



Automation, Process and Inspection
Technology

OPTIspin SB20

START

Automation,
Process and
Inspection Technology

Manual

OPTIspin SB20

Spinning Module

operating instructions



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2.1 Safety Instructions

All safety instructions will be found in chapter 2 and following ones.

Prior to installation, starting-up and operation of the system relevant safety instructions have to be read carefully and considered accordingly.

2.2 Liability

The manufacturer will not take any liability of object, person and secondary damage caused by improper use or ignoring of safety instructions as well as caused by the owner's manual due to missing updating after the system or its software have been modified, nor will the manufacturer take any liability of damages due to loss of data.

In addition, the terms of business that are part of the order/contract will apply.

Our products are continuously modified and improved due to innovation, legal requirements and standards. As a consequence, the information given in this documentation may not accurately reflect every detail of the system actually delivered. Please contact the manufacturer in cases of uncertainty.

Products mentioned in this manual are eventually trade marks and are used for identification purposes only.

2.3 Edition

Edition	Year / Month	Name of the Item	Description	Number
5	2010 / 07	OPTIspin SB20	Spinning Module	81***

2.4 Warranty

We guarantee for the equipment as stated in the order/contract.

This warranty will expire in case of:

- interference into or modification of the system without prior consent of the manufacturer
- improper use of the system
- insufficient maintenance of the system
- inappropriate operation of the system
- negligence of correct supply requirements
- application of third-part components
- alteration of program or configuration write-ups without manufacturer's consent

2.5 Service Address

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2.6 Symbols Used in the Manual



Condition

Defined conditions have to be met in order to execute next action.



Action

You are requested to do something.



Result

Explains the result of an action.



Help

Actions to make, should problems occur



Decision

Description of alternative actions.



Information and additional advice



Text or key / button



Physical units



Checkbox (option present, if checked)

3 Safety Instructions

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3.1 General

Prior to installation, starting and operation of the system relevant safety instructions should be read carefully and considered accordingly.

Persons charged with transport, storing, installation, starting, operation, maintenance and service have to know the content of this manual.

This manual contains information and warnings to be followed by the user to ensure safe operation and to maintain the system in secure condition. It should be located in a suitable place close to the system.

In addition to this manual all valid, legal and other local regulations concerning prevention of accidents as well as protection of the environment are applicable.

Please consider all instructions, in particular safety instructions, in order to achieve safe operation of the system.

Possible hazards harming the user or resulting in damage to the system are clearly stated within appropriate chapters of this manual.

Safety instructions plus important information are marked in the following way:

DANGER!

The word "Danger!" combined with this or a more specific symbol indicates an immediate hazard while using the system.

Neglecting of instructions given in this documentation or on the system itself can result in personal injury or death of the operator or of persons being close by.

The system, other equipment or the environment can be seriously damaged as well.

WARNING!

The word "Warning!" combined with this or a more specific symbol indicates an impending hazard or fatal unsafe practice while using the system.

Neglecting of instructions given in this documentation or on the system itself can result in severe personal injury of the operator or of persons being close by.

The system, other equipment or the environment can be damaged as well.

CAUTION!

The word "Caution!" combined with this or a more specific symbol indicates a possible hazard or unsafe practice while using the system.

Neglecting of instructions given in this documentation or on the system itself can result in personal injury of the operator or of persons being close by.

The system, other equipment or the environment can be damaged as well.

Please consider all instructions, in particular safety instructions, in order to achieve safe operation of the system.

Advice contained in this chapter is intended to supplement, not to supersede, the safety advice given in other chapters of this manual, nor the general safety code of behaviour prevailing in the user's country.

3.2 General Hazards

This system has been designed and manufactured considering all relevant safety regulations. Improper use or operation by persons not qualified accordingly may result in danger:

- to life and health of the operator
- to the system itself
- to surroundings of the user
- to performance and efficiency of the system.

General hazards of the system, depending on design or type, may arise in the following ways:

- mechanical hazard caused by squeezing, shearing and cutting, catching and winding, stitching or by freely moving parts
- thrust caused by kinetic energy of moving mass
- sharp corners and edges
- electrical hazard caused by touching live parts (directly or indirectly)
- thermal hazard causing burns
- chemical hazard causing poisoning, corrosion and explosion
- toxic hazard due to inhalation of vapours and gases
- gases under pressure
- liquids under pressure
- combination of hazards caused by
 - faulty installation
 - incorrect loading of substrates / wafers
 - breakdown of power or media supply
 - breakdown and/or incorrect arrangement of preventive measures
 - combination of escaping media
- hazards caused by
 - human misconduct
 - noise
 - allergies, excitations of mucous membrane, unknown effects caused by media
 - ejection of parts
 - disturbance / malfunction of control system
 - leaking of hoses or pipes
 - combination of atmospheres or vapours
 - fire hazard
 - natural hazards caused by lightning, environmental catastrophes etc.

3.3 Maintenance



DANGER!

Avoid any contact of the motor with solvent.

3.4 Mechanical



DANGER!

By applying components of other manufacturers additional and unknown hazards may arise. No liability will be taken in this case.
Use only genuine parts provided by the manufacturer of the system.
Genuine parts are constructed conforming to applicable safety regulations.



DANGER!

Moving parts may cause squeezing or cutting of extremities.
Do not touch any moving parts of the system while in operation.



DANGER!

Operation of the system by several persons may cause hazards based on misconduct or missing mutual understanding.
Operation of the system by two or more persons is not allowed.
If in case of service or maintenance tasks the system has to be operated by two persons, these have to conduct a secure joint procedure.



DANGER!

The system may only be operated while all doors and safety covers are closed and any protection systems are properly positioned. Function of safety covers or doors has to be assured at any time.
In case of any safety deficiencies the system has to be switched off and the service personnel has to be informed accordingly.



DANGER!

Never remove safety covers or doors during operation (only for service case). Never open the system when it's switched on.

3.5 Spinning Operation



DANGER!

Ejection of parts

When using a spin chuck without vacuum, the rotation speed may not exceed 2000 rpm.



DANGER!

Pollution of the spinning module

The spinning module has always to be operated with chuck and wafer / substrate, except when using a low contact chuck.

Without chuck, the medium can get in the vacuum system.

3.6 Syringe System



DANGER!

Collision!

Operating with syringes the lid must rest in upper position, otherwise a collision between lid and syringe could occur.

Do not activate any recipe in which the arm moves over the chuck and the lid set in middle position.

3.7 Hotplates Operation



DANGER!

Hot surface

The hotplate will reach temperatures of 300°C based on option provided. Touching of it may lead to serious injuries.

Don't touch the hot plate surface!

The plate may still be hot, even when switched-off.

Prior to any maintenance or repair work, please make sure that all heated parts have reached ambient temperature.

Before touching any parts check the actual temperature displayed on temperature indicator.



DANGER!

Fire hazard

Do not place any inflammable objects on hotplate or close to it.

Do not use any inflammable media close to the hotplate.

Do not operate the hotplate in an area with explosion hazard.



DANGER!

Do not operate the hotplate without adequate exhaust.



DANGER!

The system must not be operated without an emergency stop button.



DANGER!

Fire hazard

Do not place any inflammable objects on hotplate or close to it.

Do not use any inflammable media close to the hotplate.

Do not operate the hotplate in an area with explosion hazard.



DANGER!

Hotplate with HMDS, vapour prime process
Never open a hotplate with HMDS during a running process or after a power failure.

3.8 Power Supply



DANGER!

Electrical hazard
Disconnect the mains plug before opening the control panel.



DANGER!

Electrical hazard
The system needs to be grounded in all cases. Do not remove or cut off any ground wire of power supply or inside the system. Insufficient grounding can cause additional electrostatic charging of plastic parts, hoses or pipes, and the system as a whole.



DANGER!

Electrical hazard
This system operates under high voltages. Danger of high voltages exists even when the system is switched off, but still connected to the power supply.
Capacitors within the system may be charged even in case the system is switched off and disconnected from mains supply line.



DANGER!

Electrical hazard
While switched on, electrical connectors will be live. Opening of covers or removing of parts may result in exposure to live parts.



DANGER!

Electrical hazard
Interchange of current-bearing wires may result in danger for health and life of operator. Connection to the mains supply has to be effected by a qualified electrician according to prevailing regulations. Neutral wire (blue) and ground wire (green/yellow) have to be connected in due form.



DANGER!

Electrical hazard
Persons bearing a pacemaker may not operate, clean or service the unit.



DANGER!

Electrical charging hazard

Due to electrical charging plastic components or wiring, solvents and process chemicals could be ignited. Therefore, the system and its components have to be grounded.



DANGER!

Emergency Stop button

The system must not be operated without an emergency stop button. All systems (insert systems only) without emergency stop button have to be supplied with one. In case of emergency the emergency stop button must be approachable immediately. The maximum distance between emergency stop button and machine is 0.5 m.

3.9 Additional Safety Information

- Do not take actions on the system other than described in this manual.
- Do not operate the system while covers or other protective systems have been removed.
- Maintenance and service work may only be executed by SSE service personnel or persons qualified accordingly.
- Disconnect all wires of power supply prior to opening of the system. In case work has to be done while the system remains open (for adjustments, maintenance etc.) it should only be done by qualified personnel, knowing all potentially dangerous points and being able to prevent hazards by taking appropriate precautions.
- In case fuses have to be replaced make sure that only fuses of same type and current rating will be used.



DANGER!

Under no circumstances use makeshift fuses or short-circuit any fuse holders.

- In case of insufficient grounding or of damaged ground conductor make sure that the system will be inoperable and secure it against unauthorized or unintentional operation.
- Whenever it is likely that the system is no longer electrically safe, make it inoperable and secure it against any unauthorized or unintentional operation.
- The system is likely to be electrically unsafe if:
 - a) any damage is visible
 - b) it fails to perform according to specification
 - c) it has been subject to prolonged storage under unfavourable conditions
 - d) it has been subject to severe transport stress.

In these cases the safety state of the machine has to be checked by SSE service personnel.

3.10 Handling of Electronic Components

Electrostatic discharges can cause damage to parts.
For handling electronic components several precautions are essential:

- Wear a grounded wrist strap or work on a grounded static-dissipating work surface. If this not possible touch an adjacent earth ground (i. e. central heaters or water pipes) before handling electronic components or printed circuit boards.
- Leave electronic components and printed circuit boards in their original packaging until final installation.
- Handle electronic components by their body or case, avoid touching of leads.
- Keep electronic components and printed circuit boards away from such static-generating materials as vinyl's, plastic bags, etc.

Maintenance and repair work required, but not listed in this manual, should only be done by ATMsse service or by persons of equivalent qualification.

3.11 Chemicals

Chemicals are provided and applied by the user. Proper handling of chemicals is the user's responsibility.

 	DANGER! It is the user's responsibility to mark all containers and supply lines of chemicals (i.e. containers of media and waste) with appropriate labels and warning signs.
 	DANGER! When handling chemicals, please observe relevant safety regulations as well as supplier's information (safety data sheet and additional advice).
 	DANGER! When handling chemicals, insure proper ventilation and exhaust of vapours.
 	DANGER! When handling chemicals, please observe that released chemicals may react with each another, leading to unwanted and unknown substances. These substances may bear major additional risks.



DANGER!

Solvents!

Inflammable, explosive, toxic

- Do not inhale its vapours (danger of suffocation).
- Prevent electrostatic loading.
- Keep away from ignition sources.
- Do not smoke.
- Do not eat (danger of poisoning).
- Do not touch.



DANGER!

Process chemicals!

Inflammable, explosive, toxic

- Do not inhale its vapours (danger of suffocation).
- Prevent electrostatic loading.
- Beware of ignition sources.
- Do not smoke.
- Do not eat (danger of poisoning).
- Do not touch.



DANGER!

Corrosives

Inflammable, explosive, toxic

- Do not inhale its vapours (danger of suffocation).
- Prevent electrostatic charging.
- Beware of ignition sources.
- Do not smoke.
- Do not eat (danger of poisoning).
- Avoid contact to eyes.
- Do not touch.



DANGER!

Gases

Inflammable, explosive, toxic

- Do not inhale (danger of suffocation).
- Prevent electrostatic charging.
- Beware of ignition sources.
- Do not smoke.



DANGER!

In case corrosive, gassing or noxious wet media are applied you have to prevent any peril to your staff by all means.

3.12 Laser Sensors

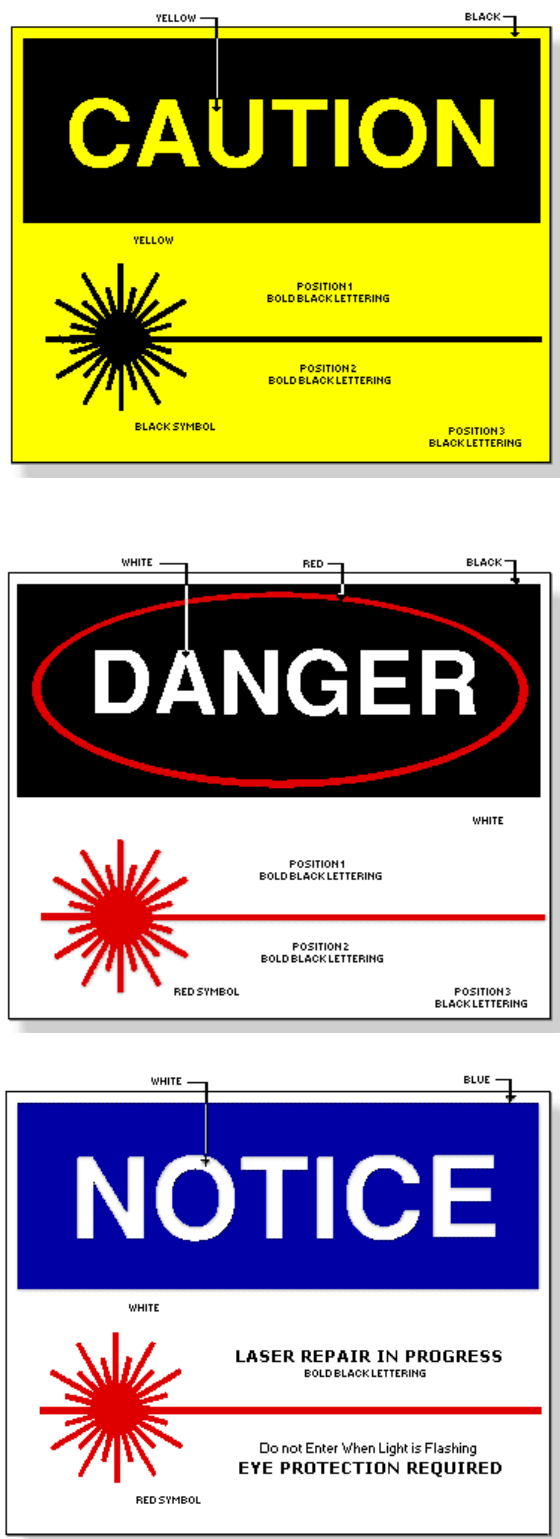
i

Virtually all of the U.S. domestic as well as all international standards divide lasers into four major hazard categories called the laser hazard classifications. The classes are based upon a scheme of graded risk. They are based upon the ability of a beam to cause biological damage to the eye or skin. In the FLPPS, the classes are established relative to the Accessible Emission Limits (AEL) provided in tables in the standard. In the ANSI Z 136.1 standard, the AEL is defined as the product of the Maximum Permissible Exposure (MPE) level and the area of the limiting aperture. For visible and near infrared lasers, the limiting aperture is based upon the "worst-case" pupil opening and is a 7 mm circular opening.

Class	Applies to --- wavelength ranges ---				----- Hazards -----		
	UV	VIS	NIR	IR	Direct ocular	Diffuse ocular	Fire
I	X	X	X	X	No	No	No
IA	--	X*	--	--	Only after 1000 sec	No	No
II	--	X	--	--	Only after 0.25 sec	No	No
IIIA	X	X**	X	X	Yes	No	No
IIIB	X	X	X	X	Yes	Only when laser output is near Class IIIB limit of 0.5 Watt	No
IV	X	X	X	X	Yes	Yes	Yes

Key: X = Indicates class applies in wavelength range.
* = Class **IA** applicable to lasers "not intended for viewing" **ONLY**.
** = CDRH Standard assigns Class **IIIA** to visible wavelengths **ONLY**. ANSI Z 136.1 assigns Class **IIIA** to all wavelength ranges.

Warning Symbols:



Requirements	-----Class ¹ -----					
	I	IA	II	IIIA	IIIB	IV
Performance (all laser products)						
Protective housing	R ²	R ²	R ²	R ²	R ²	R ²
Safety interlock	R ^{3,4}	R ^{3,4}	R ^{3,4}	R ^{3,4}	R ^{3,4}	R ^{3,4}
Location of controls	—	R	R	—	R	R
Viewing optics	R	R	R	R	R	R
Scanning safeguard	R	R	R	R	R	R
Performance (laser systems)						
Remote control connector	—	—	—	—	R	R
Key control	—	—	—	—	R	R
Emission indicator	—	—	R	R	R ¹⁰	R ¹⁰
Beam attenuator	—	—	R	R	R	R
Reset	—	—	—	—	—	R ¹³
Performance (specific purpose products)						
Medical	S	S	S	S ⁸	S ⁸	S ⁸
Surveying, leveling, alignment	S	S	S	S	NP	NP
Demonstration	S	S	S	S	S ¹¹	S ¹¹
Labeling (all laser products)						
Certification and identification	R	R	R	R	R	R
Protective housing	D ⁵	R ⁵	R ⁵	R ⁵	R ⁵	R ⁵
Aperture	—	—	R	R	R	R
Class warning	—	R ⁶	R ⁷	R ⁹	R ¹²	R ¹²
Information (all lasers)						
User information	R	R	R	R	R	R
Product literature	—	R	R	R	R	R
Service information	R	R	R	R	R	R

Key: R = required
 — = not applicable
 S = same as other products of class
 NP = not permitted
 D = depends on level of interior radiation

Notes:

1. Based on highest level accessible during operation.
2. Required wherever and whenever human access to laser radiation above Class I limits is not needed for product to perform its function.
3. Required for protective housings opened during operation or maintenance, if human access thus gained is not always necessary when housing is opened.
4. Interlock requirements vary according to Class of internal radiation.
5. Wording depends on level and wavelength of laser radiation within protective housing.
6. Warning statement label.
7. **CAUTION** logotype.
8. Requires means to measure level of radiation intended to irradiate the body.
9. **CAUTION** if 2.5 mWcm⁻² or less, **DANGER** if greater than 2.5 mWcm⁻².
10. Delay required between indication and emission.
11. Variance required for Class IIIB or IV demonstration laser products and light shows.
12. **DANGER** logotype.
13. Required after August 20, 1986.



CAUTION!

Class I

cannot emit laser radiation at known hazard levels (typically continuous wave: cw 0.4 μ W at visible wavelengths). Users of Class I laser products are generally exempt from radiation hazard controls during operation and maintenance (but not necessarily during service).

Since lasers are not classified on beam access during service, most Class I industrial lasers will consist of a higher class (high power) laser enclosed in a properly interlocked and labelled protective enclosure. In some cases, the enclosure may be a room (walk-in protective housing) which requires a means to prevent operation when operators are inside the room.



WARNING!

Class I.A.

a special designation that is based upon a 1000-second exposure and applies only to lasers that are “not intended for viewing” such as a supermarket laser scanner. The upper power limit of Class I.A. is 4.0 mW. The emission from a Class I.A. laser is defined such that the emission does not exceed the Class I limit for an emission duration of 1000 seconds.



DANGER!

Class II

low-power visible lasers that emit above Class I levels but at a radiant power not above 1 mW. The concept is that the human aversion reaction to bright light will protect a person. Only limited controls are specified.



DANGER!

Class IIIA:

intermediate power lasers (cw: 1-5 mW). Only hazardous for intrabeam viewing. Some limited controls are usually recommended.

NOTE: There are different logotype labelling requirements for Class IIIA lasers with a beam irradiance that does not exceed 2.5 mW/cm² (Caution logotype) and those where the beam irradiance does exceed 2.5 mW/cm² (Danger logotype).



DANGER!

Class IIIB

moderate power lasers (cw: 5-500 mW, pulsed: 10 J/cm² or the diffuse reflection limit, whichever is lower). In general Class IIIB lasers will not be a fire hazard, nor are they generally capable of producing a hazardous diffuse reflection. Specific controls are recommended.



DANGER!

Class IV

High power lasers (cw: 500 mW, pulsed: 10 J/cm² or the diffuse reflection limit) are hazardous to view under any condition (directly or diffusely scattered) and are a potential fire hazard and a skin hazard. Significant controls are required of Class IV laser facilities.

3.13 Symbols Used on System

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The following safety instructions (caution and command symbols) may be seen on the system:

CAUTION SYMBOLS



Warning
General hazard



Electrical hazard



Flammable material
Fire hazard



Toxic Material
Poison



Explosive material
Explosion hazard



Squeezing hazard
Hand crush



Magnetic field



Pinch point
Hand in rollers



Harmful to health



Hot surface



Laser hazard



Automatic start-up

COMMAND SYMBOLS



Read the instructions
manual first



Wear protective gloves



Eye Protection
Wear safety goggles



unplug BEFORE open



Respiratory protection
Wear gas mask



Wear protective clothing



Wear conductive boots



Spinning direction clockwise



Spinning direction
anticlockwise

PROHIBITION SYMBOLS



No pacemakers



Do not touch



Keep off area



Do not operate
by several persons



Energized enclosure
No touching - high voltage



Do not extinguish fire by
water



Do not cover



Do not fold up
Prohibition



Do not switch

The above symbols refer to SSE components and parts. However, components and parts of sub suppliers may show other symbols, not expressly mentioned or referred to in this manual.



DANGER!

The owner of the system is responsible to place adequate danger signals and labels in suitable places.

This applies in particular to signals and labels concerning process chemicals used.

Irrespective of number of caution symbols and information placed on or around the system all safety instructions of this manual have to be observed.

3.14 Emergencies

In case of an emergency (accident with material or personal damage), please observe the following instructions:



DANGER!

In case of emergency immediately push the red emergency stop button <EMERGENCY STOP> and await complete stand-still of the system within a safe distance.

Prior to checking of risk area operate the main switch and disconnect the system from mains and media supply (i.e. compressed air, nitrogen, cleaning medium, and other).

Wait until all hot parts have reached ambient temperature.



DANGER!

Reactivating of the system after an emergency stop may only be done by qualified persons. Prior to restarting, the system has to be checked for eventual hazards.



DANGER!

In case of emergency while handling chemicals (i.e. cleaning or developer media), please call immediately for a safety expert or for a physician and act according to instructions of the data sheet of the applied process chemical.

3 Directives de sécurité

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3.2 Directives générales de sécurité

Avant l'installation, la mise en marche et l'utilisation du système; il est primordial de lire attentivement ce mode d'emploi et particulièrement les directives et avertissements concernant la sécurité.

Toute personne en charge de travaux concernant le système tels que: le transport, le stockage, l'installation, la mise en marche, l'utilisation, le service après-vente, les services d'entretien et de contrôle, doit bien connaître le contenu de ce manuel d'emploi. Il est nécessaire d'observer avec exactitude toutes les informations et tous les avertissements en rapport avec la sécurité du système. De cette manière, vous assurez le fonctionnement sûr et performant du système.

Les sources de risques pouvant entraîner des dégâts matériels ainsi que des atteintes à la santé de personnes travaillant avec le système où à sa proximité sont décrites dans les différents chapitres de ce manuel. Ce manuel d'emploi vous transmet des informations importantes permettant d'assurer un fonctionnement performant et sûr du système.

Le manuel d'emploi doit être déposé dans un endroit accessible, à proximité du système. Complémentairement aux préceptes de ce manuel il va de soi, que toute loi, décret ou autre règlement légal (surtout ceux concernant la prévention d'accidents ainsi que la protection de l'environnement) en vigueur dans le pays où sera installé le système devra être respecté.

Les avertissements et les mentions importantes sont signalisées de la manière suivante:

DANGER!

Quand le mot de signalisation „Danger“ est visible (comme ci-contre) à côté de ce symbole ou à côté d'un autre symbole de signalisation de danger plus spécifique, un risque de danger imminent peut survenir lors de l'utilisation du système. Dans le cas où les utilisateurs et opérateurs du système ne respecteraient pas les directives de sécurité de ce manuel ainsi que celles placées visiblement sur le système, l'opérateur du système, ou des personnes se trouvant à proximité du système encourent des périls d'accidents graves, voire mortels. D'autre part, le système, ses produits, ainsi que son entourage direct peuvent être gravement endommagés.

AVERTISSEMENT!

Quand le mot de signalisation „Avertissement“ est visible (comme ci-contre) à côté de ce symbole, ou à côté d'un autre symbole plus spécifique, un risque peut fort probablement survenir lors de l'utilisation du système.

Dans le cas où les directives de sécurité de ce manuel ainsi que celles placées sur le système ne seraient pas respectées, l'opérateur du système, ainsi que toute personne se trouvant à proximité du système encourent des périls d'accidents moyennement à sévèrement graves.

D'autre part, le système, ses produits, ainsi que son entourage direct peuvent être sérieusement endommagés.

ATTENTION!

Quand le mot „Attention!“ est visible (comme ci-contre) à côté de ce symbole, ou à côté d'un autre symbole plus spécifique, un risque peut probablement survenir lors de l'utilisation du système.

Dans le cas où les directives de sécurité de ce manuel ainsi que celles placées sur le système ne seraient pas respectées, l'opérateur ainsi que toute personne se trouvant à proximité du système encourent des risques d'accidents légers à moyens.

D'autre part, le système, ses produits, ainsi que son entourage direct peuvent être endommagés.

Nous vous prions de porter particulièrement votre attention sur les directives de sécurité concernant les dangers pouvant survenir durant l'utilisation du système, ainsi que leur prévention.

Les directives d'avertissement et de sécurité regroupées dans ce chapitre ne peuvent pas valoir à la place des règles et directives de sécurité en vigueur dans les autres secteurs spécifiquement concernés. Il s'agit plutôt d'un regroupement de conseils spécifiques à observer de manière complémentaire aux règles de sécurité généralement et spécifiquement en vigueur.

3.3 Potentiel général de danger

Le système a été conçu, développé et assemblé en respectant tous les points de vue de de sécurité technique nécessaires. En cas d' utilisation non conforme ou d'une mise en marche du système par des personnes sans autorisation ou qualification, les risques, périls et dangers énumérés ci-dessous sont imminement probables:

- pour la vie et la santé de la personne aux commandes du système.
- pour le système lui-même.
- pour d' autres objets de valeur de l' entrepreneur.
- pour le rendement et la rentabilité du système.

Le potentiel général de danger du système peut contenir, selon les modèles et les types de fabrication, les risques suivants:

- risques à caractère mécanique causés par des effets d' écrasement, de froissage, de cisaillement, de coupage, des effets d' emprise et d' embobinement, des perforations et des poinçonnages, ainsi que des projections de pièces du système à proximité de celui-ci.
- coups et secousses causés par le déploiement de l' énergie cinétique de la masse des pièces projetées.
- bordures et angles vifs ou tranchants.
- décharges, court-circuitages et électrocutions causés par contacts directs ou indirects avec le circuit électrique du système.
- dangers d' ordre thermique causés par des processus de combustion incontrôlés.
- dangers d' intoxications provoqués par l' aspiration de gaz et de vapeurs toxiques ou corrosives et par des effets d' explosions.
- dangers d' aspiration de gaz ou de vapeur nocives.
- dangers en rapport avec des gaz ou des liquides sous pression.
- dangers multiples combinés causés par:
 - transport inadéquat, assemblage et montage érronnés du système.
 - fixation et application erronées des „Wafer“ (substrates)
 - perturbation ou défaillance de l' approvisionnement énergétique ou des réservoirs à substances chimiques.
 - défaillance du système aspirateur d' air ou du système de dosage du courant d' air.
 - absence de mesures de protections ou prescription erronée de celles-ci.
- effets de combinaison de substances chimiques fugitives.
- dangers résiduels, c' est à dire potentiels et non-manifestes tels que:
 - comportement humain non-approprié.
 - bruit.
 - allergies, irritation des muqueuses, effets inconnus causés par des substances chimiques.
 - catapultage imprévu de pièces du système.
 - défaillance ou perturbation du dispositif de commande du système.
 - fuites dans la tuyauterie du système.
 - combinaison néfaste de certaines vapeurs et/ou de certaines atmosphères.
 - incendies.
 - périls d' origine naturelle tels que foudre, inondations et autres catastrophes.

3.4 Services de contrôle et d'entretien technique après-vente



DANGER!

Nettoyage du „chuck“ (assiette rotative):
Ne jamais nettoyer un „chuck“ incorporé au système à l' aide de solvants!
Ceux-ci pourraient détruire le moteur du „chuck“.

3.5 Mécanique du système



DANGER!

Des dangers imprévisibles et considérables sont à craindre, dans le cas où des pièces de rechange provenant d'une autre fabrication que la nôtre seraient incorporées au système. Dans pareils cas, notre entreprise déclinera toute responsabilité par rapport à d' éventuels dégâts chez l' utilisateur du système!

N' utilisez que les pièces de rechange provenant de notre fabrication!
Nos pièces de rechange d' origine sont fabriquées selon les normes de sécurité requises et en vigueur.



DANGER!

Les parties du système effectuant des mouvements mécaniques peuvent causer des écrasements, tenaillements ou coupures de parties du corps. Éviter absolument d' introduire la main ou une autre partie du corps à l' intérieur du système, lorsque celui-ci est en marche.



DANGER!

De multiples dangers sont à craindre, si le pilotage et la commande du système sont pourvus par plus d' une seule personne! (Risques en rapport avec des défaillances au niveau de la communication et de la coordination des manoeuvres de commande).

Il est donc strictement interdit pour les raisons décrites ci-dessus, de partager la commande du système entre deux ou plusieurs personnes. En cas d' un travail de contrôle ou de réparation nécessitant exceptionnellement deux personnes à la commande du système, celles-ci doivent se soumettre préalablement à une entente de sécurité commune sur la marche à suivre des opérations nécessaires.



DANGER!

Il est strictement interdit de mettre le système en marche, si couvercles, couvertures ou portes de sécurité ne sont pas fermées. Le bon fonctionnement de celles-ci doit être constamment garanti.

Le travail du système doit être interrompu instantanément, lorsqu' une défaillance du système de sécurité est perçue. En outre le personnel de service après-vente doit être informé.



DANGER!

Il est strictement interdit d' enlever tout couvercle, couverture ou porte de sécurité du système, sauf pour des services de contrôle effectués par notre personnel. Il est également strictement interdit d' ouvrir le système lorsqu' il est en marche, ou lorsqu' il est branché sur le circuit électrique.

3.6 Manutention des modules à centrifuge.



DANGER!

Des pièces du système peuvent être propulsées ou catapultées! (cela vaut uniquement pour les assiettes rotatives du type "Low-Contact")
Lorsqu' une assiette rotative dépourvue d' un système d' aspiration sous vide est utilisée, l' index de rotation par minute ne doit pas dépasser la limite de 2000 t/min.



DANGER!

Salissement du système:

La mise en marche du système ne peut-être effectuée qu' avec une assiette rotative et des substrates. (Seule exception: assiettes rotatives du type „Low contact“.). Une mise en marche du système sans substrates peut provoquer une aspiration de solvants ou d' autres substances chimiques par l' orifice du système d'aspiration sous vide. Utiliser le système sans assiette rotative comprend également le risque d' une diffusion de solvants ou d' autres substances chimiques à l' intérieur du système.

3.7 Manutention des systèmes à cartouche.



DANGER!

Danger de collision!

Lors d'opérations d'installation ou de rechange de cartouches, il est nécessaire de s'assurer que le couvercle se trouve toujours à son degré maximum d'ouverture. Si cela n'est pas le cas, il y a risque de collision avec la cartouche.

Pour cette raison, il est interdit de mettre en marche une procédure qui exige que le bras passe au-dessus du pot à processus chimiques pendant que le couvercle se trouve à son degré moyen d'ouverture.

Déclenchez immédiatement l'interrupteur d'urgence en cas de danger de collision!

3.8 Travaux avec différents systèmes de laquage/vernissage.



DANGER!

Danger de destruction du système!

Avant chaque changement de procédure/recette, il est absolument nécessaire de vérifier que l'assiette rotative („Chuck“) spécifiquement requise soit installée! :

Types de recettes de „Coating“(application de couches de laque):

- Spincoating („coating“ avec système rotatif)
- Spraycoating („coating“ avec spray), version standard- avec „pin“ soulevé, avec nitrogène.
- Spraycoating („coating“ avec spray)-sans soulèvement de „pin“, sous-vide, sans nitrogène.
- Spraycoating („coating“ avec spray)-sans soulèvement de „pin“, pas de sous-vide, avec nitrogène.

3.9 Utilisation des plaques chauffantes.



DANGER!

Surfaces cuisantes!

Les plaques chauffantes peuvent atteindre, selon le modèle utilisé, jusqu' à une température de 550 °C.

Le contact avec une plaque chauffante peut avoir pour suite de sérieuses brûlures.

Même lorsque l' enclenchement, et par cela l' utilisation d' une plaque a été interrompu, celle-ci peut garder une assez haute température jusqu' à 200°C durant la période de refroidissement!

Préalablement à tous travaux de contrôle et de nettoyage d' une plaque chauffante, il est indiqué d' attendre que tous les éléments ayant été sujets à un processus de chauffage élevé soient refroidis!

Pour cette raison nous vous conseillons de vérifier la température de la plaque et de son entourage à l' aide de l' indicateur de température, avant de toucher des éléments ayant été sujets à un chauffage élevé.



DANGER!

Risques d' incendies!

Il est interdit de déposer des objets inflammables sur ou à proximité d' une plaque chauffante.

Il est interdit d' utiliser des solvants ou d' autres substances chimiques inflammables dans la zone susceptible d' inflammations autour d' une plaque.

Il est interdit d' utiliser une plaque chauffante dans une zone susceptible de dangers d' explosions.



DANGER!

La mise en marche d' une plaque chauffante est interdite, si elle n' est pas munie d' un système d' aspiration de l' air usé.

3.10 Le système électrique



DANGER!

Risques et périls pouvant être causés par le système électrique:
Par la présence de champs magnétiques tout aussi bien que par des phénomènes d'électricité statique (agissant sur des couvercles, des éléments de couvrage métalliques ou en matière plastique, ainsi que sur des conduites électriques ou des conduites pour liquides chimiques), des processus d'ignition ou d'inflammation imprévisibles peuvent faire prendre feu à des solvants ou à d'autres substances chimiques utilisées dans le système.

Le système doit toujours être connecté aux câbles de masse, lorsqu'il est en état de marche. Il est interdit de déconnecter ou d'enlever des câbles de masse tout aussi bien à l'intérieur du système, que dans les conduites électriques d'approvisionnement du système.



DANGER!

Risques et périls pouvant être causés par le système électrique:

Le système travaille à haute tension.

Lorsque le système se trouve hors d'état de marche, (après avoir interrompu le circuit électrique général à l'aide de l'interrupteur général) la tension électrique est en tous cas présente jusqu'à la hauteur de l'interrupteur général.

Dans ce cas-là, les condensateurs à l'intérieur du système peuvent toujours se trouver sous tension.



DANGER!

Risques et périls pouvant être causés par le système électrique:

Lorsque le système est enclenché, en état de marche, tous les raccords électriques sont sous tension. Évitez absolument d'ouvrir des couvercles, de les enlever, ou d'enlever des parties du système. Par celà, des raccords électriques ou d'autres éléments du système se trouvant sous tension peuvent être mis à découvert, ce qui ferait courir des risques graves à tous égards.



DANGER!

Risques et périls pouvant être causés par le système électrique:

Une confusion entre différents câbles électriques du système faussement connectés représente un vif danger pour la vie et la santé de l'utilisateur. Le raccord au circuit électrique général doit être effectué uniquement par un électricien spécialisé, qui doit faire ce travail selon les directives de sécurité en vigueur. Veillez à faire des raccords de câbles bleus ou verts/jaunes conformes aux prescriptions.



DANGER!

Risques et périls pouvant être causés par le système électrique:
Toute personne munie d'un «Pace-maker» n'est ni autorisée à s'approcher de la zone d'action magnétique du système, ni bien sûr à travailler avec le système, dans quelle fonction que ce soit.



DANGER!

Risques et périls en rapport avec des phénomènes d'électricité statique:
Dus à des phénomènes d'électricité statique (sur des parties en métal, en matières plastiques, ou sur des conduites électriques du système) des processus d'ignition ou d'inflammation de solvants ou d'autres substances chimiques en usage dans le système peuvent survenir.
Il est indispensable de s'assurer de la présence de câbles de masse qui relient le système électrique à la terre.



DANGER!

Interrupteur de sécurité à stoppage immédiat (Bouton rouge "NOT-AUS"):
Tous les systèmes non-munis d'un interrupteur de sécurité à stoppage immédiat (Bouton rouge "NOT-AUS") doivent obligatoirement être pourvus de cet interrupteur.
Sans l'interrupteur de sécurité à stoppage immédiat (Bouton rouge "NOT-AUS") il est interdit de mettre un tel système en marche.
En cas d'urgence, l'interrupteur à stoppage immédiat (Bouton rouge "NOT-AUS") doit être à portée de la main. La distance maximale entre cet interrupteur, le poste de commande du système ou tout autre emplacement faisant partie de la zone de travail et de commande du système ne doit pas dépasser 0,5m!

3.11 Directives de sécurité complémentaires

- Tout travail sur le système doit être un travail explicitement requis par le manuel d'emploi du système.
- Dans le cas où des couvercles, couvertures ou portes de sécurité ne sont pas fermées, ou que des parties quelconques du système auraient été enlevées, il est interdit de mettre le système en marche.
- Tous les travaux de contrôle, service après-vente et de réparation sur le système doivent être effectués uniquement par notre personnel technique «SSE» ou par des techniciens spécifiquement préparés aux travaux nécessaires.
- Avant d'ouvrir le système, il est indispensable de séparer et de déconnecter tous les raccords électriques du système reliant celui-ci au circuit électrique général. Tous les travaux (de justage ou d'entretien) qui doivent alors être effectués, sont strictement réservés aux personnes spécifiquement formées pour ces travaux. Ces personnes doivent bien connaître les points et zones de danger du système. En outre ces personnes doivent savoir quelles mesures de prévention et de sécurité sont nécessaires pour éviter tout danger potentiel.
- Dans le cas d'un remplacement nécessaire de fusibles, veuillez à installer uniquement des fusibles du même type, ainsi que de la même capacité de résistance.



DANGER!

Il est strictement interdit d'utiliser des fusibles hors normes ou de fabrication artisanale. Il est également interdit de court-circuiter le dispositif de support des fusibles.

- En cas d'une installation insuffisante des câbles de masse qui relient le système électrique à la terre, le système ne doit en aucun cas être mis en marche. Dans le cas d'un endommagement de ces câbles de masse, la marche du système doit être immédiatement stoppée. Dans les deux cas, le système doit être bloqué de manière à prévenir toute tentative de mise en marche non-intentionnelle ou non-autorisée.
- Dans le cas où la sécurité électrique du système n'est plus assurée, la marche du système doit être immédiatement stoppée et il doit être bloqué de manière à prévenir toute tentative de mise en marche non-intentionnelle ou non-autorisée.
- La sécurité électrique du système n'est plus assurée quand:
 - a) des dégâts extérieurs sont visibles.
 - b) le système ne travaille plus correctement.
 - c) le système a été emmagasiné de manière incorrecte ou dans des conditions défavorables.
le système était hors d'état de marche, ou quand il n'a pas été utilisé pendant longtemps.
 - d) lorsqu'il a été, durant son transport, sujet à des traitements ou à des situations trop éprouvantes.

Dans tous les cas mentionnés ci-dessus, il est indispensable de faire appel au service après-vente de notre entreprise «SSE» qui se chargera de remettre le système en état.

Avertissements concernant l' utilisation et la manutention d' éléments électroniques du système:

Des décharges électrostatiques peuvent causer des dégats sur des éléments électroniques du système. Pour cette raison, il est nécessaire de mettre en pratique des mesures de sécurité spécifiques lors de la manutention et de l' utilisation des éléments électroniques:

- Portez un bracelet de sécurité anti-statique „ESD“, veillez à travailler sur une surface antistatique reliée à la terre par câble de masse.
- Laissez les éléments électroniques dans leur emballage, jusqu' au moment de leur mise en emploi.
- Tenez ou touchez les éléments électroniques uniquement par les surfaces de leur boîtier. Évitez absolument de toucher les dispositifs de contact.
- Veillez à tenir éloignés les éléments électroniques et les plaquettes semi-conductrices de toute surface électrostatiquement chargée comme par exemple celles de matières plastiques en PVC, de sachets en plastiques, etc.

Tous travaux d' entretien ou de réparation nécessaires qui ne seraient pas mentionnés dans ce manuel, doivent être effectués uniquement par notre personnel du service après-vente „SSE“, ou par des techniciens spécialement formés pour ce genre de travaux.

3.12 L' utilisation de substances chimiques

Il incombe à l' entrepreneur du système de procurer les substances chimiques nécessaires pour la production du système. Il doit les mettre à la disposition du personnel de commande du système. Il est par ailleurs responsable de la sécurité des travaux en rapport avec l' utilisation des substances chimiques.



DANGER!

L' entrepreneur propriétaire du système est responsable de la mise en place de plaquettes ou d' autres panneaux de signalement ou d' avertissement légaux sur tous récipients, tanks, tuyaux d' approvisionnement en substances chimiques utilisés dans le système, et pour la marche du système.



DANGER!

Lors de l' utilisation de substances chimiques il est obligatoire de tenir compte des directives de sécurité en question, ainsi que de suivre les prescriptions de l' entreprise de fabrication du système (Le fichier des directives de sécurité concernant l' utilisation de substances chimiques et les recommandations complémentaires).



DANGER!

Lors de l' utilisation de substances chimiques il est important d' assurer une aération suffisante et de mettre en place un dispositif aspirateur des vapeurs toxiques.



DANGER!

Lors de l' utilisation de substances chimiques il est important de tenir compte du risque couru (pendant un processus de réaction chimique) par des liaisons chimiques nouvelles et imprévues, porteuses d' un danger potentiel éventuellement néfaste.



DANGER!

Solvants:

Facilement inflammables, susceptibles à des processus explosifs et ayant un caractère toxique!

- Ne pas aspirer les vapeurs émanant de ces substances pour éviter les dangers d' asphyxie!
- Prendre des mesures contre les phénomènes d' électricité statique!
- Tenir, emmagaziner et utiliser ces substances chimiques à l' écart de quelque source de feu ou d' étincelle que ce soit!
- Ne pas fumer à proximité de ces substances!
- Ne pas avaler ou consommer à cause du danger d' empoisonnement!
- Éviter tout contact de ces substances chimiques avec la peau!



DANGER!

Substances chimiques instables:

Faiblement inflammables, susceptibles à des processus explosifs et ayant un caractère toxique!

- Ne pas aspirer les vapeurs émanant de ces substances pour éviter les dangers d' asphyxie!
- Prendre des mesures contre les phénomènes d' électricité statique!
- Tenir, emmagaziner et utiliser ces substances chimiques à l' écart de quelque source de feu ou d' étincelle que ce soit!
- Ne pas fumer à proximité de ces substances!
- Ne pas avaler ou consommer à cause du danger d' empoisonnement!
- Éviter tout contact de ces substances chimiques avec la peau!



DANGER!

Mediums chimiques à pouvoir corrosif:

Faiblement inflammables, susceptibles à des processus explosifs, et ayant un caractère toxique et corrosif!

- Ne pas aspirer les vapeurs émanant de ces substances pour éviter les dangers d' asphyxie!
- Prendre des mesures contre les phénomènes d' électricité statique!
- Tenir, emmagaziner et utiliser ces substances chimiques à l' écart de quelque source de feu ou d' étincelle que ce soit!
- Ne pas fumer à proximité de ces substances!
- Éviter tout contact de ces substances chimiques avec la peau et les yeux!
- Ne pas avaler ou consommer à cause du danger d' empoisonnement et de brûlures intérieures causées par le pouvoir corrosif de ces substances!
- Éviter tout contact de ces substances chimiques avec la peau!



DANGER!

Substances chimiques sous forme de gaz:

Faiblement inflammables, susceptibles à des processus explosifs et ayant un caractère toxique et corrosif!

- Ne pas aspirer les vapeurs émanant de ces substances pour éviter les dangers d' asphyxie!
- Prendre des mesures contre les phénomènes d' électricité statique!
- Tenir, emmagaziner et utiliser ces substances chimiques à l' écart de quelque source de feu ou d' étincelle que ce soit!
- Ne pas fumer à proximité de ces substances!



DANGER!

Lorsque vous utilisez des substances chimiques corrosives, gazeiformes ou toxiques pour le processus de production du système, vous êtes obligatoirement responsable de la mise en place de mesures capables, en tous les cas, d' exclure tout risque ou péril à l' égard de vos collaborateurs et du personnel à la commande du système.

3.13 L' utilisation d' appareils à rayons «Laser»



ATTENTION!

Rayons „Laser“ de la catégorie 1

Les rayons „Laser“ appartenant à la catégorie 1 se caractérisent par leur faible taux de radiation. Même durant une période de radiation ininterrompue, le taux des rayons de cette catégorie reste en deçà du taux de radiation maximum défini par les règles de sécurité. Les „scanner-à-rayons-laser“ de la catégorie 1 sont donc sans danger et ne nécessitent pas de mesures de sécurité spécifique, mis à part la plaquette de signalisation représentée ci-contre.



AVERTISSEMENT!

Rayons „Laser“ de la catégorie 2

Les rayons „Laser“ appartenant à la catégorie 2 se distinguent d' abord par le fait que leur faisceau lumineux soit visible. Leur taux de radiation ne dépassant pas 0.25ms, ils ne représentent pas de danger pour les yeux. Le taux de radiation de 0.25ms correspond à la faculté moyenne du réflexe de battement de paupières, ce qui permet de dire, qu' en général, de tels rayons sont inoffensifs pour l' oeil. Dans le cas d' une personne dont le battement de paupières ne correspond pas (p.e. à cause d' un traitement pharmaceutique) à la valeur moyenne nommée ci-dessus, des mesures de sécurité spécifiques doivent être mises en pratique par cette personne après consultation médicale. Quiconque soumet volontairement sa vue à l' effet de la radiation, en opprimant volontairement le réflexe de battement de paupières, court des risques certains. Mises à part ces deux exceptions, les appareils au rayons „Laser“ de la catégorie 2 sont considérés comme inoffensifs. Pour cette raison, les appareils au rayons „Laser“ de la catégorie 2 ne nécessitent pas de mesures de sécurité spéciales. Il suffit de placer la plaquette avec le symbole et la mention appropriée („Laser“de la catégorie 2) sur le boîtier des appareils en question.



DANGER!

Rayons „Laser“ de la catégorie 3R

Les „scanner au laser“ appartiennent à la catégorie 3R, lorsque leur taux de radiation maximum ne dépasse pas le quintuple du taux de radiation (environ 1.25ms) maximum des deux premières catégories. Les rayons «Laser» de la catégorie 3R peuvent, déjà par le contact à vue, causer des dommages oculaires. Pour cette raison, il est indispensable de placer une plaquette avec le symbole et la mention appropriée („Laser“de la catégorie 3R) sur le boîtier des appareils en question. En outre, il est de rigueur d' informer le personnel sur les risques et périls en rapport avec les rayons „Laser“, et particulièrement sur les risques et dangers des rayons «Laser» de la catégorie 3R. Il est obligatoire de porter des lunettes de protection et des gants de protection, lorsqu' on travaille avec cette catégorie de rayons «Laser»! [En Allemagne, le §6 „UVV-BGV-B2-Rayons Laser“ (consignes juridiques de sécurité du travail) prescrit la nomination d' un spécialiste pour la sécurité du travail avec les rayons „Laser“. L' utilisation de ces appareils doit être déclarée officiellement.]



DANGER!

Rayons „Laser“ de la catégorie 3B

Dans le cas où le regard serait directement dirigé sur le faisceau des rayons „Laser“ de la catégorie 3B, il s' en suivrai de graves et irréversibles dommages pour l' œil humain. Par contre, le contact de courte durée du faisceau des rayons „Laser“ de la catégorie 3B sur la peau ne cause pas de dommages. Il faut porter de lunettes de protection „anti-Laser“, à partir du moment où l' on se rend dans une localité, dans laquelle des rayons „Laser“ de la catégorie 3B sont utilisés. Complémentairement il est obligatoire de signaler à l' aide d' une lampe d'avertissement clignotante la mise en marche d' appareils à rayons „Laser“ de la catégorie 3B dans les dites localités. En outre, le port de gants et de lunettes de protection est de rigueur. [En Allemagne, le §6 „UVV-BGV-B2-Rayons Laser“ (consignes juridiques de sécurité du travail) prescrit la nomination d' un spécialiste pour la sécurité du travail avec les rayons „Laser“. L' utilisation de ces appareils doit être déclarée officiellement.]

3.14 Panneaux d'avertissement en usage sur le système

Tous les panneaux d'avertissement traités ci-dessous sont uniquement en usage sur des éléments et composants de nos systèmes «SSE». Toutefois il n'est pas exclu, que des pièces composantes du système provenant d'une autre fabrication que la nôtre, soient munies d'autres plaquettes ou d'autres panneaux de signalisation ou d'avertissement. Ceux-ci ne figureraient donc pas dans l'index suivant.

Signeaux d'avertissement



Zone à dangers



Tension électrique
dangereuse



Matériau inflammable



Substance toxique



Matériau à risque
d'explosion



Danger d'écrasement
pour les mains



Champ magnétique



Danger d'emprise
Pour les mains



Substance nocive ou
irritante



Surface cuisante



Rayons „Laser“



Mise en marche
automatique

Signeaux à caractère prescriptif



Lisez d'abord le mode
d'emploi!



Portez des gants de
Protection!



Portez des lunettes de
protection!



Débranchez la prise de
courant avant d'ouvrir!



Portez un masque de
protection des voies
respiratoires!



Portez une combinaison de
protection!



Portez des chaussures à
semelles anti-statiques!



Sens giratoire horaire!



Sens giratoire anti-horaire!

Signeaux d'interdiction



Zone défendue à toute
personne qui porte un
„Pace-maker“ !



Défense de toucher!



Interdiction de mettre les
pieds dans cette zone!



Défense d'utilisation à plus
d'une personne!



Défense de toucher,
couvercle/boîtier sous
tension!



Défense d'éteindre ce feu
avec de l'eau!



Défense de couvrir!



Défense de plier!



Défense d'enclencher!



DANGER!

L'entrepreneur et l'utilisateur du système doivent pourvoir à la mise en place des plaquettes, panneaux, et mentions d'avertissement sur et autour du système aux endroits appropriés!

Cette responsabilité est d'autant plus sévèrement à satisfaire pour ce qui concerne les plaquettes, panneaux, et mentions d'avertissement relatifs aux solvants et autres substances chimiques en utilisation dans le système! Indépendamment des plaquettes, panneaux, et mentions d'avertissement placés sur et autour du système, toutes les directives et prescriptions de sécurité contenues dans ce manuel gardent leur valeur!

3.15 Comportement en cas d'urgences

Pour éviter, sinon minimiser, en cas d'urgence, toute atteinte à la santé des personnes et tout dommage aux biens concernés par tel cas d'urgence, il est absolument nécessaire de suivre les prescriptions suivantes:



DANGER!

Bouton rouge "NOT-AUS":

En cas d'urgence, appuyez immédiatement sur le bouton de l'interrupteur à stoppage immédiat (Bouton rouge "NOT-AUS")

Attendez l'arrêt de marche complet du système en observant une distance de sécurité par rapport à celui-ci!

Avant de procéder à l'examen de la zone ou du point de dommage et de danger, il est absolument nécessaire de couper l'approvisionnement électrique du système, en activant l'interrupteur général du circuit électrique. Il est pareillement nécessaire d'interrompre le ravitaillement du système en nitrogène et (s'il y a utilisation d'air comprimé) en air comprimé. S'il y a présence d'un dispositif d'alimentation du système en solvants, liquides ou autres substances chimiques, celui-ci doit également être mis en arrêt de fonctionnement.



DANGER!

Après un cas d'urgence, la remise en marche du système doit être effectuée uniquement par le personnel qualifié pour ce travail. Avant de remettre le système en marche, il est indispensable de contrôler tout le système relativement à tout point de danger potentiel ou résiduel!



DANGER!

En cas d'urgence survenu lors d'un travail avec des solvants, liquides ou autres substances chimiques, un service de secours médical d'urgence doit être immédiatement averti! (Médecin/Personnel secouriste médical)

Le service de secours médical doit bien entendu tenir compte et procéder selon les fiches de sécurité relatives aux substances chimiques impliquées dans le cas d'urgence.

4 Standards, CE Conformity

i

This module corresponds in its technical design to various international and national standards, partly not listed here, but including other standards, directions and regulations. The most important ones are listed below.

Documenten no	Description	Edition
EN ISO 12100-1		
EN ISO 12100-2		
EN ISO 13850		
EN 60204-1	electrical equipment of machinery, general requirements	
EN 60439-1	low voltage-switching gear	
EN 60947	low voltage-combinations of switching gear	

Dokumentenbezeichnung

091112_Aktualitätsprüfung_Beuth

DIN_406_Teil11_Masseintragung_1992_12

DIN_EN_1299_Schwingungsisolierung_von_Maschinen_1997_05

DIN_EN_418_Sicherheit_von_Maschinen_1993_01

DIN_EN_457_Akustische_Gefahrensignale_1992_04

DIN_EN_563_Sicherheit_von_Maschinen_Temperaturen_beruehrbarer_Oberflaechen_1994_08

DIN_EN_61000_6_2_VDE_0839_6_2_Elekromagnetische_Vertaeglichkeit_2006_03

DIN_EN_ISO_11200_Geraeuscheabstrahlung_von_Maschinen_Geraeten_1996_06

DIN_EN_ISO_11689_Vorgehensweise_Vergleich_Geraeuschemissionswerten_fuer_Maschinen_Geraete_1997_03

DIN_EN_ISO_12100_2_Maschinensicherheit_Grundbegriffe_allgemeine_Gestaltungsleitsaetze

DIN_EN_ISO_12101_1_Sicherheit_von_Maschinen_Grundbegriffe_allgemeine_Gestaltungsleitsaetze

DIN_EN_ISO_12101_A1_Sicherheit_von_Maschinen_Grundbegriffe_allgemeine_Gestaltungsleitsaetze

DIN_EN_ISO_9283_Leistungskenngrößen_und_zugehörige_Prüfmethoden_Industrieroboter_1999_05

DIN_EN_ISO_9946_Industrieroboter_Darstellung_charakteristischer_Eigenschaften_2000_06

SN_EN_292_1_Sicherheit_von_Maschinen_Grundbegriffe_allg_Gestaltungsleitsaetze_Teil1_1991_09

The module is in conformity with CE requirements and bears the CE symbol. A corresponding manufacturer's statement was forwarded to the user.

CE symbol:



Type:	OPTIspin SB20		
Serial Number S/N:	2010KA1249-A		
Description:	Spinner Module		
Voltage:	1 x 230V/ N / PE / 50Hz / 1 x 10A		
Current:	10A	Exhaust 1	40m³/h
Power Consumption	1,8kW/h	Exhaust 2	
CDA:	8,0 ± 2,0bar	Exhaust 3	
Nitrogen:	4,0 ± 0,5bar	Exhaust 4	
Vacuum:	Min. -0,8bar	Exhaust 5	
DI Water	2,5 – 4,0bar	Exhaust 6	
Noise Level:	70db(A)		



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Type:	OPTIspin SB20		
Serial Number S/N:	2010KA1249-B		
Description:	Spinner Module		
Voltage:	1 x 230V/ N / PE / 50Hz / 1 x 10A		
Current:	10A	Exhaust 1	40m³/h
Power Consumption	1,8kW/h	Exhaust 2	
CDA:	8,0 ± 2,0bar	Exhaust 3	
Nitrogen:	4,0 ± 0,5bar	Exhaust 4	
Vacuum:	Min. -0,8bar	Exhaust 5	
DI Water	2,5 – 4,0bar	Exhaust 6	
Noise Level:	70db(A)		



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5 Transportation and Storage

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5.2 Storage.....	2



DANGER!

Prior to installation and operation of the unit, the installation and operating instructions have to be thoroughly read and observed.

5.1 Transportation



DANGER!

An overturning unit may cause serious injuries. During transport tipping forces of the unit including its packaging have to be considered.



DANGER!

The unit is equipped with transportation castors. If placed on inclining ground, the unit has to be secured against rolling.



DANGER!

Upon delivery, moving parts of the system are secured against moving. If the unit is to be relocated later on, all moving parts have to be fixed.



DANGER!

The unit is delivered on a special pallet. Use a forklift truck or other lifting system with a capacity of at least 1000 kg. The unit is equipped with transportation castors and fixed feet. Move the unit on castors to the installation site and then place it on its feet.

5.2 Storage



The system can be stored safely under following conditions:

- without any liquids (process chemicals etc.)
- ambient temperature - 10°C to + 60°C
- ambient relative humidity max. 80%, no condensation
- dust-free and protected (eventually packed up)

When removing from storage, prior to installation, keep the system for at least one day under approved operating conditions.

6 Installation

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DANGER!

Please read the manual, containing required safety instructions, carefully prior to installation, starting and operation of the unit.



DANGER!

Installation and initiation of the electrical equipment have to be effected by competent and qualified personnel only. All valid national instructions (i.e. VDE) have to be observed. Prior to all works assure the disconnection of all components to be installed of power supply.

DANGER!

The system is not protected against the ingress of water. Therefore, it should be installed in a dry place only, where it is protected from humidity.



DANGER!

Ejection of parts (rotating elements)

Chucks designed for vacuum operation may never be run without vacuum. When operating the system without vacuum, special spin chucks have to be used. The rotation speed of spin chucks without vacuum may not exceed 2000 rpm.

6.1 Unpacking



This is a highly sensitive electromechanical appliance.
Be careful while unpacking, installing, starting and operating the unit.



Check the contents upon unpacking for damages during transport.



In case of transport damages or damages in transit, please contact the manufacturer immediately.



Verify receipt of all parts based on packing list.



In case of missing parts, please refer to the manufacturer.

6.2 Operating Conditions

This system will operate correctly under following conditions:

- clean rooms, class ≥ 10
- ambient temperature + 10° C to + 30° C
- Do not operate without suitable exhaust.



DANGER!

Explosive atmospheres!
Do not apply any explosive chemicals.
Do not operate the system in explosive atmospheres.



DANGER!

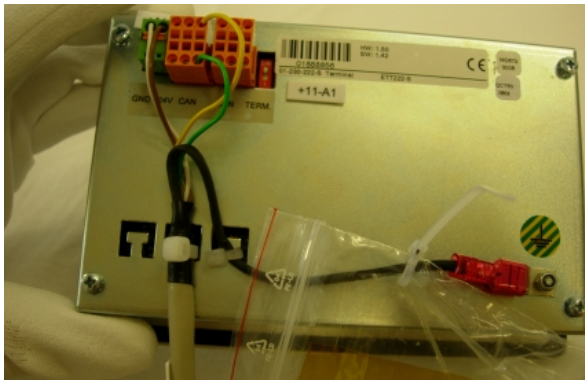
Do not operate without suitable exhaust.

6.3 Place of Installation

The system may only be placed on a stable, flat, vibration-free and safe surface not to be deformed under the weight of the unit and eventual accessories (see Technical Data).

6.4 Connections Overview

Terminal:



Controller (Don't forget earth connection):



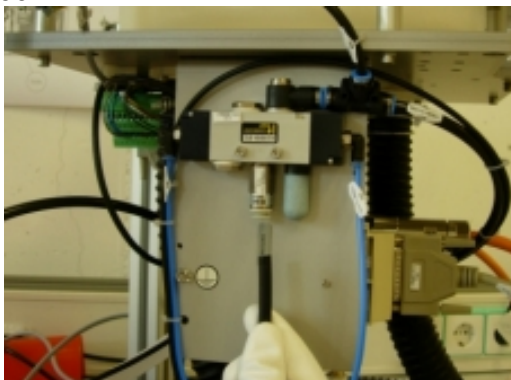
Control connection:



Valve cluster:



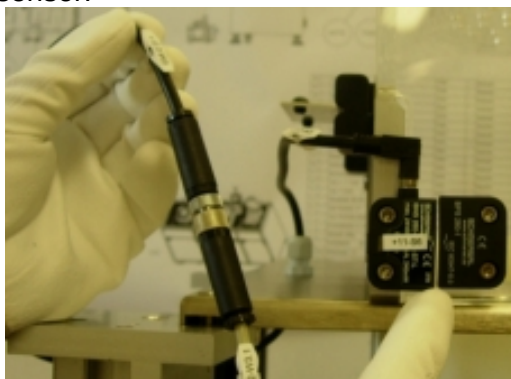
Vacuum:



Compressed air:



Lid sensor:



Motor:



Figure 1: Connections overview

6.5 Mounting the Spinning Module

Please observe the mounting depth in accordance to the drawing (connections added).

In order to fix the module on the carrier plate cut out an opening as per sketch.

- ☞ Put the module into the opening of its carrier plate.
- ☞ Mark four holes to be drilled.
- ☞ Remove the module from its carrier plate.
- ☞ Drill four holes into the carrier plate.
- ☞ Put the module back into its carrier plate.
- ☞ Fasten all fixing screws of the module to the carrier plate.

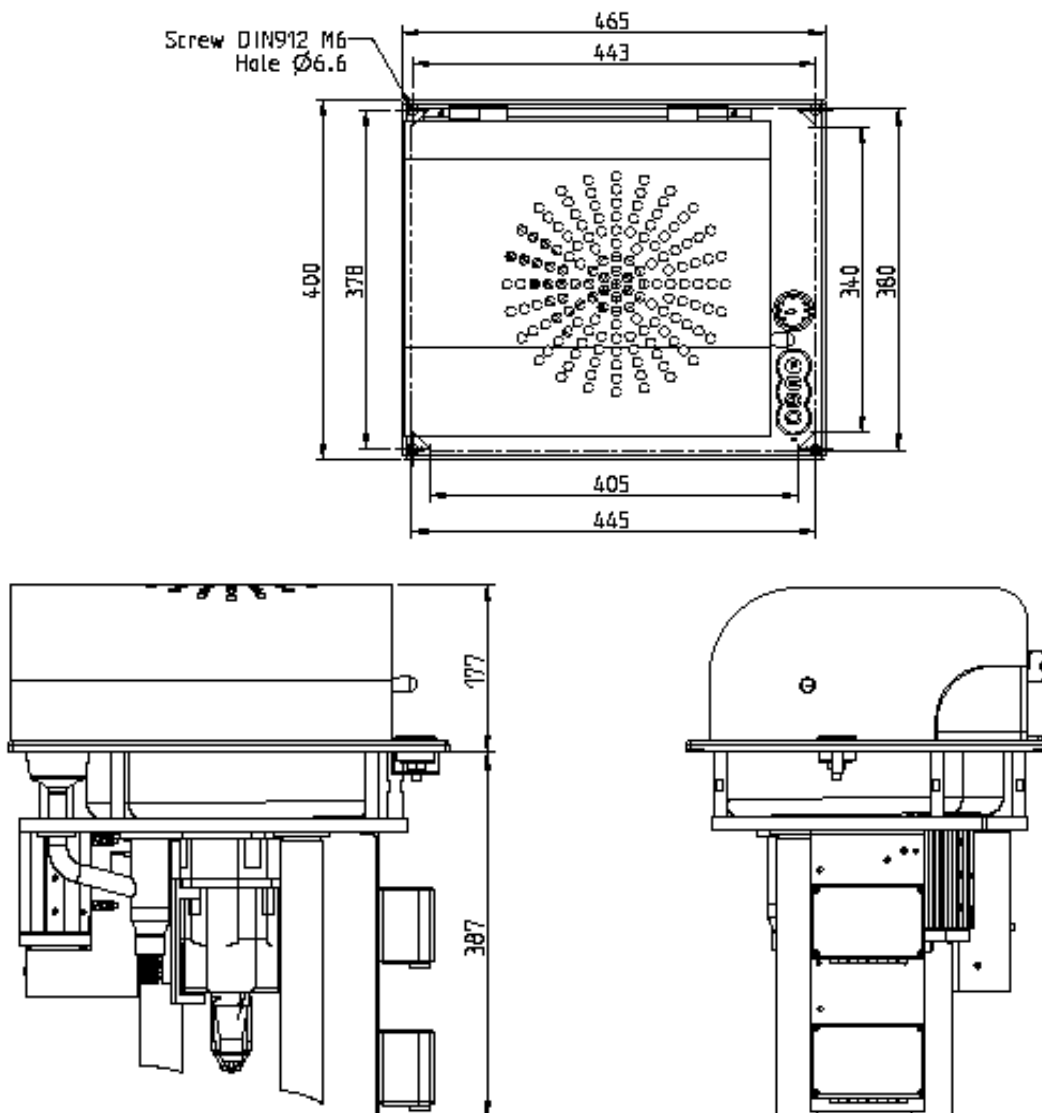


Figure 2: Dimensions overview

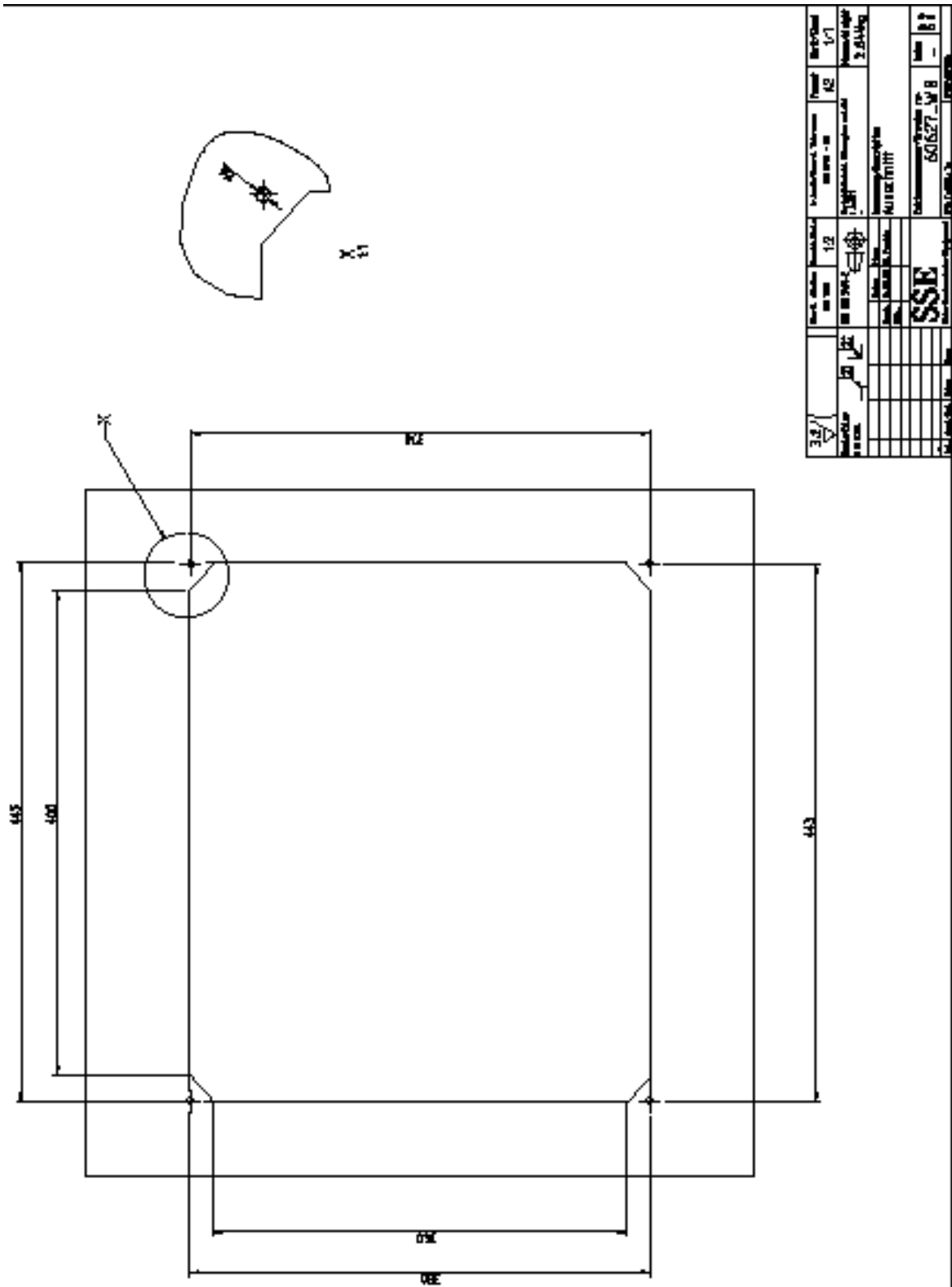
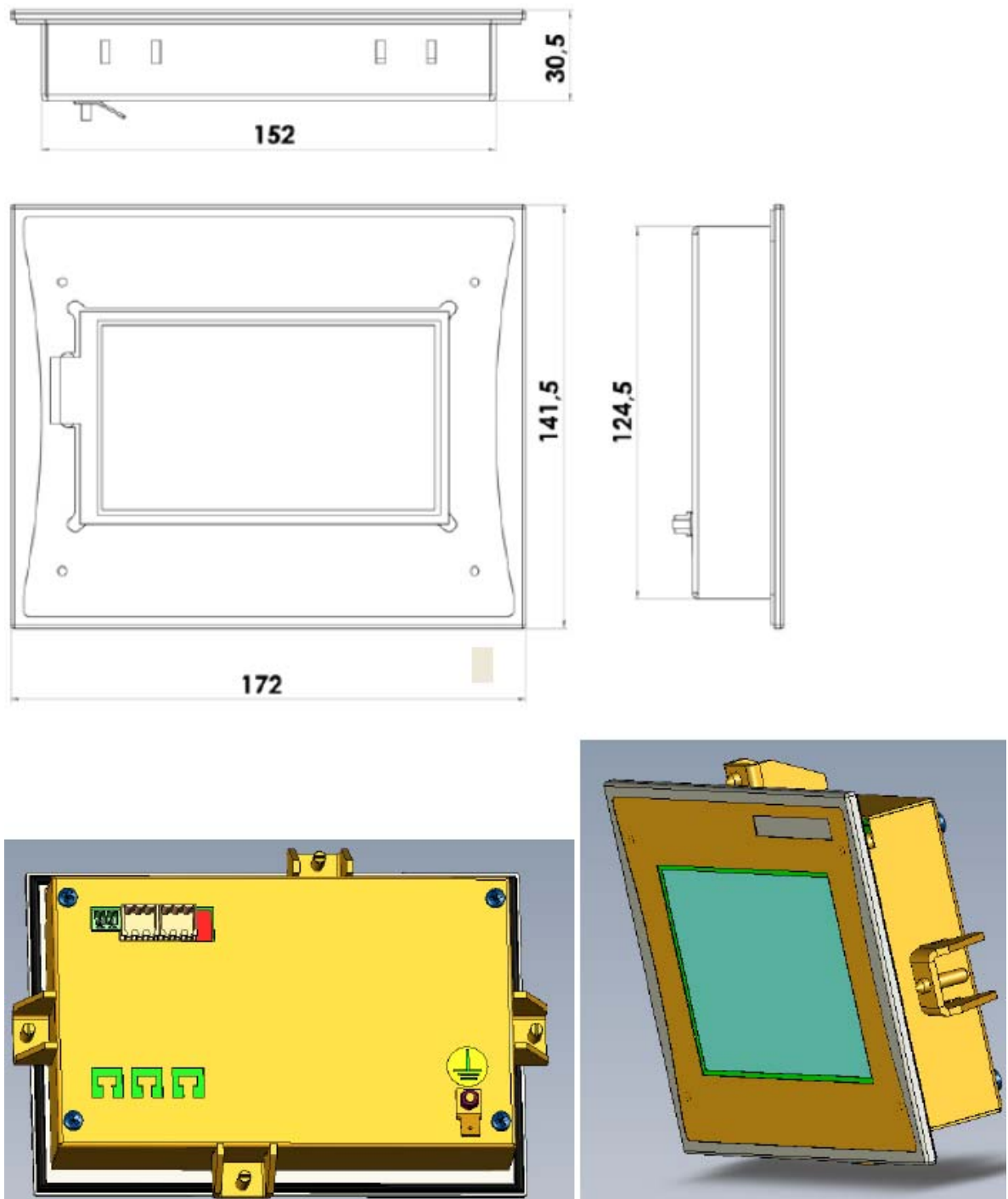


Figure 3: Mounting dimensions of the spinning module

6.6 Mounting the Display



6.7 Mounting the Controller

Please observe that a minimum depth of 420mm is required due the connecting cables

You can put the controller in the grey room, so no mounting is necessary. Please assure a levelled place.

-  Make a cut of 452mm x 135mm in the carrier plate.
-  Put the controller unit into the cut.
-  Mark the drill holes.
-  Remove the controller from the cut.
-  Drill the marked fixing holes.
-  Put the controller into the cut.
-  Fasten the controller.

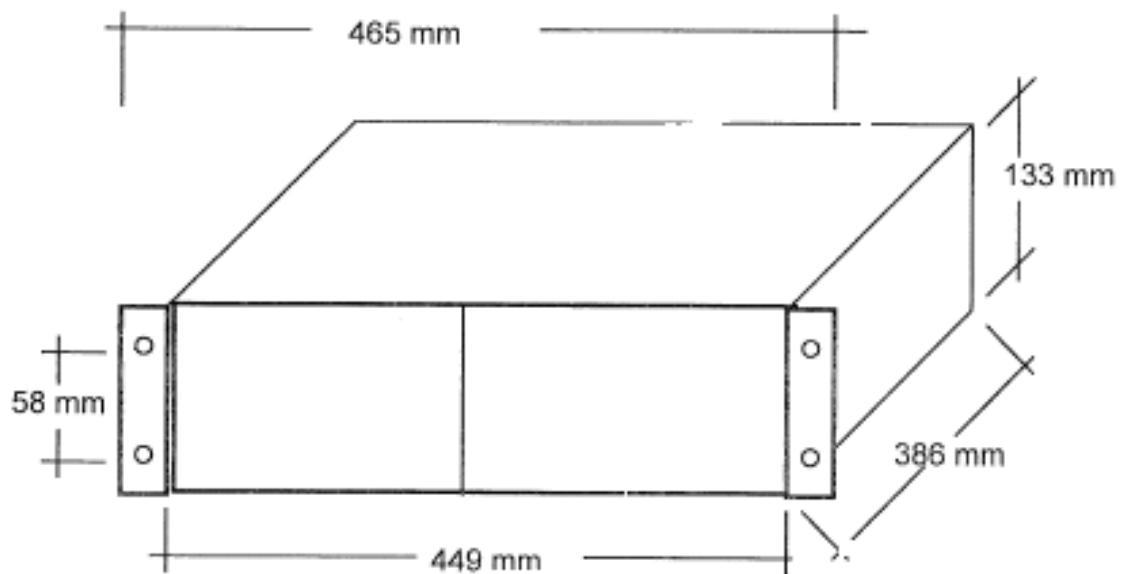


Figure 5: Mounting dimensions of the controller

6.9 Mounting the Pump System (Option)

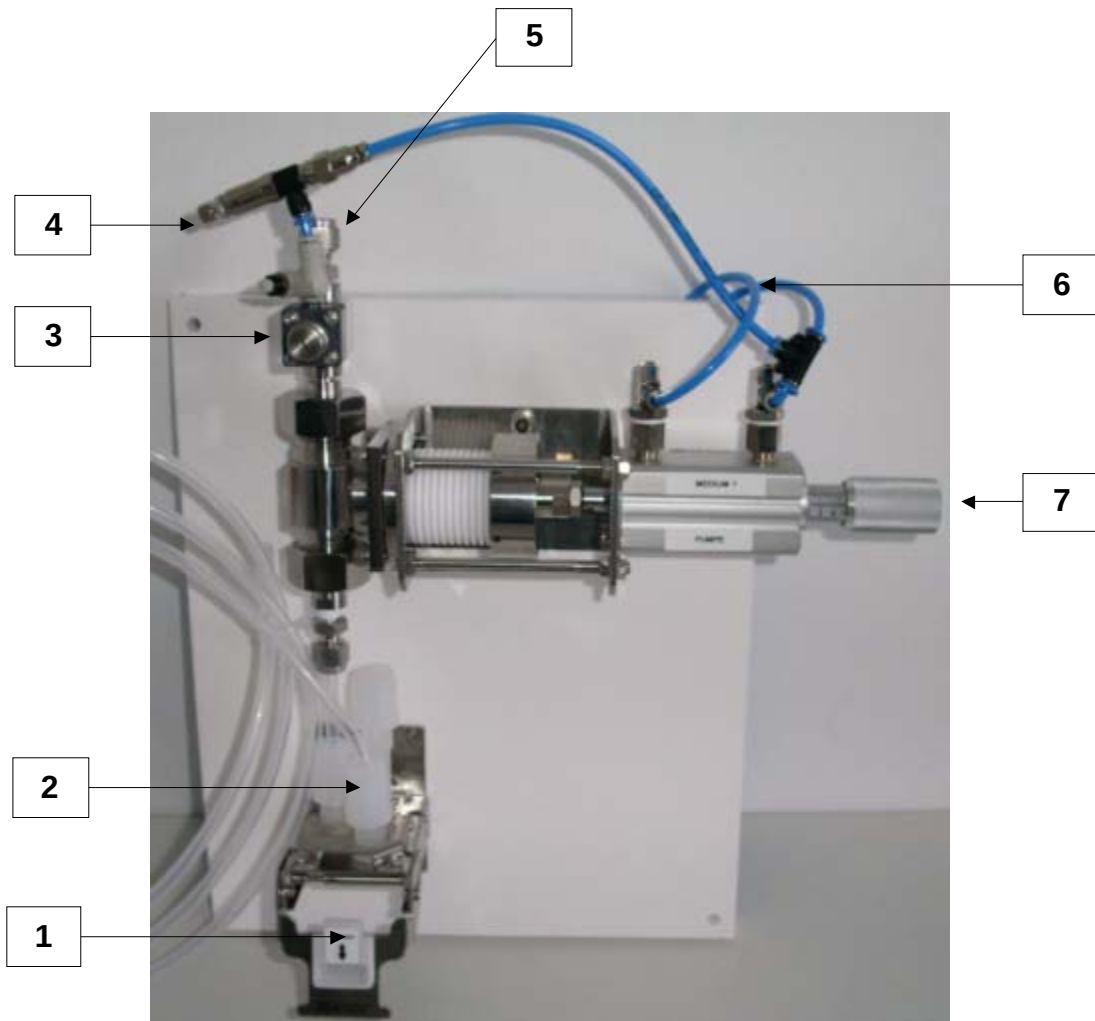


Figure 7: Mounting the media pump system

1. Medium – external inlet (from resist bottle, metal clamping yoke)
2. Nitrogen – inlet, connection with hose line
3. Suckback unit
4. Choke of the pressure for the suckback unit
5. Medium – top outlet to the spinning module
6. Pressure – inlet, connection with hose line and T-connector
7. Adjusting bolt for stroke



CAUTION!

Function of the pump

The pump can operate correctly in vertically position (see figure).



WARNING!

Contamination

After some time of application resist could pour out of any leakage.

Therefore place the pump on a cleanable surface.



Put the carrier into the greyroom or below the system on a suitable, stable panel.



Mark the holes to be drilled.



Remove the carrier.



Drill the marked fixing holes.



Fasten the carrier plate.

6.10 Installation of the Chuck



Special chucks are required for fitting the substrate during the spinning process. Depending on the process different kinds of chucks are used (e.g. with / without vacuum, discs or cross construction, with / without centering pins).



WARNING!

The chuck is used to lay the substrate on.
It is specially counterbalanced for high rotation speeds.
Handle the chuck with much caution!



To take off the chuck (for change or maintenance) consider the following steps:



Put the chuck with its bearing bush on the motor shaft as you place the long hole of the bearing bush on the pin in the motor shaft. Press the chuck to the bottom.



The bearing bush must not jam on the motor shaft.



The pin is fixed until its limit in the long hole.

6.10.1 Levelling the Chuck on the Carrier Plate

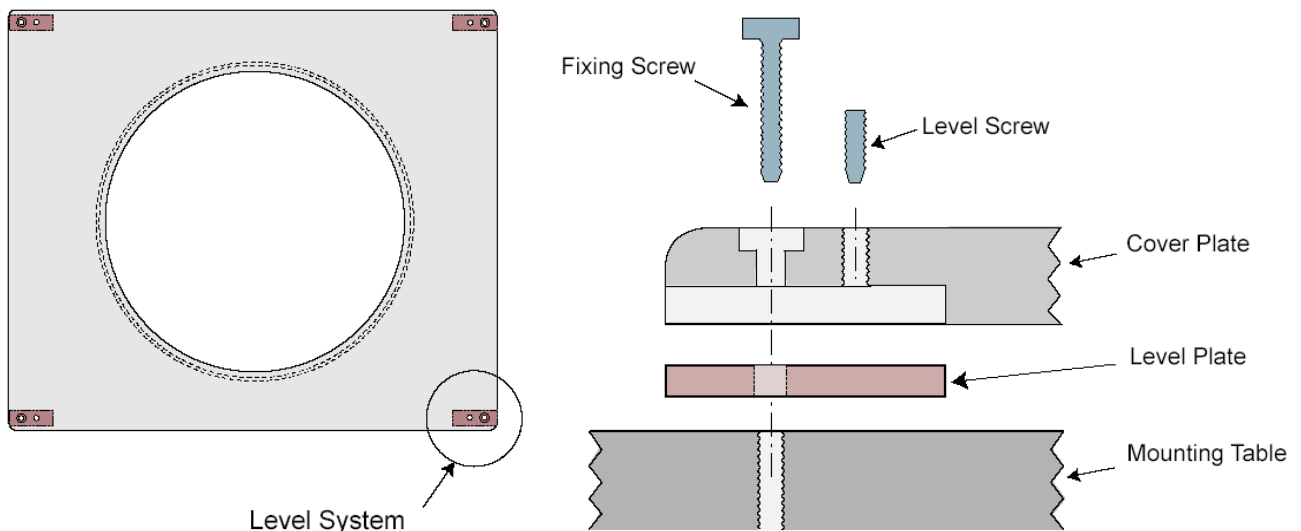


Figure 8: Levelling



Adjust the carrier plate exactly for levelling the spinning module (see drawing).

6.11 Connecting Media Supply and Disposal

For detailed information and requirements, please refer to chapter Technical Data, the electrical and pneumatic/vacuum drawings and the customer specific list of connecting values.

All media lines connected with the system's reverse are carrying unmistakable plugs.
The sockets are marked appropriately.



DANGER!

Prior to media connections make sure that the system is disconnected from current.



DANGER!

In case corrosive, gassing or noxious wet media are applied you have to prevent any peril to your staff by all means.

6.12 Connecting Power Supply



All cables, connected with the system, are carrying unmistakable plugs.
The sockets are marked appropriately.



DANGER!

Connect the mains cable at last (after all connections) to the house power supply.



DANGER!

An Emergency Stop button is required.
Look for the connection values in chapter Technical Data. Without Emergency Stop button operating the system isn't allowed. The Emergency Stop button with connection is delivered by the manufacturer.



DANGER!

Each installation and operation work at electrical equipment must be done by qualified personnel.
The valid national instructions (e.g. VDE) have to be followed. Prior all work check the system's disconnection of the power supply.



Make sure that the main switch is in <0/OFF> position



Connect power cable to power supply system

For detailed information and requirements, please refer to chapter Technical Data, the electrical drawings and the customer specific list of connecting values.

7 Product Description

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7.1 Intended Use

The OPTIspin SB20 Spinning Module is a process tool for typical coating applications of wafer and other substrates.

The design of the three piece process bowl provides excellent coating uniformity and repeatability for 2" up to 8" wafers or up to 6" x 6" substrates.

It is also possible to perform developing, cleaning or drying applications with the spinner system.

OPTIspin SB20 is suitable to be set into any kind of wetbenches and tables. The modules have been specifically designed for easy operation and maintenance. With the wide range of options (e.g. Programmable Dispense Arm) the system can be upgraded for higher automation and improved wafer to wafer process repeatability.



DANGER!

This OPTIspin SST20 is not suited or designed for any other applications than the ones stated above.

Any modification of the system requests manufacturer's prior consent as well as his confirmation in writing.



DANGER!

Chemicals

Without proper protection the system is not suited for the application of explosive or hazardous chemicals.

Our products are continuously modified and improved due to innovation, legal requirements and standards. As a consequence, the information given in this documentation may not accurately reflect every detail of the system actually delivered. Please contact the manufacturer in cases of uncertainty.

7.2 Module Components

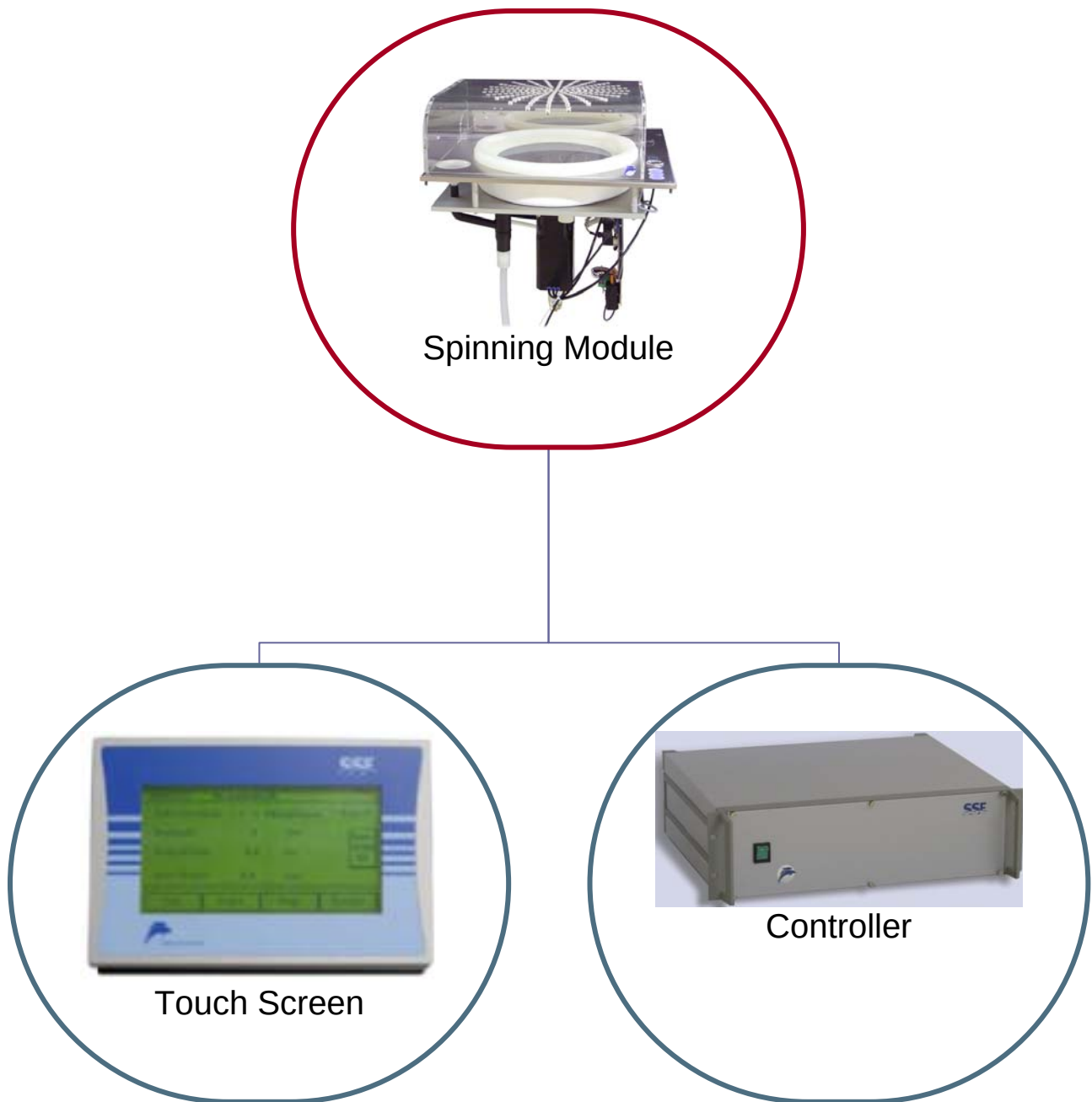


Figure 1: Module components

7.3 Spinning Area, Top Side



Figure 2: Coating module – top side

1. Lid
2. Media arm
3. Media nozzles
4. Media drip pan
5. Keypad
6. Vacuum indication
7. Process bowl

7.3.1 Process Bowl



Figure 3: Process bowl

1. Splash ring
2. Centering pins
3. Chuck
4. Vacuum inlay
5. Protective cover
6. Nozzle for Backside Rinse

7.3.2 Media Arm (Option)

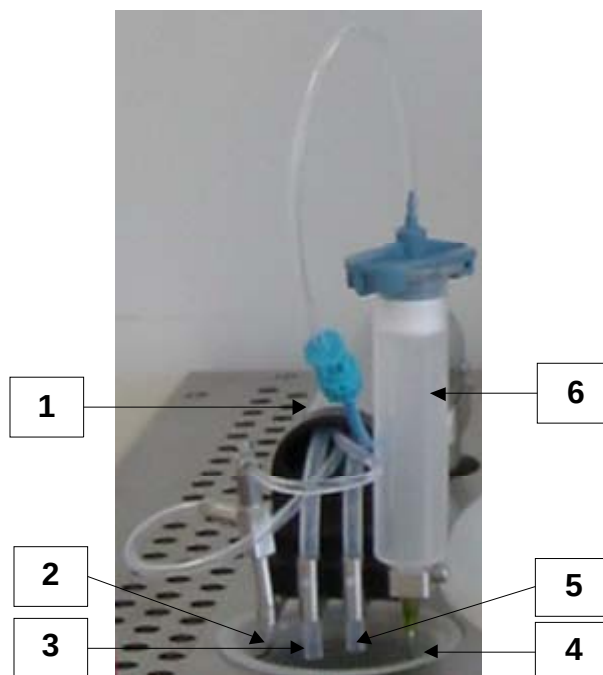


Figure 4: Media arm

1. Media arm
2. Nozzle for Edge Bead Remove <EBR> (option)
3. Puddle nozzle for solvent
4. Media drip pan
5. Puddle nozzle for resist
6. Syringe (option)

For further information about Syringe Dispense Systems and Edge Bead Remove please refer to chapter "System Components".

7.3.3 Keypad with Vacuum Indication

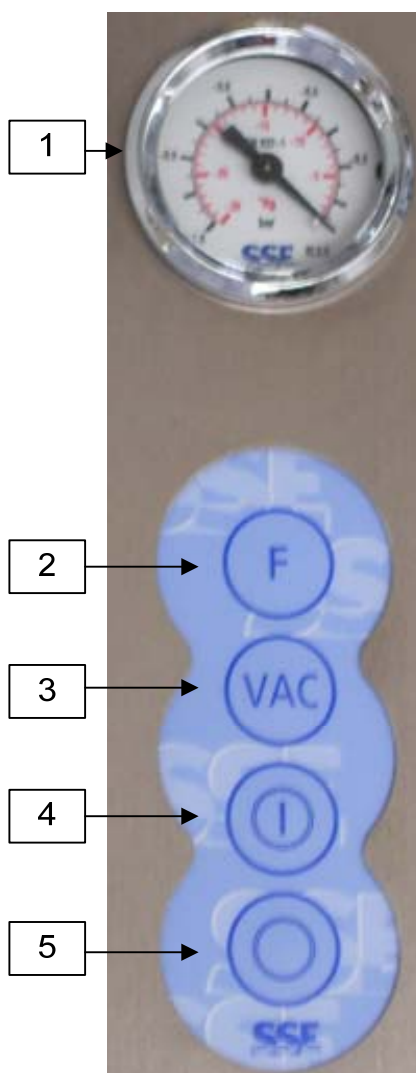


Figure 5: Keypad

1. Vacuum indication
2. Button <F> = function, aborts the actual recipe step and runs the next one
3. Button <VAC> = vacuum on/off
4. Button <I> = start
5. Button <O> = stop

7.4 Media Connection in the Lid (Option)

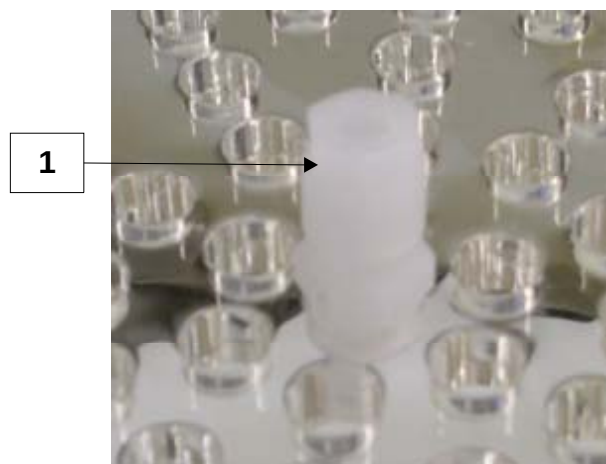


Figure 6: Media connection in the lid

1. Screw connection for media hose

7.5 Process Module from Below

7.5.1 Vacuum Connection and I/O Box

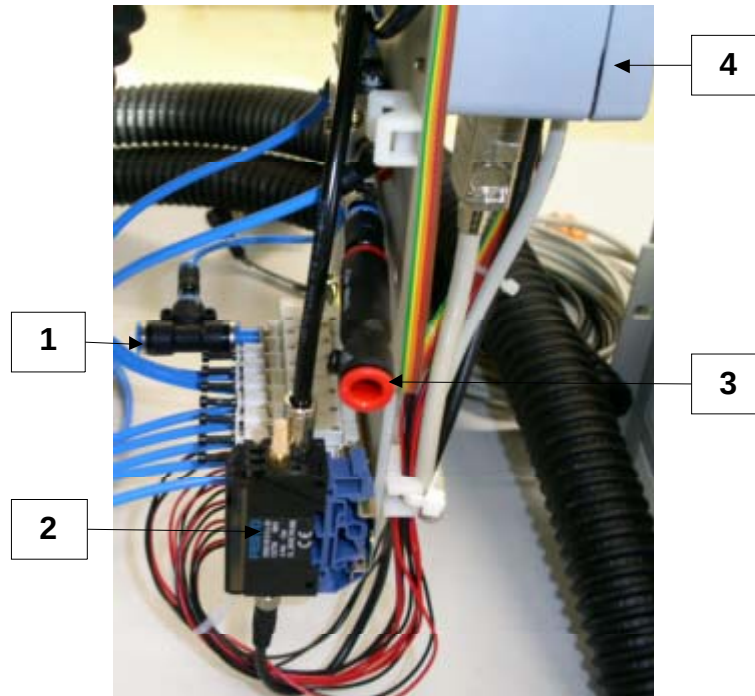


Figure 7: Spinning module – from below

1. Pressure – inlet, plug-in connection
2. Vacuum sensor
3. Vacuum – inlet, plug-in connection
4. I/O box

7.5.2 Spinning Motor

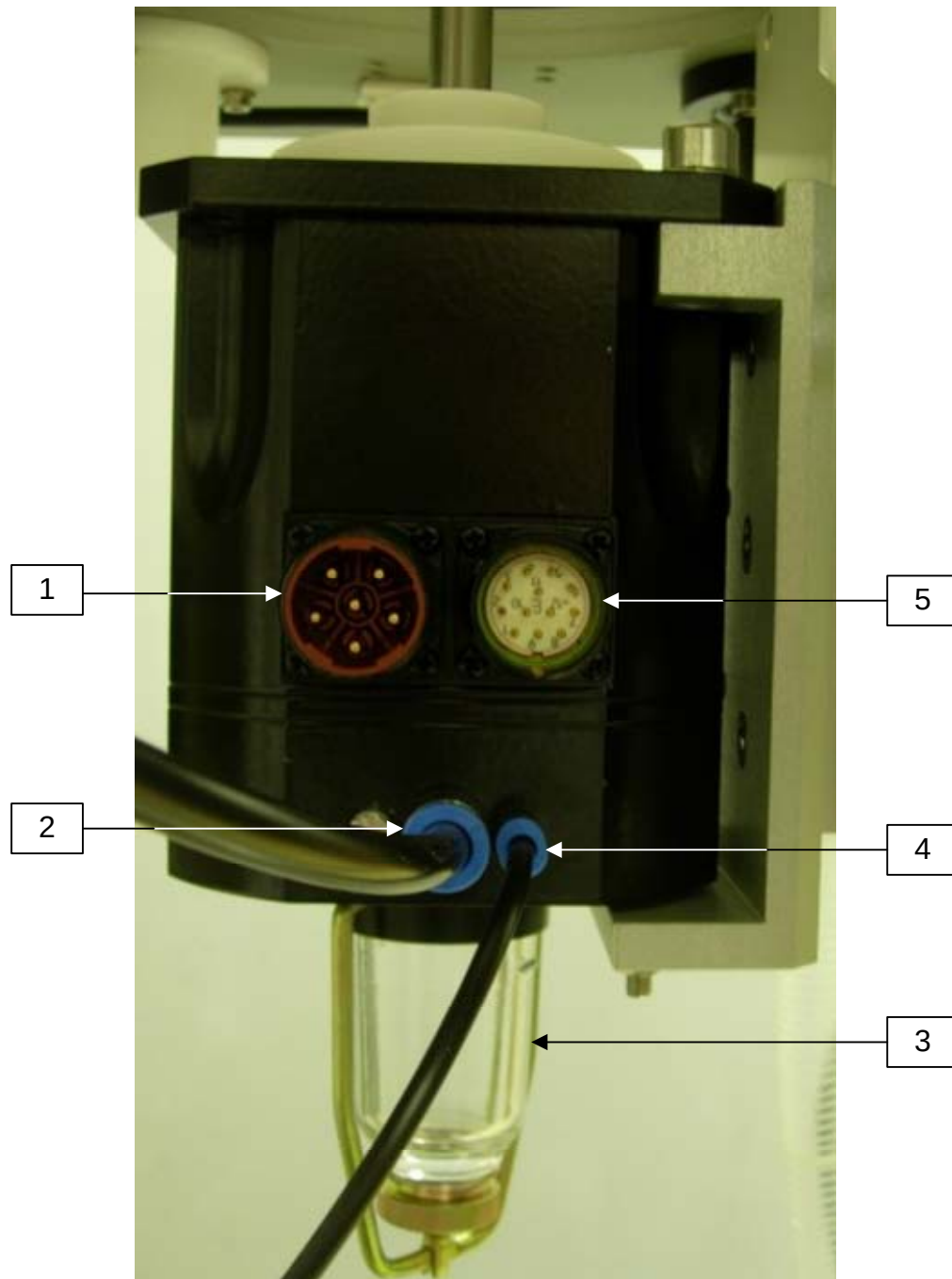


Figure 8: Spinning motor with vacuum inspection glass

1. Motor connection (6-pole circuit socket)
2. Spinning motor
3. Inspection glass of media separator for vacuum system
4. Vacuum connections to valve and sensor
5. Resolver connection (12-pole circuit socket)

7.5.3 Media Waste Container

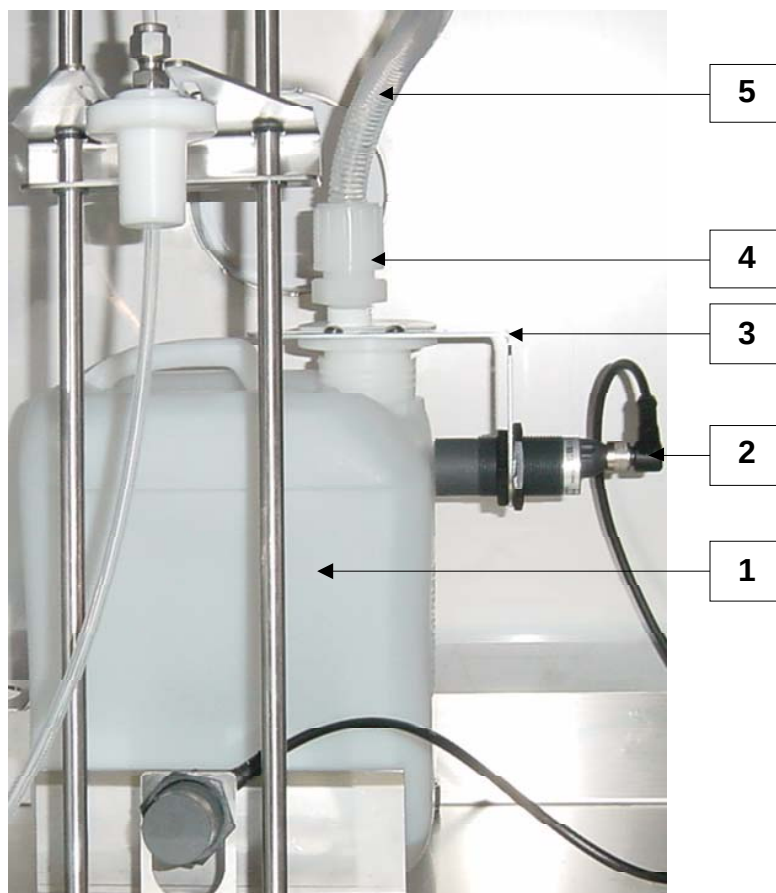


Figure 9: Media waste container

1. Media waste container
2. Level sensor
3. Holder for level sensor
4. Media waste hose coupling
5. Media waste hose

7.5.4 Bottle Holder (Option)

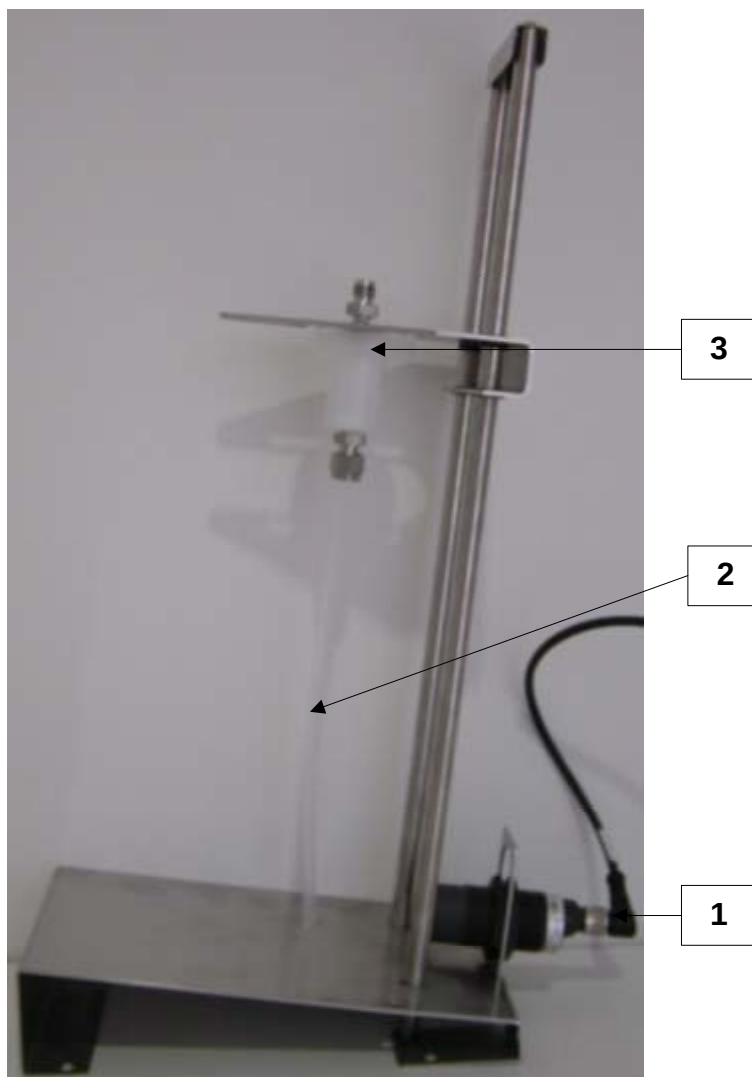


Figure 10: Bottle holder

1. Low level sensor
2. Medium hose
3. Resist bottle seal

7.5.5 Media Pump, SAWATEC (Option)

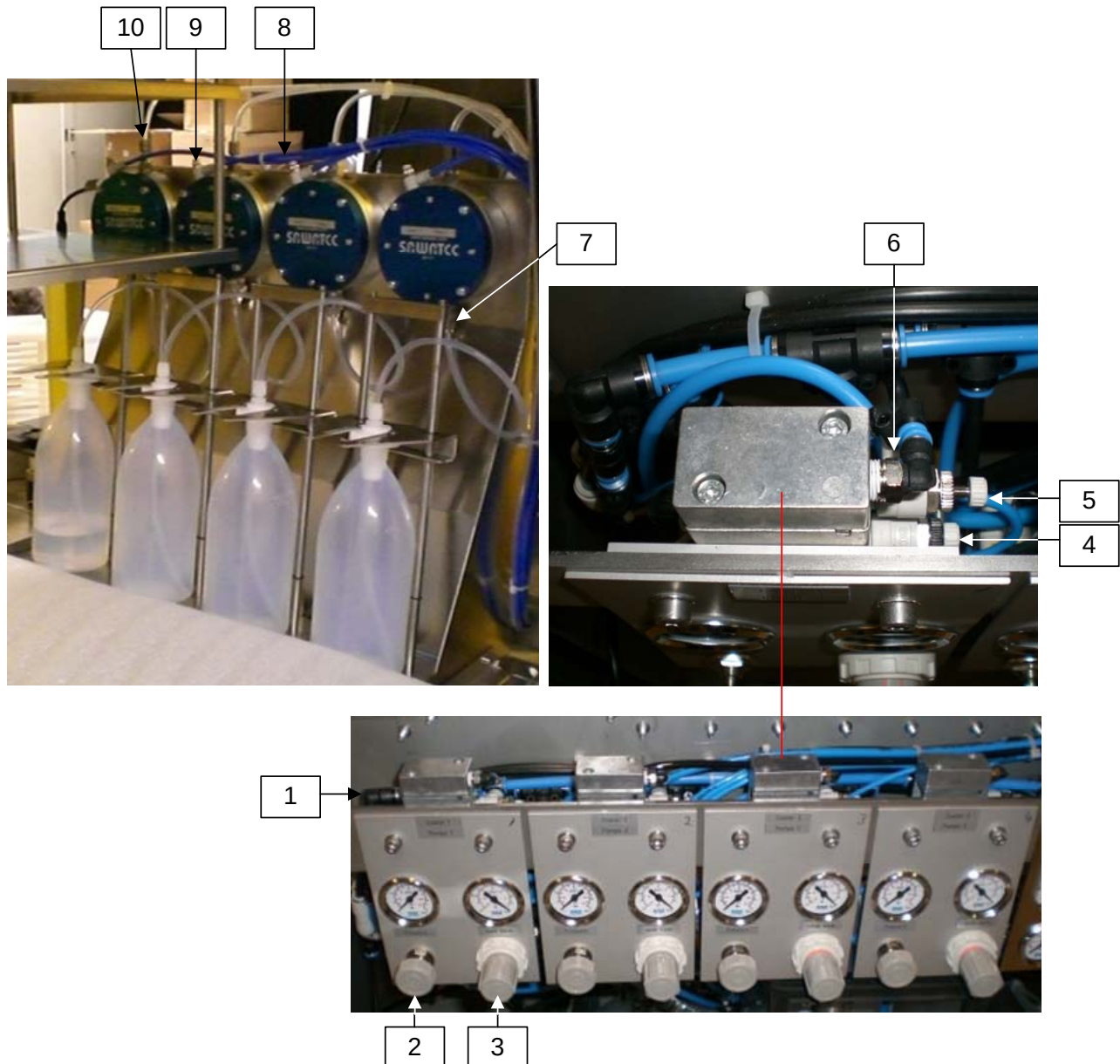


Figure 11: Media pump, SAWATEC

1. Trigger nitrogen and vacuum
2. Pressure control and indication, nitrogen
3. Pressure control and indication, vacuum
6. Throttle for nitrogen
7. Throttle for vacuum
8. Control pressure for switch valve
9. Media inlet
10. Nitrogen / vacuum inlet
11. Throttle for dispense
12. Media outlet

For further information about media pumps please refer to chapter "System Components" and the OEM manuals, added to these operating instructions.

7.5.6 Media Pump, IWAKI (Option)

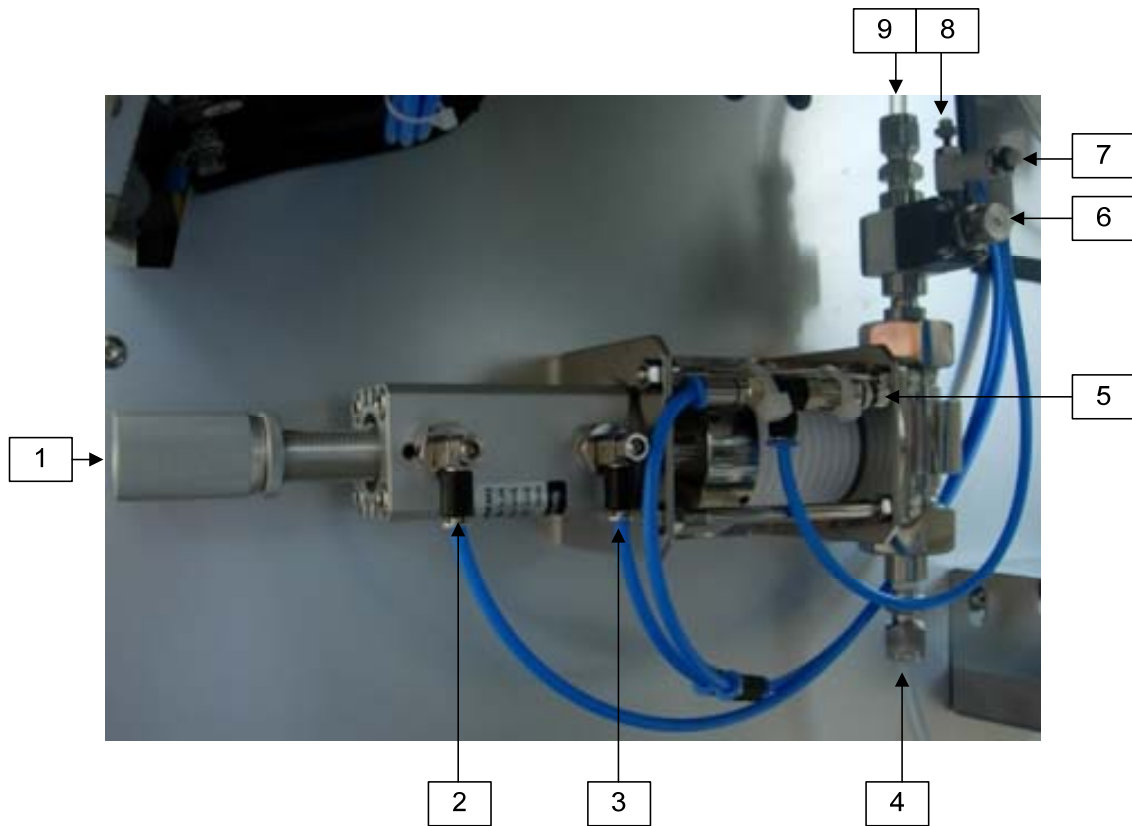


Figure 12: Media pump, IWAKI

1. Stroke setting
2. Suck speed
3. Pump speed
4. Suck line
5. Pressure control of the operating pressure of the suck back valve.
Never modify the adjustment 2 bars!
6. Volume of suck back
7. Speed of switching on the suck back valve
8. Speed of suck back
9. Media outlet

For further information about media pumps please refer to chapter "System Components" and the OEM manuals, added to these operating instructions.

7.5.7 Dispense-Control (Option)

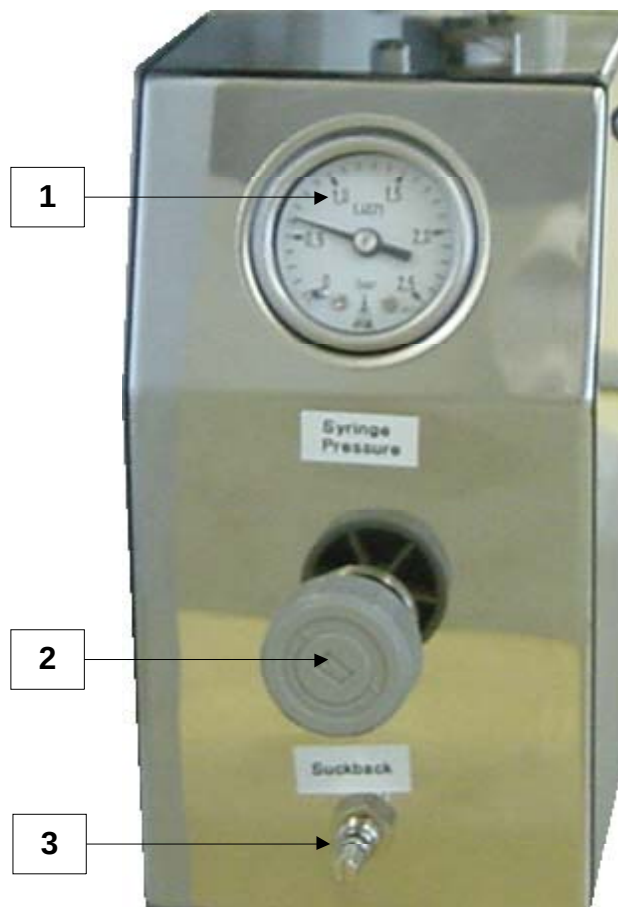


Figure 13: Dispense control

1. Pressure indication
2. Control of the dispense pressure
3. Vacuum control, adjustment of suckback

For further information about Syringe Systems please refer to chapter “System Components”.

7.5.8 Megasonic Unit (Option)



Figure 14: Megasonic Unit

For further information on the Megasonic Unit please refer to chapter "System Components".

7.5.9 High Pressure Unit (Option)

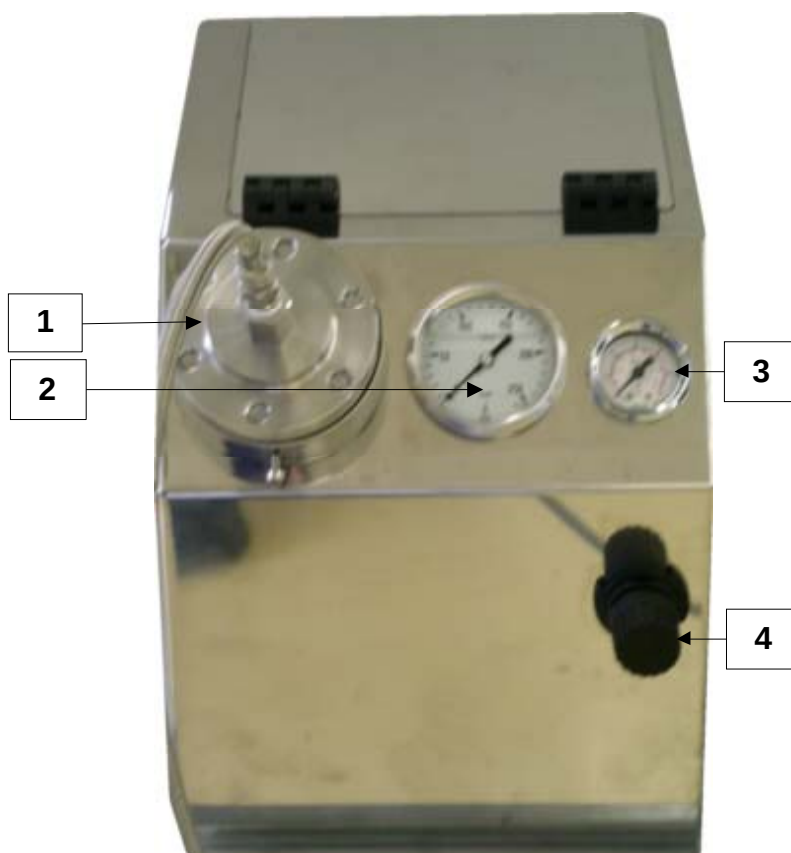


Figure 15: High Pressure Unit

1. Micro filter
2. Indication of the medium pressure (water)

For further information on the High Pressure Unit please refer to chapter "System Components".

7.6 Media Connection Plate, Option

7.6.1 Puddle Nozzle (Option)

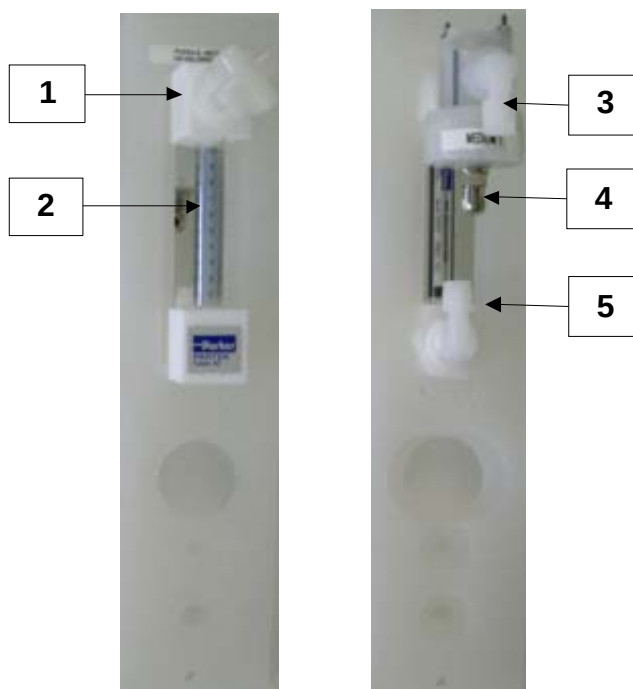


Figure 16: Media panel – puddle nozzle

1. Continuous flow controller
2. Flowmeter
3. Media outlet
4. Control air
5. Media inlet

7.6.2 Spray Nozzle (Option)

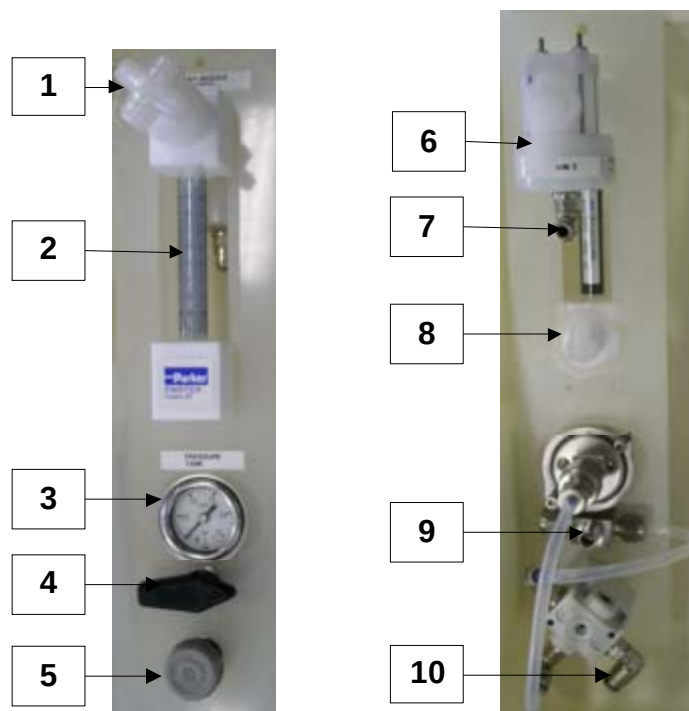


Figure 17: Media panel – spray nozzle

1. Continuous flow controller
2. Flowmeter
3. Indication pressure tank
4. Tank ventilation
5. Setting pressure tank
6. Media outlet
7. Control air
8. Media inlet
9. Nitrogen tank connection
10. Nitrogen connection

7.6.3 Backside Rinse – DI Water (Option)

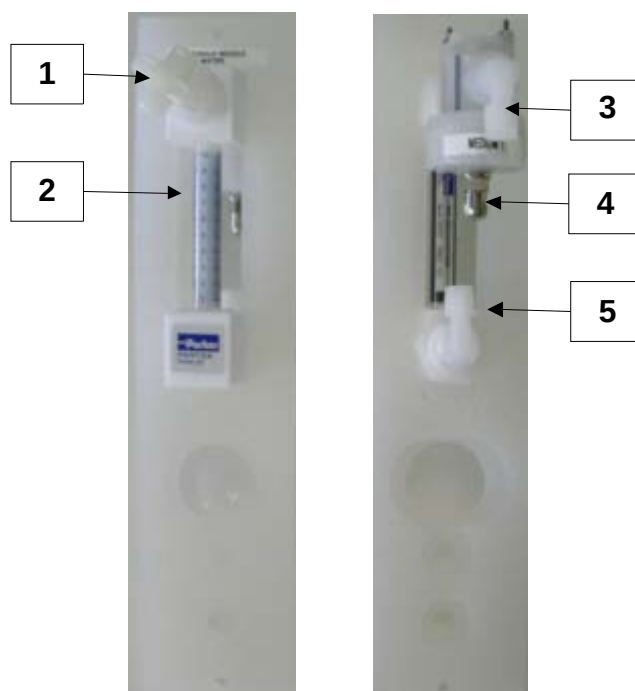


Figure 18: Media panel – Backside Rinse, DI water

1. Continuous flow controller
2. Flowmeter
3. Media outlet
4. Control air
5. Media inlet

7.6.4 Nitrogen for Puddle Nozzle (Option)

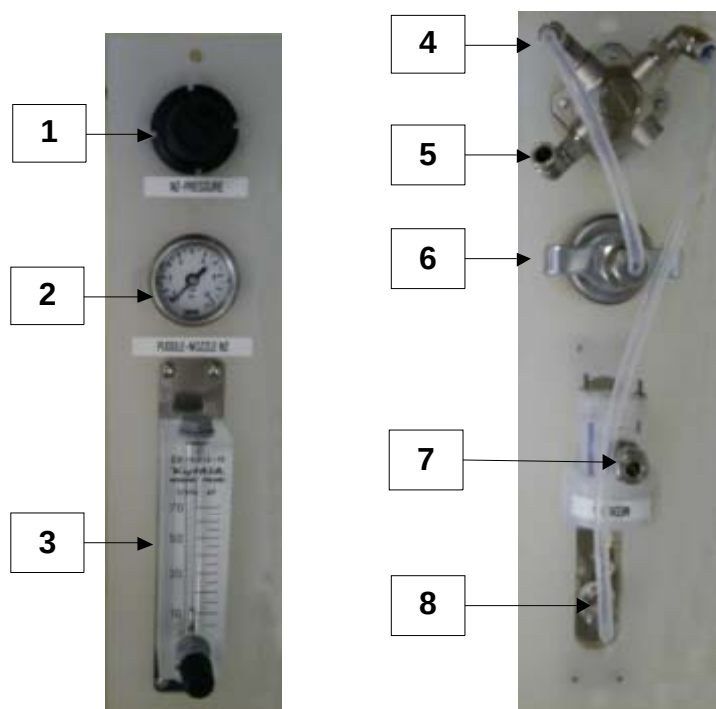


Figure 19: Media panel – nitrogen for puddle nozzle

1. Nitrogen pressure control for Blow Off
2. Nitrogen pressure indication for Blow Off
3. Flowmeter
4. Pressure control
5. Nitrogen inlet
6. Nitrogen pressure indication
7. Nitrogen outlet
8. Flowmeter

7.7 Touch Screen for Terminal Program



Figure 20: Touch screen

For further information on the Terminal Program please refer to chapter "Software".

7.8 Controller



Figure 21: Controller

Connections at the controller's rear side:

- Motor connection cable with plug, 6-pole
- Resolver connection cable with plug, 12-pole
- CAN-Bus connection cable to the panel interface
- Main inlet – plug for connection cable
- Fuse 10A

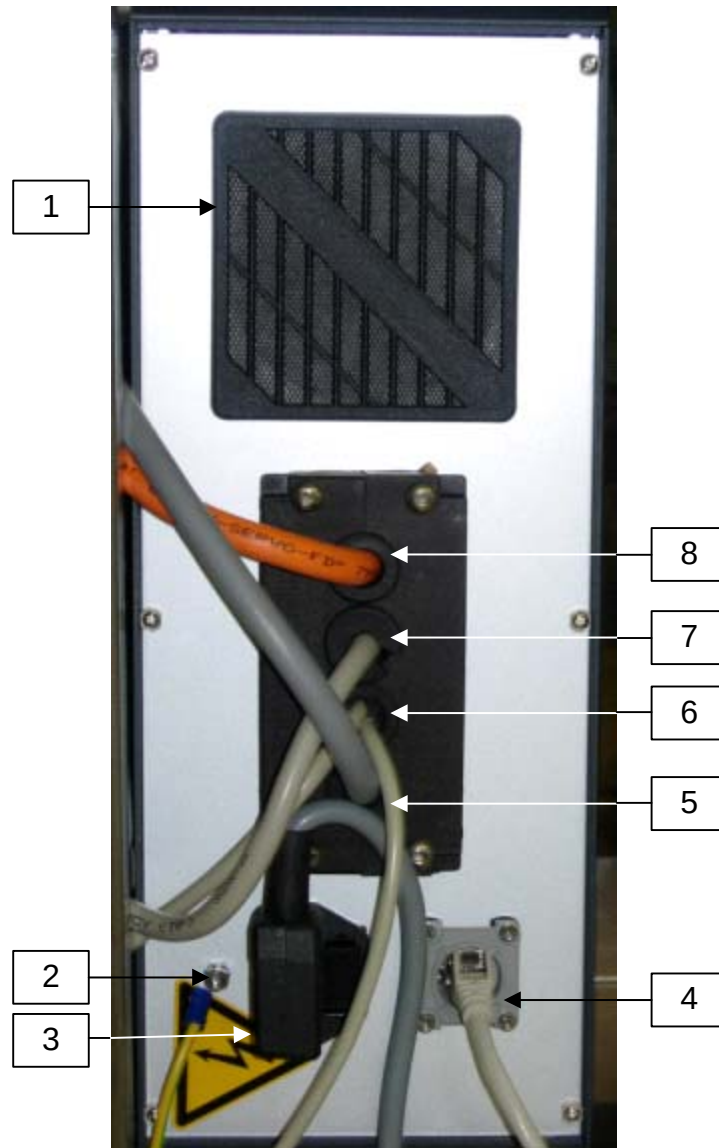


Figure 22: Controller connections, rear side

1. Ventilator
2. Grounding
3. Power plug
4. Network connection
5. Cable bushing for resolver conductor
6. Cable bushing for the emergency stop button and the tank connection
7. Cable bushing for the I/O controller connection
8. Cable bushing for the motor plug

7.9 Media Exhaust with Exhaust Detector (Option)

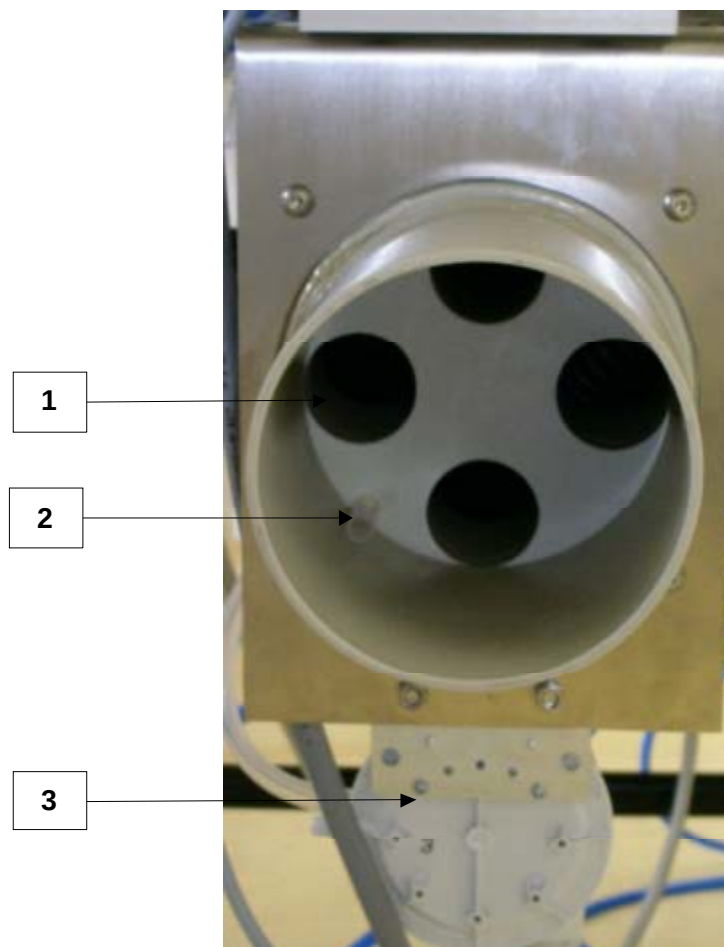


Figure 23: Media exhaust with exhaust detector

1. Media exhaust
2. Measuring point exhaust detector
3. Exhaust detector

7.9.1 Exhaust Detector



Figure 24: Exhaust detector

8 Operation

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DANGER!

Depending on form and size of substrates, special spin chucks are used.
Use only a spin chuck suited for the actual substrate.



DANGER!

Make sure that the substrate is placed correctly between the centering pins.



DANGER!

The system may never be operated without exhaust.
Without exhaust, dangerous vapors and fumes can be set free damaging health or parts of system.
Please consider: All exhaust tubes must be of the same length to warrant a continuous exhaust.



DANGER!

The system may never be switched on nor operated without vacuum and compressed air.



DANGER!

Never touch a rotating spin chuck in the process chamber.



WARNING!

Assure the correct installation of the media waste bottle at the waste pipe of the process chamber.

DANGER!

Ejection of parts!
When using a spin chuck without vacuum, the rotation speed may not exceed 2000 rpm.

DANGER!

In case of interruption of the spin process dangerous media residues can still be present on the substrate and in the system.
Please make sure to carefully rinse the process chamber and the substrate before removing the substrate.

8.1 Operating Mode



There are three coating options:

- static coating by applying resist to the center of the substrate
- dynamic coating by applying resist in an oscillating movement of the media arm
- dynamic coating by extending the media arm.



After the application of resist the surplus resist is slung away by the rotation of the spin chuck, leading to a very thin coat of photo resist. The Covered Chuck Technology (optional) assures that the coat will be even, especially on the corners and edges of rectangular substrates.

8.2 Process Flow

Following steps make up the process:

1. Program recipes
2. Load a recipe
3. Put the substrate on the required chuck and close the door
4. Start the recipe
5. Open the door after recipe end
6. Remove the processed substrate



If additional / optional features are applied, the actual process may differ from the given description.

8.3 Start-Up

8.3.1 Preparation



Depending on features used with the system (options) and applied media certain preparations are necessary:



Assure that media tanks / bottles are sufficiently filled.



Assure that the media waste containers or house drain connection are installed and not full.



Assure that the inspection glass of the motor at the spinning module is not full.



Assure that the exhaust is connected and working.

8.3.2 Switching On



Assure that compressed air, vacuum and exhaust are connected and functional.



Press the green main switch on the controller to <ON>.



The green control light of the main switch lights up.



After starting the application program the system is operational.

8.3.3 Switching Off



Terminate the actual recipe.



Switch the green main switch on the controller to <OFF>.



The system is switched off, the green button doesn't light.

8.3.4 Aborting a Spinning Process in Case of Emergency



Press the red emergency stop button <EMERGENCY STOP> on the front.



All outputs are switched off.



The chuck slows down to "0" (non-braked).



When the actuator voltage is switched on again, the chuck gets braked well-defined.



DANGER!

In case of interruption of the spin process dangerous media residues can still be present on the substrate and in the system.



DANGER!

After each abort and recipe stop the system must be initialized again.

9 Software

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9.1 Terminal Program

i

The terminal program consists of an application program on the panel interface (operation on touch screen) and a system program (firmware) on the system controller. Different configuration and recipe files can be created, changed and activated in the application program. A special service program is part of the application software. The system program controls and monitors the system hardware.

Initialization of the system sets all system components in a pre-defined reference position.

In AUTOMATIC the system must be initialized at first.

If an action is done in SERVICE the system will be initialized automatically when terminating service.

Our software is continuously modified and improved due to innovation.

As a consequence, the information given in this documentation may not accurately reflect every detail of the system actually delivered.

Please contact the manufacturer in cases of uncertainty.

9.1.1 Password

- i** At delivery the administrator password = 7 5 3
and the user password = 1 2 3 4 5.
- i** All passwords can be modified via the administrator password.
- i** All service dialogs are protected with the administrator password.
- i** All dialogs corresponding to recipes are protected with the user password.
- i** After entering the password select the task again.
- i** Password protection for the selected task is cancelled by entering the correct password.
- i** Via the administrator password all tasks protected by the user password can be edit.

Password protection is re-activated within a set period without further input (break protection, see "Change Password").

9.1.2 Touch Screen

- i** Numeric display
(for required or possible inputs the numeric touch screen is displayed).
Confirm the inputs on touch screen to transmit the values to the hardware.
- i** Alpha-numeric display
(for required or possible inputs the alpha-numeric touch screen is displayed).
Confirm the inputs on touch screen to transmit the texts to the hardware.

9.1.3 Functions “OPTImus“



Figure 1: Terminal – main menu

Actual recipe	Displays the actual recipe name.
Automatic	Leads to AUTOMATIC → automatic processing.
Recipe	Leads to RECIPE → to edit or modify recipes.
Selection	Leads to SELECTION → a list of existing recipes.
Service	Leads to SERVICE → service functions.



Figure 2: Terminal – ATM sse information

9.1.4 Automatic

HH:MM:SS		Automatic	
Stepnumber	00 / 00	Recipename	
Speed	00000 rpm	SSSSSSSS	
Armposition	0000.0 mm		
Steptime	000.0 sec	Predispense	
Init Start Stop Return			

Figure 3: Terminal – Automatic



Before starting the recipe initialize the system.



Initialization of the system sets all system components in a pre-defined reference position.



After switching on re-select the favourite recipe.



Initialize the system with <INIT>.



After switching on the following error message appears: “Actor voltage missing”.



Assure that the actor voltage is connected and click <OK>.



The recipe activated at last appears automatically on the AUTOMATIC display.

Stepnumber Speed _[rpm] Armposition _[mm] Steptime _[sec]	Displays the actual parameters.
Init	Initializes the system.
Start	The selected (loaded) recipe is started 1. START: pins down 2. START: process starts.
Stop	The selected recipe is stopped and the system is initialized.
Return	Returns to the main menu.
Predispense	Leads to the submenu PREDISPENSE.

9.1.4.1 **Predispense (Option)**

HH:MM:SS

Predispense

Tank 1

☐

volume syringe

Tank 2

☐

0000 0.1ml

Solv. bath T1

☐

Dispensetime

000.0

sec

max. time 10 sec.

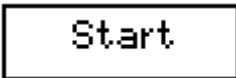
Start

Return

Figure 4: Terminal – Predispense



Select the dark ground areas to enable / disable the corresponding outputs.

	Select medium to dispense.
Dispensetime [sec]	Displays the actual dispense time.
max. time	Displays the maximum dispense time (10sec.).
volume syringe [x0.1ml]	Displays the actual dispense volume.
	Enter the dispense time by touching the input field. The touch screen opens automatically. Confirm the inputs to transmit the values to the hardware.
	Returns to the main menu.

9.1.4.2 Error Message

i

If an error message appears during initialization the process can be continued by clicking <OK> / <IGNORE> / <REPEAT> / <ABORT>:

HH:MM:SS	Error
	Errornumber 000 machine not initialized
OK Ignore Repeat Abort	

Figure 5: Terminal – error message

Errornumber	Displays the number of the actual error message.
OK	Confirms the error message, leads to AUTOMATIC.
Ignore	Continues the initialization in spite of an error The program returns to AUTOMATIC. The following automatic process can be operated not correctly.
Repeat	Repeats the initialization Dependent on the error it can be eliminated automatically or repair the failure. Start again with <repeat>. Continue until no error message appears. Now the system is initialized correctly. The program returns to AUTOMATIC.
Abort	Leads directly to AUTOMATIC.

9.1.5 Recipes

HH:MM:SS Recipes			
Actual recipe		SSSSSSSS	
Drive		S	
Restore	Backup	Import	
Create	Edit	Password	
Copy	Delete	Selection	Return

Figure 6: Terminal – Recipes

Actual recipe	Displays the actual recipe name
Drive	Choose between USB (F) and PLC (C)
	Displays the actual time progress
Create	Leads to RECIPE EDITOR and there to the next storage location
Edit	Leads to the submenu RECIPE EDITOR
Restore	The USB stick must be connected to the PLC. All recipes which are in F:\recipes are copied to PLC.
Backup	The USB stick must be connected to the PLC. All recipes which are on the PLC are copied on the USB stick
Import	To import files from RecipeNet via USB stick
Password	Facility to enter passwords on different levels.
Copy	Copies the actual recipe and substitutes the last symbol with a special character
Delete	Deletes the actual recipe
Selection	Leads to the menu <Recipe Selection>
Return	Returns to the main menu

9.1.5.1 Recipe Selection

i RECIPE SELECTION opens a recipe list with recipes.

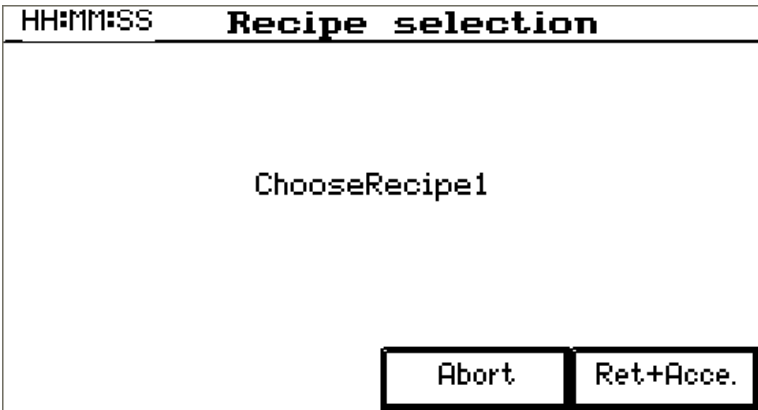
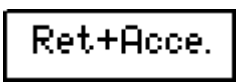


Figure 7: Terminal – Recipe Selection

	Opens the window displayed before.
	= “OK”, continues and leads to the main menu.

9.1.5.2 Recipe Editor

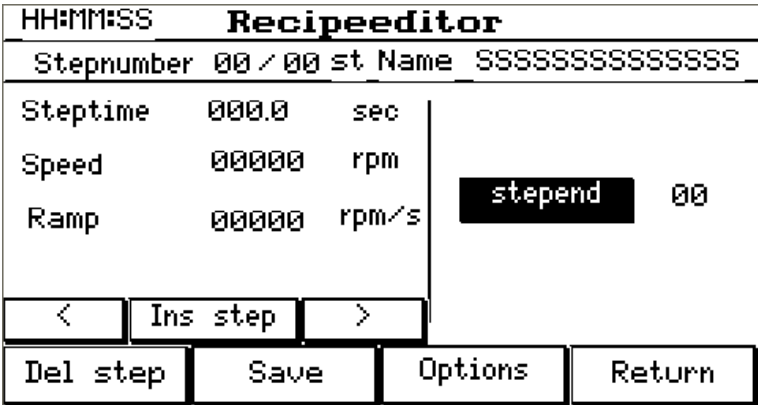


Figure 8: Terminal – Recipe Editor



Make the inputs in the dark grounded fields.

Steptime [sec.] Speed [rpm] Ramp [rpm/sec.] syr.vol. [x0.1ml] Armvelo [mm/sec.]	Activate step time, rotation speed, ramp, syringe volume and arm speed by touching the input field. The touch screen opens automatically. Confirm the inputs to transmit the values to the hardware.
Armpos	Input field for the horizontal arm position
Output	Select output
stepend	Select step end: if time over if the arm is in position if the cover is in position if the syringe is ready
C-Pos	Opens COVER POSITION
Options	Opens OPTIONAL PARAMETERS
Del step	Deletes the actual recipe step If only one step exists the recipe will be deleted (after question).
Ins step	Inserts a step before the actual step
>	Leads to the next step in the recipe (scroll forward)
<	Leads to the last step in the recipe (scroll backward)
Save	SAVE „yes“ / „no“, „ABORT“ leads to the RECIPE EDITOR
Return	Returns to the main menu

9.1.5.3 **RECIPE Cover Position**

-  Select the field <Cover Position>.
-  Following window is displayed:

HH:MM:SS

Recipe cover pos.

☐

Cover up

☐

Cover middle

☐

Cover down

Return

Figure 9: Terminal – Recipe Cover Position

-  Activate the corresponding field by touching 
 - cover up = cover in upper position
 - cover middle = cover in middle position NEVER WITH PNEUMATIC SYRINGE!!!
 - cover down = cover is closed

Return

Leads to RECIPE EDITOR.

9.1.5.4 **RECIPE Media**

 Select the field <OUTPUTS>.

 Following window is displayed:

HH:MM:SS

Recipe media

Tank 1

☐

Tank 2

☐

Solv. bath T1

☐

Syringe

Return

Figure 10: Terminal – Recipe Media

 Activate the corresponding medium by clicking 

Syringe	Opens the window RECIPE SYRINGE
Return	Leads to RECIPE EDITOR.

9.1.5.5 RECIPE Syringe

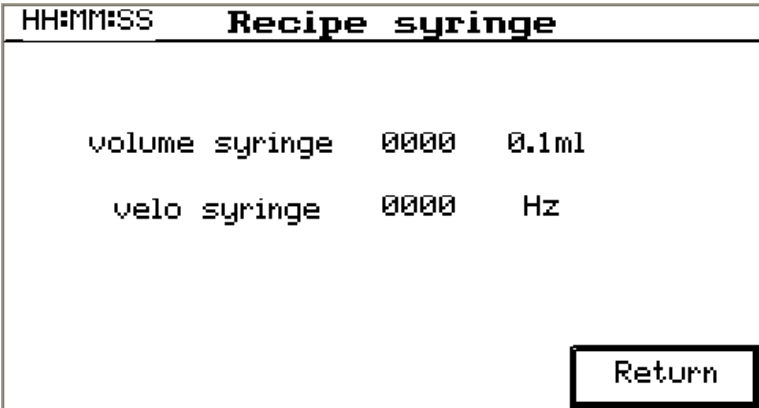


Figure 11: Terminal – Recipe Syringe

volume syringe	Amount of medium [x0.1ml] per stroke
velo syringe	Dispense velocity [Hz]
Return	Leads to RECIPE EDITOR.

9.1.5.6 Options



Select the field <OPTIONS>.



Following window is displayed:

HH:MM:SS
Optional parameter

Not step depending

Pins stay down

0

step depending

Arm stay up

0

Second Arm active

0

Loop 00
Count 00

Return

Figure 12: Terminal – Optional parameter



Select the dark grounded field to enable / disable.

Not step depending	The following parameter is valid for the whole recipe
Pins stay down	After the recipe is finished the pins stay down
step depending	The following parameters are valid just for the selected step
Arm stay up	After the step is finished the arm stays up
Second Arm active	The second arm is activated (only with two arms)
Loop	Number of steps to be repeated
Count	Number of repetitions
Return	Leads to RECIPE EDITOR.

9.1.5.7 Step End Condition

HH:MM:SS	Stepend condition
☐	if time over
☐	if arm in position
☐	if cover in position
☐	if syringe ready
Return	

Figure 13: Terminal – Step End Condition

 Select the  to enable the selected condition.

i step end if arm on position:
X: the selected time is ignored in the recipe step, no time input is required.
The step terminates when the arm reaches the position with the set velocity and the next step starts.

i step end if cover on position:
X: the selected time is ignored in the recipe step, no time input is required.
The step terminates when the lid reaches the set position and the next step starts.

Return	Leads to RECIPE EDITOR.
-------------------	-------------------------

	NOTE! Valid for actions as step end when arm on position and step end when lid on position: If both actions are enabled (not allowed), the first action in the recipe process is enabled.
---	--

9.1.5.8 Save

HH:MM:SS	Store recipes
Do you want to store the recipe?	
YES NO	

Figure 14: Terminal – Save

YES NO	STORE “yes” / “no” leads to the RECIPE EDITOR
--	---



React according to your decision and confirm the task!

9.1.5.9 Recipe End



Following inputs are required for the recipe step following the last one:

1. no step time: ZERO,
2. no action bit set.

9.1.6 Demo Recipe

Overview

G		
General		
Name:	SSE example	
Comment:		
Status:	☐ under develop ☒ ready	
Last change:	11/26/2007 13:25:20	
1	+	Arm to position
2	+	nozzle 1 on
3	+	Arm to another position
4	+	Arm to another position, Repeat
5	+	Arm stays up at endposition
6	+	Arm to another position
7	+	syringe
8	+	repeat
9	+	Arm to o-position
10	+	cover down
11	+	cover down for 10 sec
12	+	cover middle
13	+	Cover middle with high rotation

Step 1

Recipe Step	No.	Comment					Count	Jump
	1	Arm to position						
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End	
Speed	rpm	0	6000	400				
Acceleration	rpm/s	50	600	400				
Pos. Arm	mm	0	335	238,0	DevPud 		☒	
Arm-Lift		0	1	0	down 			
velocity arm	mm/s	1	100	40				
Time	Unit	Start					Time	End
Step time	sec	immediate 					0,0	☐
Digital Param.	Description						Set	
Media	Developer						☐ bit1	
	DI Water						☐ bit2	
	N2						☐ bit3	
	BSR						☐ bit4	

Step 2

Recipe Step	No.	Comment					Count	Jump
	2	nozzle 1 on						
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End	
Speed	rpm	0	6000	600				
Acceleration	rpm/s	50	600	200				
Pos. Arm	mm	0	335	238,0	DevPud		☐	
Arm-Lift		0	1	0	down			
velocity arm	mm/s	1	100	40				
Time	Unit	Start					Time	End
Step time	sec	immediate					20,0	☒
Digital Param.	Description						Set	
Media	Developer						☒ bit1	
	DI Water						☐ bit2	
	N2						☐ bit3	
	BSR						☐ bit4	

Step 3

Recipe Step	No.	Comment				Count	Jump
	3	Arm to another position					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	1			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	30,0	- by Value - ▾		☒
Arm-Lift		0	1	0	down ▾		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate ▾				0,0	☐
Digital Param.	Description					Set	
Media	Developer					☒ bit1	
	DI Water					☐ bit2	
	N2					☒ bit3	
	BSR					☐ bit4	

Step 4

Recipe Step	No.	Comment				Count	Jump
	4	Arm to another position, Repeat				3	3
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	100			
Acceleration	rpm/s	50	600	201			
Pos. Arm	mm	0	335	193,0	EBR4Inch		☒
Arm-Lift		0	1	0	down		
velocity arm	mm/s	1	100	41			
Time	Unit	Start				Time	End
Steptime	sec	immediate				0,0	☐
Digital Param.	Description					Set	
Media	Developer					☐ bit1	
	DI Water					☐ bit2	
	N2					☒ bit3	
	BSR					☐ bit4	

Step 5

Recipe Step	No.	Comment				Count	Jump
	5	Arm stays up at endposition					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	1			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	205,0	N2Blow		☒
Arm-Lift		0	1	1	up		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate				0,0	☐
Digital Param.	Description					Set	
Media	Developer					☐	bit1
	DI Water					☐	bit2
	N2					☐	bit3
	BSR					☐	bit4

Step 6

Recipe Step	No.	Comment				Count	Jump
	6	Arm to another position					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	200			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	248,5	DiPud		☒
Arm-Lift		0	1	1	up		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate				0,0	☐
Digital Param.	Description					Set	
Media	Developer					☒	bit1
	DI Water					☒	bit2
	N2					☒	bit3
	BSR					☐	bit4

Step 7

Recipe Step	No.	Comment				Count	Jump
	7	syringe					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	200			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	201,0	Syringe		☒
Arm-Lift		0	1	0	down		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate				70,0	☐
Digital Param.	Description					Set	
Media	Developer					☒	bit1
	DI Water					☒	bit2
	N2					☒	bit3
	BSR					☐	bit4

Step 8

Recipe Step	No.	Comment				Count	Jump
	8	repeat					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	200			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	201,0	Syringe		☐
Arm-Lift		0	1	0	down		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate				70,0	☒
Digital Param.	Description					Set	
Media	Developer					☐	bit1
	DI Water					☐	bit2
	N2					☐	bit3
	BSR					☐	bit4

Step 9

Recipe Step	No.	Comment				Count	Jump
	9	Arm to o-position					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	200			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	0,0	- by Value -		☒
Arm-Lift		0	1	0	down		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate				0,0	☐
Digital Param.	Description					Set	
Media	Developer					☐ bit1	
	DI Water					☐ bit2	
	N2					☐ bit3	
	BSR					☐ bit4	

Step 10

Recipe Step	No.	Comment				Count	Jump
	10	cover down					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	200			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	0,0	- by Value -		☐
Arm-Lift		0	1	0	down		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate				70,0	☐
Digital Param.	Description					Set	
Media	Developer					☒	bit1
	DI Water					☒	bit2
	N2					☒	bit3
	BSR					☐	bit4

Step 11

Recipe Step	No.	Comment				Count	Jump
	11	cover down for 10 sec					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	200			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	0,0	- by Value -		☐
Arm-Lift		0	1	0	down		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate				10,0	☒
Digital Param.	Description					Set	
Media	Developer					☐	bit1
	DI Water					☐	bit2
	N2					☐	bit3
	BSR					☐	bit4

Step 12

Recipe Step	No.	Comment				Count	Jump
	12	cover middle					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	200			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	0,0	- by Value - 		☐
Arm-Lift		0	1	0	down 		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate 				10,0	☐
Digital Param.	Description					Set	
Media	Developer					☐	bit1
	DI Water					☐	bit2
	N2					☐	bit3
	BSR					☐	bit4

Step 13

Recipe Step	No.	Comment				Count	Jump
	13	Cover middle with high rotation					
Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
Speed	rpm	0	6000	2000			
Acceleration	rpm/s	50	600	200			
Pos. Arm	mm	0	335	0,0	- by Value - 		☐
Arm-Lift		0	1	0	down 		
velocity arm	mm/s	1	100	40			
Time	Unit	Start				Time	End
Steptime	sec	immediate 				12,0	☒
Digital Param.	Description					Set	
Media	Developer					☐ bit1	
	DI Water					☐ bit2	
	N2					☐ bit3	
	BSR					☐ bit4	

9.1.7 Service

In service mode switch on vacuum manually.

 Click <Service> in the main menu.

i The service functions are used to test single system functions.
The administrator password is required.



WARNING!

The single test of functions doesn't include any security functions or queries.
Danger of injuring or squeezing of body!
Only the manufacturer or qualified personnel are permitted to operate with service functions.
The manufacturer takes no responsibility for the user's service activities.
During operation with service functions any other person may not be near the system.
The service / administrator password may only be known to qualified service personnel.

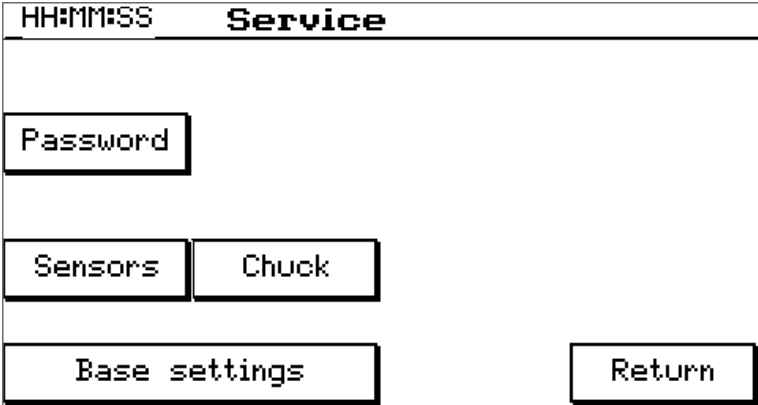
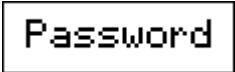
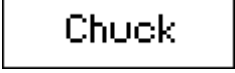
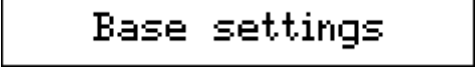
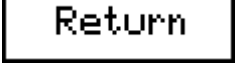


Figure 15: Terminal – Service, main menu

 Select the appropriate <Service> field to get to the required display.

	Opens the window PASSWORD
	Opens the window SENSORS
	Opens the window CHUCK
	Leads to the window SETTINGS
	Leads to the main window.

9.1.7.1 Service Password

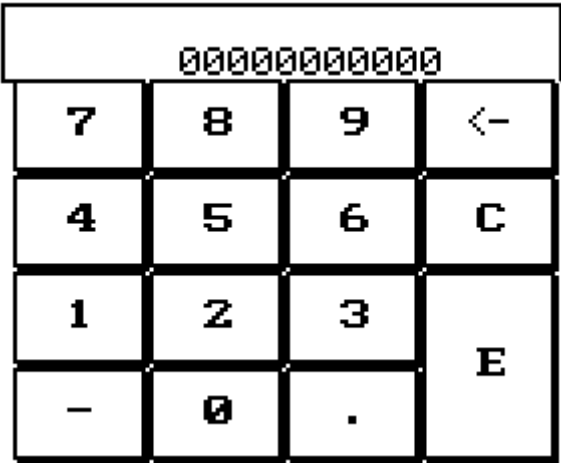


Figure 16: Terminal – Service, Password



Input your password and confirm by clicking <E>.

9.1.7.2 Service Sensors

HH:MM:SS		Service sensors			
		o u		Tank	
Arm		0	0	T1 0	T2 0
Pins		0	0	T3 0	T4 0
Cover cyl. 1		0	0	T5 0	T6 0
Cover cyl. 2		0	0	Trashbottle 0	
Vacuum		0			
Exhaust		0			
		Return			

Figure 17: Terminal – Service, Sensors



Display for the sensors (1 = active / 0 = inactive)

Return	Leads to the SERVICE main menu.
--------	---------------------------------

9.1.7.3 Service Chuck

HH:MM:SS

Service chuck

Pins I/O	Out U D	up	☐	C1	C2
	0 0 0			U D	U D
Vacuum	0	middle	☐	0 0	0 0
Ramp	00000 rpm/s	down	☐	Cover	
	Set Actual				
Speed	00000 00000 rpm				
Motor disable	0				

Return

Figure 18: Terminal – Service, Chuck



WARNING!

Enable motor
Catapulting substrates!
The vacuum must be switched on before switching on the motor if a substrate lies on the chuck.

Ramp [rpm/s]	Enable ramp and speed by touching the input field.
Speed [rpm]	The touch screen opens automatically. Confirm the inputs to transmit the values to the hardware.



Select the dark grounded field to enable / disable.

Pins I/O	Out ... output 1 = set / 0 = not set u ... up 1 = active / 0 = inactive d ... down 1 = active / 0 = inactive
Motor disable	1 = set / 0 = not set
Vacuum	1 = enabled / 0 = disabled no sensor display
Return	Leads to the SERVICE main menu.



→ Possible inputs for the cover:

Possible inputs COVER	Cylinder 1 sensor	Cylinder 2 sensor
Cover up	up (1)	up (0)
	down (0)	down (1)
Cover middle	up (1)	up (1)
	down (0)	down (0)
Cover closed	up (0)	up (1)
	down (1)	down (0)

9.1.7.4 Service Arm

HH:MM:SS

Service arm

	Set	Actual
Armposition	0000.0	0000.0 mm
Armvelo	000	mm/s

Arm I/O

A	u	o
0	0	0

Disable

0

Return

Figure 19: Terminal – Service, Arm

Armposition Armvelo	Enable arm position and arm velocity by touching the input field. The touch screen opens automatically. Confirm the inputs to transmit the values to the hardware.
------------------------	--



Select the dark grounded field to enable / disable.

Arm I/O	A = output (1 = set / 0 = not set) u = sensor up (1 = active / 0 = inactive) o = sensor down (1 = active / 0 = inactive)
Disable	(1 = set / 0 = not set) You can move the enabled arm manually. The actual position is displayed correctly.
Return	Leads to the SERVICE main menu.

9.1.7.5 Service Media

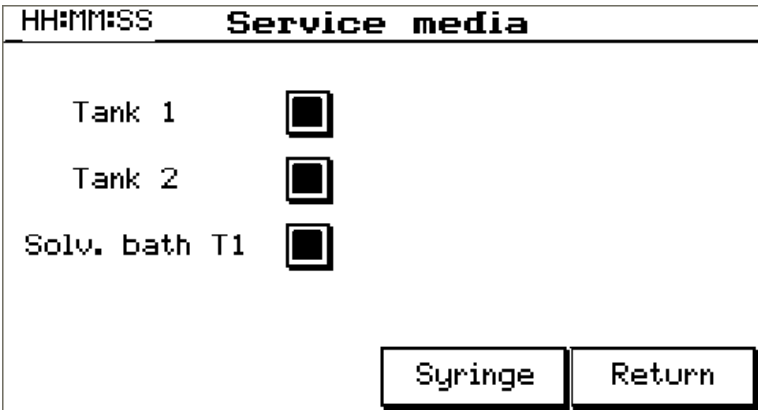


Figure 20: Terminal – Service, media

 Select the dark grounded field to enable / disable.

Syringe	Leads to syringe outputs.
Return	Leads to the SERVICE main menu.

9.1.7.6 Service Syringe

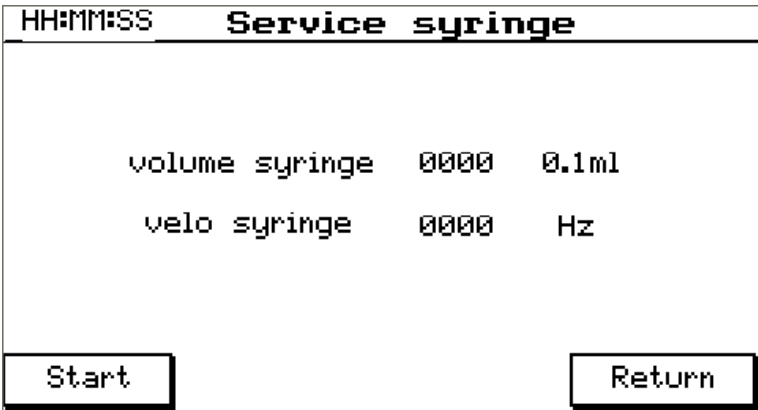


Figure 21: Terminal – Service, syringe



Select the dark grounded field to enable / disable.

Start	Starts running the syringe.
Return	Leads to the SERVICE main menu.

9.1.8 Settings

HH:MM:SS

Settings

Choose language

English

German

Base settings

Chuck

Change PW

Return

Figure 22: Terminal – Base settings

Choose language English	Activates English
Choose language German	Activates German
Chuck	Leads to SETTINGS CHUCK
solv.bath	Leads to SOLVENT BATH SETTINGS
Syringe	Leads to SETTINGS SYRINGE
Arm	Leads to SETTINGS ARM
Change PW	Leads to CHANGE PASSWORD
Return	Leads to SERVICE main menu.

9.1.8.1 Service Change Password

HH:MM:SS **Change password**

Operator

000000000000

Service

000000000000

Resettime (msec)

000000000000

Return

Figure 23: Terminal – Service, Change Password

Operator	Password operator level (allows recipe edition)
Service	Service password (allows service and recipe operations)
Resettime (msec)	Period of password protection – the password protection is re-activated within the period set without further input (break protection).
Return	Leads to SETTINGS main menu.

9.1.8.2 Settings Chuck



Select the field <CHUCK>.



Following window is displayed:

HH:MM:SS **Settings chuck**

ChuckposAcc 0000 Chuckpos sp 0000

Chuckpos 000000 steps **Accept**

MaxVeloChuck 00000 rpm

MaxAccChuck 00000 rpm/s

Return

Figure 24: Terminal – Settings arm

ChuckposAcc	Chuck position acceleration
Chuckpos sp	Chuck position speed
Chuckpos	Chuck position
MaxVeloChuck [rpm]	Maximum chuck speed
MaxAccChuck [rpm/s]	Maximum chuck acceleration
Accept	Confirms the inputs to transmit the values to the hardware
Return	Leads to SETTINGS main menu.

9.1.8.3 Settings Arm



Select the field <ARM>.



Following window is displayed:

HH:MM:SS	Settings arm			
		mm		mm
Mid. nozzl 1	0000.0	ArmMinPos	0000.0	
Mid. nozzl 2	0000.0	ArmMaxPos	0000.0	
Mid. nozzl 3	0000.0	OffsetArm	0000.0	
Mid. nozzl 4	0000.0			
Mid. nozzl 5	0000.0			
Mid. nozzl 6	0000.0			
				Return

Figure 25: Terminal – Settings arm



Select the field “nozzle” of the nozzle that will be placed in the middle / on position.



Each nozzle can be edit in the Setup / Arm.

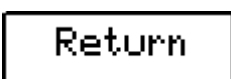


The actual value of the arm position appears.



The arm position is editable freely, each input from 0 to maximum is possible.

- Middle position: Position of the arm if respective nozzle is on the middle.
- Min. position : Arm on rim position - the arm is placed completely over the chuck.



Leads to the SETTINGS main menu.



CAUTION!

Arm offset: Assure that the arm does not crash with the lid!
If the Arm offset is too high, the arm can crash with the lid.
Control the arm position visually after each initialization.

9.1.8.4 Settings Syringe

-  Select the field <SYRINGE>.
-  Following window is displayed:

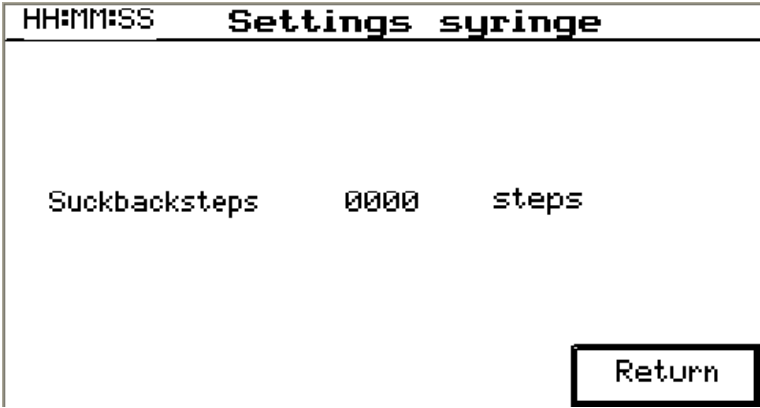


Figure 26: Terminal – Settings Syringe

Suckbacksteps	Number of suckback steps
Return	Leads to the SETTINGS main menu.

9.1.8.5 **Settings Solvent Bath**



Select the field <ARM>.



Following window is displayed:

HH:MM:SS **Solv. bath settings**

Solv. bath interval dispense

Time interval: min

On time: sec

Value 0 disable this function

Figure 27: Terminal – Settings Solvent Bath



Select the field “nozzle” of the nozzle that will be placed in the middle / on position.



Each nozzle can be edit in the Setup / Arm.



The actual value of the arm position appears.



The arm position is editable freely, each input from 0 to maximum is possible.

Time interval [min]	Rinsing interval
On time [sec]	Duration of rinsing in each interval.
Return	Leads to the SETTINGS main menu.

9.2 RecipeNet



RecipeNet is used to program and apply the system's recipe administration manually and automatically.



The system's touch screen monitor is used for operate the application programs.

Our software is continuously modified and improved due to innovation. As a consequence, the information given in this documentation may not accurately reflect every detail of the system actually delivered. Please contact the manufacturer in cases of uncertainty.



DANGER!

Electricity

The controller, the PC and all electrical connections are inside the system. Because of safety each modification and usage of additional connections has to be permitted by the manufacturer. Without written permission the manufacturer will not take any liability of damage and reserves the right to reject any guarantee demands.



CAUTION!

Data consistence and continuity

Pay attention to the correct input and order of commands and characters when editing configuration and recipe files (.config and .xml files) with the text editor.

Incorrect input can cause an abort or a wrong action of the system.

Configuration files may only be modified by the manufacturer or with written permission of the manufacturer. Without written permission the manufacturer will not take any liability of damage and reserves the right to reject any guarantee demands.

9.2.1 Conditions



Following requirements should be met for installation and application of the recipe editor (file "RecipeNet.exe") and the application program (file "DelfinNet.exe")

- an operating system Windows 2000 or XP from Microsoft is installed
- a user profile is installed in the operating system
- Net-Frameworks from Microsoft, Version 1.1 or higher is installed (file "Dotnetfx.exe")



Net-Frameworks 1.1 is on the Windows Installation CD or can be downloaded in the actual version to the operating system from the Microsoft website. For installation administrator rights for MS-Windows are required. More detailed information is displayed when installing the file "Dotnetfx.exe".

9.2.2 Installing



Following steps must be done when installing the OPTIcoat software

1. Create a path on the drive C:\ with the name "OptiCoat"
2. Copy the complete contents of the path "OptiCoat" of the ATMsse OPTIcoat CD in the created path "C:\OptiCoat"
3. Create a link on the desktop to the file "RecipeNet.exe" in the path "C:\OptiCoat\RecipeNet"



A path differing from "C:\OptiCoat" is possible. You modify each path declaration in the configuration windows of RecipeNet and DelfinNet (see chapter "Configuration"). If path declarations are missing a configuration window with the input command opens at the start of RecipeNet.

9.2.3 Updating



A software update consists of one or more files or complete paths with actual file versions. The actual program version is displayed in the "RecipeNet".



Copy the actual update files over the original files for actualization. It's important to overwrite all original files of the same name. If the Opticoat software is in a different path than "C:\OptiCoat" actualize all path declarations in the configuration window for RecipeNet.

9.2.4 Basic Functions of Applying ATMsse Programs

i

The operation control of the ATMsse application programs bases on MS-Windows. This operating instruction doesn't contain further detailed information about MS-Windows applications.

9.2.4.1 Virtual Keyboard



Figure 28: Virtual keyboard (example)

9.2.4.2 Mainly Applied Fields in SSE Application Programs

Field	Description
0	Input field (white background), alpha-numeric and numeric display
☐	Control button, enables or disables functions (possible multiselections)
0	Display field (grey background), alpha-numeric and numeric display
☐	Option field, enables or disables one exclusive option (only one selection possible)
Select station	Command button
- by Value -	List field (pull down menu), selection of one function out of several possibilities (only one selection possible)
	Scroll bar, the cursor scrolls up / down in a text or list field

9.2.4.3 Application of “RecipeNet”

-  Click the symbol  RecipeNet
-  The following window is displayed:

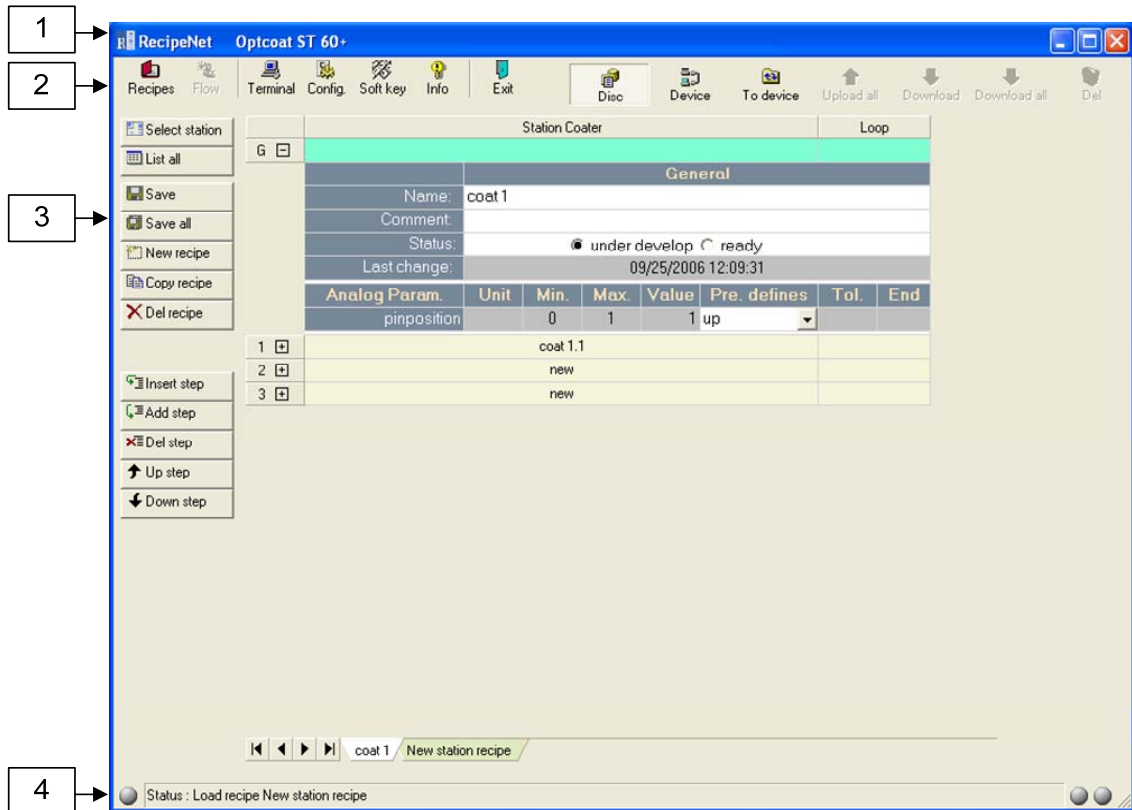


Figure 29: RecipeNet - start window

1. Column heading panel with program name
2. Toolbar
3. Operating area with function field(s) and tab(s)
4. Status string

The operating area is displayed differently, according to selected program modules. Select the module and function in the toolbar.

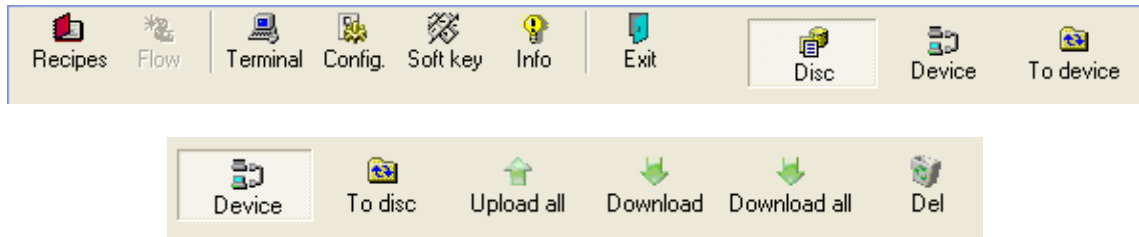
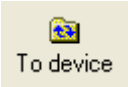


Figure 30: RecipeNet – toolbar

The operating area is displayed differently, according to selected program modules. Select the module and function in the toolbar.

Symbol Buttons	Description
 Recipes	Recipe display – module recipe editor - creates, modifies, deletes recipes
 Flow	Disabled – only used on certain machines. Process display – module process editor - creates, modifies, deletes processes
 Terminal	Terminal window - communication with stations via commands
 Config.	Configuration window - files selection for the system configuration and virtual keyboard
 Soft key	Enables / disables a virtual keyboard on the screen (see picture virtual keyboard)
 Info	Information window - displays manufacturer's information and software version
 Exit	Finishes recipe administration - exits the program, back to the operating system
 Disc	Hard disc - used for passive storage of the process recipes
 Device	Virtual overview of the system's memory on the computer. DOWNLOAD sends data from  Device to the system, UPLOAD synchronized the data between the system and the  Device-memory. <i>Caution: The complete data on  Device are overwritten by UPLOAD.</i>

Symbol Buttons	Description
 To device	Sends recipes from the processor's hard disc to the  Device
 To disc	Saves recipes of  Device on the processor's hard disc – is recommended not to exceed the memory capacity of  Device.
 Upload all	Synchronizes  Device with the system's memory. Caution: The complete data are overwritten by UPLOAD on the system.
 Download	Sends a selected recipe from  Device to the system for processing.
 Download all	Sends all recipes from  Device to the system.
 Del	Deletes a selected recipe.

9.2.4.4 Recipe Display – Operating Interface

Started the recipe administration an operating interface recipe display (module recipe editor) is loaded automatically.
The last recipe in alphabetic order is opened first.

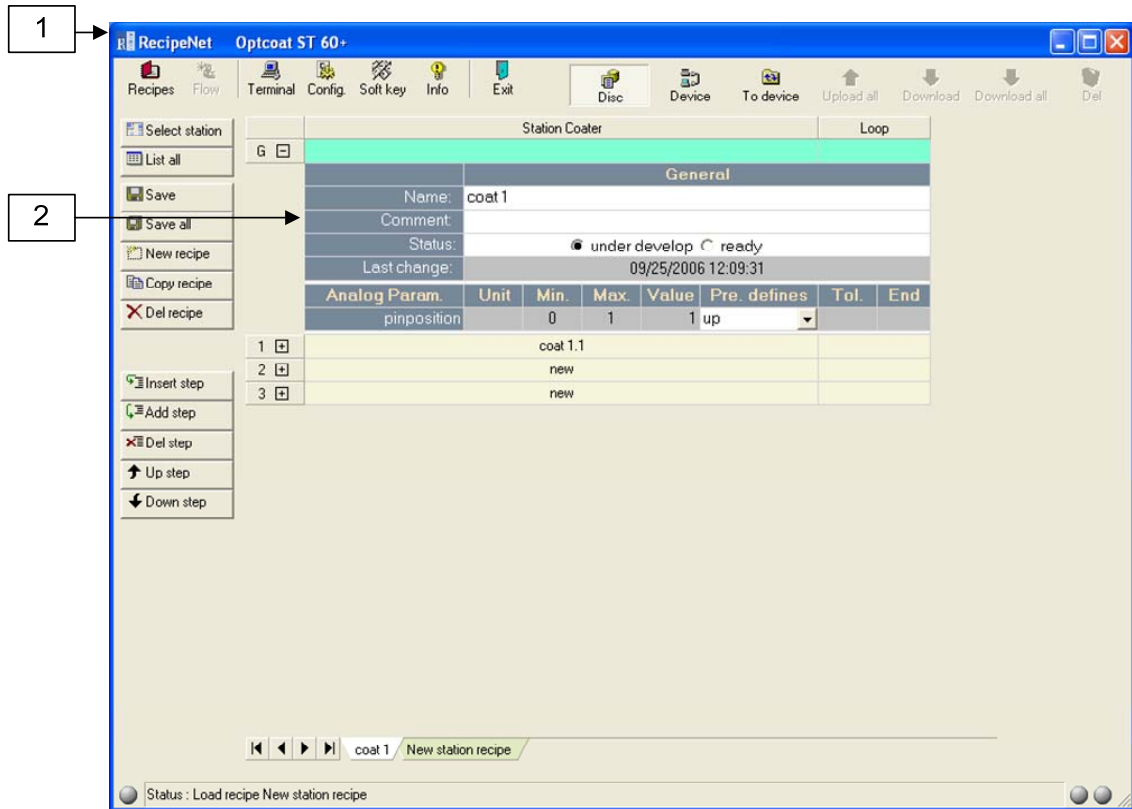


Figure 31: RecipeNet - operating interface

1. Function field
2. Recipe display (tab)

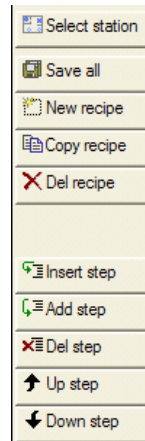
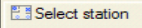
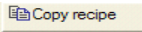
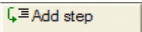
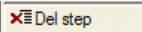
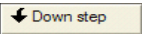
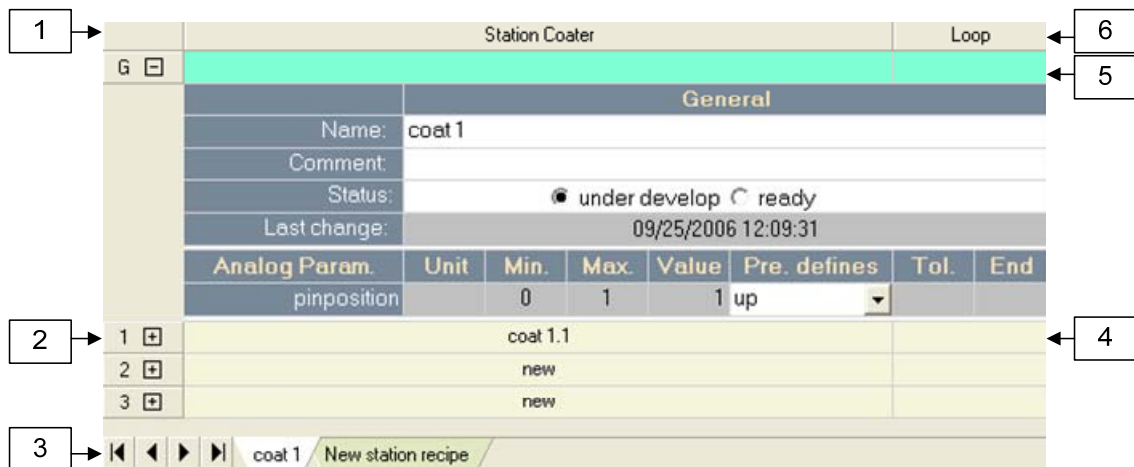


Figure 32: RecipeNet – function field recipe editor

Symbol Buttons	Description
	Selects the actual station (e.g. coating module, heating module)
	Saves all loaded recipes (tabs) in the selected path
	Creates a new recipe (tab)
	Duplicates the actual recipe in a new tab
	Deletes the actual recipe (tab)
	Inserts a new step upon the actually selected step
	Adds a new step behind the last step
	Deletes the actually selected step
	Moves the actually selected step one step higher
	Moves the actually selected step one step lower

9.2.4.4.1 Recipe Tab



1 →

Station Coater

Loop

6 ←

5 ←

General

Name: coat 1

Comment:

Status: ☒ under develop ☐ ready

Last change: 09/25/2006 12:09:31

Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
pinposition		0	1	1	up		

2 →

1 + coat 1.1

2 + new

3 + new

4 ←

3 →

coat 1 New station recipe

Figure 33: RecipeNet – recipe tab

1. Station name
2. List of recipe steps
3. Recipe list (white = enabled recipe) (in alphabetic order)
4. Column heading panel recipe steps
5. Column heading panel general settings (in alphabetic order)
6. Loop

Each tab consists of one single recipe. Its tab name is also the file name.

i

By clicking  or  the corresponding menu pulls up or down.

i

Each recipe consists of a “general” menu and one or more identical menus for the recipe steps.

9.2.4.4.2 Functions and Parameters

Functions of the Menu "General"



Click the button 

General			
Name	Recipe name (tab name and file name)		
Comment	Comment about the menu = appears in the green headline		
Status	Option menu	Under develop	Recipe is not displayed in dialog (Delfin)
		ready	Recipe is displayed in dialog (Delfin)
Last change	Date of the last change		



Clicking the button  the "General" menu pulls down.



General settings of the recipe are entered in this menu.



Clicking the button  opens the menu recipe step.



Enter the settings for each recipe step in this menu.

Packed Recipe Display

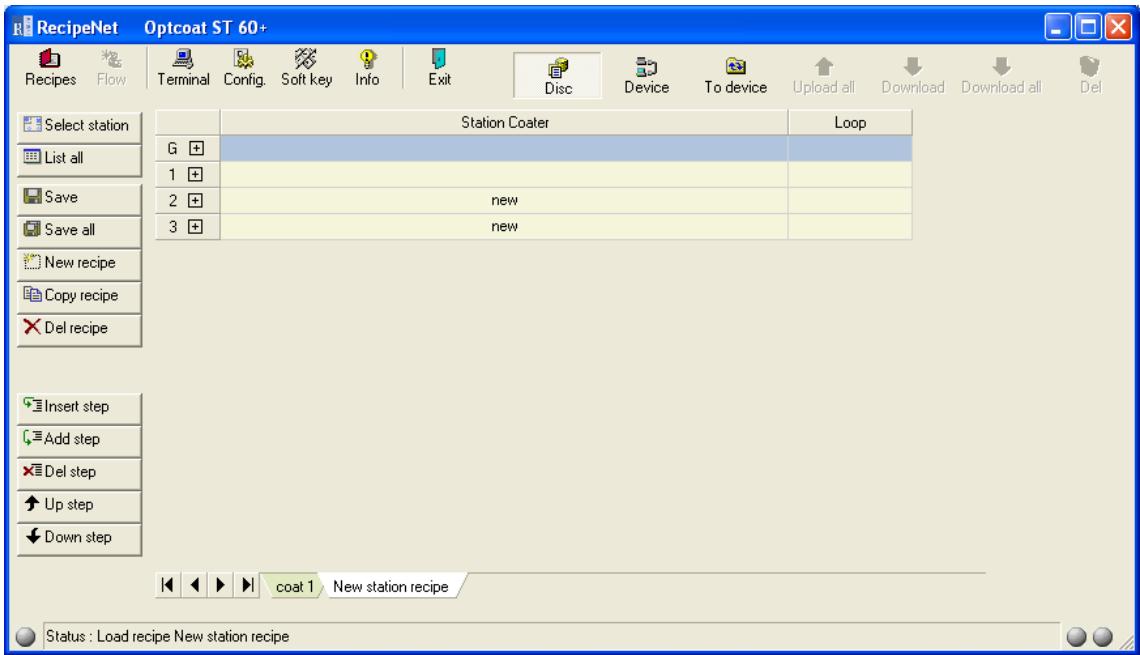


Figure 34: RecipeNet - packed recipe display

Detailed Recipe Display, Demo

Select station

List all

Save

Save all

New recipe

Copy recipe

Del recipe

Insert step

Add step

Del step

Up step

Down step

Station Coater

Loop

General

Name: New station recipe

Comment:

Status: ☒ under develop ☐ ready

Last change: 09/21/2006 11:49:13

Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End
pinposition		0	1	1 up			

Recipe Step	No.	Comment	Count	Jump																																
	1																																			
<table><thead><tr><th>Analog Param.</th><th>Unit</th><th>Min.</th><th>Max.</th><th>Value</th><th>Pre. defines</th><th>Tol.</th><th>End</th></tr></thead><tbody><tr><td>Speed</td><td>rpm</td><td>0</td><td>2000</td><td>100</td><td></td><td></td><td></td></tr><tr><td>Acceleration</td><td>rpm/s</td><td>200</td><td>500</td><td>500</td><td></td><td></td><td></td></tr><tr><td>Position Lid</td><td></td><td>0</td><td>3720</td><td>3720 open</td><td></td><td></td><td>☐</td></tr></tbody></table>	Analog Param.	Unit	Min.	Max.	Value	Pre. defines	Tol.	End	Speed	rpm	0	2000	100				Acceleration	rpm/s	200	500	500				Position Lid		0	3720	3720 open			☐				
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Step time	sec		10.0	☒																																

2 new

3 new

coat 1

New station recipe

Status : Load recipe New station recipe

Figure 35: RecipeNet - detailed recipe display

9.2.4.4.3 Functions of the Menu “General”



Click the button 

General			
Name	Recipe name (tab name and file name)		
Comment	Comment about the menu = appears in the green headline		
Status	Option menu	Under develop	Recipe is not displayed in dialog (Delfin)
		ready	Recipe is displayed in dialog (Delfin)
Last change	Date of the last change		



Clicking the button  opens the menu recipe step.



Enter the settings for each recipe step in this menu.

9.2.4.4.4 Functions of the Menu “Step”



Click the button 

Recipe Step	
number	Step number set automatically
comment	Comment for the step headline
count	Number of loops -1
jump	Number of steps to be repeated

Analog Parameters	
Speed	Speed of the chuck reached as a result of the acceleration and the time set
Acceleration	Acceleration of the chuck
Position lid	Position of the lid

Time	
time	Step time → immediate start without delay
End	The end of a recipe step can be defined in two ways. The mode is assigned by marking one of the following fields: 1.) END [Pos.Arm] → step is finished when arm reached its destination 2.) END [StepTime] → step is finished when set time is over. If no end condition is set, the next step will be executed.

All other parameters in this display have no controller function for spin recipes and get wrapped.

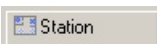
9.2.4.4.5 Recipe Display – Using the Recipe Editor

- i** All modifications of station tabs (create, modify, delete recipes) are actualized after saved in the predefined path of the station (configuration file):

Loading Station Recipes

- i** Loading loads and displays all existing recipes of one station.

Schedule – Load

-  Click the button  in the toolbar.
-  The field „Station“ appears:

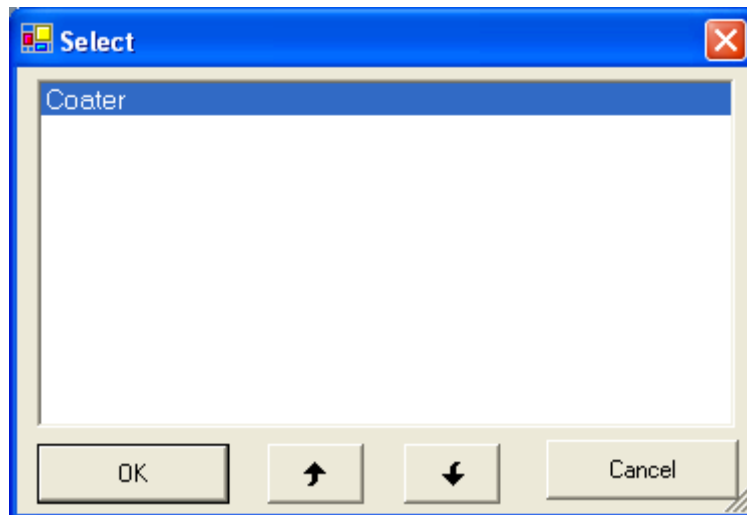


Figure 36: RecipeNet – Select station

-  Select the required station.
-  Confirm this action by clicking <OK>
-  All recipes saved of the station are displayed.

9.2.4.4.6 Create a New Recipe

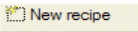


You can create a new recipe on two ways

- create a new empty recipe
- copy an existing recipe

Schedule – CREATE



Click the button  in the toolbar



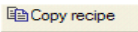
A new recipe is displayed with the name “new recipe”

Schedule – COPY



Select a recipe in the recipe list



Click the button  in the toolbar



A copy of the actually selected recipe appears with the appendix “copy of ...” before the copied recipe name

For transferring of modifications save the recipe.
Without saving all modified data are lost. (see chapter “save recipes”).

9.2.4.4.7 Delete a Recipe

Schedule – DELETE

-  Select the recipe you want to delete.
-  Click the button  in the toolbar
-  The field “System” appears:

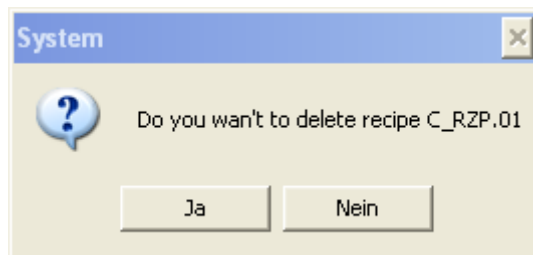


Figure 37: RecipeNet – System, delete recipe

-  Confirm this action by clicking <YES>
-  The selected recipe is deleted.

For transferring of modifications save the recipe.
Without saving all modified data are lost. (see chapter “save recipes”).

9.2.4.4.8 Modify a Recipe

More information about how to apply the program and its field functions you find in the chapter “Basic Functions of Applying SSE Programs”.

Schedule - MODIFY

-  Select the recipe you want to modify.
-  Select the menu “General” or the step you want to modify.
-  Modify the required positions.

For transferring of modifications save the recipe.
Without saving all modified data are lost. (see chapter “save recipes”).

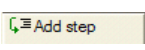
9.2.4.4.9 Insert, Modify, Scroll, Delete a Recipe Step

Schedule – INSERT A RECIPE STEP

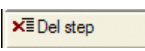
-  Select the recipe step you want to insert a new one before (yellow column heading panel or button <+>)
-  Click the button  in the toolbar
-  A new recipe step is inserted before the actual selected recipe step

Schedule – ADD A RECIPE STEP

A recipe step is always added as last step.

-  Click the button  in the toolbar
-  A recipe step is added after the last one.

Schedule – DELETE A RECIPE STEP

-  Select the recipe step you want to delete (yellow column heading panel or button <+>)
-  Click the button  in the toolbar
-  The field “System” appears:

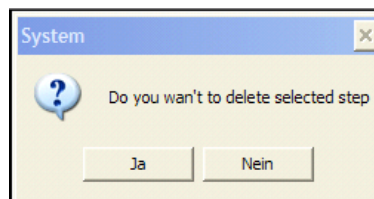


Figure 38: RecipeNet – System, delete step

-  Confirm this action by clicking <YES>
-  The selected recipe step is deleted.

9.2.4.4.10 Save a Recipe

Schedule – SAVE



Click the button  in the toolbar.



All recipes are saved in the corresponding path.

9.2.5 Terminal

The terminal window offers the possibility to communicate directly with each station via commands

 Click the button  in the toolbar.

 The window "Terminal" appears:

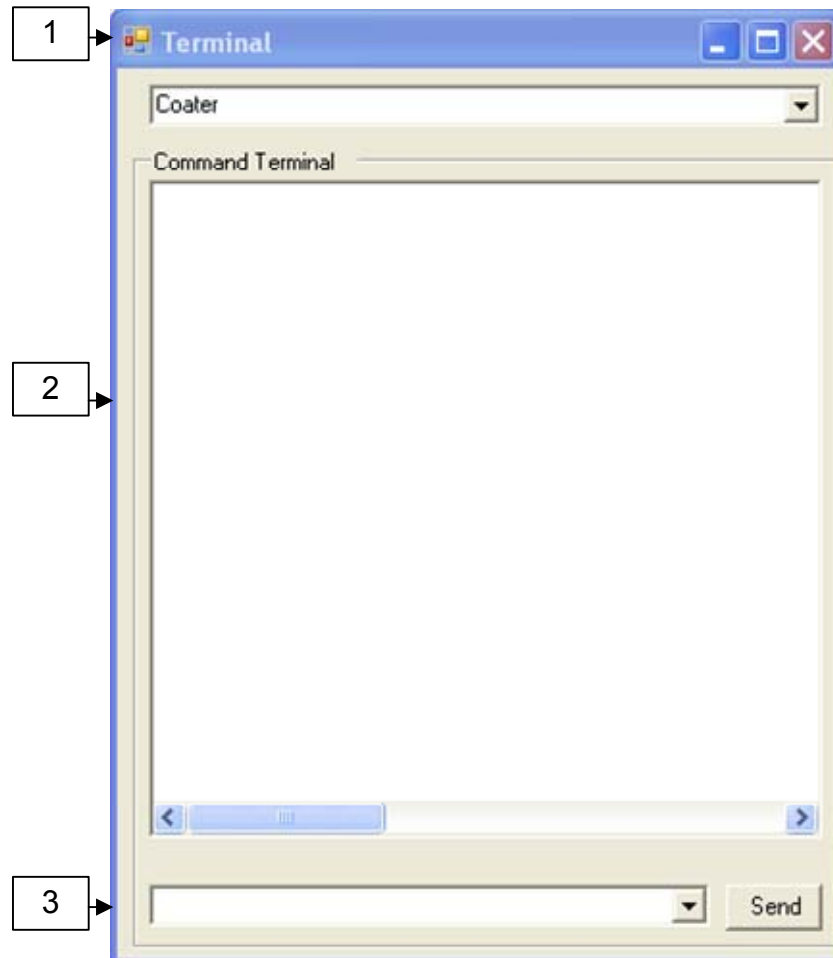


Figure 39: RecipeNet – Terminal

1. Stations – Lists field
2. Display for input and output commands
3. Input line and lists field (consists of the last commands)

9.2.5.1 Schedule – TERMINAL

-  Select the required station out of the lists field.
-  Enter the command in the line
-  Click the button <SEND>
-  The activated station proceeds the command.
-  In the display the command and a response of the system appear.

9.2.6 Configuration

The configuration window offers the possibility to indicate the path, the file name for the system configuration and the virtual keyboard. A log file can be enabled or disabled.

-  Click the button  in the toolbar.
-  Following window appears:

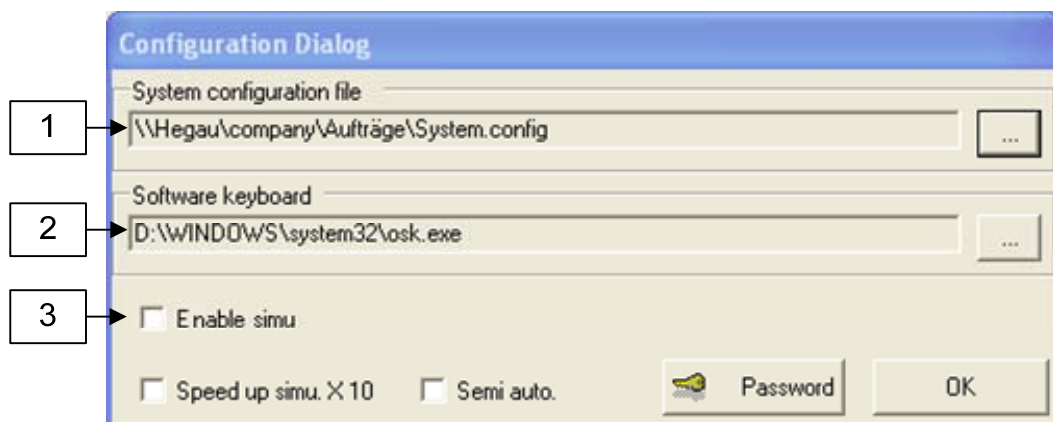


Figure 40: RecipeNet – Configuration

1. System configuration file – file and path indications
2. Software keyboard - file and path indications
3. Buttons and control boxes – enable/disable (option)

9.2.6.1 Schedule – CONFIGURATION

-  Select the required display panel
-  Click the button 
-  Following window appears:

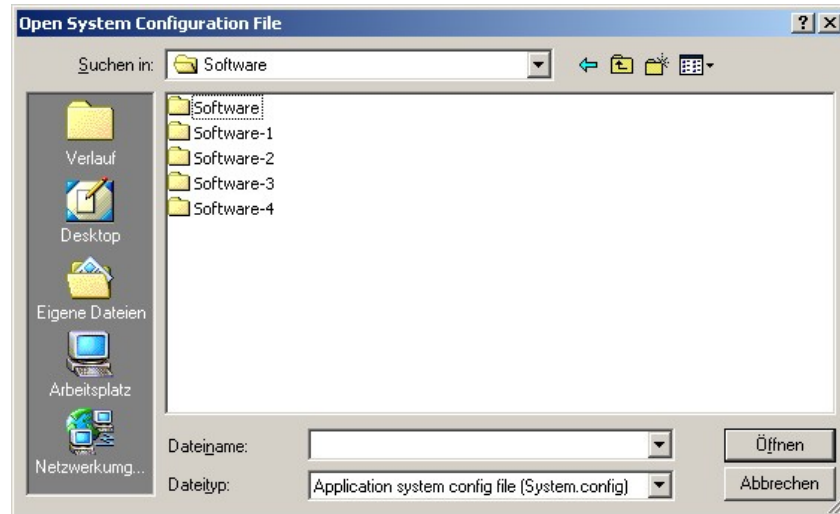


Figure 41: RecipeNet – Open System Configuration File

-  Select the required path and the file in the display panel
-  Click the button <OPEN>
-  The configuration window with file and path indications appear in the display panel.
-  Enable/disable the log file if required (control box – option)

A log file is required to indicate states of the stations, error messages and command sequences.
In error case quicker debugging is possible.

-  Confirm this action by clicking <OK>.

9.2.7 Information Window

The information window displays the manufacturer and the software version of the recipe administration.
For updating the software it's important to inform the manufacturer about the version number (display panel 2).

 Click the button  in the toolbar.

 Following window appears:



Figure 42: RecipeNet – information window (example)

1. Display panel – version of the file “RecipeNet.exe”
2. Display panel – build number
3. Button– close the information window

9.2.8 Open Virtual Keyboard

A virtual keyboard can appear in the recipe administration for numeric and alpha-numeric inputs.

-  Click the button  in the toolbar.
-  A virtual keyboard appears on the touch screen.

9.2.9 Exit RecipeNet

Modifications aren't saved automatically when closing RecipeNet.

-  Prior to close RecipeNet, save all modifications you want to keep.
-  Click the button  in the toolbar.
-  The recipe administration is closed.
-  The Windows operating surface appears.

10 Required Media

i

According to features following media are required:

- exhaust
- vacuum (option)
- nitrogen (option)
- compressed air (option)
- DI water (option)
- Resist (option)
- chemicals (e.g. IPA, MIBK, option)

i

For detailed information and requirements, please refer to chapter Technical Data, the electrical and pneumatic/vacuum drawings and the customer specific list of connecting values.

11 System Components

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11.1 Pressure Tanks (Option)



DANGER!

When handling pressure tanks and their contents observe your internal and legal instructions as well as the separately added operating instructions of the pressure tank.



DANGER!

Overpressure!

The pressure tank is under overpressure. Never open the pressure tank when there is overpressure.



DANGER!

Destruction!

Dependent on their material (metal or plastic) pressure tanks and connections are resistant to particular media.
Only media are applicable which don't react with the materials of the pressure tank and the connections.
Look for appropriate applicability in the material and media list.

11.1.1 Pressure Tank, Metal Version (Option)

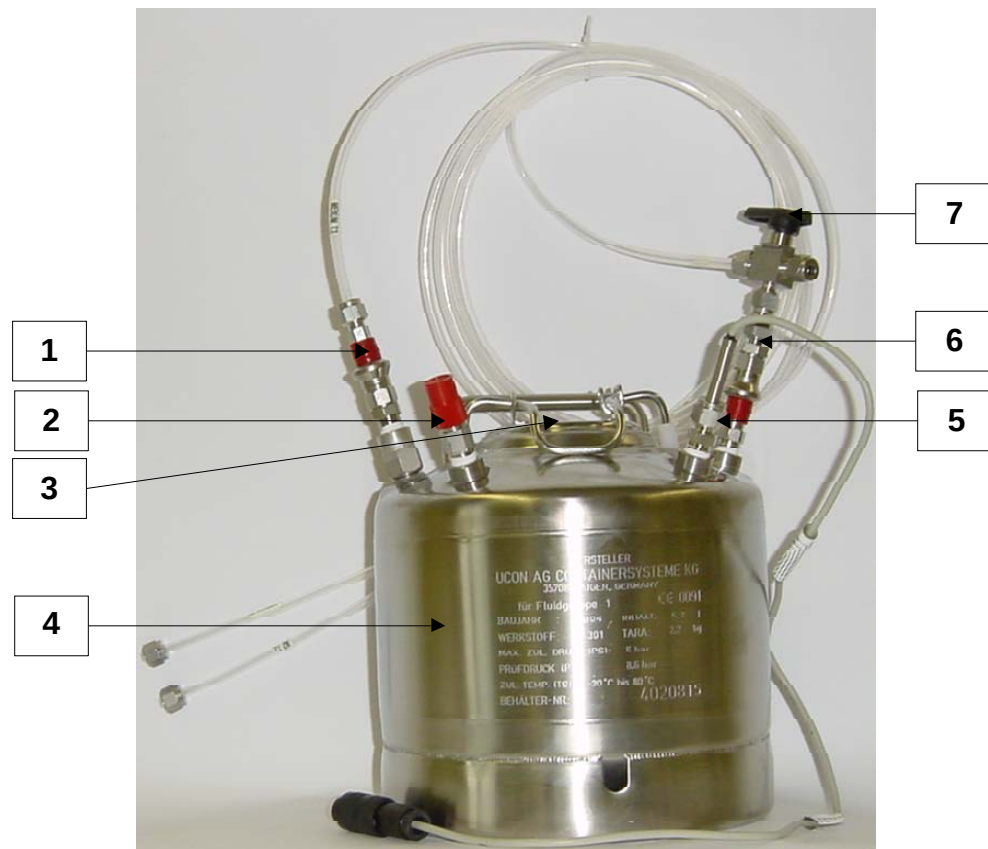


Figure 1: Pressure tank, metal version

1. Medium output
2. Pressure valve
3. Cover
4. Pressure tank, special steel
5. Level sensor, connecting lead with plug
6. Nitrogen inlet
7. Ventilation

11.1.2 Pressure Tank, Plastic Version (Option)



Figure 2: Pressure tank, plastic version

1. Hose - connection coupling to tank
2. Hose - nitrogen inlet
3. Hose - medium outlet
4. Tank - medium outlet
5. Tank - nitrogen inlet
6. Level sensor - connecting lead with plug

11.1.3 HMDS-Tank (Option)

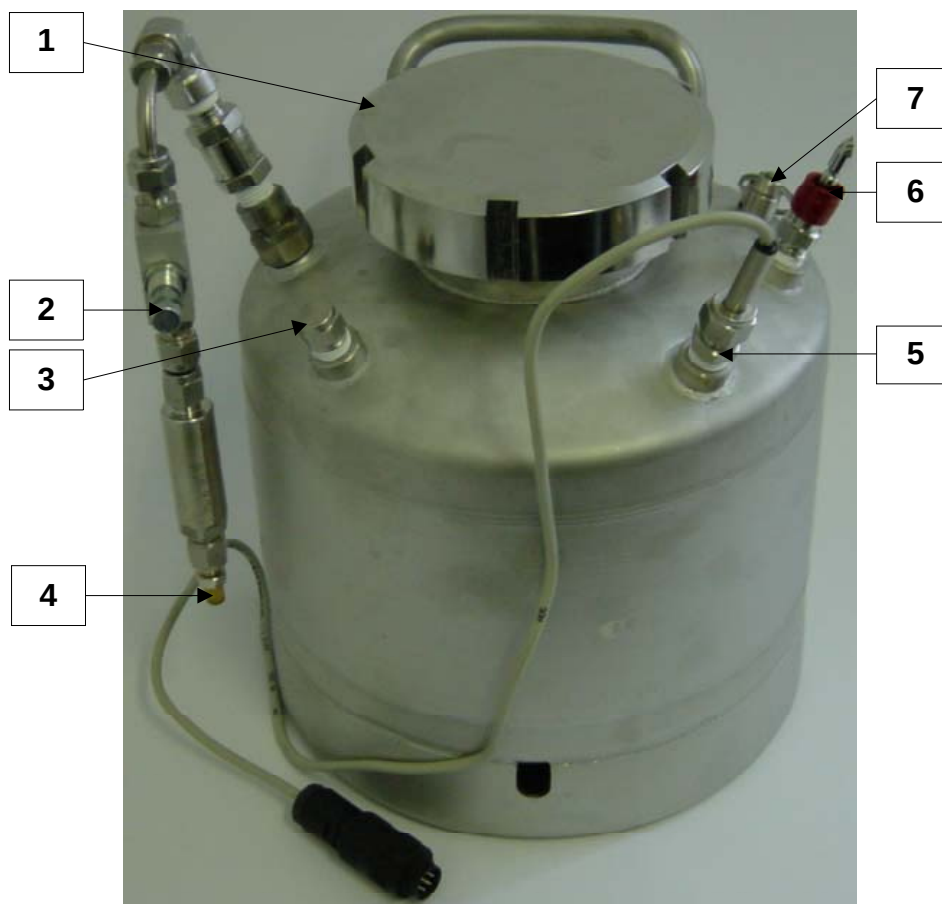


Figure 3: HMDS-Tank

1. Screw plug
2. Throttle for adjusting the air amount
3. Blind plug
4. Air inlet
5. Float switch
6. Medium outlet
7. Additional tank ventilation

11.2 Canister Pressure Dispense System (CPD System)

11.2.1 Introduction

i The CPD system is regular used to dispense “Photosensitive Organic Layer Material” or “Liquid Layer Material” (organic / non-organic) onto silicon wafers.

i SSE provides an integrated pressurized stainless steel tank (Figure 1+2) to dispense e. g. high or low viscosity media with adequate supply volume handling and suck back functionality.

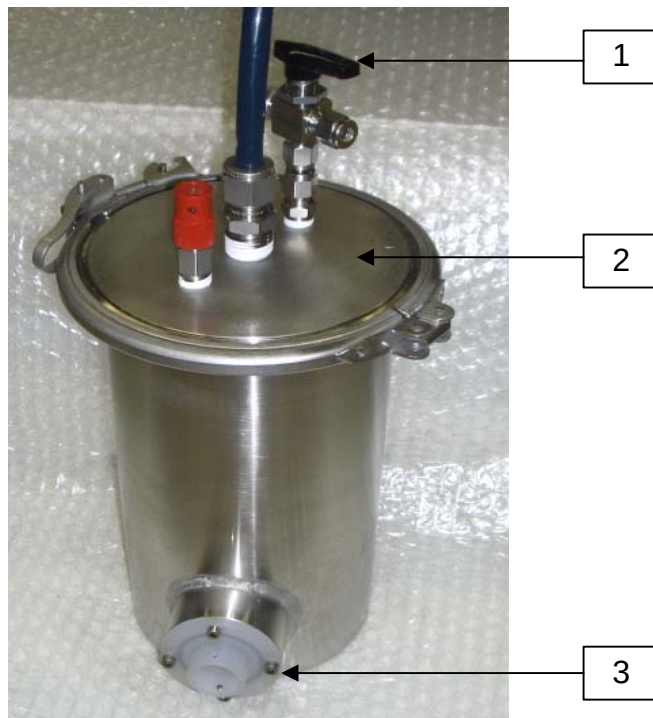


Figure 4: Stainless steel tank

1. Ball valve adjustable between on-position for nitrogen and off-position for exhaust
2. Steel tank cover with junction fittings
3. Media low level sensor housing

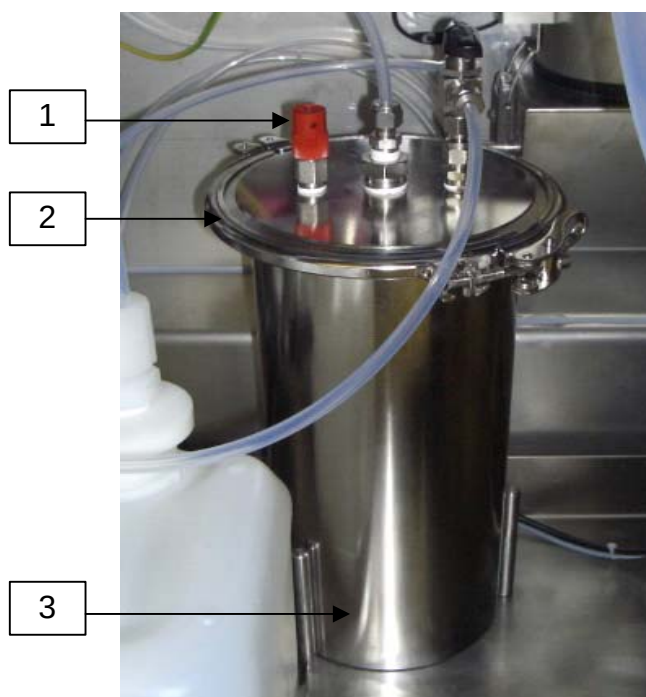


Figure 5: Stainless steel tank

1. Pressure relief valve N3.2
2. Tension ring
3. Stainless steel tank

11.2.2 CPD Systems Start-Up Procedure

11.2.2.1 CPD System in Maximus 806



Maximus 806 is using a combined dispense 2 way-valve with suck back (see following figure).



In the first instance the photo resist container should be placed into the stainless steel tank.



The seal o-ring has to fit the groove on the top tank body.



The steel tank cover has to be closed whilst the suction tube with siphon is dipping inside the photo resist container bottom.



Lock steel body and cover with accompanying tension ring.



Adjust pressure relief valve N3.2 (0.2 to 3.5 bar) e.g. to 2.5 bar and according to the normal nitrogen variations.



Adjust pressure controller for nitrogen to 1.5 bar.



If pneumatic valve Y7a is triggered (afterwards Delfin Software initialization) the nitrogen flows straight to the ball valve mounted direct onto the tank cover.



Ensure that the ball valve V4.2 is in “on-position for N₂” flow and not in “off-position for exhaust”.



Pneumatic valve Y7a fills the inner compartment of steel tank continuously with nitrogen.



The combined dispense valve V4.3 (Furon) is triggered from Y7b as long the dispensing time was set to.



The two mounted throttle valve manipulating exposure and turn-off time of dispense valve V4.3.



The knurled screw mounted on the suck back valve adjusts suck back volume.

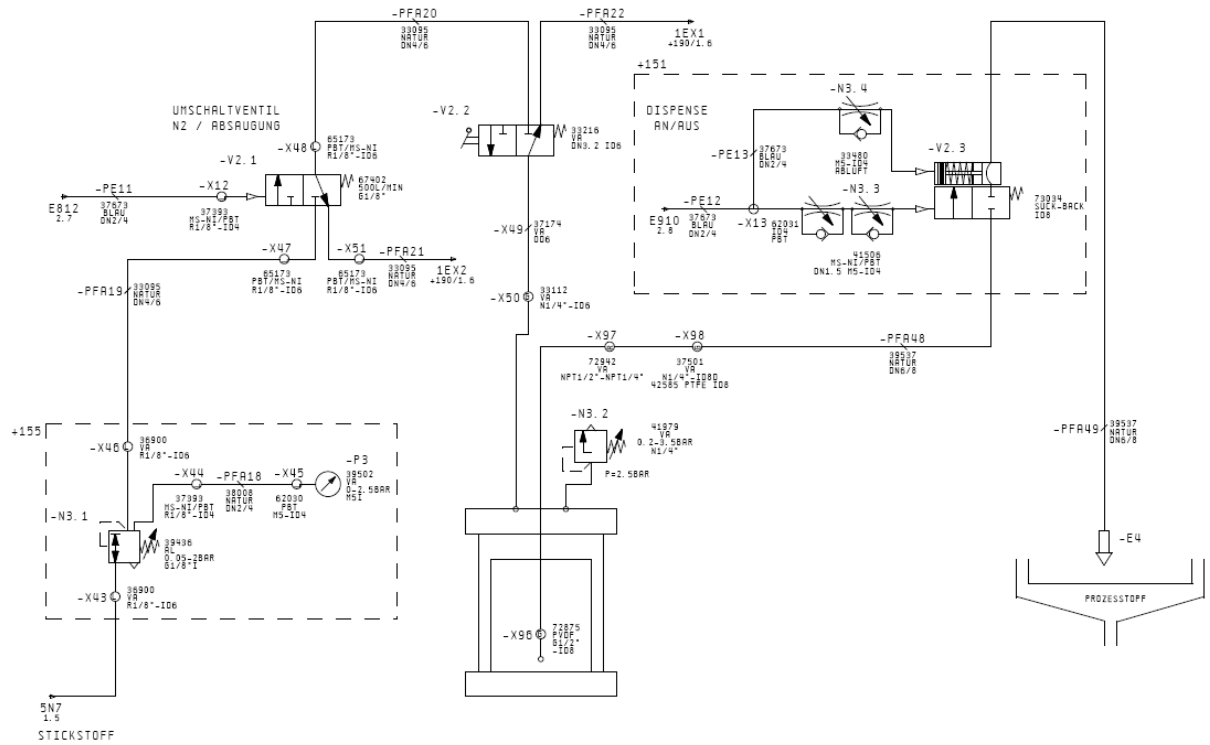


Figure 6: CPD system in Maximus 806

11.2.2.2 CPD System in Maximus 804

- i** Maximus 804 is using a 2 way-valve with external vacuum suck back functionality (see following figure).
- i** This suck back works with a vacuum connection via an additional 2 way-valve V10.
- i** V10 is activated as far as Maximus actuator voltage is powered on.
- i** This valve is systems vacuum forwarding to the next valve V4.1
- i** V4.1 is activated as far as the Delfin software is initialized.
- i** Input connection –X40 supports vacuum and –X39 supports systems nitrogen.
- i** It follows from above that the steel tank gets pressurized with N² after ball valve V4.2 is turned into “on-position for N₂”.
- i** If adequate media is dispensed, only V4.1 (CKD valve) turns off and the system chance from a pressurized system into a vacuum system.
- i** Have the suck back level reached V4.3 is closing and V.4.1 turns on back again and the system gets pressurized same as before.
- i** The suck back time is pre adjustable in the Delfin software for suck back volume fine tuning.

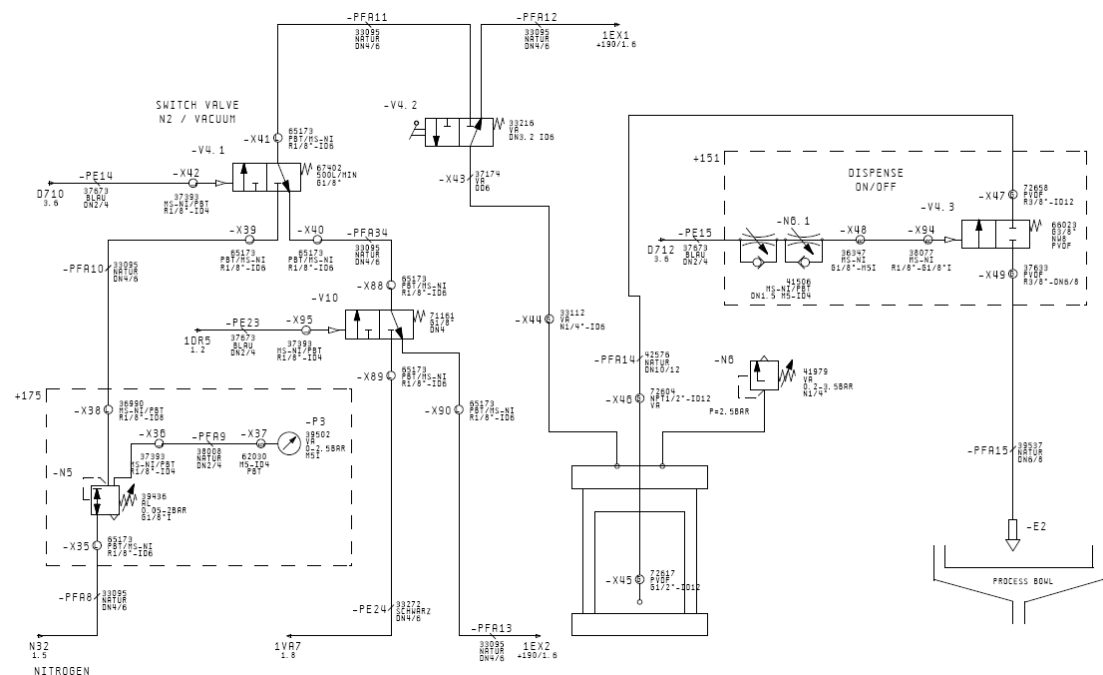


Figure 7: CPD system in Maximus 804

11.2.3 Cleaning and Refilling



WARNING!

For cleaning reason and exchanging to the new photo resist container ensure following safety regulations strictly!



Before opening the stainless steel tank turn off pressure controller N5 first!



Turn off the actor voltage.



The ball valve mounted on the cover, has to be set to “off-position for exhaust” (first figure).



Immediately exhaustion from nitrogen must be audible.



Turn ball valve several times in both directions till no exhaustion is audible any more.



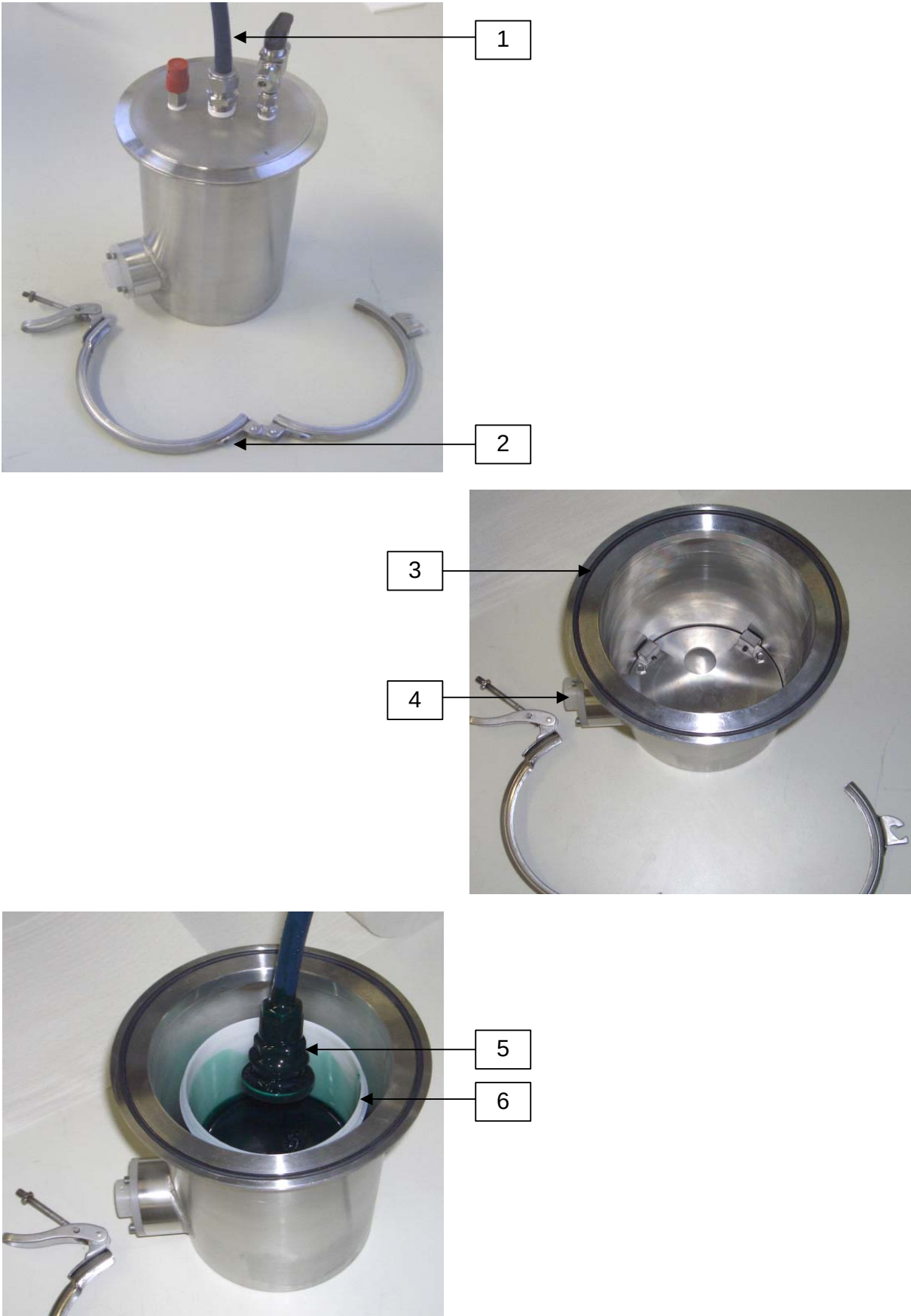
This confirms an unpressurised tank status.



Open tension ring and lift cover in vertical direction straight and carefully up. Some photo resist must remain inside the siphon to protect the situation “air getting sucked into the suction tube”.



Exchange photo resist container and add all parts in reversed order together.



2. Tension ring
3. Seal o-ring inside its groove
4. Media level sensor housing
5. Media siphon
6. Photo resist container

11.3 Motorized Syringe System (Option)

11.3.1 Coating Module with Motorized Syringe Dispense Unit

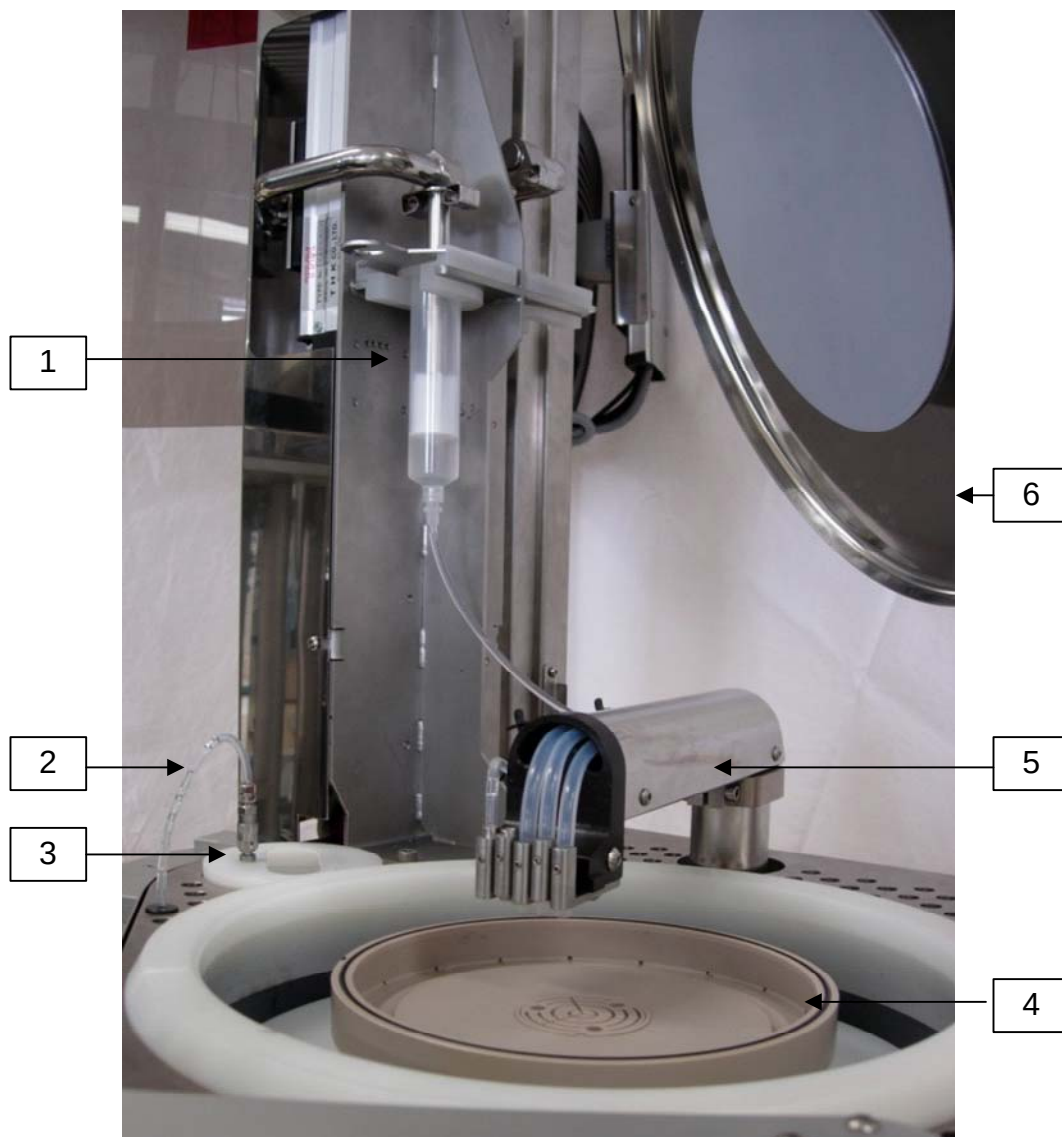


Figure 9: Motorized syringe dispense unit

1. Dispense System
2. Solvent inlet for rinsing
3. Drip pan
4. Process bowl
5. Media arm
6. Lid

11.3.2 In General

-  It's possible to set the dispense rate and the suckback as individual parameter in each recipe.
-  The two inputs are valid for all recipes. If the resist's features differ appropriate values must be set before the recipe start. Repeat this procedure at each recipe change or check the settings at least.
-  The two inputs are set in the configuration window that is opened in the service menu.
-  The fill level of the syringe isn't checked by system. If the syringe is empty, dispensing is interrupted immediately and a message given independent of the resist amount on the substrate. The sensor causing this action is security relevant and therefore can't be overridden.
-  As the dispense process can be interrupted anytime. The operator must check the amount of resist in the syringe regularly.

11.3.3 Putting In the Syringe

-  Press the stop button (the arm is released at each pressing of the stop button).
-  Take off the mounting bracket.
-  Push the arm manually to the top.
-  Put the syringe from the bottom up in its holder.
-  Fit the plunger in the arm.
Pay attention that the two clips at the syringe are cross to the pushing direction of the mounting bracket.
-  Press the arm down so the syringe fits in its holder.
-  Fix the syringe by pushing in the mounting brackets.
-  Position the inlet hose in the mounting bracket and fix it with clips along the media arm.
-  Initialize the system, the arm is in its actual position.

11.3.4 Changing, Putting Off the Syringe

-  Press the stop button (the arm is released at each pressing of the stop button).
-  Take off the mounting bracket.
-  Push the arm with fixed syringe to the top
-  Demount the plunger from the arm.
-  Put off the syringe down from its holder.
-  Take off the media hose from the clips and the nozzle holder.

11.4 Pneumatic Syringe System (Option)



DANGER!

Collision!

Operating with syringes the lid must rest in upper position, otherwise a collision between lid and syringe could occur.

Do not activate any recipe in which the arm moves over the process bowl and the lid set in middle position.

In case of collision risk press the emergency stop button.

11.4.1 Components



The syringe system consists of a syringe dispense unit with one syringe, a rapid action hose coupling and a dispense system.

11.4.2 Pneumatic Syringe Dispense Unit



Figure 10: Pneumatic syringe dispense unit

1. Pressure hose, the unit runs with nitrogen or compressed air
2. Rapid action hose coupling
3. Syringe
4. Luer Lock with needle

11.4.3 Dispense Controller

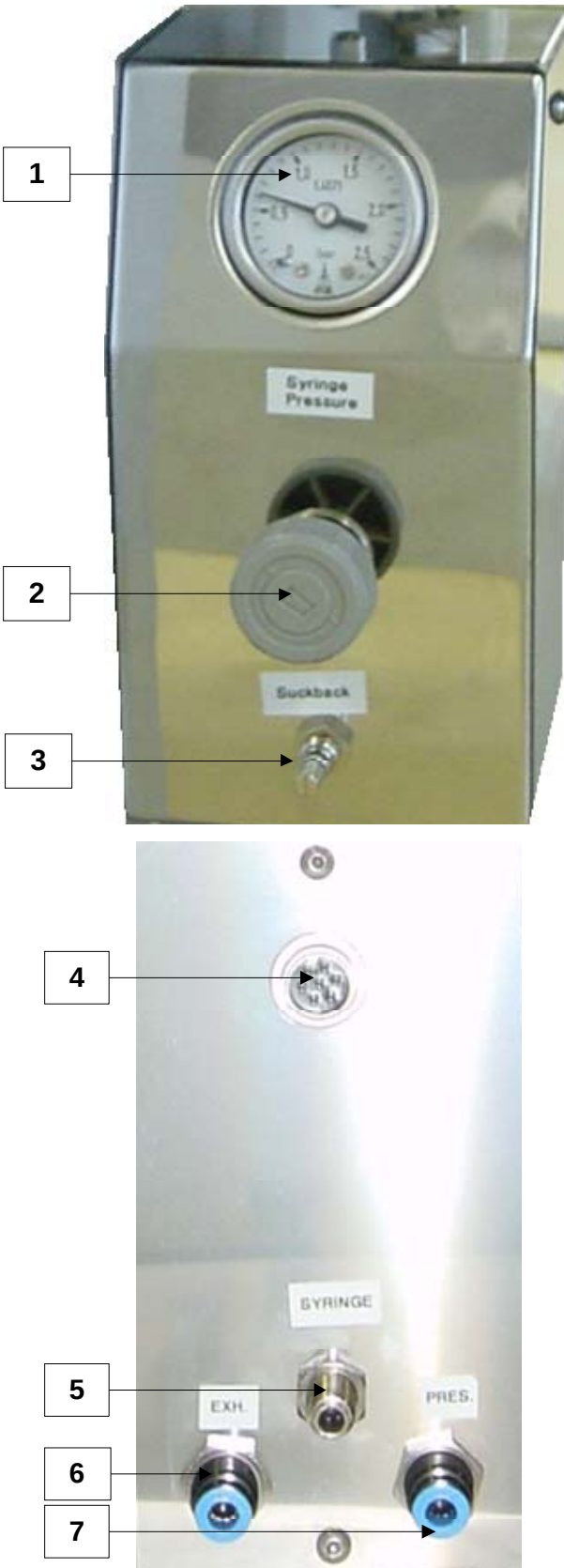


Figure 11: Dispense controller

11.4.3.1 Front

1. Pressure indication
2. Regulator of dispense pressure
3. Control of vacuum, precision adjustment of the suck back

11.4.3.2 Reverse

4. Current connection
5. Syringe connection
6. Exhaust connection
7. Pressure connection

11.4.3.3 Accessories

- A needle set with different needle jets
- Additional syringes with a volume of 30 ml and 55 ml

11.4.4 Initial Start-Up

Operate the initial start-up in the SERVICE MODE
..... \SERVICE \ SERVICE OUTPUT \ SYRINGE (1)



The optimal dispense pressure depends on the medium's viscosity
standard value: ca. 1 bar.



Close the suck back throttle.



The suck back throttle is permanently active, it isn't switched.



Put the filled syringe on its holder.



Connect the syringe with the pressure hose.



Turn the suck back throttle as far as necessary, no bubble should build up.

11.4.5 Operating Errors

- The suck back is too powerful
Avoid too powerful suck back shown by bubbling in the syringe. The consequence would be an indefinable dispense result.
- Filling height of the syringe
Fill the syringe maximally up to three-quarter, otherwise medium could get back to the unit.

11.5 Pneumatic Syringe Filling System (Option)

i A syringe filling system (option) simplifies filling a syringe.

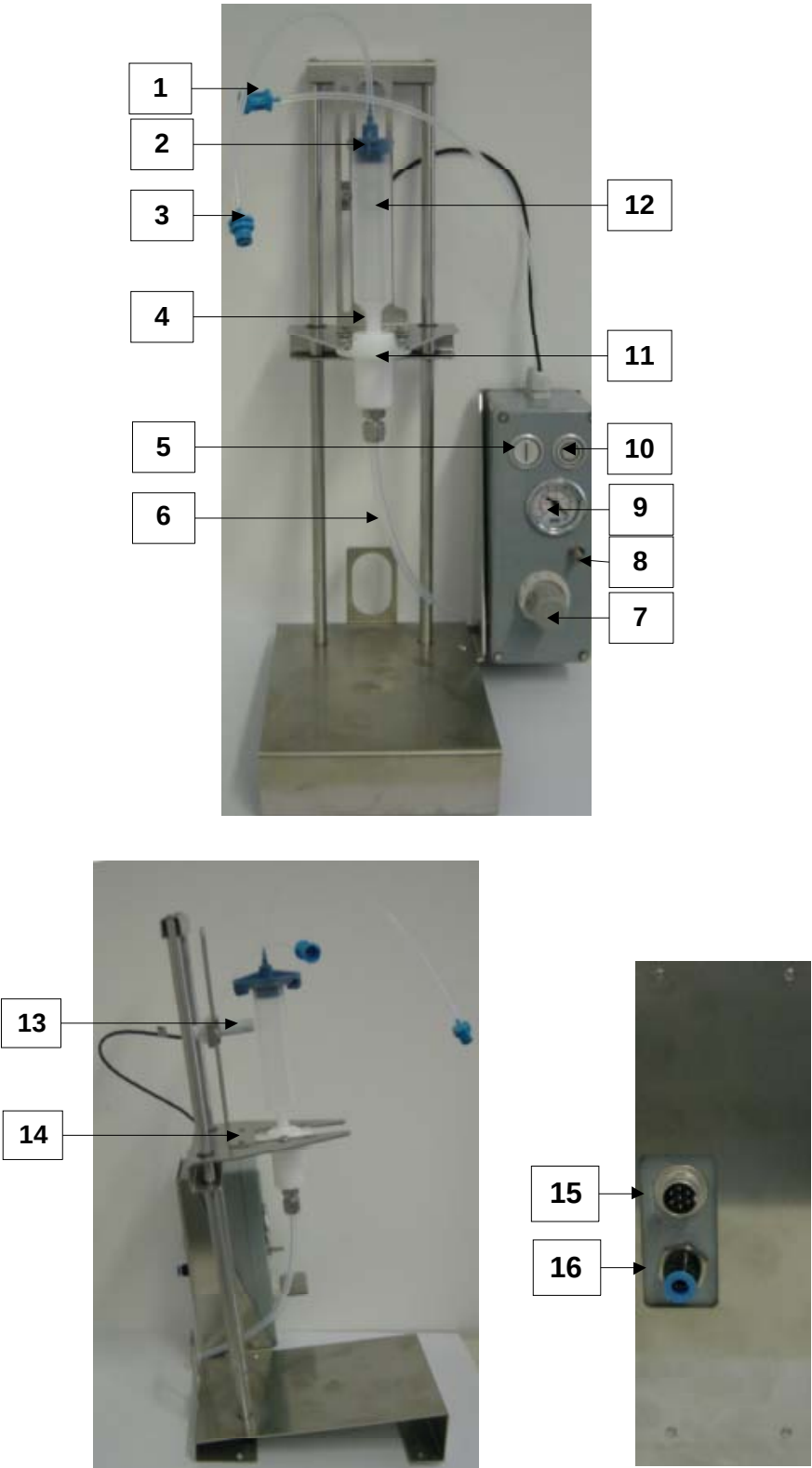


Figure 12: Pneumatic syringe filling system

11.5.1 Front

1. Rapid action hose coupling to the vacuum hose
2. Connection to syringe
3. Rapid action hose coupling from the syringe
4. Luer Lock
5. Key <I> = start
6. Resist hose
7. Control of vacuum
8. Control of filling velocity
9. Indication of vacuum
10. Key <O> = stop
11. Resist bottle seal
12. Syringe

11.5.2 Side View

13. Level sensor
14. Seal holder

11.5.3 Reverse

15. Current inlet
16. Vacuum inlet

11.5.4 Handling the Syringe Filling System



Place the resist bottle below the seal putting the hose in the bottle.



Screw the syringe on the seal.



Connect the rapid action hose couplings (1+3).



Start filling with the start button.



The filling will be terminated by a level sensor.

Fill the syringe maximally up to three-quarter, otherwise medium could get back to the unit.



Close the syringe with an appropriate stopper because otherwise medium pours out when the rapid action hose coupling is opened and air comes in.



Disconnect the rapid action hose coupling from the vacuum pipe.

11.5.5 Initial Start-Up

11.5.5.1 Adjustment of the Filling Velocity



Close the vacuum control (7) and the pressure throttle (8).



Start e.g. with 0.3 bar vacuum and open the throttle carefully.



For precision adjustment more vacuum is eventually required, in this case close the throttle before you increase the vacuum.



Afterwards open the throttle again very carefully, the filling velocity should be as high as necessary.

Avoid too fast filling up as resist could fumigate.

11.5.5.2 Checking the Sensor Function



Check the level sensor, if the filling isn't stopped when medium is passing the sensor, press immediately the <STOP> key.



Adapt the distance between sensor and syringe.

11.6 Media Pump - IWAKI (Option)

11.6.1 Adjustments

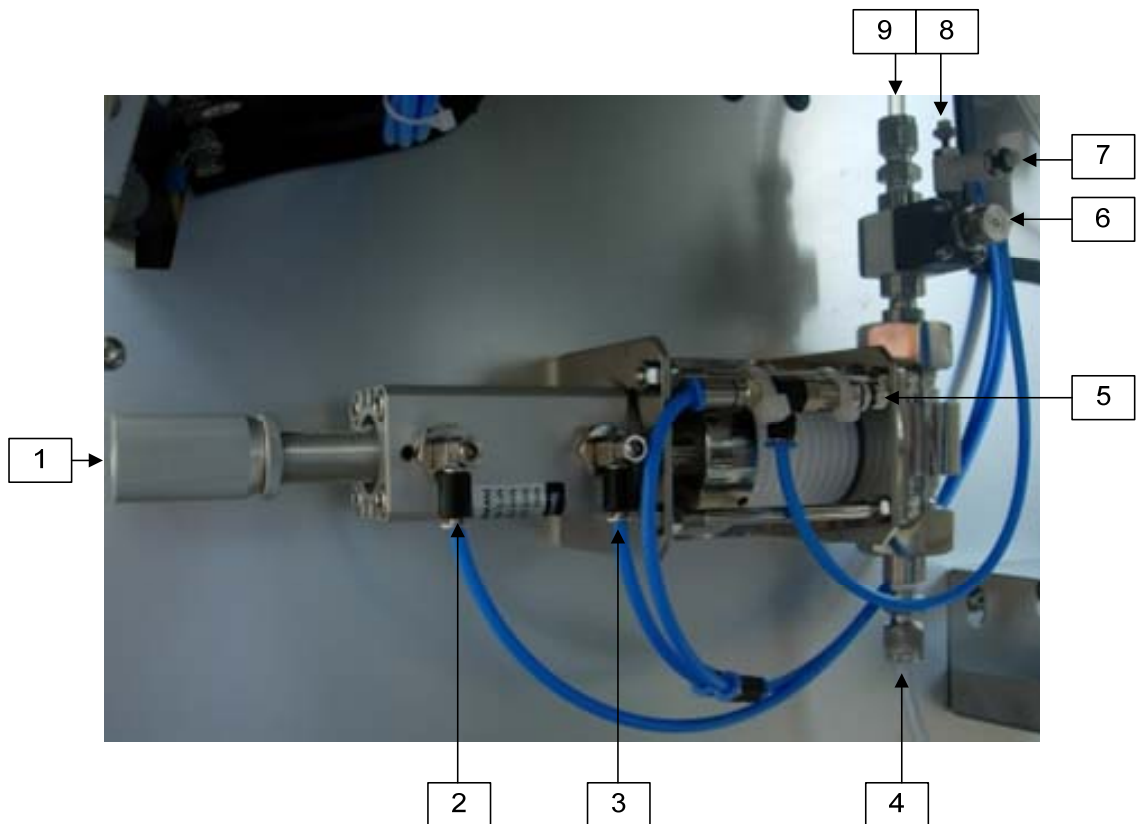


Figure 13: Media pump, Iwaki

1. Stroke setting
2. Suck speed
3. Pump speed
4. Suck line
5. Pressure control of the operating pressure of the suck back valve.
Never modify the adjustment 2 bars.
6. Volume of suck back
7. Speed of switching on the suck back valve
8. Speed of suck back
9. Media outlet

11.6.2 Features

- Repeatability $\pm 1\%$ of full scale
- Adjustable pump velocity for suck and press
- Integrated adjustable suck back valve
- Mounting plate made of polypropylene (PP) - for bench mounted modules

11.6.3 Function

i

If the operating voltage is off, the pump sucks the media into the pump bellow. The volume depends on the adjustment of the end position screw. The pump velocity can be regulated in both directions by two check valves.

i

When the operating voltage is switched on, the pump presses the media through the suck back valve to the spinner. If the operating voltage is switched off, the suck back valve sucks the media in the outlet line a little bit back, so that the nozzle can't drip. With the screw on the topside the valve the strength of the suck back can be adjusted.

i

The dispense volume is controlled via the dispense time (dispense time mode).

i

The pump stroke, which is defined by the end position screw, must be greater than the volume you want to dispense. The dispense volume of liquid depends on the duration of the applied operating voltage. This is the better way if you often want to change the dispense volume. For another dispense volume you only have to change the time of the operating signal.

11.6.4 Material

11.6.4.1 Pump

Name of part	Material
Pump head	ANSI stainless steel SUS 304
Valve	Hastelloy C-276
Valve seat	ANSI stainless steel SUS 304
Valve guide	ANSI stainless steel SUS 304
Valve gasket	PTFE
Bellows	PTFE

11.6.4.2 Suck back Valve

Name of part	Material
Body	PFA
Diaphragm	PTFE
Insert bushing	PFA
Nut	PFA
Collar	PFA

11.6.4.3 Tubing

Name of part	Material
Tubes	PFA
Tube fittings	ANSI stainless steel SS 316

PFA: perfluoroalkoxyethylene

PTFE: polytetrafluorethylene (Teflon®)

11.6.5 Installation Guide



The pump should be installed as close as possible to the liquid supply tank. The dashed line in the next figure marks the maximum level of the photo resist inside the bottle related to the pump.

... without filter the maximum resist level is the dashed line

... with filter the maximum resist level is the upper edge of the filter.



For installation choose an indoor place conveniently located for maintenance and inspection (for bench mounted modules).



Install the pump so that the label TOP SIDE is on top (for bench mounted modules).



The mounting panel will be fixed on the carrier plate by the three 6 mm hexagon socket screws or similar.



The pump needs pressure controlled compressed dry air with a pressure of 1 to 4 bar (depending on the viscosity of the used photo resist).



The suitable liquid connection tubes will be delivered by SSE.

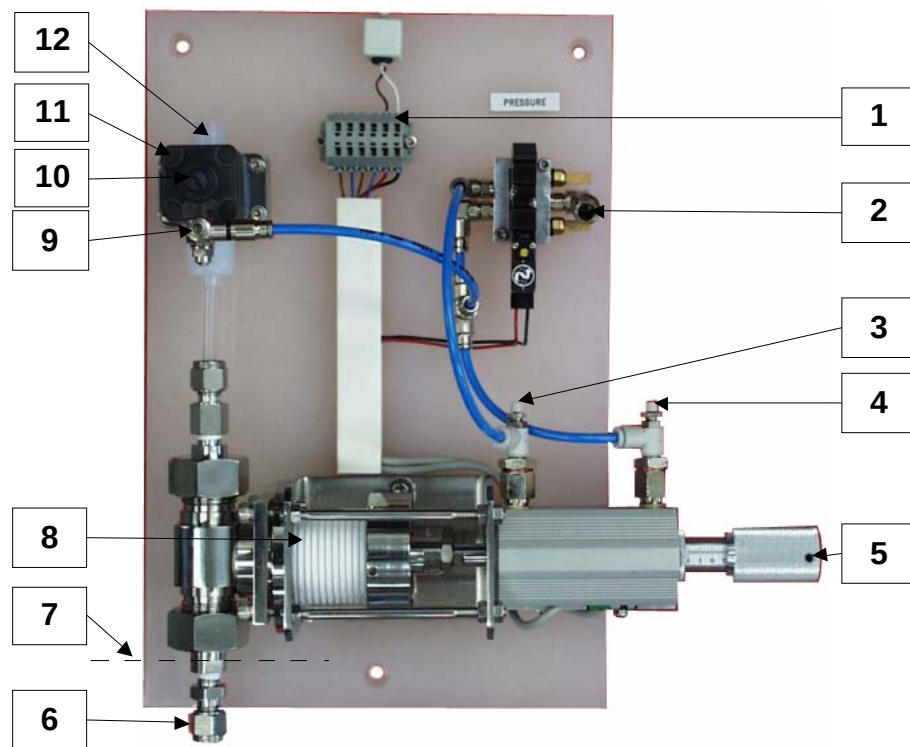


Figure 14: Media pump - mounting plate

1. Connection
2. Compressed air - inlet
3. Stroke velocity - pump
4. Stroke velocity - suck
5. Dispense volume
6. Medium inlet (from resist bottle)
7. Maximum mounting height
8. Bellows
9. Suck back velocity
10. Suck back volume
11. Suck back valve
12. To the nozzle

11.6.6 Dimensions



Look for the dimensions in the added drawings.

11.7 Media Pump – SAWATEC (Option)

For more information about the SAWATEC pump look at the OEM manual, added to these operating instructions.

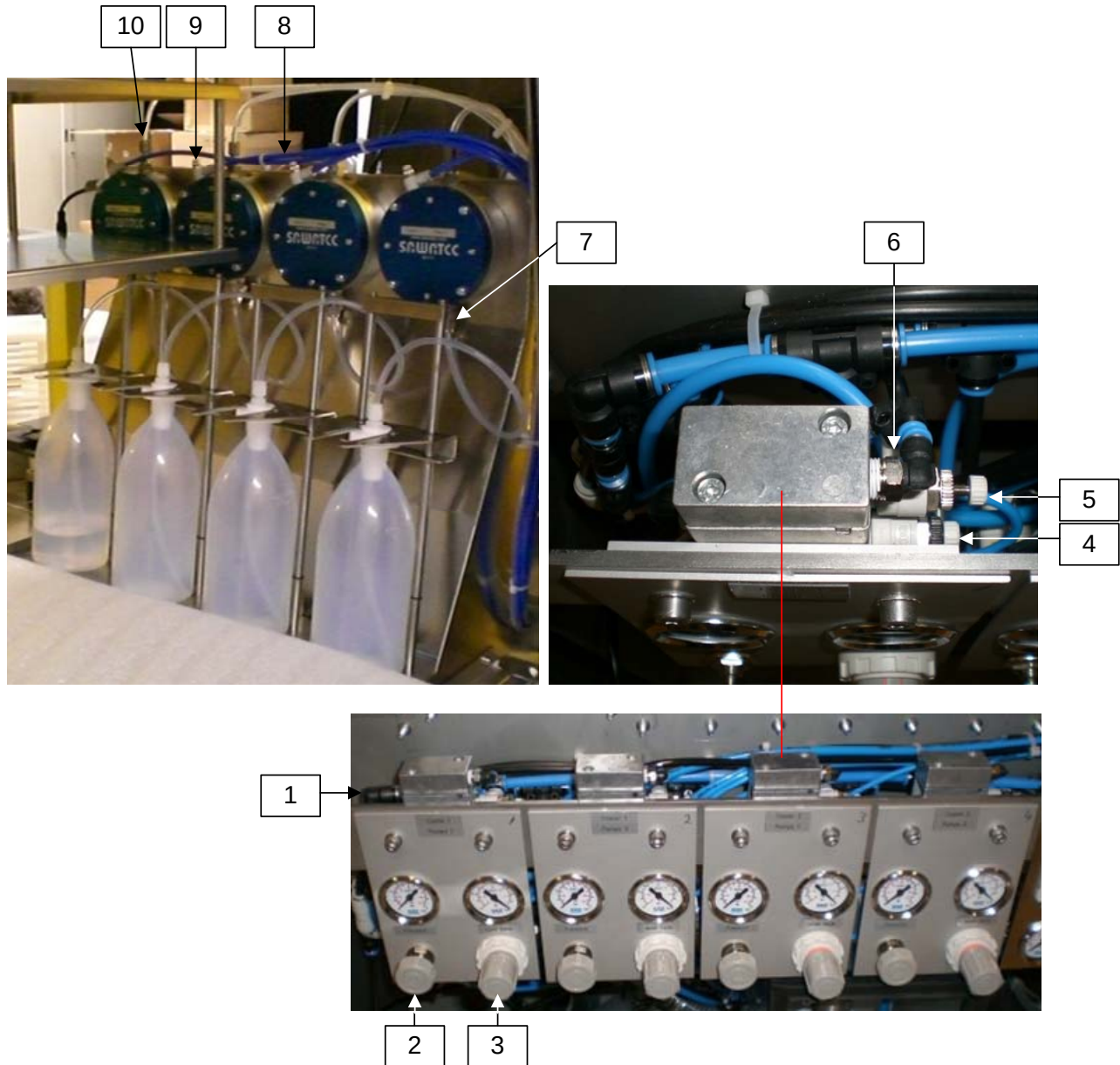


Figure 15: Media pump, Sawatec

1. Trigger nitrogen and vacuum
2. Pressure control and indication, nitrogen
3. Pressure control and indication, vacuum
4. Throttle for nitrogen
5. Throttle for vacuum
6. Control pressure for switch valve
7. Media inlet
8. Nitrogen / vacuum inlet
9. Throttle for dispense
10. Media outlet

11.7.1 Adjustments for Filling

-  Set the pressure 4bar.
-  Set the vacuum full -0,8bar
-  Open the throttle (9) at the pump completely.
-  Open the vacuum throttle (5) completely.
-  Open the nitrogen throttle (4) completely.

11.7.2 Basic Settings

-  Pressure: 1,2bar – 1,3bar
-  Vacuum: -0,3bar
-  Throttle for vacuum (5): completely open
-  Throttle at pump (9): from the open state 7 rotations backwards
-  Throttle for nitrogen (4): from the open state 8 rotations backwards

11.8 Edge Bead Remove (Option)

11.8.1 Components



Figure 16: Edge Bead Remove

1. Solvent nozzle
2. Exhaust
3. Solvent hose connection
4. Regulator of exhaust
5. Regulator of solvent
6. Flow meter of solvent

11.8.2 Media Connection Plate - Front

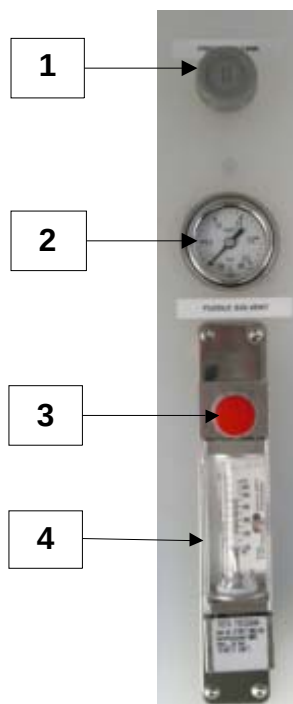


Figure 17: Edge Bead Remove - media connection plate, front

1. Regulator of pressure via <Pressure Tank>
2. Pressure indication (option)
3. Regulator of solvent <EBR>
4. Flow meter <EBR>

11.8.3 Media Connection Plate - Reverse

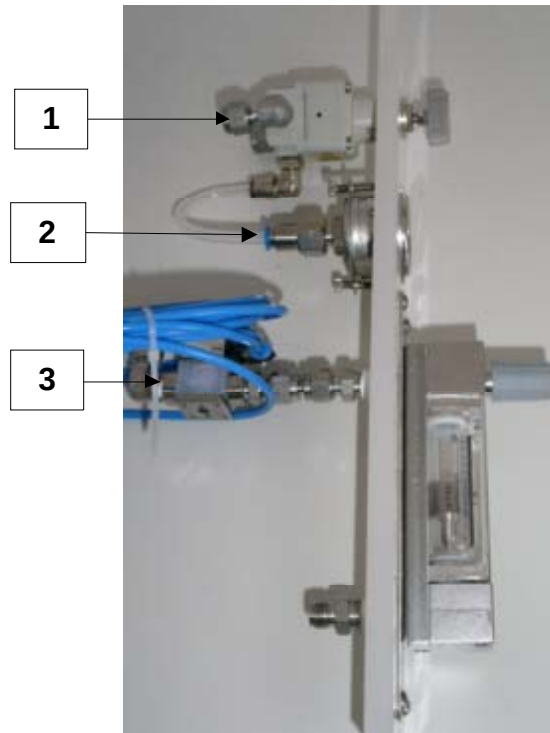


Figure 18: Edge Bead Remove - media connection plate, reverse

1. Pressure regulator
2. Pressure indication (option)
3. Nitrogen outlet

11.8.4 Initial Start-Up



Activate the edge bead remove in the SERVICE MODE. No droplet should be built up at the end of the solvent nozzle.



Set pressure on the corresponding solvent tank.



Close the flow meter.



Close the exhaust.



Set the necessary pressure
standard value: 1.5 bar.

11.9 High Pressure Unit (Option)

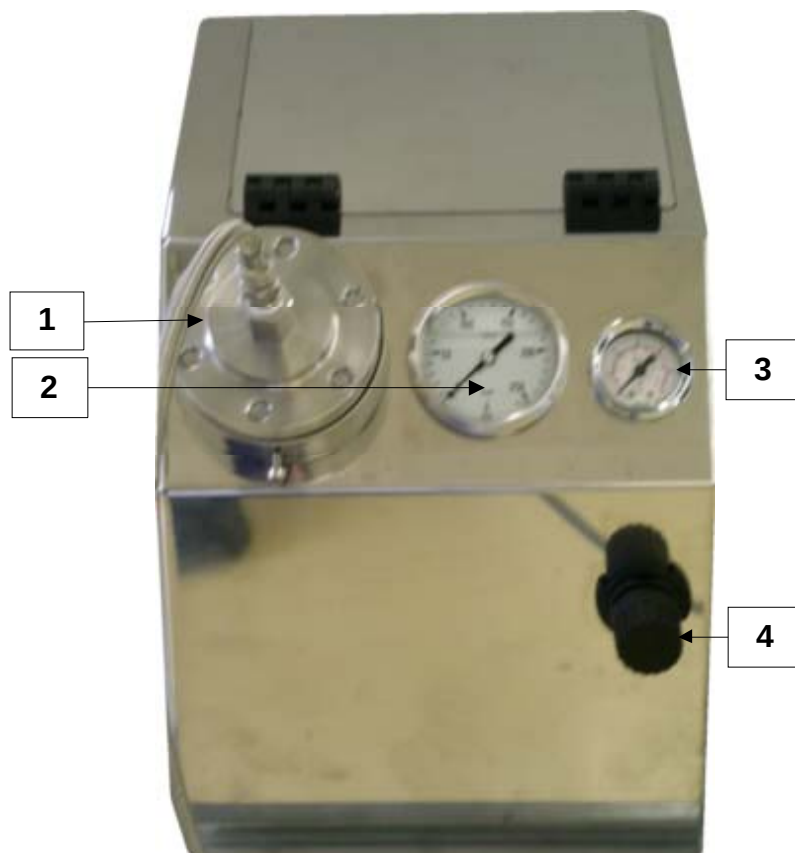


Figure 19: High Pressure Unit

1. Micro filter
2. Indication of the medium pressure (water)
3. Indication of the actuating pressure for the pump
4. Adjustment of the actuating pressure

11.9.1 Connecting the High Pressure Unit



Figure 20: High Pressure Unit, connection

1. Electrical connection

11.9.2 Function



DANGER!

Never handle below a high-pressure nozzle because high pressure can cause injuries to your body.



Figure 21: High Pressure Unit, outside



Figure 22: High Pressure Unit, inside

11.9.3 Preparations



The High Pressure Unit operates only with DI water.



The water pressure at the DI water connection (bulkhead stuffing box at the cabinet of the high-pressure unit) should run 2,5 - 4 bar.



Never operate the pump without DI water.



The air pressure at the compressed air connection (push-in-fitting at the cabinet of the high-pressure unit) should run 5 - 8 bar.
Exceeding or remaining under these limits can cause a malfunction of the pump.



A filter membrane must be placed in the filter box of the High Pressure Unit.



Check also the correct fitting of the screws at the filter box.



If no filter membrane is in the filter box place a membrane according to the operating instructions of the high pressure filter and close the cabinet.



After switching on the High Pressure Unit check also the actuating pressure for the high-pressure valve (at the manometer for compressed air), and the water pressure (at the manometer for DI water).



Increasing the pressure at the compressed air inlet leads to an increase of the water pressure at the outlet of high-pressure unit and the nozzle outlet.

11.9.4 Setting the High Pressure Before or During Operation

i Increasing the pressure input leads to an increase of the pressure output at the high pressure nozzle outlet.

i Settings overview:
5 bar pressure input leads to ca. 180 bar water pressure,
7 bar pressure input leads to ca. 265 bar water pressure,
8,5 bar pressure input leads to the maximal water pressure of 310 bar.

The described values are determined in tests by a pump manufacturer. They are just useable as orientation as they depend on the boring diameter of the high-pressure nozzle.

11.9.5 Changing the Filter



Remove the filter box out of the filter holder.



Open the screws at the filter cabinet.



Hold the cabinet vertically or fix it vertically to the attachment so that you can remove the lid of the cabinet upwards (the screw heads are topside).



Remove the metal sieve that is placed in the low part of the cabinet. Under the sieve is the filter membrane to be replaced.



You needn't wet the new filter membrane.



Re-put the sieve and close the cabinet.



All screws should be fixed.



The filter is now operational.

11.10 Megasonic Unit (Option)



DANGER!



Never handle below a high-pressure nozzle because high pressure can cause injuries to your body.



Figure 23: Megasonic Unit

i

The transducer in the Megasonic puddle produces a Megasonic wave, that gets transmitted on the substrate surface via a flowing medium, e.g. DI water. At this the Megasonic power of approx. 60W is concentrated on a dot of 2 – 4 mm.

i

This Megasonic system offers a contactfree cleaning process with medium always free of particles.

12 Cleaning

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12.2 Cleaning the Process Bowl	3



The OPTImus doesn't need any special maintenance, except occasional cleaning. Cleaning intervals depend on usage intensity and the type of applied media.



Do not use scratching or scouring cleaning agents or tools.



DANGER!

Prior to all maintenance and cleaning work inside the unit, the unit and additional modules have to be disconnected from all external and media supplies.

Pay attention to all additional safety instructions in chapter Safety Instructions



DANGER!

Never use solvents that could destruct parts of the system



12.1 Cleaning in General



Clean the chuck, the process chamber and the process chamber (interior) with DI water or a solvent which is suitable for the process chemical.



Clean the stainless steel surfaces, the armatures and the cabinet only with alcohol or equal solvents.



Flash the hoses with suitable solvent. The solvent depends on the processed media.

12.2 Cleaning the Process Bowl

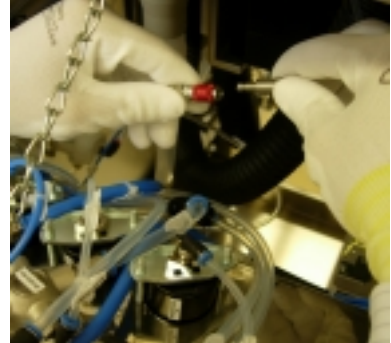
1. Remove the chuck



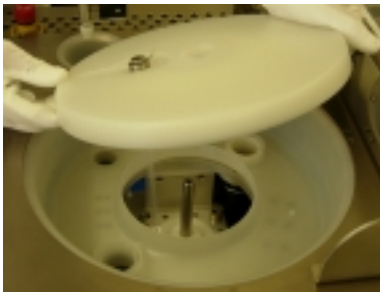
2. Remove the splash ring



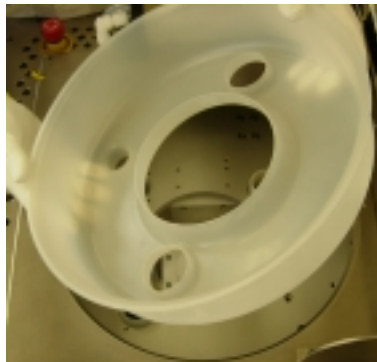
3. Disconnect the BSR pipe



4. Remove the inlay



5. Remove the bowl



-  Remove the chuck for cleaning the process bowl.
-  Assure that the media arm is outside the process bowl.
-  Draw the chuck vertically upwards out of the motor shaft.
-  Remove the cover ring and the splash ring.
-  Remove the process bowl slowly vertically upwards.
-  Clean all components with a suitable medium.
-  Reassemble the process bowl with its cover ring and splash ring.
-  Place the process bowl between the pins on the base plate.
-  Assure that all components are surface-mounted.
-  Replace the chuck on the motor shaft.

13 Maintenance

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13.2 Pressure Tank (Option) – Changing / Refilling Medium	3
13.3 Emptying the Media Waste Bottle (Option).....	4
13.4 Emptying the Inspection Glass for Vacuum System	4
13.5 Daily Maintenance.....	5
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13.1 Maintenance Guidelines



DANGER!

Cleaning the chuck!

Clean the installed chuck with a suitable detergent, otherwise unsuitable solvent could destroy the motor.



DANGER!

By applying components of other manufacturers additional and unknown hazards may arise. No liability will be taken in this case.

Use only genuine parts provided by the manufacturer of the system.

Genuine parts are constructed conforming to applicable safety regulations.



DANGER!

Moving parts may cause squeezing or cutting of extremities.

Do not touch any moving parts of the system while in operation.



DANGER!

Operation of the system by several persons may cause hazards based on misconduct or missing mutual understanding.

Operation of the system by two or more persons is not allowed.

If in case of service or maintenance tasks the system has to be operated by two persons, these have to conduct a secure joint procedure.

NOTE:

We recommend to demount chucks from shaft minimum twice per week to prevent galling.

We recommend not to demount basic chuck from ground chuck.

These parts are balanced in mounted condition.

Demounting can cause a deterioration of rotation.

Please treat the O-rings between motor shaft and chuck with clean room grease.

13.2 Pressure Tank (Option) – Changing / Refilling Medium



DANGER!

When handling pressure tanks and their contents observe your internal and legal instructions as well as the separately added operating instructions of the pressure tank.



DANGER!

Overpressure!
The pressure tank is under overpressure. Never open the pressure tank when there is overpressure.

Pressure Tank Metal Version



Turn the inlet / outlet valve to <exhaust>.



Nitrogen escapes until the pressure tank is depressurized.



Disconnect the media and Nitrogen pipes (if necessary).



Open the cover of the pressure tank.



Fill the medium in the tank.



Close the cover of the pressure tank.



Turn the inlet / outlet valve to <N2 tank>.



DANGER!

When the cover isn't closed correctly media can escape.
Pay attention to a correct closing of the cover.



Connect the media and Nitrogen pipes.



Turn the ball valve to <exhaust>.



Turn the device on.

13.3 Emptying the Media Waste Bottle (Option)

- i** The media waste bottle must be emptied when it's filled up to 9/10.
-  Turn the media waste bottle out (right-hand thread).
-  Empty the media waste in a suitable special waste container.
-  Turn the media waste bottle again on the connection pipe.

13.4 Emptying the Inspection Glass for Vacuum System

- i** Whenever you empty the media waste bottle you also clean the media inspection glass required. The glass is below the motor of the spin chuck.
-  Unlock the screw under the vacuum inspection glass.
-  Pull the fastening bow sideward.
-  Take the vacuum inspection glass out and empty its content into a suitable special waste container.
-  Clean the vacuum inspection glass.
-  Press the vacuum inspection glass back into the nut. Make sure that the seal is placed correctly.
-  Push the fastening bow under the vacuum inspection glass and fix the screw.
-  Reconnect to vacuum supply.
-  Place a substrate on the chuck, turn the vacuum on and control the tightness around the vacuum inspection glass.

13.5 Daily Maintenance

Code: 1 = check 2 = clean 3 = adjust 4 = replace 5 = lubricate

Check Point	Designation	Code	Action	Information
	Media separator for vacuum system at the motor	1	Fill Level - emptying if necessary	
	Nozzles (coater)	1 / (2)	Checking, cleaning, predispose if necessary	

* dependent on media - the maintenance rate depend on media and the system's operating life.

13.6 Weekly Maintenance

Code: 1 = check 2 = clean 3 = adjust 4 = replace 5 = lubricate

Check Point	Designation	Code	Action	Information
	Process bowl, splash ring, chuck and covered chuck lid on the coater	2	Cleaning with suitable solvent	Note media resistance of components.
	Drip pan	1 / (2)	Checking, cleaning with a suitable solvent if necessary.	Note media resistance of components.
	Nozzles (coater)	1 / (2)	Checking, cleaning, predispose if necessary	
	Media pump	1	Stability and consistency of tube connections	
	Media filter *	4	Replacing media filter - <i>dependent on media</i>	
	Piping	1	Stability and tightness	
	Sensor connection	1 / (3)	Plug connections - retightening if necessary	
	Front panel (option)	2	Makralon - cleaning never with acetone	
	Glass panel (option)	2	Checking and cleaning with suitable solvent	

* dependent on media - the maintenance rate depend on media and the system's operating life.

13.7 Monthly Maintenance

Code: 1 = check 2 = clean 3 = adjust 4 = replace 5 = lubricate

Check Point	Designation	Code	Action	Information
	Media cabinet	2	cleaning with suitable solvent	
	Arm drive belt (option)	1 / (3)	Checking belt tension - re-clamping if necessary	Belt should not be twistable more than 45°
	Piping	1	Checking tube connectors, screwing fittings and retorque if necessary	
	Media filter *	4	Replacing media filter - <i>dependent on media</i>	

* dependent on media - the maintenance rate depend on media and the system's operating life.

i

This maintenance rate applies for 1-schift operation.

14 Disposal

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14.1 Disposal of the System



At the end of its life span the system has to be disassembled and disposed according to applicable laws and regulations.



Upon disposal, consider the following:

- Separate materials.
- Forward metals to a recycling process.
- Forward plastic parts to a recycling process.
- Forward electrical/electronic parts to a special waste disposal process.

Recommendation: Get in contact with a waste disposal professional.

14.2 Disposal of Chemicals



Chemicals used in processes or cleaning have to be disposed according to applicable laws and regulations.

15 Technical Data

See following Facility Requirements List.

Facility Requirements List



Automation, Process and Inspection Technology

Product	Customer	Date	Project Manager	Project No.	Version	Response
OPTIspin SB20,	EPFL STI CMI	15.09.2010	Werner Sinzinger	KA1249	1.0	Werner Sinzinger

Requirement	Description	Customer provides	ATMsse provides
Width x Depth x Height [mm] / Weight (approx.)	<i>Spinner Module:</i> 465 x 450x 567mm* / 20 kg * with closed cover <i>19" Controller:</i> 520 x 376x 133mm / 10kg <i>Handheld Touch Display:</i> 158 x 107 x 60mm / 0,5kg	-	See drawing 76497_2 OPTIspin SB20
	40,5mm Ø		Pressure Manometer
Noise level of the unit	< 70db(A)	-	-
Waste Drain	5ltr. Waste tank		Tube 17,8mm Ø, length 60cm, 5ltr. Waste tank with high level sensor
Power requirements	System power supply	Voltage: 230VAC / 1 phase + N + PE / 50Hz Fuse current rating: 1 x 16 Amps Type of plug: 16 Amps female Schuko 2pin	16 Amps male Schuko 2pin plug
Power consumption	peek approx. 1,8 kW	-	-
Compressed air	Clean dry air (CDA) for pneumatics	Tube outside 8mm, inside 6mm Pressure: 8 ± 2 bar Quality: 5 µm filtered, dry oil free	Push-In connector for tube (outside 8 mm, inside 6mm)
Vacuum	For chuck vacuum	Tube outside 8mm, inside 6mm Vacuum: -08 +/- 0,1bar	Push-In connector for tube (outside 8 mm, inside 6mm)
Exhaust	Exhaust process bowl	Flexible chemical resistant tube, (inner Ø 110mm), max. flow rate: 40m3/h	Connection piece with manual throttle valve (outer Ø 110mm, length 150mm) (see drawing 60929, 60489,)
Length of tubes and cables	Between modul, relectronic rack and display		Standard 3m (for other length, please clarify with ATMsse)

16 Spare Parts List

Ressource	Short Text
33674	Sensor capa. SK1 M30/2-30mm/PNP/S SK1-30-
34888	Gage glass and seal
35882	CPU 1xCAN 16DE/16DEA/ PU 104-R
36097	Pressure controller 0,5/10bar G1/8"l Ms vern.
37792	AC Servo motor F506C D.12x105mm/Sleeve shaft
38928	Control block populated complete
39099	5/2-Way Impulse valve DN2,5 M5
39728	Corrugated tube 13,8x17,8 PFA/Teflon(f.3/4")
39801	Vacuum monitor 0,2...3MBAR
41762	Flat gasket ADm.37/IDm28/H=2,0 EPDM
42041	Slide-on receptacle with lace 3m(RD, BK)
42042	5/2-Way valve ID4 24VDC(Cassette type)
43148	Brake resistance 120Ohm/300Watt
60107	Seperator Lid
60111	Control terminal VT155W
60159	Bottle cap waste canister
60480	Splash ring OPTIspin SB20
62019	Waste canister 5l HDPE white
62056	Check valve Push-In ID8
62205	Manometer 0...8bar M5l panel mounting
68100	Manometer -1...0bar M5l panel mounting
71241	Syringe strainer filter PTFE 0,45µm D=4mm

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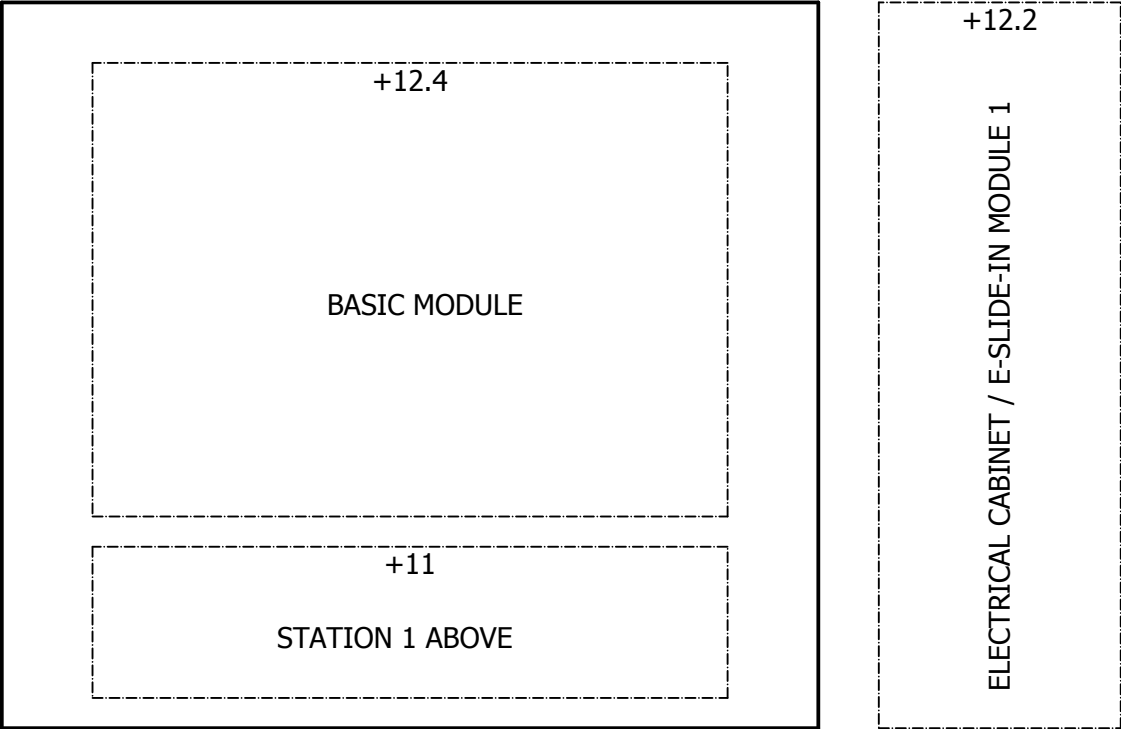
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Structure identifier overview

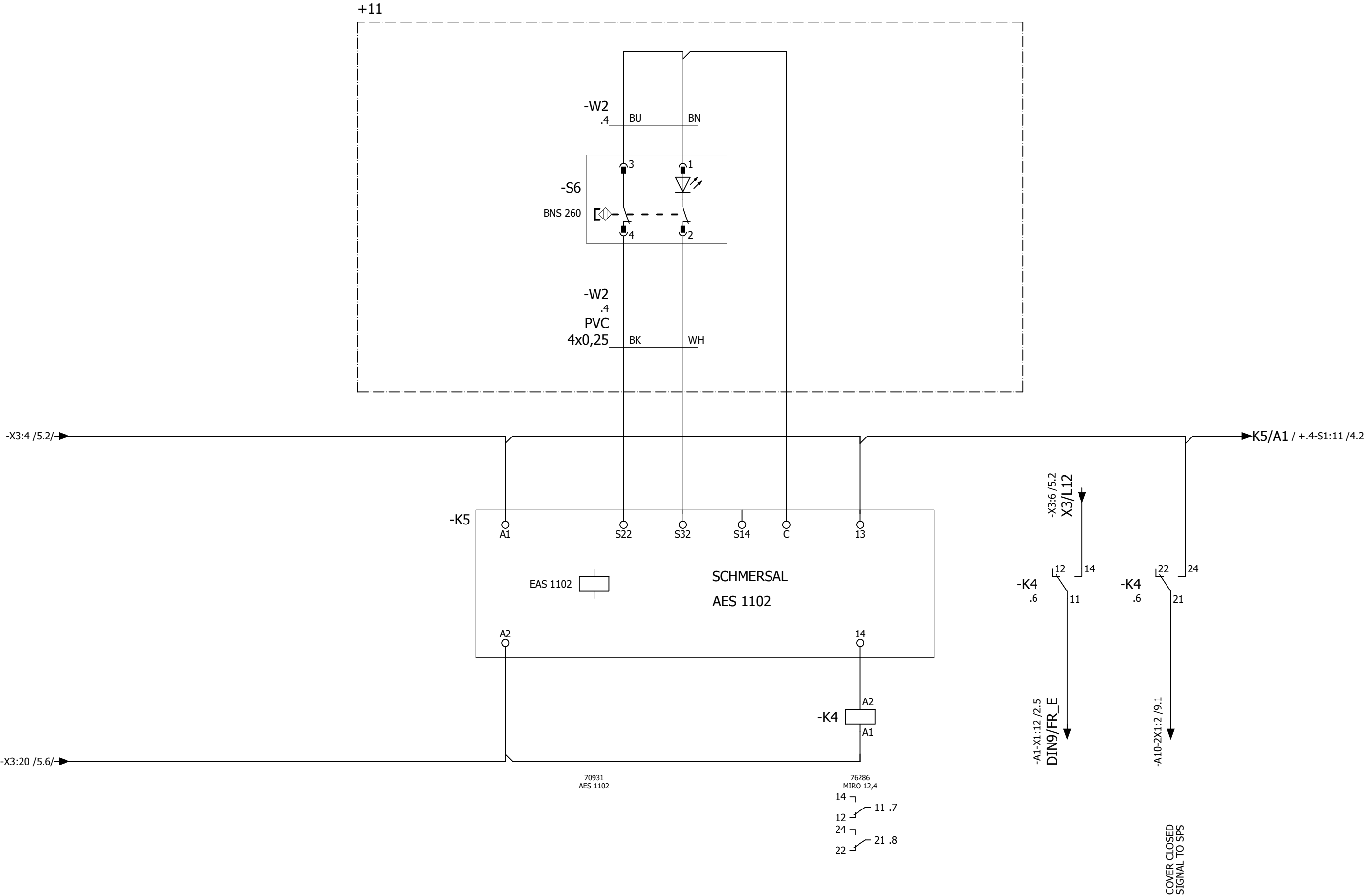
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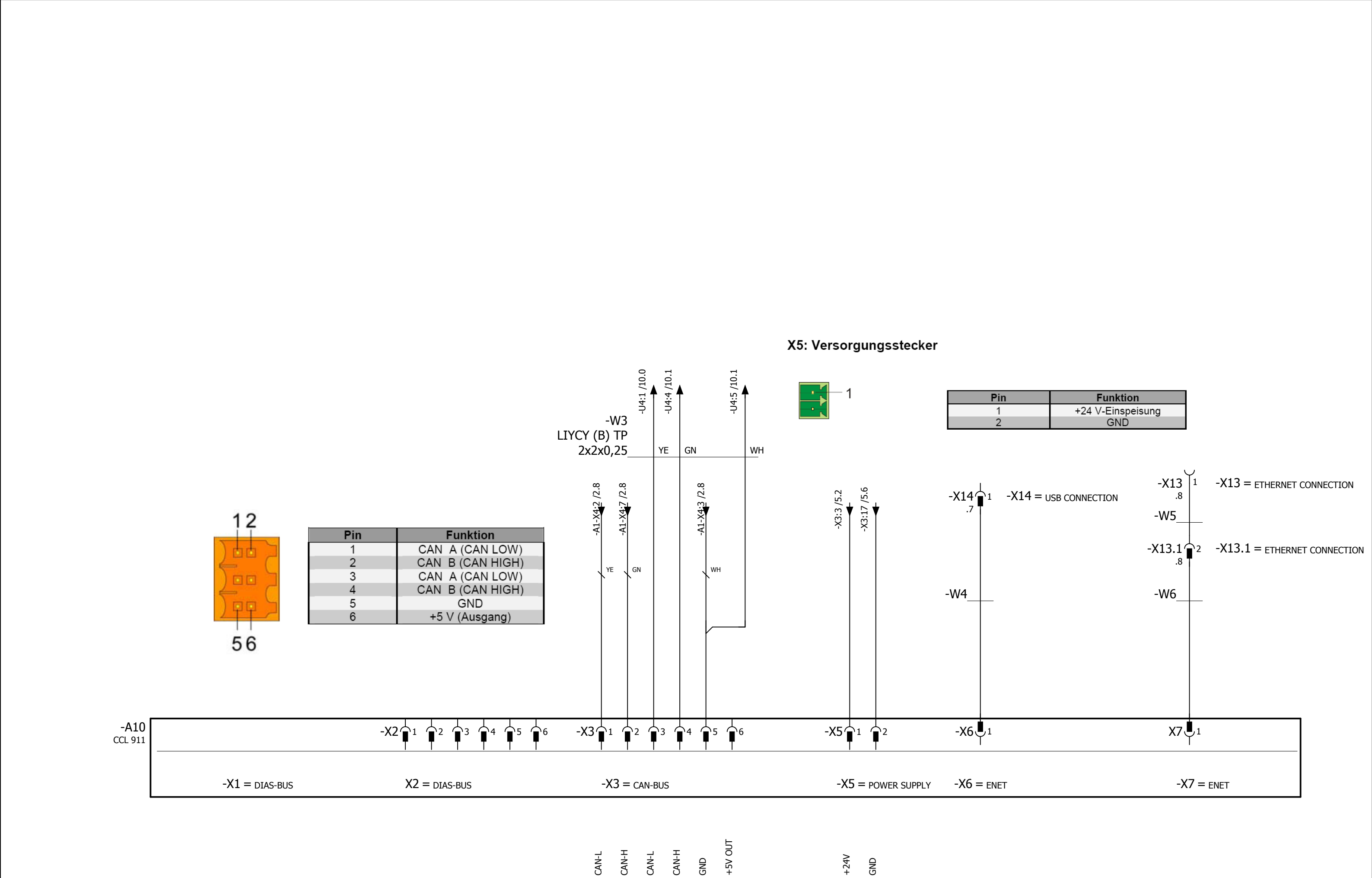
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+12.4	Einbauort	GRUNDMODUL / MOTORHALTEPLATTE
+250	Einbauort	Kartuschendosiergeräte
+11	Einbauort	STATION 1 OBEN
+00	Einbauort	OUTSIDE OF THE INSTALLATION
+PART_STL	Einbauort	
+PDF	Einbauort	
+TERM_KLM	Einbauort	
+CBL_KBL	Einbauort	
+12	Einbauort	
+260	Einbauort	

TOP VIEW OPTIcoat SB20+

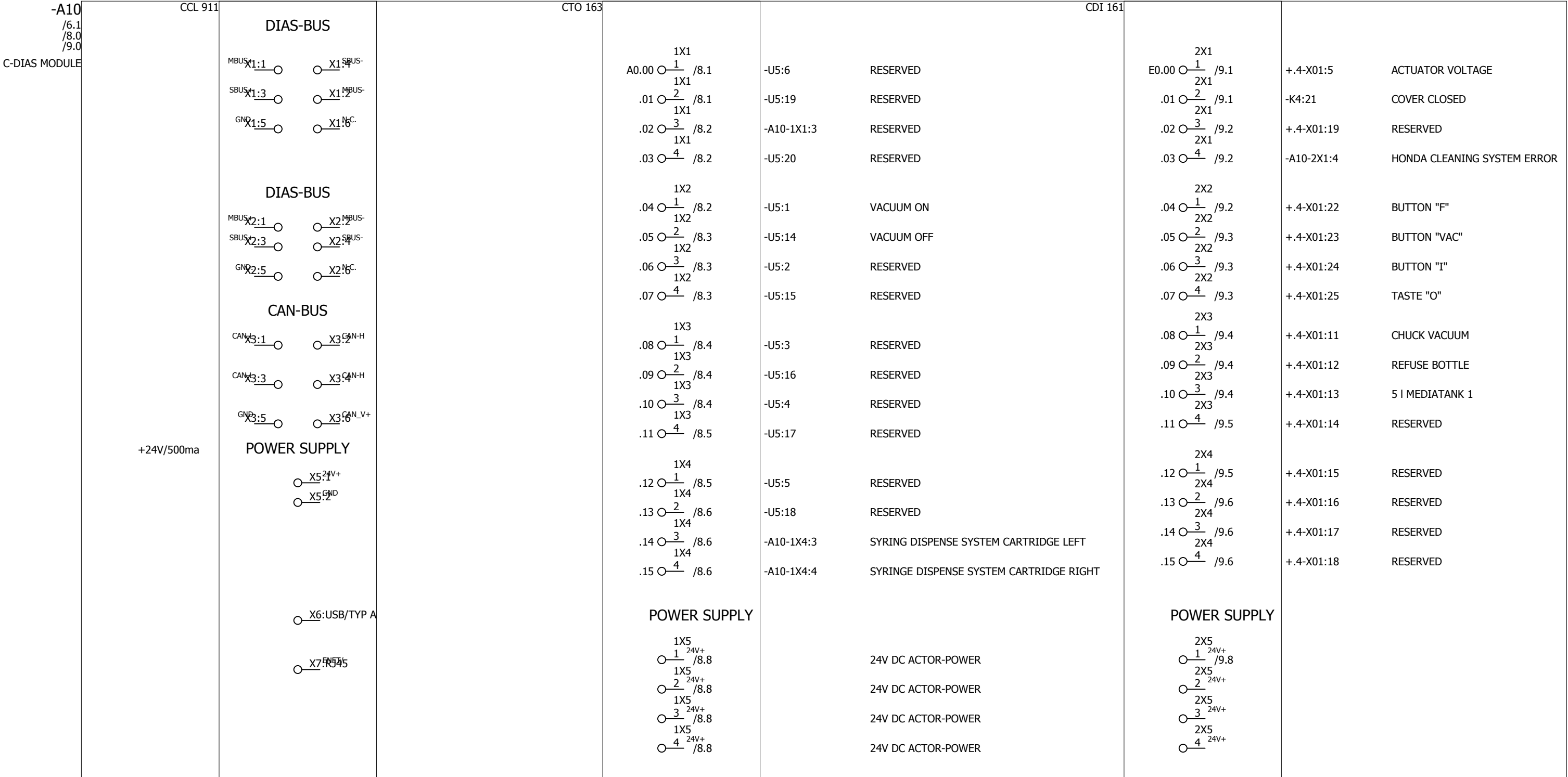


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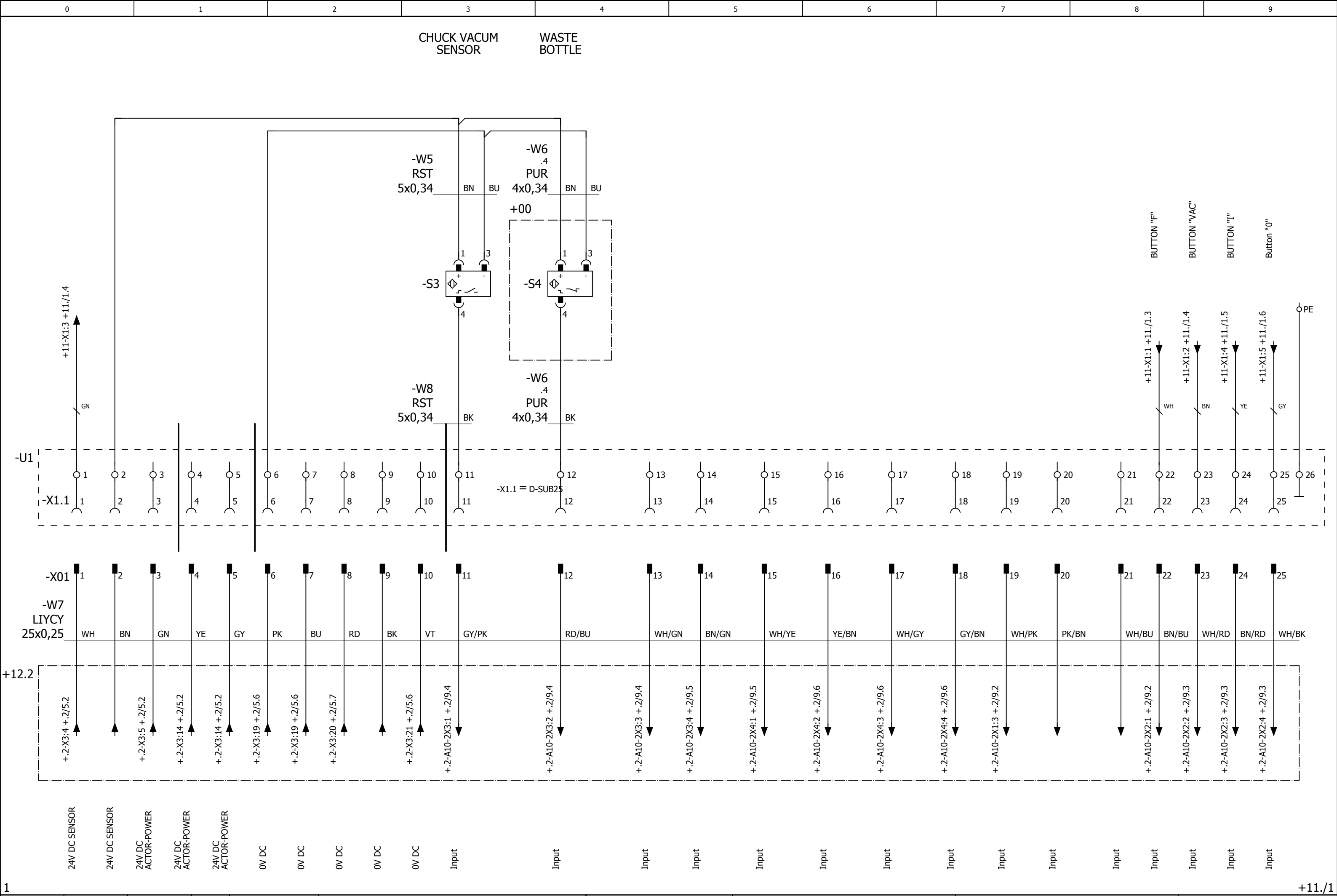


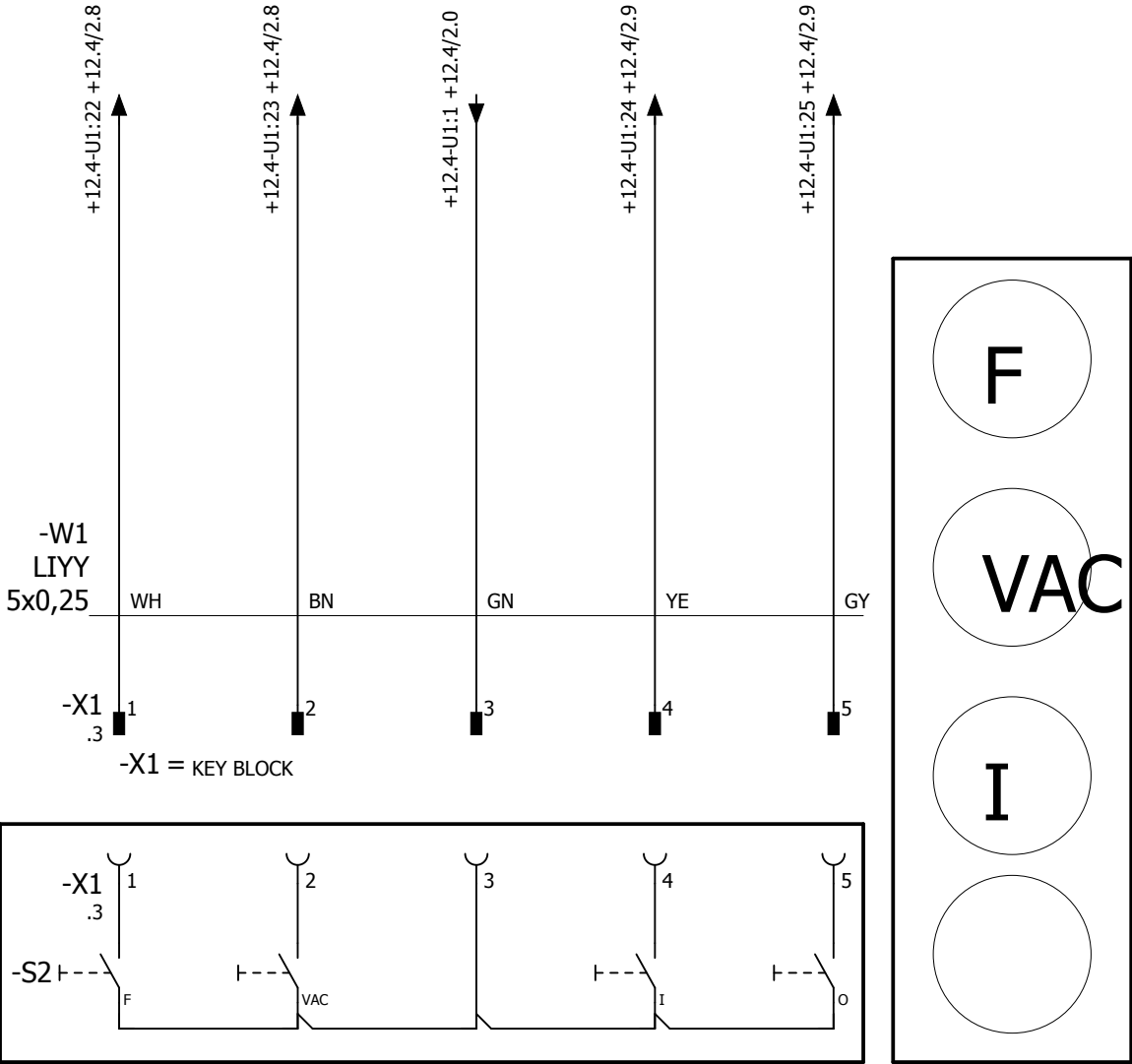
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Terminal-strip overview

F14_002

Terminal strip	Function text	Terminals					Terminal diagram page
		first	last	Total PE	Total N	Total number	
+		PE	PE	1	0	1	
+12.2-X0		PE	PE	2	0	2	=REPORT+TERM_KLM/3
+12.2-X1		1	PE	3	0	5	=REPORT+TERM_KLM/4
+12.2-X3	DISTRIBUTION 24V DC	1	23	0	0	23	=REPORT+TERM_KLM/5

+PART_STL/40

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									Pg 23

Terminal diagram

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Cable overview

F10_002

Cable type	Cable description	Device tag	Conductors	Cross-section	Length	Remark
H05VV-F		+12.2-W1	3x	1,0	2,5	
LIYCY (B) TP		+12.2-W2	2x2	0,25		
		+12.2-W3	2x2	0,25		CAN-L
		+12.2-W4				GND
		+12.2-W5				=
		+12.2-W6				=
LIYY		+12.2-W7	4	0,25		FR_E
		+12.2-W8	4	0,5		
LIYCY		+12.2-W9	25x	0,25		VACUUM ON
TKD-MOT		+12.4-W1	4	0,75		
TKD-RES		+12.4-W2	4x2	0,25		/SIN-
RST		+12.4-W5	5	0,34		Input
PUR		+12.4-W6	4	0,34		Input
LIYCY		+12.4-W7	25x	0,25		24V DC SENSOR
RST		+12.4-W8	5	0,34		Input
LIYY		+11-W1	5	0,25		
		+11-W2				
LIYD11Y		+11-W5	4	0,14		
LIYCY (B) TP		+11-W5.1	2x2	0,25		

+TERM_KLM/5

[illegible]



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Customer Street ZIP code / City Phone. Fax E-mail	Ecole Polytechnique Fédérale BM 1.125, Station 17 CH-1015 Lausanne	End customer Street ZIP code / City Phone. Fax E-mail
Project name Drawing number Project description Commission Responsible for project Created on Project end Edit date by (short name) Number of pages	spinSB20 20100930 (KA1249-B) 76549 SB20 KA1249-B / 82103 E. Ferch 2010 30.09.2010 23	Place of installation Manufacturer (company) Make Part feature Input lead Power supply Control voltage Type Environmental consideration Regulation Degree of protection Enclosures

			Date	30.09.2010	KA1249-B / 82103		COVER PAGE		=		
			Ed. by	eferch					+		
			Appr		SB20						
Modification	Date	Name	Original		Replacement for	Replaced by				76549	Page 1 Pg 23

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F06_003

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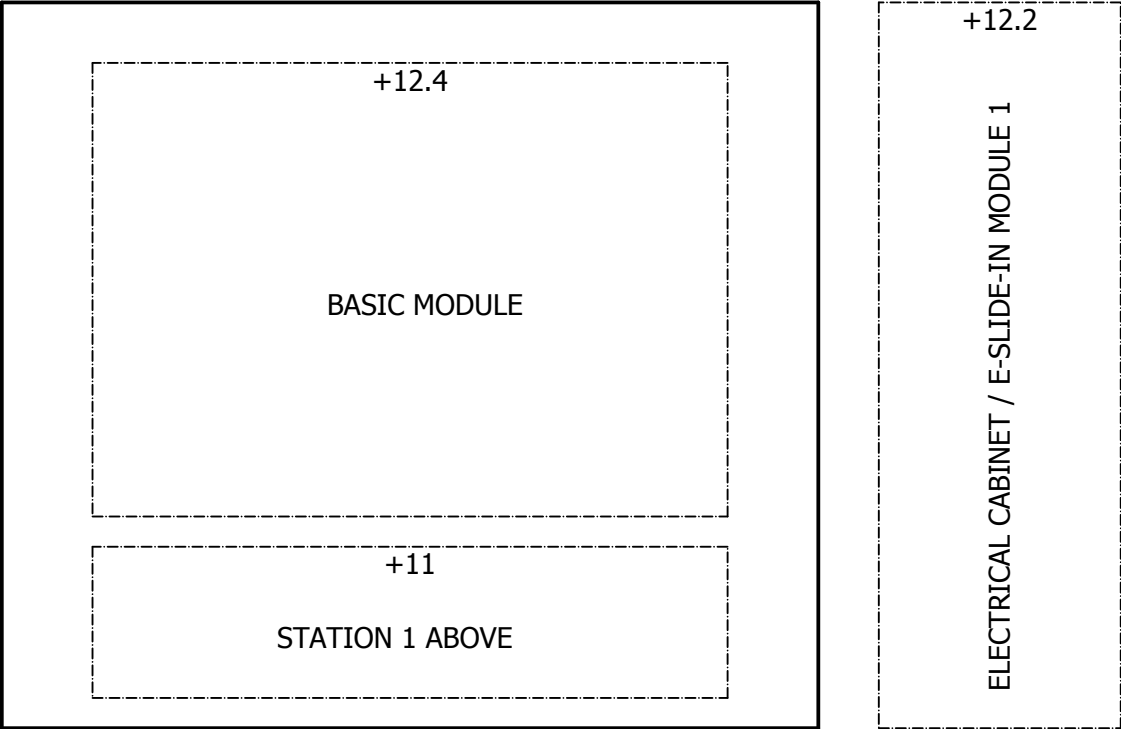
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			Appr					SB20								
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												Pg	23			

Structure identifier overview

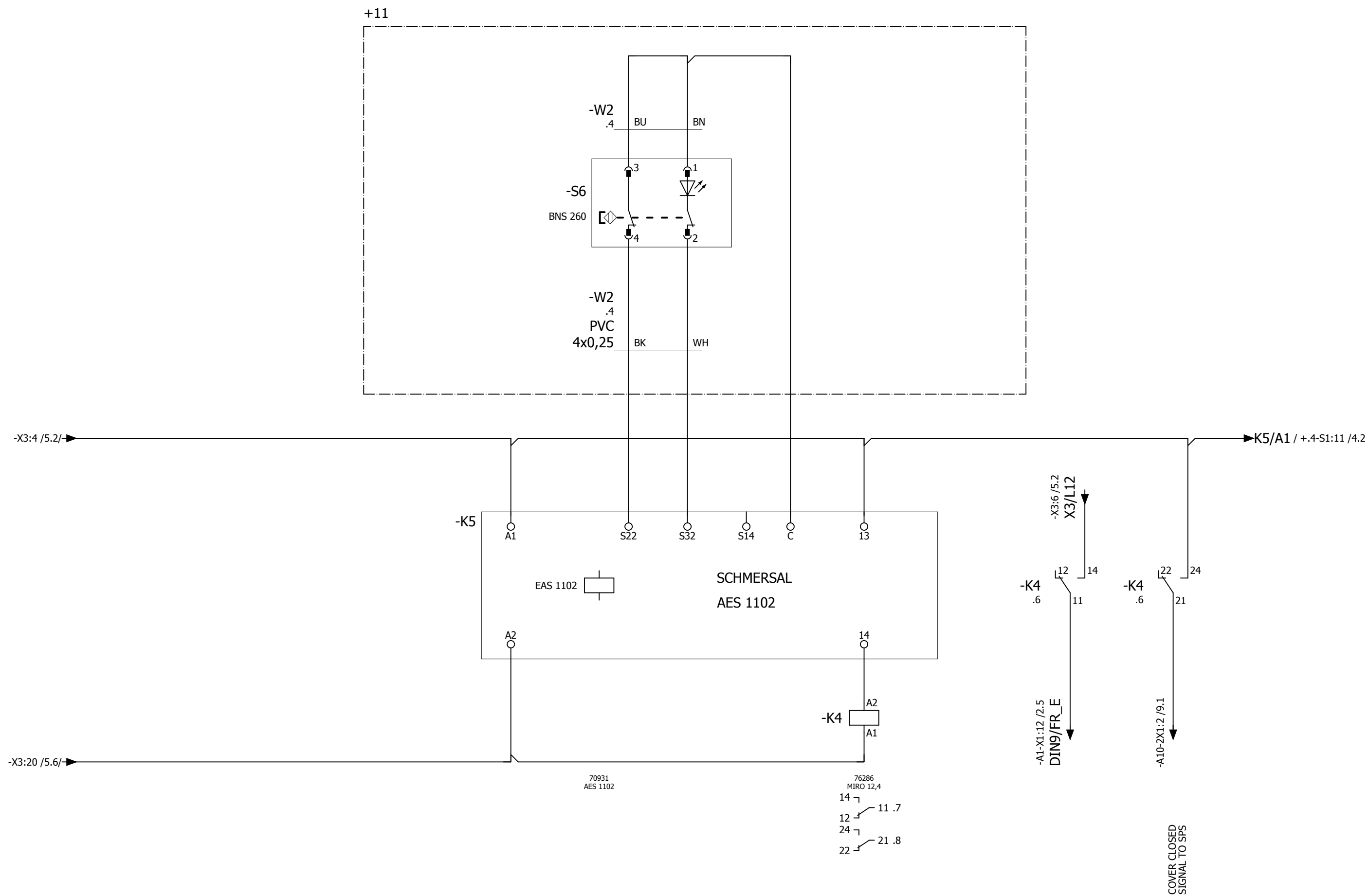
F24_002

Full designation	Labeling	Structure description
=ANHANG	Anlage	
=REPORT	Anlage	
+12.2	Einbauort	SCHALTSCHRANK / E-EINSCHUB 1
+12.4	Einbauort	GRUNDMODUL / MOTORHALTEPLATTE
+250	Einbauort	Kartuschendosiergeräte
+11	Einbauort	STATION 1 OBEN
+00	Einbauort	OUTSIDE OF THE INSTALLATION
+PART_STL	Einbauort	
+PDF	Einbauort	
+TERM_KLM	Einbauort	
+CBL_KBL	Einbauort	
+12	Einbauort	
+260	Einbauort	

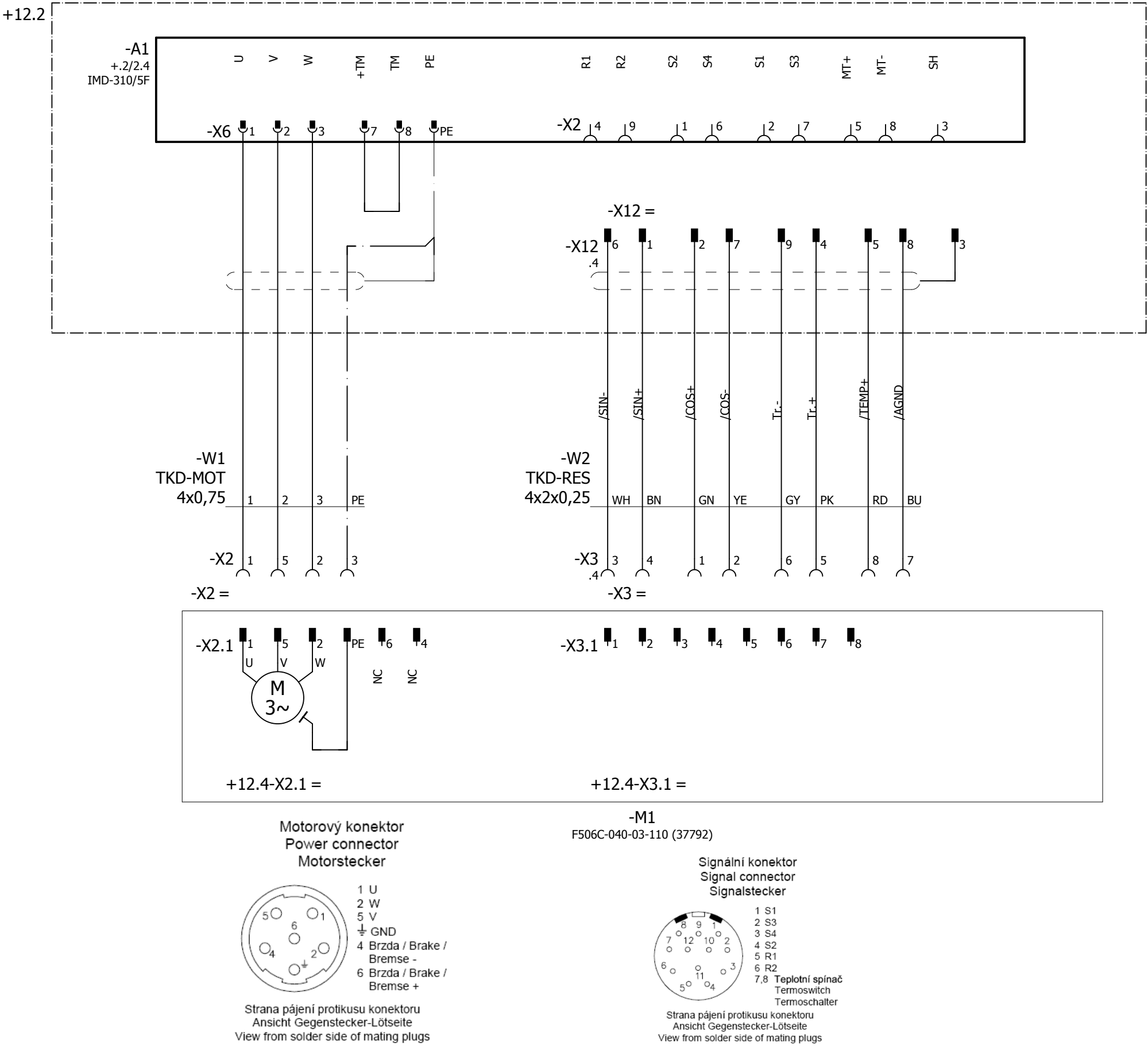
TOP VIEW OPTIcoat SB20+



COVER 60481



			Date	30.09.2010	KA1249-B / 82103			INTERLOCK				=
			Ed. by	eferch								+ 12.2
			Appr							SB20		
Modification	Date	Name	Original		Replacement for	Replaced by			76549	Page	3	
									Pg	23		



			Date	30.09.2010	KA1249-B / 82103		SENSORBOX			=		
			Ed. by	eferch						+ 12.4		
			Appr					SB20				
Modification	Date	Name	Original		Replacement for	Replaced by		76549		Page	2	
										Pg	23	

Parts list

F01_001

Device tag	Quantity	Designation	Typnummer	Supplier	Part number
+12.2-A1	1	SERVO DRIVE	IMD310/5F	FRITZ	38142
+12.2-A1	1	PLUG	FRONT-MSTB 2,5/ 9-ST-5,08	GFI	51142
+12.2-A10	1	MODULE PLC C-DIAS	CDIAS3.1	SSE	71073
+12.2-K1	1		PNOZ X7	PILZ	75046
+12.2-K2	1		MIRO 12,4	MURR	76286
+12.2-K3	1		MIRO 12,4	MURR	76286
+12.2-K4	1		MIRO 12,4	MURR	76286
+12.2-K5	1	PROTECTIVE DOOR GUARD	AES 1102	SCHMER	70931
+12.2-M1	1	FUN	80x80mm	SCHEF	42771
+12.2-M1	1	FILTER UNIT	PMFA80T	RS	38301
+12.2-M1	1	PROTECTIVE GRID	081172	FAR	38302
+12.2-Q1	1	SWITCH	C1353VQNAC	FAR	35692
+12.2-R1	1	RESISTOR	PWR-R 300 120R/J	GHV	43148
+12.2-U2	1	MAINS FILTER-PLUG	KFA 4301.5005	SCHURT	35421
+12.2-U2	2	MINIATURE FUSE	10,0AT 5x20mm	BUERKLE	35696
+12.2-U3	1	POWER SUPPLY UNIT	MPS5-230/24	BUERKLE	43281
+12.2-U4	1	INTERFACE	FLKM-D 9 SUB/B	RED	63017
+12.2-U5	1	INTERFACE	FLKM-D25 SUB/B	PHOE	63019
+12.2-W1	1	COLD APPLIANCES-CONNECTING LINE	1450/SW 2,5m	FAR	67460
+12.2-W3	1	CABLE	LIYCY (B) TP 2x2x0,25		35976
+12.2-W4	1		1487587-1	RS	74344
+12.2-W5	1	LAN CABLE	2xRJ45/3,0m	GRABE	44354
+12.2-W6	1	LAN CABLE	2xRJ45/0,5m	GRABE	63063
+12.2-W9	1	CONNECTING CABLE	CABLE-D25SUB/B/S/300/KONFEK/S	PHOE	63025
+12.2-X1	1;1	FUSE TERMINAL	UK 5-HESILED 24	PHOE	51149
+12.2-X1	1	MINIATURE FUSE	2,0AMT 5x20mm	BUERKLE	35688
+12.2-X1	1	MINIATURE FUSE	4,0AMT 5x20mm	BUERKLE	63068
+12.2-X13	1	SOCKET INSERT	VS-08-BU-RJ45-6-MOD/BU	PHOE	46999
+12.2-X13	1	DIRECTLY ATTACHED SHELL	VS-08-A-RJ45/MOD-1-IP67	PHOE	47000
+12.2-X13.1	1	SOCKET INSERT	VS-08-BU-RJ45-6-MOD/BU	PHOE	46999
+12.2-X13.1	1	DIRECTLY ATTACHED SHELL	VS-08-A-RJ45/MOD-1-IP67	PHOE	47000
+12.2-X14	1		NAUSBB		74822
+12.4-M1	1	SERVO MOTOR	F506C-0B101-000H-1	FRITZ	37792
+12.4-S1	1		M22-PV/KC02/IY	BUERKLE	72782
+12.4-S3	1	PRESSURE SENSOR	SDE1-V1-G2-HQ4-C-P1-M8	FESTO	66590
+12.4-U1	1	INTERFACE	FLKM-D25 SUB/B	PHOE	63019
+12.4-W1	1	MOTOR CABLE	TKD 4G0,75 M7	FRITZ	71220
+12.4-W2	1	RESOLVER CABLE	KAWEFLEX 3340 TKD 4x2x0,25 / 5,0m	FRITZ	71236
+12.4-W2	1	SIGNAL PLUG	ASTA020FS04620035000 / 12-POL.LINKSLAUFEND	FRITZ	71099
+12.4-W6	1;1	RIGHT ANGLE SOCKET MOULDED	M12x1/PUR 4x0,34/5m	BINDER	44288
+12.4-W7	1	CONNECTING CABLE	CABLE-D25SUB/B/S/300/KONFEK/S	PHOE	63025
+11-A1	0	CONTROL TERMINAL	ETT222	SIGMAT	73087
+11-S2	1	KEY PAD	Zchg.# 7198	BOPLA	60075
+11-S6	1	SAFETY SENSOR	BNS 260-02ZG-ST-L	SCHMER	70875
+11-S6	1	BUTTON	BPS 260-1	SCHMER	69925
+11-W1	1	CABLE	UNITRONIC LIYY 5x0,25mm²	BUERKLE	35974
+11-W2	1	RIGHT ANGLE SOCKET MOULDED	M8x1/4-POL. 5m, ABGEWINKELT	BUERKLE	73911
+11-W5	1	CABLE	SPIREX LIYD11Y 4x0,14	BUERKLE	66587
+11-W5.1	1	CABLE	LIYCY (B) TP 2x2x0,25		35976
+11-X1	5	FEMALE PIN	AMPMODU 166722-1	BÜRKLIN	38158
+11-X1	1	FEMALE PIN HOUSING	AMPMODU 104257-4 5-POL	BUERKLIN	38157
+11-X1	1	PIN HOUSING	MKS1185	ZEDER	43301
+11-X2	1	CABLE PLUG	SERIE 723 - 07 POL/LÖT	BIN	37851
+11-X2	1	CABLE SOCKET	SERIE 723 - 07 POL	BIN	37852
+00-S4	1	LEVEL SENSOR	SK1-30-M30-P-NB-X-PBT-Y2	SIE	33674

$$\boxed{=+11/2}$$
$$+ \text{TERM_KLM} / 1$$

			Date	30.09.2010	KA1249-B / 82103			Parts list : 38142 - 33674				= REPORT	
			Ed. by	eferch								+ PART_STL	
			Appr						SB20				
Modification	Date	Name	Original		Replacement for	Replaced by						Pg	23

Terminal-strip overview

F14_002

Terminal strip	Function text	Terminals					Terminal diagram page
		first	last	Total PE	Total N	Total number	
+		PE	PE	1	0	1	
+12.2-X0		PE	PE	2	0	2	=REPORT+TERM_KLM/3
+12.2-X1		1	PE	3	0	5	=REPORT+TERM_KLM/4
+12.2-X3	DISTRIBUTION 24V DC	1	23	0	0	23	=REPORT+TERM_KLM/5

+PART_STL/40

3

			Date	30.09.2010	KA1249-B / 82103		Terminal-strip overview : PE - +12.2-X3			= REPORT	
			Ed. by	eferch						+ TERM_KLM	
			Appr					SB20			
Modification	Date	Name	Original		Replacement for	Replaced by			76549		Page
										Pg	23

Terminal diagram

F13_004

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F13_004

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Cable overview

F10_002

Cable type	Cable description	Device tag	Conductors	Cross-section	Length	Remark
H05VV-F		+12.2-W1	3x	1,0	2,5	
LIYCY (B) TP		+12.2-W2	2x2	0,25		
		+12.2-W3	2x2	0,25		CAN-L
		+12.2-W4				GND
		+12.2-W5				=
		+12.2-W6				=
LIYY		+12.2-W7	4	0,25		FR_E
		+12.2-W8	4	0,5		
LIYCY		+12.2-W9	25x	0,25		VACUUM ON
TKD-MOT		+12.4-W1	4	0,75		
TKD-RES		+12.4-W2	4x2	0,25		/SIN-
RST		+12.4-W5	5	0,34		Input
PUR		+12.4-W6	4	0,34		Input
LIYCY		+12.4-W7	25x	0,25		24V DC SENSOR
RST		+12.4-W8	5	0,34		Input
LIYY		+11-W1	5	0,25		
		+11-W2				
LIYD11Y		+11-W5	4	0,14		
LIYCY (B) TP		+11-W5.1	2x2	0,25		

+TERM_KLM/5

[illegible]

ATMSSE GMBH

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Customer :
Plant designation: OPTIspin SB20
Drawing Number : 82103
Commission : KA1249

Manufacturer (Firm) : ATMSSE GMBH

Path EPLAN4\P\.. :

Project name :

Make :

Type :

Mounting site :

Responsible for project : AF

Part feature :

Created the : 08.12.08

Highest page nbr.: 3

Changed on the: 31.08.10 from (abr.):

Number of pages : 10

			DATE		KA1249		ATMSSE GMBH	TITLE SHEET	82103		=		
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			PLOT	03.09.10									
CHANGES	DATE	NAME	FORM.	EPLAN 4.10 : 14.09.93	ORIG.	EST. WITH	EST. BY				SH.	1	
											3 SHS		

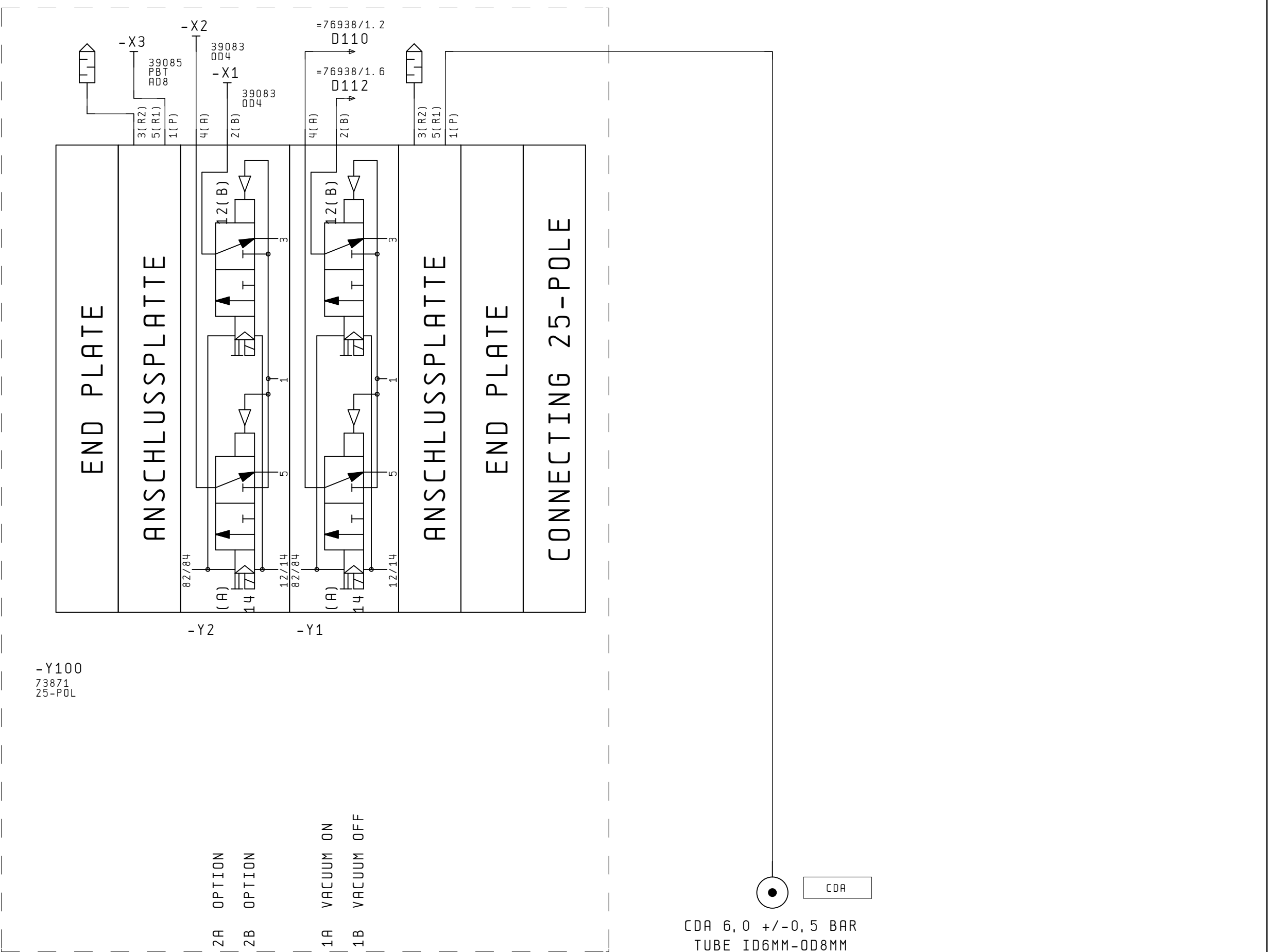
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Higher-level assignment / Location designation overview

ESSY001

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			PLOT	03.09.10	OPTIspin SB20							SH.	3
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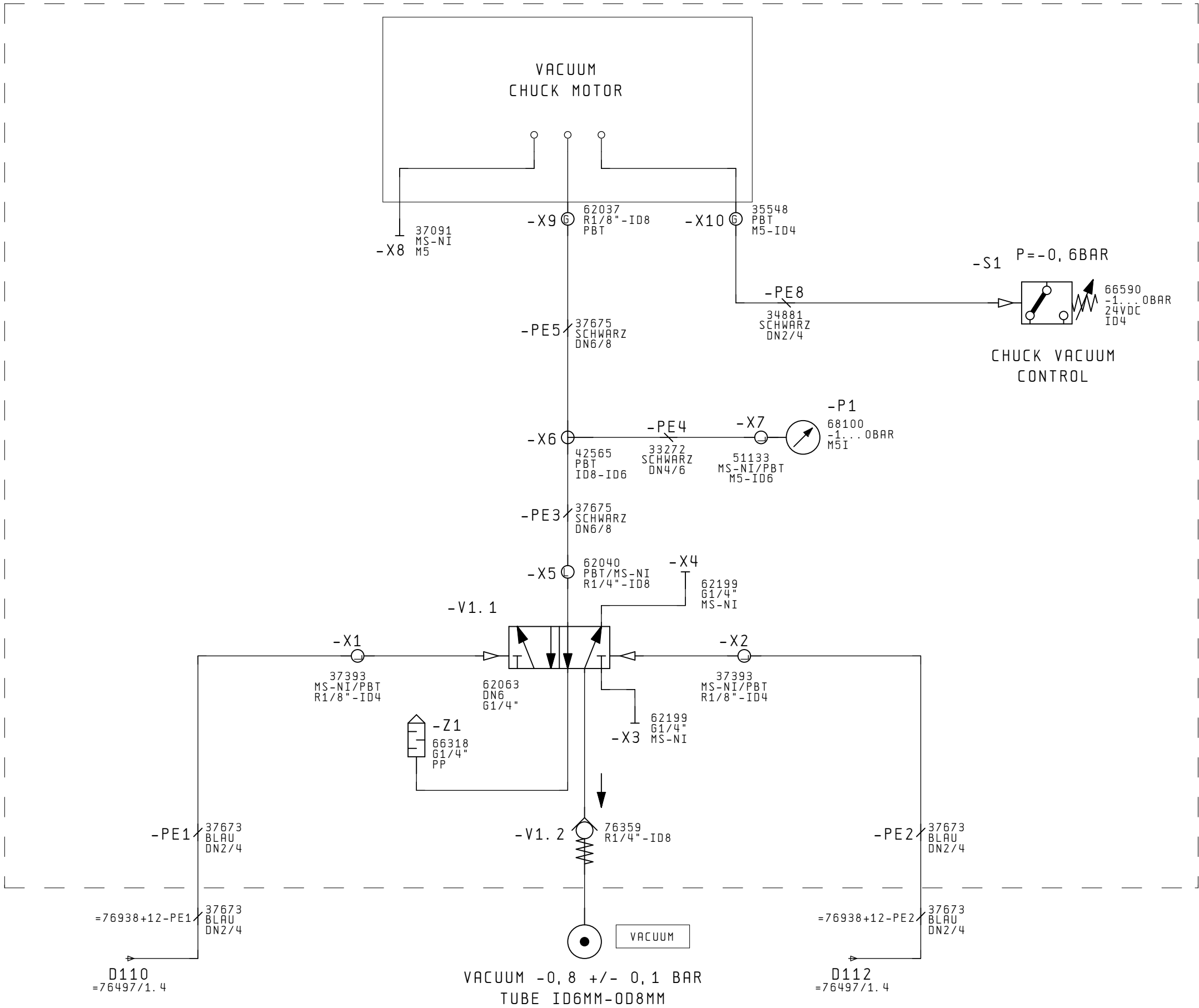


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				PLOT	03.09.10									SH. 1	
CHANGES	DATE	NAME	FORM.	EPLAN 4.10 : 14.09.93	ORIG.			EST. WITH		EST. BY				1 SHS	

BILL OF MATERIALS

AMOUNT	ARTICLE NR-NO.	DESIGNATION	DEVICE DESIGNATION PLANT / LOCATION / ID SCHEMATICS / POSITION	POSITION
1	39083	SEALING PLUG OD4 PBT	=76497+12. 4-X2 =76497+12/1. 3	4
1	39083	SEALING PLUG OD4 PBT	=76497+12. 4-X1 =76497+12/1. 3	5
1	39085	SEALING PLUG AD8 PBT	=76497+12. 4-X3 =76497+12/1. 2	6
1	73871	MANIFOLD 25-POLE, 2 Valves	=76497+12. 4-Y100 =76497+12/1. 2	7

+12. 4



=76497+12. 4/1

+12. 4/1

			DATE		KA1249		ATMSSE GMBH		CHUCK VACUUM		82103		=76938	
			NAME	RS	OPTIspin SB20								+12	
			PLOT	03. 09. 10									SH. 1	
CHANGES	DATE	NAME	FORM.	EPLAN 4.10 : 14.09.93	ORIG.	EST. WITH	EST. BY					1 SHS		

BILL OF MATERIALS

AMOUNT	ARTICLE NR-NO.	DESIGNATION	DEVICE DESIGNATION PLANT / LOCATION / IDSCHEMATICS / POSITION	POSITION
1	33272	PE-TUBE ID4MM-OD6MMPE-BLACK	=76938+12. 4-PE4=76938+12/1. 5	8
1	34738	CONNECTOR WITH CABLE CLOSE 66590	=76938+12. 4-S1=76938+12/1. 7	9
1	34881	PE-TUBE ID2MM-OD4MMPE-BLACK	=76938+12. 4-PE8=76938+12/1. 6	10
1	35548	G-PLUG-SCREW CONNECTION M5-ID4MS-NI	=76938+12. 4-X10=76938+12/1. 5	11
1	37091	SEALING PLUG M5MS-NI	=76938+12. 4-X8=76938+12/1. 3	12
1	37393	L-PLUG-SCREW CONNECTION R1/8"-ID4MS-NI/PBT	=76938+12. 4-X1=76938+12/1. 3	13
1	37393	L-PLUG-SCREW CONNECTION R1/8"-ID4MS-NI/PBT	=76938+12. 4-X2=76938+12/1. 5	14
1	37673	PE-TUBE ID2MM-OD4MMPE-BLUE	=76938+12. 4-PE1=76938+12/1. 2	15
1	37673	PE-TUBE ID2MM-OD4MMPE-BLUE	=76938+12. 4-PE2=76938+12/1. 7	16
1	37675	PE-TUBE ID6MM-OD8MMPE-BLACK	=76938+12. 4-PE5=76938+12/1. 4	17
1	37675	PE-TUBE ID6MM-OD8MMPE-BLACK	=76938+12. 4-PE3=76938+12/1. 4	18
1	42565	T-PUSH-IN CONNECTOR ID8-ID6PBT	=76938+12. 4-X6=76938+12/1. 4	19
1	51133	L-PLUG-SCREW CONNECTION M5-ID6MS-NI/PBT	=76938+12. 4-X7=76938+12/1. 6	20
1	62037	G-PLUG-SCREW CONNECTION R1/8"-ID8PBT	=76938+12. 4-X9=76938+12/1. 4	21
1	62040	L-PLUG-SCREW CONNECTION R1/4"-ID8PBT	=76938+12. 4-X5=76938+12/1. 4	22
1	62063	5/2-WAY-IMPULSE VALVE PNEU. DN6 G1/4I	=76938+12. 4-V1. 1=76938+12/1. 4	23
1	62199	SEALING PLUG G1/4"MS-NI	=76938+12. 4-X3=76938+12/1. 5	24
1	62199	SEALING PLUG G1/4"MS-NI	=76938+12. 4-X4=76938+12/1. 5	25
1	66318	BAFFLE G1/4"PP	=76938+12. 4-Z1=76938+12/1. 4	26
1	66590	VACUUM SENSOR -1...0BAR ID4 24VDC	=76938+12. 4-S1=76938+12/1. 7	27

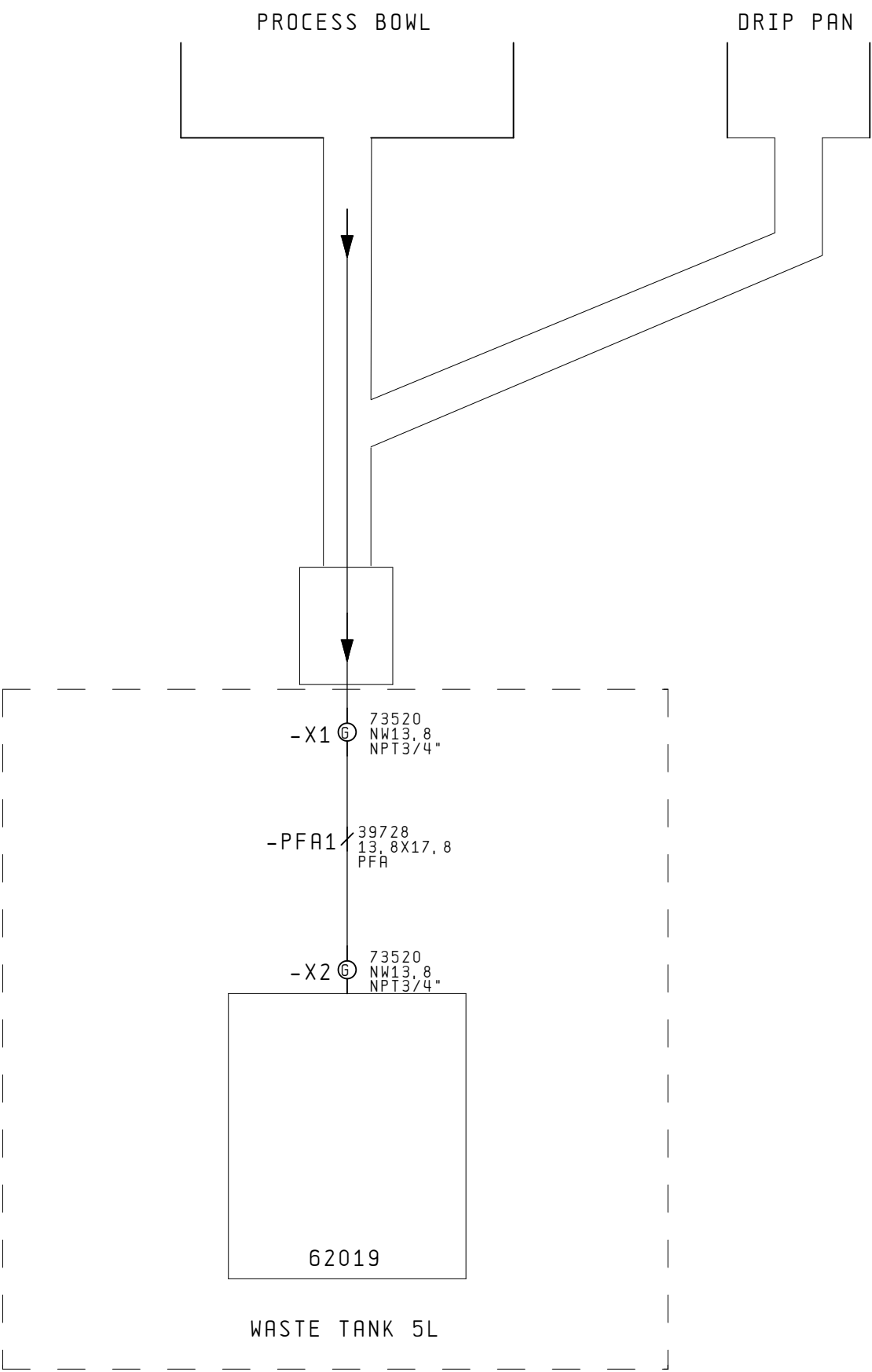
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CHANGES	DATE	NAME	FORM.	EPLAN 4.10 : 14.09.93	ORIG.	EST. WITH	EST. BY		2 SHS

BILL OF MATERIALS

AMOUNT	ARTICLE NR-NO.	DESIGNATION	DEVICE DESIGNATION PLANT / LOCATION / ID SCHEMATICS / POSITION	POSITION
1	68100	PRESSURE GAUGE -1...0BAR M5I	=76938+12. 4-P1 =76938+12/1. 6	28
1	76359	NON-RETURN VALVE R1/4"-ID8	=76938+12. 4-V1. 2 =76938+12/1. 5	29

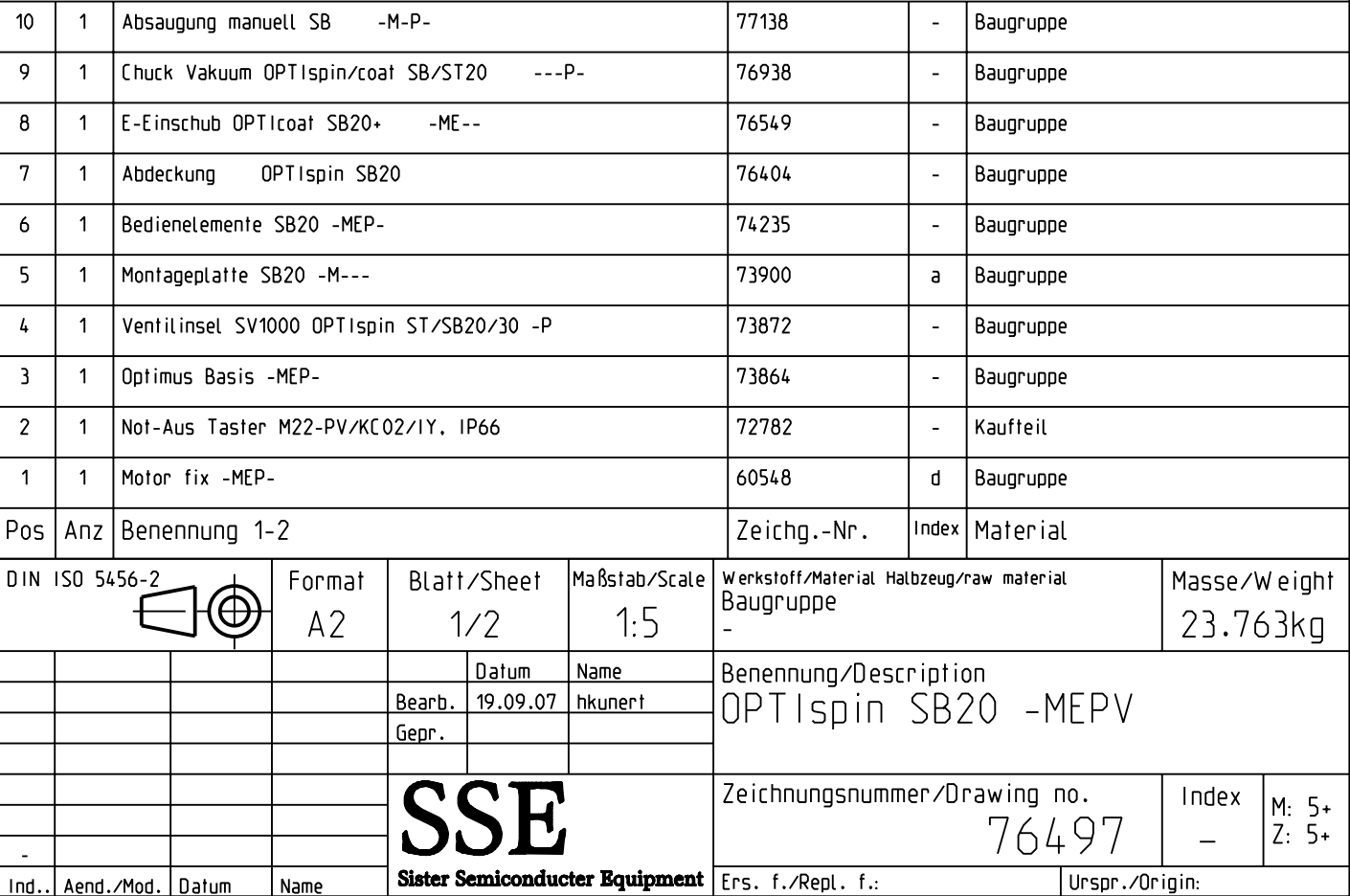
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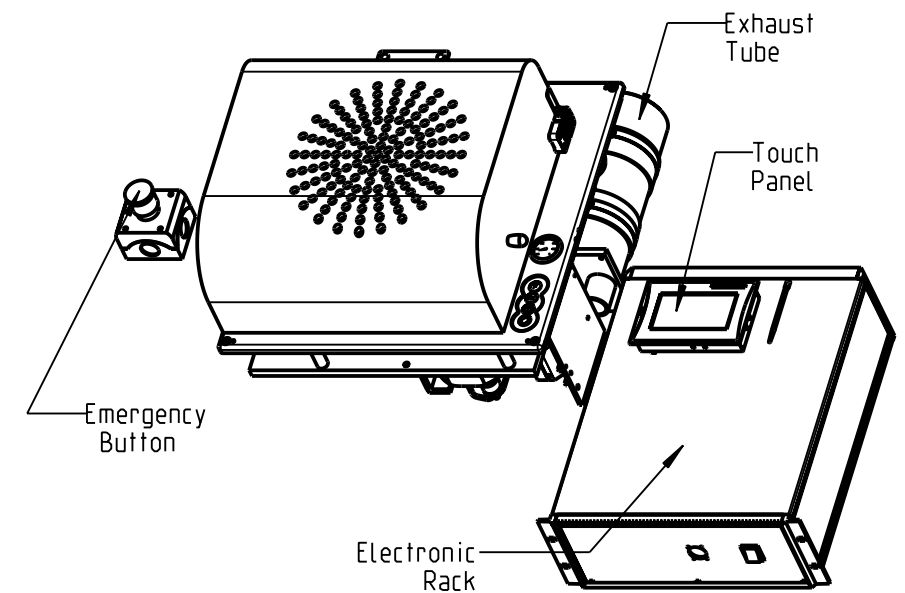
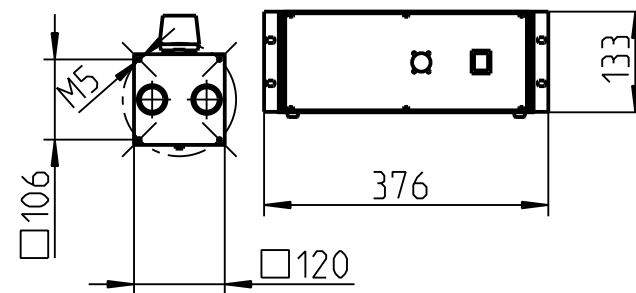
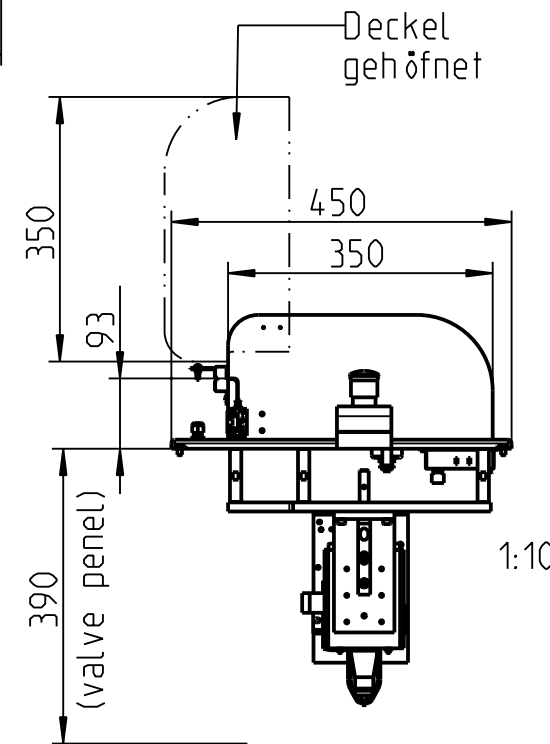
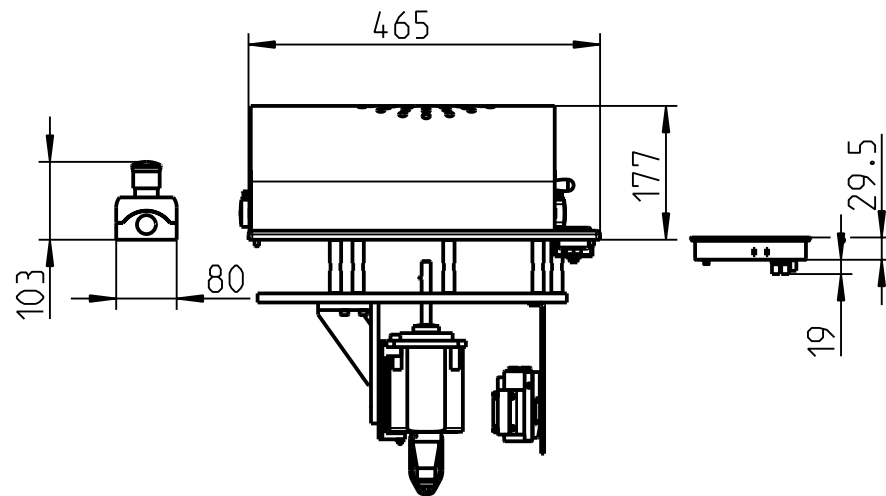
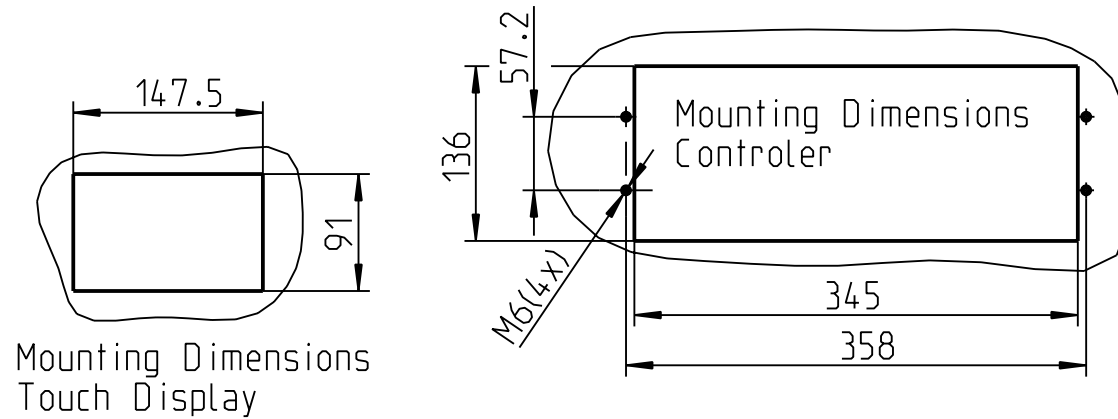
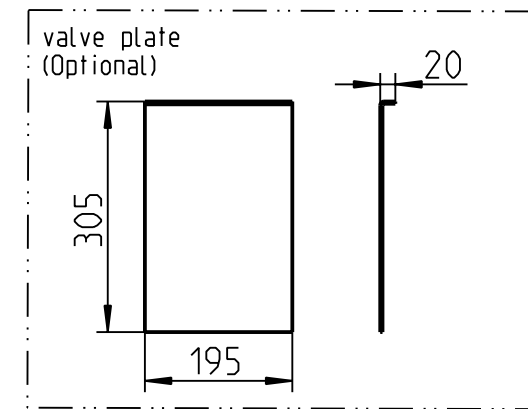
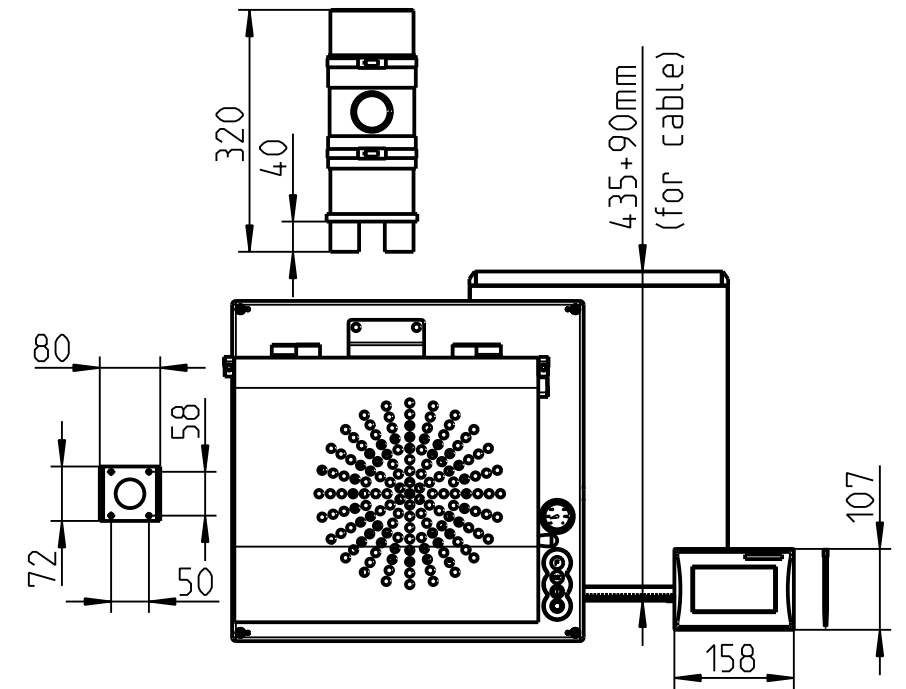
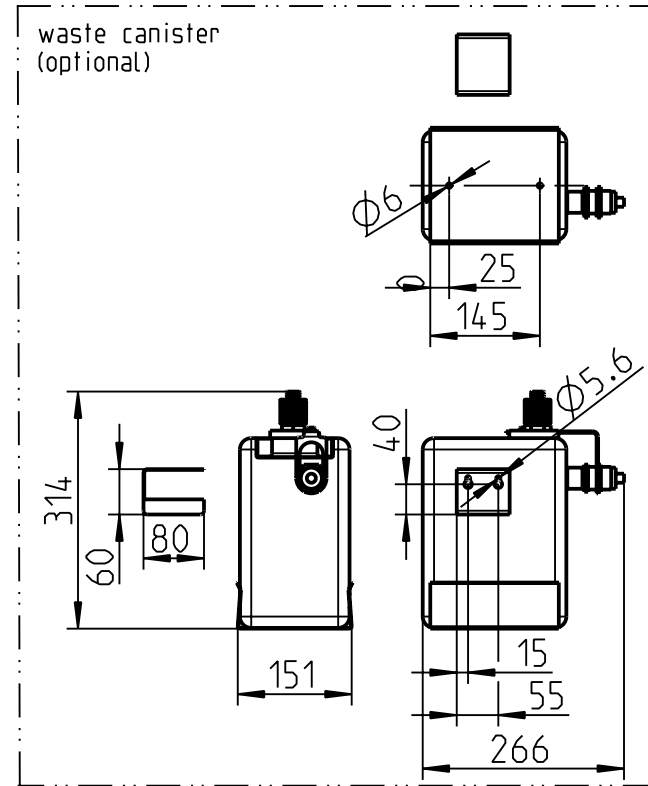
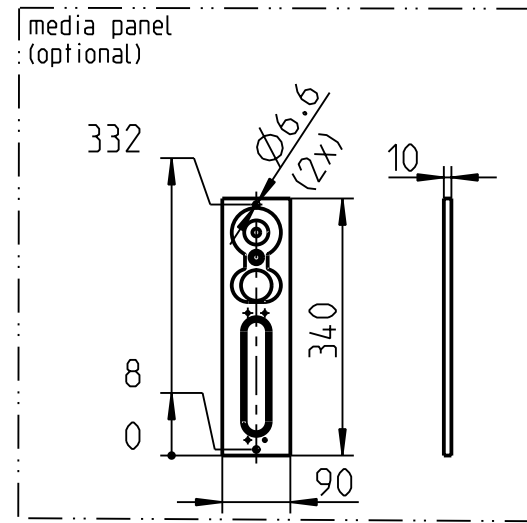
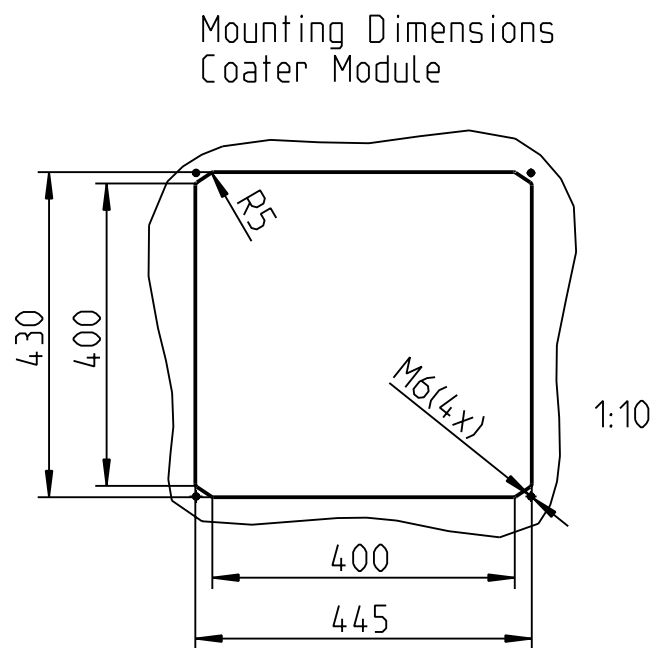
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	Datum	Name	Benennung/Description		Blatt/Sheet	Format
Bearbeiter	09.09.10	hkunert	OPTIsipin SB20 -MEPV		2/2	A3
Geprüft						
Ind.	Aend./Mod.	Datum	Name	Zeichnungsnummer/Drawing no.		Index
				76497		M: 6+
				Ers. f./Repl. f.:		Z: 6+
				Urspr./Origin:		

ATMsse

20 OEM Manuals

Further OEM manuals are available on request.