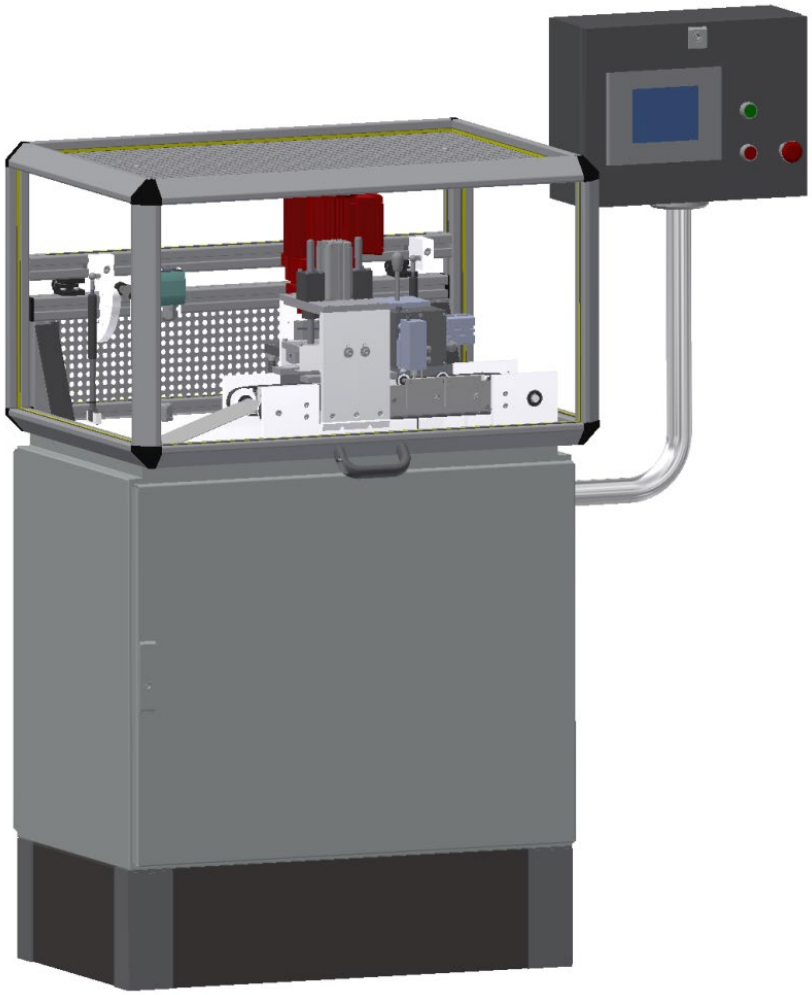
ITW Dynatec®

Adhesive Application Solutions | ISO 9001 certified

SmartBond Adhesive Testing Unit

With Servo motor and Siemens Controller TP700
PN I19.00160.503, AB399832

Technical Documentation, No.20-87, Rev.4.24
English - Translation of the original instructions (German)



ITW Dynatec
An Illinois Tool Works Company
www.itwdynatec.com

Information about this manual

Read all instructions before operating this equipment!

It is the customer's responsibility to have all operators and service personnel read and understand this information. Contact your ITW Dynatec customer service representative for additional copies.

NOTE: Please be sure to include the serial number of your application system each time you order replacement parts and/or supplies. This will enable us to send you the correct items that you need.

NOTE: Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

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Additional Suppliers documents on USB:

- Burster, Tension-Compression Load Cells, Amplifier
- SEW Motor and gear
- Vexta Stepping motor
- Wenglor, Sensor

Chapter 1
Declaration of Incorporation / Conformity

EG-Konformitätserklärung CE
im Sinne der EG-Maschinenrichtlinie 2006/42/EG

EC-Declaration of Conformity
according to machine regulation 2006/42/EG

CE

Der Hersteller ITW Dynatec GmbH Industriestr. 28 40822 Mettmann Telefon +49-(0)2104-915-0 Telefax +49-(0)2104-915-111	**The manufacturer** ITW Dynatec GmbH Industriestr. 28 40822 Mettmann Phone +49-(0)2104-915-0 Fax +49-(0)2104-915-111
erklärt hiermit, dass die nachfolgend bezeichnete Maschine	**confirms that the machine mentioned below**
Bezeichnung der Maschine: **Klebstoffprüfgerät** Maschinentyp: **mit Mikroschmelzer**	Description of the machine: **Glue Testing Unit** Machine type: **with Micro-Melter**
aufgrund ihrer Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen, sowie der elektromagnetische Verträglichkeits-Richtlinien der EG-Maschinenrichtlinie entspricht. Bei einer nicht mit uns abgestimmten Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.	**is designed and executed according to the safety and health regulations as well as to electromagnetic compatibility specifications of the EC Machine Specification. This declaration is void in case of any changes made on the apparatus without written agreement by us.**
Einschlägige EG-Richtlinien: • Maschinenrichtlinie (2006/42/EG) • EG-Niederspannungsrichtlinie (2006/95/EG) • Norm der Störsendung EN 61000-6-4 • Norm der Störfestigkeit EN 61000-6-2 • EMV-Richtlinie (2004/108/EG) • EG-Richtlinie Maschinen 2006/42/EG, Anhang VII B • Angewandte harmonisierte Normen, insbesondere • DIN EN ISO 12100-1 Sicherheit von Maschinen, • und 12100-2 Grundbegriffe, allgemeine Gestaltungsleitsätze • DIN EN 294 und 811 Sicherheit von Maschinen, Sicherheitsabstände • DIN EN 349 Sicherheit von Maschinen Mindestabstände • DIN EN 60204-1 Sicherheit von Maschinen Elektrische Ausrüstung • DIN VDE 0113 Elektrische Ausrüstung von Industriemaschinen	EC Specifications: • Machine specifications (2006/42/EC) • EC-low-voltage direction (2006/95/EC) • Standard of interference emission EN 61000-6-4 • Standard of being interference-proof EN 61000-6-2 • EMC-direction (2004/108/EC) • EC Specifications Maschinen 2006/42/EG, Annex VII B • Applied harmonized standards, in particular • DIN EN ISO 12100-1 Security of Machines, • and 12100-2 Fundamental Terms, general principles for design • DIN EN 294 und 811 Security of Machines, safety distances • DIN EN 349 Security of Machines, • minimum distances • DIN EN 60204-1 Security of Machines, • electrical equipment • DIN VDE 0113 Electrical equipment of industrial machines

Mettmann, den 24.10.2012 — Christof Schotten, Geschäftsführer

(Ort und Datum /Place and date of issue) (Name des Unterzeichnenden/ Identification of representative) (Unterschrift/Signatur)

Ersteller und Verantwortlicher der technischen Dokumentation: Zekeriye Kasaboglu
Author and responsible person of the technical documentation

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Chapter 2
Safety Instructions

2.1 General Considerations

- **All operators and service personnel must read and understand this manual before operating or servicing equipment.**
- **All maintenance and service on this equipment must be performed by trained technicians.**

Read and adhere to the manual!

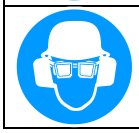
1. Read and follow these instructions.
   Failure to do this could result in severe personal injury or death.
2. Keep the binding rules for accident prevention valid for your country and the place of installation. Also keep the approved qualified technical rules for safety-conscious and professional work.
3. Additional safety instructions and/ or symbols are located throughout this manual. They serve to warn maintenance personnel and operators about potentially hazardous situations.
4. Inspect the machine for unsafe conditions daily and replace all worn or defective parts.
5. Keep work area uncluttered and well lit. Remove all material or things not needed for the production from the workspace of the equipment!
6. All covers and guards must be in place before operating this equipment.
7. Subject to technical modifications without notice!
8. To ensure proper operation of the equipment, use specified electrical and/ or air supply sources.
9. Do not attempt to alter the design of the equipment unless written approval is received from ITW Dynatec.
10. Keep all manuals readily accessible at all times and refer to it often for the best performance from your equipment.

2.2 Warning Labels

1. Read and obey all of the warning labels, signs and caution statements on the equipment.
2. Do not remove or deface any of the warning labels, signs and caution statements on the equipment.
3. Replace any warning labels, signs and caution statements which have been removed or defaced. Replacements are available from ITW Dynatec.

2.3 Safety Symbols in this Manual

Mandatory signs

	General mandatory sign
	Read and adhere to the documentation!
	Switch the unit voltage-free before working! Main switch OFF!
	Wear headgear, protective goggles and ear protection!

	Wear foot guard!
	Wear protective gloves!
	Wear protective clothing!

Warning signs

NOTE: The dangers and risks exist if the corresponding instructions are not heeded and the precautionary measures are not taken!

	**Caution, danger spot!** This sign points to possible dangers for life and physical condition or to possible risks for machine and material or to possible risks for environment. The word **"DANGER"** in addition with this points to possible dangers of life The words **"WARNING" and "CAUTION"** in addition with this sign point to possible risks of injury. The word **"ADVICE"** in addition with this sign points to possible risks for machine, material or environment.

	**Danger, high voltage!** This sign points to possible dangers for life and physical condition caused by electricity. **Risk of injury, mortal danger!**
	**Caution, hot surface!** This sign points to possible risks of burns. **Risk of Burns!**
	**Caution, high pressure!** This sign points to possible risks of injury caused by high pressure. **Risk of injury!**
	**Caution, rotating rolls!** This sign points to possible risks of injury caused by inrunning nip (at rolls). **Risk of injury!**

Prohibition signs

	**Fire danger!** **Smoking prohibited!**

	**Fire danger!** **Fire and open flames prohibited!**

2.4 Safe Installation and Operation

Read and adhere to the manual!

1. Read this manual before applying electrical power to the equipment. Equipment may be damaged by incorrect electrical connections.
2. To avoid possible failure of hoses, make sure all hoses are routed to avoid kinking, tight radius turns (8” or less) and abrasive contact. Hot-melt hoses should not have prolonged contact with heat-absorbing surfaces such as cold floors or metal troughs. These heat-absorbing surfaces can alter adhesive flow and cause incorrect calibration. Hoses should never be covered with materials that prevent heat dissipation, such as insulation or sheathing. Hoses should be spaced apart from each other, not making direct contact.
3. Do not use adhesive that is dirty or that may be chemically contaminated. Doing so can cause system clogging and pump damage.
4. When adhesive hand-held applicators or other movable applicators are used, never point them at yourself or at any other person. Never leave a hand-held applicator's trigger unlocked when not actually in use.
5. Do not operate the hopper or other system components without adhesive for more than 15 minutes if the temperature is 150° C (300° F) or more. To do so will cause charring of the residual adhesive.
6. Never activate the heads, hand-held applicators and/ or other application devices until the adhesive's temperature is within the operating range. Severe damage could result to internal parts and seals.
7. Never attempt to lift or move the unit when there is molten adhesive in the system.
8. In case of an emergency or exceptional incident, press the emergency stop button in order to stop the unit quickly.
9. Use the unit only as it is intended to.
10. Never let the unit run unattended.
11. Operate the unit only in a faultless and fully functional condition. Check and make sure that all safety devices work in proper form!

	**Smoking, fire and open flames prohibited! Fire danger!** Make absolutely sure that there is no smoking and no fire being lit in the work area!

2.5 Explosion/ Fire Hazard

1. Never operate this unit in an explosive environment.
2. Use cleaning compounds recommended by ITW Dynatec or your adhesive supplier only.
3. Flash points of cleaning compounds vary according to their composition, so consult with your supplier to determine the maximum heating temperatures and safety precautions.

2.6 Choice of Adhesive

DANGER! HARMFUL FUMES!

Substance(s) being processed (e.g., melted, pumped, applied) by ITW equipment is at the discretion of the user and beyond ITW Dynatec's control. Any health effects or other safety-related concerns arising from the melting of those particular substances (e.g., hazardous fumes) is the responsibility of the user to identify and mitigate.

2.7 Use of PUR (Polyurethane) Adhesives

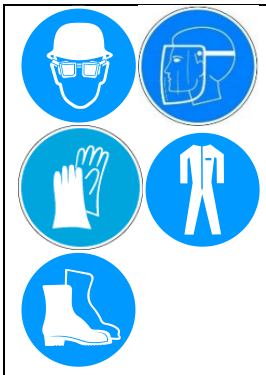
1. PUR adhesives emit fumes (MDI and TDI) that can be dangerous to anyone exposed to them. These fumes cannot be detected by the sense of smell. ITW Dynatec strongly recommends that a power-vented exhaust hood or system be installed over any PUR system.

2. Consult with your adhesive manufacturer for specifics about required ventilation.

CAUTION

Because of the nature of PUR adhesives to strongly bond in the presence of moisture, care must be taken to prevent them from curing inside ITW Dynatec equipment. If PUR adhesive solidifies in a unit, the unit must be replaced. Always purge old PUR adhesive from the system per your adhesive manufacturer's instructions and time table. ALLOWING PUR ADHESIVE TO CURE IN A UNIT OR ITS COMPONENTS VOIDS ITW DYNATEC'S WARRANTY.

2.8 Eye Protection & Protective Clothing



WARNING
EYE PROTECTION & PROTECTIVE CLOTHING REQUIRED

1. It is very important that you PROTECT YOUR EYES when working around hot melt adhesive equipment!

2. Wear a face shield conforming to ANSI Z87.1 or safety glasses with side shields which conform to ANSI Z87.1 or EN166.

3. Failure to wear a face shield or safety glasses could result in severe eye injury.

4. It is important to protect yourself from potential burns when working around hot melt adhesive equipment.

5. Wear heat-resistant protective gloves and long sleeved, protective clothing to prevent burns that could result from contact with hot material or hot components.

6. Always wear steel reinforced safety shoes.

2.9 Electrical

DANGER HIGH VOLTAGE

1. Dangerous voltages exist at several points in this equipment. To avoid personal injury, do not touch exposed connections and components while input power is on.
2. Disconnect, lockout and tag external electrical power before removing protective panels.
3. A secure connection to a reliable earth ground is essential for safe operation.
4. An electrical disconnect switch with lockout capability must be provided in the line ahead of the unit. Wiring used to supply electrical power should be installed by a qualified electrician.
5. Notify the maintenance personnel immediately, if cables are damaged. Provide for exchanging the defective components immediately.

2.10 Lockout/ Tagout

Switch the unit voltage-free before working!
Main switch OFF!

1. Follow OSHA 1910.147 (Lockout/ Tagout Regulation) for equipment's lockout procedures and other important lockout/tagout guidelines.
2. Be familiar with all lockout sources on the equipment.
3. Even after the equipment has been locked out, there may be stored energy in the application system, particularly in the capacitors within the panel box. To ensure that all stored energy is relieved, wait at least one minute after removing power before servicing electrical capacitors.

2.11 High Temperatures

WARNING HOT SURFACE

1. Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.
2. Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

2.12 High Pressure

WARNING HIGH PRESSURE PRESENT

1. To avoid personal injury, do not operate the equipment without all covers, panels and safety guards properly installed.

2. To prevent serious injury from molten adhesive under pressure when servicing the equipment, disengage the pumps and relieve the adhesive system's hydraulic pressure (i.e. trigger the heads, hand-held applicators, and/or other application devices into a waste container) before opening any hydraulic fittings or connections.

3. IMPORTANT NOTE: Even when a system's pressure gauge reads “0” psi, residual pressure and trapped air can remain within it causing hot adhesive and pressure to escape without warning when a filter cap or a hose or hydraulic connection is loosened or removed. For this reason, always wear eye protection and protective clothing.

4. Either of the two High Pressure symbols shown may be used on ITW Dynatec equipment.

5. Keep the given operating pressure.

6. Notify the maintenance personnel immediately, if hoses or components are damaged. Provide for exchanging the defective components immediately.

2.13 Protective Covers

WARNING
DO NOT OPERATE WITHOUT GUARDS IN PLACE

1. Keep all guards in place!

2. To avoid personal injury, do not operate the application system without all covers, panels and safety guards properly installed.

3. Never get your extremities and/or objects into the danger area of the unit. Keep your hands away from running parts of the unit (pumps, motors, rolls or others).

2.14 Servicing, maintenance

1. Only trained and qualified personnel are to operate and service this equipment.
2. Before any service work disconnect the external power supply and the pressure air supply!
3. Never service or clean equipment while it is in motion. Shut off the equipment and lock out all input power at the source before attempting any maintenance.
4. Follow the maintenance and service instructions in the manual.
5. Keep the maintenance rates given in this documentation!
6. Any defects in the equipment that impact safe operation have to be repaired immediately.
7. Check screws that have been loosened during the repair or maintenance, if they are tight again.
8. Replace the air hoses in preventive maintenance regularly, even if they have got no viewable damages! Adhere to the manufacturers` instructions!
9. Never clean control cabinets or other houses of electrical equipment with a jet of water!
10. Adhere to the current safety data sheet of the manufacturer when using hazardous materials (cleaning agents, etc.)!

2.15 Cleaning Recommendation

- Filters are disposable and need to be replaced regularly. DO NOT boil in mineral oil, solvents or water; the sealant used in filter assembly may become brittle and very likely disintegrate when boiled.
- When cleaning other components in mineral oil, remove all non-metallic items (O-rings, seals, filter cartridge, etc.) away from chemicals before components are subjected to hot mineral oil cleaning.
- If there is not a specific rebuild kit available or directions on how to clean a part, please treat it as a replacement item and do not attempt to clean/rebuild.

2.16 Secure transport

1. Examine the entire unit immediately after receipt, if it has been delivered in perfect condition.

2. Let damages in transit certify by the carrier and announce them immediately to the ITW Dynatec.

3. Use only lifting devices that are suitable for the weight and the dimensions of the equipment (see drawing of the equipment).

4. The unit has to be transported upright and horizontally!

5. The unit has to cool down to room temperature before packaged and transported.

2.17 Treatment for Burns from Hot Melt Adhesives

Measures after being burned:

1. Burns caused by hot melt adhesive must be treated at a burn center. Provide the burn center's staff a copy of the adhesive's M.S.D.S. to expedite treatment.

2. Cool burnt parts immediately!

3. Do not remove adhesive forcibly from the skin!

4. Care should be used when working with hot melt adhesives in the molten state. Because they rapidly solidify, they present a unique hazard. Even when first solidified, they are still hot and can cause severe burns.

5. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.

6. Always have first-aid information and supplies available.

7. Call a physician and/or an emergency medical technician immediately. Let the burns medicate by a medic immediately.

2.18 Measures in case of fire

1. Please heed that not covered hot parts of the engine and molten hot melt may cause heavy burns. Risk of burns!

2. Work very carefully with molten hot melt. Keep in mind, that already jelled hot melt can be very hot, too.

3. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body!

Measures in case of fire:

Wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body.

Firefighting - burning hot melt:

Please keep attention to the safety data sheet given by the adhesive manufacturer.

EXTINGUISH FIRE

Appropriate extinguishing agents:
Foam extinguisher, Dry powder, Spray, Carbon dioxide (CO_2), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:

Appropriate extinguishing agents:
Carbon dioxide (CO_2), Dry powder.

2.19 Keep attention to environmental protection standards

1. When working on or with the unit, the legal obligations for waste avoidance and the duly recycling / disposals have to be fulfilled.

2. Keep attention, that during installations, repairs or maintenance matters hazardous to water, like adhesive / adhesive scrap, lubricating grease or oil, hydraulic oil, coolant and cleaner containing solvent do not pollute the ground or get into the canalization!

3. These matters have to be caught, kept, transported and disposed in appropriate reservoirs!

4. Dispose these matters according to the international, national and regional regulations.

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Chapter 3
Description and Technical Specifications

3.1 Applicable Safety Regulations

3.1.1 Intended conditions of use

Adhesive Testing Unit:
The Adhesive Testing Unit is only intended for measuring and determining the traction force of an adhesive bond between two paperboard cards.

Micro Melter:
The Micro Melter is only intended for melting, forwarding and applying hot melt.

The Micro Melter is not intended for handling of toxic, flammable or explosive materials without further protective measures. To prove the suitability for specific fluids the user must take all for his application relevant regulations into consideration, especially those concerning safety of work, transportation and environment.

The maximum working temperature is 200°C.

If the unit is not used in accordance with this regulation, a safe operation cannot be guaranteed.

The operator - and not ITW Dynatec - is liable for all personal injury or property damages resulting from unintended use!

Intended use includes, that you
- read this documentation,
- heed all given warnings and safety instructions, and
- do all maintenance within the given maintenance rates.

Any other use is considered to be unintended.

3.1.2 Unintended Use, Examples

The unit may not be used under the following conditions:
- In defective condition.
- In a potentially explosive atmosphere.
- With unsuitable operating/processing materials.
- When the values stated under Specifications are not complied with.

The unit may not be used to process the following materials:
- Toxic, explosive and easily flammable materials.
- Erosive and corrosive materials.
- Food products.

3.1.3 Residual Risks

In the design of the unit, every measure was taken to protect personnel from potential danger. However, some residual risks cannot be avoided.

Personnel should be aware of the following:

- Risk of burns from hot material.
- Risk of burns from hot unit's components.
- Risk of burns when conducting maintenance and repair work for which the system must be heated up.
- Risk of burns when attaching and removing heated hoses.
- Material fumes can be hazardous. Avoid inhalation. If necessary, exhaust material vapors and/or provide sufficient ventilation of the location of the system.
- Risk of pinching parts of the body at running parts of the unit (pumps, motors, rolls or others).
- The safety valves may malfunction due to hardened or charred material.

3.1.4 Technical changes

Any kind of technical changes having impact to the security or the operational liability of the system should only be done by written agreement of ITW Dynatec. Suchlike changes made without given a corresponding written agreement will lead to immediate exclusion of liability granted by ITW Dynatec for all direct and indirect subsequent damages.

3.1.5 Using foreign components

ITW Dynatec takes no responsibility for consequential damages caused by using foreign components or controllers that have not been provided or installed by ITW Dynatec.

ITW Dynatec does not guarantee that foreign components or controllers used by the operating company are compatible to the ITW Dynatec-system.

3.1.6 Setting-up operation

We recommend asking for an ITW Dynatec-service technician for the setting-up operation, to ensure a functioning system. Let yourself and the people working with or working on the system be introduced to the system on this occasion.
ITW Dynatec takes no responsibility for damages or faults caused by any untrained personal.

3.2 Technical Specifications

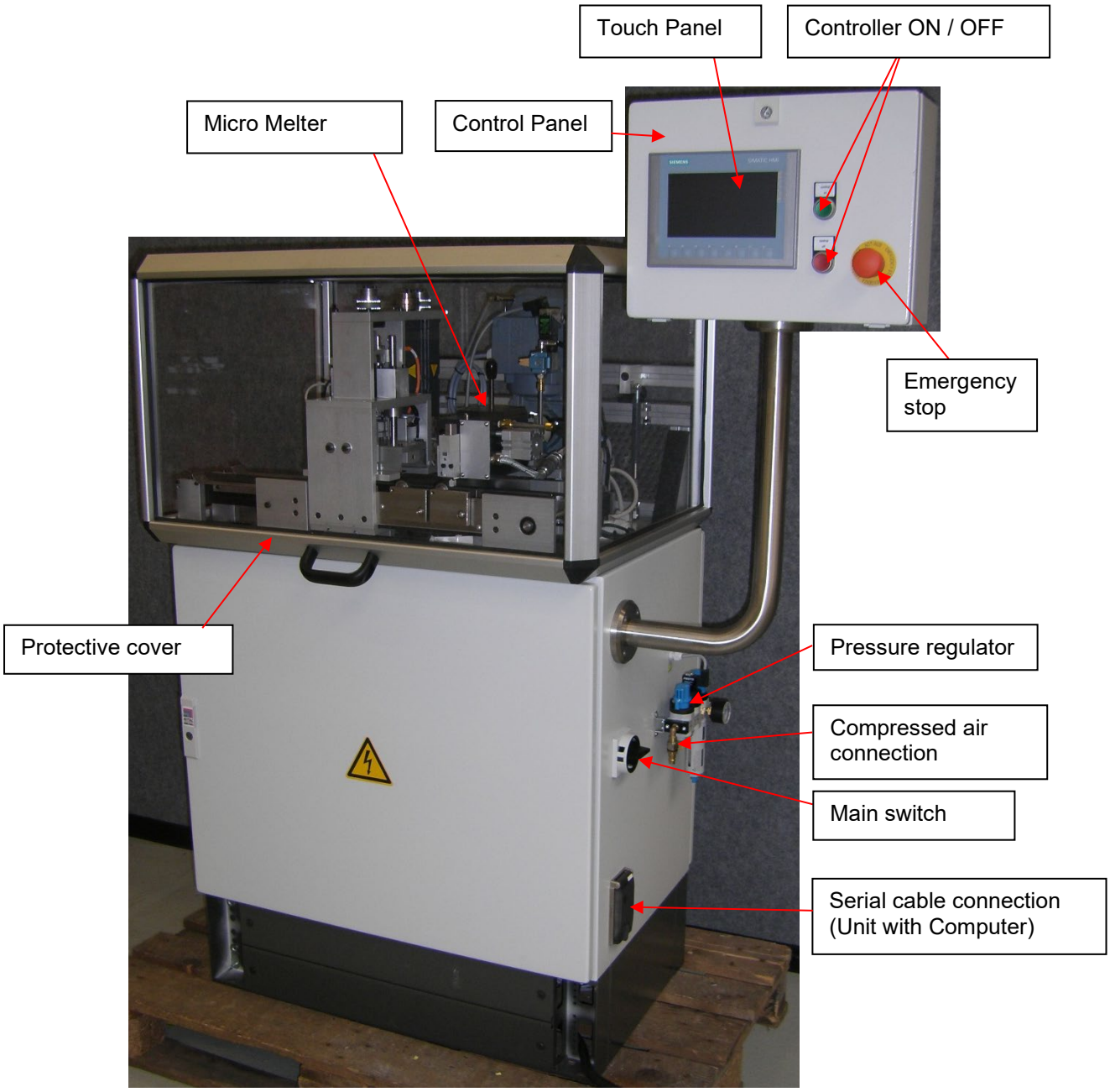
Environmental:

Storage/ shipping temperature ..... -40°C to 70°C (-40°F to 158°F)
Ambient service temperature ..... -7°C to 50°C (20°F to 122°F)
Noise emission ..... < 60 dbA (at 1 meter/ 39 in)

Physical:

Unit type: ..... Adhesive Testing Unit with Micro Melter
Tank capacity: ..... 220 cm³ / approx.. 200g
Melting rate: ..... until 500 g/h, adhesive-dependent
Power: ..... 2 kW
Working temperature max.: ..... 200°C
Over temperature protection, glass bead ..... 210°C (standard)
Main connection: ..... 230 V AC; N; PE; 50/60 Hz
Fuse max.: 25A
Operating pressure: ..... 6 bar
Gear pump: 1x
Motor: ..... 1 AC-gear motor, power: 0.18kW
Pressure regulating valve: 1x
Controller: ..... PLC SIEMENS with Touch Panel
Noise emission: ..... The acoustic pressure level measured according to EN 13023 does not exceed the value of 80 dB (A).
Exposure to fumes: ..... Fumes of molten adhesive might come out of the warm tank when opening it.
Dimensions ..... see drawing

3.3 Description Adhesive Testing Unit



Picture: Adhesive Testing Unit

Description

The Adhesive Testing Unit consists of the control cabinet, paperboard transport station, pressing mechanism, Micro Melter, protective cover and control panel.
The Adhesive Testing Unit measures and determines the traction force of an adhesive bond between two paperboards.

Protective cover

The protective cover is secured with a limit switch. In order to protect the operator from an unintended intervention during the test process, the adhesive test process will start only if the protective cover is closed. Once the protective cover has been opened, all functions will be switched off (except for the heating of Micro Melter).

Control Panel

The control panel includes a Touch Panel, a button "Controller On", a button "Controller Off" and a button "Emergency Stop".

Micro Melter

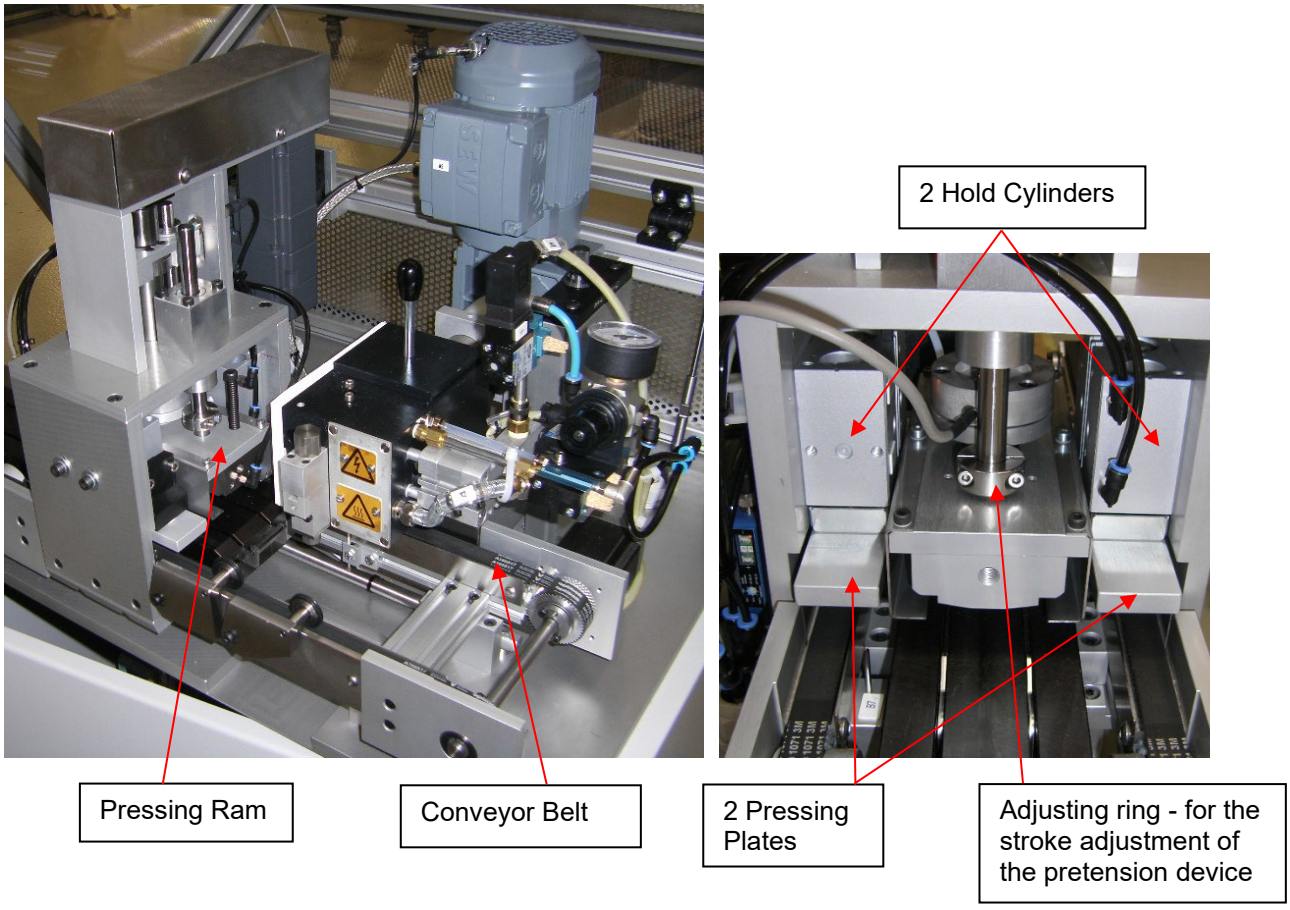
Within the Micro Melter, the hot melt is molten. The temperature can be set and regulated at the Touch Panel. The gear pump feeds the molten adhesive to the circ. application module.

Inserting the paperboards

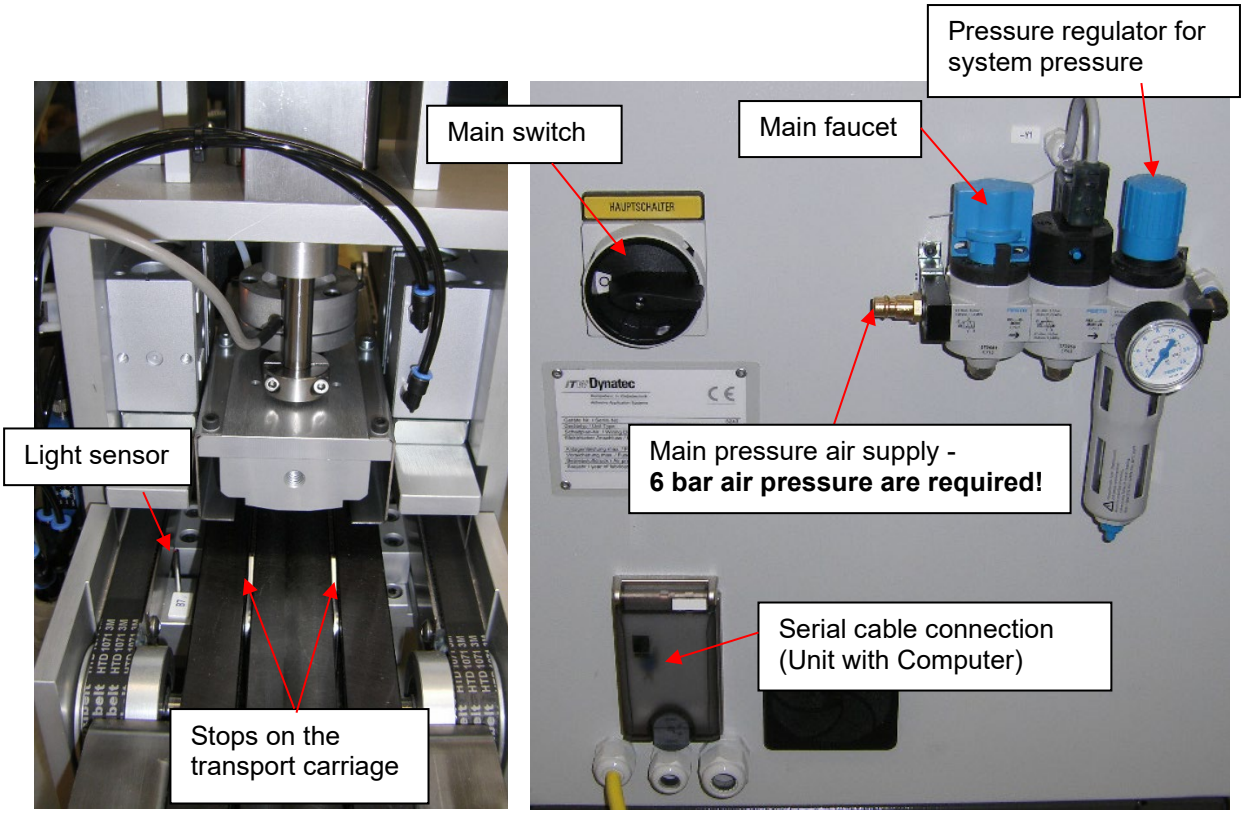
We recommend using corrugated paperboard EE-flute with underliner (interlayer).
The sizes of smaller paperboard have to be 7.5 x 16.0 x 0.32 cm.
The sizes of larger paperboard have to be 15.3 x 16.0 x 0.32 cm.
Put the larger paperboard on the conveyor belt. Insert the smaller paperboard from the left side into the pressing mechanism until it reaches the stop.
Step motors and pneumatic cylinders effect the required movements.

Pretension device for the upper paperboard

With the pretention device, the upper (smaller) paperboard will be pre-tensioned, i.e. the two longitudinal edges will be attracted upwards; thus, the internal tension of the paperboard will be bypassed during the pressing process and the bonding of the two paperboards will be accelerated.
The adjusting ring is provided for the stroke adjustment of the pretension device and it can be readjusted manually by loosening and re-attaching the screws.



Pictures: Pressing Mechanism

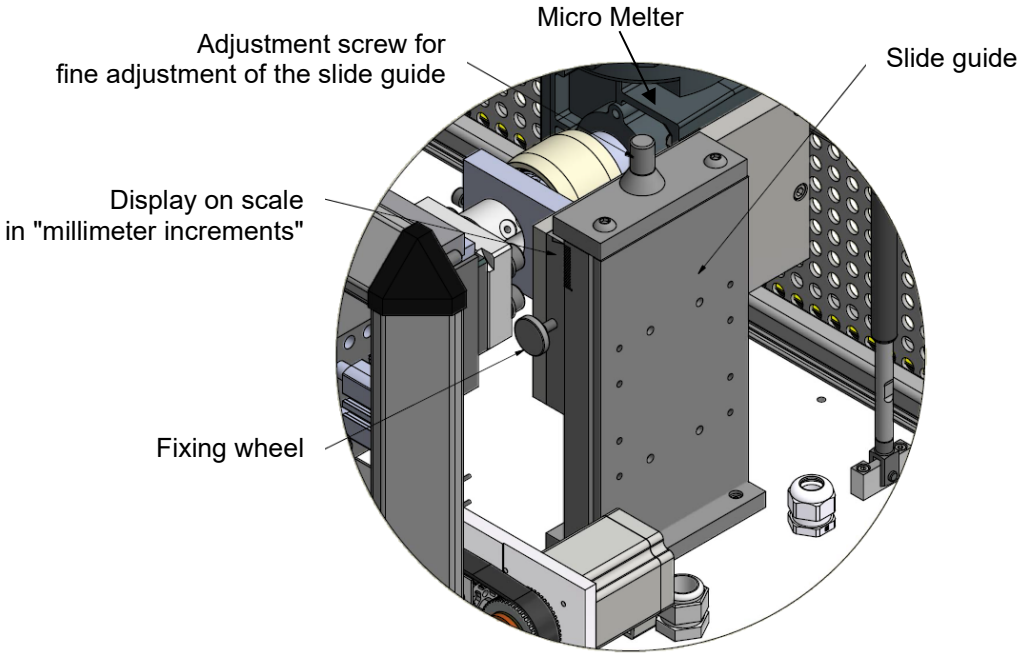


Pictures: Light sensor, Main switch, Pressure regulator

Height adjustment for test paperboard up to 8mm thickness PN I09.80005.500 (optional):

With the height adjustment, the height of the nozzle (or the Micro Melter) is adjusted to the thickness of the test cardboards (paperboards) used. For further details on "Adjustment of the cardboard thickness" in the controller and on the "Mechanical adjustment of the system", see Chap. 6 Controller / Point "6.8 Selection of Cardboard Thickness (Optional)".

If the height adjustment is chosen, the Micro Melter will be mounted on an adjustable slide guide.



Picture: Height Adjustment (optional)

Function of Pressing mechanism “Test with tear-off (measuring traction force)”:

1. The first paperboard will be fed by the conveyor belt.
2. 10 mm after that the first light sensor detects the paperboard, the application module opens and closes again according to the entered length (e.g. 120 mm).
3. The paperboard will be fed in the pressing mechanism. A second light sensor detects that the paperboard has reached the press position and stops the conveyor belt.
4. After the open time (waiting time) has elapsed, both paperboards will be compressed with the preset down force (pressing force). The preset down force (pressing force) is adjustable on the Touch Panel.
5. After the pressing time has elapsed, both paperboards will be torn apart at the adhesive joint.
6. The traction force will be displayed in Newton on the Touch Panel.
7. The first paperboard will be ejected over the transport carriage. The second paperboard has to be taken out manually.

   See chapter Controller.

Function "Test without tear-off (measuring traction force)":

1. The first paperboard will be fed by the conveyor belt.
2. 10 mm after that the first light sensor detects the paperboard, the application module opens and closes again according to the entered length (e.g. 120 mm).
3. The paperboard will be fed in the pressing mechanism. A second light sensor detects that the paperboard has reached the press position and stops the conveyor belt.
4. After the open time (waiting time) has elapsed, both paperboards will be compressed with the preset down force (pressing force). The preset down force (pressing force) is adjustable on the Touch Panel.
5. After the pressing time has elapsed, the press cylinders will be relaxed. The pressed paperboards can be taken out.
6. After a desired period of time these paperboards can be inserted again into the pressing mechanism from the ejection-side, in order to tear both paperboards apart at the adhesive joint. See Controller, chapter 6.5 Tear-off test and 6.9 Settings.
7. The traction force will be displayed in Newton on the Touch Panel.
8. The first paperboard will be ejected over the conveyor belt. The second paperboard has to be taken out manually.

See chapter Controller.

Function "intermittently":

The adhesive-bead can be applied intermittently (with interruptions). See Controller / Setting mode.

3.4 Description Micro Melter

Within the Micro Melter the adhesive is molten and forwarded.

Melting tank

Fill the adhesive into the melting tank. Heating cartridges, temperature sensors, and a pressure regulating valve are integrated in the tank.
The tank is non-stick coated, to make it easy to clean and to avoid sticking of adhesive.
The adhesive will be molten within the melting tank. Set the melting temperature for the used adhesive according to the appropriate data sheet.

Gear pump

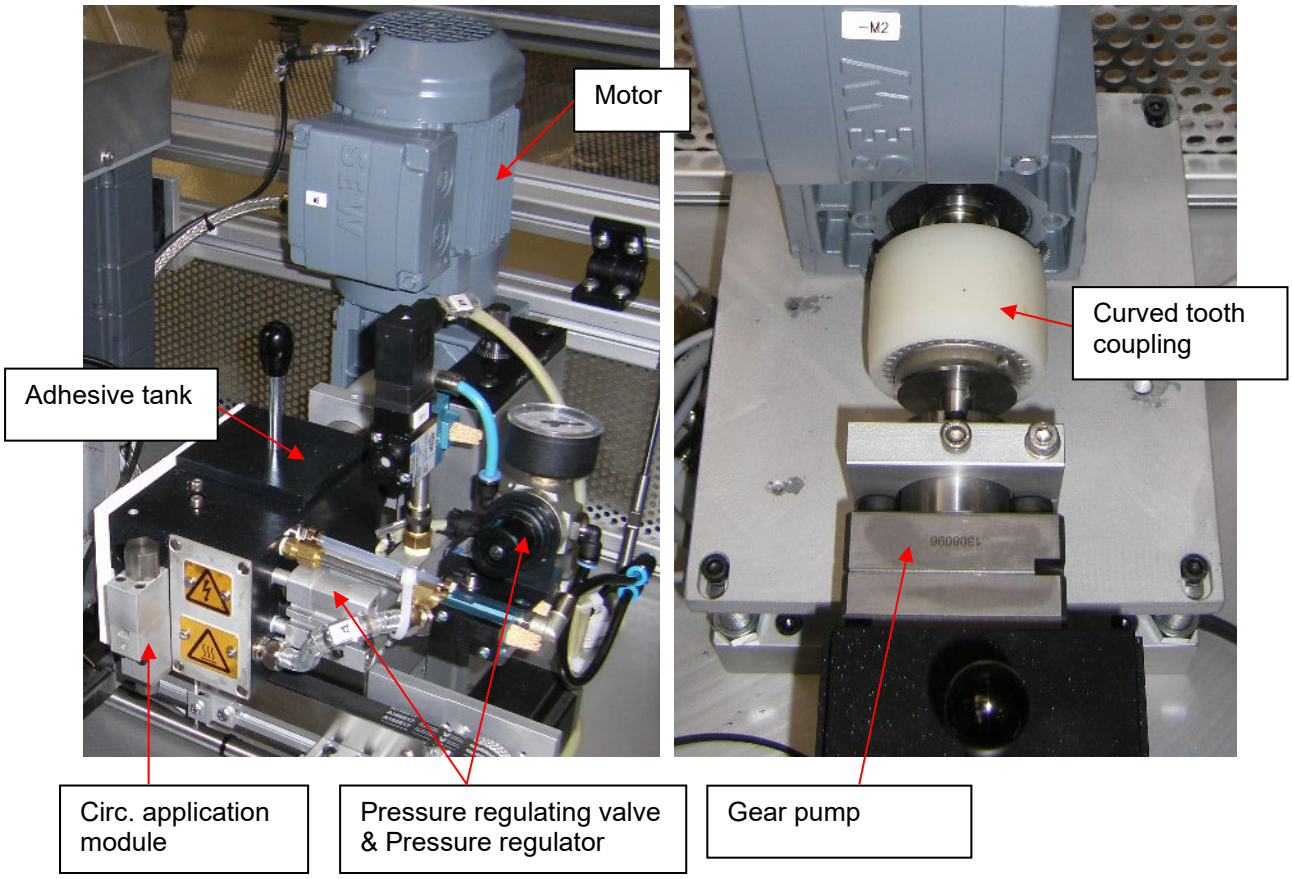
The gear pump is mounted at the supply part and it is driven by an AC-gear motor.
The molten adhesive flows through the bottom hole of the tank to the gear pump. The adhesive will be fed from the pressure side of the pump to the application module. See chapter "gear pump".

Pressure regulating valve:

The circulation pressure is controlled by a pressure regulator via the pneumatic pressure regulating valve. See chapter "3.4.3 Pneumatic pressure regulating valve, tank circulation".

Circulation Application module (Circ. Application module)

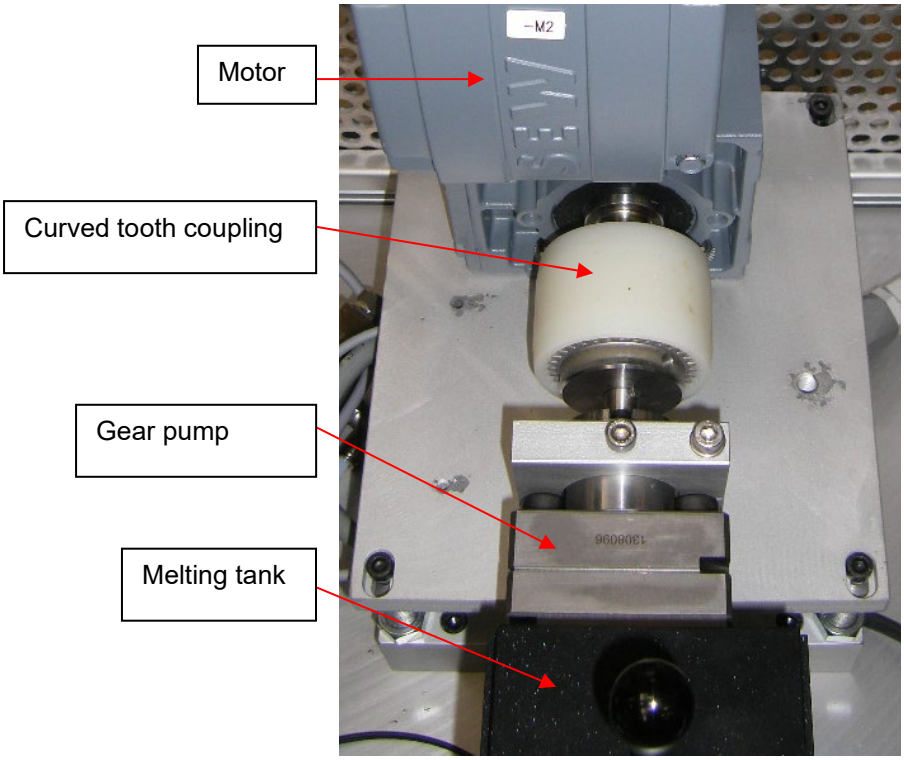
The circ. application module is a 3/2-way-adhesive valve (3 ways, 2 switching states). An external 5/2-way solenoid valve opens and closes the application module. A nozzle is mounted at the bottom end of the application module. The application module applies the adhesive through the nozzle onto the paperboard. The application module requires for opening an air pressure of between 5.5 - 6 bar. This pressure has to be adjusted at the pressure regulator for system pressure.



Pictures: Micro Melter – Components

3.4.1 Gear pump

The gear pump is mounted at the pump distributor. The molten adhesive flows through the bottom hole of the tank to the gear pump and it is forwarded from the pressure side of the pump.



Picture: Gear pump

CAUTION

The gear pump is not corrosion-resistant!

Do not run the gear pump with water or other corrosive media! Danger of corrosion! No warranty!

Never run the gear pumps without a suitable medium, but always with adhesive or suitable cleaner only!

Pay attention to the rotating direction of the pump, it compellable has to be clockwise (right).

Do not exceed the gear pump speed over 60 rpm.

ADVICE

Due to normal wastage, the pumps could get leaky at the shaft sealing.

Check weekly visual the shaft sealing of the gear pump.
If it's leaky, send the gear pump to ITW Dynatec for repair.

We recommend stocking a gear pump for exchange!

Feed rate

An AC-gear motor drives the gear pump.

The feed rate is engraved on the gear pump in cm³ per revolution.
Ex**ample:** Gear pump 10cm³/r = i.e. the pump feeds 10 cm³ per revolution.

Calculation of volume

Example (when a gear pump 10cm³/r is mounted). If you multiply 10cm³/r by the rotation speed, you will get the volume of the adhesive per minute (and per outlet, if it is a many-fold pump).

Formula: Feed volume cm³/r x speed r/min = Volume per minute.

Example: 10 cm³/r x 5 r/min = 50 cm³/min.

Calculation of weight

If you multiply the volume by the density of the adhesive, you will get the weight of adhesive per minute.

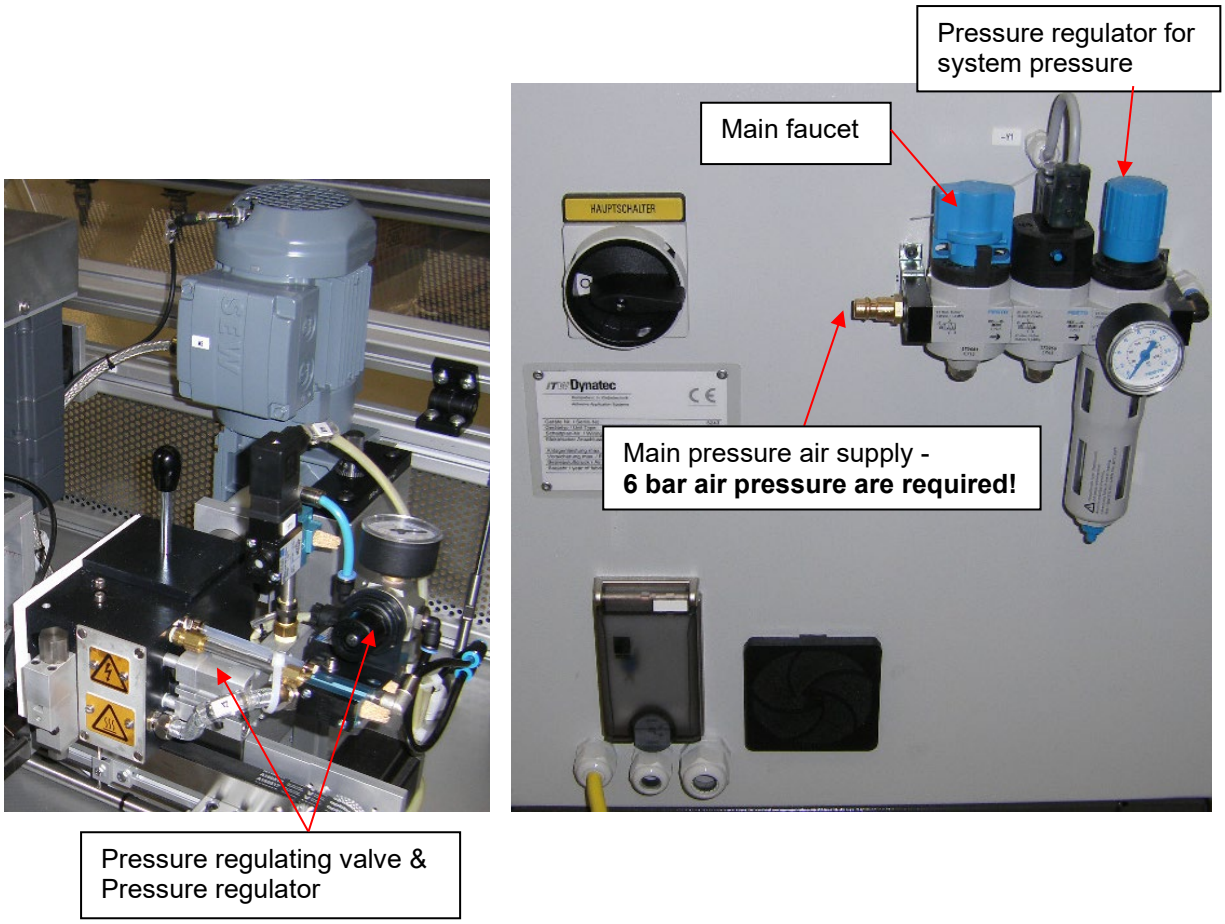
Formula: Volume/min x density of the adhesive = weight of adhesive per minute.

3.4.2 Curved tooth coupling, coupling sleeve

The curved tooth coupling consists of one coupling sleeve and two coupling hubs. The coupling sleeves are made of heat stabilized polyamide and the coupling hubs of steel. Due to this combination of materials, the coupling is maintenance-free.

The power from the AC-gear motors to the gear pumps will be transmitted over the curved tooth coupling.

3.4.3 Pneumatic pressure regulating valve, tank circulation



Picture: Pneumatic pressure regulating valve, Pressure regulator

Pneumatic pressure regulating valve, tank circulation:

At the Micro Melter a pneumatic pressure regulating valve (up to theoretical max. 96 bar (1392 psi)) will be mounted in order to regulate the circulation pressure, when the application module is closed on the nozzle side and it is switched to the circulation position.

This circulation pressure should be adjusted to the application pressure in order to ensure a good start of the bead application.

The air pressure to the pneumatic pressure regulating valve is regulated via a separate air pressure regulator. This pressure is adjusted to 3 bar by default, since it enables the best results with the installed nozzle. We recommend that you do not change this pre-adjusted pressure.

If the circulation pressure is adjusted too low, too little adhesive will come out of the module at the beginning. If the circulation pressure is adjusted too high, too much adhesive will come out of the module at the beginning.

At the pneumatic pressure regulating valve, the transmission ratio between the adjusted air pressure to the adhesive pressure is approx. 1:16. The adjusted pressure multiplied by the transmission ratio 1:16 gives the corresponding theoretical adhesive pre-pressure, depending on the viscosity and on the processing temperature of the adhesive.

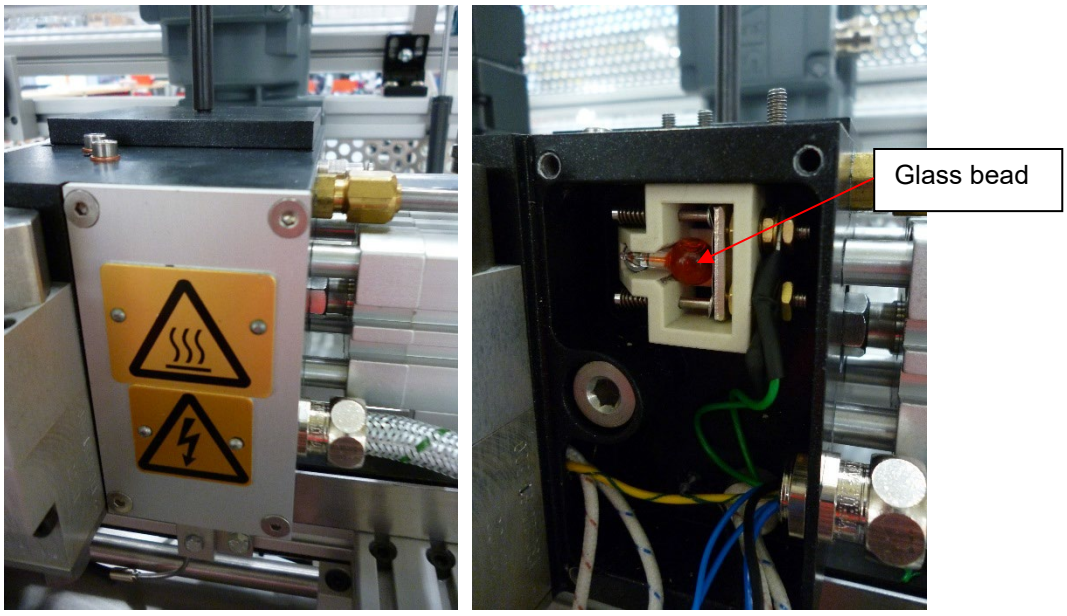
Automated rinsing of the pressure regulating valve:

In order to ensure a permanently faultless function, the pressure regulating valve has to be maintained regularly. This process would be atomized to make it easier for the operator.
Each time the pump motor will be switched on, the pressure regulating valve is rinsed with adhesive for about 10 seconds. Approx. 10 seconds after switching on the pump motors the solenoid valves in the unit get an electrical signal (e. g. by the controller), thus the solenoid valves will open and let pass the compressed air. Thus the pressure regulating valve will be closed through the connected compressed air supply only after approx. 10 seconds. The adhesive pressure will be built up. Thus the pressure regulating valve will be rinsed for 10 seconds with adhesive. During this process, no production is possible. Production can start only 10 seconds later.

3.4.4 Over temperature protection, Controller

The temperature of the tank is monitored by the Controller.
If the temperature exceeds the set over temperature value, the Controller switches the complete heating off and it displays an error message.

3.4.5 Over temperature protection, glass bead



Illustrations: Over temperature protection, glass bead

The tank (melting and supply part) is provided with a mechanical over temperature protection. This over temperature protection consists of a glass bead filled with a liquid. This bead is held by a ceramic support.

By means of contacts, the lines to the appropriate heaters are closed on these ceramic supports. If an over temperature occurs, the bead will break and open the circuit of the appropriate heating.

CAUTION

If the glass bead within the ceramic socket is damaged caused by over temperature, carry out **necessarily** the following:

- The defect, e.g. a damaged temperature sensor or solid-state relay, etc., has to be located and corrected.
- Remove the residual of the damaged glass bead and insert a new one.

3.5 Control Cabinet

The control cabinet contains all electrical equipment of the unit. Refer to wiring diagram.

Frequency inverter

The frequency inverter times the number of revolution of the pump-motor according to the line speed. The number of revolution affects the application volume / weight of the glue and is adjustable from 1 to 60 rpm (calculating application volume or weight: see point 3.6 gear pump).

In case of perturbation of the frequency inverter, please act in accordance with the instruction manual (to be found on the CD of the documentation) and save the changes by pressing the reset-button FN.

Chapter 4
Installation

CAUTION

- Before installation, please read this documentation carefully.
- Pay attention to all the installation and connecting advices.
- Heed all safety instructions mentioned in Chapter 2.
- All installation procedures must be performed by qualified, trained technicians.

4.1 Conditions for set-up and mounting

Place requirement

The unit has to be installed in such way, that the employee working with or on it is able to work on all sides for adjusting, preparing, maintaining, repairing, cleaning, etc. See drawing under Ch.10 Drawings.

There has to be sufficient space, so that the door of the control cabinet can be opened if applicable.

Mounting and alignment

- The complete unit has to be installed on solid, stable and flat ground.
- The alignment in height of the complete system has to be considered.
- The alignment of the machine has to be considered.

Electrical connection

- Necessary electrical and pneumatic connections have to be provided. See wiring diagram.
- Install a potential equalization according to EN 60204-1 8.2.8, because the earth leakage current of the unit exceeds 10 mA. See wiring diagram.

Pneumatic connection

ADVICE

Provide the necessary pneumatic connection:

- **6 bar air pressure are required.**
- **If the unit works with an application head**, the compressed-air supply to the unit has to be **DN 15 at least.**
  CAUTION: In any case the air has to be clean and dry! See advice in chapter 4.4 „Quality of compressed air“.
- **If the unit works without an application head**, the compressed-air supply to the unit has to be **DN8 at least.**
- Please heed that units with high air demand may not be used at the same time with the same air supply.

ADVICE

- Check all screw connections at the unit and torque them down if necessary.
- Install all cables and the heated hoses in a manner, that there will be no risk or at least the minimal risk of stumbling.

4.2 Installation

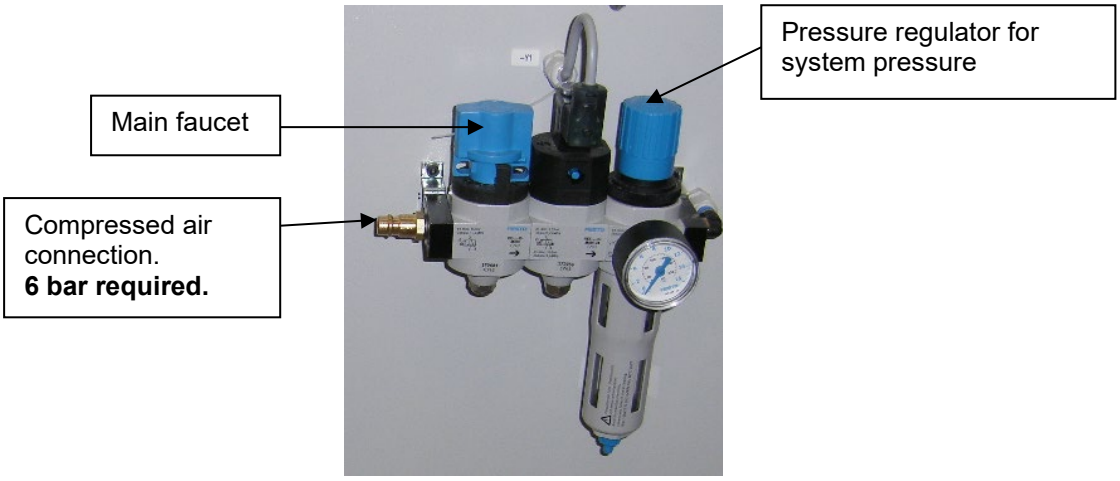
CAUTION

- All work on or with this unit is only permitted for skilled personnel!
- Pay attention to the wiring diagram!
- Only with an air pressure of **6 bar** a perfect performance is secured!
- All motors have to be attached according to the data sheet of the manufacturer.
- All heating elements have to be mounted and operated secured and according to the valid regulations.

Proceed as follows to interconnect the unit components according to the wiring diagram:

Installation

1. Connect the compressed-air supply to the Adhesive Testing Unit.
   Adjust the required air pressure.



ADVICE

6 bar air pressure are required.

- Lower air pressure causes uneven adhesive application.
- The modules do not switch or switch with delay, resp. open and close again, if the air supply is uneven.
- Only permanent pressure and sufficient volume flow leads to reproducible application accuracy regarding position and amount.

2. Connect the cable of the Adhesive Testing Unit (according to the wiring diagrams and the cable marking).

ADVICE

Install a potential equalization according to EN 60204-1 8.2.8, because the earth leakage current of the unit exceeds 10 mA. See wiring diagram.

- The unit has to be connected according to the attached wiring diagrams. The regulations of the VDE or local power supply organizations have to be observed in all cases!
- The supply line for the control cabinet has to be adapted to the output of the unit. The input lead has to be fused accordingly.
- Never connect or disconnect plug-and-socket connections under load!

4.3 Alarms and Machine Contact

ADVICE

- The alarm contacts will be released, if the unit has over- or under-temperature. The motors have an automatic electrical lock in case of over- or under-temperatures. All the heatings will be switched off immediately in case of over-temperature.
- The alarms and machine contacts are located on the terminal strip X01. See wiring diagram in the appendix.
- Install a potential equalization according to EN 60204-1 8.2.8, because the earth leakage current of the unit exceeds 10 mA. See wiring diagram.

4.4 Quality of compressed Air

CAUTION

- **In any case, the air has to be clean and dry!**
- **The min. requirement for compressed air supply to solenoids to control automatic Applicators is ISO 8573-1:2010 class 2:4:3.**
- **The min. requirement for compressed air supply to solenoids to control Adhesive Supply Unit is ISO 8573-1:2010 class 7:4:3.**

Compressed air quality classes according to ISO 8573-1:2010 class 7:4:3:

ISO 8573-1: 2010	Solid particles				Water		Oil
Class	Maximum number of particles per m³			Mass concentration	Vapor pressure dew point	Liquid	Total oil content (liquid, aerosol and mist)
	0.1-0.5 µm	0.5-1 µm	1-5 µm	mg/m³	°C	g/m³	mg/m³
0	As stipulated by the equipment user, stricter requirements than class 1.						
1	≤ 20,000	≤ 400	≤ 10	-	≤ -70	-	0.01
2	**≤ 400,000**	**≤ 6,000**	**≤ 100**	**-**	≤ -40	-	0.1
3	-	≤ 90,000	≤ 1,000	-	≤ -20	-	**1**
4	-	-	≤ 10,000	-	**≤ +3**	-	5
5	-	-	≤ 100,000	-	≤ +7	-	-
6	-	-	-	≤ 5	≤ +10	-	-
7	-	-	-	5-10	-	≤ 0.5	-
8	-	-	-	-	-	0.5 - 5	-
9	-	-	-	-	-	5 - 10	-
X	-	-	-	> 10	-	> 10	> 10

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Chapter 5
Start-up operation, daily operation

5.1 Advices for the start-up operation

CAUTION

Start with start-up operation only if
- the functioning of the unit is known, and
- all preparations for start-up operation have been done according to the details given in the previous chapter. That means, all unit components are operable.

Read the documentation thoroughly to avoid breakdowns caused by faulty handling.

We recommend asking for an ITW Dynatec-service technician for the start-up operation, to ensure a functioning unit. Let yourself and the people working with or working on the unit be introduced to the unit on this occasion.

ITW Dynatec takes no responsibility for damages or faults caused by any self-contained start-up.

Heed all safety instructions mentioned in chapter 2.

Only allow skilled expert staff to do the start-up operation!

Always wear safety shoes, protective gloves, safety goggles and protective clothing when working on or with the unit. Risk of burns and risk of injury!

Risk of electric shocks! Risk of injury, Mortal danger!

The unit components are getting very hot during operation! Risk of burns!

The adhesive is very hot and pressurized! Risk of burns and risk of injury! At working temperature, molten adhesive could cause heavy burns. Let spilled out adhesive cool down first, before removing it!

During operating the unit, heed the following:
- Heed all safety instructions mentioned in chapter 2.
- Set the working temperatures strictly within the temperature range given by the adhesive manufacturer. Do not exceed this temperature range.
- Switch the unit off during longer production breaks.
- Switch the unit to standby during shorter production breaks
- Avoid voltage fluctuation.
- The air supply has to be clean and dry.
- In case of an emergency or exceptional incident, press the emergency stop button in order to stop the unit quickly.

	**The unit is ready for operation, when** • all temperatures are within the tolerances and • all motors are switched on.
	Risk of stumbling on cables and heated hoses!
	Keep your hands away from running parts of the unit (pumps, motors, rolls or others).
	Keep your hands away from pressing station. Risk of injury!

5.2 Start-up operation / Daily operation

5.2.1 Operation with hot melt adhesive (Micro Melter)

Start-up operation / Daily operation:

1. Open the protective cover.
2. Switch off the air supply at the main-faucet.
3. Make sure that the cold glue application head is demounted from the Micro Melter.
4. Visually check the unit and the travel paths for safety. Eliminate danger spots and visible damage!
5. Before switching on the unit, make sure that nobody can be injured when it starts up!
6. Remove all material or things not needed for the production from the workspace of the unit!
7. Check and make sure that all safety devices are working in proper form!
8. Switch the air supply at the main-faucet on again.

Fill-up adhesive

9. Fill up the tank of the Micro Melter with adhesive.
   - Open the lid of the tank.
   - Fill in the adhesive.
   - Close the lid.

Always wear protective gloves and safety goggles when filling in or exchanging adhesive!

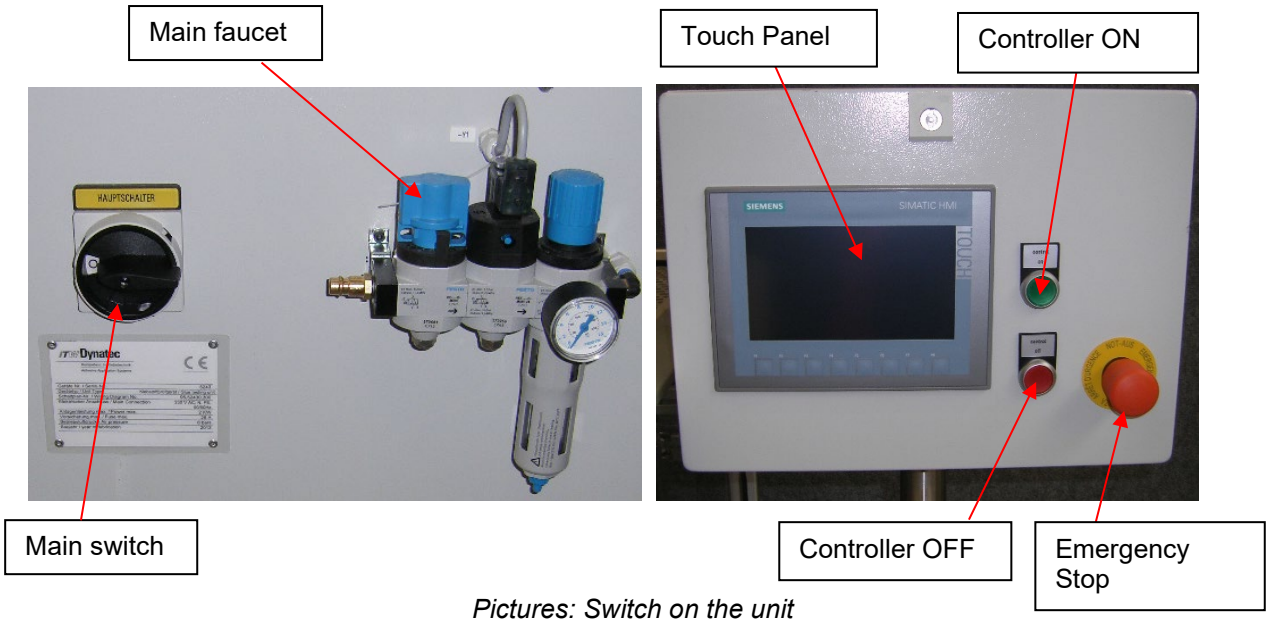
Only fill in as much adhesive as the tank can definitely be closed.

Always keep the tank closed, as dirt can get into the adhesive system through the open lid and cause breakdowns.

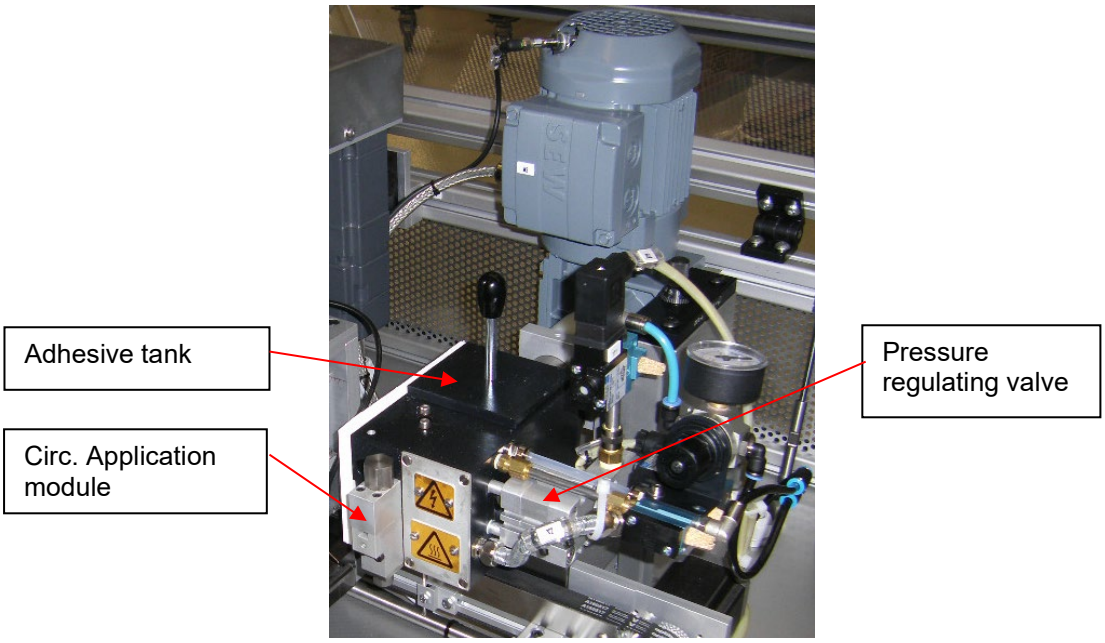
Make sure that no dirt particles (foil residues, dust, etc.) get into the adhesive system; otherwise, the consequence would be: The adhesive contains the dirt particles.

It is essential to clean or flush the system when you switch from one adhesive to another - even within the same product group or from the same manufacturer. This will prevent possible reactions between the adhesives.

10. Switch the main switch "ON".
11. Switch the controller "ON", for this press the button "Controller On".
12. Choose the operation mode “service with hot melt” at the system-screen on the Touch Panel. (The buttons/switches show the as-is-state of the particular function).



Pictures: Switch on the unit



Picture: Micro Melter

13. Set the operation temperature at the heating screen.

14. Switch on the heating of the melting tank.

Temperature settings:

Note that the maximum working temperature is 200 ° C.

Always adhere to the processing temperatures of the adhesive that are specified in the respective data sheet.

If you set the temperatures incorrectly, this can lead to burns of the adhesive in the system and to incorrect bonding.

The temperatures of the individual heating zones are set according to the adhesive used (if necessary, consider the manufacturer's instructions!). If a temperature adjustment is required, proceed as described in the "Controller" chapter.

ADVICE

The unit is only ready for operation, when
- all temperatures are within the tolerances and
- the adhesive in the tank is completely molten.

Do not switch on the pump/motor until the adhesive is completely molten! Pay attention to the heating phase of the adhesive!

If the pump starts up prematurely, there are the following risks:
- The pump is not being supplied with sufficient adhesive and could suck in air. The air leads to foam formation within the adhesive system and, in the case of PUR adhesives, to the reaction of the adhesive.
- The pump runs dry and can block.
- Unmolten adhesive can settle in front of the suction port of the pump. The pump and the motor can overheat and even be destroyed.

Caution! Risk of burns and risk of injury!

- This unit operates with very high temperatures and high adhesive pressure.
- Hot adhesive comes out of the application module!
- Always wear protective gloves and safety goggles!
  Molten adhesives at operating temperature could cause heavy burns.
- Do not touch the hot surfaces or parts without wearing protective gloves!

15. Select either “Automatic” or “Manual” mode at the "Parameter-screen" on the Touch Panel.

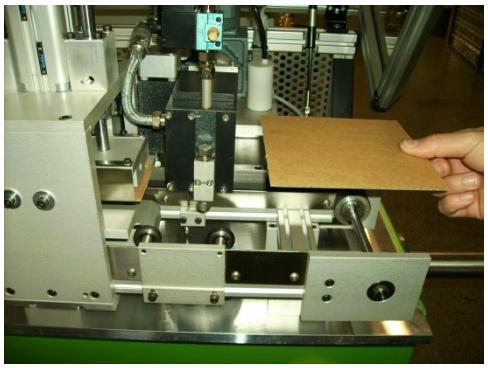
➢ **In automatic mode,** the grammage respectively thickness of the adhesive bead will be determined from the parameters adhesive length, adhesive weight and density. The speed of the gear pump will be regulated automatically according the parameters.

➢ **In manual mode,** the grammage respectively thickness of the adhesive bead will be determined by the set speed of the gear pump. The speed of the gear pump can be entered and edited manually.

16. Insert the paperboards.

- We recommend using corrugated paperboard EE-flute with underliner (interlayer).
- The sizes of smaller paperboard have to be 7.5 x 16.0 x 0.32 cm.
  The sizes of larger paperboard have to be 15.3 x 16.0 x 0.32 cm.
- Put the larger paperboard on the conveyor belt. Make sure that the board is put in front of the first pressure wheel.

1.

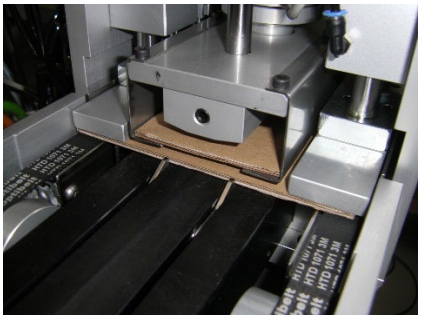


2.

- Insert the smaller paperboard from the left side into the pressing station until it reaches the stop.

1.

2.



Pictures: Inserting paperboards

17. Close the protective cover.

Do not reach into the pressing station.
Keep your hands away. Risk of injury!

Set respectively change the test-parameters:

18. Set the test-parameters at the Touch Panel or change them if necessary.

    The speed of the conveyor belt is fixed to 20m/min.

    The following parameters can be set at the Touch Panel:

Open time (waiting time):	After this time has elapsed, the test cylinder will lower and press the small paperboard onto the wide one.
Pressing time:	After this time has elapsed, the test cylinder will lift and will tear apart both paperboards at the adhesive joint.
Down force (pressing force):	According to the input power, both paperboards will be pressed together
Adhesive length in mm:	According to the input length, the application module will open, applies the adhesive bead and close again.
Set speed (only in manual mode):	The set speed of the gear pump determines the grammage of the adhesive bead.
Intermittent or non-intermittent:	The adhesive-bead can be applied with or without interruptions.

19. Switch on the pump.

20. Press the "base position" button. No test is possible as long as this display is visible.

21. Press the button "Start test" at the main screen.

ADVICE: After starting the pump, the adhesive is available after 10 seconds, because the pressure regulating valve will be purged first.

The adhesive test starts automatically:

a) Function “Test with tear-off (measuring traction force)":

- The first paperboard will be fed by the conveyor belt.
- 10 mm after that the first light sensor detects the paperboard, the application module opens and closes again according to the entered length (e.g. 120 mm).
- The paperboard will be fed in the pressing mechanism. A second light sensor detects that the paperboard has reached the press position and stops the conveyor belt.
- After the open time (waiting time) has elapsed, both paperboards will be compressed with the preset down force (pressing force). The preset down force (pressing force) is adjustable on the Touch Panel.
- After the pressing time has elapsed, both paperboards will be torn apart at the adhesive joint.
- The traction force will be displayed in Newton on the main screen.
- The first paperboard will be ejected over the transport carriage. The second paperboard has to be taken out manually.

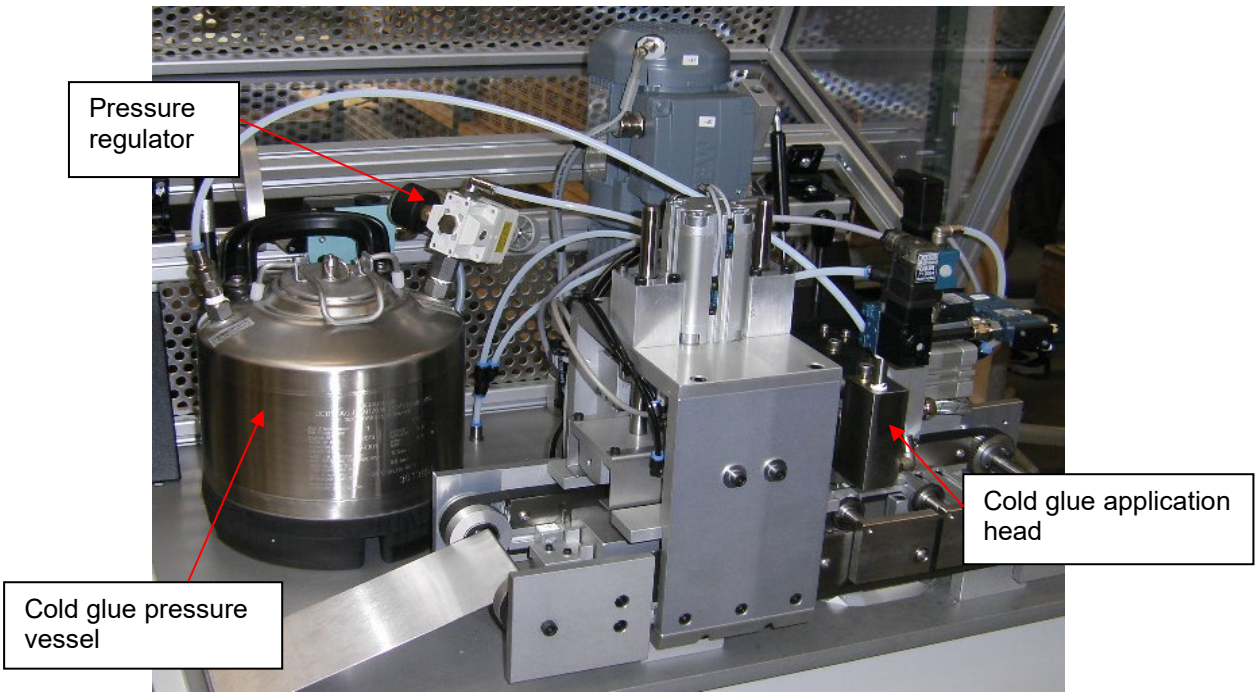
b) Function "Test without tear-off (measuring traction force)":

- The first paperboard will be fed by the conveyor belt.
- 10 mm after that the first light sensor detects the paperboard, the application module opens and closes again according to the entered length (e.g. 120 mm).
- The paperboard will be fed in the pressing mechanism. A second light sensor detects that the paperboard has reached the press position and stops the conveyor belt.
- After the open time (waiting time) has elapsed, both paperboards will be compressed with the preset down force (pressing force). The preset down force (pressing force) is adjustable on the Touch Panel.
- After the pressing time has elapsed, the pressing plates will be raised and the pressing ram will be raised ca. 10mm. The pressed paperboards can be taken out.
- After a desired period of time these paperboards can be inserted again into the pressing mechanism from the ejection-side, in order to tear both paperboards apart at the adhesive joint. See Controller, chapter 6.5 Tear-off test and 6.9 Settings.
- The traction force will be displayed in Newton on the Touch Panel.
- The first paperboard will be ejected over the conveyor belt.
- The second paperboard has to be taken out manually.

ADVICE: PUR-adhesives react with air humidity. To prevent the tank, application head, application module and nozzle from clogging, they must be cleaned with PUR cleaner immediately after production stop.

5.2.2 Operation with cold glue (pressure vessel, optional)

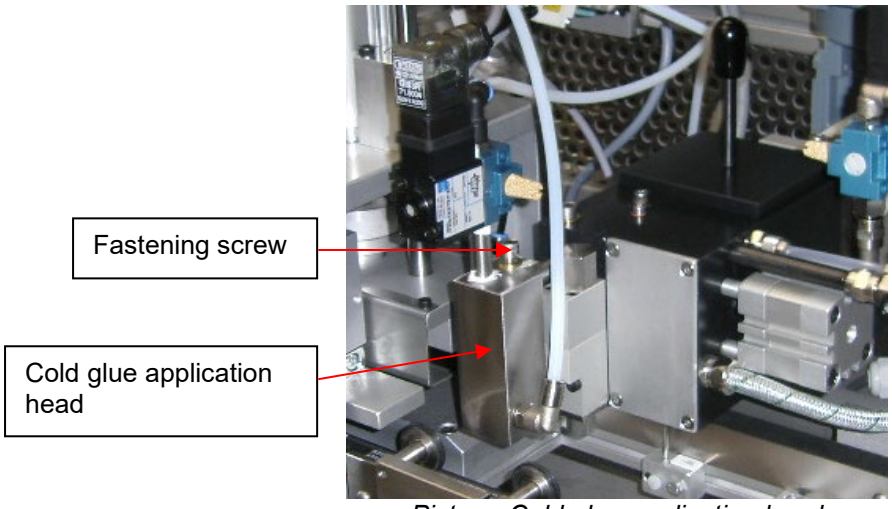
- Heed all safety instructions mentioned in chapters 2, 9.4 and 9.6.
- In case of an emergency or exceptional incident, press the emergency stop button in order to stop the unit quickly.



Picture: Operating with cold glue

Start-up operation / Daily operation

1. Open the protective cover.
2. Make sure that the complete system is cold (i.e. at room temperature).
3. Switch off the air supply at the main-faucet.
4. Mount the cold glue application head at the appropriate place in the Adhesive Testing Unit and secure it with the fastening screw.



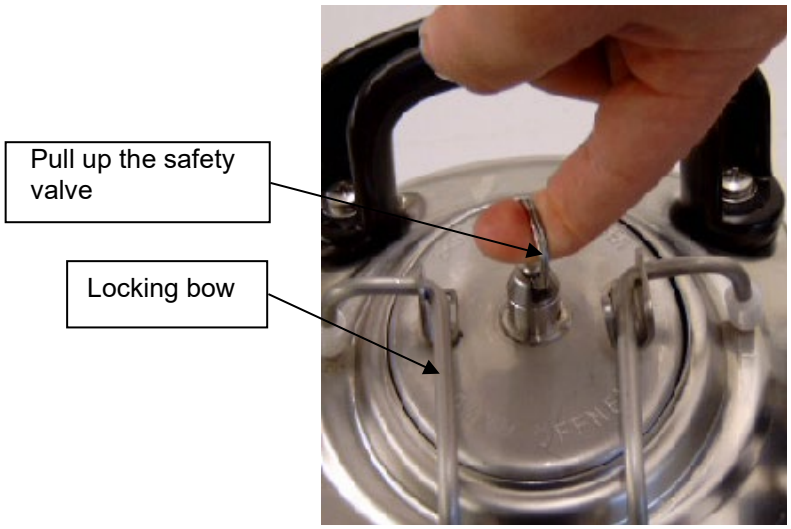
Picture: Cold glue application head

Fill up with adhesive:

5. Fill the pressure vessel with liquid cold glue.

Before each opening of the lid, make sure that the vessel is pressureless:

- Turn the pressure regulator to "0" bar.
- Open the safety valve by pulling it up and wait until the compressed air has escaped.



Picture: Pressure vessel, safety valve

- Open the locking bow.
- Remove the lid by a rotating and tilting movement.
- Fill in the adhesive as much that the vessel can be closed in any case.
- Check the sealing of the lid and exchange it if necessary. Insert the lid into the vessel, set it on the cleaned seal-seat, and close it with the locking bow.

Always wear protective gloves and safety goggles when filling in or exchanging adhesive!

Always keep the vessel closed, as dirt can get into the adhesive system through the open lid and cause breakdowns.

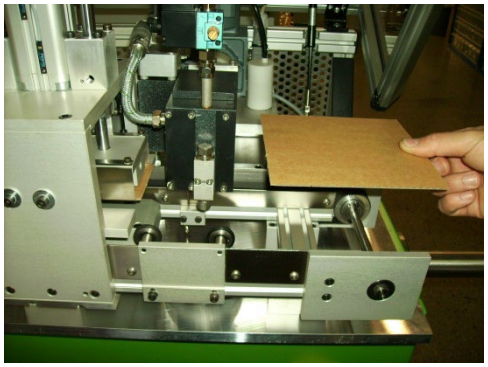
Make sure that no dirt particles (foil residues, dust, etc.) get into the adhesive system; otherwise, the consequence would be: The adhesive contains the dirt particles.

It is essential to clean or flush the system when you switch from one adhesive to another - even within the same product group or from the same manufacturer. This will prevent possible reactions between the adhesives.

6. Visually check the unit and the travel paths for safety. Eliminate danger spots and visible damage!
7. Before switching on the unit, make sure that nobody can be injured when it starts up!
8. Remove all material or things not needed for the production from the workspace of the unit!
9. Check and make sure that all safety devices are working in proper form!
10. Switch the main switch "ON".
11. Switch the controller "ON", for this press the button "Controller On".
12. Switch on the air supply at the main-faucet again.
13. Select the operation mode "service with cold glue" in the system screen on the Touch Pane.
14. Insert the paperboards.

- We recommend using corrugated paperboard EE-flute with underliner (interlayer).
- The sizes of smaller paperboard have to be 7.5 x 16.0 x 0.32 cm.
  The sizes of larger paperboard have to be 15.3 x 16.0 x 0.32 cm.
- Put the larger paperboard on the conveyor belt. Make sure that the board is put in front of the first pressure wheel.

1.

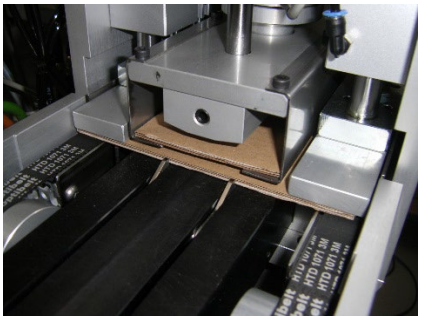


2.

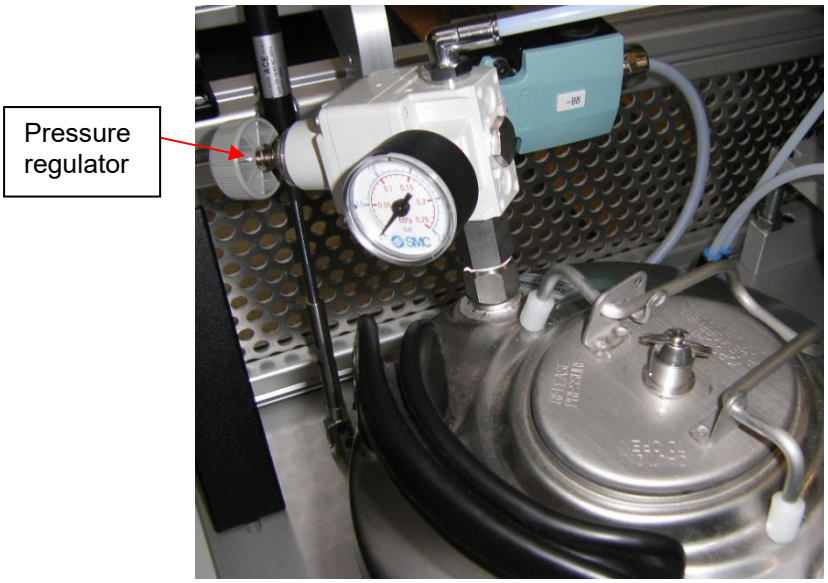
- Insert the smaller paperboard from the left side into the pressing station until it reaches the stop.

1.

2.



Pictures: Inserting paperboards



Picture: Pressure regulator

15. Adjust the adhesive pressure at the pressure regulator.

    ➢ This pressure determines the grammage respectively the thickness of the adhesive bead.

16. Close the protective cover.

Do not reach into the pressing station.
Keep your hands away. Risk of injury!

Set respectively change the test-parameters:

17. Set the test-parameters on the Touch Panel, respectively change these if necessary.

    The speed of the conveyor belt is fixed to 20m/min.

    The following parameters can be set at the Touch Panel:

Open time (waiting time):	After this time has elapsed, the test cylinder will lower and press the small paperboard onto the wide one.
Pressing time:	After this time has elapsed, the test cylinder will lift and will tear apart both paperboards at the adhesive joint.
Down force (pressing force):	According to the input power, both paperboards will be pressed together
Adhesive length in mm:	According to the input length, the application module will open, applies the adhesive bead and close again.
Intermittent or non-intermittent:	The adhesive-bead can be applied with or without interruptions.

18. Press the button "Start test" on the Touch Panel.

The adhesive test starts automatically:

a) Function "Test with tear-off (measuring traction force)":

- The first paperboard will be fed by the conveyor belt.
- 10 mm after that the first light sensor detects the paperboard, the application module opens and closes again according to the entered length (e.g. 120 mm).
- The paperboard will be fed in the pressing station. A second light sensor detects that the paperboard has reached the press position and stops the conveyor belt.
- After the open time (waiting time) has elapsed, both paperboards will be compressed with the preset down force (pressing force). The preset down force (pressing force) is adjustable on the Touch Panel.
- After the pressing time has elapsed, both paperboards will be torn apart at the adhesive joint.
- The traction force will be displayed in Newton on the main screen.
- The first paperboard will be ejected over the transport carriage.
  The second paperboard has to be taken out manually.

b) Function "Test without tear-off (measuring traction force)":

- The first paperboard will be fed by the conveyor belt.
- 10 mm after that the first light sensor detects the paperboard, the application module opens and closes again according to the entered length (e.g. 120 mm).
- The paperboard will be fed in the pressing mechanism. A second light sensor detects that the paperboard has reached the press position and stops the conveyor belt.
- After the open time (waiting time) has elapsed, both paperboards will be compressed with the preset down force (pressing force). The preset down force (pressing force) is adjustable on the Touch Panel.
- After the pressing time has elapsed, the pressing plates will be raised and the pressing ram will be raised ca. 10mm. The pressed paperboards can be taken out.
- After a desired period of time these paperboards can be inserted again into the pressing mechanism from the ejection-side, in order to tear both paperboards apart at the adhesive joint. See Controller, chapter 6.5 Tear-off test and 6.9 Settings.
- The traction force will be displayed in Newton on the Touch Panel.
- The first paperboard will be ejected over the conveyor belt.
- The second paperboard has to be taken out manually.

ADVICE: PUR-adhesives react with air humidity. To prevent the tank, application head, application module and nozzle from clogging, they must be cleaned with PUR cleaner immediately after production stop.

5.3 Switching the unit off

Caution! Risk of burns and risk of injury!

- Parts of the unit can be hot long after switching off.
- Always wear protective gloves and safety goggles!
  Molten adhesives at operating temperature could cause heavy burns.
- Do not touch the hot surfaces or parts without wearing protective gloves!

ADVICE
PUR-adhesives react with air humidity. To prevent the tank, application head, application module and nozzle from clogging, they must be cleaned with PUR cleaner immediately after production stop.

Carry out the following steps:

1. Switch off the pump at the Touch Panel.
2. Switch off the controller, for this press the button "Controller Off".
3. Switch the main switch Off.
4. Switch off the main faucet and remove the main pressure air supply.

ADVICE
Remove immediately dirt from the Melter and Module.

Suitable for cleaning are:
- wooden scrapers
- lint-free cloth with cleaner

Unsuitable are:
- metallic scrapers or
- other tools made from steel like knifes, blades, etc.

5.4 Safety Instructions Adhesives

5.4.1 Instructions for processing of application materials

Definition	Application materials are here e.g. thermoplastic hot melt adhesives, adhesives, sealants and similar application materials, referred to in the text as materials.
Manufacturer information	Materials may be processed only in accordance with the product descriptions and safety data sheets of the manufacturer. They inform you among other things about the processing, transport, storage and disposal of the product. Also, information about working temperature, reactivity and potentially hazardous decomposition products, toxic properties, flash points, etc. can be found there.
Liability	ITW Dynatec is not liable for hazards and damages caused by materials.
Risk of burns	When handling with heated materials exists risk of burns. When refilling, be aware that no hot material injects from the tank. Work carefully and wear appropriate protective equipment such as safety goggles and heat-resistant gloves. In case of burns cool the skin immediately with cold water for several minutes. Never attempt to remove the material from skin, but consult a physician.
Smokes and gases	Ensure that smokes and gases do not exceed the prescribed limits. Possibly exhaust smokes and gases by means of suitable devices and / or provide sufficient ventilation of the workplace.
Substrate	The substrate should be free of dust, grease and moisture. Select the appropriate material by tests, determine the optimum working conditions and determine the possibly required pretreatment for the substrate.
Processing (working) temperature	Keep the prescribed working temperature when working with tempered material; this is crucial for the quality of the application. This may not be exceeded! Overheating can cause coking or cracking of the material and this can cause malfunctions or equipment failure. The material should generally be melted gently. A longer, unnecessary temperature load should be avoided. When work is interrupted, the temperature should be lowered. If the working temperature is set too high, this will cause a longer wet life and a longer conditioning time. Thereby the bonding may open again. The product quality will be derogated. If the working temperature is set too low, the wet life will shorten. The adhesive will get pasty and the adhesive application will get patchy. This has a negative effect on the bonding.
Melter Unit	At Gear Pump Melter: Keep the adhesive tank always filled. To avoid adhesive-coking, refill continuous small quantities of adhesive. Keep the tank always closed. At Bag Melter: Keep the adhesive tank always closed respectively the pneumatic cylinder always lowered. Aerial oxygen affects the polymeric chains of the adhesive, which causes oxidation.

5.4.2 Safety instructions for processing of Polyurethane (PUR)-Adhesives

The PUR-adhesives show improved characteristics. The strength of PUR-adhesives also increases when it cools down. In addition, these adhesives contain reactive substances. The reactive substances (isocyanate groups) react with moisture and cross-link to an infusible adhesive. The PUR-adhesive reacts from fusible thermoplastic to an infusible thermosetting adhesive.

The PUR-adhesive has to be protected from any moisture during production, stocking and use to avoid preliminary reaction. Heed the following additional instructions when processing of PUR adhesives:

ADVICE
Before processing of PUR adhesives read and follow all instructions given in the safety data sheets and product information of the manufacturer.

- Do not exceed the prescribed processing (working) temperature.
- Do not use PUR adhesives, as long as uncertainties in the implementation of all security measures exist.
- The isocyanates in PUR-adhesives are among the dangerous substances and irritate the skin, mucous membranes of the eyes and respiratory tracts.
- Persons with asthmatic complaints may have a shortness of breath.
- Since isocyanates occur in different concentrations in PUR adhesives from different manufacturers, it is imperative to read and follow the safety data sheets and product information of the manufacturer before using. Note especially the indication of toxicity, health hazards and reaction behavior.
- Use suitable respiratory protective equipment if the risk of inhalation of isocyanates or other hazardous substances exist, which were used in the polyurethane production and are present in concentrations above the limits.
- At very high pollutant concentrations or unclear circumstances, use respiratory protective equipment independent of the ambient air.
- Exhaust the adhesive smokes with suitable exhaust and ventilation devices.
- When spraying an efficient exhaustion is imperative because of the smokescreen-risk.
- Nevertheless, it is advisable to exhaust the vapors, to encapsulate the machine or to reduce the temperature.
- If evaporating of isocyanates cannot be avoided while changing or removing the bag or while cleaning the base tank, use a respiratory protective with gas filter type A, color brown or type B, color grey. The mask has to be always in good and hygiene condition.
- During production interruptions or breaks lower the temperature and cover the nozzles of the applicators with Vaseline (petroleum jelly) or dunk into suitable oil.

- Before longer shutdown, rinse the application system with a suitable cleaning agent. Use only a cleaning agent recommended by the material manufacturer.

ADVICE
When using cleaners, heed the instructions given in the safety data sheets and product information of the manufacturer.

- Lock the open material connections airtight.
- Always wear heat-resistant gloves and long-sleeved protective clothing when handling PUR adhesives.
- Always wear suitable protective goggles to prevent eye contact.
- Keep ready devices for eye wash (eye wash bottles or eye showers) and a cold water source (with washing possibilities in the work area) for the treatment of burns and spraying PUR-adhesive.
- As preventative skin protection, use regularly skin protection cream for hands and face.
- In working rooms where PUR adhesive is processed, do not eat, drink, smoke and do not store food.
- Wash hands thoroughly after end of work, before breaks and after any contact with PUR adhesives.
- Change clothes contaminated with adhesive immediately.
- **Temperature reduction, standby:** If longer repair or maintenance work is necessary, we recommend switching the Application Unit off or at least switch to "stand-by" in order to protect the adhesive. Ask the adhesive manufacturer for accurate times and information.
- **Protection of the application head:** During longer production breaks the applicators should principally be protected against penetrating moisture. Suitable means of protection are produced and recommended by the adhesive manufacturers.
- **Protection caps for nozzles:** Nozzles could be protected e.g. with protection caps filled with PUR-cleaner, mounted immediately after production stop.
- **Protection pan for slot nozzles:** Slot nozzles and application heads could be protected by a pan filled with PUR-Cleaner. Immediately after production stop you dunk the slot nozzle or the application head into this pan.

- **Cleaning:**


CAUTION

During start-up operation or during maintenance work all parts that are soiled with adhesive should be thoroughly cleaned before reassembling, since a reaction of the adhesive occurs, because it was in contact with air humidity. Therefore breakdowns, blocked nozzles and in particular malfunction of movable parts could be the possible causes.

Dismounted and contaminated parts should be cleaned immediately if possible, because a delayed cleaning will be difficult because of the immediately incipient cross-link reaction.

- **Filter:**


CAUTION

Filters used during the work with PUR-adhesive cannot be respectively can hardly be cleaned. Therefore we recommend renewing soiled filters (filter cartridges).

Air usually contains moisture that could cause a reaction of the adhesive within the filter. After replacement the filter, the filter housing has to be de-aerated immediately!

- **Disposal:**

Dispose the adhesives according to the instructions in the safety data sheets and product information of the manufacturer and in accordance with applicable international, national and local rules and regulations.

5.4.3 Useful hints for adhesive-users

1. Adhesive degradation / coking respectively cracking

Adhesives degrade or coke if not used correctly.

You can detect adhesive-degradation by one or more of the following effects:
- darker color
- black particles within the adhesive
- swelling or gelation
- formation of smoke

Possible cause	Solution
Temperature settings too high	• Check the adhesive-temperature with a calibrated thermometer. • Set the temperatures according to the manufacturers' instructions.
Standby-temperature settings too high	• Set the stand by-temperature to 85°C. • Switch the unit to standby during shorter production breaks. • Switch the unit off during longer production breaks.
Coked adhesive residues and disposal within the base tank	• Empty the base tank and clean it with an appropriate cleaning agent. After that, fill up new adhesive. • You will find deposit of coked adhesive basically on the wall and in the corners of the base tank – see that the base tank is always closed and that the filling quantity is constant and enough. • If adhesive-degradation occurs repeatedly, please contact the responsible sales representative from ITW Dynatec or the adhesive-manufacturer.
Incompatible types of adhesive mixed within the tank / the system	• Mixing incompatible types of adhesive may cause gelation – never mix different types of adhesive!

2. Blocked nozzles

Possible cause	Solution
The adhesive is coked.	• See adhesive-degradation / coking respectively cracking.
The filters are blocked / burst.	• Replace filters.
Pollutants got into the base tank.	• Clean respectively rinse the complete adhesive system. • Keep the base tank and the adhesive-package always closed.
The nozzle is blocked by burned particles or damaged.	• Clean the nozzle or replace it.
The application head is dirty on the outside.	• Clean it.

3. Adhesive threads / cobwebs

Adhesive threads / cobwebs could cause drop head halts. Furthermore they can cause fouling on your products and machines.

Possible cause	Solution
Application temperature is too low.	• Check the temperature and increase it if necessary in steps of 5°C.
The substrate is too cold	• Warm the substrate up to room temperature.
The adhesive has begun to coke.	• See adhesive-degradation / coking respectively cracking.
The spray-application system is defective	• Please contact ITW Dynatec.
The distance between the spray-application system and the substrate is too high	• Decrease the distance.
The adhesive viscosity is too high	• Get a new product suggestion.
The application-weight is too high	• Decrease the application-weight.

4. Deficient adhesion (not pressure sensitive adhesives)

Problem 1: The adhesive-bead is not pressed out and there is only adhesive on the application-side:

Possible cause	Solution
The applied quantity is too little, very narrow beads.	• Increase the applied quantity by e.g. increase the pressure and/or use bigger nozzle.
The application temperature is too low to reach the needed wet life.	• Adjust the needed application temperature (see technical data sheet).
The adhesive-beads are not pressed out holohedral.	• Adjust the contact pressure-station. • Search for reasons that may cause a cooling down of the adhesive and eliminate them.

Problem 2: The adhesive is on both sides, but the surface is irregular and potentially there are adhesive threads (cohesion fracture).

Possible cause	Solution
Applied adhesive quantity too high.	• Reduce the applied quantity.
Application temperature is too high.	• Check the temperature and lower it if necessary in steps of 5°C.
Contact pressure is too low.	• Increase the contact pressure.

Problem 3: There is only adhesive on one side (adhesive fracture). The adhesive-bead is pressed out but the substrates are not adhered together.

Possible cause	Solution
Application temperature is too high.	• Check the temperature and lower it if necessary in steps of 5°C.
The applied quantity is too little.	• Increase the applied quantity to increase the wet life
Maybe the adhesive is not suitable for the substrate.	• Get a new product suggestion.

5. Deficient adhesion (pressure sensitive adhesives)

Possible cause	Solution
The substrate is too cold.	• Warm the substrate up to room temperature.
Application temperature is too low.	• Check the temperature and increase it if necessary in steps of 5°C.
The applied quantity is too little	• Increase the applied quantity.
The application pattern is misaligned	• Check the application pattern of the adhesive.

6. "Rails" with roller application (optional)

Explanation: “Rails” means, that two thick adhesive beads on the left and on the right of a thin adhesive film in the middle are applied. The adhesion looks stable on first sight, but in tests you will see, that it is unstable and will break on the transport or in further processing.

Possible cause	Solution
Scraper misaligned / applied quantity too little	• Change the scraper adjustment to increase the applied quantity.
Dirt particles on the scraper blade	• Remove all dirt particles.
Pressure of the roll on the substrate too high	• Lower the pressure of the roll on the substrate.
Contact pressure of the roll on the substrate too low	• Increase the contact pressure, so adhesive-beads will be all pressed out.

Chapter 6
Controller Siemens TP700

Rev.12.21

6.1 Security advice

ADVICE

Do not damage Touch Panel with sharp edged tools or similar!

Do not besprinkle Touch Panel!

Keep the Touch Panel always clean!

The Controller and the Touch Panel start automatically when switching on the main switch and pressing the button „Controller ON“.

The Touch Panel is self-explanatory.

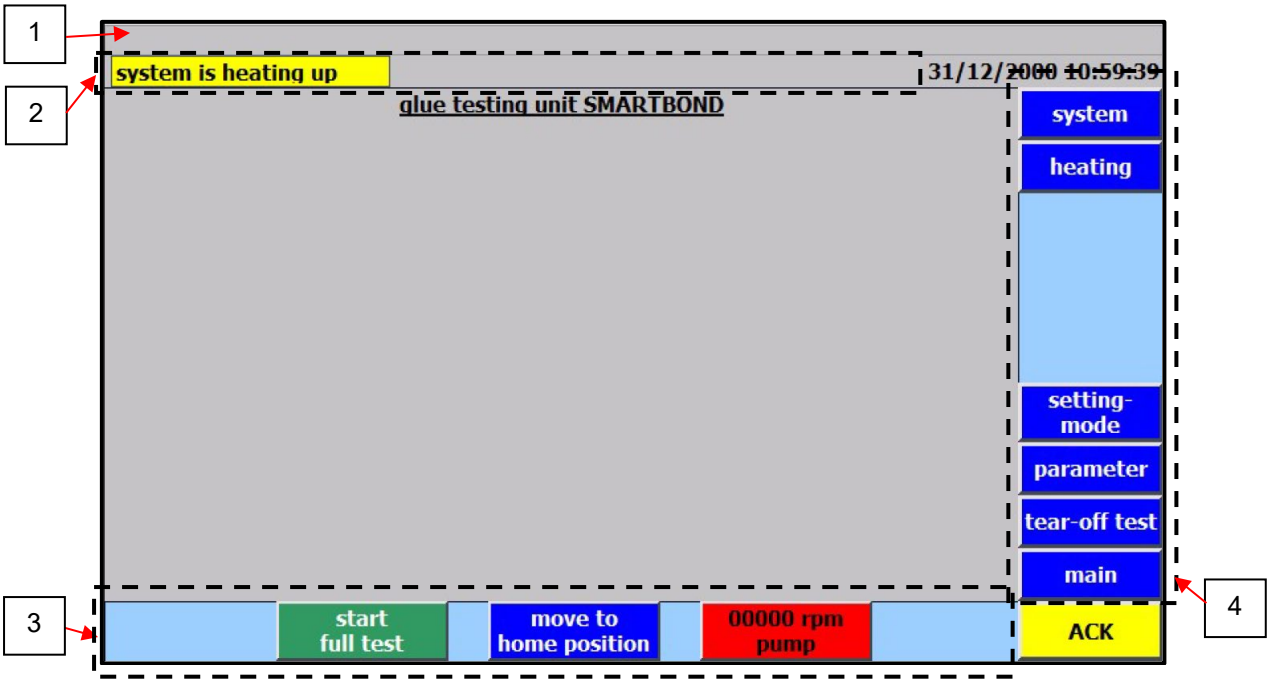
➢ Press the particular function field and the appropriate function will be activated.

➢ Press the desired function and the value can be entered or changed.

All settings and controller can be done using the Touch Panel, e.g. for

- temperatures,
- times,
- speed, etc.

6.2 Main Controls



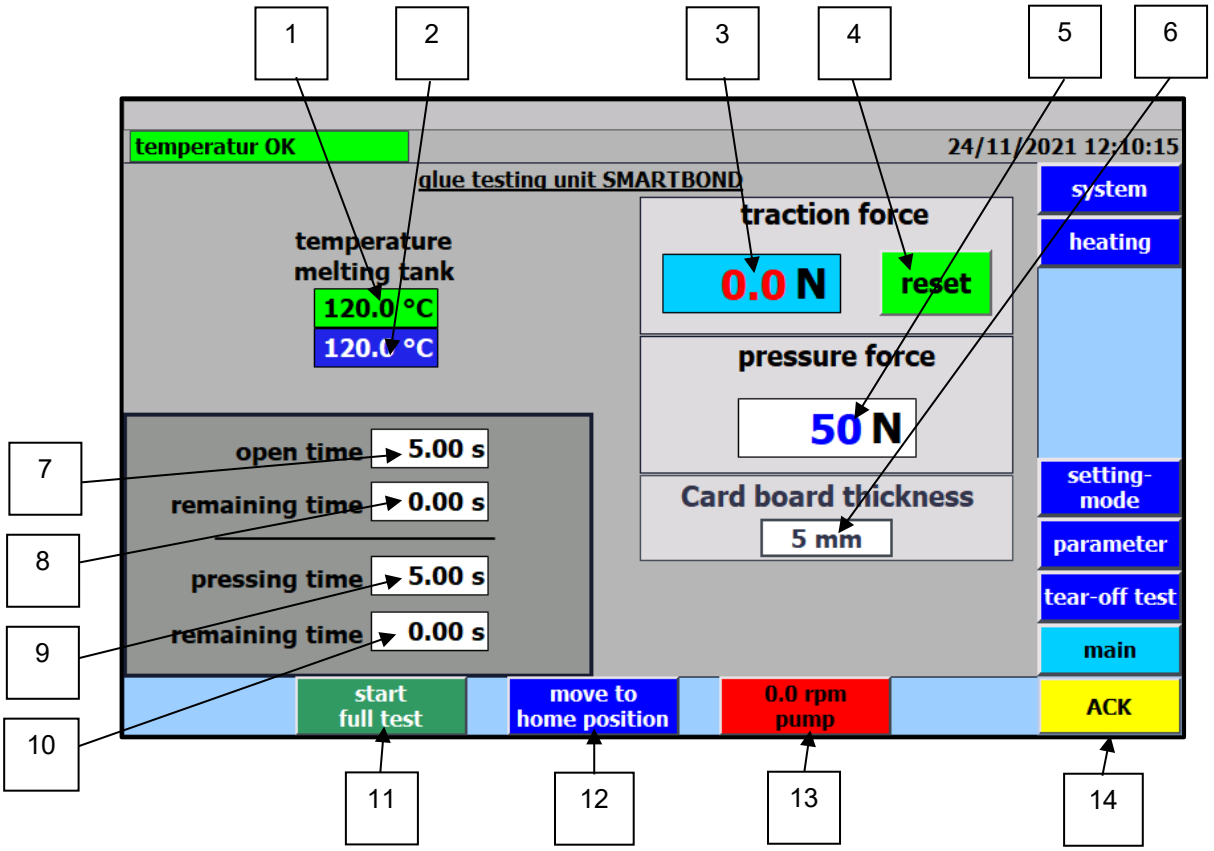
	Description
1	**Message line for warnings, errors, information and indications** • Errors will be displayed red. • Warnings will be displayed yellow. • Information/Indications will be displayed green.
2	**Status Display** In this area, the current status of the individual areas is displayed.
3	**Switch bar** In this area, the switches for the operation of the system are located.
4	**Navigation** In this area, the control elements for the navigation in the operation of the system are located.

6.3 Overview, Main Screen

6.3.1 Main screen for tests with measuring

ADVICE

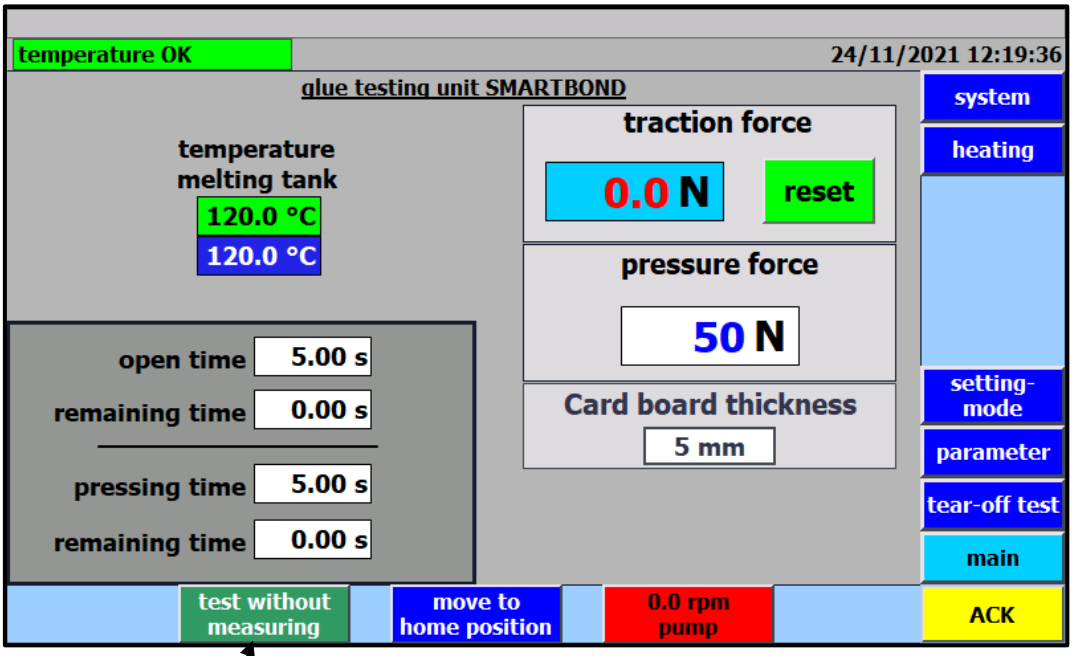
- After each switching on and off the main switch, choose the operation mode "hotmelt mode" or "cold glue mode" on the system screen.
- If you choose "hotmelt mode", switch on additionally the heating zone "tank" on the Heating screen (see point 6.4)!
- The buttons/switches show the as-is-state of the particular function.
- If you press an input box, a numeric keypad will open. Enter the desired values and confirm by pressing ENTER.



	Description
1	**Display: Current temperature in °C** The actual temperature is displayed. By pressing one of these fields, you go to the heating screen, where you can set the temperatures.
2	**Display: Setpoint temperatures in °C** The setpoint temperature is displayed.
3	**Display: Traction force in Newton** The measured traction force is displayed.
4	**Button: Reset** • Press this button, if during the test process an error occurs. • By pressing this button, the traction force will be reset to 0 N.
5	**Display: Pressure force in Newton** The pressure force is displayed, which has been set in the parameters.
6	**Display: Card board (paperboard) thickness** The thickness of the test paper boards to be bonded is displayed.

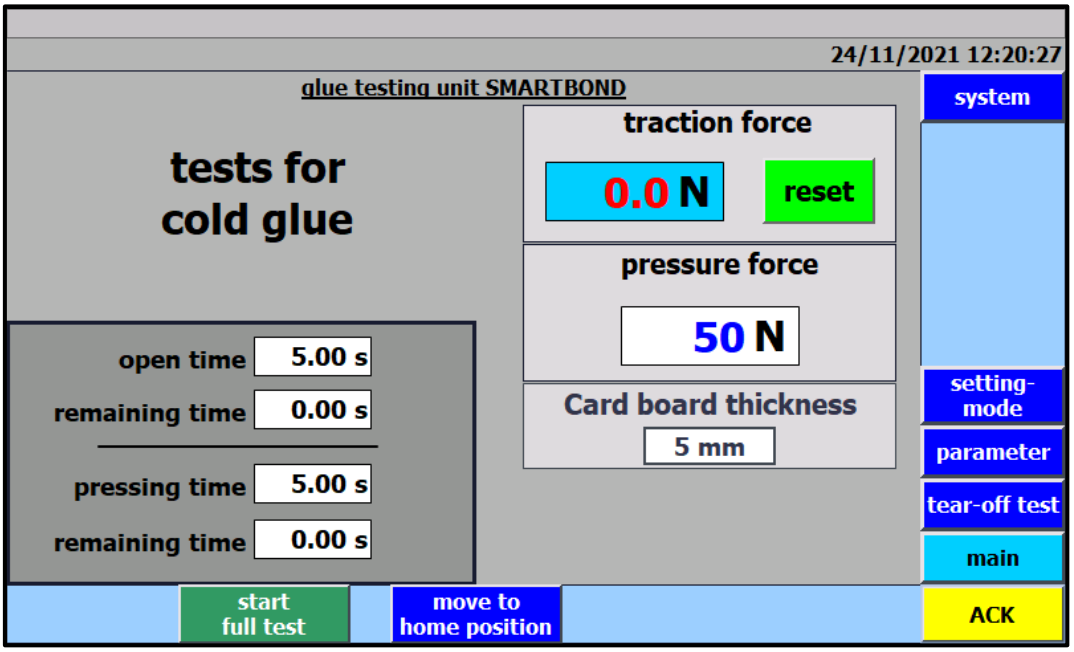
7	**Display: Open time (waiting time) in seconds** The open time (waiting time) is displayed, which has been set in the parameters.
8	**Display: Remaining time in seconds** The remaining open time (waiting time) is displayed.
9	**Display: Pressing time in seconds** The pressing time is displayed, which has been set in the parameters.
10	**Display: Remaining time in seconds** The remaining pressing time is displayed.
11	**Button: Start Test** By pressing this button, the test process will start automatically, i.e. the first paperboard will be fed, glued, pressed onto the second paperboard, torn apart at the adhesive joint and the traction force will be measured and displayed.
12	**Button: Home position** The display for the home position will be visible if any condition is missing for Start Test: - The protective cover is not closed. - The pump is not running for “service with hot melt”. - The positions of pressing plates and the conveyor belt (transport carriage) are not correct. - The pressing ram is not in the start position. By pressing this button, the corresponding positions will be run up. **Switch on the pump and close the protective cover by hand.**
13	**Switch: Pump is On/Off** By pressing this switch, the pump will be switched on or off. The display for the pump is only visible after the working temperature has been reached; then, the switch is also activated.
14	**Taste: ACK** With the button "ACK" you have to acknowledge any faults after their elimination. Execute following steps: • Correct and clear the faults / disturbances. • Press the button "ACK" to turn the main contactor on and to start the system again.

6.3.2 Main screen for tests without measuring (option)



	Description
	Button: Test without measuring • The functions of Adhesive Testing Unit are here identical as under point 6.3.1. **Exception:** the paperboards will not be torn and ejected after gluing, but they must be removed manually from the device. • The selection of the operation with or without measuring takes place in the Settings screen point 6.9.

6.3.3 Main screen for tests with cold glue (option)

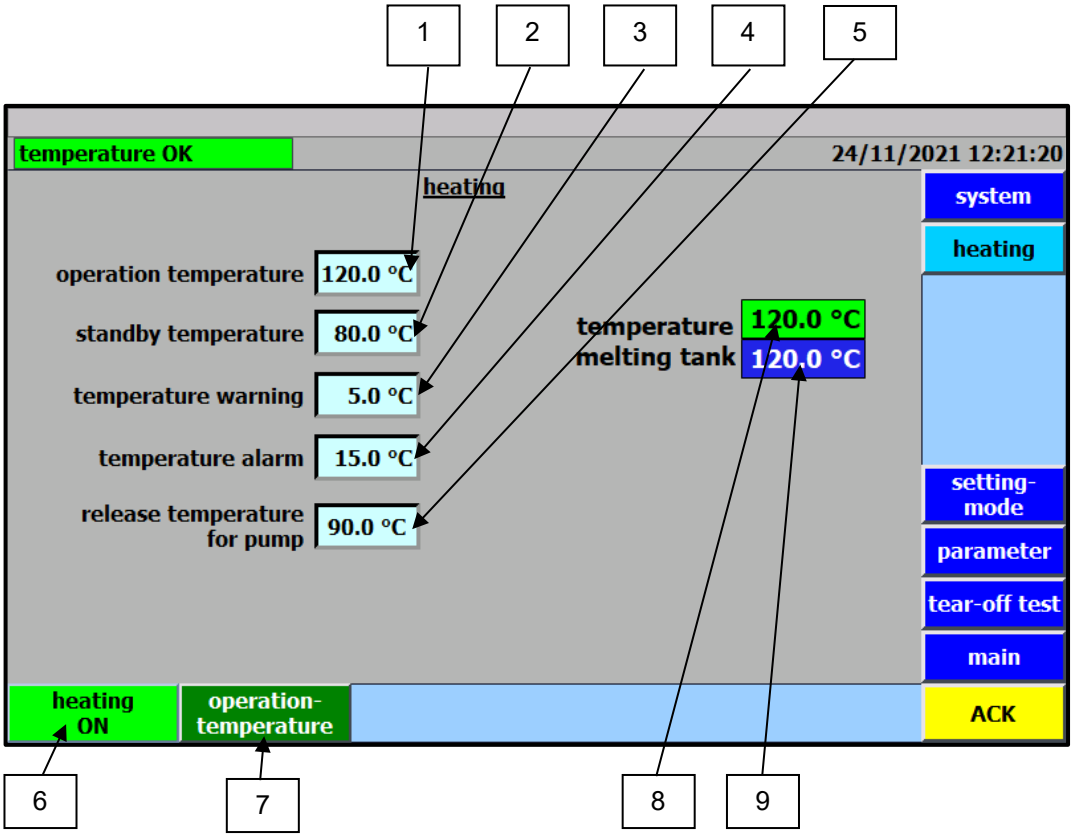


	Description
	Tests for cold glue • The functions of Adhesive Testing Unit are here identical as under point 6.3.1. **Exception:** The heating remains off and the pump for hot melt is out of operation. For this purpose, a cold glue pressure vessel will be used. • The selection of the operation with hot melt or with cold glue takes place in the System screen point 6.11.

6.4 Heating screen

ADVICE

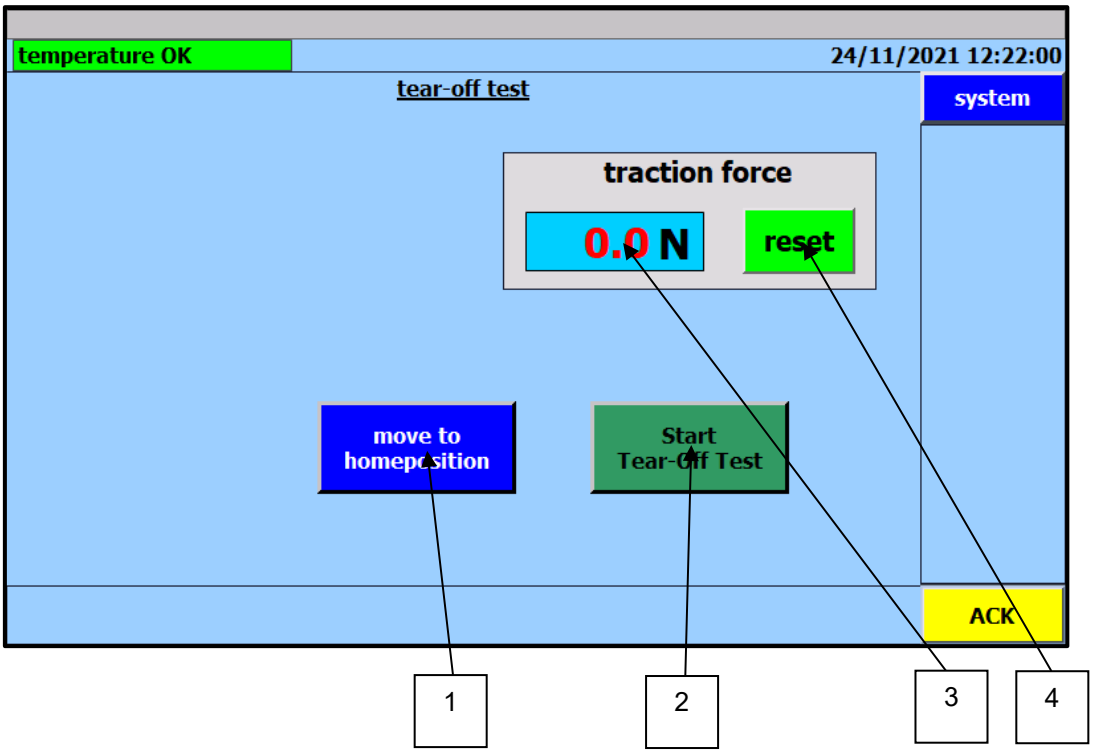
- After each switching on and off the main switch, choose the operation mode "service with hot melt" or "service with cold glue" at the system screen.
- If you choose "service with hot melt", switch on additionally the tank heating zone!
- You go to the heating screen if you press the temperature display on main screen or on the button “heating”.



	Description
1	**Input: Operation temperature in °C** • Enter here the temperatures for the corresponding heating zone. • By pressing the input box, you can set or change the operation temperature value according to the data sheet given by the adhesive manufacturer.
2	**Input: Standby temperature (in Δ°C)** • Enter here the desired value by which the operation temperature should be lowered. • Factory made the standby temperature is set to 50°C.
3	**Input: Temperature warning** If the temperature of a heating zone falls below or rises above this value, a warning message will be displayed. This value applies to all heating zones.
4	**Input: Temperature alarm** If the temperature of a heating zone rises above this value, an alarm message will be displayed and the unit will be stopped. This value applies to all heating zones.
5	**Input: Release temperature for pump** When this temperature is reached, the converter for the pump will be released by the controller.

6	**Switch: Heating On/Off** By pressing this switch, the heating will be switched on or off.
7	**Switch: Operation temperature / Standby temperature:** By pressing this switch, you switch between both operation modes respectively temperature types. • If **„operation temperature“** is displayed, then the operation temperature has been activated. The unit heats up to the operation temperature. • If **„standby temperature“** is displayed, then the standby temperature has been activated. The unit cools down to the set standby temperature (factory made setting: 50°C). The standby mode preserves the adhesive during longer production breaks. The pump is blocked.
8	**Temperature Melting Tank** **Display: Current temperature in °C** • The actual temperature is displayed. • By pressing one of these fields, you go to the heating screen, where you can set the temperatures.
9	**Temperature Melting Tank** **Display: Setpoint temperatures in °C** • The setpoint temperature is displayed.

6.5 Tear-off test

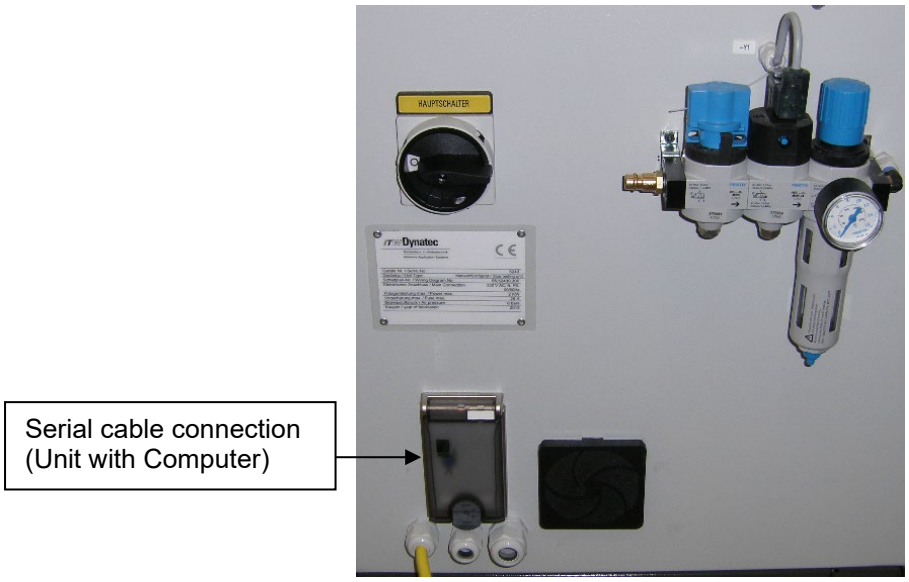


	Description
1	**Button: Home position** By pressing this button, the initial position for the tear-off test will be run up and the value for the traction force will be set to zero.
2	**Button: Start Tear-off test** By pressing this button, the tear-off test will be started. After successful test, the applied traction force will be displayed.
3	**Display: Traction force in Newton** The measured traction force will be displayed.
4	**Button: Reset** Press this button, if during the test process an error occurs. By pressing this button, the traction force will be reset to 0 N.

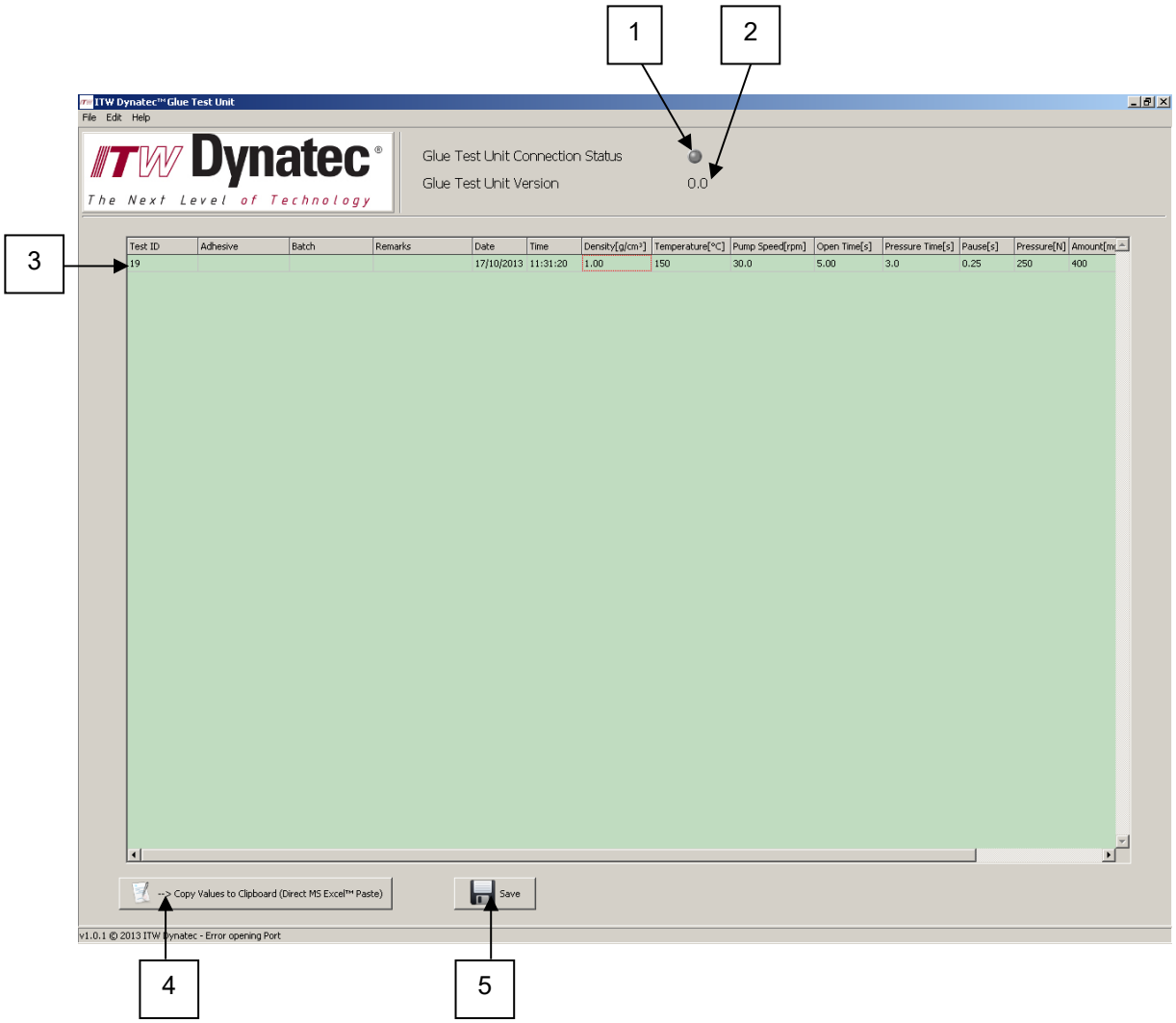
6.6 Record

ADVICE

- Install the program "GTU Setup.exe" on your computer! You will find the program on the Docu-CD.
- Connect the Adhesive Testing Unit with your computer by using a serial cable.
- Start the program GTU in your computer.
- You can load a saved file by clicking "Load from File" under the tab "File".
- You can save a new file by clicking "Save as" under the tab "File".
- You can save resp. overwrite a file by clicking "Save" under the tab "File".



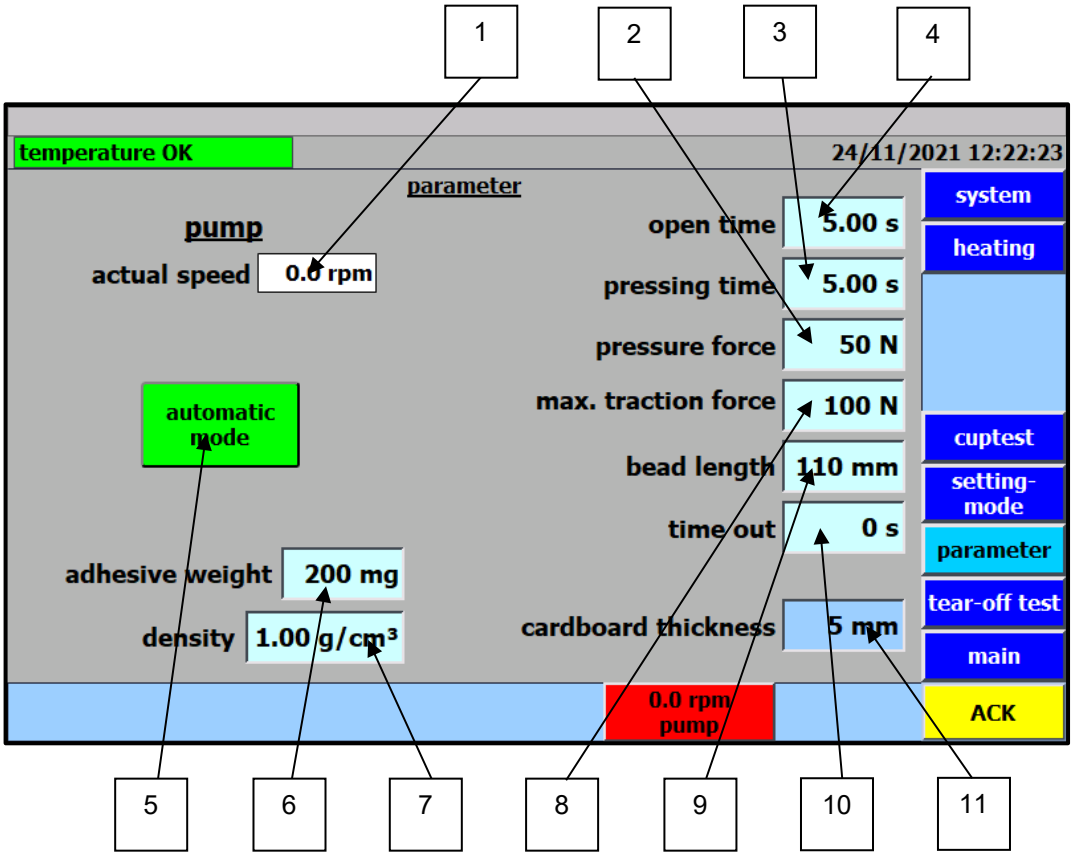
➢ *After you have started the program GTU in your computer, the following screen will open.*



	Description
1	**Glue Test Unit Connection Status, LED** The LED lights green when the connection is made between Controller and Program.
2	**Glue Test Unit Version** The version number of Adhesive Testing Unit will be read from the Controller and displayed.
3	**Display** • If a test is performed, the results are automatically displayed here one below the other. • The fields under the columns "Adhesive, Batch, Remarks, Date, Time" can be edited as desired. All other information (parameters) will be taken from the Controller and displayed; they cannot be edited.
4	**Copy Values to Clipboard (Direct MS Excel Paste)** In order to transfer the data to Excel, first click on this button and then paste the data into Excel.
5	**Save** If you click this button, the data on the screen will be saved in the file.

6.7 Parameter

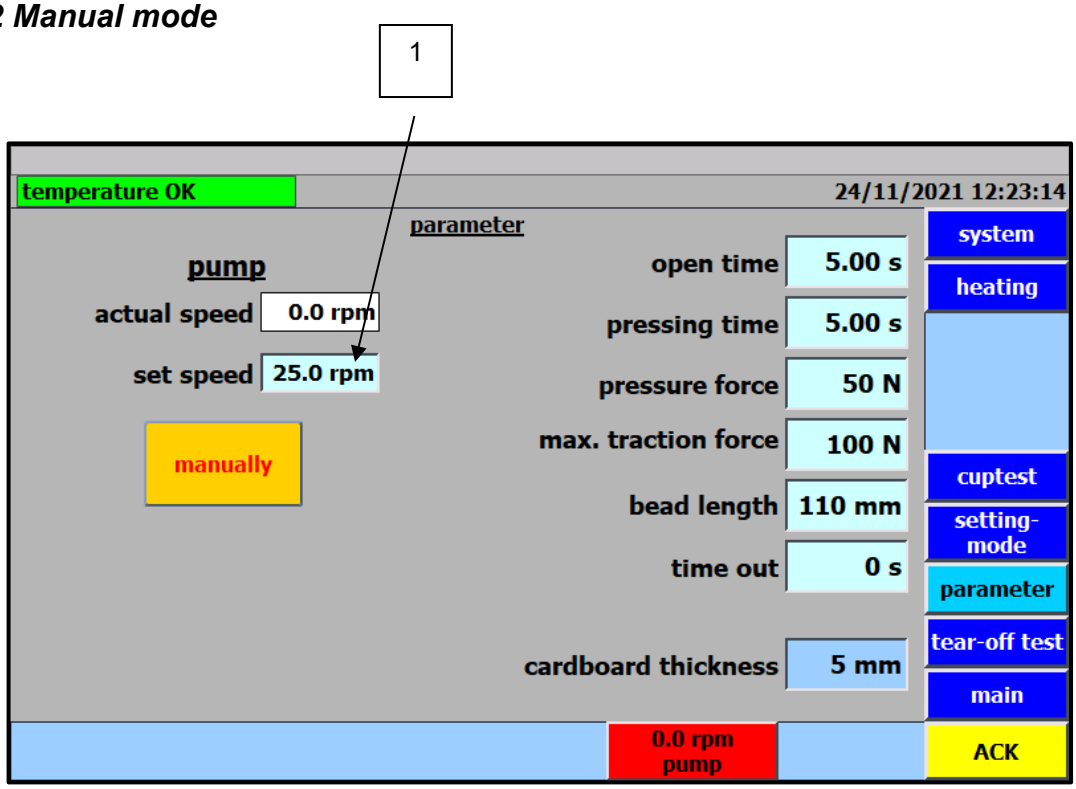
6.7.1 Automatic mode



	Description
1	**Display: Actual speed in rpm** The actual speed of the gear pump is displayed.
2	**Input: Pressure force in N** Enter here the pressure force with which both test-paperboards will be pressed together in the test.
3	**Input: Pressing time in s** Enter here the duration with which both test-paperboards will be pressed together in the test.
4	**Input: Open time (waiting time) in s** Enter here the open time (waiting time) until the test-paperboards are pressed together.
5	**Switch: Automatic Mode / Manual Mode** • By pressing this switch, you can toggle between automatic mode and manual mode of the pump. • In manual mode, enter the setpoint of rotation speed in the corresponding input box. • In automatic mode, the rotation speed will be calculated depending on adhesive length, adhesive weight and density.
6	**Input: Adhesive weight in mg** Enter here the adhesive bead.
7	**Input: Density in g/cm³** Enter here the density of the adhesive to be tested.
8	**Input: max. traction force in N** Enter here the maximum traction force that can be achieved during tear-off.
9	**Input: Adhesive bead length in mm** Enter here the adhesive bead length.
10	**Input: Time out (s) (max. tear-off time)** Enter here the time for the test. If the two paperboards are not torn apart after this time has elapsed, the process will be aborted, and a message appears in the controller display.

11	**Input: Cardboard (paperboard) thickness** If you click on this field, a selection box will open, where you can select the thickness of the board in mm increments.

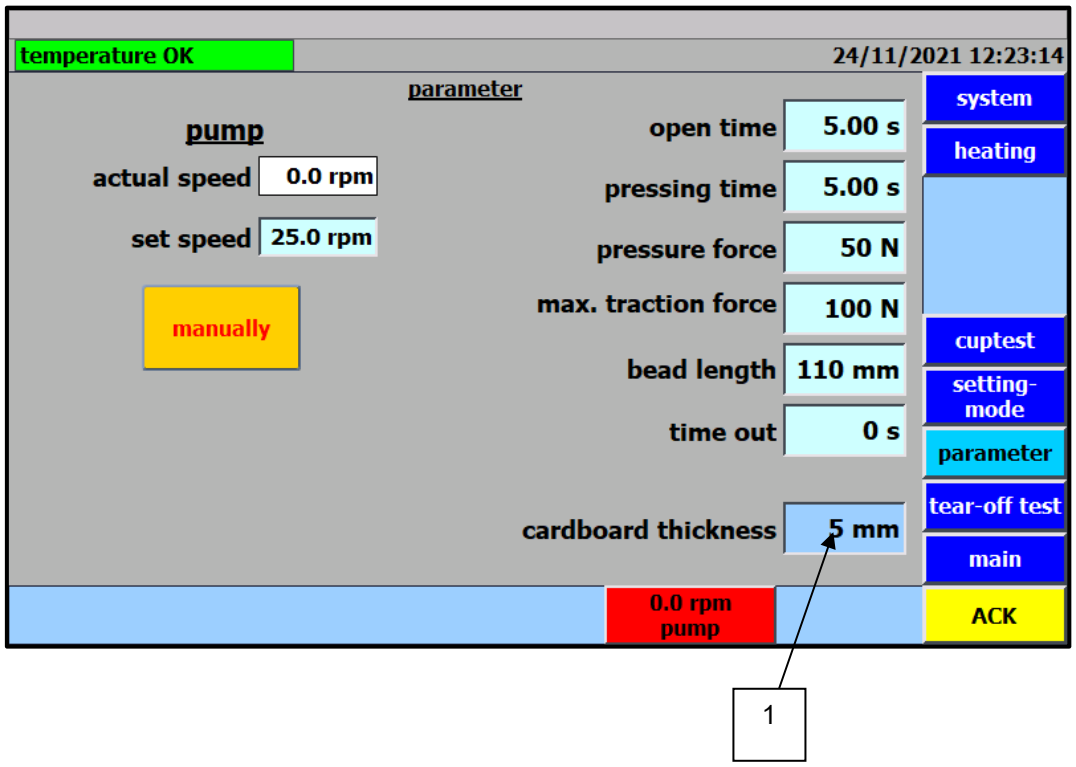
6.7.2 Manual mode



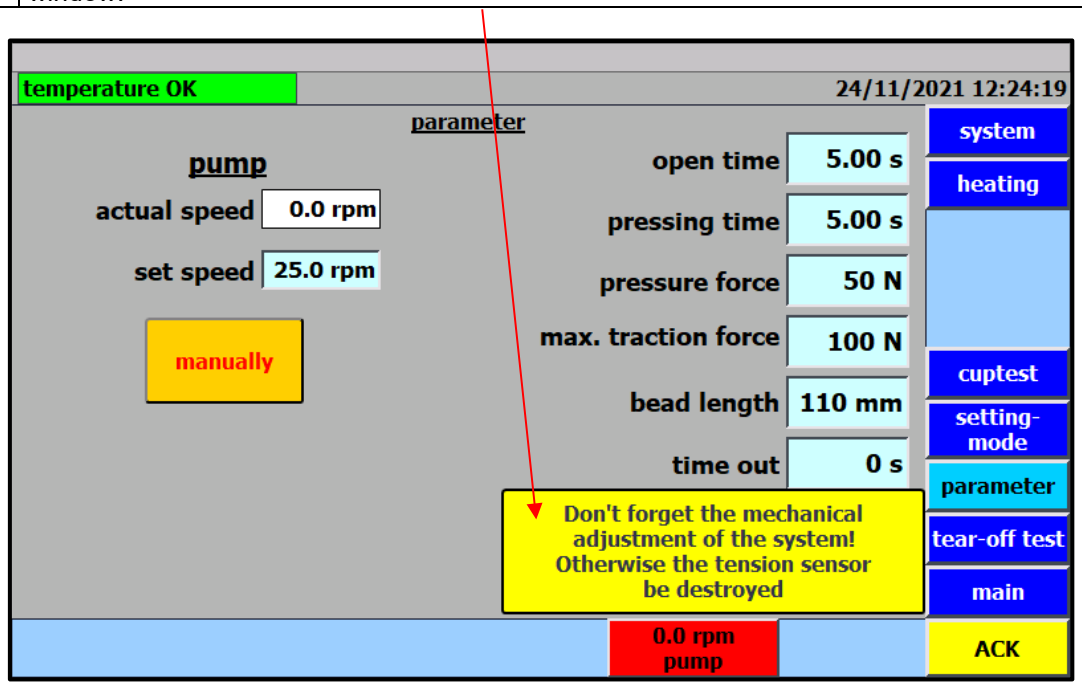
	Description
1	**Input: Set speed in rpm** This input field is visible only in manual mode. For this, switch to manual mode.

6.8 Selection of Cardboard Thickness (Optional)

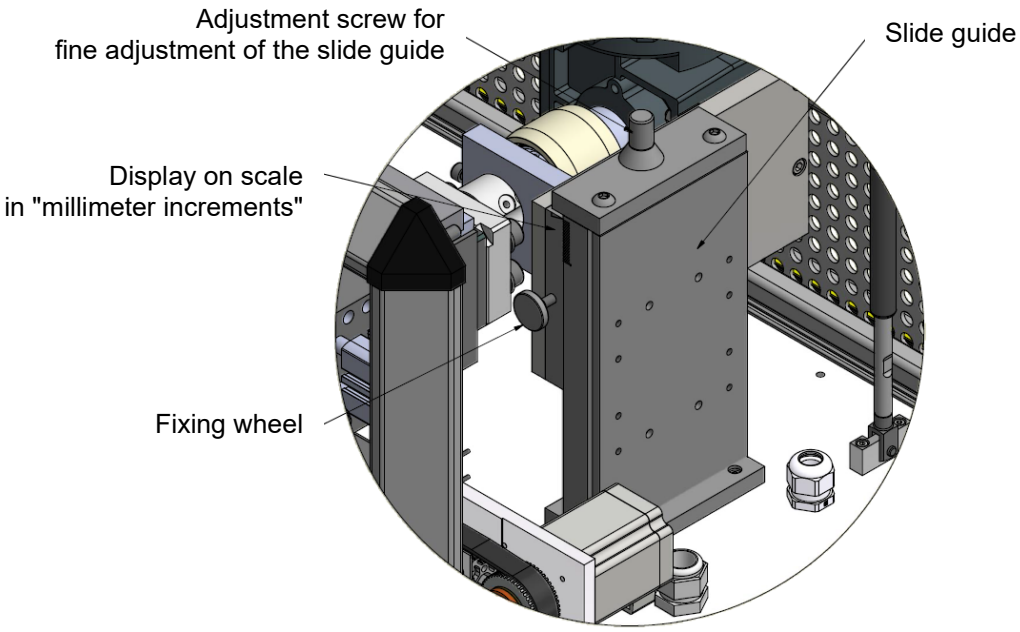
6.8.1 Adjustment of the cardboard thickness

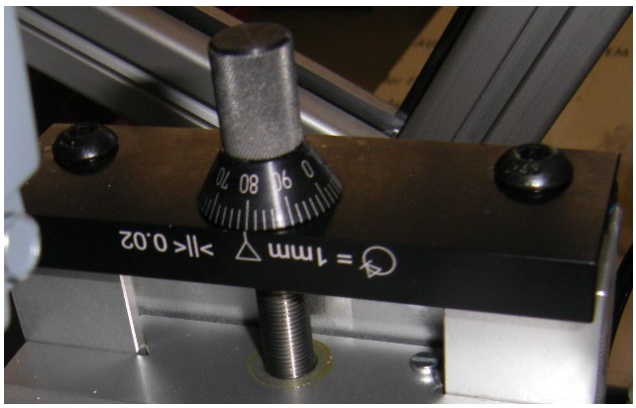


	Description
1	**Input: Cardboard (paperboard) thickness** If you click on this field, a selection box will open, where you can select the thickness of the board in mm increments. After completing the entry, the following message appears in the window.



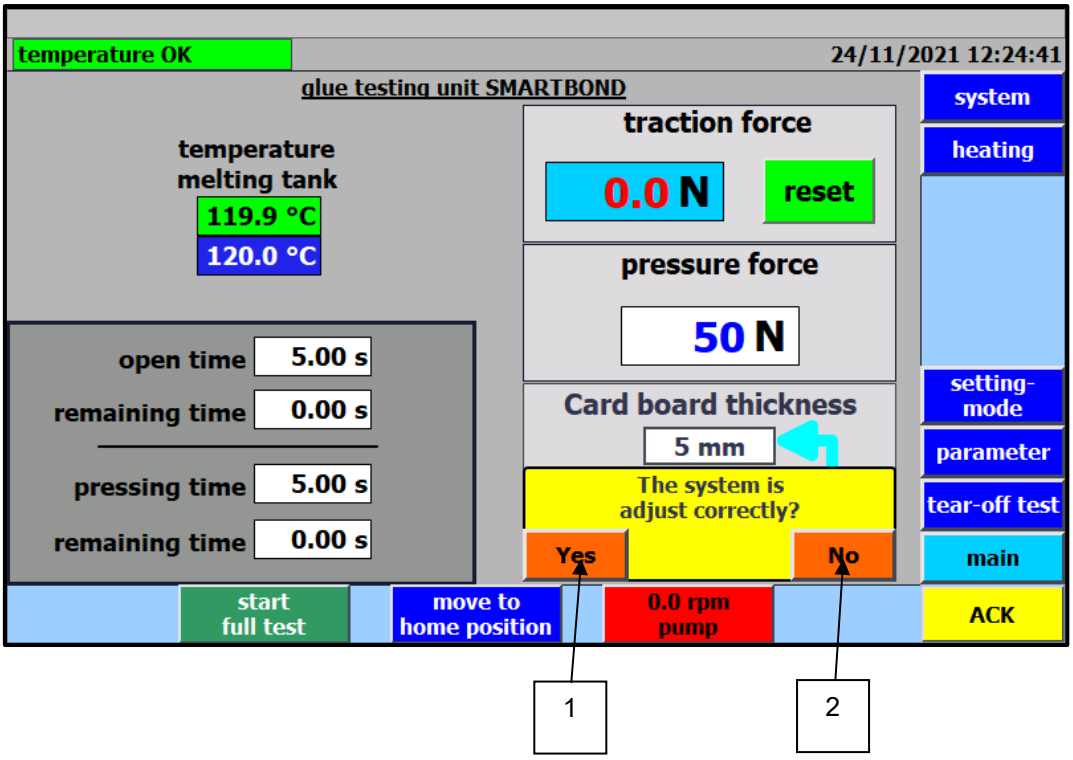
6.8.2 Mechanical adjustment of the system



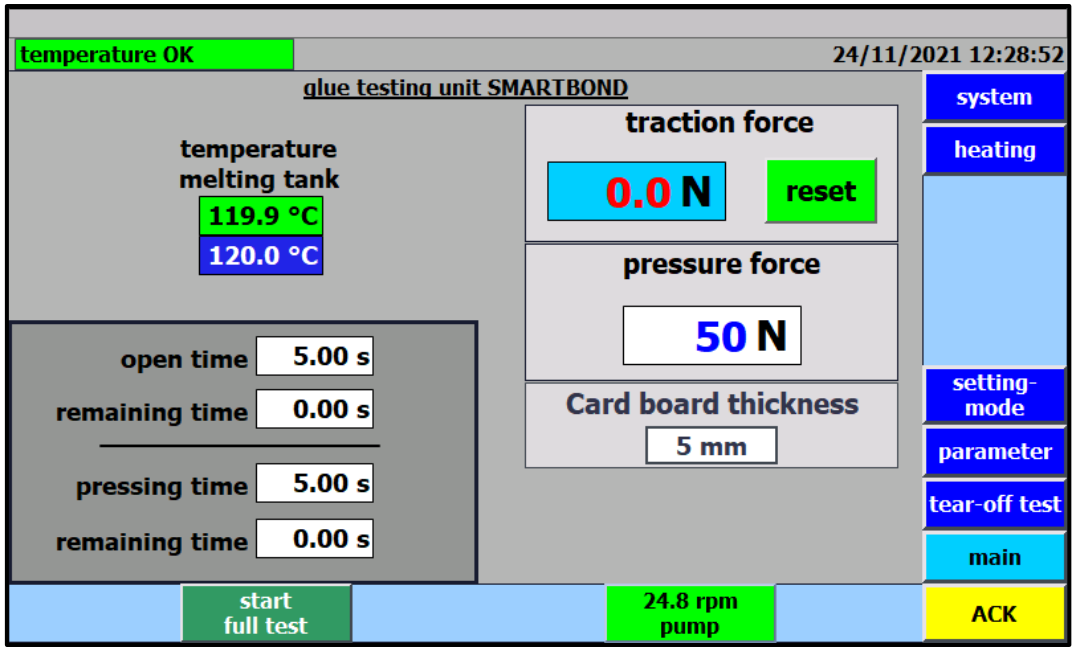


	Description
	Use the adjustment screw to adjust the system to the selected cardboard thickness. The adjustment takes place in 0.02mm increments. One full turn of the adjustment screw corresponds to 1mm. • First loosen the fixing wheel of the slide guide. • Turn the screw to the left (counterclockwise) to lower the system. Turn the screw to the right (clockwise) to lift the system. • After the desired adjustment, tighten the fixing wheel of the slide guide. The number six on the scale corresponds to a cardboard thickness of 3 mm and is the lowest position of the system. Here is the list of possible numbers on the scale and the corresponding cardboard thicknesses: 6 = 2,7-3 mm cardboard thickness 7 = 4 mm „ 8 = 5 mm „ 9 = 6 mm „ 10 = 7 mm „ 11 = 8 mm „ **ATTENTION:** The system may be set to a **maximum of 8 mm** cardboard thickness!

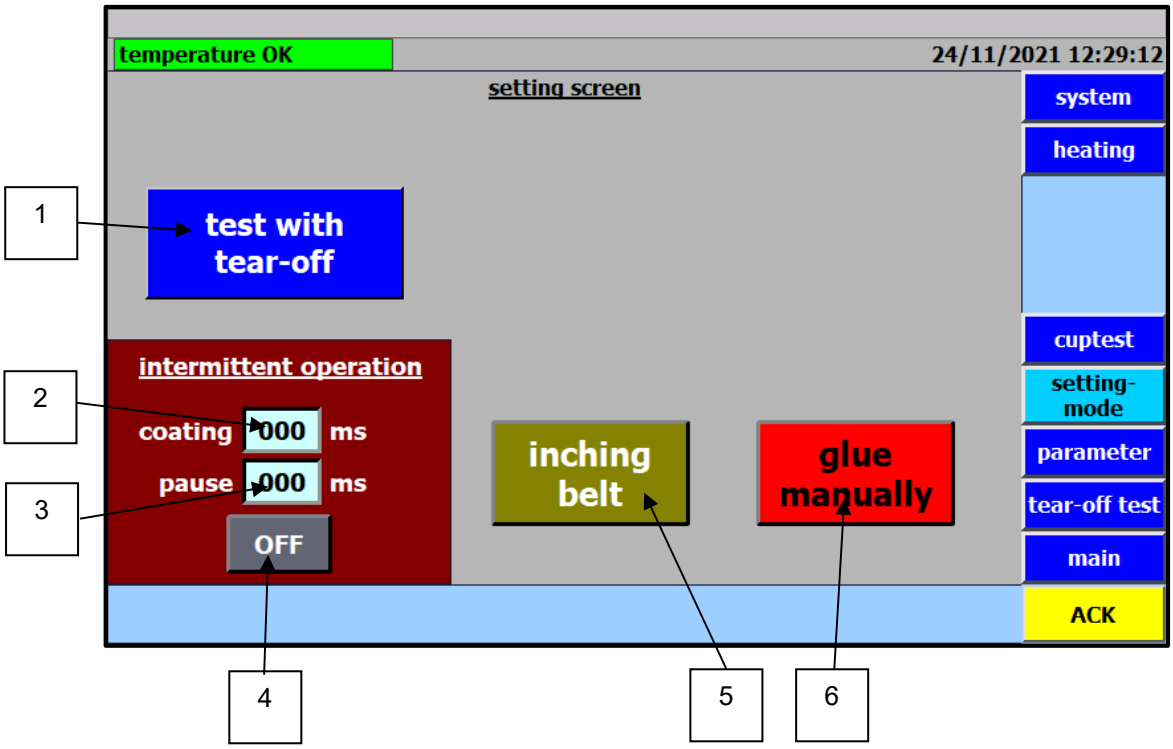
6.8.3 Confirmation of the adjustments



	Description
1	**Button: Yes** By pressing the "Yes" button, you confirm the correctness of the cardboard thickness and the corresponding adjustments; the Adhesive Testing Unit is now ready to begin the tests (see picture below).
2	**Button: No** By pressing the "No" button, you return to the parameters to correct your entry.

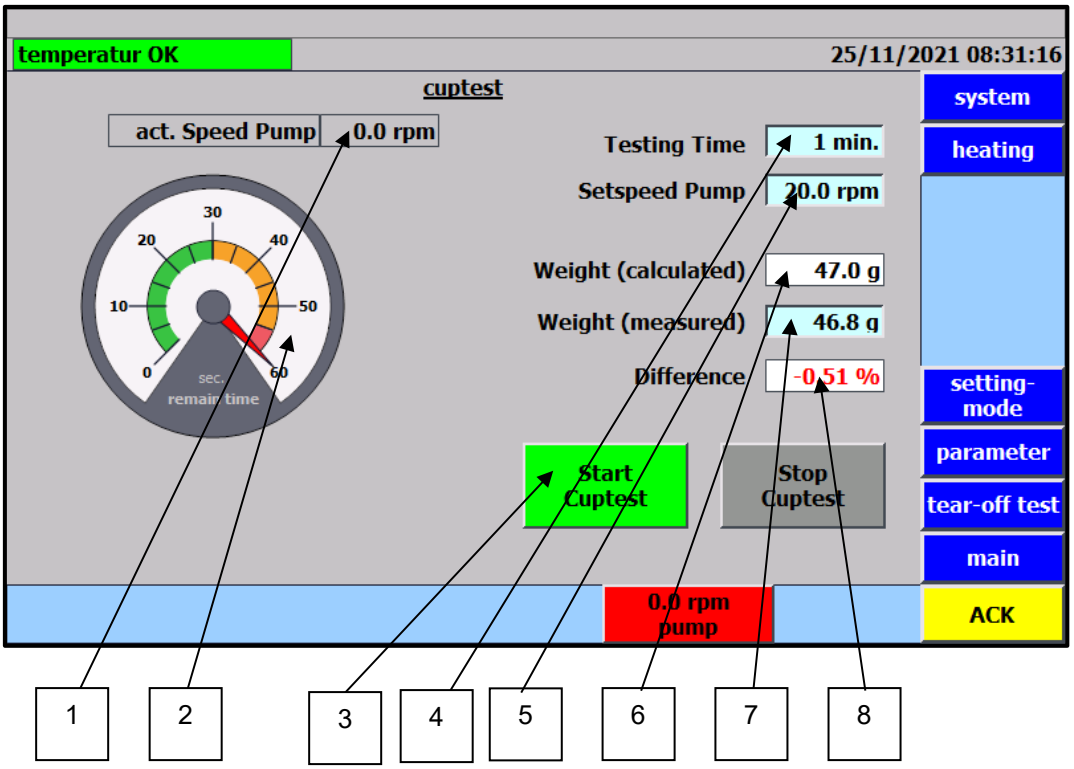


6.9 Settings

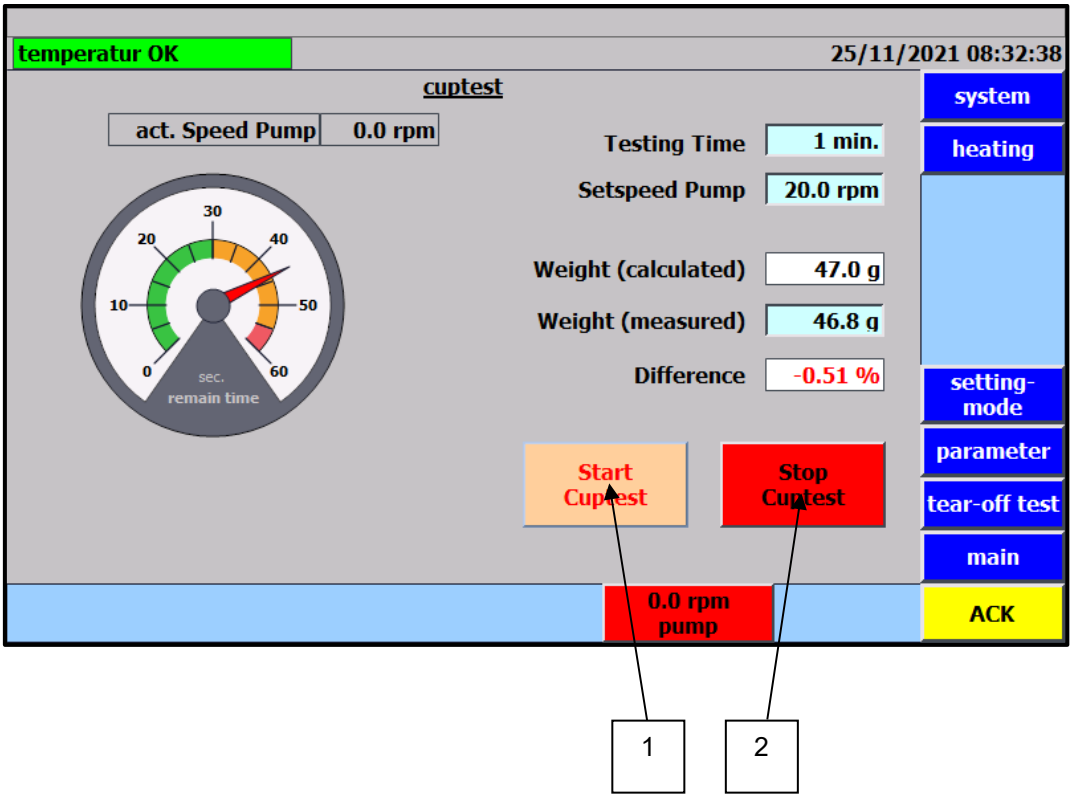


	Description
1	**Switch: Test with or without tear-off (measuring traction force)** By pressing this switch, the test will be carried out with or without traction force. • **Test with tear-off (measuring traction force):** Two test-paperboards will be compressed and torn apart, and the traction force will be determined. • **Test without tear-off (measuring traction force):** Two test-paperboards will be compressed but not torn apart, and they will be taken out manually from the pressing mechanism.
2	**Input: Coating in ms (millisecond)** Enter here the tact (cycle) in ms, with which the intermittence works in the test mode.
3	**Input: Pause in ms (millisecond)** • Enter here the pause duration in ms, with which the intermittence works in the test mode. • The pause duration determines the distances between the bead applications.
4	**Switch: Intermittence On/Off (Intermittence = Adhesive application with interruption)** By pressing this switch the function intermittence will be switched on or off.
5	**Button: Inching belt** • The belt is running by inching. • If you press the button and keep it pressed, the belt will run. The belt will be stopped, when you release the button.
6	**Button: Glue manually** If you press this button the module will be opened and the adhesive will run (come out). The adhesive will be stopped, when you press the button again. This function is intended e.g. to purge the nozzle or emptying the tank.

6.10 Cuptest



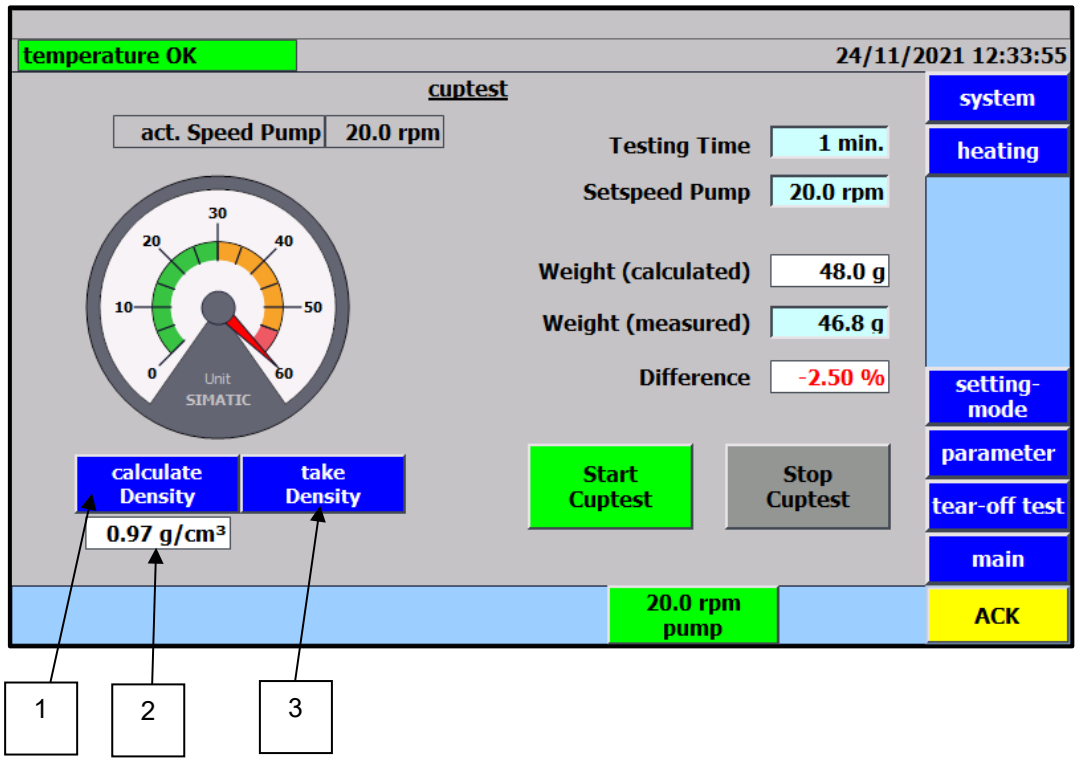
	Description
1	**Display: Actual Speed Pump in rpm** The current speed of the pump is displayed.
2	**Display: Remaining time** The remaining time of the current Cuptest is displayed.
3	**Switch: Start Cuptest** Press this switch to start the cup-test. See further description on next page.
4	**Input: Testing time in min** Enter the duration for the Cuptest.
5	**Input: Setspeed Pump in rpm** Enter the speed of the pump/motor for the Cuptest.
6	**Display: Weight (calculated)** The weight is displayed, which should be measured in an ideal case as a result of the Cuptest. This value is a calculated value which is calculated based on the speed of the motor, the density of the adhesive and the duration.
7	**Input: Weight (measured)** Here you can enter the weight of the cup test measured on a scale.
8	**Display: Difference** The calculated difference between calculated and actual test weight will be displayed here.



	Description
1	**Switch: Start Cuptest** As long as the Cuptest is running, this switch flashes red-yellow.
2	**Switch: Stop Cuptest** By pressing this switch the Cuptest will be interrupted at any time.

6.10.1 Determination of the density of the adhesive

If the parameters are set to "1" for the density - which could happen, for example, with a new adhesive - the screen of the Cuptest appears in the following layout. It is now additionally possible to determine the density at the current temperature of the adhesive.

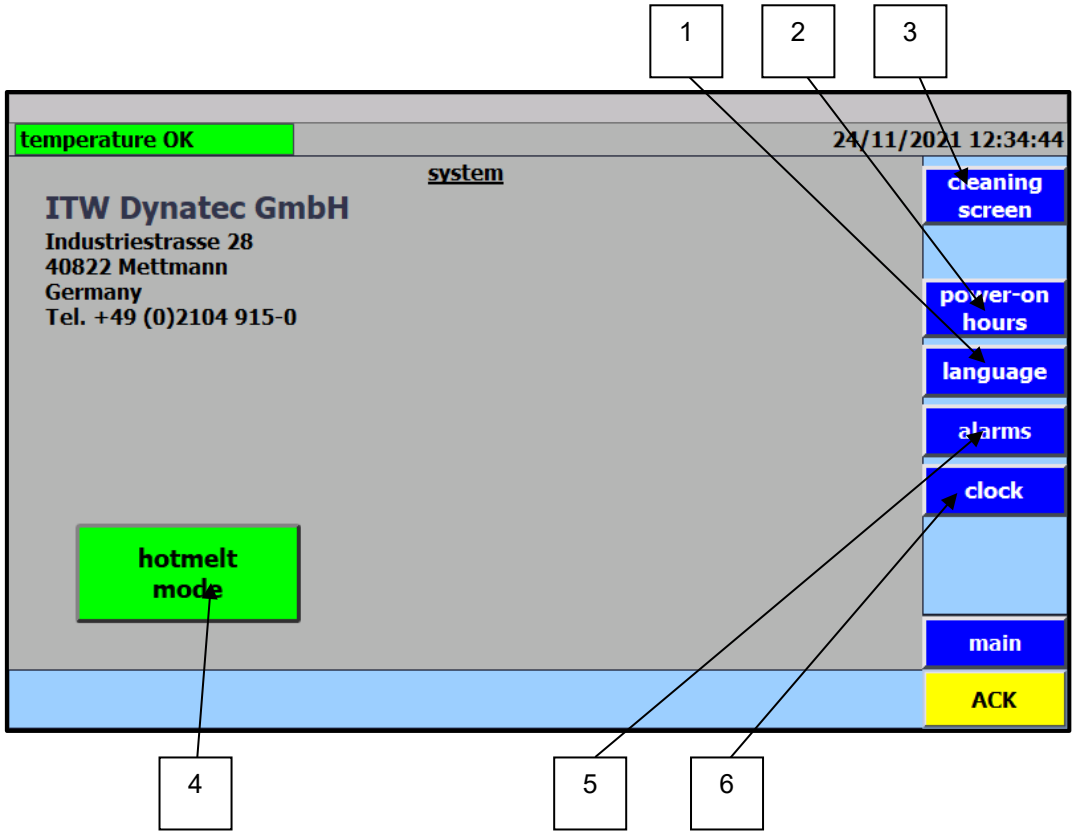


	Description
1	**Button: Calculate density** After you have entered the measured weight as described above, you can now determine the density of the adhesive by pressing this button.
2	**Display: Calculated density** Here the calculated density will be now displayed.
3	**Button: Take on the calculated density** When you press this button, the determined density will be taken on into the parameter and the screen changes to the normal layout shown above.

6.11 System screen

ADVICE

- After each switching on and off the main switch, choose the operation mode "hotmelt mode" or "cold glue mode" on the system screen.
- If you choose "hotmelt mode", switch on additionally the heating zone "tank" on the heating screen (see point 6.4)!

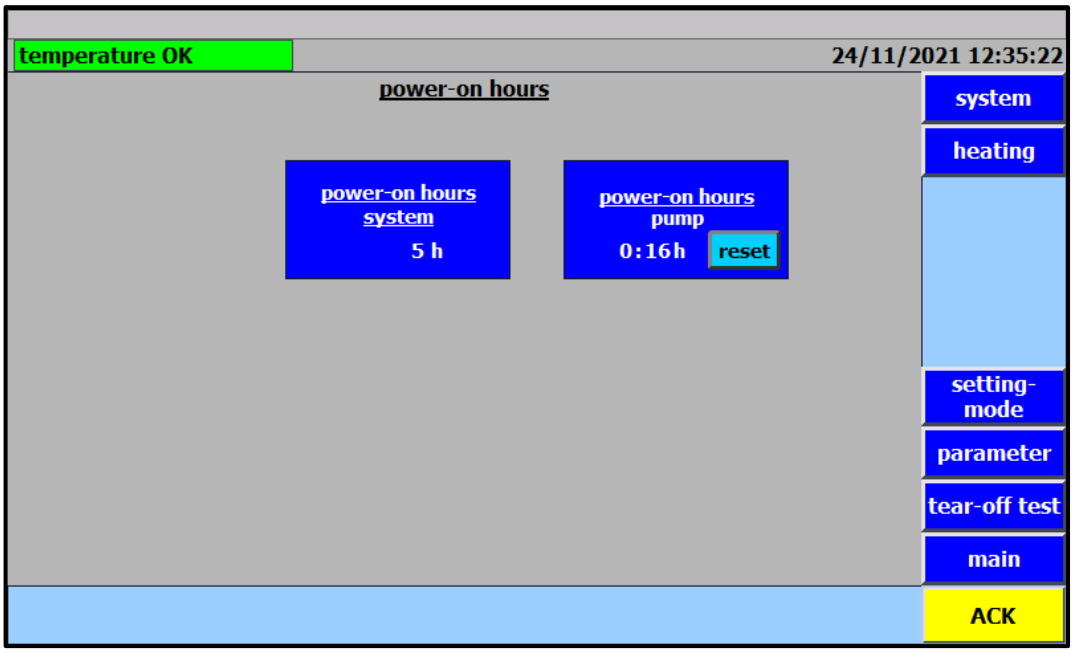


	Description
1	**Button: Language** By pressing this button, you will go to the chosen screen.
2	**Button: Power-on hours** By pressing this button, you will go to the chosen screen.
3	**Button: Cleaning screen** Press this button to clean the screen. Then, the functions of the Touch Panel will be switched off for 30 seconds.
4	**Switch: Operation with hotmelt mode or cold glue mode** • By pressing this switch, you can toggle between operation with hotmelt or cold glue. • If you toggle from hotmelt mode to cold glue mode, the heating will be switched off automatically.
5	**Button: Alarms** By pressing this button, you will go to the chosen screen.
6	**Button: Clock** By pressing this button, you will go to the chosen screen. Here you can set or configure the clock.

6.12 Language

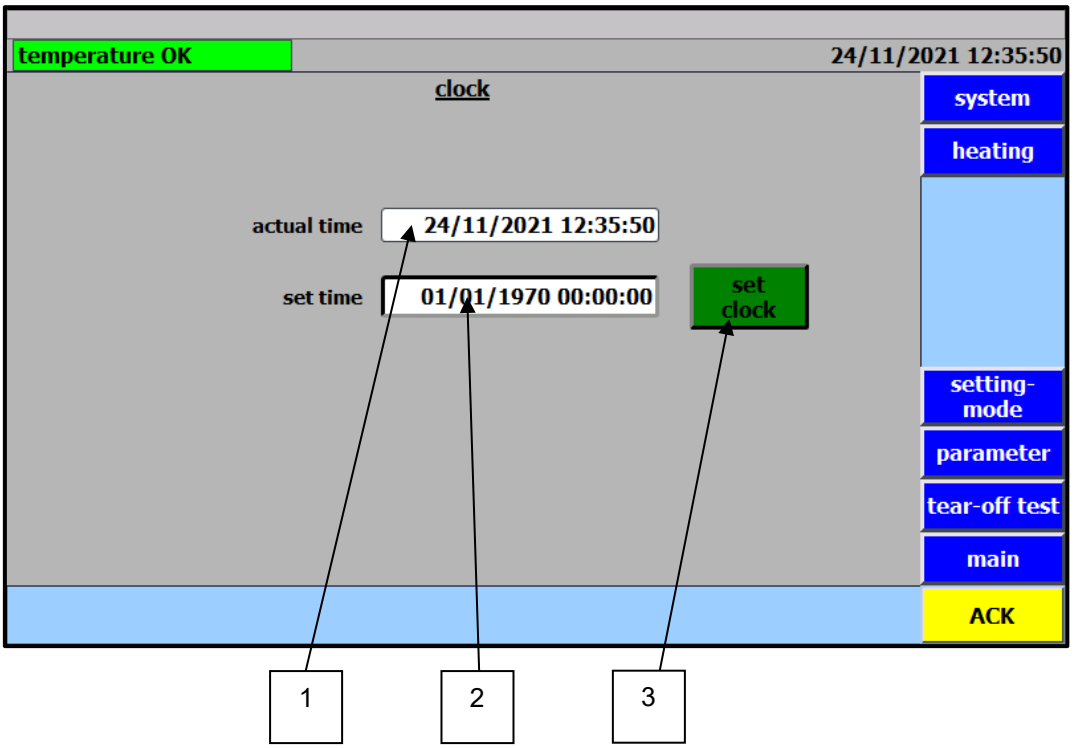
	Description
	Button: Language Deutsch / English The Touch Panel can be operated in German or English. Choose one of these languages by pressing the appropriate button.

6.13 Power-on hours



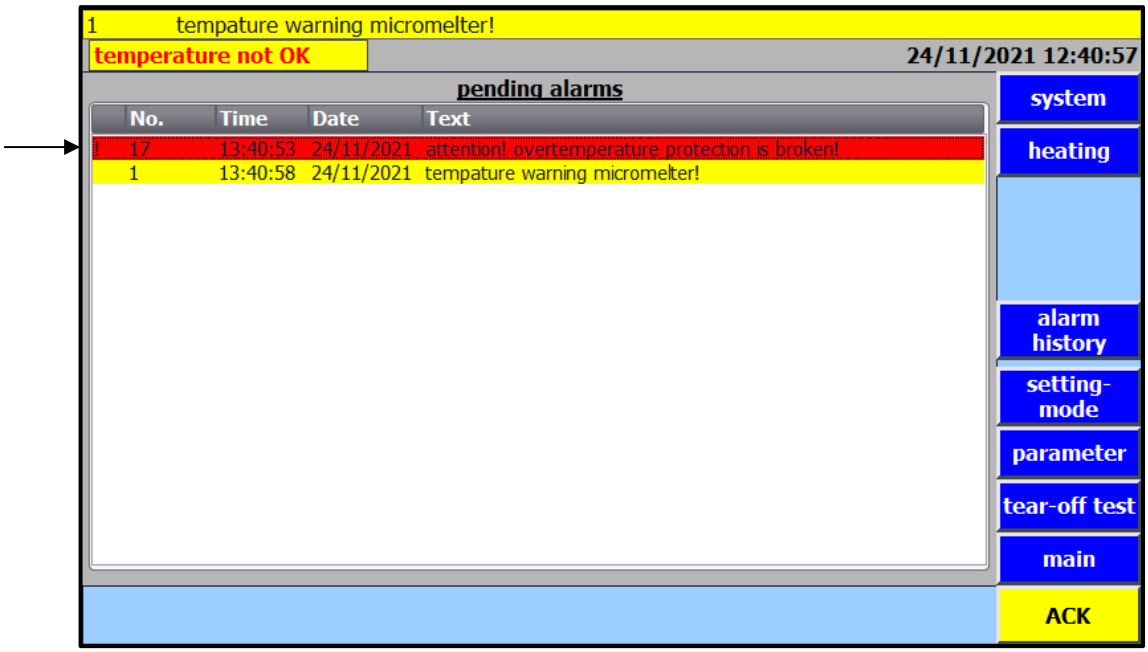
	Description
	Display: Power-on hours The operating hours of the system and of the adhesive pump are displayed. This is only for statistical surveys.

6.14 Clock



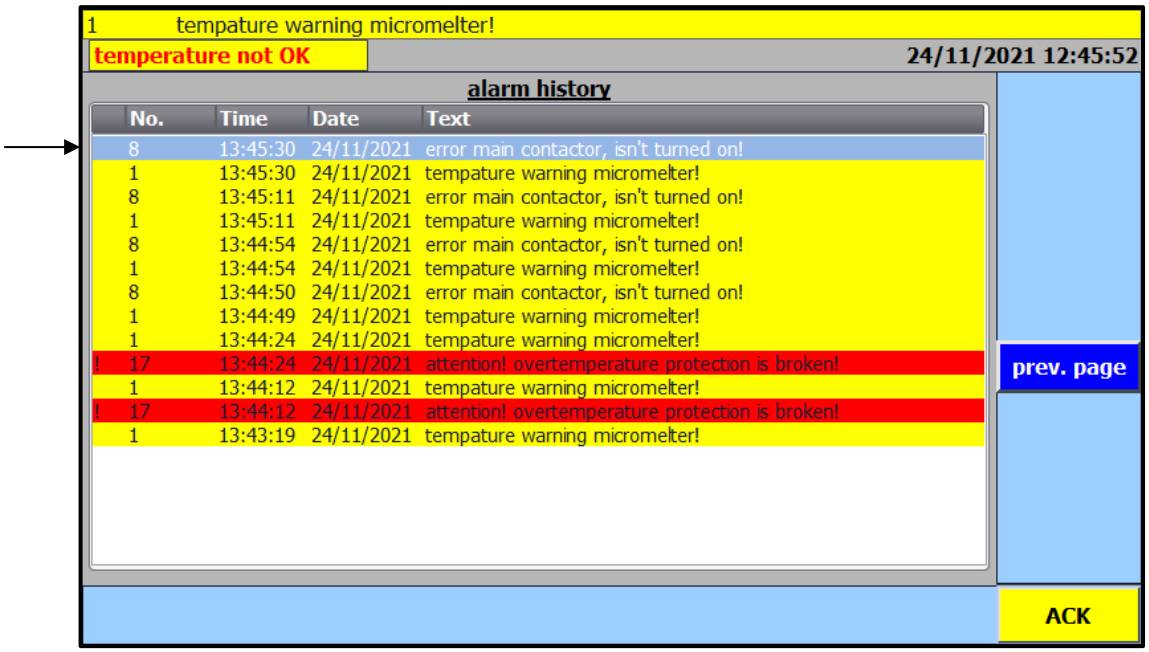
	Description
1	**Display: actual time** Display of the actual set day and time.
2	**Input: Date and Time** Here you can change the date and time.
3	**Button: Set clock** By pressing this button, the fed values will be set.

6.15 Pending Alarms



	Description
1	**Display: Alarms and warnings** • You go to this screen over the system screen. • All pending warnings and alarms are displayed.

6.16 Alarm History

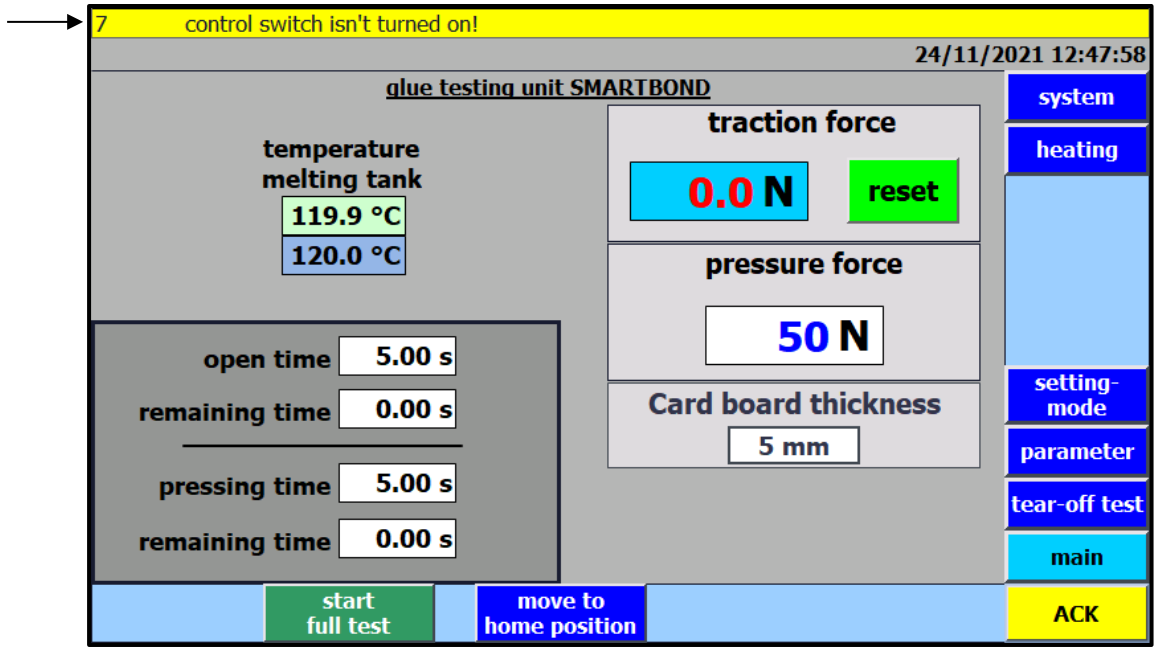


	Description
	Display: Message text All message texts about faults and warnings of the last time with the corresponding states (K; KG; KQ; KGQ) are saved and displayed here.

6.17 Trouble indication or information

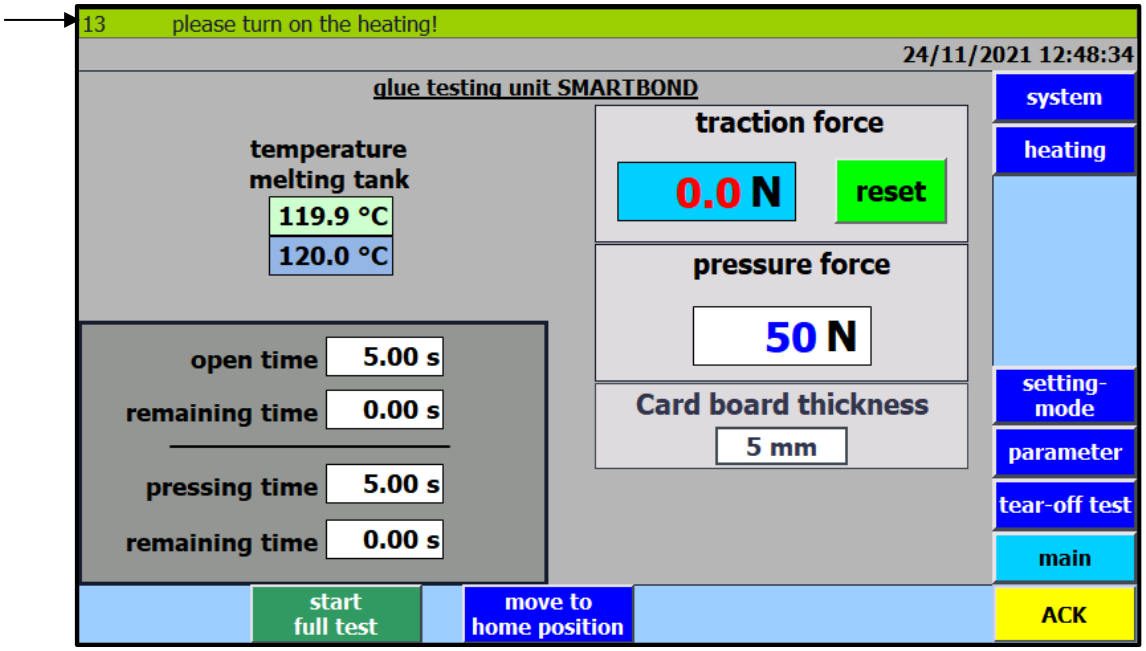
These messages are visible on each screen.

6.17.1 Control switch is not turned on!



	Description
	Display: Control switch is not turned on! Turn the controller on (press green button on the control panel).

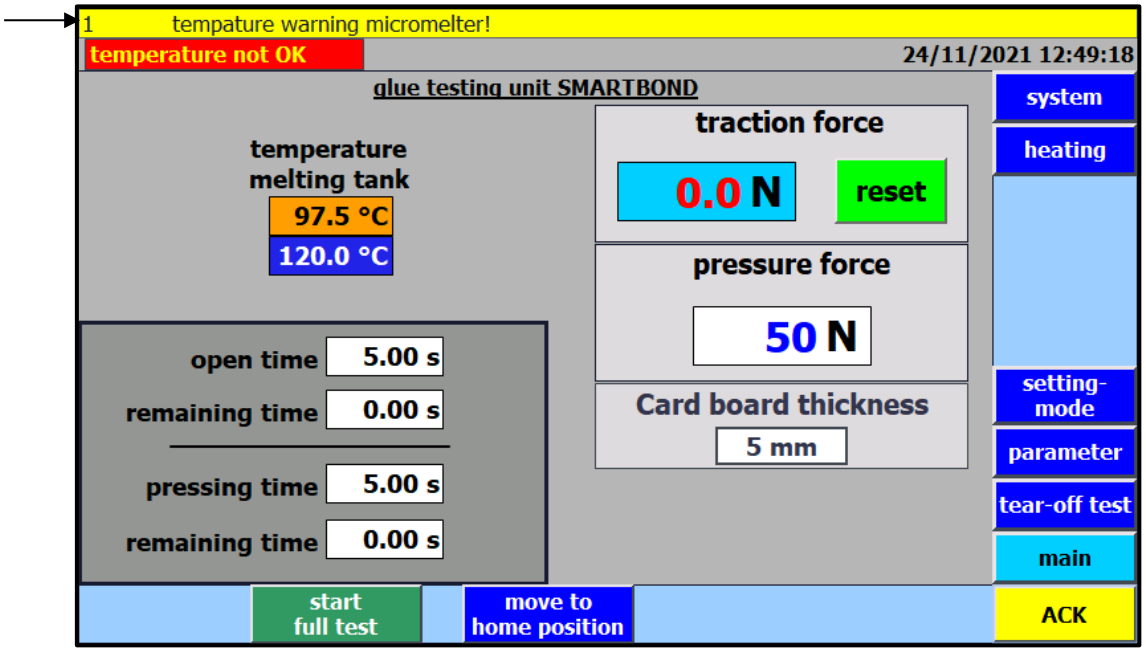
6.17.2 Turn on the heating!



	Description
	Display: Please turn on the heating! If you have chosen “hotmelt mode”, turn the heating on.

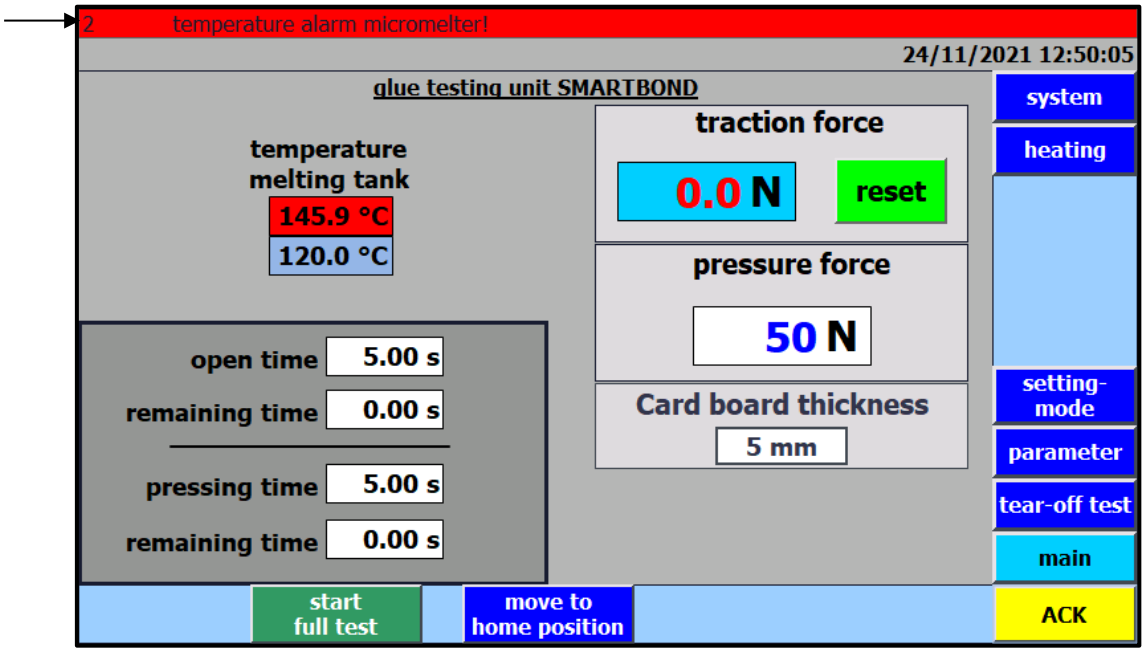
6.17.3 Warnings

Temperature warning Micromelter!



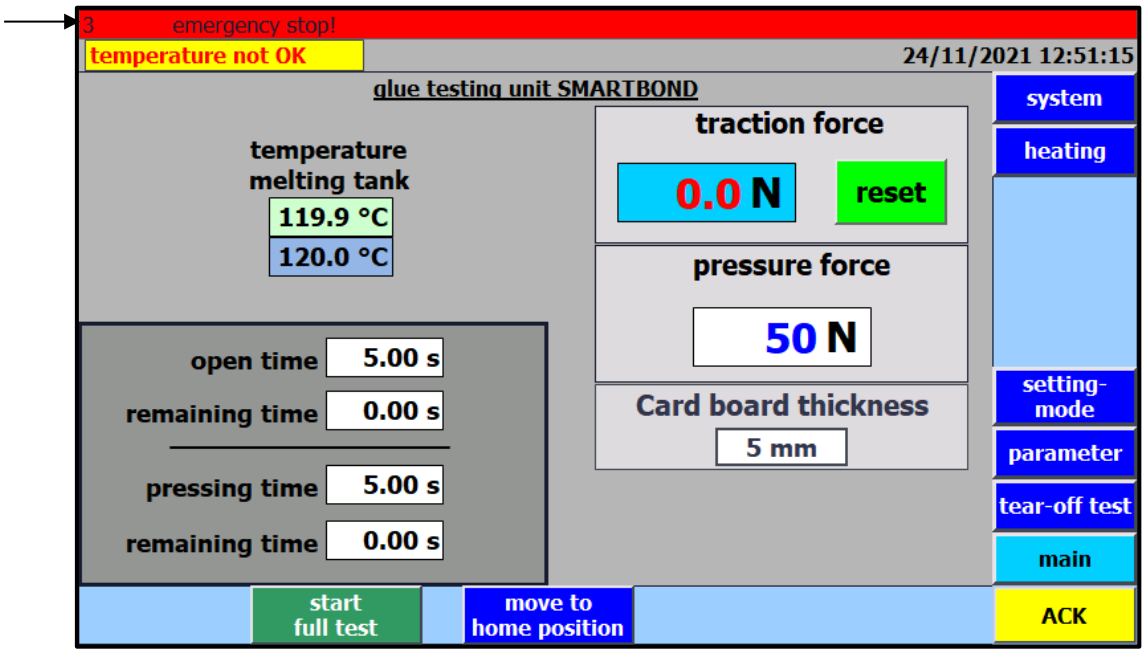
	Description
	Display: Temperature warning Micromelter! Warnings are displayed in a yellow color and serve as advices. Only when the temperature warning appears, some functions are still blocked (e.g. the pump).

6.17.4 Temperature alarm



	Description
	Display: Temperature alarm Micromelter! If the temperature of a heating zone exceeds the set value for the temperature alarm, a fault message will be displayed and the unit will be stopped.

6.17.5 Troubles and faults

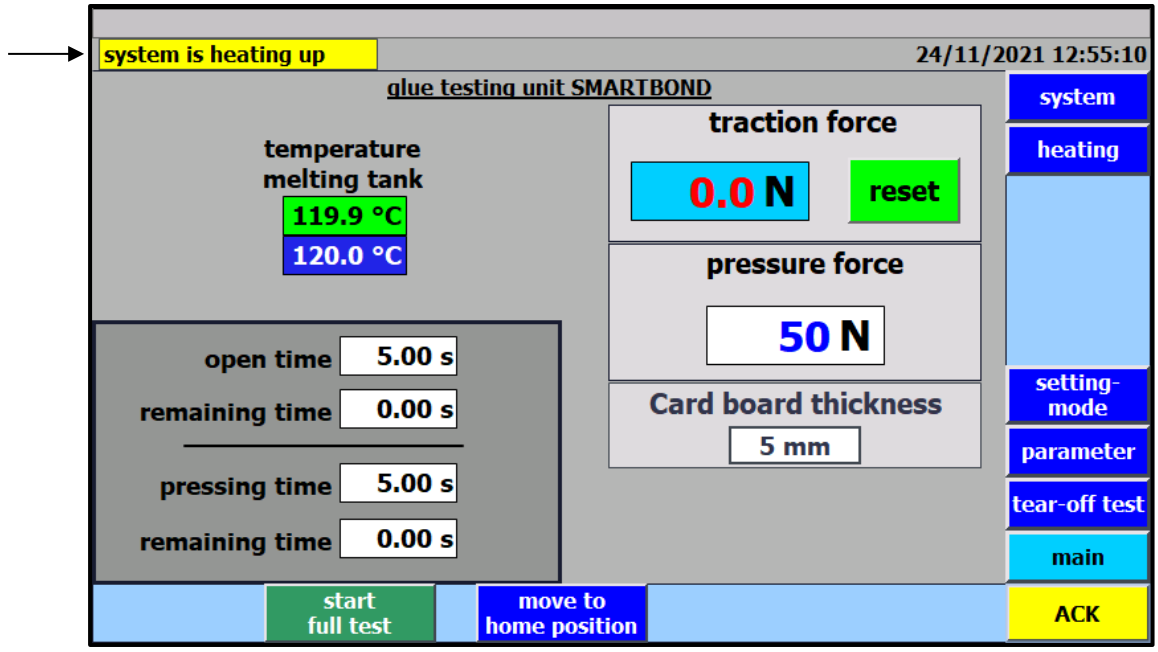


	Description
	Display: Emergency stop! Troubles and faults will be displayed in a red color; at the same time, the unit will be stopped. After eliminating faults, they must be acknowledged with the ACK key.

6.18 Display Status Heating

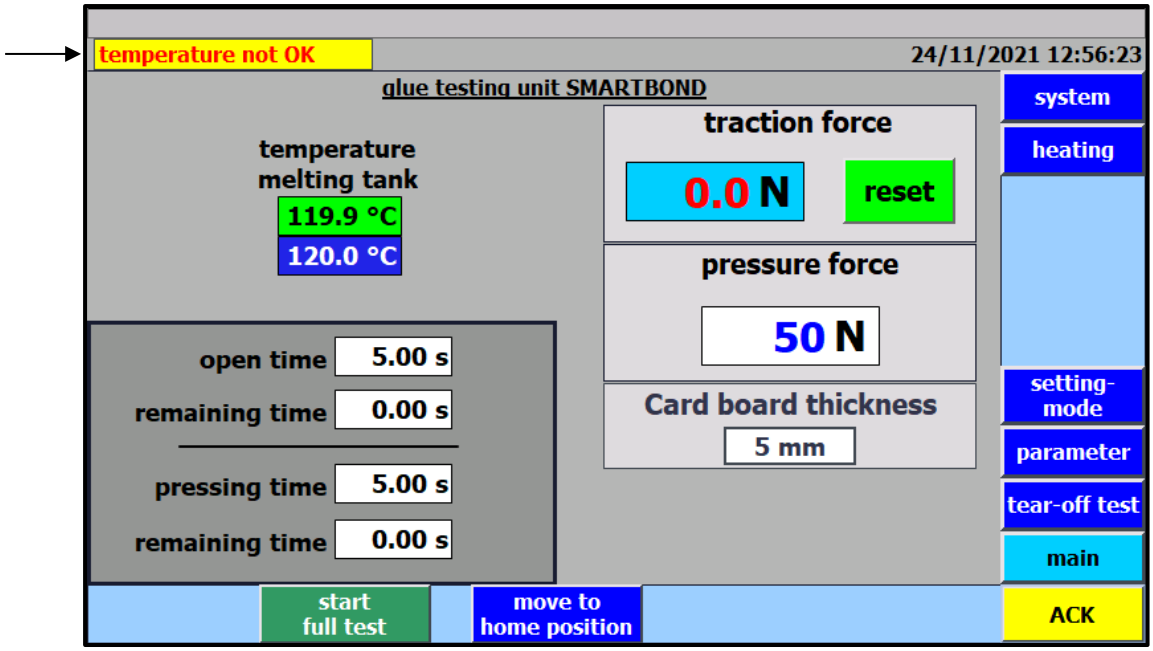
These messages are visible on each screen.

6.18.1 System is heating up



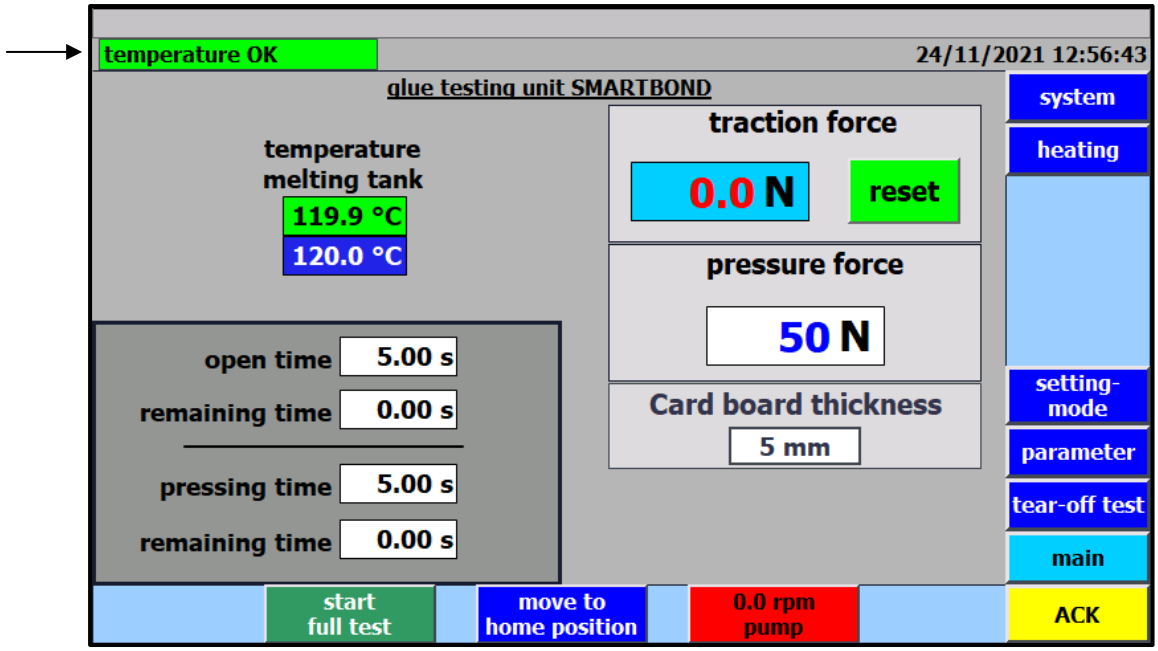
	Description
	Display: System is heating up This display appears when the SmartBond heats up for the first time. Even if the temperatures have already been reached according to the display, this display is still visible until the release delay of 10 minutes has expired.

6.18.2 Temperature not OK



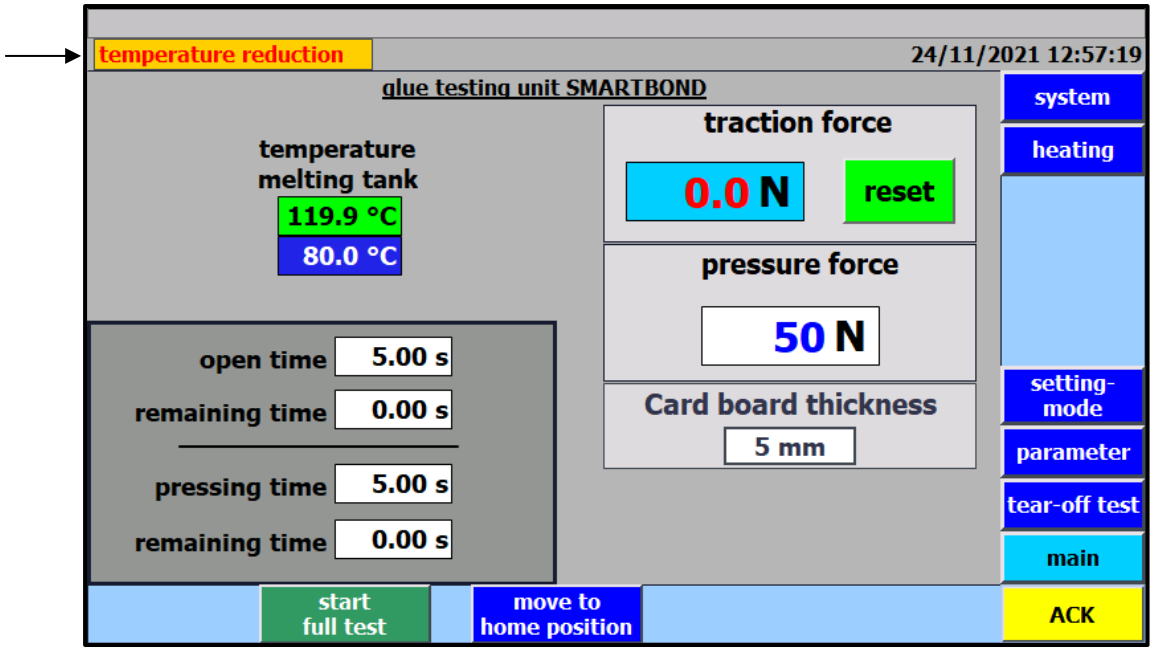
	Description
	Display: Temperature not OK This display appears when the temperature in the melting tank is not within the operation range, i.e. if the temperatures are outside the hysteresis set in the heating screen (point 6.4).

6.18.3 Temperature OK



	Description
	Display: Temperature OK This display appears when the temperature in the melting tank is within the operation range. The release of the pump is available and tests can be carried out.

6.18.4 Temperature reduction (Standby active)



	Description
	Display: Temperature reduction (Standby active) • This message appears, if the temperature reduction (standby) has been activated in order to preserve the adhesive during longer production breaks. • By switching over to operation temperature, this message disappears.

Chapter 7
Maintenance and repair notes

7.1 Security advices for maintenance and repair

Heed all security advices given in Chapter 2.

Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!

Maintenance and repair work is only permitted for skilled personnel!

Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or heavy burns!

High Voltage! Risk of injury and mortal danger!

- All electrical connections must be made by qualified electrical personnel.
- Care must be taken to assure proper grounding prior to any disassembly.
- Lockout and tag the electrical sources as required.
- Make sure there is no electrical power on the leads you will be connecting.
- When covers are removed, high voltage sources create an electrocution hazard.
- Wear appropriate safety equipment when working with high voltage sources.

Parts and surfaces of the unit get very hot. High temperatures! Risk of heavy burns!

High adhesive temperature and adhesive pressure! Risk of injury or heavy burns!
Always assume that the system is under pressure, proceed with caution.

Keep a cool-pack, or bucket of clean water near the work area.

Place a heat-resistant catchment container/underlay under the components. Hot adhesive may come out.

CAUTION: At working temperature, molten adhesive could cause heavy burns. Let spilled out adhesive cool down first, before removing it!

CAUTION: Use only lint-free cleaning cloth and suitable cleaner for cleaning! Do not damage surfaces! Do not scratch above them with sharp-edged tools, otherwise the components will get leaky and inoperable!

All maintenance and repair work has to be done at working temperature, except as noted otherwise. Else there is a risk of damaging the unit components!

Before any service work disconnect the external power supply and switch the unit voltage-free:

1. Switch off the main switch and the controller.
2. Disconnect the power supply respectively remove the plug / cable.
3. Guard the unit against unauthorized restarting!

Before any service work the adhesive pressure must be relieved throughout the system. Switch the unit pressureless:

1. Disconnect the pressure air supply.
2. Turn the pressure regulator to zero bar, if necessary. Wait approximately 1 minute until the pressure is relieved.
3. Open the applicators purge valve or open the modules by activating the solenoids to relieve any adhesive pressure.

7.1.1 Equipment Preparation for Maintenance & Repair

- Adhesive processing equipment must be worked on while hot enough to soften any material residue within the assembly. This depends on the type of adhesive used with the equipment. This may require the system to be up to operating temperature before disassembled, to prevent damage to fasteners and components.
- Once disassembled, the individual parts may be cleaned by immersion in approved solvent. Surface deposits may be removed by lightly scrapped with a brass device or scrapper. Care must be taken not to damage sealing surfaces with sharp objects or sand paper.
- Components such as O-rings, fasteners and relief valves should be discarded and replaced by certified ITW Dynatec replacement parts.

7.1.2 Re-Assembly Procedures and General Cautions

Unless noted, the re-assembly is simply the reverse sequence of the disassembly procedures. However, the following “cautions” should be followed (whenever they apply) for proper re-assembly:

CAUTION

In general, all O-RINGS AND SEALS must be replaced whenever hot-melt equipment is re-assembled. All new O-rings must be lubricated with O-ring lube (PN 001V078).

SOME FITTINGS used for adhesive on hot melt equipment have straight threads and O-ring seals. Use of thread sealant is not necessary with these parts, but the O-ring seals should be clean and lubricated. Tighten straight-threaded parts and fittings until their shoulders are firmly seated. Excessive torque may damage straight-threaded parts and the use of power wrenches is not recommended.

HOT-MELT RESIDUE must be cleaned from parts before they are re-assembled, particularly from threaded parts. As a precaution against adhesive residue preventing proper re-assembly, threaded parts must always be re-tightened at operating temperature.

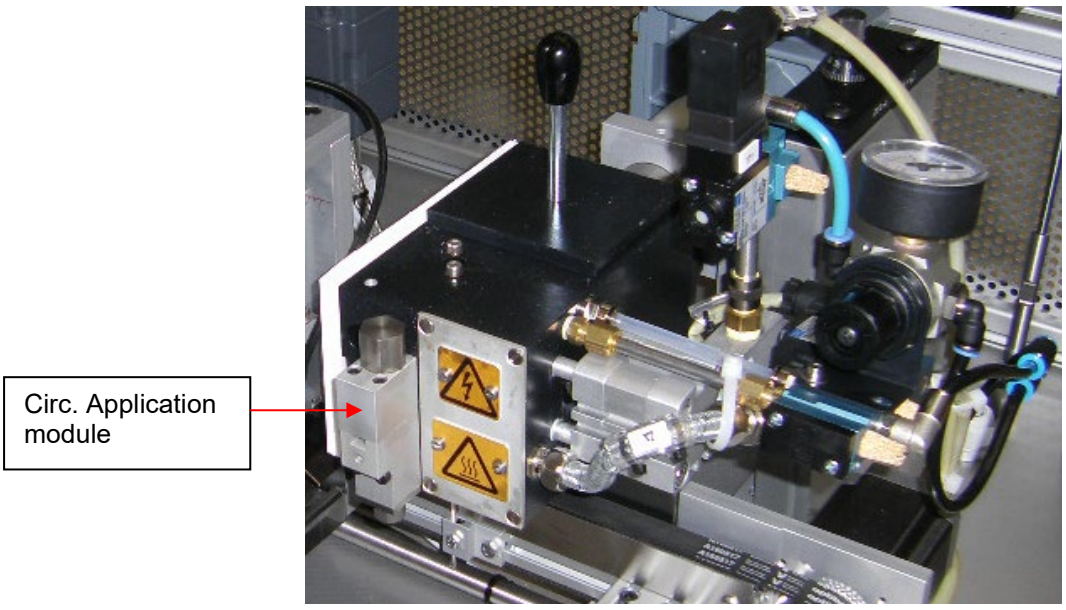
7.1.3 Cleaning Recommendation

- Filters are disposable and need to be replaced regularly. DO NOT boil in mineral oil, solvents or water; the sealant used in filter assembly may become brittle and very likely disintegrate when boiled.
- When cleaning other components in mineral oil, remove all non-metallic items (O-rings, seals, filter cartridge, etc.) away from chemicals before components are subjected to hot mineral oil cleaning.
- If there is not a specific rebuild kit available or directions on how to clean a part, please treat it as a replacement item and do not attempt to clean/rebuild.

7.2 Exchanging the circ. application module

CAUTION
Heed all security advices given in chapter 7.1.

In the event of leaks, send the application module to ITW Dynatec for repair or replacement.



Exchanging the circ. application module:

1. Stop all motors.
2. Switch off the controller.
3. Turn the main switch off. Ensure that the unit is voltage-free.
4. Guard the unit against unauthorized re-starting!
5. Place a heat-resistant catchment tank/underlay under the module. Hot adhesive might come out.
6. Switch off the air supply at the main-faucet. Wait ca. 1 minute until the adhesive pressure reduces.
7. Remove the air pressure hose.
8. Unscrew the two attachment screws of the circ. application module and take it off.
9. Check if all of the O-rings on the back of the new circ. application module are present.
10. Attach a new circ. application module and tighten it with both screws.
11. Connect the air pressure hose.

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Switch the air supply at the main-faucet on again.
- Turn the main switch to ON. Switch on the controller.
  The unit heats up. Wait until all temperatures are within the tolerances and the adhesive in the tank is molten completely.

ADVICE

Before each production start, purge the circ. application module / the Micro Melter, i.e. let the adhesive flow out until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application module from adhesive.

Continue production.

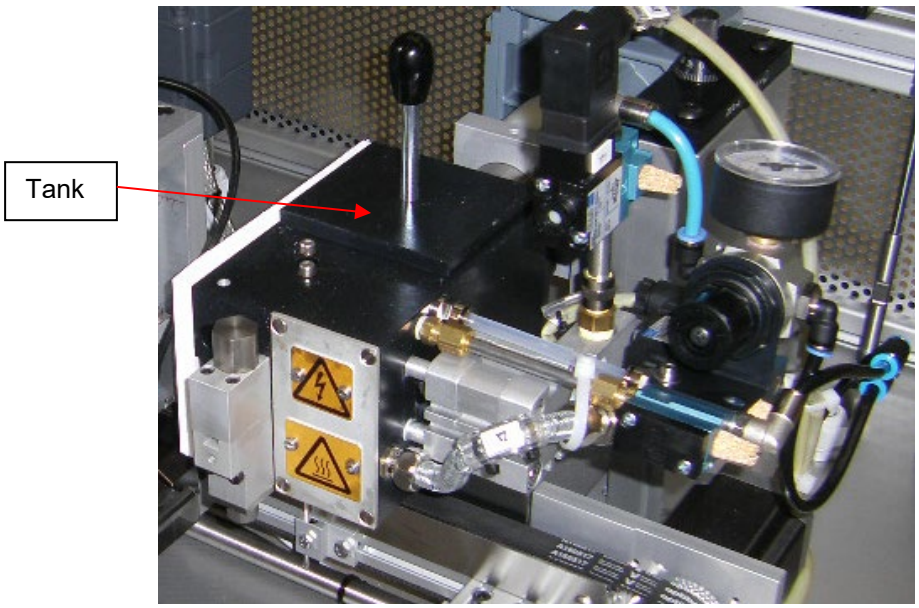
7.3 Checking and cleaning the tank

CAUTION
Heed all security advices given in chapter 7.1.

MAINTENANCE:
Regularly inspect the interior of the tank for contamination and deposits. These can be caused e.g. by burnt adhesive or the like and collect on the inner walls of the tank.

Due to the different types of adhesive, ask the adhesive manufacturer for the correct maintenance intervals if necessary (e.g. monthly).

ADVICE
When cleaning, adhere to the actual safety data sheet of the manufacturer of the cleaner.



Cleaning the tank:

1. Empty the tank.
2. Stop all motors.
3. Switch off the controller.
4. Turn the main switch off. Ensure that the unit is voltage-free.
5. Guard the unit against unauthorized re-starting!
6. Place a heat-resistant catchment tank/underlay under the tank. Hot adhesive might come out.
7. Switch off the air supply at the main-faucet. Wait ca. 1 minute until the adhesive pressure reduces.
8. Let the tank cool down to the ambient temperature.

9. Switch on the main switch and the controller and warm up again up to 50-60°C.
   While warming up, the disposal could be removed with a pincer like skin in one piece.

ADVICE
Clean other disposal from the inner wall of the tank with a wooden scraper.

WARNING
Do not damage the coating of the tank with sharp-edged or metallic objects or tools.

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Switch the air supply at the main-faucet on again.
- Turn the main switch to ON. Switch on the controller.
  The unit heats up. Wait until all temperatures are within the tolerances and the adhesive in the tank is molten completely.

ADVICE

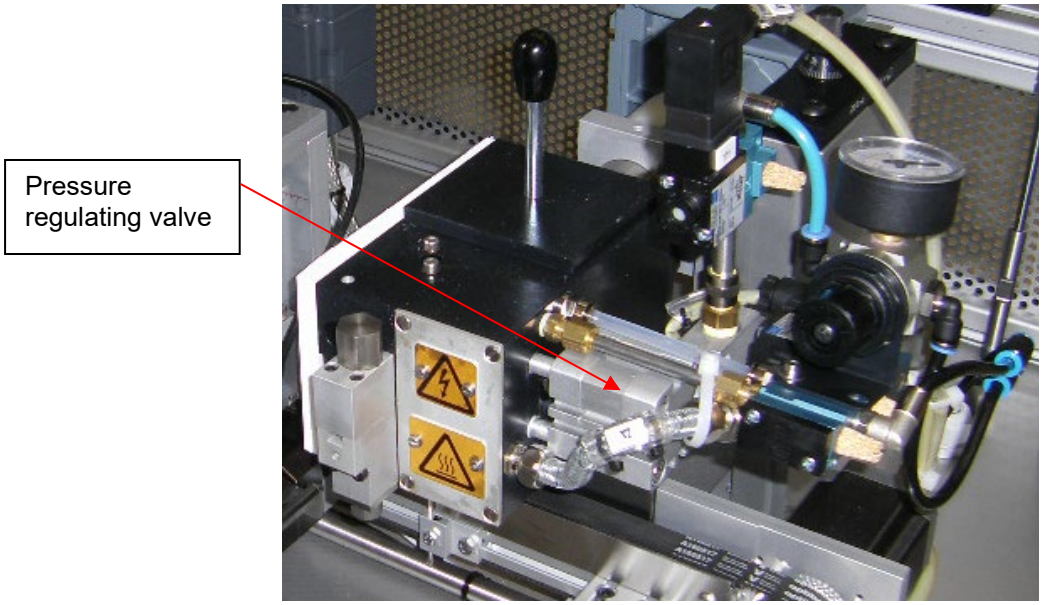
Before each production start, purge the circ. application module / the Micro Melter, i.e. let the adhesive flow out until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application module from adhesive.

Continue production.

7.4 Exchanging the pressure regulating valve

CAUTION
Heed all security advices given in chapter 7.1.



Exchanging the pressure regulating valve:

1. Stop all motors.
2. Switch off the controller.
3. Turn the main switch off. Ensure that the unit is voltage-free.
4. Guard the unit against unauthorized re-starting!
5. Place a heat-resistant catchment tank/underlay under the pressure regulating valve. Hot adhesive might come out.
6. Switch off the air supply at the main-faucet. Wait ca. 1 minute until the adhesive pressure reduces.

- The exchange has to be done quickly because hot adhesive could pour out of the tank!
- Soiled parts can be cleaned with a special cleaner (e. g. Eco-Clean).

7. Unscrew the 4 screws from the air cylinder.
8. Unscrew the 2 screws at the connection flange.
9. Pull out the valve housing with a pincer.
10. Re-mount the pressure regulating valve in reverse order.
    Keep attention, that the O-rings will not be damaged while re-mounting the valve. If the O-rings are damaged, they have to be exchanged absolutely! (See drawing of the pressure regulating valve).

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Switch the air supply at the main-faucet on again.
- Turn the main switch to ON. Switch on the controller.
  The unit heats up. Wait until all temperatures are within the tolerances and the adhesive in the tank is molten completely.

ADVICE

Before each production start, purge the circ. application module / the Micro Melter, i.e. let the adhesive flow out until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application module from adhesive.

Continue production.

7.5 Exchanging the gear pump

CAUTION
Heed all security advices given in chapter 7.1.

CAUTION
The gear pump is not corrosion-resistant!

Do not run the gear pump with water or other corrosive media!
Danger of corrosion! No warranty!

Never run the gear pumps without suitable medium (like adhesive), but always with adhesive or suitable cleaner only!

Pay attention, the rotating direction of the pump compellable has to be clockwise (right).

Do not exceed the gear pump speed over 60 rpm.

Due to normal wastage, the pumps could get leaky at the shaft sealing.

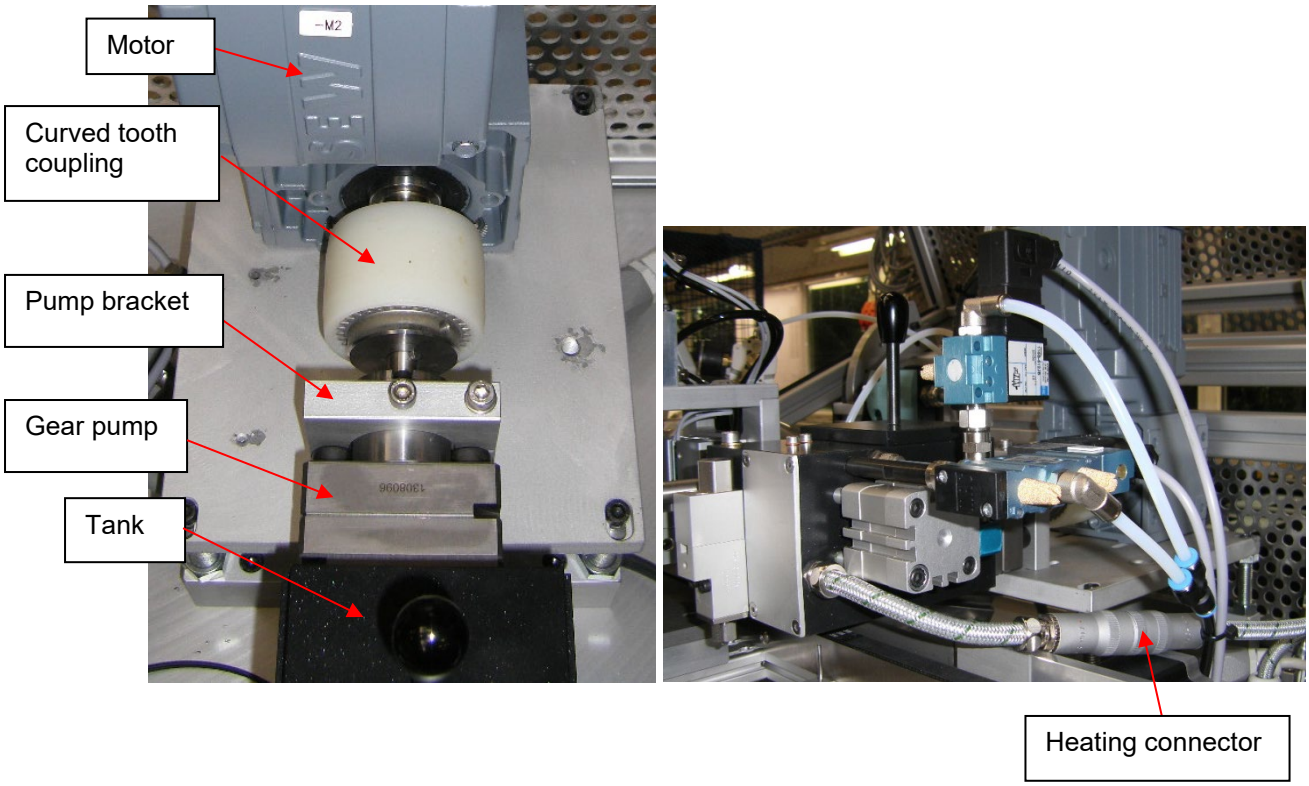
Check **weekly** visual the shaft sealing of the gear pump.
If it's leaky, send the gear pump to ITW Dynatec for repair.

We recommend stocking a gear pump for exchange!

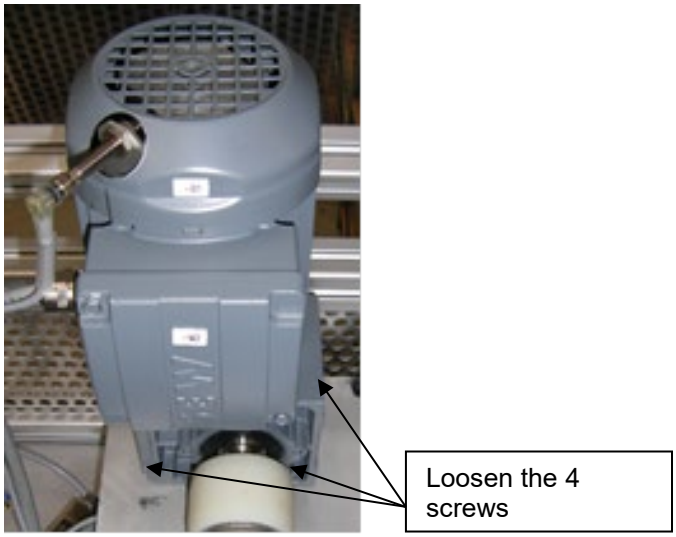
ADVICE
Before dismounting the gear pump, empty the tank or allow it to cool down so that no more adhesive can pour out from the tank hole.

Exchanging the gear pump:

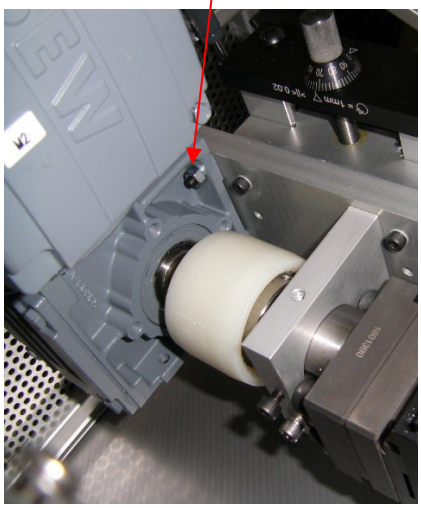
1. Stop all motors.
2. Switch off the controller.
3. Turn the main switch off. Ensure that the unit is voltage-free.
4. Guard the unit against unauthorized re-starting!
5. Place a heat-resistant catchment tank/underlay under the pump. Hot adhesive might come out.
6. Switch off the air supply at the main-faucet. Wait ca. 1 minute until the adhesive pressure reduces.
7. Secure the pump with tank against falling down.
8. Disconnect the heating connector.



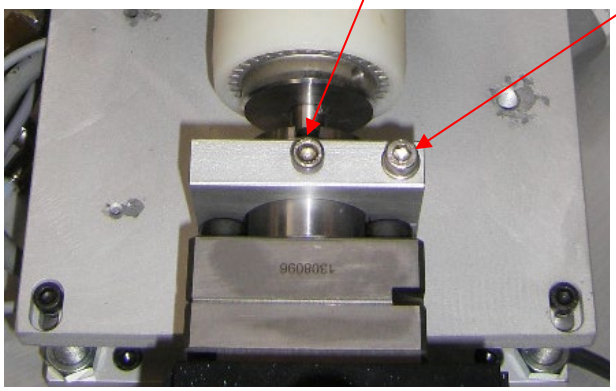
9. Dismantle the four attachment screws of the motor, move it sidewards and remove it. Remove the coupling sleeve.



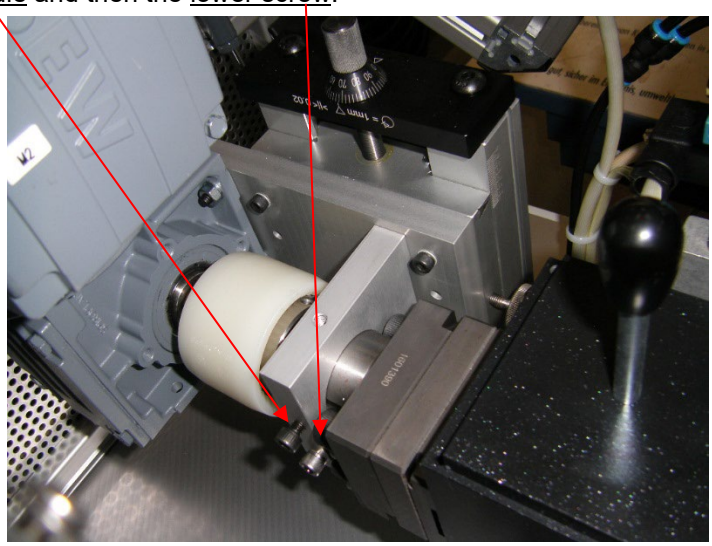
ATTENTION: On units with height adjustment (optional), the motor is attached to the side of the pump bracket with 4 fixing screws that must be loosened. Secure the motor against falling down!



10. Loosen at the pump bracket above the middle screw first and then the screw on the side.



ATTENTION: On units with height adjustment (optional), first loosen at the pump bracket the middle and then the lower screw.



11. Loosen the headless screw at the coupling hub and remove the coupling hub.
    CAUTION: The pump and the tank tilt downward.

12. Pull the pump together with the tank out of the pump bracket and put it on a wooden table.

13. Dismantle the 4 attachment screws of the pump and detach the pump from the tank.

    CAUTION: Place a heat-resistant catchment tank thereunder. Hot adhesive might come out.

    CAUTION: Do not damage the pump plates! They are smoothed sealing surfaces!

    Do not scratch above them with sharp-edged tools, otherwise the pump will get leaky and inoperable! Use only lint-free cleaning cloth and suitable cleaner for cleaning!

14. After dismantling the pump clean the pump plate at the pump distributor. Do not use sharp-edged tools when cleaning! The surface of the pump plate is, as well as the pump, smoothed.
    Use a lint-free cloth and a suitable cleaner!
    Clean the tank before mounting the new pump. Gear pumps can be mechanical destructed by extreme soiling (e. g. package leavings) of the tank.

15. Fix the new pump resp. the cleaned pump at the tank. Pay attention that the pump is attached the right way: big bores up and small bores down! Torque the attachment screws steady-going with a locking torque of 48 Nm.

16. Insert the pump through the pump bracket and tighten the screws on the pump bracket.

17. Mount the coupling hub on the pump and tighten the headless screw.

18. Insert the coupling sleeve.

19. Mount the motor and at the same time insert the coupling hub into the coupling sleeve. To do that the pump might be turned slightly until the toothing fits together.

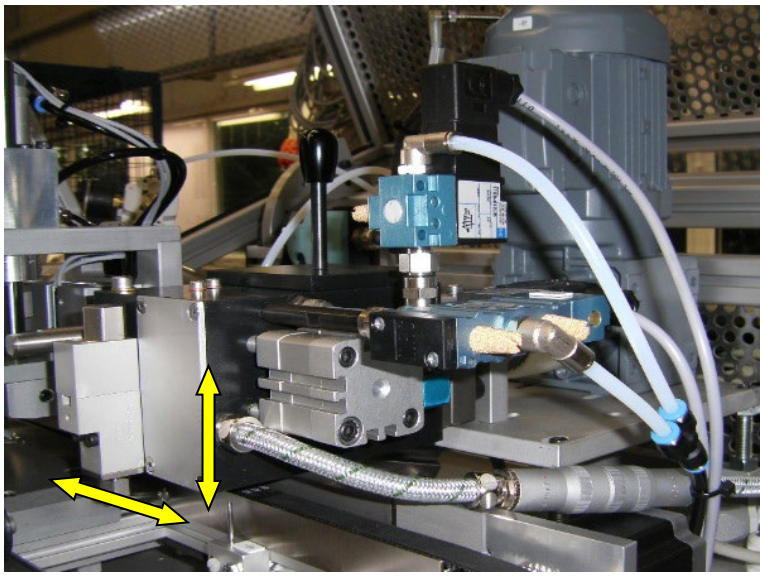
20. Align motor and pump to each other in hot condition, that means at operating temperature!
    Fix at first the middle screw of the pump bracket, then the screw on the side.

    Thereby pay attention that the pump with the tank are fixed straight, so that the module is aligned vertically. See picture below.

    Ensure that the rotating direction of the pump is clockwise (right).

    Great attention has to be paid on that the coupling sleeve can be swayed about 5 mm.

    Tighten all attachment screws of motor.



CAUTION
Pay attention: if the motor is not properly adjusted the pump might be damaged!
No guarantee!

21. Connect the heating connector again.

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Switch the air supply at the main-faucet on again.
- Turn the main switch to ON. Switch on the controller.
  The unit heats up. Wait until all temperatures are within the tolerances and the adhesive in the tank is molten completely.

ADVICE

Before each production start, purge the circ. application module / the Micro Melter, i.e. let the adhesive flow out until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application module from adhesive.

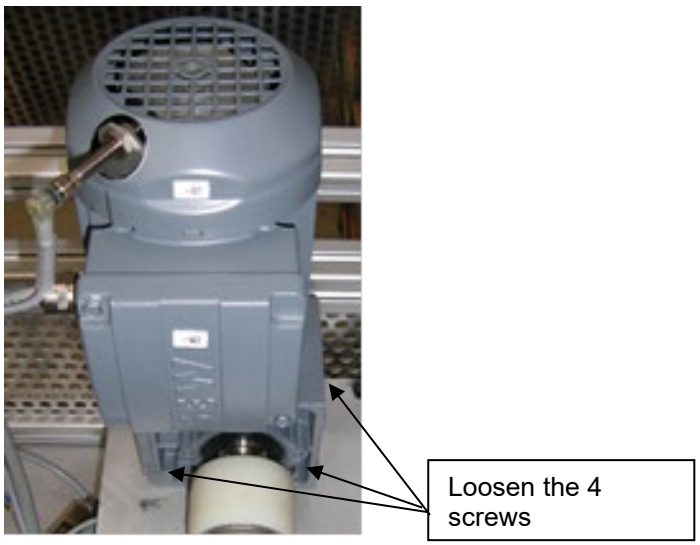
Continue production.

7.6 Exchanging the motor

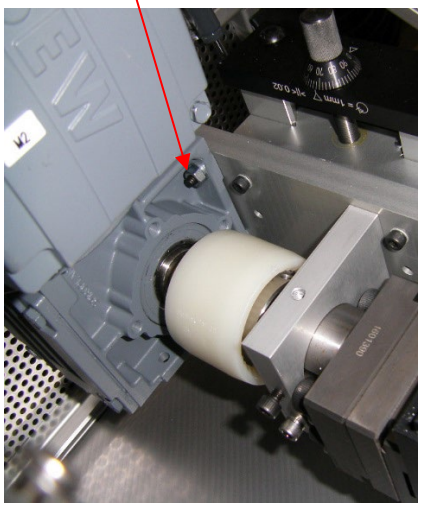
CAUTION
Heed all security advices given in chapter 7.1.

Exchanging the motor:

1. Stop all motors.
2. Switch off the controller.
3. Turn the main switch off. Ensure that the unit is voltage-free.
4. Guard the unit against unauthorized re-starting!
5. Switch off the air supply at the main-faucet. Wait ca. 1 minute until the adhesive pressure reduces.
6. Disconnect the cable of the motor.
7. Dismantle the four attachment screws of the motor and move it sidewards or remove it.



ATTENTION: On units with height adjustment (optional), the motor is attached to the side of the pump bracket with 4 fixing screws that must be loosened.
Secure the motor against falling down!



8. Demount the coupling hub from the defect motor and mount it on the new motor.

9. Place the motor in front of the pump and insert it into the coupling sleeve. Thereby the pump might be turned slightly until the toothing fits together.
   Align motor and pump to each other in hot condition, that means at operating temperature!
   Ensure that the rotating direction of the pump is clockwise (right).

10. Tighten all attachment screws of motors.
    Great attention has to be paid on that the coupling sleeve can be swayed about 5 mm.

11. Connect the cable of the motor.

CAUTION
Pay attention: if the motor is not properly adjusted the pump might be damaged!
No guarantee!

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Switch the air supply at the main-faucet on again.
- Turn the main switch to ON. Switch on the controller.
  The unit heats up. Wait until all temperatures are within the tolerances and the adhesive in the tank is molten completely.

ADVICE

Before each production start, purge the circ. application module / the Micro Melter, i.e. let the adhesive flow out until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application module from adhesive.

Continue production.

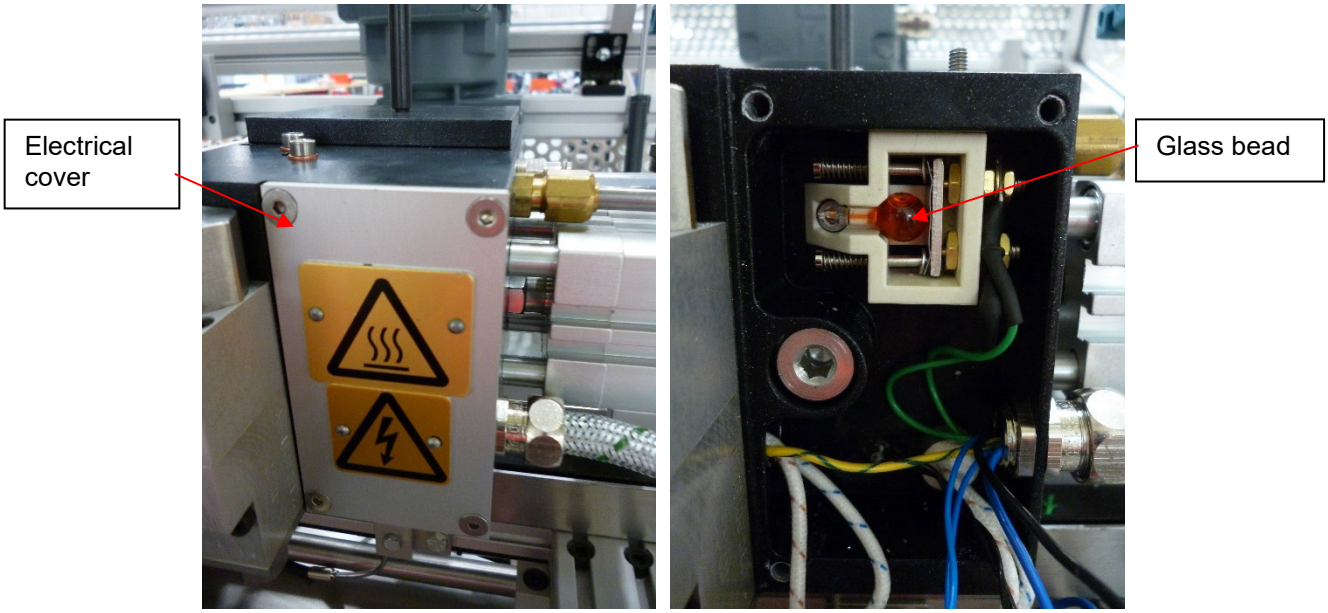
7.7 Replacement of glass bead, Over temperature protection

CAUTION
Heed all security advices given in chapter 7.1.

If the glass bead within the ceramic socket is damaged, the maximum permissible temperature for the tank has been exceeded. Renew the damaged or defect glass bead.

Replacement of the glass bead:

1. Stop all motors.
2. Switch off the controller.
3. Turn the main switch off. Ensure that the unit is voltage-free.
4. Guard the unit against unauthorized re-starting!
5. Switch off the air supply at the main-faucet. Wait ca. 1 minute until the adhesive pressure reduces.
6. Demount the electric cover by removing the four screws.
7. The defect, e.g. a damaged temperature sensor or solid-state relay, etc. has to be located and corrected.
8. Remove the residuals of the damaged glass bead.
9. Insert a new glass bead.



10. Mount the electric cover again by attaching the four screws.

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Switch the air supply at the main-faucet on again.
- Turn the main switch to ON. Switch on the controller.
  The unit heats up. Wait until all temperatures are within the tolerances and the adhesive in the tank is molten completely.

ADVICE

Before each production start, purge the circ. application module / the Micro Melter, i.e. let the adhesive flow out until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application module from adhesive.

Continue production.

7.8 Maintenance plan Micro Melter

CAUTION

Heed all security advices given in chapter 7.1.

Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!

Please use only the indicated lubricants and keep the prescribed maintenance intervals. Consider in addition the enclosed regulations of manufactures.

Punctual and conscientious maintenance of the unit secures not only a trouble free function, but prevents also for expensive repair costs.

Remove all materials and tools used during the repair or maintenance from the workspace of the unit.

Place a heat resistant catchment tank/underlay under the components. Hot adhesive may come out.

Use only lint-free cleaning cloth and suitable cleaner for cleaning! Do not damage surfaces! Do not scratch above them with sharp-edged tools, otherwise the components will get leaky and inoperable!

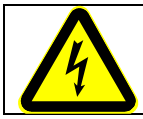
Maintenance plan:

Operating time/ frequency	Inspection point / maintenance notes
Continuous	• Remove dropped out adhesive and scrap adhesive. Search for the cause of that, eliminate the cause • Listen for abnormal sounds of the unit, e. g. from the motors, pumps, etc.
Once a day	• Clean the unit, application module and components from dirt.
Once a week	• Visual check of the shaft seal of the gear pump. If there is a leak, send the gear pump to ITW Dynatec for repair. • Purge the pressure regulating valve, if no automatic purging is installed. • Check the function of the pressure relief valve and replace if necessary. • Check the air supply connections for leaks; if they are loose, tighten them or replace them if necessary. • Check the function of the solenoid valves and replace them if necessary. • Visual check of the leak tightness of the application module, exchange if necessary.
Once a month	• Check the tank for dirt and clean it if necessary. • Check the fastening screws of the pump for tightness and tighten them if necessary. • Due to temperature differences a loosening of threads (threaded connections) is possible. Check all parts with threads and all screw fittings for tightness and tighten them if necessary.
Once a year	• Clean the unit. • Complete check-up for wearing. • Electrical check-up of the unit. • Check Emergency Stop button for proper functioning.
Every two years	• Complete maintenance.

Chapter 8
Troubleshooting

NOTE: Please re-read all security advices given in Chapter 2 before performing any troubleshooting or repair procedures.

All troubleshooting or repair procedures must be performed by qualified, trained technicians.



DANGER HIGH VOLTAGE

The Dynamelt Melter uses electrical power that can be life threatening.

WARNING HOT SURFACE

The unit uses hot-melt adhesives that can cause serious burns.

Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.

Some of the procedures in the following Troubleshooting Guide require working near hot adhesive.

Face shields (preferred) or safety glasses (for minimum protection), heat-resistant protective gloves and long-sleeved clothing must be worn whenever working with or around adhesive application systems.

Use proper tools for handling hot melt components.

ADVICE: The temperatures measured on the outer surface may deviate significantly from the temperatures set and displayed. This can lead to a false conclusion (e.g. defective heating). Such a difference is normal and depends also largely on the materials used.

Preliminary Checks: If failure occurs:

- Check all the electrical and pneumatic connections.
- Verify that the main power switch is ON.
- Verify that the pump is functioning and the required air pressure is present.
- Verify that the temperature settings and the set points for the Melter and all other components connected to the unit are correct.

Fault	Possible Cause	Solution
8.1 No function, Unit does not heat up	Current supply not connected.	• Connect the current supply. • Plug in plugs.
	Main-switch is OFF.	• Set main-switch ON.
	E-stop has been pressed.	• Release E-stop • Release the superordinate master. • Switch controller on.
	Controller has been switched off.	• Switch controller on.
	Fault report on the Touch Panel.	• Accept fault report and clear the disturbance.
	Heating zone „Tank“ has been switched off.	• Switch on the heating zone on the Touch Panel.
	Over or under temperature have been reached.	• Locate and clear the fault.
	Main fuse not switched on.	• Switch the main fuse on. • If the fuse drops out again, locate and clear the fault.
	Fuse for reference voltage defective.	• Locate and clear the fault, switch the fuse on again / exchange the fuse.
	Fuses within the unit failed.	• Locate and clear the fault, switch the fuse on again.
	Glass bead of the over temperature protection is defective.	• Locate and clear the cause of fault and then replace the glass bead.

Fault	Possible Cause	Solution
8.2 Gear pump delivers too little adhesive, Adhesive application is too little	Not enough adhesive has been molten.	• Let enough adhesive be molten.
	Temperature settings are too low.	• Raise temperatures.
	Air supply has not been connected / is disconnected.	• Connect air supply (6bar).
	Solenoid valve is defective.	• Exchange the solenoid valve.
	Application modules are blocked or defective.	• Clean or exchange the modules.
	Nozzle, slot die or application head is blocked or defective.	• Clean nozzle, slot die or application head resp. exchange it.
	Tank or adhesive channels are blocked.	• Clean / flush the unit.
	Pressure regulating valve is defective, O-rings are leaky.	• Clean or exchange the Pressure regulating valve, exchange the O-rings.
	Gear pump is stiff or defective.	• Exchange the gear pump.
8.3 Controller has been switched on, but the unit does not heat up	Fault report on the Touch Panel.	• Accept fault report and clear the disturbance.
	Heating zone „Tank“ has been switched off.	• Switch on the heating zone (Touch Panel).
	Fault report “Over Temperature” on the Touch Panel.	• Check the state of all heating zones. • Check all set temperatures and adjust if necessary. • Check if all cables have been connected correctly. • Adjust all alarm values correctly if necessary. • Check solid-state relay, exchange if necessary.
	Fault report “Over Temperature” for one of the heating zones on the Touch Panel	• Check solid-state relay, main fuse and temperature sensor, exchange if necessary.
	Glass bead of the over temperature protection is defective.	• Locate and clear the cause of fault and then replace the glass bead.
8.4 Unit does not reach the set temperature, motors cannot be switched on	Information "Stand by active" on the Touch Panel.	• Change to „Operation Temperature“.
	Faulty frequency inverter.	• Read off the fault report and correct it. • Press reset FN.

Fault	Possible Cause	Solution
8.5 Unit switches the motor/ pump off during production	Fault report on the Touch Panel.	• Accept the fault report and correct the fault.
	Fault report “Over Temperature” for one of the heating zones on the Touch Panel.	• Check solid-state relay, main fuse and temperature sensor, exchange if necessary.
	Sensor break, status display “B” for a heating zone (controller main screen).	• Repair the sensor break.
	Fuse for the frequency inverter has dropped out.	• Switch the fuse on.
	Faulty frequency inverter	• Read off the fault report and correct it • Press reset FN
8.6 Temperatures alternate more than 8 °C about the set value	The heated element is exposed to changing cooling (ventilation, opened doors).	• Avoid changing cooling!
	EMC problems.	• Consider separating control-cables and supplying cables. • Install a potential equalization (16mm²).
	Fault within the control circuit.	• Check the control circuit for defective connections or slack joints. Repair if necessary.
	Temperature sensor defective.	• Exchange the temperature sensor:
	Solid state relay defective:	• Check the solid-state relay and exchange it if necessary.
8.7 Operational temperature variations cause over or under temperature-alarms	Alarm values not adjusted:	• Adjust alarm values.
8.8 Application weight varies	Compressed air varies.	• Keep compressed air constant.
	Not enough molten adhesive within the tank.	• Let more adhesive be molten Consider the melting time!
	Application modules defective.	• Exchange application modules.

Chapter 9

Cold glue Pressure Vessel, Application Head (optional)

9.1 CE-Declaration of Conformity, Pressure Vessel

CE

UCON CONTAINERSYSTEME

Konformitätserklärung
Declaration of Conformity

für ein Druckgerät / a pressure equipment

Der Hersteller / *manufacturer*

UCON AG Containersysteme KG
Sechsheldener Str. 122
D-35708 Haiger

erklärt hiermit, dass das Druckgerät
herewith declares, that the pressure equipment

Beschreibung / Verwendungszweck: *Description / Application*	Druckbehälter / pressure vessel		
Typ - Bezeichnung: *Type name*	DRB 216		
Artikel-Nr. : *Item-No.*	447002	Auftrag-Nr.: *Order-No.*	1495730
Behälter-Nr(n).: *Serial-No.*	2090137		
max. zulässiger Druck [bar]: *max. allowable pressure*	6,00	Volumen [dm³]: *Volume*	5,7 l
min./max. Temperatur [°C]: *allowable min./max temperature*	- 20 / + 80	Prüfdruck [bar]: *Test pressure*	8,60
Behälterwerkstoff: *Vessel material*	1.4301 / 304	kein Korrosionszuschlag *no corrosion allowance*	
Herstellungsjahr: *Year of manufacturing*	2012		

mit der Druckgeräterichtlinie 97/23/EG übereinstimmt.
corresponds to the Pressure Equipment Directive 97/23/EC.

Konformitätsbewertungsverfahren: *Conformity assessment procedure*	Modul A
Angewandte Normen, techn. Spezifikationen: *Applied standards, technical specifications*	AD 2000 in Anlehnung, DIN EN 287-1, DIN EN ISO 15614-1
Weitere angewandte EG-Richtlinien: *Other applied EC directives*	
Benannte Stellen / ***Notified bodies :***	
Prüfung, Überwachung, Kontrollen während der Fertigung: *Examination, control, manufacturing inspections*	TÜV Techn. Überwachung Hessen GmbH Hans-Böckler-Str. 4, D-35440 Linden

Ort, Datum:
Location, date

Haiger, 6. Februar 2013

i.A. Schubert

Beauftragter / Instructor: Dipl.-Ing. L. Schubert

CEKE0401

9.2 Intended Use

The vessel is made to store fluids. Vapor pressure at the maximum allowable temperature plus additional hydrostatic pressure must not exceed the max. allowed pressure (values see identification plate).

The type of the fluid allowed for this vessel is related to the Fluid Group (PED 97/23/EG, Art. 9, par. 1), which is marked on the data plate. Other restrictions are determined by material resistance to chemicals and to other possible dangers in respect to handling and environmental aspects. For this reason, the users of the vessel – and not ITW Dynatec – have to take the responsibility – in regard of all for the site of operation relevant safety rules and other regulations – that the pressure vessel meets all requirements of the specific intended purpose.

The pressure vessel is not intended for storage or handling of toxic, flammable or explosive materials without further protective measures. To prove the suitability for specific fluids the user must take all for his application relevant regulations into consideration, especially those concerning safety of work, transportation and environment.

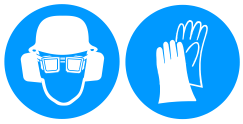
9.3 Technical specs

Unit type	Cold glue Pressure Vessel
For fluid group	1
Material	1.4301
Tare	2,2 kg
Filling capacity	5,7 liters
Max. operating pressure	6 bar
Test pressure	8,6 bar
Min.- Max. operating temperature	-20°C – +80°C

9.4 Safety instructions

- Heed all safety advices mentioned in chapter 2.
- Pay attention to the intended use.
- Heed all relevant regulations for accident prevention.

- Keep the limits of pressures and temperatures.
- The vessel must be depressurized before opening. The adhesive is pressurized! Risk of injury!
- For removing the pneumatic hose, press the ring of the fitting down and pull the hose out. **Do this only if you have previously switched off the air supply at the main-faucet**
- Improper use can result in sudden discharge of the vent valve. Risk of injury.



- During all work on the system, wear safety shoes, protective gloves, safety goggles and protective clothing that covers all parts of the body at risk. Otherwise there is a risk of injury!

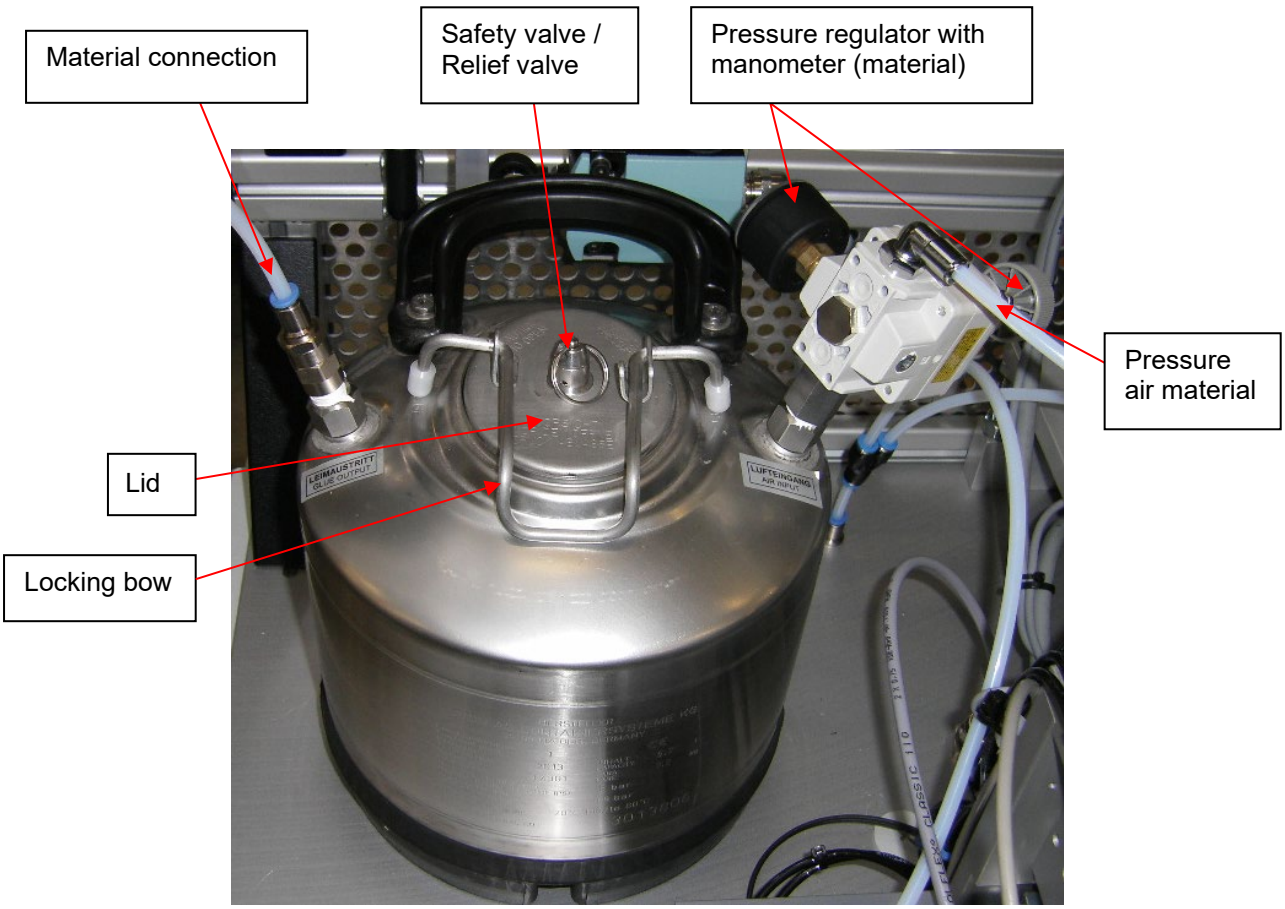
- Operation of the pressure vessel and maintenance and repair is only permitted for skilled personnel!
- Carry out all maintenance and repair work at working temperature, unless otherwise stated. Otherwise there is a risk of damage to the device components!

- Keep fire away and all ignition sources.
- Make sure that the material compatibility between the material, vessel and sealing material is guaranteed so that damage due to chemical or thermal reactions with the material (e.g. corrosion) can be excluded.
- According to the max. allowed working pressure [PS], defined on the data plate, the pressure feed side of the vessel must have a suitable pressure regulating valve and additionally a pressure safety valve approved and permitted by the competent authority of the region of use! These safety devices against pressure overload must be locked to exclude unauthorized manipulations.
- If you fill flammable or corrosive liquids, the vessel may not be vented by the vent valve. Risk of injury!
- The vessel must be electrically grounded, if there is a filling operation! Risk of electric shocks! Risk of injury, Mortal danger!

- The armatures on the lid (regulator, manometer, safety valve, etc.) may not be come into contact with the contents of the vessel (e. g. through pivoting, tilting or toppling over of the vessel), because they lose their function.

- Ensure an adequate accessibility and stability of the vessel.
- The air must be absolutely clean and dry!
- Connect the hoses absolutely free of twists with the application head!
- Check the vessel for leaks after each assembly or maintenance work.
- The pressure vessel may not be transported in pressurized condition!
- The pressure vessel may not be structurally modified
- Use only original spare parts.
- Ensure the readability of the identification plate.

9.5 Description Cold glue pressure vessel



Picture: Cold glue pressure vessel

Description

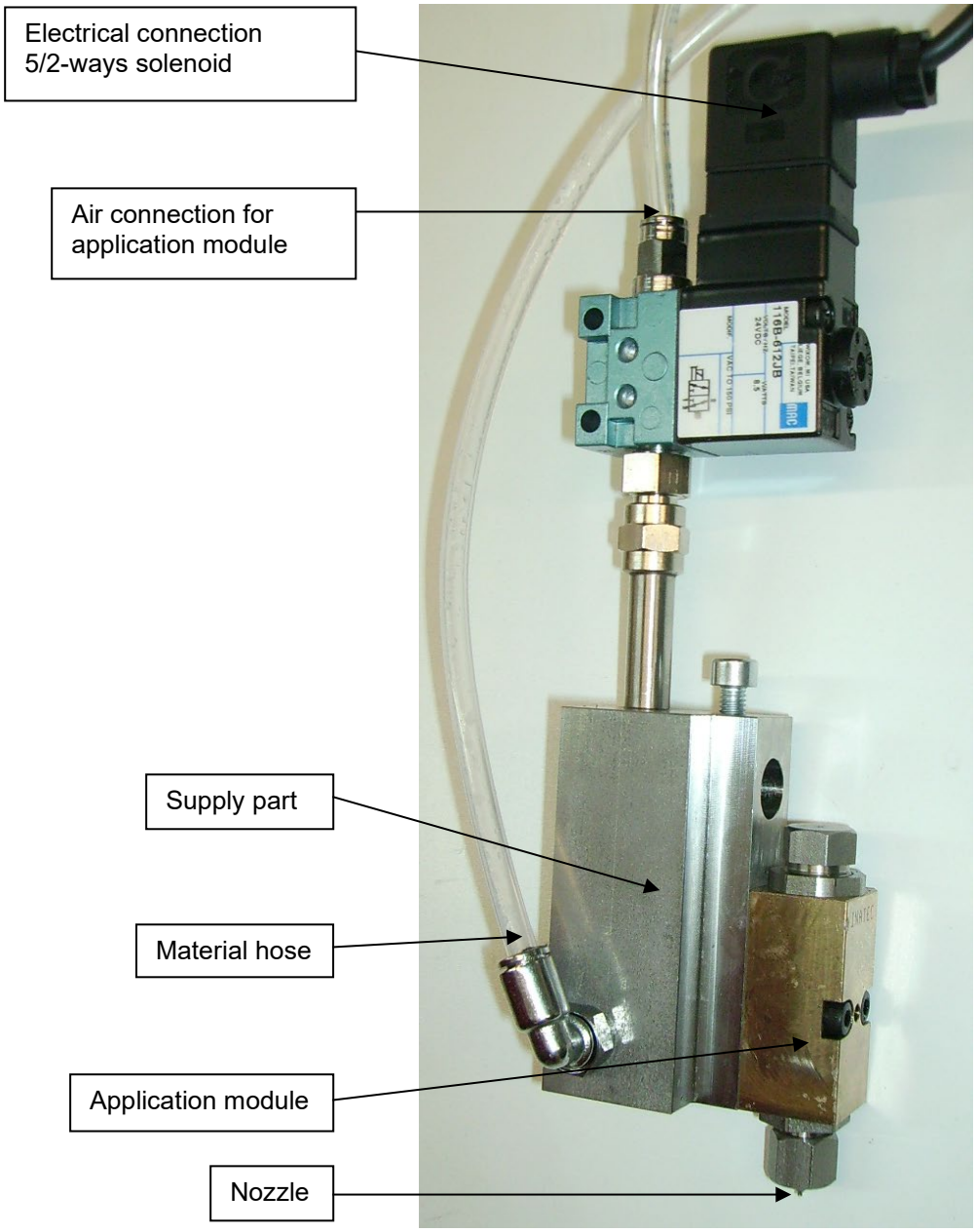
The cold glue pressure vessel is preferably to be filled through the hand hole. If this happens, however by a connected hose, the pressure increase should be limited by adequate ventilation.

The cold glue pressure vessel has a removable lid. By means of compressed air the liquid material will be pressurized. The pressurized material will be then fed through a suitable hose to the application head.

The cold glue pressure vessel is made of stainless steel and maintenance free. The maximum temperature of the medium should not fall below -20°C and not exceed +80°C. The maximum inlet air pressure is 6 bar. The maximum over operating pressure is 2,5 bar. The use of corrosive materials may only be in agreement with the company ITW Dynatec.

According to the pressure vessel regulations, appropriate armatures for pressure vessels are required. The pressure vessel is equipped with compressed air connection-armature, with pressure regulator, relief valve (safety valve) and locking bow.

9.6 Description Cold glue Application Head



Picture: Application head – Components

Description

The cold-adhesive application head consists of a supply part, hose connection, an application module and a nozzle.

The adhesive will be fed to the supply part by a hose.

The application module is a 2/2-way-adhesive valve (2 ways, 2 switching states). An external 5/2-way solenoid valve drives respectively opens and closes the application module.

The adhesive is applied from the nozzle onto the substrate.

If the adhesive application is too little, the following advices can help

Control point:	Check and remove faults:
1. Air supply	• Main air pressure 6 bar?
2. Solenoid valve	• Function faultless?
3. Pressure regulating valve at the tank	• Is the lifter at the pressure regulating valve in motion? • Free movement is possible? • O-rings O.K.?
4. Tank	• Blocked? Measure the quantity.
5. Heated hoses	• Blocked? Measure the quantity.
6. Exchange die of slot applicator	• Blocked? Measure the quantity.

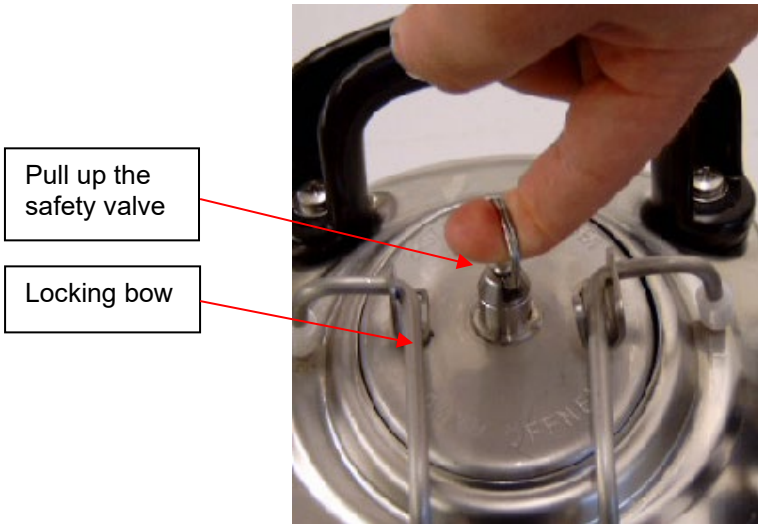
9.7 Start-up, Filling and exchanging adhesive

Opening the pressure vessel:

WARNING

Before each opening of the lid, make sure that the vessel is pressureless:

1. Switch off the air supply at the main-faucet.
2. Turn the pressure regulator to "0" bar.
3. Open the safety valve by pulling up the safety valve and waiting until the compressed air has escaped. The pressure gauge must show "0" bar.
4. Remove the air and material hoses.
5. Open the locking bow.
6. Remove the lid by a rotating and tilting movement.



Picture: Pressure vessel, safety valve (example picture)

Filling the adhesive:

7. Fill in the adhesive as much that the vessel can be closed in any case.

Closing the pressure vessel:

8. Check the sealing of the lid and exchange it if necessary. Insert the lid into the vessel, set it on the cleaned seal-seat, and close it with the locking bow.

Exchanging the adhesive:

9. Always clean or purge the system (pressure vessel, hoses, application head) when you switch from one adhesive to another - even within the same product group or from the same manufacturer. This will prevent possible reactions between the adhesives.

Start-up:

10. Clean the vessel first. Heed the advices in the next chapter.

11. Fill up the material 35 mm below the upper vessel edge.

12. Switch the air supply at the main-faucet on again.

13. Adjust the required pressure at the pressure regulator / manometer. The vessel is now pressurized.

    Check regularly (e.g. weekly), the lid-seal for wear and proper seat.

9.8 Operation interruption and cleaning, Maintenance

Advices for operation interruption and cleaning:

- At longer operation interruption, clean the parts and surfaces of the vessel they are in contact with the material with a suitable cleaning agent.

- Maintain a clean sealing surface between the lid-seal and the vessel edge!

- Don't let cleaning agents penetrate into the lid armature!

- When cleaning the vessel make sure that no aggressive, solvent-containing or alkaline substances may come into contact.

- Check the vessel for leaks after each start-up or maintenance work.

Maintenance:

- Renew the seals, if there are leaks. Seals are subjected to normal wear and fatigue. Defective seals are indicated by the leakage of air or material on fittings and connections.

- Check regularly (e.g. weekly), the lid-seal for wear and proper seat. When exchanging the seal, check the compatibility with the used material.

- Grease lightly the moving parts of the locking bow if necessary.

- Check the vessel regularly (at least yearly) for leaks, corrosion and mechanical damages. The frequency depends on the environmental and operating conditions. Corrosive dots and speckles must be removed immediately by polishing. It is recommended to eliminate the source of corrosion.

9.9 Cleaning the application head

CAUTION
Heed all safety advices mentioned in chapter 2 and 9.4.

MAINTENANCE:
Check the application head regularly for dirt. The dirt can be caused e.g. by burned adhesive, and can be amassed at the supply part, at the application module, at the nozzle, etc.

Due to the different kind of adhesives it is necessary that you ask the adhesive manufacturer for the right maintenance rates (e.g. monthly).

When cleaning, adhere to the actual **safety data sheet** of the manufacturer **of the cleaner!**

Cleaning the application head from adhesive residues:

1. Switch off the controller.
2. Turn the main switch off. Ensure that the unit is voltage-free.
3. Guard the unit against unauthorized re-starting.
4. Remove the compressed air supply. Turn the pressure controller to 0 bar. Wait 1 minute until the adhesive pressure reduces.
5. Place a catchment tank/underlay under the applicator. Adhesive might come out.
6. Remove all contamination from the application head by using a wooden scrapers, lint-free cloth with cleaner.
   WARNING: Do not damage the application head with sharp-edged or metallic objects or tools.

   We recommend Eco-Clean from ITW Dynatec as cleaning agent, part number I06.90100.119 5 liters container.

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the compressed air supply and turn the pressure regulator to the required adhesive pressure again.
- Turn the main switch to ON. Switch on the controller.

ADVICE

Before each start of production, purge the application head, i.e. let the adhesive outflow until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application head from adhesive.

Continue production.

9.10 Exchanging the application module

CAUTION
Heed all safety advices mentioned in chapter 2 and 9.4.

If a module is leaky, send it to ITW Dynatec for repair or exchange.

Exchanging the application module:

1. Switch off the controller.
2. Turn the main switch off. Ensure that the unit is voltage-free.
3. Guard the unit against unauthorized re-starting.
4. Remove the compressed air supply. Turn the pressure controller to 0 bar. Wait 1 minute until the adhesive pressure reduces.
5. Place a catchment tank/underlay under the applicator. Adhesive might come out.
6. Unscrew the two attachment screws and take off the module.
7. Check if all of the O-rings on the back of the new module are present.
8. Attach a new circulation module and tighten it with both screws.

Picture: Exchanging the application module

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the compressed air supply and turn the pressure regulator to the required adhesive pressure again.
- Turn the main switch to ON. Switch on the controller.

ADVICE

Before each start of production, purge the application head, i.e. let the adhesive outflow until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application head from adhesive.

Continue production.

9.11 Cleaning / Exchanging the nozzle

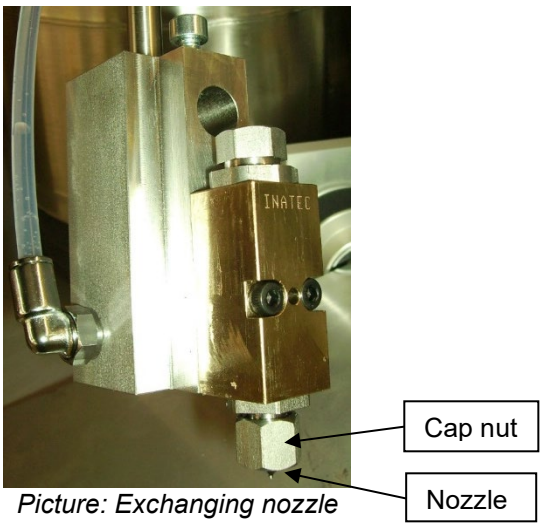
CAUTION
Heed all safety advices mentioned in chapter 2 and 9.4.

Cleaning / Exchanging the nozzle:

1. Switch off the controller.
2. Turn the main switch off. Ensure that the unit is voltage-free.
3. Guard the unit against unauthorized re-starting.
4. Remove the compressed air supply. Turn the pressure controller to 0 bar. Wait 1 minute until the adhesive pressure reduces.
5. Place a catchment tank/underlay under the applicator. Adhesive might come out.
6. Unscrew the cap nut and take off the nozzle.
7. Blow out the nozzle from the direction of the exit hole with an air pistol.

   If this is not sufficient, boil out the nozzle with a cleaning agent recommended by the adhesive manufacturer. Afterwards the nozzle has to be blown again as described previously.

   Exchange defect nozzle.
8. Attach the cleaned or new nozzle with the cap nut on the application module.



Picture: Exchanging nozzle

After finishing the repair or maintenance works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the compressed air supply and turn the pressure regulator to the required adhesive pressure again.
- Turn the main switch to ON. Switch on the controller.

ADVICE

Before each start of production, purge the application head, i.e. let the adhesive outflow until the adhesive application is satisfactory.

Thereafter switch off the adhesive and clean the application head from adhesive.

Continue production.

9.12 Maintenance plan Pressure vessel

CAUTION

Heed all safety advices mentioned in chapter 2 and 9.4.

Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!

Please use only the indicated lubricants and keep the prescribed maintenance intervals. Consider in addition the enclosed regulations of manufacturers.

Punctual and conscientious maintenance of the unit secures not only a trouble-free function, but prevents also for expensive repair costs.

Remove all materials and tools used during the repair or maintenance from the workspace of the unit.

Place a heat-resistant catchment tank/underlay under the components. Hot adhesive may come out.

Use only lint-free cleaning cloth and suitable cleaner for cleaning! Do not damage surfaces! Do not scratch above them with sharp-edged tools, otherwise the components will get leaky and inoperable!

Maintenance plan:

Operating time/ frequency	Inspection point / maintenance notes
Continuous	• Remove dropped out adhesive and scrap adhesive. Search for the cause of that, eliminate the cause. • Remove the corrosive dots and speckles immediately by polishing.
Once a day	• Clean the pressure vessel from dirt and clean it if necessary. • Clean the application head from dirt.
Once a week	• Visual check of the leak tightness of the application module, exchange if necessary. • Check air supply connections for leaks and tighten if loose or replace if necessary. • Check the function of the solenoid valves and exchange if necessary.
Once a month	• Check the pressure vessel for leaks, corrosion and mechanical damages and eliminate these or the cause if necessary. • Clean the hoses. • Due to temperature differences a loosening of threads (threaded connections) is possible. Check all parts with threads and all screw fittings for tightness and tighten them if necessary.
Every two years	• Complete maintenance.

Chapter 10
Drawings and BOMs

WARNING

All parts must be periodically inspected and replaced if worn or broken. Failure to do this can affect equipment's operation and can result in personal injury.

This chapter contains the component illustrations (exploded-view drawings) for each assembly of the unit. These drawings are useful for finding part numbers as well as for use when maintaining or repairing the equipment.

Note: Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

Components of AB399832

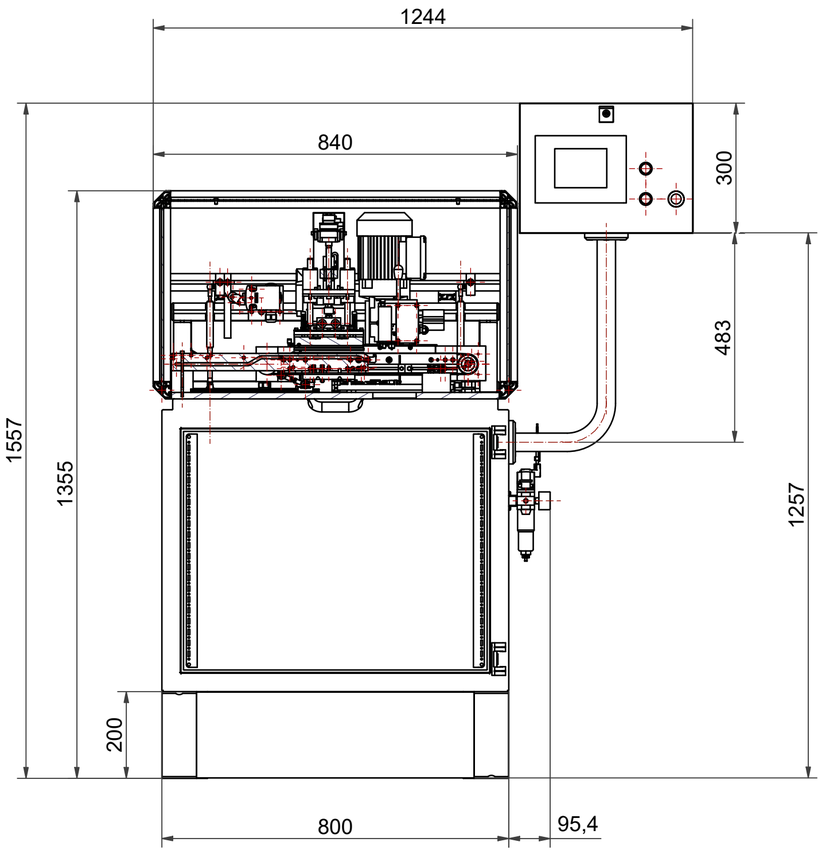
Pos.	Part no.	Description	Qty
10	I19.00160.503 *	Adhesive Testing Unit with Control Cabinet and Nozzle-Kit	1
20	I09.80005.500	Height adjustment for test paperboard up to 8mm for Testing Device	1

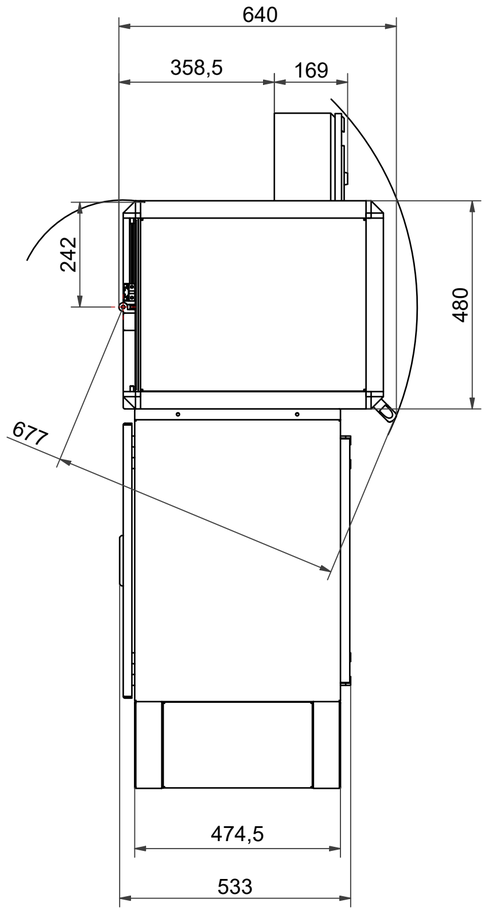
* See separate drawing and/or list of parts.

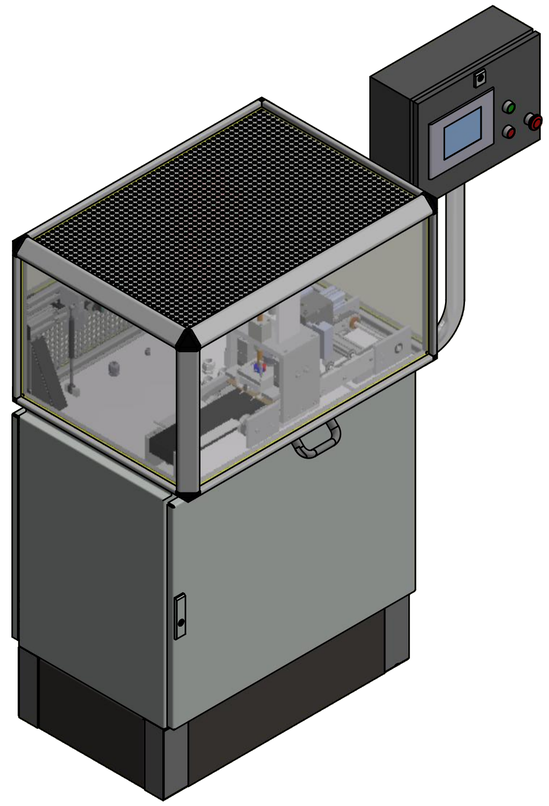
Main BOM Adhesive Testing Unit, PN I19.00160.503

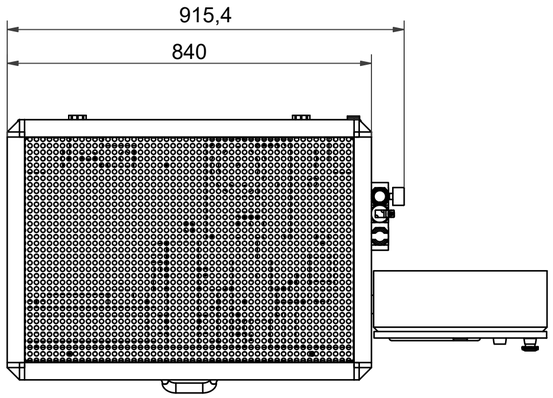
Pos.	Part no.	Description	Qty
10	I09.80004.500 *	Testing Device complete, without electrics, with Servo-Motor version	1
20	I19.00150.501 *	Micro Melter for Adhesive Testing Unit	1
30	I93.30176.500 *	Control Cabinet for Adhesive Testing Unit with Servo TP700 and V20	1
40	I19.00162.500	Pretension device for test paperboard	1
	I19.80001.006	Pretension device	1
	I07.93324.002	3/2-way solenoid G1/8	1
50	I19.00168.500	Nozzle-Kit for Adhesive Testing Unit Including: I32.00062.400 Bead nozzle Ø0,4mm 1x I32.00074.400 Bead nozzle Ø0,5mm 1x I32.00075.400 Bead nozzle Ø0,6mm 1x I32.00076.400 Bead nozzle Ø0,7mm 1x	1

* See separate drawing and/or list of parts.





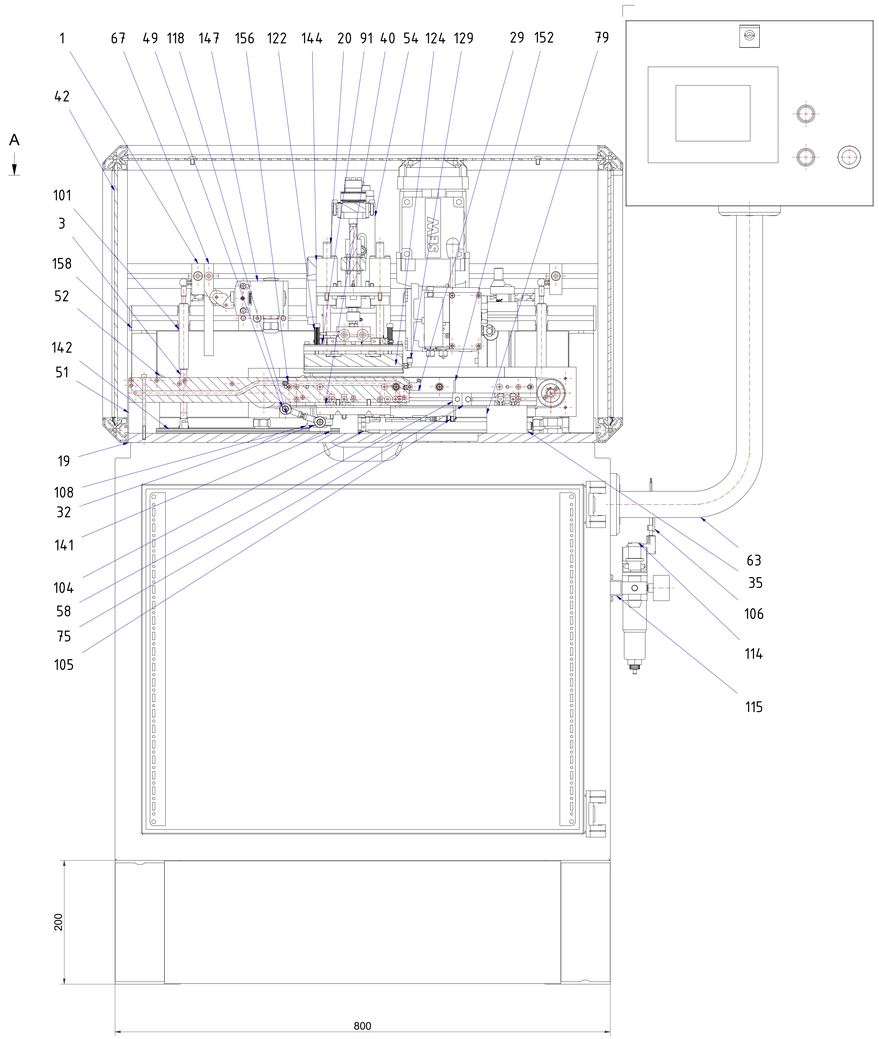


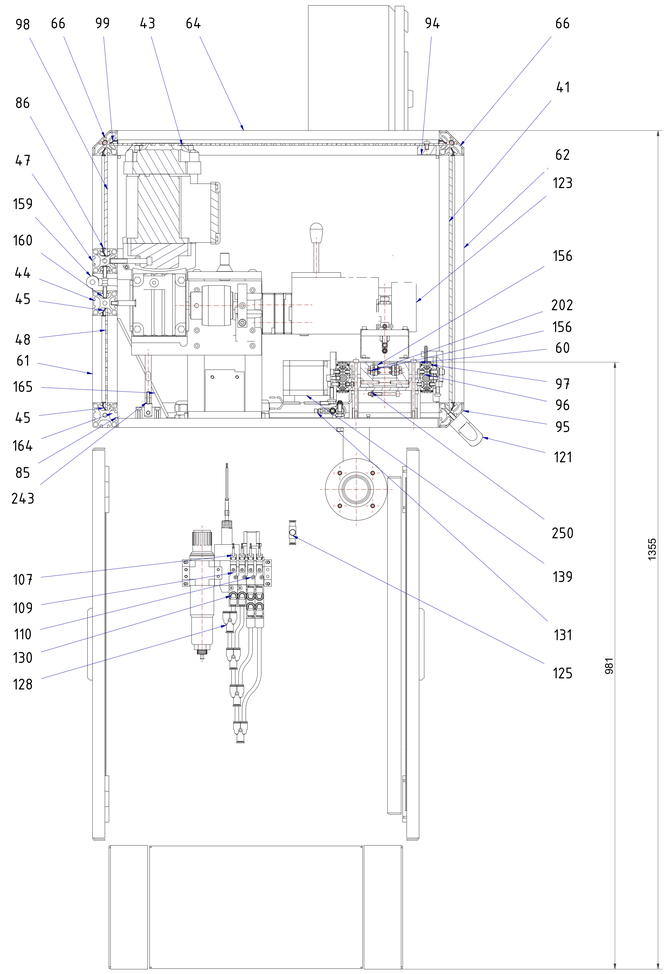


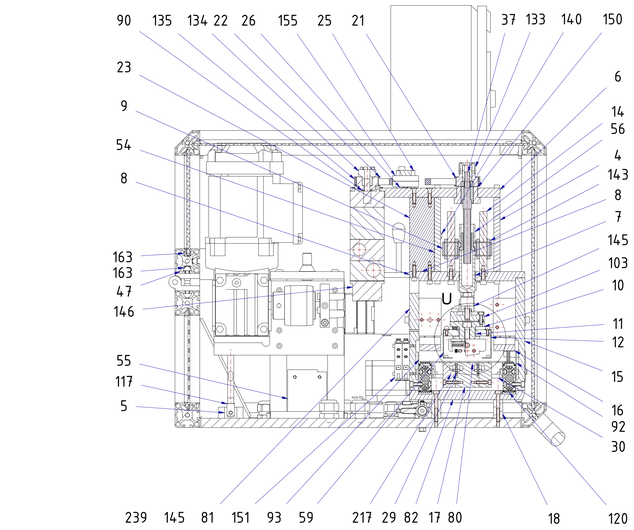
Allgemeintoleranzen nach ISO 2768-mK					Maßstab: 1:10	Gewicht: 101,85 kg
				Datum	Name	Prüfeinrichtung für Hotmelt
			Gezeichnet	03.02.2021		Test device for hotmelt
			Kontrolliert			
			Norm			
					ITW Dynatec THE NEXT LEVEL OF TECHNOLOGY	I19.00160.503 / 1 / A2
Status	Änderungen	Datum	Name			Layout.idw

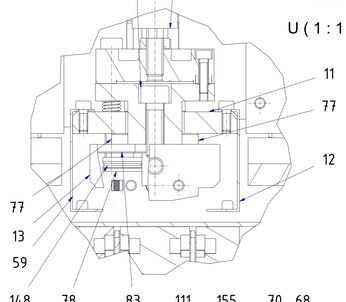
10.1 Testing device complete without electrics, with Servo-Motor, PN I09.80004.500

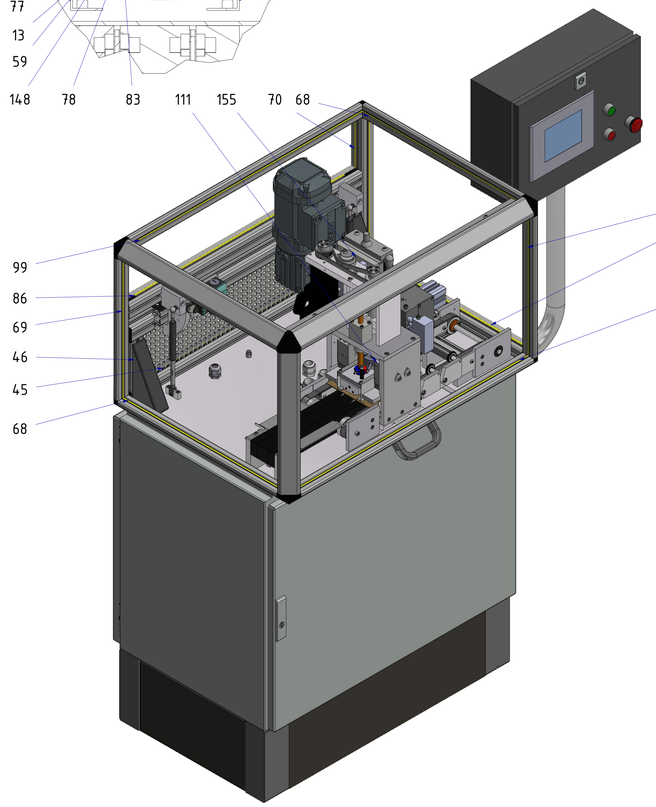
Drawing B-033-24-001-00-R00



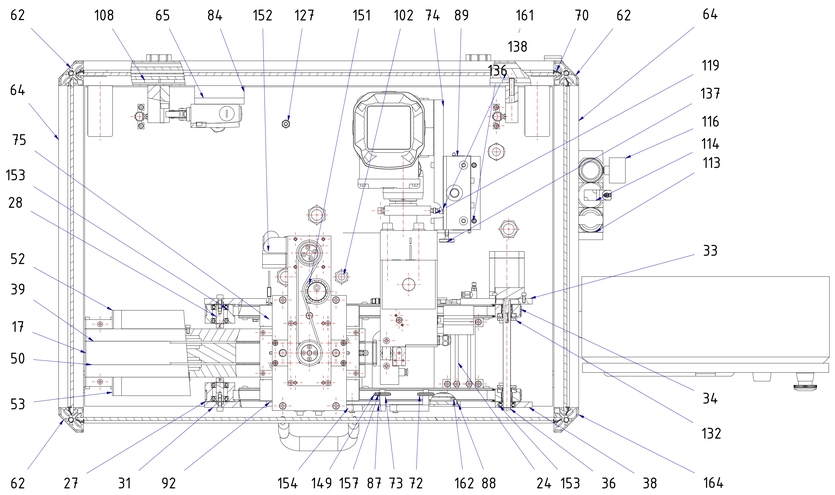




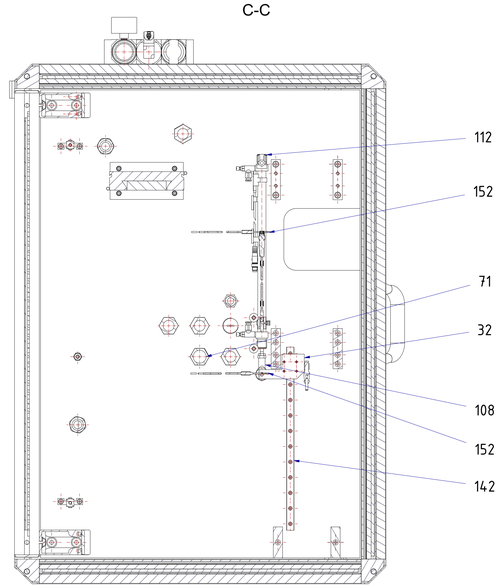




A-A



C-C



Allgemeintoleranzen nach ISO 2768-mK				Maßstab:	Gewicht: 104,32 kg
			Datum	Name	
		Gezeichnet	09.02.2018		Prüfeinrichtung für Hotmelt
		Kontrolliert	27.11.2015		test device for Hotmelt
		Norm			Dynatec B-033-24-001-00-R00 1 A0
Status	Änderungen	Datum	Name		

Pos.	Part no.	Description	Qty
1	B-033-02-001-01-R01	Lever	2
3	B-033-08-001-03-R00	Connecting piece	2
4	B-033-14-001-04-R00	Support plate	1
5	B-033-01-001-05-R00	Housing for bearing	2
6	B-033-14-001-06-R00	Motor plate	1
7	B-033-14-001-07-R00	Adapter	1
8	B-033-14-001-08-R00	Cylinder plate	1
9	B-033-14-001-09-R00	Guide block	1
10	B-033-08-001-10-R00	Flange	1
11	B-033-20-001-11-R00	Plate	1
12	B-033-19-001-12-R00	Links	1
13	B-033-19-001-13-R00	Pressure piece	1
14	B-033-14-001-14-R00	Shaft	2
15	B-033-08-001-15-R00	Side plate (front)	1
16	B-033-01-001-16-R01	Holder	2
17	B-033-14-001-17-R00	Force plate	1
18	B-033-14-001-18-R00	Bottom plate	2
19	B-033-21-001-19-R00	Base plate	1
20	B-033-19-001-20-R00	Shaft	2
21	B-033-14-001-21-R00	Gear wheel	1
22	B-033-14-001-22-R00	Drive gear wheel	1
23	B-033-14-001-23-R00	Reinforcing plate	1
24	B-033-06-001-24-R00	Profile 5	1
25	B-033-14-001-25-R00	Clamping axis	1
26	B-033-14-001-26-R00	Ring	1
27	B-033-08-001-27-R00	Toothed disc	2
28	B-033-08-001-28-R00	Axis	2
29	B-033-14-001-29-R01	Carriage	2
30	B-033-14-001-30-R00	Connector	1
31	B-033-11-001-31-R00	Deflection	2
32	B-033-14-001-32-R00	Transport plate	1
33	B-033-11-001-33-R00	Motor plate	1
34	B-033-02-001-34-R00	Toothed disc	2
35	B-033-14-001-35-R00	Holder	1
36	B-033-08-001-36-R00	Drive shaft	1
37	B-033-14-001-37-R00	Ball screw drive	1
38	B-033-11-001-38-R00	Drive plate	1
39	B-033-14-001-39-R00	Side guide plate 2	1
40	B-033-14-001-40-R00	Connector	1
41	B-033-08-001-41-R00	Polycarbonate	1
42	B-033-08-001-42-R00	Polycarbonate	2
43	B-033-08-001-43-R00	Perforated plate	1
44	B-033-08-001-44-R00	Profile 8	1
45	B-033-08-001-45-R00	Sealing	2
46	B-033-08-001-46-R00	Sealing	2
47	B-033-08-001-47-R00	Profile 8	1

48	B-033-11-001-48-R00	Perforated plate	1
49	B-033-14-001-49-R00	Spacer	2
50	B-033-14-001-50-R00	Side guide plate 1	1
51	B-033-14-001-51-R00	Bottom plate	2
52	B-033-14-001-52-R00	Mounting bracket 1	1
53	B-033-14-001-53-R00	Mounting bracket 2	1
54	B-033-14-001-54-R00	Support plate	1
55	B-033-21-001-55-R00	Stopper	1
56	B-033-14-001-56-R00	Protection sleeve	1
58	B-033-15-001-58-R00	Holder	2
59	B-033-19-001-59-R00	Bracket	1
60	B-033-08-001-60-R00	Guide plate (inside)	2
61	B-033-08-001-61-R00	Profile 8	2
62	B-033-06-001-62-R00	Profile 8	4
63	B-033-11-001-63-R00	Flange + tube	1
64	B-033-06-001-64-R00	Profile 8	4
65	B-033-02-001-65-R01	Plate	1
66	B-033-06-001-66-R00	Profile 8	2
67	B-033-06-001-67-R00	Holder	1
68	B-033-08-001-68-R00	Sealing	6
69	B-033-08-001-69-R00	Sealing	6
70	B-033-08-001-70-R00	Sealing	2
71	B-033-18-001-71-R00	Cable gland	1
72	B-033-01-001-72-R00	Press roll	2
73	B-033-06-001-73-R00	Distance tube	2
74	B-033-21-001-74-R00	Plate	1
75	B-033-15-001-75-R00	Holder	2
77	B-033-19-001-77-R00	Piston	4
78	B-033-19-001-78-R01	Piston disc	4
79	B-033-06-001-79-R00	Bottom plate	2
80	B-033-14-001-80-R00	Transport bar	1
81	B-033-02-001-81-R00	Side plate (rear)	1
82	B-033-14-001-82-R00	Connection plate	1
83	B-033-19-001-83-R01	Cover plate	4
84	B-033-02-001-84-R00	Bracket	1
85	B-033-08-001-85-R00	Profile 8	1
86	B-033-03-001-86-R00	Sealing	1
87	B-033-21-001-87-R00	Roll holder	2
88	B-033-21-001-88-R00	Sandwich plate	1
89	B-033-21-001-89-R00	Dovetail slides with micrometer spindle	1
90	B-033-14-001-90-R00	Ring	1
91	B-033-19-001-91-R00	Clamping ring	2
92	B-033-06-001-92-R00	Guide plate	1
93	B-033-06-001-93-R00	Guide plate	1
94	B-033-06-001-94-R01	Weight	1
95	B-033-06-001-95-R00	Profile 8	1
96	B-033-08-001-96-R00	Profile 5	2
97	B-033-08-001-97-R00	Sliding strip	2

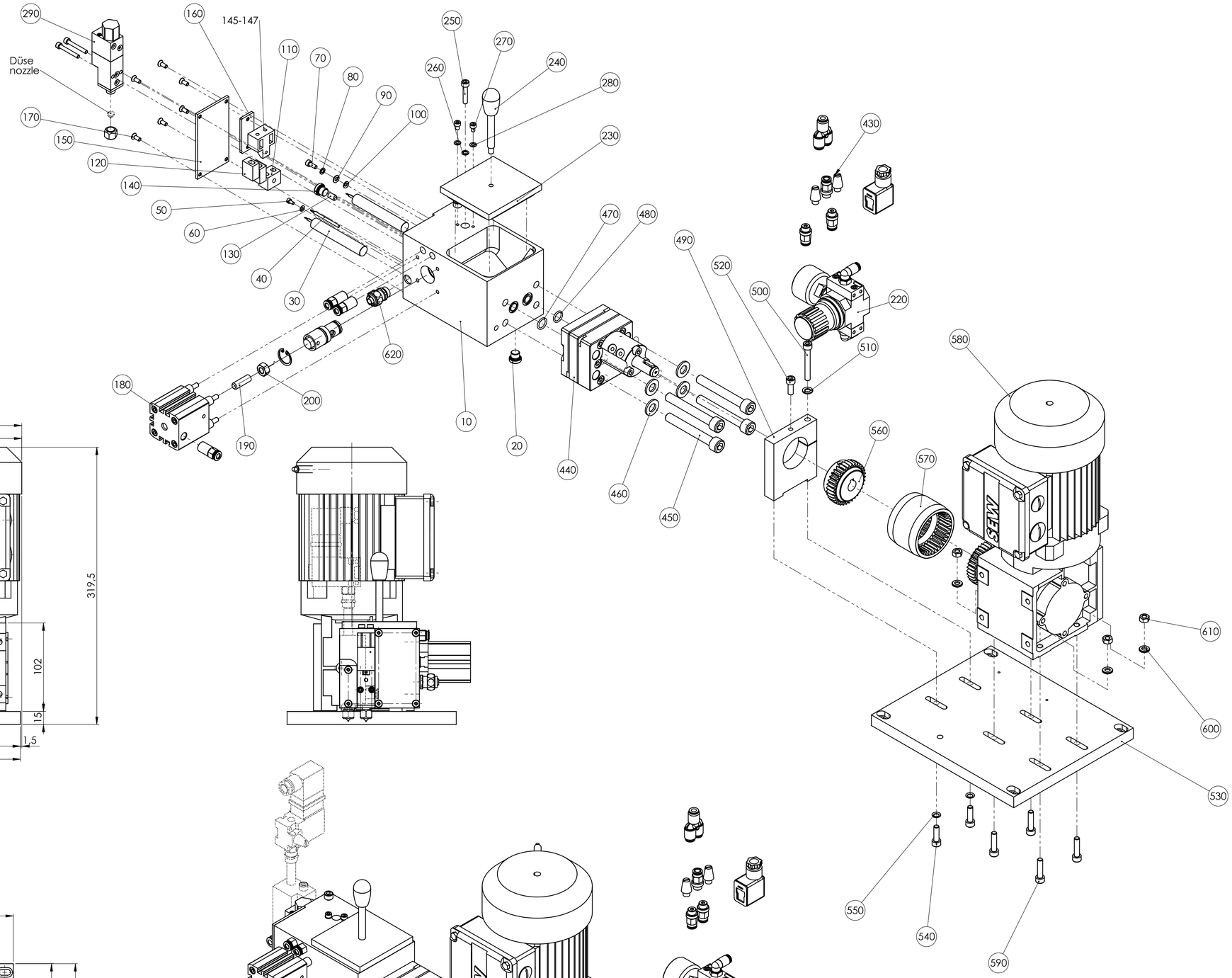
98	B-033-08-001-98-R00	Polycarbonate	1
99	B-033-08-001-99-R00	Sealing	5
101	K-800-00-572	Gas pressure spring	2
102	K-800-03-159	Channel bolting	1
103	K-800-03-770	Transducer	1
104	K-800-04-973	SMBR-Mounting kit	2
105	K-800-04-974	SME-proximity sensor	2
106	K-800-03-843	Socket cable	1
107	K-800-05-231	Presets-Connecting cable	4
108	K-800-04-767	Ball head	1
109	K-800-04-229	Solenoid valve	2
110	K-800-03-923	5/2-valve	2
111	K-800-03-771	Cylinder	2
112	K-800-04-825	Cylinder	1
113	K-800-03-838	Switch-on valve	1
114	K-800-03-842	Switch-on valve	1
115	K-800-01-462	Fastener	2
116	K-800-03-803	Filter control valve	1
117	K-800-03-767	U-head	2
118	K-800-04-824	Ball head	2
119	K-800-02-749	Centering	2
120	K-800-03-778	Toothed belt	2
121	K-800-03-294	Handle	1
122	K-800-05-545	Spring	2
123	K-800-03-777	Micro melter	1
124	K-800-02-727	Plug	5
125	K-800-04-164	Restrictor	1
126	K-800-05-233	Silencer	6
127	K-018-05	Fitting	1
128	K-018-24	Y-connector	4
129	K-018-10	Screwed joint	1
130	K-018-14	Screwed joint	10
131	K-800-04-849	Restrictor	2
132	K-800-03-781	Mini clamping bush	2
133	K-800-04-829	Clamping set	1
134	K-800-04-830	Clamping set	1
135	K-800-04-833	Toothed belt	1
136	K-800-05-462	Fastening screw	4
137	K-800-05-461	Knurled screws	1
138	K-800-05-560	Straps	2
139	K-800-04-847	Multiphase motor	1
140	K-800-04-445	Initiator	1
141	K-800-04-832	Driving guide (mini)	1
142	K-800-04-831	Guide rail	1
143	K-800-04-823	Ball bushings	2
144	K-800-03-773	Linear set	2
145	K-800-03-769	Balancer	1
146	K-800-04-826	Servo motor	1

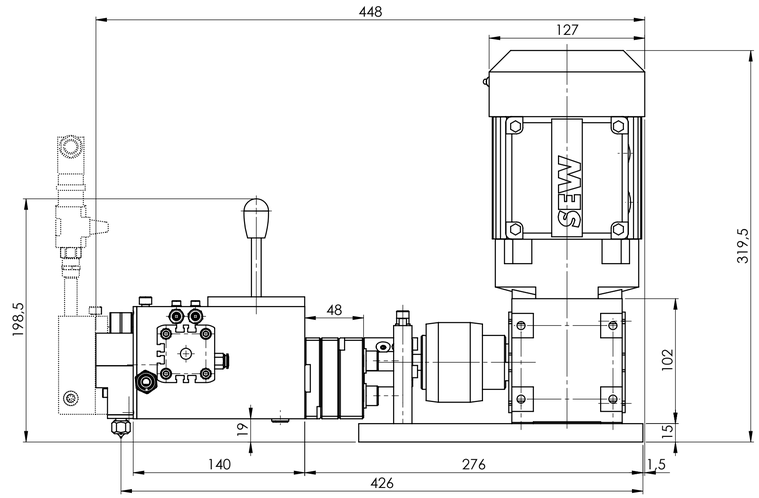
147	K-800-03-799	Switch	1
148	K-800-05-396	X-Ring	4
149	K-800-04-207	X-Ring	2
150	K-800-04-828	Bearing unit	1
151	K-800-03-802	Sensor (light)	2
152	K-800-03-802-K3	Electric light cable	2
153	K-800-03-779	Ball bearing	5
154	K-800-04-062	Ball bearing	4
155	K-800-04-834	Ball bearing	2
156	K-800-04-835	Ball bearing	8
157	K-800-03-801	Ball bearing	2
158	K-800-01-199	Cover cap	4
159	K-800-03-787	Hinge	2
160	K-800-01-110	T-slot nut	9
161	K-800-01-111	T-slot nut	3
162	K-800-01-437	T-slot nut	31
163	K-800-01-031	Screw joint kit	4
164	K-800-03-790	Connection set	8
165	K-800-03-784	Angle	2
201	S3-A2	Safety washer	4
202	DIN 125 - A 3,2	Washer	8
203	DIN 125 - A 5,3	Washer	1
204	DIN 125 - A 8,4	Washer	1
205	DIN 471 - 12x1	Circlip	5
206	DIN 471 - 22 x 1,2	Circlip	4
207	DIN 6912 - M5 x 20	Screw	2
208	DIN 6912 - M5 x 50	Screw	8
209	DIN 6921 - M6 x 20	Screw	2
210	DIN 7991 - M4x10	Screw	4
211	DIN 7991 - M5x25	Screw	2
212	DIN 7991 - M6 x 20	Screw	8
213	DIN 7991 - M6x40	Screw	1
214	DIN 9021 - 6,4	Washer	4
215	DIN 912 - M2,5 x 6	Screw	2
216	DIN 912 - M3 x 12	Screw	4
217	DIN 912 - M3 x 16	Screw	4
218	DIN 912 - M3 x 30	Screw	2
219	DIN 912 - M3 x 8	Screw	12
220	DIN 912 - M4 x 10	Screw	10
221	DIN 912 - M4 x 12	Screw	4
222	DIN 912 - M4 x 16	Screw	3
223	DIN 912 - M4 x 20	Screw	8
224	DIN 912 - M4 x 25	Screw	4
225	DIN 912 - M4 x 40	Screw	4
226	DIN 912 - M5 x 10	Screw	8
227	DIN 912 - M5 x 100	Screw	2
229	DIN 912 - M5 x 16	Screw	19
230	DIN 912 - M5 x 20	Screw	14

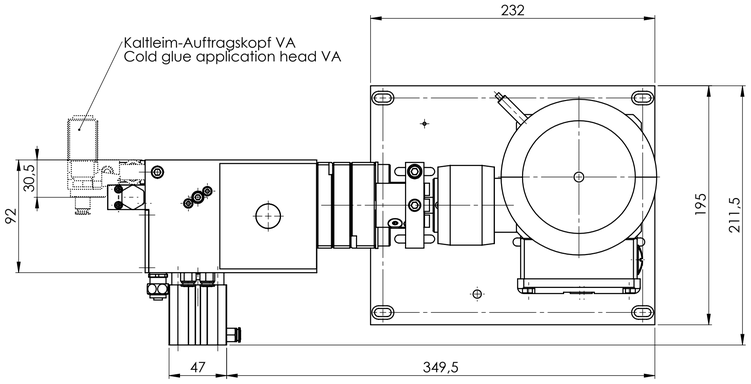
231	DIN 912 - M5 x 25	Screw	9
232	DIN 912 - M5 x 30	Screw	6
233	DIN 912 - M5 x 35	Screw	6
234	DIN 912 - M5 x 45	Screw	9
235	DIN 912 - M6 x 16	Screw	10
236	DIN 912 - M6 x 25	Screw	10
237	DIN 912 - M6 x 40	Screw	2
238	DIN 912 - M6 x 55	Screw	2
239	DIN 912 - M8 x 25	Screw	1
240	DIN 912 - M8 x 40	Screw	1
241	DIN 912 - M8 x 60	Screw	2
242	DIN 913 - M4 x 20	Threaded pin	1
243	DIN 913 - M5 x 20	Threaded pin	2
244	DIN 913 - M8 x 30	Threaded pin	2
245	DIN 933 - M4 x 12	Screw	2
246	DIN 933 - M5 x 8	Screw	2
247	DIN 933 - M7 x 16	Screw	1
248	ISO 4034 - M6	Nut	1
249	ISO 4035 - M3	Nut	4
250	ISO 4035 - M5	Nut	1
251	ISO 7092 - ST 5	Washer	8
252	ISO 7380 - M4 x 8	Screw	4
253	ISO 7380-1 - M5 x 12	Screw	25
254	ISO 7380 - M6 x 10	Screw	2
255	ISO 7380 - M6 x 16	Screw	2
256	ISO 7380 - M6 x 20	Screw	8
257	ISO 8734 - 5 x 12 - A	Cylinder pin	10
258	ISO 8734 - 5 x 24 - A	Cylinder pin	10
259	ISO 8734 - 5 x 30 - A	Cylinder pin	2
260	ISO 8734 - 5 x 40 - A	Cylinder pin	2
261	ISO 8734 - 8 x 30 - A	Cylinder pin	2

* See separate drawing and/or list of parts.

10.2 Micro Melter for Adhesive Testing Unit, PN I19.00150.501







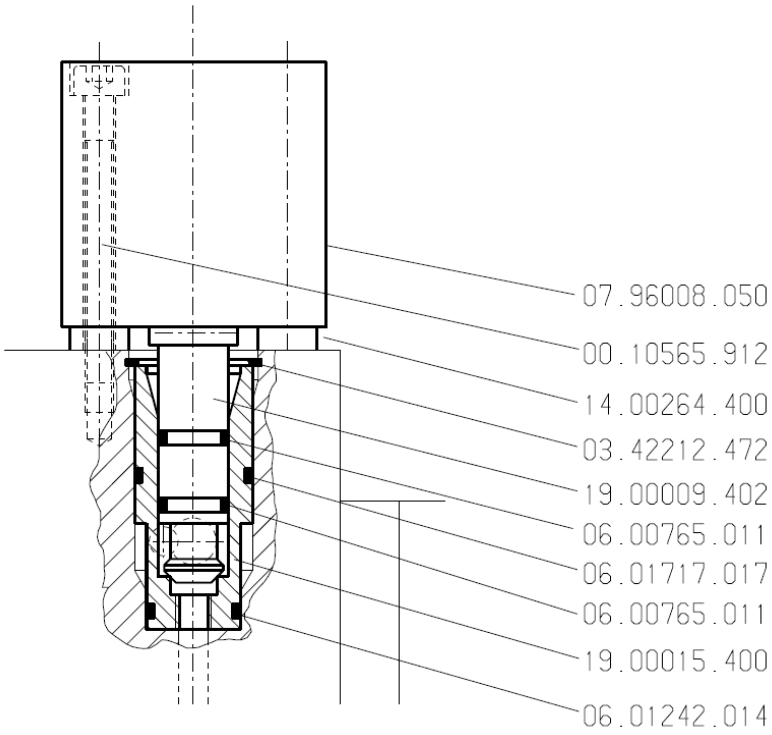
INATEC						Allgemeintoleranzen DIN 7168-f	Maßstab 1:2,5	Werkstoff	Gewicht
						Benennung	Mikroschmelzer f. Klebstoffprüfgerät Micro Melter for testing unit		
					Datum	Name			
				Bearb.	12.04.2011	Griepenstroh			
				Gepr.					
				Norm					
						DIN 6784	Zeichnungsnummer		Blatt
a	Pos. 145-147 hinzu	08.12.17	C.Ka				19.00150.500		Bl.
Zust	Änderung	Datum	Nam.	Urspr.			Ers. f.:	Ers. d.:	CAD

Pos.	Part no.	Description	Qty
10	I19.00151.100	Melting and supply part (tank)	1
20	00.60970.101	Plug screw	1
30	I05.30315.002	Heating cartridge Ø12,5x80 mm 315W, 230V	2
40	I05.63030.040	Temperature sensor Ø3x40 PT100	1
50	I00.10306.912	Cylinder head screw M3x6	1
60	I02.00320.125	Washer 3,2	1
70	I00.10410.912	Cylinder head screw M4x10	1
80	I02.50400.127	Spring ring A4	1
90	I02.00430.125	Washer 4,3	1
100	I02.70040.000	Contact disc M4	1
110	05.80002.002	Ceramic luster clamp 2-pole	1
120	05.80001.001	Ceramic luster clamp 2-pole	2
130	I00.80610.913	Headless screw M6x10	1
140	00.60970.101	Plug screw G1/8	1
145	I05.62001.001	Over temperature socket with BZ-Washer	1
146	I00.10310.912	Cylinder head screw M3x10	1
147	I05.62210.001	Glass bead 210°C	1
150	I19.00152.400	Cover	1
160	I19.00153.400	Cover	1
170	I00.50410.799	Counter sunk screw M4x10	6
180	I19.00115.500 *	Pressure regulating valve, complete	1
190	I00.80304.913	Headless screw M4x4	1
200	I01.00800.934	Hexagon nut M8	1
220	I80.00071.500 *	Pneum. Pressure switch for Pressure regulating valve at Micro Melter	1
230	I19.00154.400	Cover	1
240	I09.00880.310	Handle bar M8x80	1
250	I00.10525.912	Cylinder head screw M5x25	1
260	I02.10520.001	Sealing ring, copper for M5	1
270	I00.10408.912	Cylinder head screw M4x8	2
280	I02.10408.603	Sealing ring 4x8x1	1
290	I30.00181.500 *	Circ. application module for nozzle with 2 internal air connections	1
430	I80.00213.500 * / I80.00100.400 *	5/2-way valve with accessories for module at Micro Melter, complete	1
440	I07.99124.003	Gear pump 2,4ccm/rev, with needle bearing and divided seal housing	1
450	I00.11065.004	Cylinder head screw M10x65	4
460	I02.01040.003	Washer 10.4	4
470	I06.01110.613	O-ring 5-613	1
480	06.01189.906	O-Ring di=11,89/S=1,98 mm	1
490	I19.00122.400	Pump bracket	1
500	I00.10645.912	Cylinder head screw M6x45	1
510	I02.50600.127	Spring ring B6	1
520	I00.10616.912	Cylinder head screw M6x16	1
530	I19.00156.400	Mounting plate	1
540	I00.10620.912	Cylinder head screw M6x20	2
550	I02.20006.000	Schnorr-washer ZN S6 retaining washer "S"	2

560	I09.20002.028	Coupling hub M28-Ø12x25	1
570	I09.20002.004	Coupling sleeve M28 polyamide	1
580	I09.20005.544	AC Spiroplan gear motor 0.18kW, complete with encoder for motor regulation	1
590	I00.10625.912	Cylinder head screw M6x25	4
600	I02.00640.125	Washer 6.4	4
610	I01.00600.934	Hexagon nut M6	4
620	I05.01007.501	Valve cable Pg7-KD7, 1 control position	1

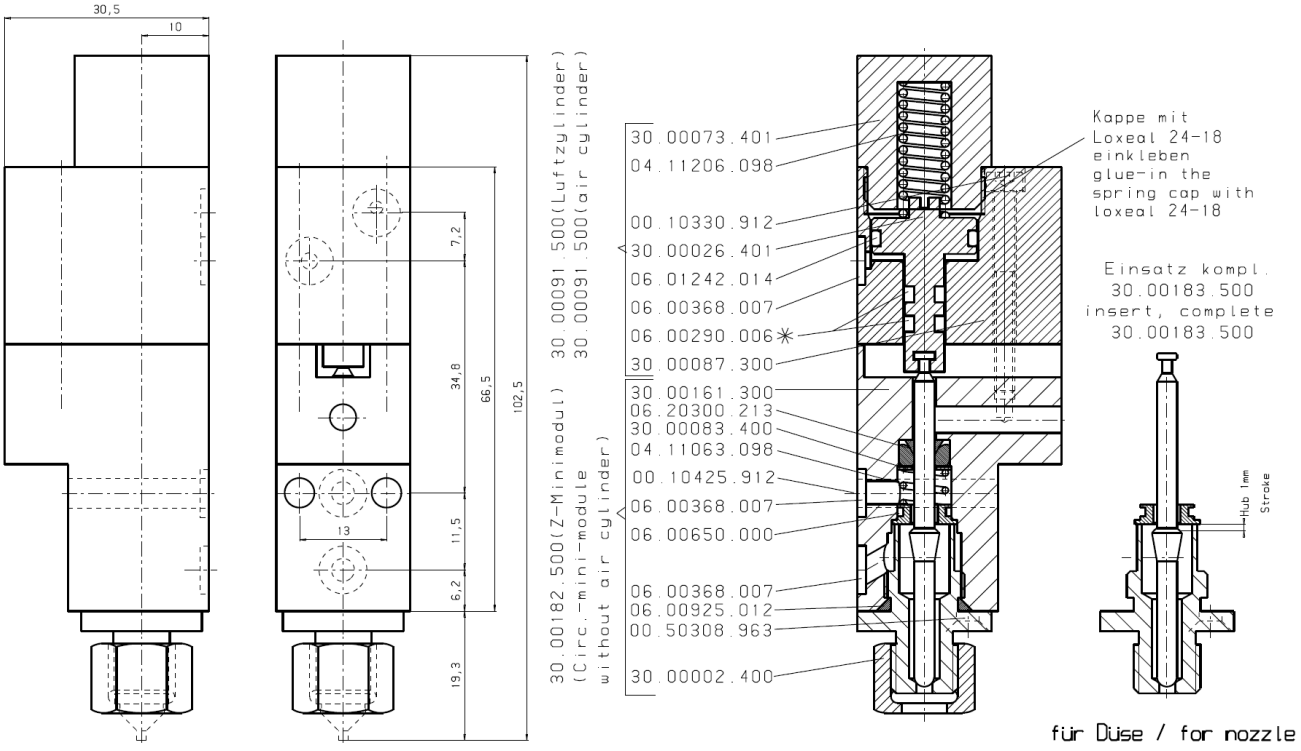
* See separate drawing and/or list of parts.

10.2.1 Pressure regulating valve, complete, PN I19.00115.500



Pos.	Part no.	Description	Qty
	I07.96008.050	Short stroke cylinder Ø32/5mm	1
	I00.10565.912	Cylinder head screw M5x65	4
	I14.00264.400	Distance washer	4
	I19.00015.400	Housing	1
	I06.01242.014	O-Ring 2-014	1
	06.01717.017	O-Ring 2-017	1
	I03.42212.472	Inner retaining ring J22x1	1
	I19.00019.500	Piston complete	1

10.2.2 Circ. Application Module for nozzle with 2 internal air connections, PN I30.00181.500



Pos.	Part no.	Description	Qty
1-8	**I30.00091.500**	**Air cylinder without circ. module**	**1**
1.	I30.00073.401	Spring cap	1
2.	I04.11206.098	Pressure spring Ø 6.3 x 25 mm	1
3.	I00.10330.912	Cylinder head screw M3 x 30 mm	2
4.	I30.00026.401	Piston	1
5.	I06.01242.014	O-Ring 2-014	1
6.	I06.00368.007	O-Ring 2-007	2
7.	I06.00290.006	O-Ring 2-006 *	2
8.	I30.00087.300	Casing upper part	1
9-20	**I30.00182.500**	**Circ.minimodule without air cylinder**	**1**
9	I30.00161.300	Casing bottom part	1
10	I06.20300.213	Needle sealing Ø 7.2 / 3 x 3 mm	1
11	I30.00083.400	Washer Ø 3.2 mm	1
12	I04.11063.098	Pressure spring ∅1,0 x ∅6,3 x 8,0 mm	1
13	I00.10425.912	Cylinder head screw	2
14	I06.00368.007	O-Ring 2-007	1
15	I06.00650.000	O-Ring 6,0x1	1
16	I06.00368.007	O-Ring 2-007	1
17	I06.00925.012	O-Ring 2-012	1
18	I00.50308.963	Counter sunk screw M3x8	2
19	I30.00002.400	Cap nut	1
20	I30.00183.500	Needle + seat, insert complete	1
	I30.00056.501	Repair kit	

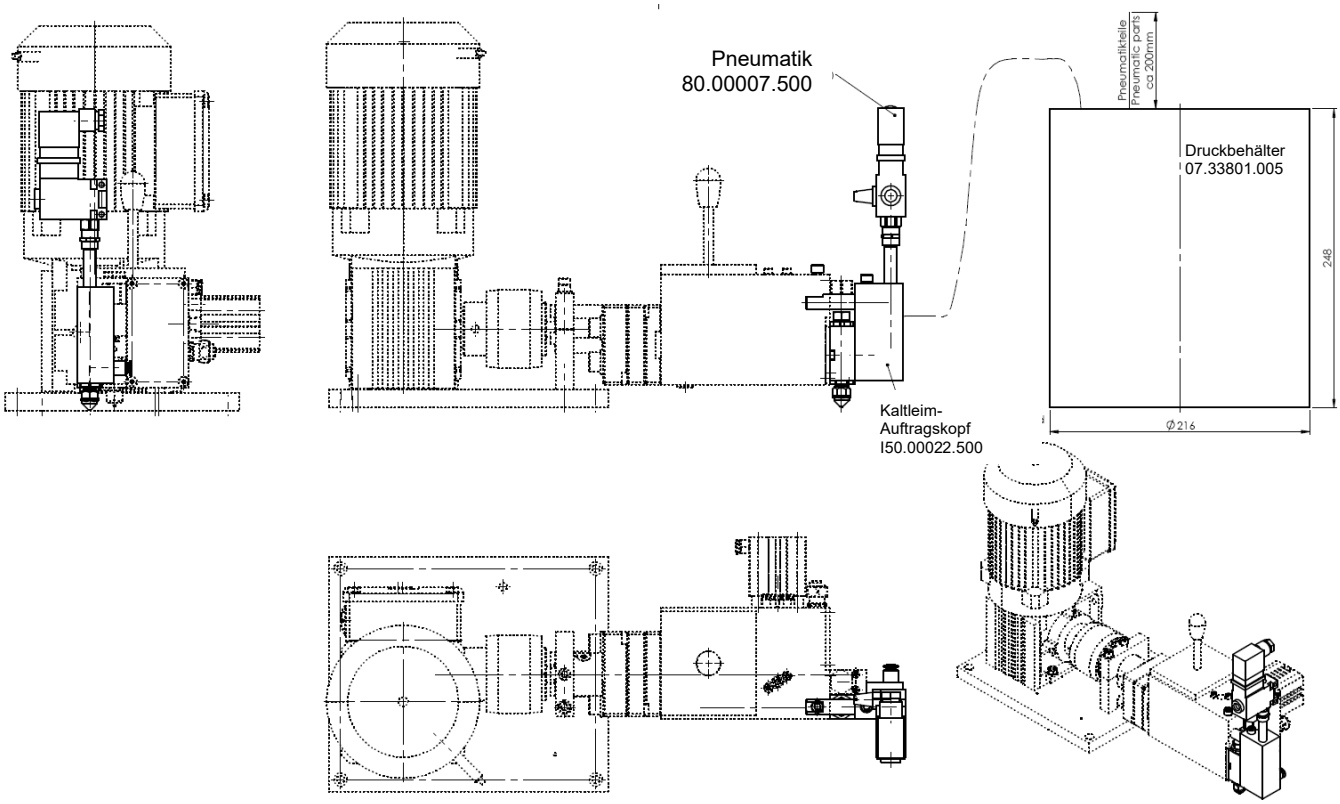
Spring cap has to be glued again with Loxeal 24-18 after it has been opened.
* Insert the o-ring only with mounting tool 30,00035,400.

10.3 Control Cabinet for Adhesive Testing Unit with Servo TP700 and V20, PN I93.30176.500

Pos.	Part no.	Description	Qty
	I05.64800.250	Siemens S7-1200 CPU 1215C Profinet	1
	I05.64800.251	S7-1200 RTD top part on the CPU 1xPT100	1
	I05.64800.252	Siemens memory card for S7-1200 + 1500 4MB	1
	I05.64800.253	Siemens S7-1200 communication module CM1241	1
	I05.64800.254	S7-1200 digital output 8DO 0.5A	1
	I05.64800.269	Siemens touch display 7" color TP700-Comfort	1
	I05.42000.011	Power supply 24VDC 2.5A	1
	I05.52220.066	Coupling relay Siemens 24VDC 2 changeover contacts with 8A each	3
	I05.00007.001	Connector BS7	2
	I05.22000.119	Mounting adapter M22-A	3
	I05.22000.121	M22-XST insert label	2
	I05.22000.123	Contact element M22-K10 NO	2
	I05.22000.124	Contact element M22-KO1 NC	4
	I05.22000.125	Lamp socket M22-LED-W	1
	I05.22000.144	Illuminated pushbutton green	1
	I05.22000.145	Illuminated pushbutton red	1
	I05.22000.132	EMERGENCY STOP sign M22-XBK1	1
	I05.22000.131	EMERGENCY STOP button M22-PV	1
	I05.22000.122	Label holder M22S-ST-X	2
	I05.05001.034	Main switch KG41B T103 / 01E	1
	I05.65401.216	Connection cable for initiator 5m for I05.65401.215	1
	I05.90000.207	Control cabinet desk base	1
	I05.90000.043	Base panel 500mm on the side	1
	I05.90000.077	Base element front + rear	1
	I05.52220.067	Auxiliary contactor 24VDC 4NO contacts	3
	I05.52000.033	Solid State Relay 20A 1ph.	1
	I05.52220.071	Excess voltage limiter 24VDC	3
	I05.64010.145	Frequency converter Sinamics V20 0.55KW	1
	I05.90000.182	Bottom plate for 05.90000.178	1
	I05.90000.269	Interface flap with transparent cover	1
	I05.90000.270	Interface insert SUB-D9 Bu/Bu	1
	I05.14001.056	Circuit breaker B16A	1
	I05.14001.055	Circuit breaker B10A	1
	I05.14001.062	Circuit breaker C6A	1
	I05.14001.050	Circuit breaker A6A	1
	I05.52220.084	Main contactor 3-pole 7.5KW 24VDC auxiliary contacts 1xNO 1xNC	1
	I05.90000.301	Reinforcement plate	1
	9998	Small and mounting parts	20
	I05.90000.213	Control cabinet WHD 300x400x155	1
	I05.64800.270	S7-1200, digital I/O SM 1223, 8 DI/8 DO	1

10.4 Drawings and BOM Cold glue Pressure Vessel 5.7 L with Application Head (optional)

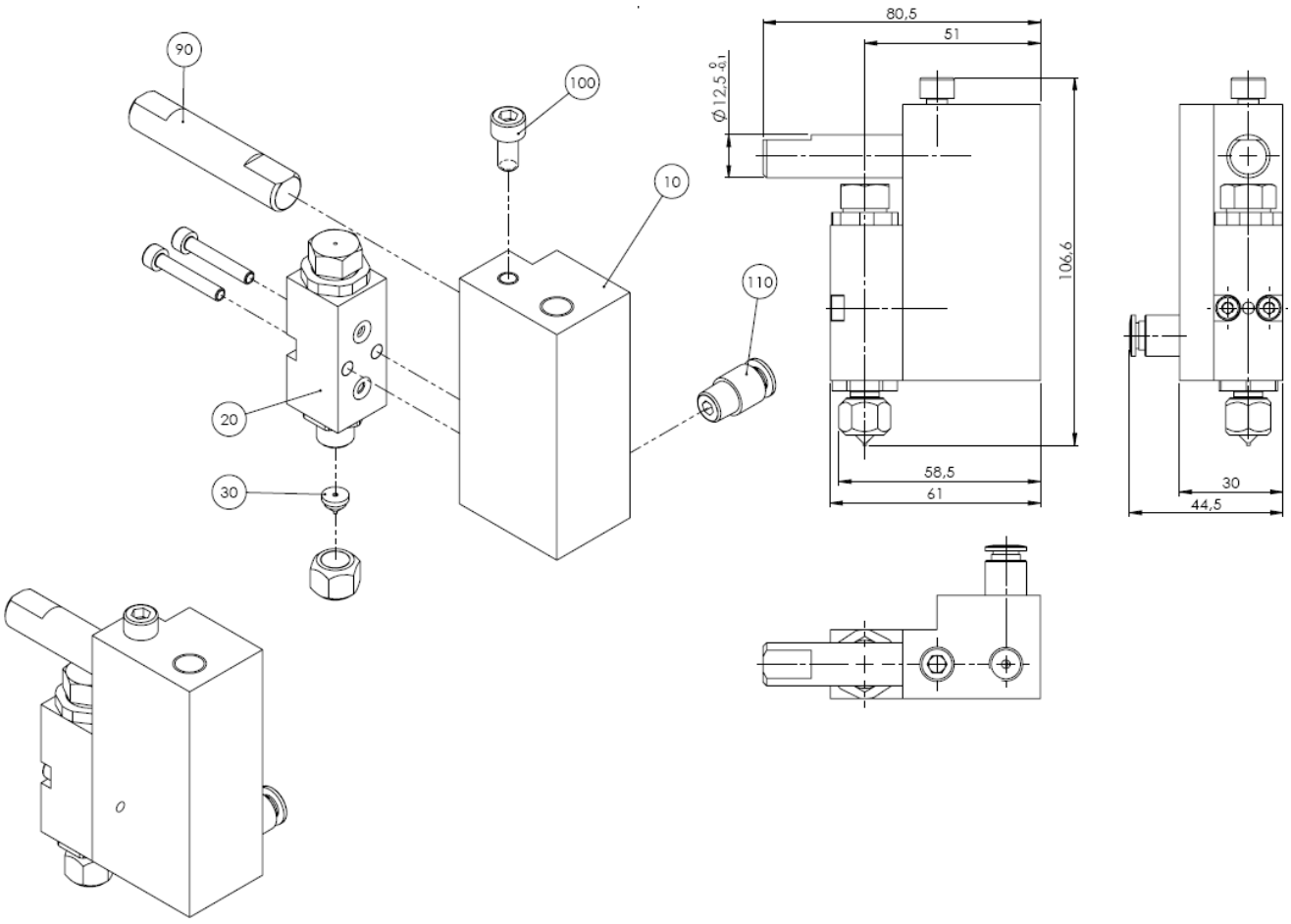
10.4.1 Cold glue pressure vessel 5.7 l with application head, PN I26.00202.500



Pos.	Part no.	Description	Qty
10	I50.00022.500 *	Cold glue – application head for 1 nozzle, small needle seat	1
20	I80.00007.500 / I80.00007.400 *	3/2-way valve 24V with accessories	1
30	I07.33801.005	Pressure vessel 5.7l	1
		Pneumatics for pressure vessel:	
50	07.01400.401	Sleeve G1/4-G1/4 i-i	2
60	07.01418.401	Reducer 1/4"-1/8" a-i	1
70	I07.01818.401	Double nipple detachable G1/8 conical	1
80	07.81002.001	Pressure regulating combination with manometer G1/4 0-2.5bar	1
90	I07.10600.014	Swivel connector G1/8-Ø6/4	1
100	I07.10600.013	Swivel connector G1/4-Ø6/4	1
110	I19.00168.500	Nozzle-Kit for Glue testing unit Including: I32.00062.400 Bead nozzle Ø0,4mm 1x I32.00074.400 Bead nozzle Ø0,5mm 1x I32.00075.400 Bead nozzle Ø0,6mm 1x I32.00076.400 Bead nozzle Ø0,7mm 1x	1
Opt.	I32.00087.400	Bead nozzle, Ø 0,80 mm	1
Opt.	I32.00089.400	Bead nozzle, Ø 1,0 mm	1
Opt.	I32.00088.400	Bead nozzle, Ø 0,90 mm	1
Opt.	I32.00086.400	Bead nozzle, Ø 1,20 mm	1

* See separate drawing and/or list of parts.

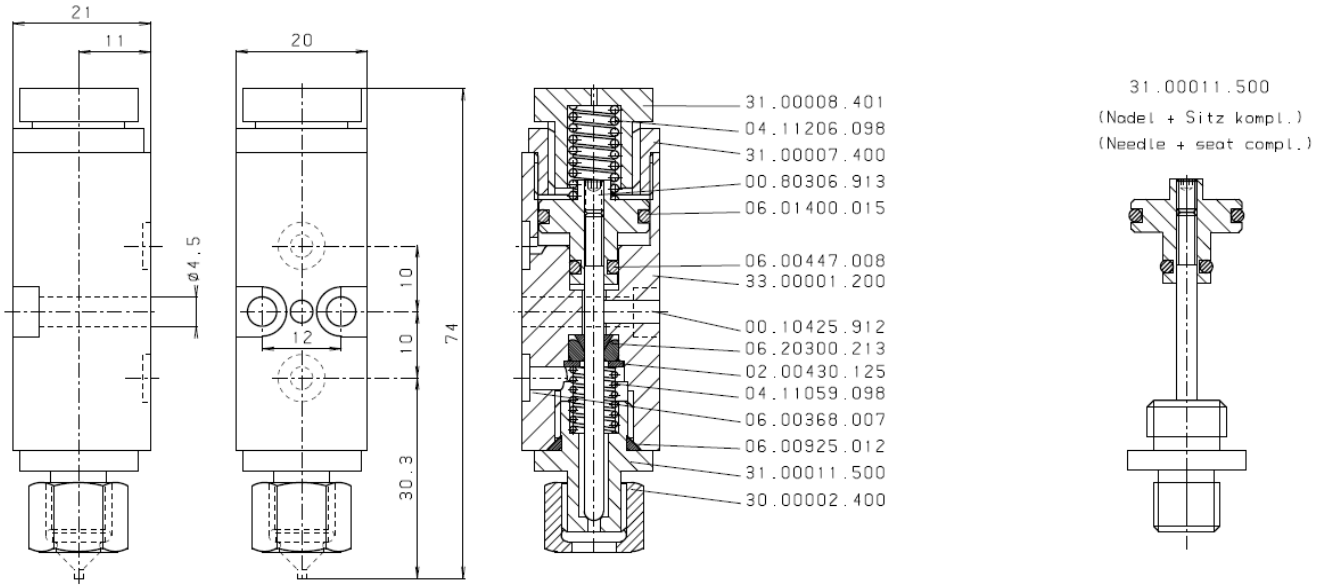
10.4.2 Cold glue application head for 1 nozzle, small needle seat, PN I50.00022.500



Pos.	Part no.	Description	Qty
10	I50.00021.300	Supply part	1
20	I33.00002.500 *	Application module – cold glue, for nozzle with internal air connection	1
30	See Options	Nozzle	1
90	I19.00155.400	Bar	1
100	I00.10620.912	Cylinder head screw M6x20	1
110	I07.00600.133	Plug-in connection 1/8-Ø6/4	2

* See separate drawing and/or list of parts.

10.4.3 Application module, cold glue, for nozzle with internal air connection, PN I33.00002.500

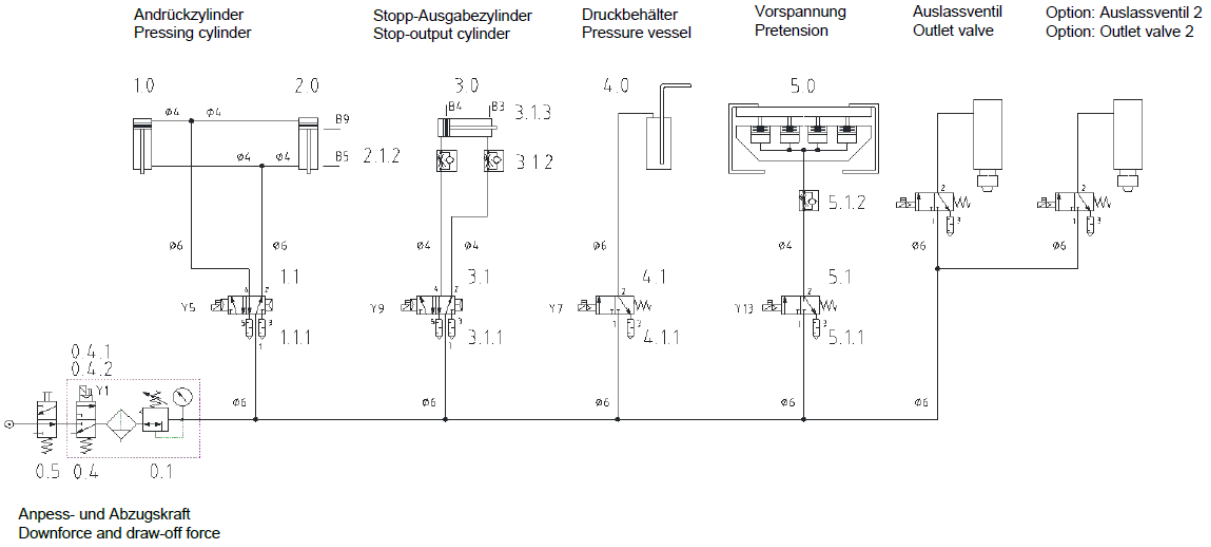


Pos.	Part no.	Description	Qty
	I33.00001.200	Valve body for int. air	1
	I06.20300.213	Needle sealing 7,2/3x3 2-parts	1
	I06.00368.007	O-Ring 2-007	3
	I02.00430.125	Washer 4.3	1
	I04.11059.098	Pressure spring 1,5x7x16mm	1
	I06.00925.012	O-Ring 2-012	1
	I31.00005.400	Needle seat	1
	I30.00002.400	Union nut	1
	I31.00011.500	Piston and needle, complete	1
	I04.11206.098	Pressure spring 6.3x25	1
	I31.00007.400	Threaded ring	1
	I31.00008.401	Spring compressor	1
	I00.10425.912	Cylinder head screw M4x25	2

Chapter 11

Pneumatic plans and BOM

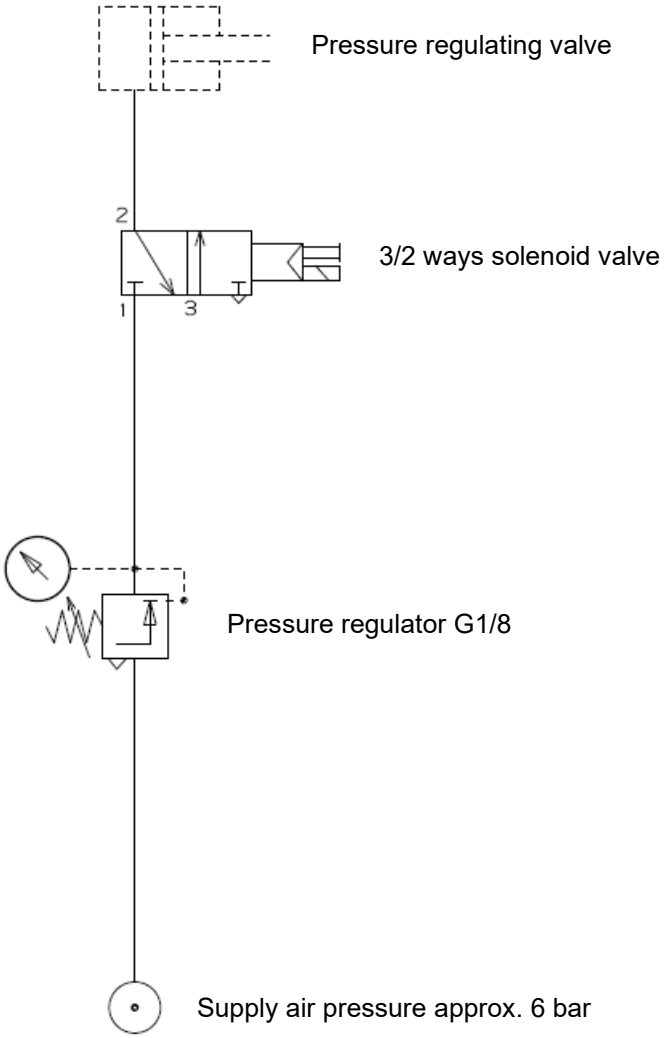
11.1 Pneumatic for Adhesive Testing Unit, PN B-033-24-001-PP-R00



Anpess- und Abzugskraft
Downforce and draw-off force

Pos.	Part no.	Description	Qty
0.1	K-800-03-803	Filter control valve	1
0.4	K-800-03-842	Switch-on valve	1
0.4.1	K-800-03-843	Socket cable	1
0.5	K-800-00-923	Cut-in valve	1
1.0	K-800-03-771	Cylinder	1
1.1	K-800-03-923	5/2 solenoid valve	1
1.1.1	K-800-05-233	Silencer	2
2.0	K-800-03-771	Cylinder	1
2.1.2	K-800-01-200	Proximity switch	2
3.0	K-800-04-825	Cylinder	1
3.1	K-800-03-923	5/2 solenoid valve	1
3.1.1	K-800-05-233	Silencer	2
3.1.2	K-800-04-849	Restrictor	2
3.1.3	K-800-01-200	REED switch	2
4.0	-	Pressure tank	1
4.1	K-800-04-229	3/2 solenoid valve	1
4.1.1	K-800-05-233	Silencer	1
5.0	B-033-19	Pressure unit	1
5.1	K-800-04-229	3/2 solenoid valve	1
5.1.1	K-800-05-233	Silencer	1
5.1.2	K-800-04-164	Restrictor (supply air)	1

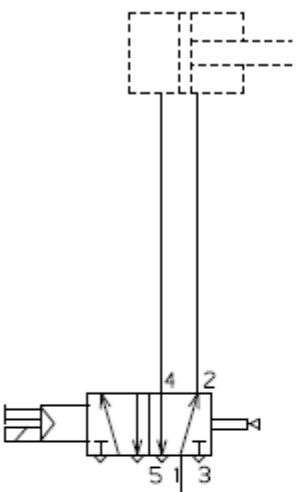
11.2 Pneumatic for Pressure regulating valve at Micro Melter, PN I80.00071.500



Pos.	Part no.	Description	Qty
	I08.00604.106	Pneumatic hose PFAN d=4/6mm	5
	I08.00604.102	Pneumatic hose d=4/6mm blue	3
	I07.93324.002	3/2 way solenoid valve G1/8	1
	07.41014.401	Plug connection DN7, G1/4 external thread	1
	I07.20414.101	Air distributor 4xG1/4	1
	I07.10600.014	Elbow union rotatable G1/8-d=6/4	3
	I07.01400.501	Bushing G1/8-G1/8 i-i	1
	I07.00600.118	Fitting straight G1/8-d=6/4	2
	I07.00600.112	Fitting straight G1/4-d=6/4	1
	I02.11350.433	Sealing ring G1/4	2
	I00.61320.908	Plug screw G1/4	2
	I07.41006.501	Silencer d=6	1
	I02.18503.001	Distance washer d=4,3/8 L=3mm	2
	I00.10420.912	Cylinder head screw M4x20	2
	I07.81000.058 *	Pressure regulator-manometer combination 0.5-7 bar	1

* not included in the BOM I80.00071.500.

11.3 Pneumatic for Circ. Application Module with 2 air connections at Micro Melter, PN I80.00213.500 / Drawing I80.00100.400



Circulation Applicator with air connection for opening and closing

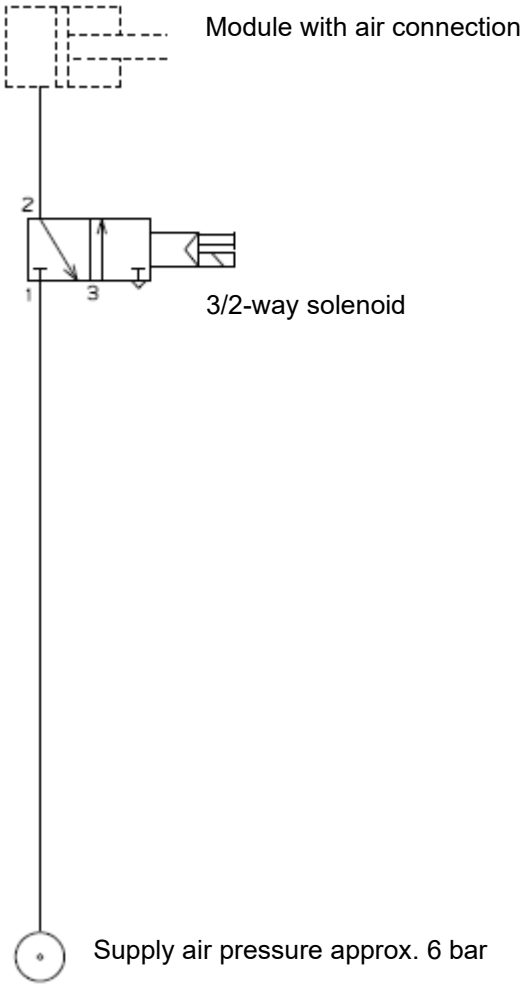
5/2-way solenoid

Supply air pressure approx. 6 bar

Pos.	Part no.	Description	Qty
	07.95224.001	5/2-way solenoid 24V 12.7W without accessories G1/8	1
	I07.00600.118	Fitting straight G1/8-Ø6/4 incl. sealing	1
	07.40970.501	Slotted silencer R-1/8	1
	I07.00600.127	Plug-in connection i-G1/8-Ø6/4	1
	I07.11400.018	Y-Plug-in connection 3xØ6/4	1
	I08.00604.106	Pneumatic hose PFAN Ø4/6mm	1

11.4 Pneumatic plan and BOM for Cold glue Application Head (optional)

Pneumatic for Application Module with 1 air connection at Micro Melter / Pressure Vessel, PN I80.00007.500 / Drawing I80.00007.400



Pos.	Part no.	Description	Qty
	I07.93324.002	3/2-way solenoid G1/8	1
	I80.00006.400	Pneumatic tube G1/8 45mm	1
	I07.01400.501	Bushing G1/8-G1/8 i-i	1
	I07.01818.401	Double nipple detachable G1/8 tapered	1
	07.40970.501	Silencer G1/8	1

Chapter 12
Recommended spare parts

We recommend keeping these parts always on stock to avoid longer machine breakdowns, when one of these parts is missing or broken.

12.1 Recommended spare parts, Adhesive Testing Unit

12.1.1 Main BOM Adhesive Testing Unit, PN I19.00160.503

Pos.	Part no.	Description	Qty
	I07.93324.002	3/2-way solenoid G1/8	1
50	I19.00168.500	Nozzle-Kit for Adhesive Testing Unit Including: I32.00062.400 Bead nozzle Ø0,4mm 1x I32.00074.400 Bead nozzle Ø0,5mm 1x I32.00075.400 Bead nozzle Ø0,6mm 1x I32.00076.400 Bead nozzle Ø0,7mm 1x	1

12.1.2 Micro Melter for Adhesive Testing Unit, PN I19.00150.501

Pos.	Part no.	Description	Qty
30	I05.30315.002	Heating cartridge Ø12,5x80 mm 315W, 230V	2
40	I05.63030.040	Temperature sensor Ø3x40 PT100	1
147	I05.62210.001	Glass bead 210°C	1
180	I19.00115.500 *	Pressure regulating valve, complete	1
290	I30.00181.500 *	Circ. application module for nozzle with 2 internal air connections	1
440	I07.99124.003	Gear pump 2,4ccm/rev, with needle bearing and divided seal housing	1
470	I06.01110.613	O-ring 5-613	1
480	06.01189.906	O-Ring di=11,89/S=1,98 mm	1
580	I09.20005.544	AC Spiroplan gear motor 0.18kW, complete with encoder for motor regulation	1

* See separate drawing and/or list of parts.

12.1.3 Pressure regulating valve, complete, PN I19.00115.500

Pos.	Part no.	Description	Qty
	I07.96008.050	Short stroke cylinder Ø32/5mm	1
	I06.01242.014	O-Ring 2-014	1
	06.01717.017	O-Ring 2-017	1

12.1.4 Circ. Application Module for nozzle with 2 internal air connections, PN I30.00181.500

Pos.	Part no.	Description	Qty
	I30,00056,501	Repair kit	

12.1.5 Control Cabinet for Adhesive Testing Unit with Servo TP700 and V20, PN I93.30176.500

Pos.	Part no.	Description	Qty
	I05.64800.250	Siemens S7-1200 CPU 1215C Profinet	1
	I05.64800.251	S7-1200 RTD top part on the CPU 1xPT100	1
	I05.64800.252	Siemens memory card for S7-1200 + 1500 4MB	1
	I05.64800.253	Siemens S7-1200 communication module CM1241	1
	I05.64800.254	S7-1200 digital output 8DO 0.5A	1
	I05.64800.269	Siemens touch display 7" color TP700-Comfort	1
	I05.42000.011	Power supply 24VDC 2.5A	1
	I05.52220.066	Coupling relay Siemens 24VDC 2 changeover contacts with 8A each	3
	I05.52220.067	Auxiliary contactor 24VDC 4NO contacts	3
	I05.52000.033	Solid State Relay 20A 1ph.	1
	I05.52220.071	Excess voltage limiter 24VDC	3
	I05.64010.145	Frequency converter Sinamics V20 0.55KW	1
	I05.14001.056	Circuit breaker B16A	1
	I05.14001.055	Circuit breaker B10A	1
	I05.14001.062	Circuit breaker C6A	1
	I05.14001.050	Circuit breaker A6A	1
	I05.52220.084	Main contactor 3-pole 7.5KW 24VDC auxiliary contacts 1xNO 1xNC	1
	I05.64800.270	S7-1200, digital I/O SM 1223, 8 DI/8 DO	1

12.1.6 Pneumatic for Adhesive Testing Unit, PN B-033-24-001-PP-R00

Pos.	Part no.	Description	Qty
1.1	K-800-03-923	5/2 solenoid valve	1
3.1	K-800-03-923	5/2 solenoid valve	1
4.1	K-800-04-229	3/2 solenoid valve	1
5.1	K-800-04-229	3/2 solenoid valve	1

12.1.7 Pneumatic for Pressure regulating valve at Micro Melter, PN I80.00071.500

Pos.	Part no.	Description	Qty
	I08.00604.106	Pneumatic hose PFAN d=4/6mm	5
	I08.00604.102	Pneumatic hose d=4/6mm blue	3
	I07.93324.002	3/2 way solenoid valve G1/8	1

12.1.8 Pneumatic for Circ. Application Module with 2 air connections at Micro Melter, PN I80.00213.500 / Drawing I80.00100.400

Pos.	Part no.	Description	Qty
	07.95224.001	5/2-way solenoid 24V 12.7W without accessories G1/8	1
	I08.00604.106	Pneumatic hose PFAN Ø4/6mm	1

12.2 Recommended spare parts, Cold glue pressure vessel with application head, (optional)

12.2.1 Cold glue pressure vessel 5.7 l with application head, PN I26.00202.500

Pos.	Part no.	Description	Qty
10	I50.00022.500 *	Cold glue – application head for 1 nozzle, small needle seat	1
20	I80.00007.500 / I80.00007.400 *	3/2-way valve 24V with accessories	1
110	I19.00168.500	Nozzle-Kit for Glue testing unit Including: I32.00062.400 Bead nozzle Ø0,4mm 1x I32.00074.400 Bead nozzle Ø0,5mm 1x I32.00075.400 Bead nozzle Ø0,6mm 1x I32.00076.400 Bead nozzle Ø0,7mm 1x	1
Opt.	I32.00087.400	Bead nozzle, Ø 0,80 mm	1
Opt.	I32.00089.400	Bead nozzle, Ø 1,0 mm	1
Opt.	I32.00088.400	Bead nozzle, Ø 0,90 mm	1
Opt.	I32.00086.400	Bead nozzle, Ø 1,20 mm	1

* See separate drawing and/or list of parts.

12.2.2 Cold glue application head for 1 nozzle, small needle seat, PN I50.00022.500

Pos.	Part no.	Description	Qty
20	I33.00002.500 *	Application module – cold glue, for nozzle with internal air connection	1
30	See Options	Nozzle	1

12.2.3 Pneumatic plan and BOM for Cold glue Application Head (optional)

Pneumatic for Application Module with 1 air connection at Micro Melter / Pressure Vessel, PN I80.00007.500 / Drawing I80.00007.400

Pos.	Part no.	Description	Qty
	I07.93324.002	3/2-way solenoid G1/8	1

12.3 Cleaner

- Eco-Clean 0.6 liter spray bottle, PN I06.90100.114.
- Eco-Clean 5 liters container with 1 faucet cook and spray bottle, PN I06.90100.119.

Chapter 13
Wiring diagrams

Wiring diagrams are provided as separate files, dependent upon the specific machine configuration.

Manual Revisions

Revision	Page/Chapter	Update Description

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