Polos SPIN150i/200i infinite

for software rev. 1.11

POLOS

Welcome to the POLOS spin processing system!

The **Polos** is a top quality spin processor engineered for ease of use, low maintenance, and long lifetime. Designed, Engineered, and Assembled in our state-of-the-art facility in Germany, the **Polos** is constructed of high purity semiconductor grade plastics to ensure the ultimate cleanliness. No metal components are in contact with process chemicals, or fumes. This ensures the **Polos** can accommodate a wide range of process chemicals, with no risk of metals contamination, or system damage.

The aerodynamic design of the lid interior ensures "splash back-free" processing and a direct drain path, while the smooth curved natural polypropylene surfaces of the lid and process chamber directly assist the easy cleaning of the unit. The touchscreen display are chemically resistant.

The system is built using industry-proven quality components ensuring precise repeatable performance, a long lifetime, and zero maintenance. The **Polos** will perform for you whether your needs are infrequent, with simple programs, continuous processing, or frequent changes using complex programming steps.

Operation is intuitive; programming is simple, and up to 10000 separate programs can be stored in the system memory. (each program can have up to 999 steps!)

This is a highly flexible system, and we offer a range of chucks, adapters, and other options to support your future requirements.

Safety features include Secure lock of Lid Latch, Lid-Open and No-Vacuum interlocks, Dynamic Braking and in-built programming safety interlocks.

Please take the time to read this manual to familiarize with the method of operation, and the installation requirements of your **Polos** system.

Operation instruction and safety information

Contents:

1 General information

This documentation is an integral part of the **Polos** spin processor. The system should not be activated or operated without this documentation.

Please read completely the manual carefully prior to installation, starting and operation of the unit.

1.1 Safety instructions

All safety instructions will be found in section 2 of these manual and following ones.
Prior to installation, starting-up and operation of the system relevant safety instructions have to be read carefully and considered accordingly.
In addition to the operating instructions generally applicable legal regulations and other provisions for the prevention of accidents and environmental protection of the relevant country apply.

In the EU directive 89/391EWG, implemented in Germany in the Ordinance on Industrial Safety and Health (BetrSichV), Technical Rules for Operational Safety (TRBS 1203) and Workplaces Ordinance (ArbStättV), the legislator demands amongst others that the working appliances are subjected to regular and competent maintenance by trained staff and checked for operability (effectiveness).

The piping system, especially joints, must be maintained and serviced. Regular checks for leaks must be performed on all screwing connections especially in case of temperature-controlled recirculation systems. A sight inspection should be performed before the beginning of each shift.

If an exhaust module is required by chemical MSDS it has to be ensured that the quantities of incoming and outgoing air are controlled before commissioning, i.e. pressure differences in the working range must be adapted.

1.2 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 case of later modifications of the plant or user software by the operator liability becomes inapplicable as well.
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.

The recipient may use these operating instructions as well as all additional documents related to the system as intended only.
Products mentioned in this manual are eventually trademarks and are used for identification purposes only.

1.3 Edition

PolosSpin150i/200i - Operating instruction
Revision: **1.0**
19/08/2013

1.4 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 without manufacturer's consent

1.5 Service address

SPS-Europe B.V.
Midden Engweg 41
NL-3882 TS Putten
The Netherlands
Tel. (31) 341 360 590
Fax. (31) 341 360 589
e-mail: info@sps-europe.com

2 Safety instruction

2.1 Intended use

The **Polos** is a process tool for typical spin process applications of wafers and other substrates.
The range of applications depends on components and options installed, it includes but it is not limited to:

- Cleaning
- Drying
- Coating
- Developing
- Etching

Intended use includes:

- adherence to entire instruction manuals
- adherence to prescribed commissioning, operating and service instructions
- adherence to prescribed inspection intervals

DANGER!

Chemicals
Customer has full responsibility and liability to assure that all wetted materials of the system are resistant to the chemical(s) applied.

Please consult the technical data section for wet material list or contact **SPS-Europe B.V.** in case of uncertainty.

DANGER!

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

DANGER!

This **Polos** spin processor 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.

Note: 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 **SPS-Europe B.V.** in cases of uncertainty.

2.2 Safety instruction: general

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

Note: advice contained in this chapter is intended to supplement, not to supersede, the safety advice given in other chapters of this manual, the instructions provided by chemicals suppliers nor the general safety code of behavior prevailing in the user’s country.

CAUTION!

Do not take actions on the system other than described in this manual.

CAUTION!

Do not operate the system while covers or other protective systems have been removed.

2.3 Symbols used on system

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

caution – risk of danger

caution – risk of electric shock

caution – risk of hand injury

caution – moving parts

caution – risk of corrosion

use eye protection

Note: The above symbols refer to **SPS-Europe B.V.** 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.

2.4 Personnel training

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

Special training is required for personnel involved in system maintenance and calibration.
Training can be provided by **SPS-Europe B.V.** on customer request.

Installation, service and repair work may only be executed by **SPS-Europe B.V.** service personnel or persons qualified accordingly.

WARNING!
Customer has full responsibility and liability to provide comprehensive training regarding unit usage and chemical safety to all employees involved on system utilization.

2.5 Personnel obligations

WARNING!
All personnel involved in system utilization must be qualified accordingly relevant task, knowing the perils and being able to prevent them by applying suitable safety measures.

WARNING!
The equipment must not be operated, maintained or serviced by personnel under effect of alcohol, drugs, medicine reducing attention.

2.6 Personal protection equipment

WARNING!
All operators involved in system must wear protective clothes adequate to chemicals used including but not limited to:

- Safety glasses/goggles and/or face shields
- Chemical gloves
- Protective suit with long sleeves
- Chemical aprons
- Closed-toe shoes
- Long pants

WARNING!
Customer has full responsibility and liability to provide adequate training and personal protection equipment to all employee involved on system utilization.

3 Specific safety instruction

3.1 System safety alarms

Depending on your system configuration one or more of following safety alarm could be present on your system.

Interface indicators:

Unit interface provide indication, warning and alarm useful for safe utilization of the unit.
In case of error a Warning symbol will appear on screen.
Clicking on this warning symbol, a log file will be prompted to provide detailed information about the reason of the alarm.

CAUTION!
Above mentioned interface indicators must be observed before system start up as well as during all process time.

WARNING!
Available indicators must be known by all personeel operating with the system.

3.2 Safety devices

Depending on your system configuration one or more of following safety device could be present on your system:

- Lid closure sensor
- Lid lock sensor
- Vacuum pressure sensor
- Motor over-temperature sensor
- External sensor(s)

Process will be interrupted in case of one or more safety device will trigger to alarm state.
Description and location of safety devices indicated above are provided in relative chapter of this manual.

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.
Note: please refer to **appendixes, drawings and section technical data** for details or contact **SPS-Europe B.V.** in case of uncertainty.

3.3 Specific threads to the system

WARNING!

System may never work under condition different to ones indicated in relative chapter of this manual

WARNING!

System may never be utilized, cleaned or maintained by untrained and unauthorized personnel.

3.4 System hazards

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 vapors and gases
- gases under pressure
- liquids under pressure
- combination of hazards caused by
  - faulty installation
  - incorrect loading of substrates / wafers
  - improper usage of chuck
  - 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 vapors
- fire hazard
- natural hazards caused by lightning, environmental catastrophes etc.

Mechanical hazards:

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!

Spin speed is to be adjusted to substrate size, thickness, shape, weight and chuck used.
Depending on substrate to be used the maximum spin speed of your system must be limited. Please consult the system specific datasheet or contact manufacturer for detailed spin speed recommendation.

DANGER!

Operation of the system by several persons may cause hazards based on misconduct or missing mutual understanding.
In case that operation of the system by two or more persons would be required, is recommended to keep a daily logbook containing usage note such as chemical applied, error encounter, etc.

DANGER!

The system may only be operated while all doors and safety covers are closed and locked (where applicable) 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!

Safety covers or doors may not be removed (unless for service purposes).
The system may not be opened during processing or after power failures.

DANGER!

Contamination of the spin processor.
The spin processor has always to be operated with chuck and wafer/substrate.
In case of use of vacuum chuck (non etching application) always operate the system with substrate loaded on chuck.

DANGER!

If required by processed chemical(s), the spin processor has always to be operated with active exhaust system and providing all media required.

Whenever it is likely that the system is no longer mechanically safe, make it inoperable and secure it against any unauthorized or unintentional operation.

Electrical hazards:

DANGER!

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!

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!

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

DANGER!

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!

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

DANGER!

In case of emergency the stop button must be approachable immediately.
Do not position any object between operator and emergency button.

DANGER!

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.
Note: 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.

DANGER!

In case fuses have to be replaced make sure that only fuses of same type and current rating will be used.
Under no circumstances use makeshift fuses or short-circuit any fuse holders.

CAUTION!

Electrostatic discharges can cause damage to parts. When handling electronic components several precautions are essential:
Wear a grounded wrist strap or work on a grounded static-dissipating work surface.
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, plastic bags, etc.

Whenever it is likely that the system is no longer electrically safe, make it inoperable and secure it against any unauthorized or unintentional operation.

Chemicals hazards:

Chemicals are provided and applied by the user. Proper handling of chemicals is the user's responsibility.
Advice contained in this section is intended to supplement, not to supersede, the safety instructions provided by chemicals suppliers nor the general safety code of behavior prevailing in the user's country.

DANGER!

Chemicals
Customer has full responsibility and liability to assure that all wetted materials of the system are resistant to the chemical(s) applied.

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!

Chemicals may only be handled by personnel having the relevant knowledge and skill.

DANGER!

When handling chemicals, please observe relevant safety regulations as well as chemical supplier's information (chemical safety data sheet and additional advice).

WARNING!

All operators involved in system must wear protective clothes adequate to chemicals used including but not limited to:

- Safety glasses/goggles and/or face shields
- Chemical gloves
- Protective suit with long sleeves
- Chemical aprons
- Closed-toe shoes
- Long pants

DANGER!

When handling aggressive chemicals, insure proper ventilation and exhaustion of vapors.
The **Polos** spin processor is designed to cooperate with facilities supplied house exhaust which needs to be always present
Always ensure that exhaust is present working correctly before opening the system.

WARNING!

As to the outgoing air the local emission acts have to be taken into consideration

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 vapors (danger of suffocation and/or poisoning).
- 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 vapors (danger of suffocation and/or poisoning).
- 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 vapors (danger of suffocation and/or poisoning).
- 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 and/or poisoning).
- Prevent electrostatic charging.
- Beware of ignition sources.
- Do not smoke.

DANGER!

In case corrosive, gassing or noxious wet media are applied it's at the user's responsibility to prevent any peril to close by staff by all means.

Whenever it is likely that the system is no longer chemically safe, make it inoperable and secure it against any unauthorized or unintentional operation.

3.5 System restore after emergencies

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.

Prior to checking of risk area operate the main switch and disconnect the system from mains power line and media supply except exhaust.
Wait until all hot parts have reached ambient temperature.

DANGER!

In case of emergency while handling chemicals, 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.

DANGER!

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.

Whenever it is likely that the system is no longer safe, make it inoperable and secure it against any unauthorized or unintentional operation.

The system is likely to be unsafe if:

- any damage is visible
- it fails to perform according to specification
- it has been subject to prolonged storage under unfavorable conditions
- it has been subject to severe transport stress.

In these cases the safety state of the machine has to be checked by SPS-Europe B.V. service personnel.

Maintenance and repair work required, but not listed in this manual, should only be done by **SPS-Europe B.V.** service or by persons of equivalent qualification.

3.6 First aid in emergency

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

DANGER!

In case of emergency immediately stop the actual process and await complete stand-still of the system within a safe distance.

DANGER!

Close all supply line (VAC, CDA, N2, DI Water, etc…) except exhaust system if available.

DANGER!

In case of emergency while handling chemicals, 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 provided by chemical producer.

4 Transportation and storage

4.1 Safety indication

DANGER!

Prior to operate with the unit, the installation and operating instructions have to be thoroughly read and observed.

CAUTION!

Heavy weights
Parts included could be heavy and have to be handled properly.

4.2 Transportation

DANGER!

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

CAUTION!

Before moving the **Polos** attention has to be paid that the unit is adapted to ambient temperature. Due to alteration to temperature during transport unwanted length modification may occur.
Keep the system for at least 24 hours under approved operating condition to make the unit adapting to ambient temperature.

4.3 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 24 hours under approved operating conditions.
System start up have to be performed by **SPS-Europe B.V.** service personnel or persons qualified accordingly.

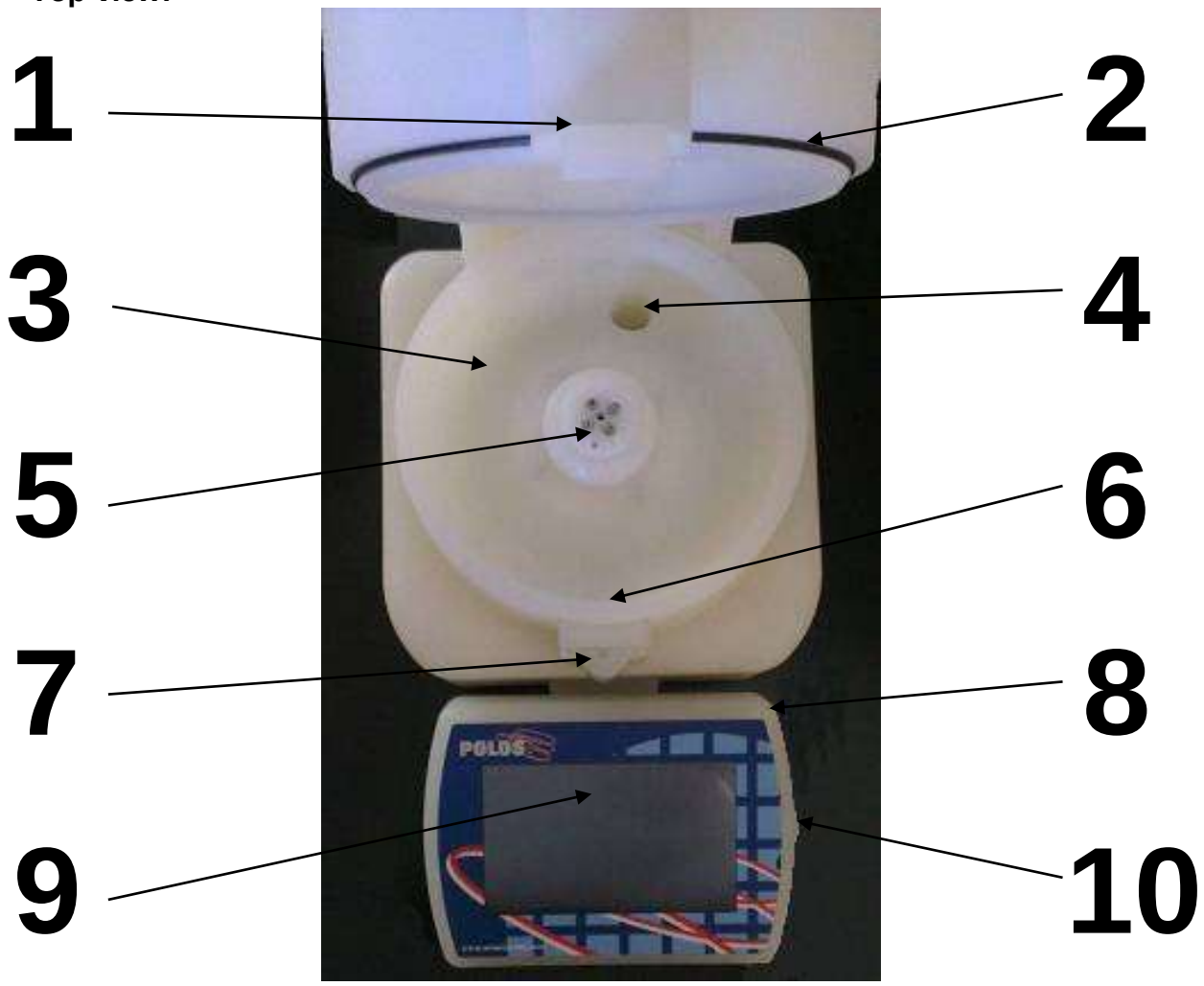
5 Product description

5.1 Package content

1. Chuck (depending on actual model, available chuck may differ)
2. Spin processor
3. Stylus
4. Manual
5. POE connector cover
6. Power cables

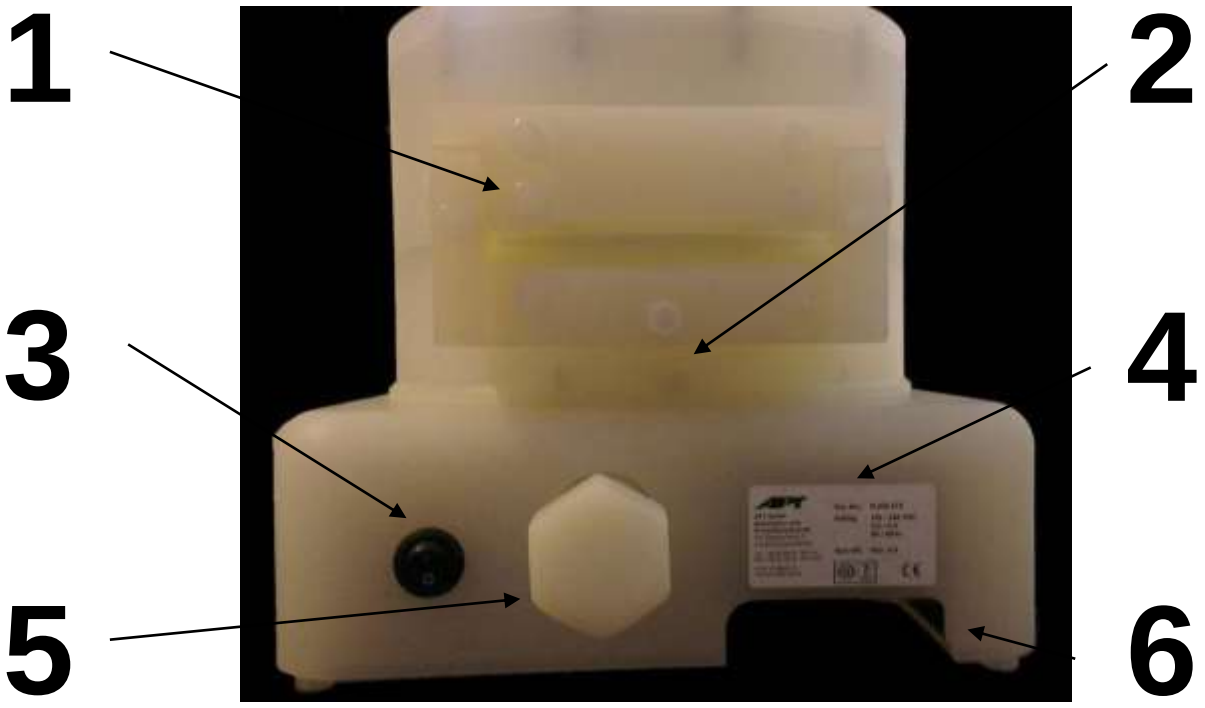
5.2 System overview

Top view:



1. Lid latch
2. Sealing O-ring
3. Spin processor chamber
4. Drain hole
5. Chuck holder
6. Lid sensor
7. Lid lock
8. Stylus holder
9. Touchscreen interface
10. USB port

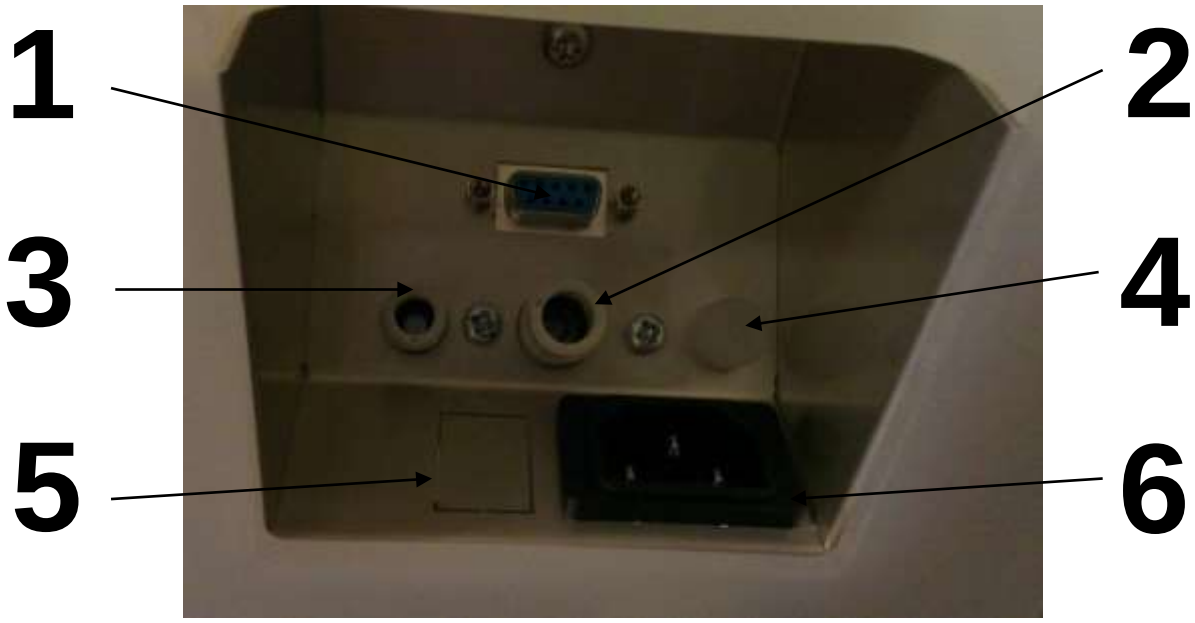
Back side view:



1. Lid hinge
2. Option holding features
3. Power switch
4. Information label
5. Drain connection port
6. Facility media connections(Power, Vacuum, purge gas, etc.)

5.3 Media connections overview

All connections are located on back side as shown in following picture.



1. Dry relay
2. Vacuum
3. Motor purge
4. Compressed air(Optional)
5. Ethernet (Optional)
6. Power plug

Depending on your system configuration some details may differ respect the ones shown above.
Note: please refer to **appendixes, drawings and section technical data** for details or contact **SPS-Europe B.V.** in case of uncertainty.

6 Installation and commissioning

DANGER!

Please read completely 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!

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 and maximum speed has to be reduced.

WARNING!

Important: Test the values of parameter in a test environment without fluids to make sure that program and system parameters are correct.
Otherwise you could damage the system.

CAUTION!

To get experience with the system, it is **STRONLGY** recommended to test the unit with DI water first ONLY before use it with chemicals.

6.1 Safety information

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

CAUTION!

Heavy weights
Parts included could be heavy and have to be handled properly.

CAUTION!

Before moving the system keep it for at least 24 hours under approved operating condition to make the unit adapting to ambient temperature. Due to alteration to temperature during transport unwanted length modification may occur.

⚠ WARNING!

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

6.2 Unpacking

Check the package and contents upon unpacking for damages during transport.
In case of transport damages or damages in transit, please contact the manufacturer immediately.

Unpacking should be performed in a suitable, dust-free and air-conditioned environment.
Verify receipt of all parts based on content list provided in relative section.
In case of missing parts, please refer to the manufacturer.

All package material has to be stored for use if further shipment is required.

6.3 Installation site

The **Polos** spin processor will operate correctly under following conditions:
1. clean rooms and laboratory
2. ambient temperature + 15°C to + 25°C
3. ambient relative humidity max. 60%, no condensation.

⚠ CAUTION!

Before installing the system keep it for at least 24 hours under approved operating condition

⚠ CAUTION!

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 section).

⚠ DANGER!

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

⚠ DANGER!

Do not operate without suitable drain.

6.4 Installation procedure

⚠ WARNING!

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

⚠ WARNING!

All personnel involved in system utilization must be qualified accordingly relevant task, knowing the perils and being able to prevent them by applying suitable safety measures.

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Note: please refer to **appendixes, drawings and section technical data** for details or contact **SPS-Europe B.V.** in case of uncertainty.

6.5 Positioning

Position the **Polos** spin processor on a stable, flat, vibration-free and safe surface not to be deformed under the weight of the unit and eventual accessories; the unit must not be deformed either.

For service purpose is recommended to leave at least 25cm available space on back, left and right sides.

⚠ CAUTION!

It is at the user's responsibility ensuring that the workplace is open, without hazardous point and with free access to emergency exit before activating the unit.

Verify that in designated position all tube connected are free to move and no sharp bent or choking are present.

⚠ DANGER!

Positioning the unit on a surface that is not stable, flat, vibration-free, safe and undeformable may cause serious injuries.

Note: please refer to **appendixes, drawings and section technical data** for details or contact **SPS-Europe B.V.** in case of uncertainty.

6.6 Assembling

System is provided already assembled and ready to use.

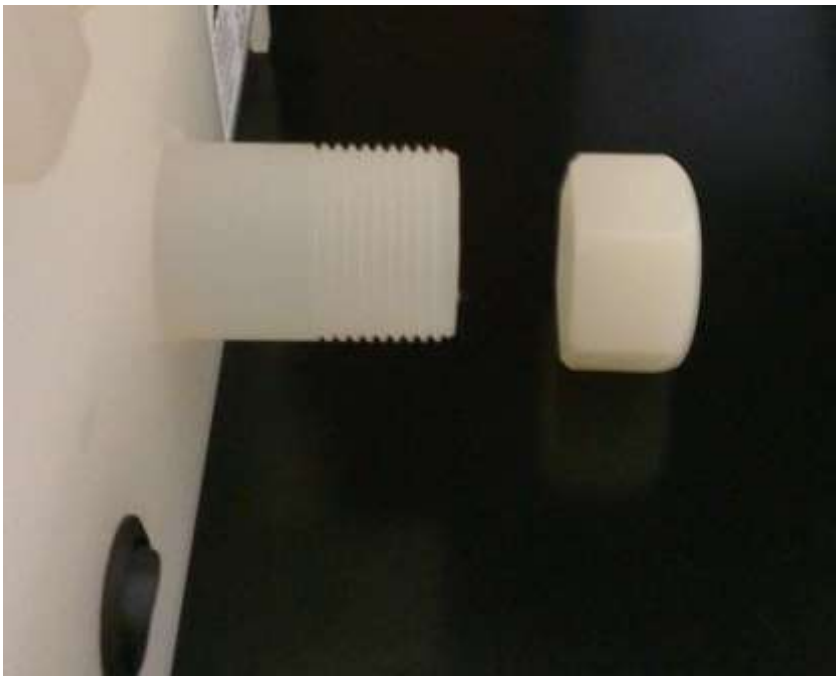
6.7 Connect drain line (Optional)

In case it is necessary to apply large volume of chemicals during each process, a drainage system has to be connected to assure proper chamber draining.

After removing the drain closing cap by unscrewing counterclockwise, a 1” MNPT will be then available for connecting the drain tube.

CAUTION!

A non-working drain causing fluid to stand still in the chamber can cause severe damage to your spin processor.



Connect the drain tube by holding it straight and turning the fixing nut.

WARNING!

The functionality of the drain system has to be verified before any other operation.

6.8 Connecting Medias

All connections are located on system back side; all sockets are marked appropriately as described in relative section.

DANGER!
Prior all media connecting check the system's disconnection of the power supply.

DANGER!
In case corrosive, gassing or noxious wet media are applied, any peril to staff has to be prevented by all means.

CAUTION!
The installation of customer's supply and disposal lines must conform to the manufacturer instruction, chemical supplier information and relevant legal regulation.

Connect media supply in this order:

1. Motor purge
2. Dry relays(Optional)
3. CDA (Optional)
4. Vacuum

6.9 Connecting to power supply

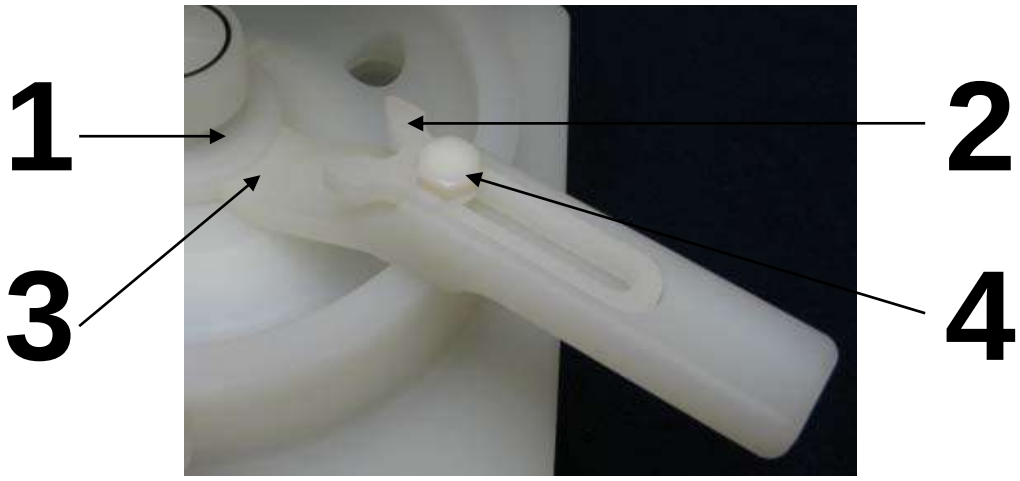
Power plug is located on system back side as described in relative section.
.
Make sure that the main switch is in <0/OFF> position and facility circuit breaker turned off (if available).
Connect power cable to power supply system.
Turn on facility circuit breaker.

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

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

For detailed information and requirements, please refer to **appendixes, drawings and section technical data.**

6.10 Adjust centring tool



Release the locking screw **(4)** so that the slider **(2)** can move freely.
Place the centering tool such as its end **(3)** makes close contact with the labyrinth sealing cap **(1)**.
Position desired substrate centered on the chuck and adjust slider **(2)** so that it slightly touches substrate edge.
Tight locking screw **(4)** to fix the slider **(2)**.

6.11 Test procedure

Before commissioning the unit must be tested executing preset recipes named “Test”.

Unit will perform several steps involving all unit capability, recipe details are indicated in appendix of this documentation.
Verify that unit is performing all steps properly without excessive noise or vibration.
The **Polos** spin processor is now ready for usage, otherwise please contact manufacturer

7 Operation

7.1 Safety indication

WARNING!

When accessing process chamber, pay attention to all additional safety instructions in referring section.

DANGER!

Depending on form and size of substrates, special spin chucks are used.
Use only a spin chuck suited for the actual substrate. Refer to appendix for list of available chuck and relative details.

DANGER!

Make sure that the substrate is placed correctly.

DANGER!

The system may never be switched on nor operated without all required connection (Vacuum, CDA, N2, Drain, etc.) being verified and provided.

DANGER!

Never touch a rotating spin chuck in the process chamber.

DANGER!

Assure the correct installation of the drain system.

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.

A spinning process is composed by following steps:
Creating a recipe.
Placing a substrate on the spin chuck.
Starting the recipe.
Removing the processed substrate.

7.2 Preparations

Depending on used features and media, special preparations could be necessary: refer to system specific datasheet for detailed information.
Make sure that mains supply, motor purge, CDA, vacuum and all required input are connected.
Make sure that the drain system, if required, is properly connected and able to work
Inspect the system to assure that no damages or failures are present.

7.3 Powering on

Verify that all required supply is properly connected to connection panel **(2)**.
Turn the main switch **(1)** of the unit to <1>.

System screen interface will start showing several loading screen, wait until home screen will been shown.

If any error indicator is active interrupt starting procedure and contact maintenance service.

7.4 Open the lid

Following procedure described in software instruction, release the lid lock.
Gently lift lid's latch and push the lid till hinge hold position, lid lock will be reactivated after countdown expires however lid will hold this position forever.

For better access the chamber, the lid can be overturned until the end of hinge travel.

CAUTION!
Always handle the lid latch gently otherwise plastic components could be damaged.

WARNING!
In case of power failure will not be possible to open the lid. Do not try to force it in any way. Please refer to service documentation or ask system administrator for further instructions.

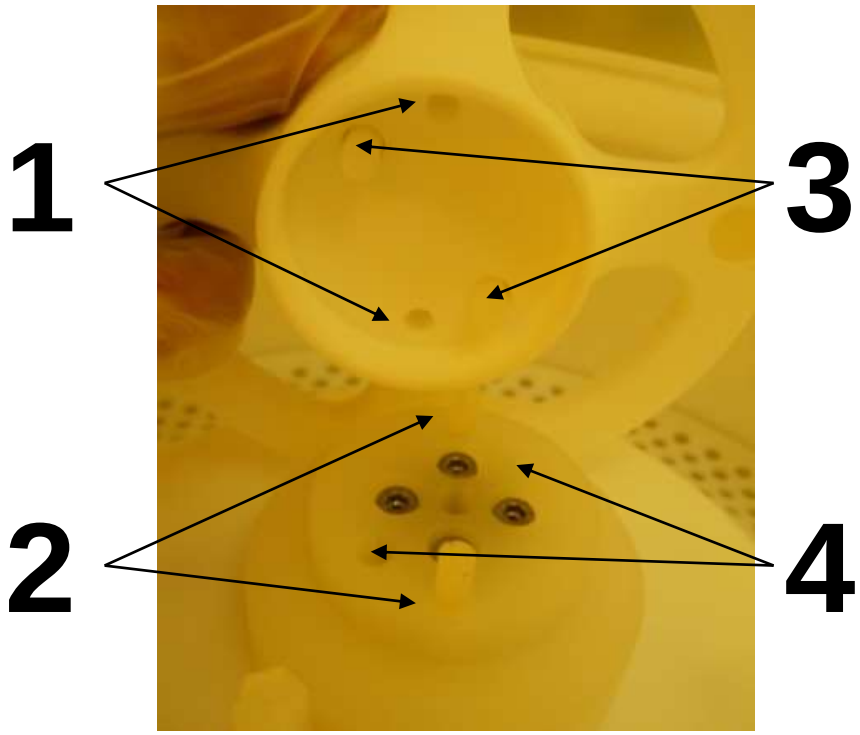
7.5 Insert or change the chuck

DANGER!

Only use chucks applicable to specific process and substrate.
Note: please refer to **appendixes, drawings and the section technical data** for details or contact **SPS-Europe B.V.** in case of uncertainty.

Use of improper chuck may lead to system damage and/or substrate damage

Switch on the **Polos** spin processor following instruction provided in relative paragraph of this manual.
Open the lid following indication provided.



1. Centering holes
2. Centering pins
3. Fixing screws
4. Screw holes

Gently press chuck on motor shaft paying attention that centering pins **(2)** slide easily through right holes **(1)**.

CAUTION!

Screws have to be hand tighten otherwise plastic screws could be damaged.

If provided with the chuck fit screws **(3)** on chuck holes **(4)**.
Tighten the screws.

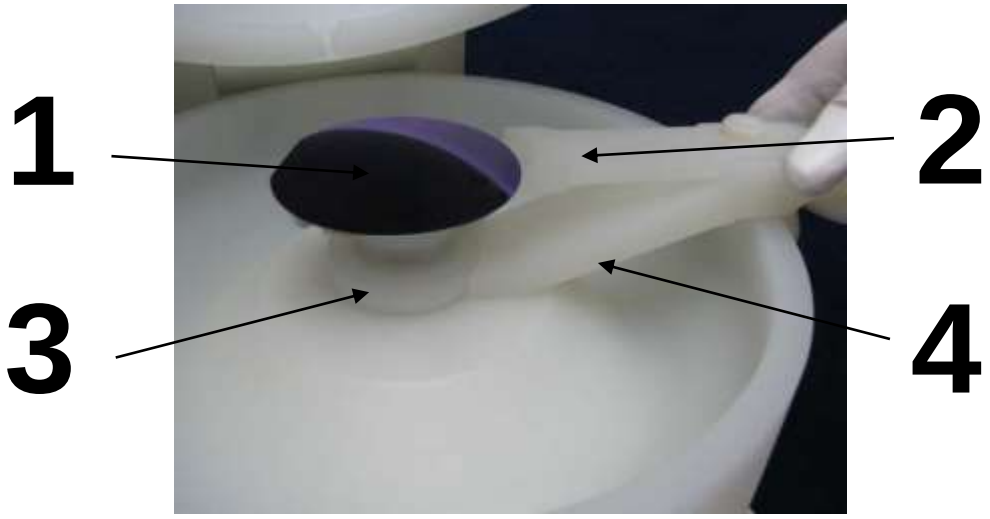
CAUTION!

Cover drain hole to avoid screws loss.

WARNING!

Drain holes must always be free of obstacle. Always assure that there isn't any object obstructing it.

7.6 Loading a substrate



Place the centering tool **(4)** on the border of the process chamber and make sure that
The tool body **(4)** makes close contact with the labyrinth sealing cap **(3)**.
Place the substrate **(1)** on the chuck and check the position of the wafer from different sides to verify that it touch the slider end **(2)** until it lies in the center of the chuck**.**

Note: The centering tool is suitable for rounded and squared substrates.

CAUTION!

Always verify substrate centering before starting a recipe, otherwise substrate may be lost due centrifugal force.

7.7 Creating a recipe

All relative information about recipes creation could be found in the relative chapter of spin processor software.

DANGER!

When using chemicals, please observe that released chemicals may react with each another, leading to unwanted and unknown reactions. These substances may bear major additional risks. It is the responsibility of the user to prevent chemical mixing.

Note: if various chemicals have to be dispensed inside the spin processor chamber, a rinse cycle is required to remove chemicals residual before dispensing a different chemical.

System is preconfigured with different preset recipes to be used as example; list of preset recipes is provided in appendix.

Additional recipes can be downloaded from our website www.spincoating.com.

CAUTION!

Some recipes are designed for specific unit that may not match to actual unit setup and therefore are not suitable to be used.
Note: please refer to **appendixes, drawings and the section technical data** for details or contact **SPS-Europe B.V.** in case of uncertainty.

7.8 Starting a recipe

All relative information about starting recipes could be found in the relative section of spin processor software documentation.

7.9 Switching off

Assure that the unit is in idle mode and no process is currently running.
Turn the main switch **(1)** of the unit to <1>.

Close the lid and leave the house exhaust system, if available, activated to avoid condensation and ensure proper ventilation and gases extraction.

Assure the drainage system, if available, is connected and properly working; leave it connected even while unit is powered off.

8 Software instruction

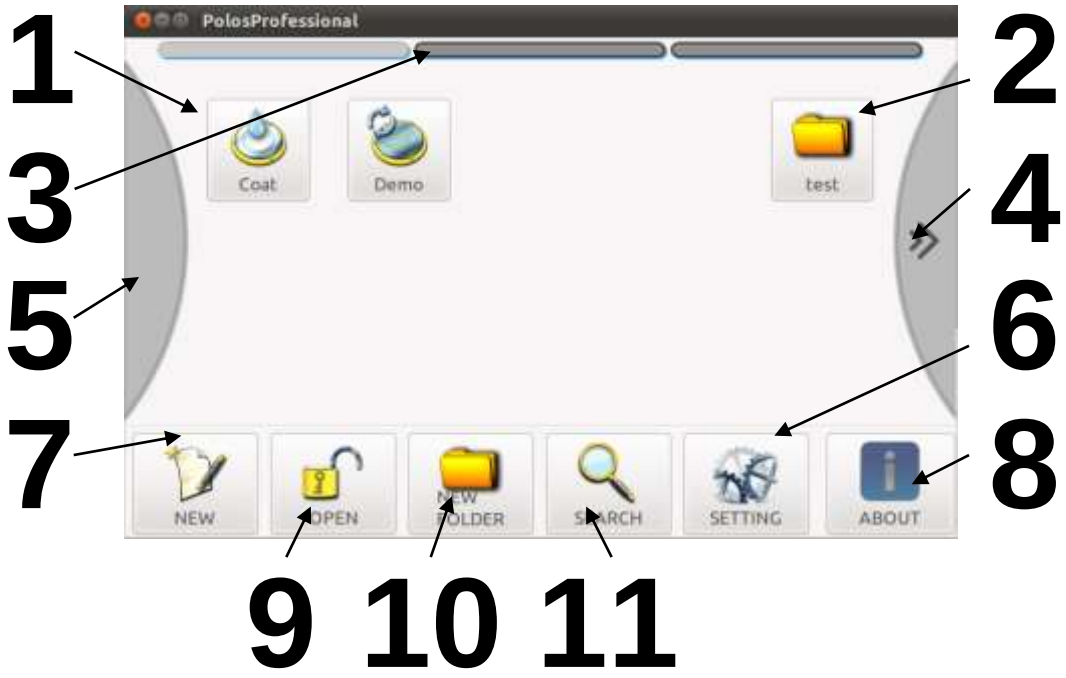
8.1 Start screen

When unit is powering up, following screen will appear.

Wait until loading bar on page bottom will be completed until performing any other operation

8.2 Home screen

On the home screen the operator sees all recipes **(1)** and folders **(2)** on his system.



1. Recipe icon
2. Folder icon
3. Pages sliding bar (Optional)
4. Next page button (Optional)
5. Previous page button (Optional)
6. Access parameter editing menu
7. Create new recipe
8. Open information screen
9. Release lid lock
10. Create new folder
11. Access search function

The home screen may have one or more pages; the picture above shows three pages

In case more than one page is present, the sliders on the top of the screen **(3)** or the buttons **(4 and 5)** on the sides of the screen will be activated to be used to switch between the pages.

Release the lid lock

For safety reason the lid lock mechanism is always activated. Touch the unlock button **(9)** in order to release it and allow to open the lid.

As soon as the operator has unlocked the lid a countdown begins, after which the lid is automatically locked again. Is possible to readjust countdown timer in the system parameter, please refer to relative section for further information.

Open a folder

When the operator touches a folder symbol, it opens and shows the recipes inside:

Each folder can contain many pages; however is not possible to create a folder inside another one, only 1 folder level is allowed.

The user can return to the home screen by clicking: 

Move a recipe or a folder

To move a recipe or a folder following steps are required:

1) Press a long time on a recipe/folder symbol in the home screen.

Selected item will appear at the bottom of the home screen in the selection pane **(1)** (in this example the recipe “Demo”).

The operator can abort this operation at any time pressing the button “Exit Edit” **(3)**; selected item will be repositioned in its original location.

2) Go to the target place, where you want to move the recipe

It can be placed inside the main panel **(2)** also located in a new page or in another folder

3) Click on the target position

The symbol of the recipe appears now at the new place.

4) End the "edit"-mode clicking on "EXIT Edit"

Interchange the place of 2 recipes

1) Press a long time on a recipe/folder symbol in the home screen.

Selected item will appear at the bottom of the home screen in the selection pane **(1)**

2) Click on the second recipe.

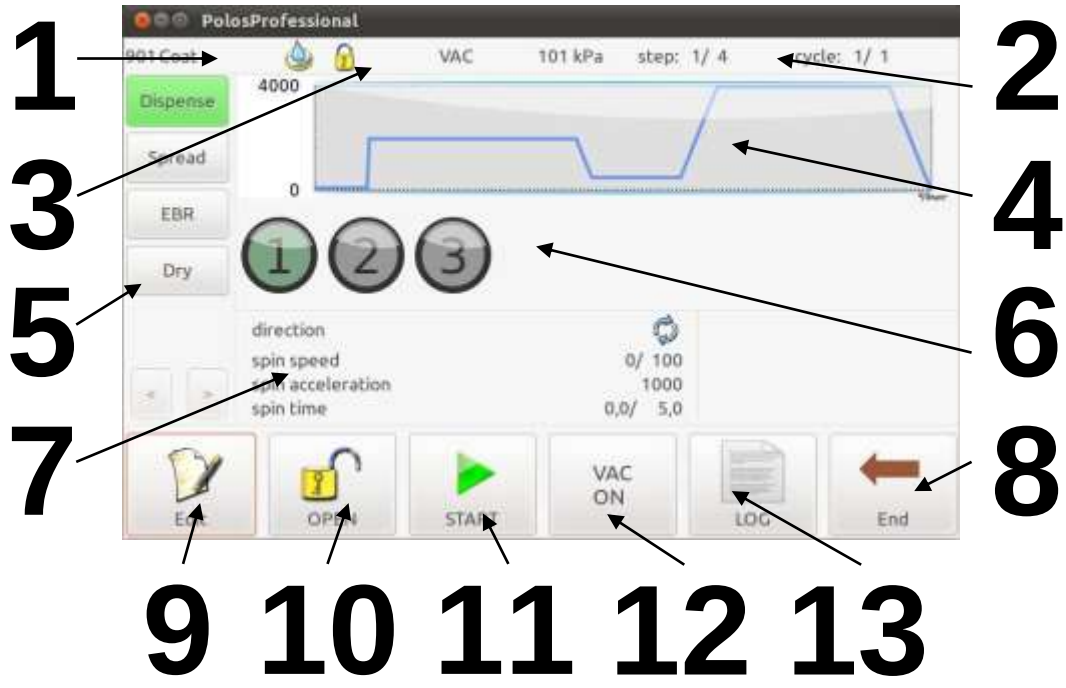
The recipe-symbols interchange their places. It is then possible to click on a new target place for the second recipe.

3) End the "edit"-mode clicking on "EXIT Edit"

Acknowledge request will be prompted; provide confirmation touching "yes". Unit will return to home screen.

8.3 Execute a recipe

Touching any recipe icon on home screen, will open it in the run screen.
All recipe detail are shown in this screen, unit will remain in idle mode until the selected recipe will not start



1. **Recipe details**
   Provides details such as name, ID number and icon of selected recipe
2. **Recipe progress indicator**
   Provides indication regarding the actual and total number of steps and the actual/total number of programmed cycles.
3. **System status**
   Shows information regard unit such as status of lid lock, actual vacuum pressure, and possible error
4. **Recipe graph**
   Provides a graphical reference of recipe progress and information about programmed speed
5. **Steps selection**
   Indicates selected step highlighted in green and allows selecting a different step by clicking on it
6. **Output indicators**
   Provide graphical information on output status; when output is activated, relative indicator will turn green
7. **Step parameters details**
   Lists all parameters programmed for actual selected step
8. **Return to home screen**
9. **Open the recipe in edit mode**
10. **Release lid lock**
11. **Start executing the recipe**
12. **Activate vacuum**
13. **Access log file**

Start a recipe

Touch the start button **(11)** in order to execute the selected recipe.

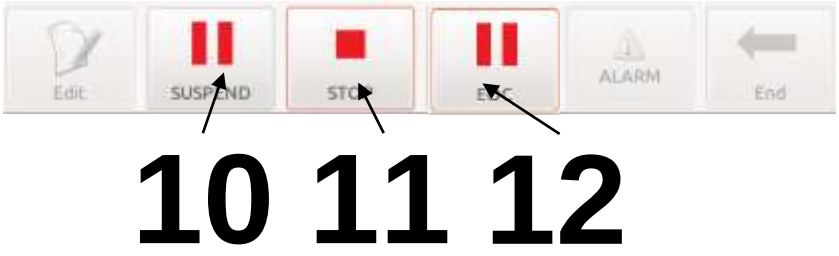
After recipe start, the current step button **(5)** lights in green.

The graph **(4)** will show in blue the intended progression of the recipe and with red/yellow line the real progression of the recipe is shown, switching colour at every cycle.

The output indicators **(6)** will light green according to program parameters and the actual status values like the spin speed are shown in bold in the recipe detail **(7)**.

On the recipe status bar **(2)** at the top of the screen, the current cycle is shown in bold.

The command button **(10)**, **(11)** and **(12)** will be replaced by following sign:



Abort a recipe

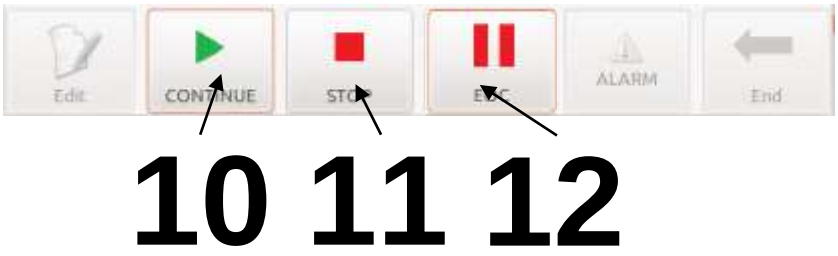
When a recipe is active, touching the “stop button” **(11)** will cause the motor to stop and the valves or relays to close.

The system will return to run screen in idle mode.

Suspend a recipe

When a recipe is active, touching the “suspend button” **(10)** will cause the motor to stop and the valves or relays to close.

The command button **(10)**, **(11)** and **(12)** will be replaced by following sign:



Touching the continue button **(10)**, the recipe will continue is normal progress.

Touching the stop button **(11)**, the recipe will be aborted and system will return to the start screen of the recipe leaving the unit in idle mode.

After suspending a recipe, the operator can only continue or stop the recipe; no other operation will be possible at this point.

End of cycle

When a recipe is active, touching the “End of Cycle” **(12)** an “E” like “End” will appear on the status bar **(2)** near the number of current cycle.

The recipe will continue as programmed but will stop after the last step of actual cycle and will not begin the next one.

When the “EOC” button is touched for a second time, the program will execute all remaining cycles.

Select different step

Each recipe step is represented by a button on the step selection list **(5)**. When a recipe is running, the button relative to actual step lights in green.

It is possible to execute a recipe starting from different step just selecting it while the unit is in idle mode

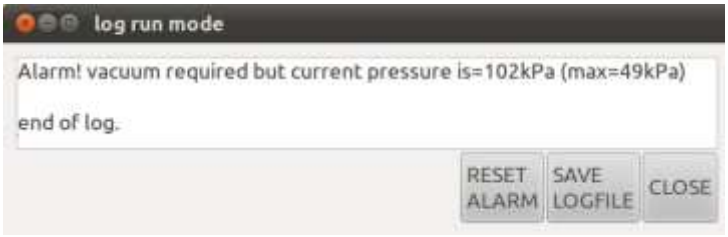
While a recipe is running, the operator can move through the steps at any time by clicking on them.

If the recipe has more than 5 steps, the two buttons below the list, page-forward and page-backward, will be enabled to allow visualization of further steps.

When the steps are not named, they will be labelled as “step 1”, “step 2”, and so on.

Log file

Touching log file button **(13)** will prompt a new window showing actual log file, listing important status information.



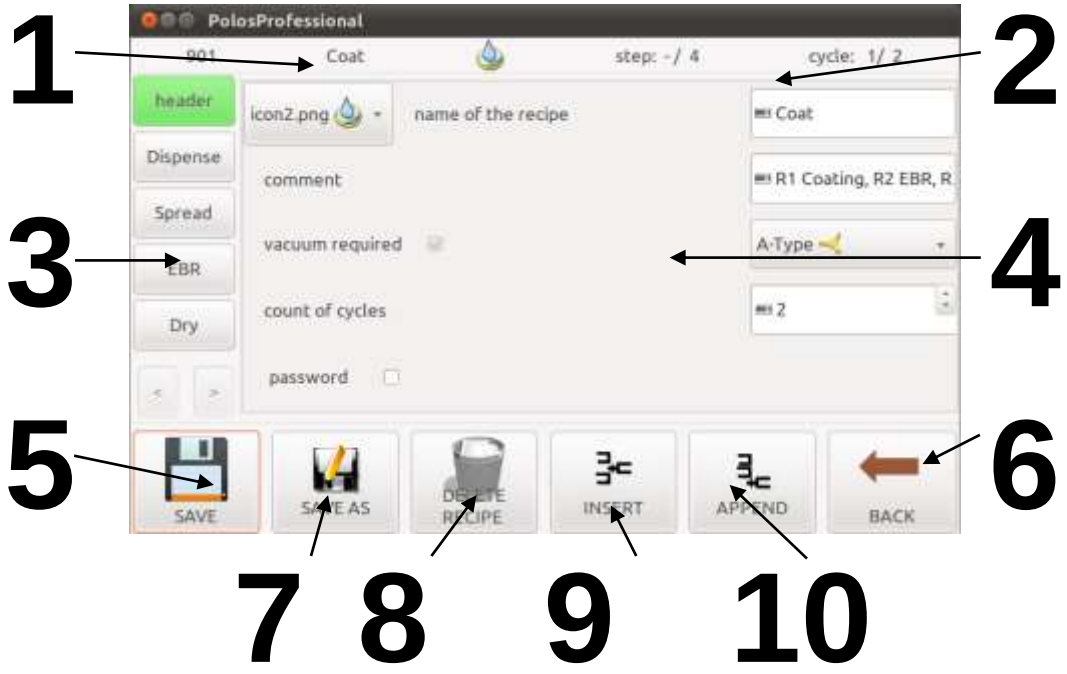
In case of an occurring error, the relative button **(13)** will light with a warning symbol: 

.

Clicking on it, the user can access the log file to identify the reason of the alarm.

8.4 Create and edit a recipe

Creating a new recipe from home screen or editing a selected recipe, will open the edit screen.
All recipe detail are shown in this screen, modification made will not be saved until proper procedure is performed.



1. **Recipe details**
   Provides details such as name, ID number and icon of selected recipe
2. **Recipe progress indicator**
   Provides indication regarding the actual and total number of steps and the actual/total number of programmed cycles.
3. **Header and steps selection**
   Indicated selected header or step highlighted in green and allows to select a different step
4. **Parameter screen**
   Shows all parameter available for the selected step or header
5. **Save**
   Save modification on selected recipe
6. **Back**
   Return to home screen without saving modification made
7. **Save as**
   Save the recipe as another one, with another name
8. **Delete**
   Delete a single step or the whole recipe depending on actual selection
9. **Insert**
   Add a step before the current step
10. **Append**
    Add a step at the end of the recipe

Touch- keyboard

In each parameter entry there is a little keyboard symbol ; touch it to show or hide a keyboard

The keyboard is numeric if a numeric field is selected; it would be alphanumeric if selected field allows entering letters.

Keyboard can be hidden again pressing on this symbol .

Edit the header

In the edit mode the header with all recipe parameters is shown at first.
The number of the current step is replaced by a dash (-) in the indication bar **(2)**. No steps are lightened in the selection list **(3)**.

It is possible to return header editing at any time selecting header in the selection list **(3)**.
In the parameter screen **(4)** following parameters may be edited:

icon3.png	Symbol for the recipe as it will appear on home screen
name of the recipe	This parameter appears on the recipe buttons
comment	Recipe comment (Optional)
A-Type	Type of the chuck. Is an important parameter, because it affects the maximal speed and the maximal acceleration in the recipe. Please refer to system specific datasheet for available chuck and specification. The values in each steps of this recipe will be reduced if they are higher than the maximal values of the chosen chuck.
vacuum required	This check box is set by the choice of a chuck and can't be edited by an operator.
count of cycles	How many times the recipe will be repeated.

Edit a step

When the operator touches a step button on the selection list, step parameters will be shown on parameter screen to allow editing.

Function of delete button **(8)** will change to delete step allowing to remove the current step selected.

A selection bar will appear on top of parameter screen to allow visualization of multiple parameter pages. SPIN150I have only 2 pages: spin and dispense, depending on the configuration of the system additional pages may be available.

Selecting each page, following parameters will be available

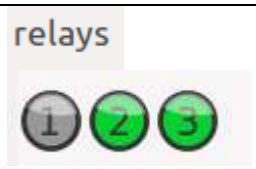
Spin parameters 

The spin page contains the following parameters:

spin time	Time for the step to spin.
direction	Motor spinning direction: Clockwise, counter clockwise
spin speed	Spin speed: between 0 and 12.000rpm, depending of the chuck
spin acceleration	Spin acceleration: between 0 and 51.270 rpm/s, depending of the chuck
If the spin direction selected is “puddle”, the spin speed and acceleration fields are replaced by:	
period	Duration of puddling in milliseconds
amplitude	Amplitude of the puddling in degree considering movement from centre position. I.e. 90 will perform 90° movement clockwise, return to 0 position, 90° counter clockwise and return to 0 position in selected period.

Dispensing parameters

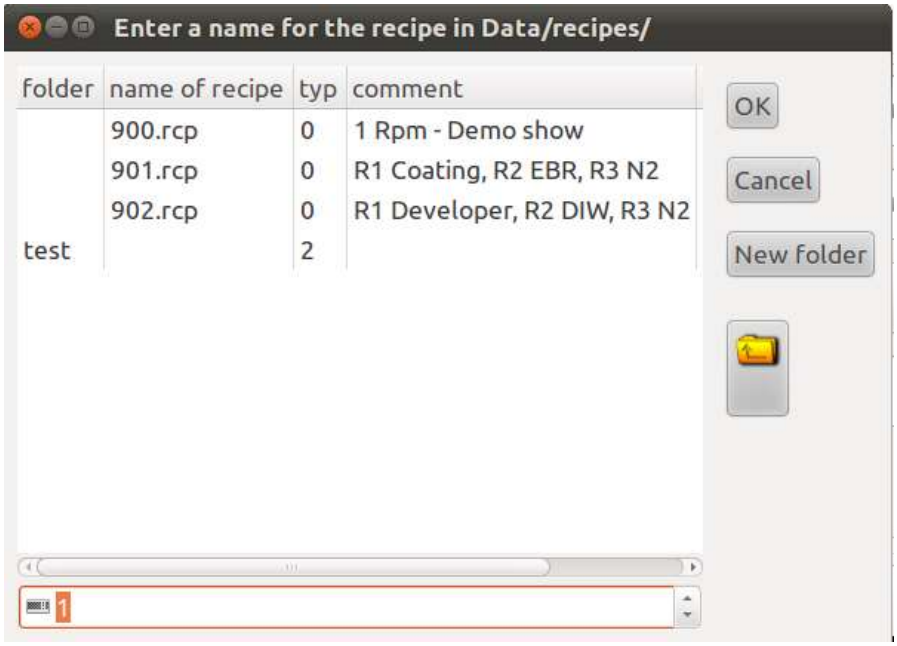
The spin page contains the following parameters:

	Touch each output (here 3 relays) to activate them in the step

Save as...

By touching the save as button, the operator can save the current recipe under another name and/or in another folder.

An explorer windows will be shown to allow selection of the destination folder and the current recipe ID number.



First available ID number will be automatically prompt in relative field and can be changed to another available number. Selecting an existing recipe ID number will prompt a question box informing that recipe is already present, asking for confirmation for overwrite.

Confirm overwrite selecting yes, touch no to return to previous screen/

To select a recipe to be overwritten, click on its name so that its ID number will be indicate in relative field and press “OK”.

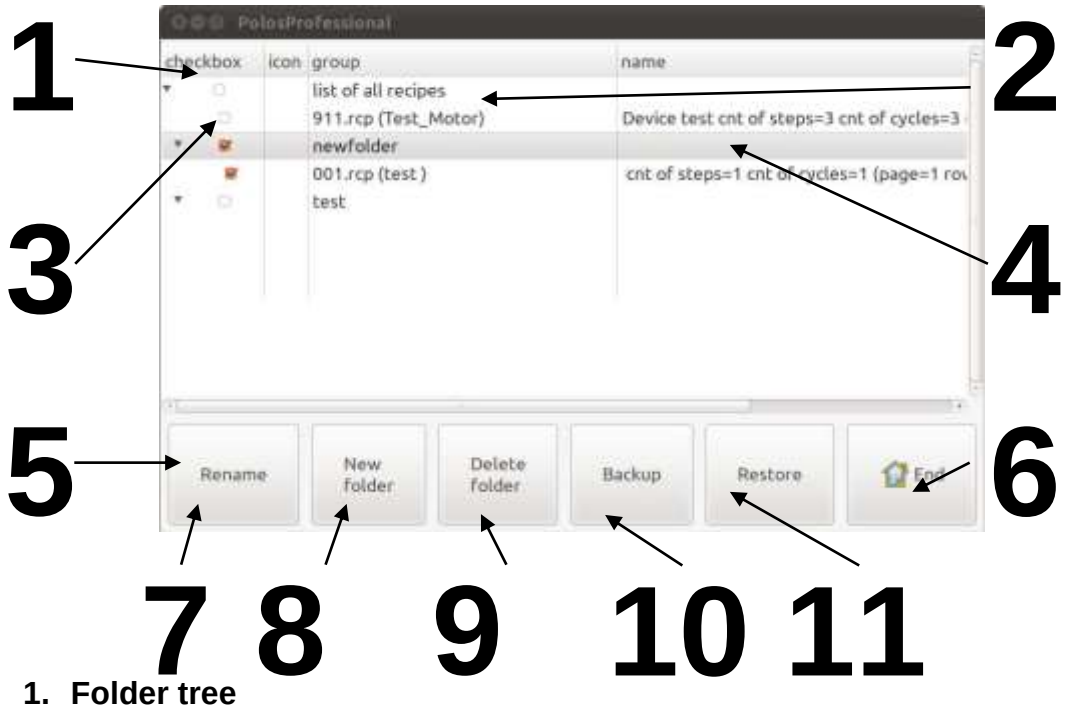
To select a different destination folder, double click on its name to open it.

To make a new folder, touch the button “New folder” and enter a name in the input field prompted.

Note: Folder name can contain a maximum of 10 alphanumerical characters, with neither spaces nor special characters.

8.5 Search a recipe

Touching the search button  on home screen, menu shown below will appear. All recipes saved on machine database are shown in this screen, is possible to get a tree view with an overview of each recipe in each folder. In this mode is also possible to see the position assigned to each recipe icon on the home screen.



1. **Folder tree**
   List of folders and recipes
2. **Recipes and folders name**
3. **Selection checkbox**
   Allows selecting an individual or multiple recipe(s), entire folder(s) or the whole database
4. **Recipe details**
   Description, number of steps and cycles, icon position defined as page, row, and column.
5. **Scroll bar**
   Scrolling left/right allow to see further recipe details
6. **Return**
   Return to the home screen
7. **Rename/edit**
   Allows folder renaming if a folder is selected; replaced by “edit” when a recipe is selected in order to enter the edit mode
8. **New folder**
   Create a new folder in the home screen
9. **Delete folder**
   Delete the selected folder(s)
10. **Backup**
    Select all recipes to archive them and click on this button (see next chapter)
11. **Restore**
    Restore recipes from an archive file done before (see next chapter)

To enable any command buttons **(7-11)** is necessary to select a recipe or folder first; each recipe can be selected, clicking on the corresponding checkbox **(3).**

Delete a folder and its contents

WARNING!

This operation is irreversible, and cannot be undone.

Be sure to make a backup copy before deleting required recipe.

Each recipe or folder can be selected clicking on the corresponding checkbox **(3)**.

Touching the delete button **(9)** while recipe(s) or folder(s) are selected, will cause their permanently deletion from unit internal drive.

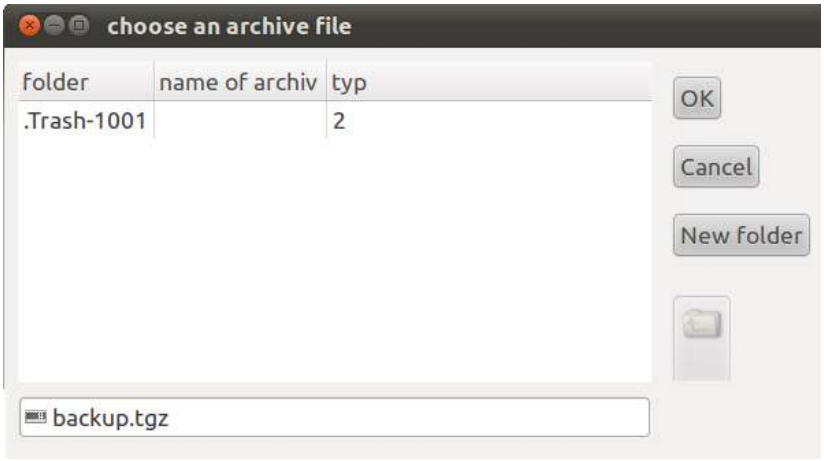
Confirm operation touching “yes” on prompted screen. The selected folder(s) and the recipe(s) it contains are deleted.

Backup recipes to an archive file

This function allows to create an archive on a USB-stick containing a backup copy of selected recipes.

To backup some recipes and folders into an archive file, select required ones and touch back-up button **(10).**

Note: Please make sure that a USB stick is connected to the system, before you start this function.



In prompted menu, input the file name for the destination archive

Once the backup will be completed a confirmation message will be prompted.

WARNING!

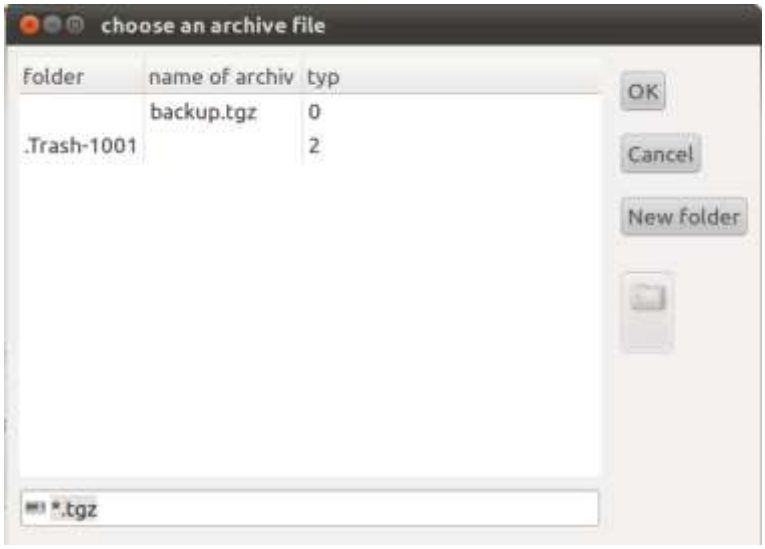
Do not stop nor power of the unit until above message appears; otherwise selected data may be lost and system filenames corrupted.

Restore recipes from an archive file

This function allows restoring a backup copy of selected recipes on the machine internal memory drive from an archive previously created on a USB-stick.

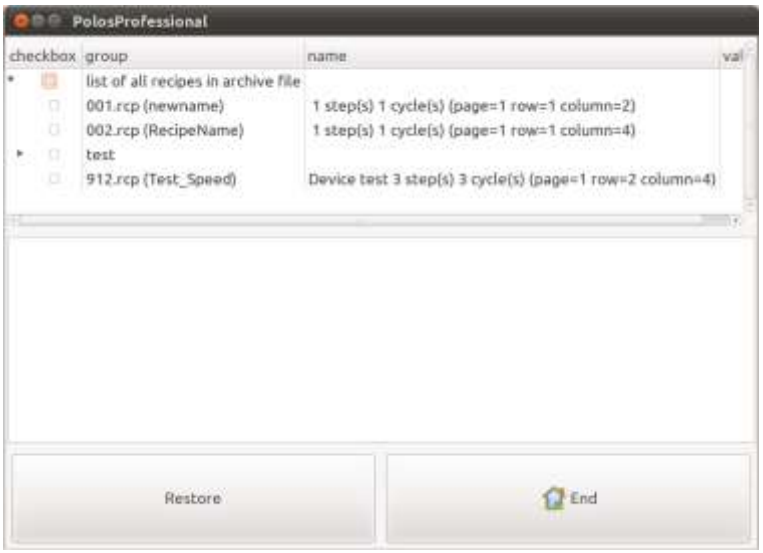
To restore some recipes and folders from an archive file, touch restore button **(11).**

Note: Please make sure that a USB stick is connected to the system, before you start this function.

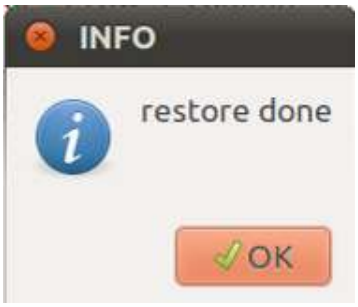


In prompted menu, click on desired archive so that relative name is indicated in field below and touch ok.

On next screen is possible to choose if restoring the complete archive or to select only certain recipe(s) or folder(s).



Touch Restore button to start restore procedure. Once the restore procedure will be completed a confirmation message will be prompt.



WARNING!

Do not stop nor power of the unit until above message appears; otherwise selected data may be lost and system filenames corrupted.

In case a recipe present on internal memory drive has the same ID number as a recipe in restored archive, following message will be prompted.

WARNING!

This operation is irreversible, and cannot be undone.

Confirm operation touching “yes” on prompted screen. Selected recipe will be deleted and replaced by the one presents on backup.

8.6 System parameters

Touching the system parameter button 

on home screen, will be possible to edit machine specific parameters.
There are 3 levels in the system configuration, each one represented by a different parameters group with its own password.
The password protection system prevents accidental or unauthorized changes in the setup.

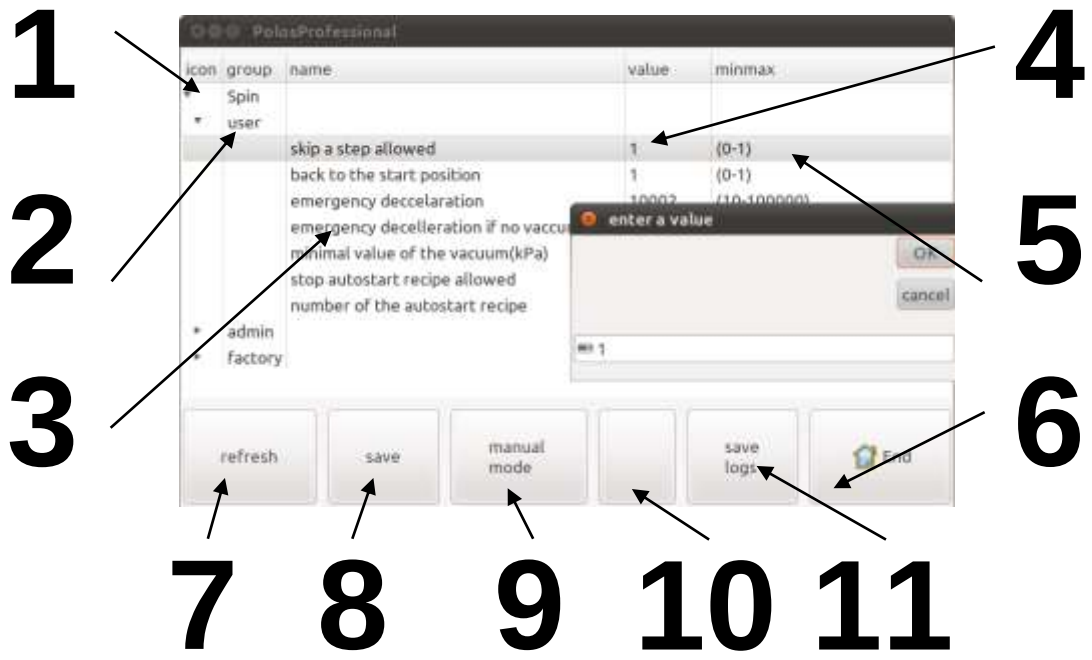
Please refer to **appendixes** for complete parameters list or contact **SPS-Europe B.V.** in case of uncertainty.

WARNING!
System parameters may never be modified by untrained or unauthorized personnel.

DANGER!
Password should be kept in safe place and provided only to qualified personnel.

CAUTION!
Please read the description of the parameters and their signification before applying any change.

Accessing system setting follow screen will appear:



1.Group selection
2.Group indication
3.Parameters name

4. Parameter value
5. Parameter min and max limit
6. End button(return to home screen)
7. Refresh
8. Save
9. Manual mode
10. Service access
11. Save log

Select the desired parameter group touching relative group selection icon in order to show contained parameters.

Parameters value can be edited clicking relative value field. An input window will appear, insert desired value and click “OK” 

button to accept; click on “CANCEL” button to exit the prompt screen without modifying relative parameter value.
Acceptable values must be between the min/max values as indicated in relative column.

Note: Any parameters modification required but not listed in this manual should **only** be done by **SPS-Europe B.V.** service or by persons of equivalent qualification.

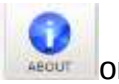
DANGER!

Important: Test the values of parameter in a test environment without fluids to make sure that program and system parameters are correct. Otherwise system may be damaged

CAUTION!

To get experience with the system, it is **STRONLGY** recommended to test the unit with DI water first ONLY before use it with chemicals.

8.7 Information screen

Touching the about button 

on home screen, menu showing unit details and contact information will appear.

Leave the information screen touching “Close” button.
Note: Please refer to appendix for detailed contact information.

9 Maintenance and cleaning

DANGER!

If dangerous chemicals have been used inside the **Polos** spin processor, rinsing of the chamber is required to remove chemicals residual before accessing any contaminated part of the system.

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 except for motor purge and exhaust.
Pay attention to all additional safety instructions in referring section.

9.1 Maintenance

The standard maintenance of **Polos** spin processor consists of cleaning the system exterior, process chamber, chucks and all additional component(s).

Note: cleaning intervals depend on usage intensity and the type of applied media.

WARNING!

All maintenance and service tasks have to be carried out by specially qualified persons only, knowing the perils and being able to prevent them by applying suitable safety measures.

Note: Maintenance and repair work required, but not listed in this manual, should only be done by **SPS-Europe B.V.** service or by persons of equivalent qualification.

9.2 Cleaning

Prior to performing any cleaning steps assure that motor purge is active and all other facility has been disconnected (see section “Required media” of this manual for details).

Activate drain valve considering activating the applicable valve for drainage system as shown in system specific datasheet provided in appendix.

Note: Motor purge must be provided during all cleaning operations.

WARNING!

The Spin processor has a sophisticated design to protect the motor from chemical ingress. To ensure this system works correctly, motor purge must be supplied to the system at any time.

Housing
The **Polos** housing can be cleaned with a dust and lint free cloth, and ISO propanol or equal solvents as required.

Display
The touch screen display should only be cleaned with a damp cloth.

Chamber
Always clean the chamber with suitable method after each process is complete prevent chemical to stand still inside the chamber.

The process chamber should be cleaned according to the dispensed materials - always ensure cleaning chemicals are fully compatible with the specifications of wetted materials

Additional components(Optional)
Periodically flush the drain line to remove all trace of chemicals.
Regularly execute rinse and purge cycles to prevent chemical to stand still inside dispensing system.
If required rinse the hoses with suitable cleaning agents. The type of cleaning agent depends on the process media used before.

CAUTION!

Ensure vacuum is switched **off** while cleaning and close vacuum holes in order to avoid chemicals entering the vacuum line.

CAUTION!

Clean the chuck, the process chamber and the process chamber interior only with DI water or a solvent which is suitable for chamber materials and chemicals used.

Note: please refer to **appendixes, drawings and section technical data** for details or contact manufacturer in case of uncertainly.

CAUTION!

Do not use scratching or scouring cleaning agents or tools, otherwise the system could be damaged.

10 Decommissioning, storage and disposal

10.1 Decommissioning

Prior to storage, system needs to be decommissioned following procedure described below.

Rinse chamber, tanks (if available), canisters (if available) and all dispensing system and plumbing with DI-water.
With liquid aspirator remove all residual liquid inside the unit.
Purge chamber, tanks (if available), canisters (if available) and all dispensing system and plumbing with nitrogen.
Turn off the unit switching main button on rear side.
Reposition all packaging material removed during installation procedure.

10.2 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 24 hours under approved operating conditions.
System start up have to be performed by **SPS-Europe B.V.** service personnel or persons qualified accordingly.

10.3 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.

10.4 Disposal of Chemicals

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

11 Technical data

11.1 Materials specifications

System
The overall system housing, frame components, chucks and adapters, drain and flexible hose are made of PP (NATURAL POLYPROPYLENE).
(Standard NPP chemical resistance specifications are applicable.) O-Rings are made of EPDM, alternatively NBR/Viton® or FEP (Teflon®) coated

Lid window
Standard: horizontal transparent pane in lid: ESG Float
Alternative: dome transparent dome in lid: ECTFE.

Touchscreen
Cover made of POLYESTER

Drain
Drain connection PP (Natural Polypropylene) 1" MNPT external thread.
optional drain hose NPP (Natural Polypropylene)

Protection classification
In deck version: IP 53 (motor overpressure connection active)
Desktop version: IP 52 (motor overpressure connection active)
see chapter: facility requirements for motor overpressure connection

Hose connections
The gas connections are full Polypropylene
DN 06/08 fittings for vacuum and DN 04/06 for motor purge.

STICKERS and LABELS
The labels and stickers are made from Polyester.

11.2 Dimensions

*See **mechanical** **drawings*** in appendix

11.3 Facility requirements

Operating voltage
Voltage: 100 -120 VAC or 200 - 240 VAC (auto select)
Frequency: 50 / 60 Hz
Max. current: 2,5 / 5 A
Power consumption (max.): 500 Watt

Motor purge
Required supply: 20-50kPa or 2 - 5l/min
Connector: ID 4mm – OD 6mm
When using liquids (especially chemicals) the connection (Motor purge) must be continuously supplied by gas (for this feature is possible to use compressed air, nitrogen or any other neither flammable nor corrosive gas). This maintains an overpressure in the drive shaft bearing to protect against liquid ingress.
Note: This is essential to ensure the long term lifetime and performance of the system.

Vacuum
Minimum vacuum requirement: - 70 kPa (-21 inchHg). (relative to atmospheric pressure)
Connector: ID 6mm – OD 8mm
Minimum supply line diameter: ID 6 mm (¼"), OD 8mm
For the correct operation of vacuum chucks and adapters, the vacuum supply requirements are:

Drain
Connector: 1" M-NPT external thread
The drain comes supplied with a removable cap.
The drain outlet must lead to a chemically compatible drain or drain store.
An adapter for exhaust separation is optional available.

Programmable relay-contacts
Connector: DSub9 female
Programmable auxiliary potential free relay output suitable for external switching.
Contact Ratings:0.5 A/125 VAC – 0.3A/60VDC
The Spin 150 provided a cable with DSub9 female connector.
Pin 1 and 2: Programmable relay contact 1 (normally open).
Pin 3 and 4: Programmable relay contact 2 (normally open).
Pin 5 and 6: Programmable relay contact 3 (normally open).
Pin 7: 24 VDC
Pin 8: Ground
Pin 9: not connected.

COMPRESSED AIR/ PNEUMATIC (Optional)
Compressed air is necessary to supply control valves, pneumatic lid or other option available.
Connector: ID 6mm – OD 8mm
Requirement: min. 300 – max. 400kPa. Min. 3.0bar – max. 4.0bar.

11.4 Chemicals

Chemicals to be provided and applied by the user.
Maximum media pressure: max. 300kPa (3.0 bar).

DANGER!

When handling chemicals please observe relevant safety regulations as well as chemical supplier's instructions (chemical safety data sheet plus additional instructions).

11.5 Noise emission

Noise level of the unit: < 55 dbA

11.6 Applicable directive

Polos spin processor is built accordingly to CE directive:
EG EMV-Richtlinie 2004/108/EG - EU EMC-directive 2004/108/EC
EG Maschinenrichtlinie 2006/42/EG - EU Machinery directive 2006/42/EC
EG Niederspannungsrichtlinie 2006/95/EG - EU LowVoltage directive 2006/95/EC

A.1 Available chuck

#	Name	Icon	Max speed	Max accelleration	Vacuum required	Height	Remarks
1	A type		10000	30000	Yes	20	Compatible with D-type chucks
2							
3							
4							
5							

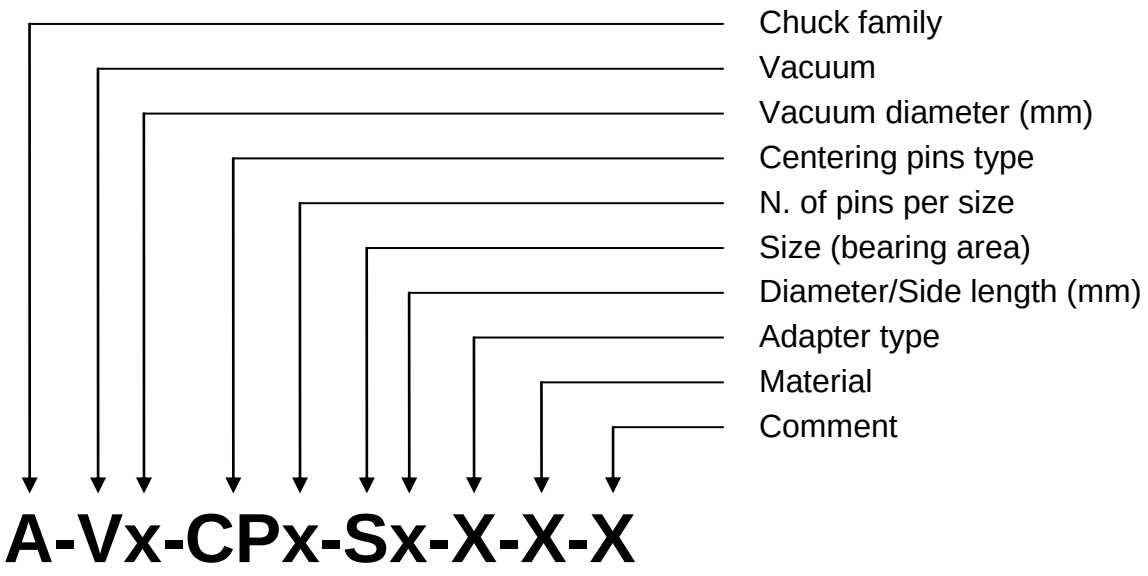
WARNING!

The maximum applicable speed is depending on the size and weight of the substrate and the used spinner unit.

Unit comes standard with A-V36-S45-PP suitable for substrate larger than 45 mm and fragment adapter D-V10-S50-PP for substrate larger than 10mm

A-V36-S45-HD-PP

D-V10-S50-PP



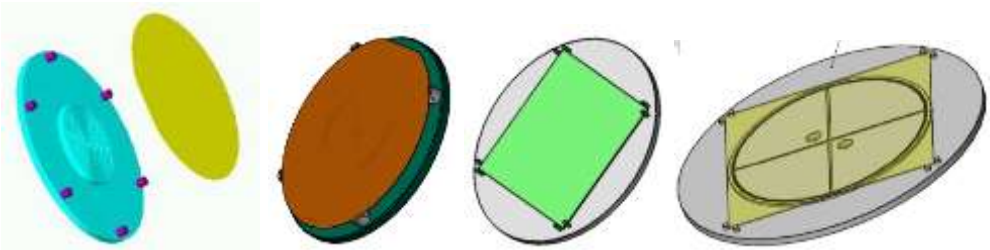
Note: other chucks available on request, please contact **SPS-Europe B.V.** for details

1.1 Family types

A type

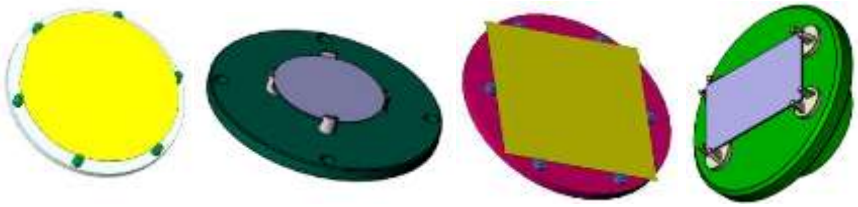
Multi-purpose vacuum chuck. Requires centering tools

B & L type



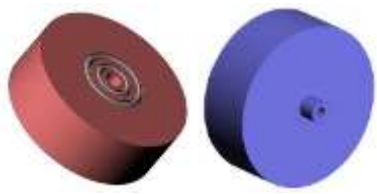
Specific size vacuum chuck with centering pins for round or square / rectangular substrate.
For high speed application.

C & E type



Specific size chuck with centering pins for round or square/rectangular substrates.
For edge contact only.

D type

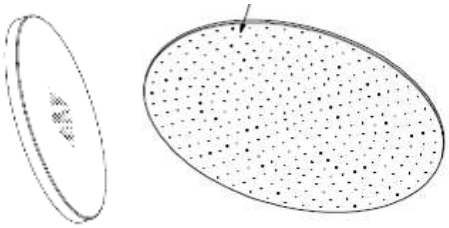


Vacuum chuck adapter for small substrate/ fragment.

H type

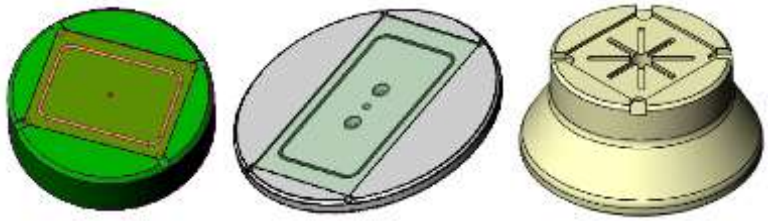
Non vacuum chuck with clearance for round and square/rectangular substrate
For back side processing

J type



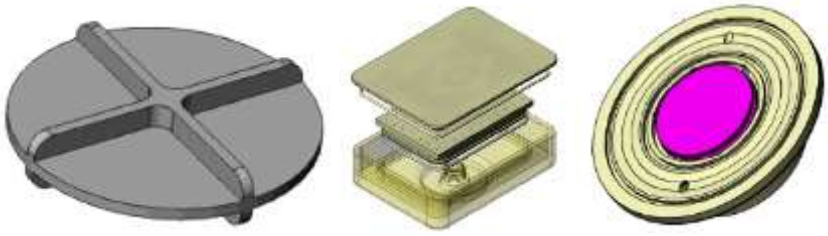
Foil adapter. For thin or flexible substrate

K type



Vacuum chuck for rectangular substrate. With embedded design for precise coating

N type



Customized chuck designed for special application.

Materials

Chucks are available in following materials:

- PP NPP with EPDM o-ring
- FP PTFE (TFM 1600 with FKM o-ring)
- EC ECTFE
- SS Stainless Steel
- AL Aluminum

Note: other materials available on request, please contact **SPS-Europe B.V.** for details

A.2 Preset recipe

#	Name	Spin				Dispense	
		Time	Direction	Speed Angle	Acceleration Period	Output	Time
901.H	**Coat**	**A-type chuck, 1 cycle, "R1 Coater, R2 EBR, R3 N2"**					
901.1	Dispense	5	CW	100	1000	R1	5
901.2	Spin-up	20	CW	2000	10000	-	-
901.3	EBR	10	CW	500	1000	R2	10
901.4	Dry	20	CW	4000	1000	R3	20
902.H	**Develop**	**A-type chuck, 5 cycles, "R1 Developer, R2 DIW, R3 N2"**					
902.1	Spray	5	PDL	90	1000	R1	5
902.2	Puddle	10	PDL	90	1000	-	-
902.3	Rinse	10	CW	1000	1000	R2	10
902.4	Dry	20	CW	3000	3000	R3	20
905.H	**Test**	**A-type chuck, 3 cycles, "Device test"**					
905.1	CW-motion	10	CW	1000	1000	R1	10
905.2	CCW-motion	10	CCW	1000	1000	R2	10
905.3	PDL-motion	10	PDL	90	1000	R3	10
905.4	1rpm	10	CW	1	1000	R1	10
905.5	1000rpm	10	CW	1000	1000	R2	10
905.6	5000rpm	10	CW	5000	10000	R3	10

A.3 System parameters

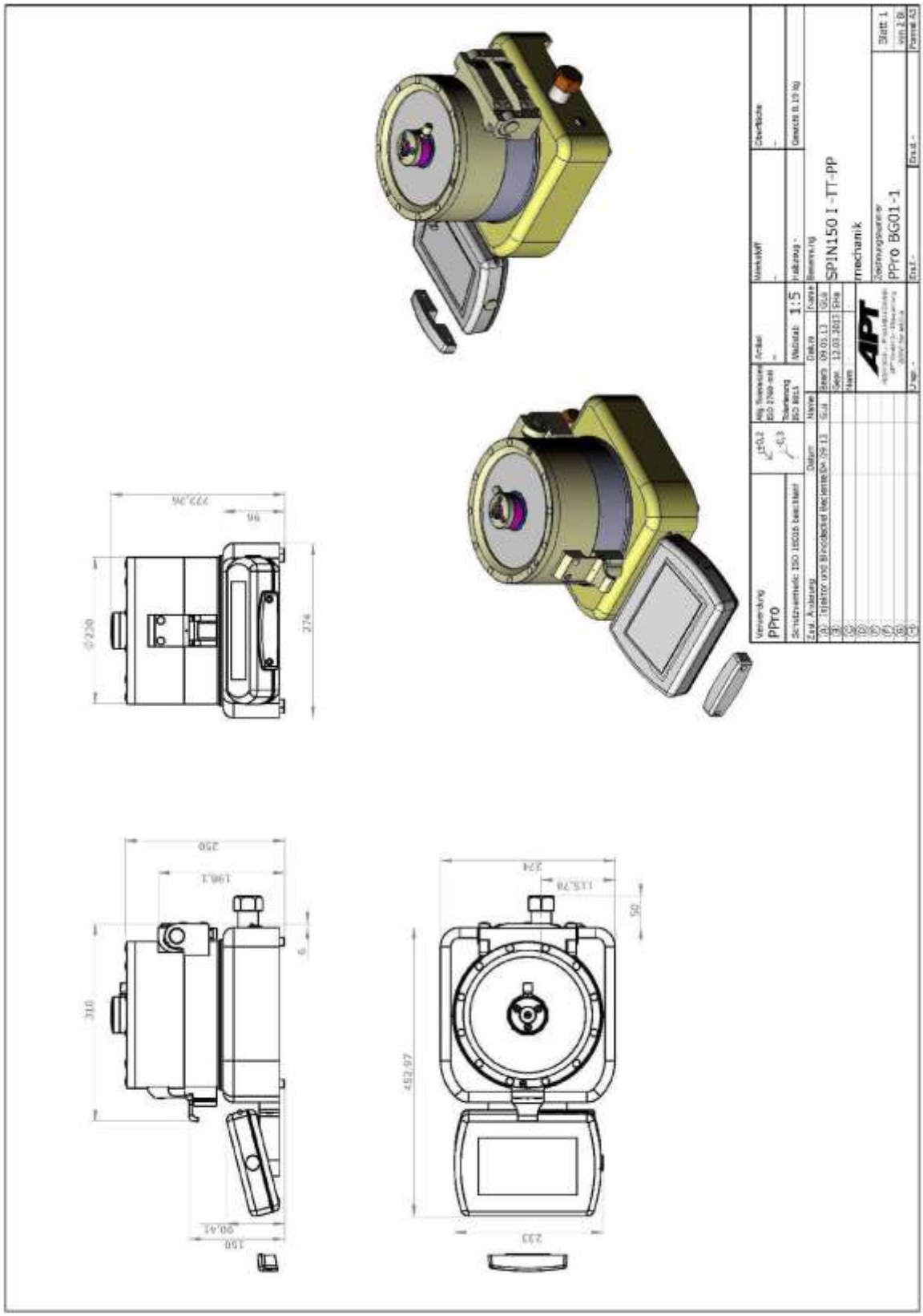
Parameter	Range (Maximum value could be limited per factory requirment)			Notes
	Default	Min	Max	
User				
vacuum_ok	48	10	100	minimal value of the vacuum(kPa)
Admin				
time_let_lid_unlocked	5	0	5	time to let the lid unlocked
lid_unlocked_latency	2	1	3	latency for the lid-unlocked sensor

A.4 Password list

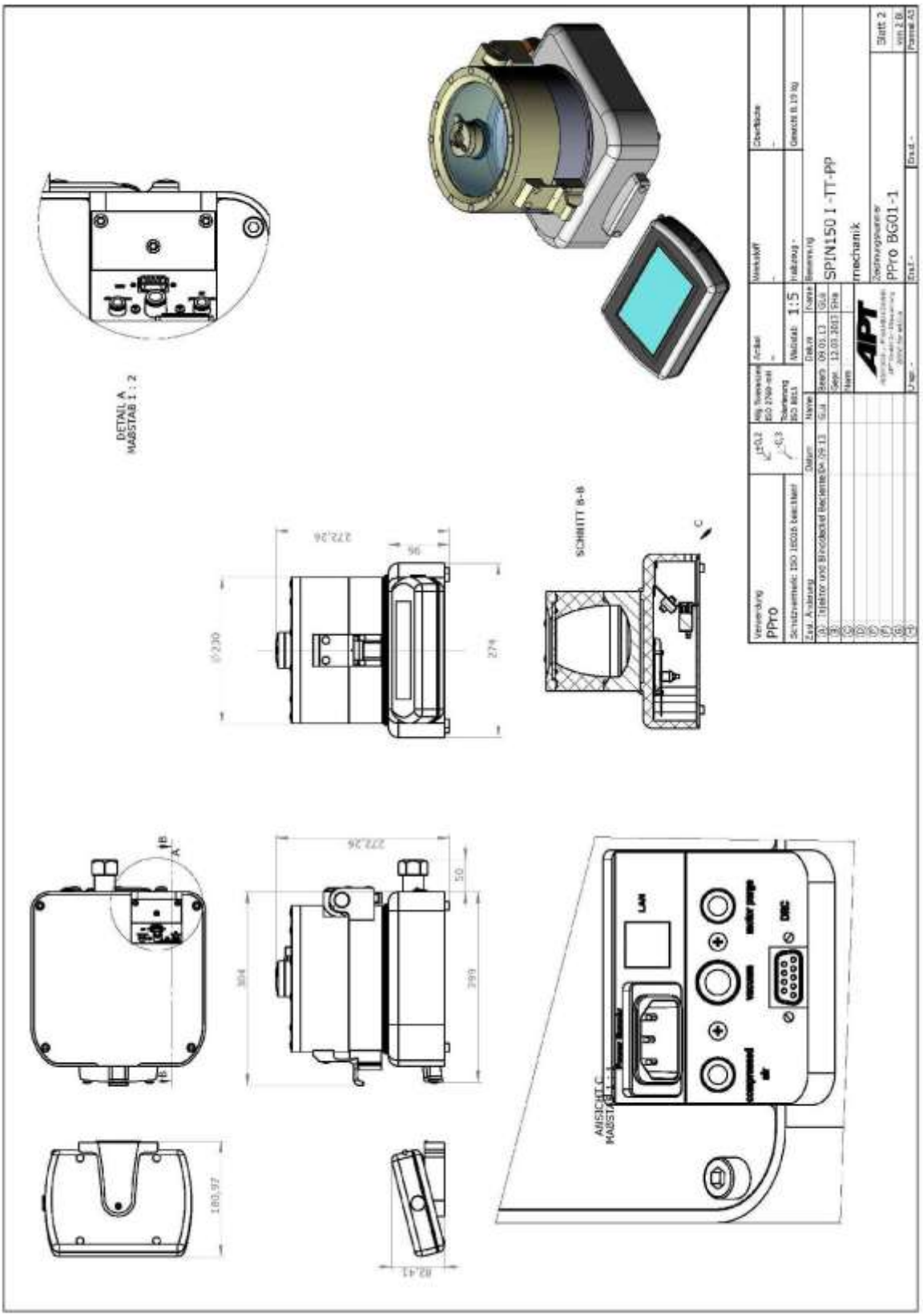
Level	Password	Remarks
User	2408	
Administrator	1106	
Manual mode	1106	

A.5 Dimensioned drawings

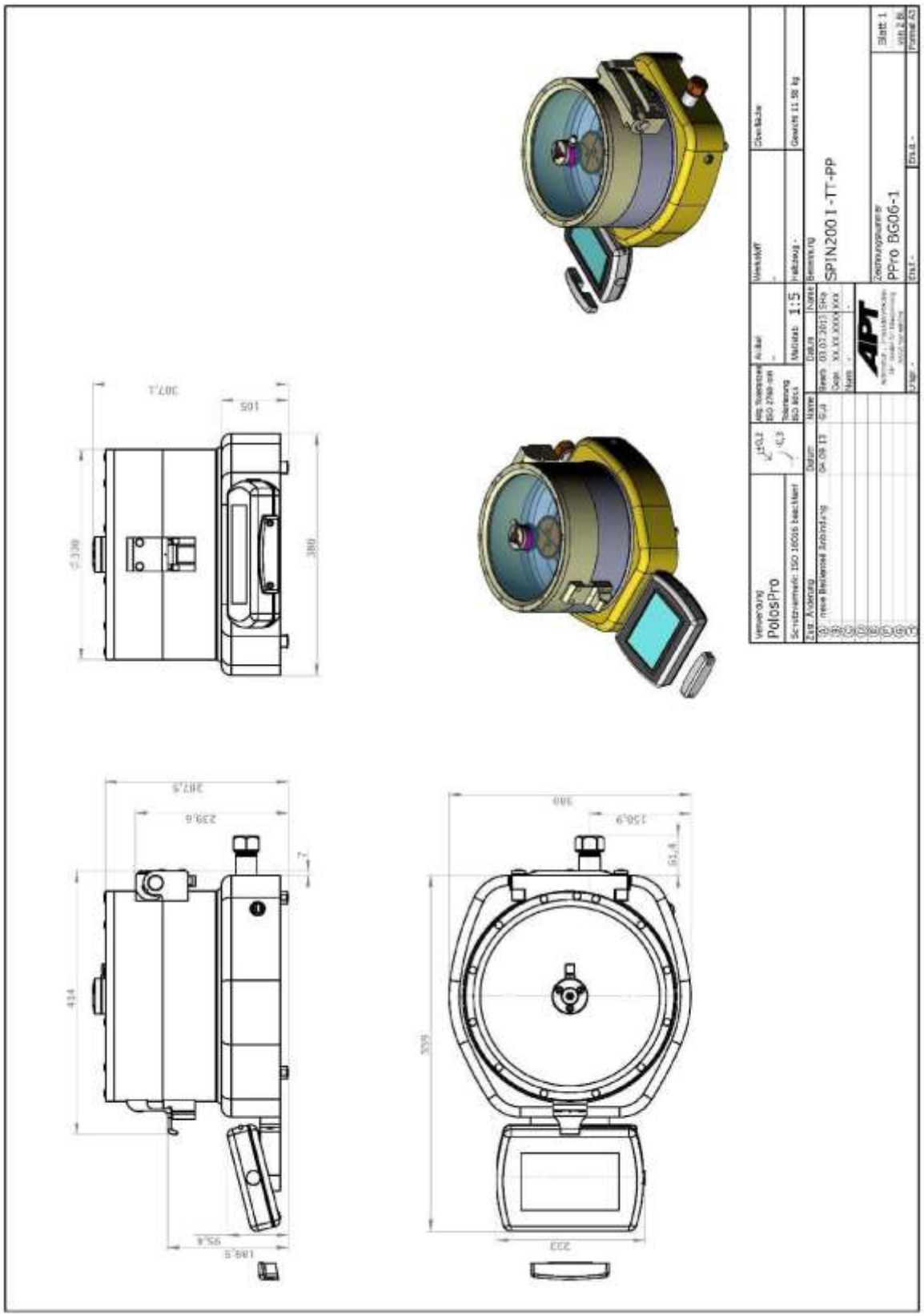
Spin150i



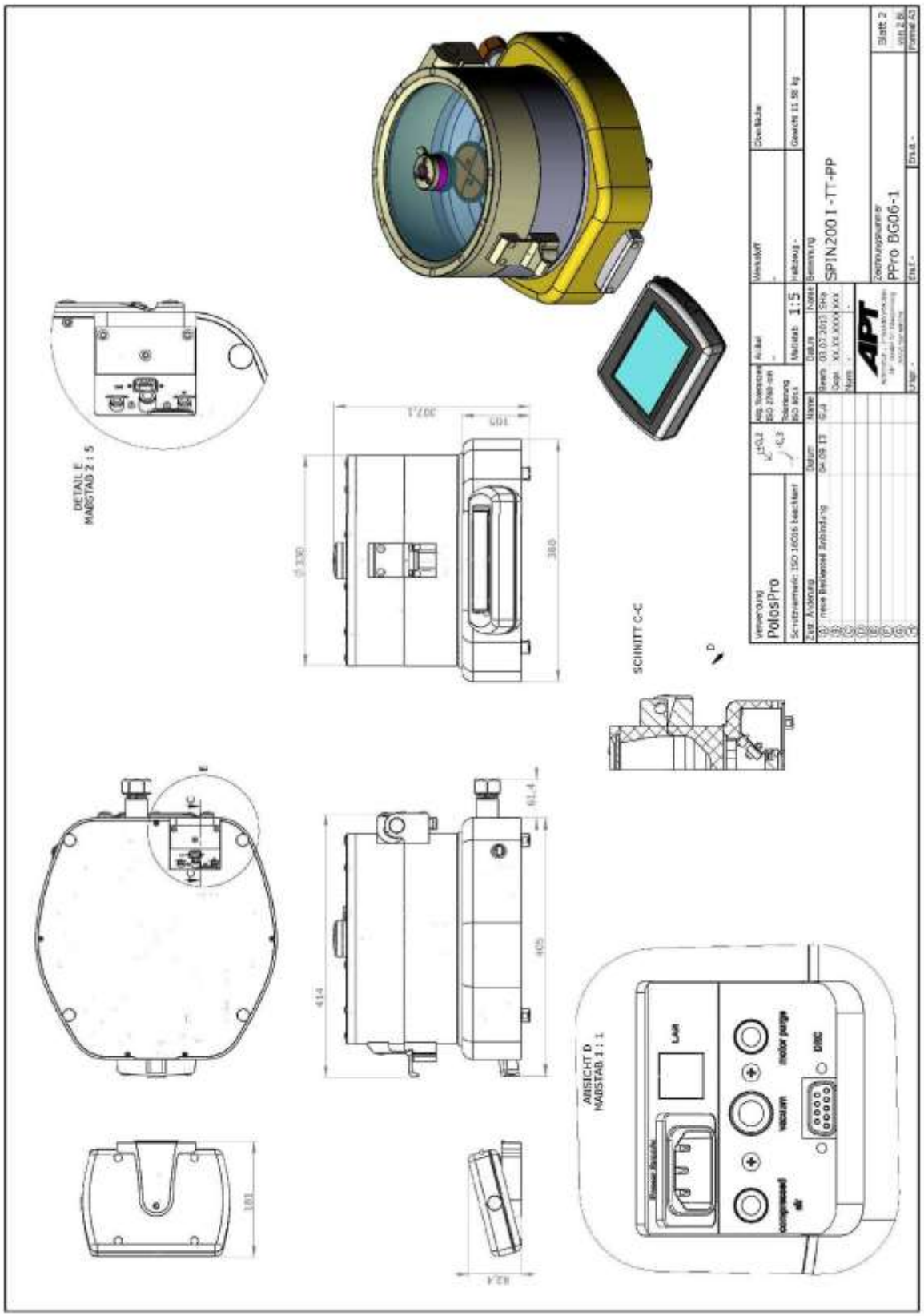
Spin150i – detached satellite controller



Spin200i



Spin200i – detached satellite controller



EG-Konformitätserklärung - CE Declaration of Conformity

nach – with

EG EMV-Richtline 2004/108/EG - EU EMC-directive 2004/108/EC

EG Maschinenrichtlinie 2006/42/EG - EU Machinery directive 2006/42/EC

EG Niederspannungsrichtlinie 2006/95/EG - EU LowVoltage directive 2006/95/EC

CE

Der Hersteller / The Manufacturer

SPS

Midden Engweg 41

3882 TS Putten

The Netherlands

erklärt hiermit, daß folgendes Produkt / hereby declares that the following product

Polos Spin 150i/200i

(Rev 1.0 oder höher / or higher)

den Bestimmungen der oben bezeichneten Richtlinien entspricht. /

is in conformity to the above standards.

Putten, 19.09.2013 J.L.M. Hilhorst

- CEO / Geschäftsführer -

Unterzeichner / Signer

A.6 Contacts

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www.sps-europe.com

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