ITW Dynatec®

Adhesive Application Solutions | ISO 9001 certified

Dyna BFC

APPLICATOR WITH SLOT NOZZLE

Technical Documentation, No.40-73, 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.

NOTICE:
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.

NOTICE:
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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Chapter 1
Safety Instructions

1.1 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!

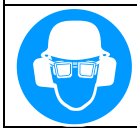
1. Read and follow these instructions.
   Failure to do this could result in severe personal injury or death.
2. Keep the binding rules for accident prevention valid for your country and the place of installation. Also keep the approved qualified technical rules for safety-conscious and professional 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.

1.2 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.

1.3 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!**

1.4 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 degrees C (300 degrees 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!

1.5 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.

1.6 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.

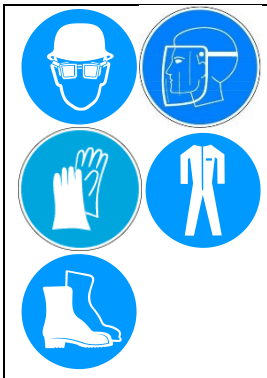
CAUTION

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.

1.7 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.

1.8 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.

1.9 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.

1.10 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.

1.11 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.

1.12 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).

1.13 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.)!

1.14 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 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.

1.15 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.

1.16 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.

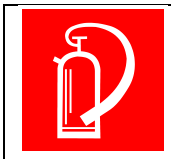
3. When working near a hot melt application system, always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothes that cover all vulnerable parts of the body!

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.

1.17 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.

Chapter 2
Description and Technical Specs

2.1 Applicable Safety Regulations

2.1.1 Intended Use

The BFC Applicator with slot nozzle may be used only to apply suitable materials, e.g. adhesives. When in doubt, seek permission from ITW Dynatec.

If the Applicator 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.

2.1.2 Unintended Use, Examples

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

2.1.3 Residual Risks

In the design of the Applicator, 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 Applicator'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 system (pumps, motors, rolls or others).
- The safety valves may malfunction due to hardened or charred material.

2.1.4 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.

2.1.5 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.

2.1.6 Start-up operation

We recommend asking for an ITW Dynatec-service technician for the start-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.

2.2 Description BFC Applicator with Slot Nozzle

2.2.1 Description

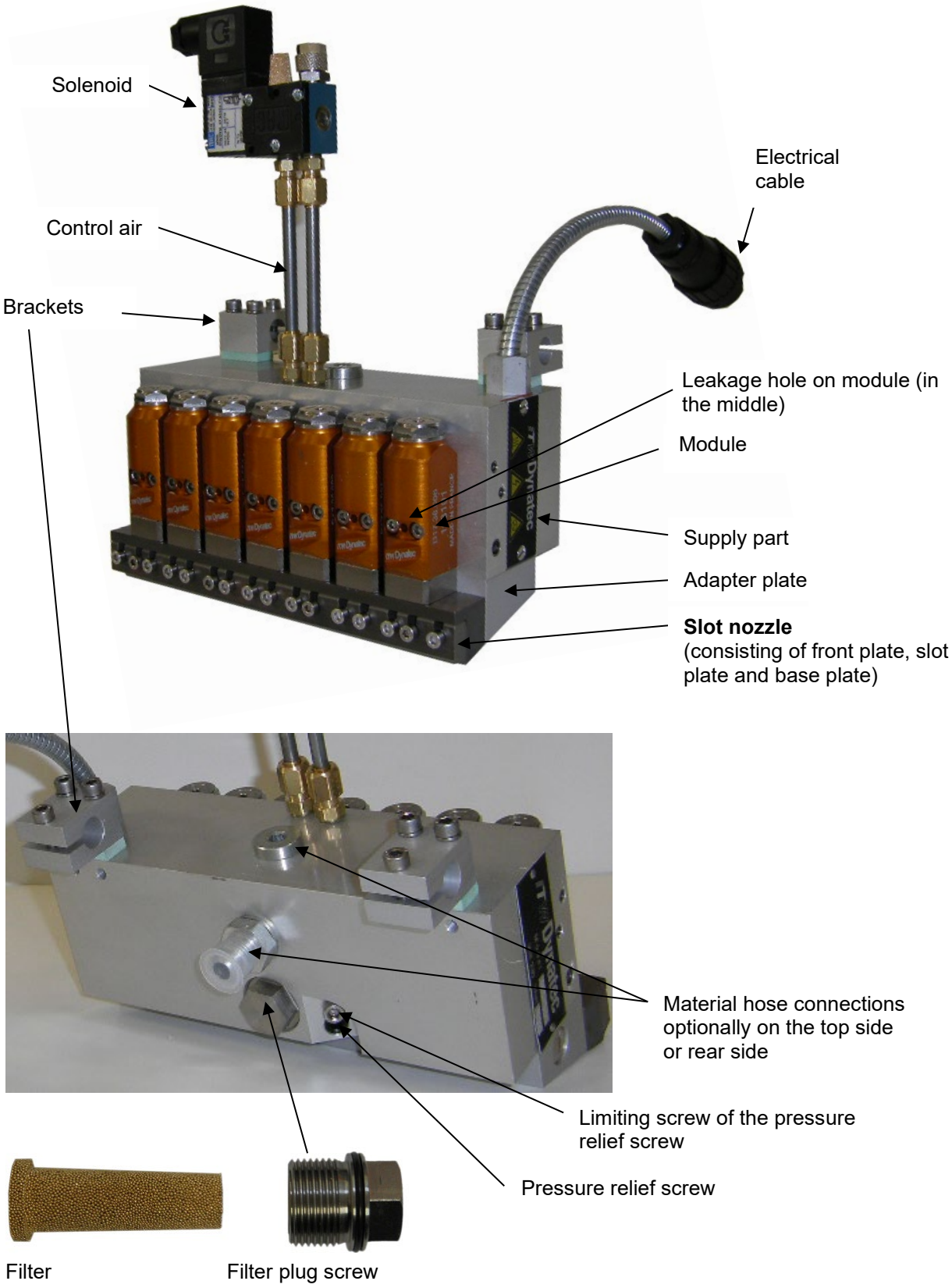
The Dnya BFC hot melt applicators with integrated filter cartridge are designed for applying full-surface adhesive patterns to different materials. The contact surfaces of the applicator are made of hardened steel to reduce wear. The applicator is electrically heated by two heating cartridges and controlled by a temperature sensor by means of a temperature control to a constant temperature value.

Due to the modular design, a wide range of application widths can be realized. Standard sizes of 44, 66, 88, 110, 154 and 198 mm are available. On request, special applicators can be designed for special applications.

Each applicator has one or more modules (adhesive valves) mounted on a single supply part. Each module opens and closes with compressed air (solenoid valve). Closing is additionally supported by a spring.

The adhesive supply hose is optionally connected to the top or rear side of the supply part. The adhesive flows from the hose into the supply part, through the filter and then to the module. The module is opened by means of air pressure (control air) so that the adhesive can flow out through the slot nozzle.

See pictures on the next page.



Components of BFC Applicators

2.2.2 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)

Physical:

Dimensions ..... see dimensional layouts on following page
Application width ..... up to 190mm (7.48 in.)
Filtration.....filter cartridge

Performance:

Operating temperature range ..... 40°C to 195°C (104°F to 383°F)
Warm-up time ..... 15 minutes for cold start/ 1 minute for module change
Adhesive pressure range ..... 7 bar (100 psi) to 68 bar (1000 psi)
Noise emission ..... 30 dB(A)

Air Requirements:

Air pressure ..... 6 bar (87 psi)

Electrical:

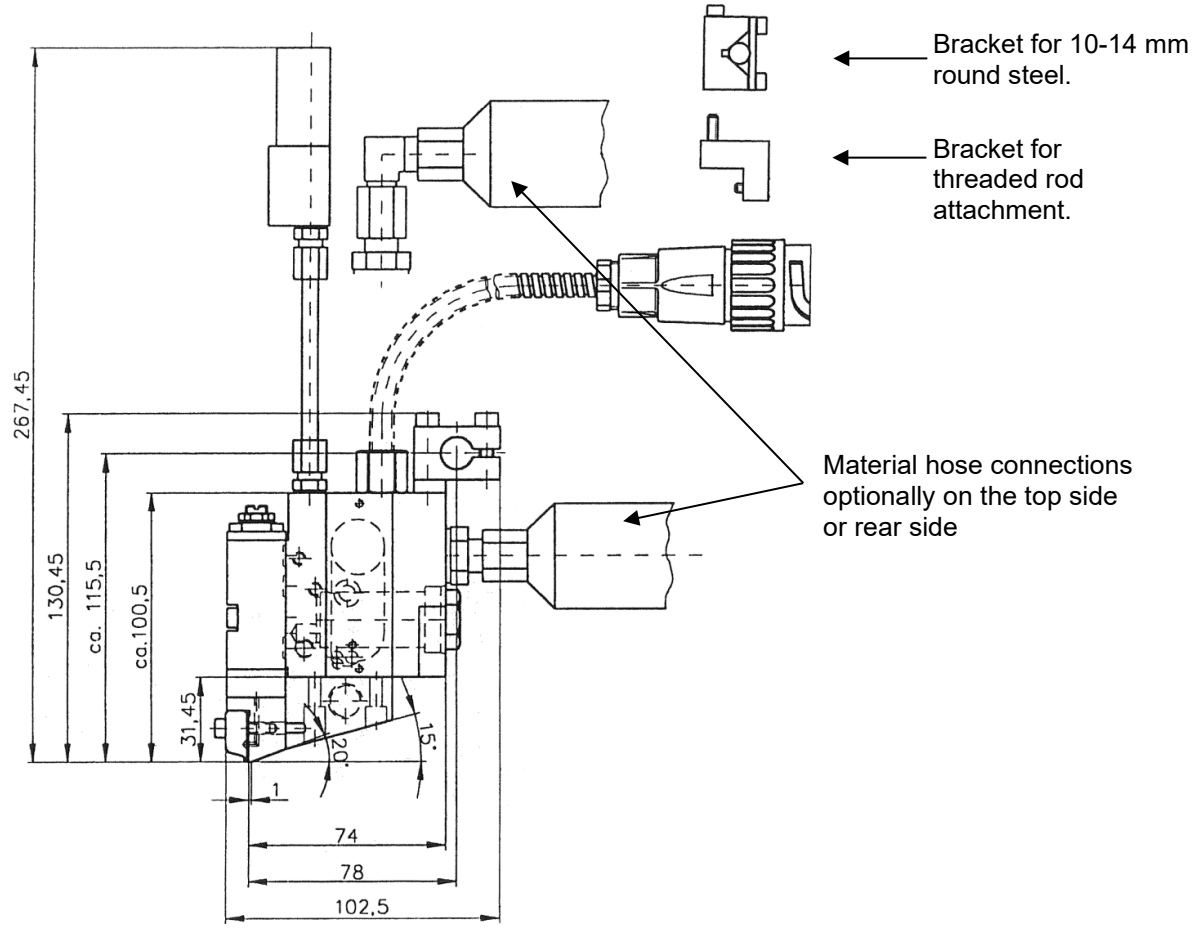
Supply voltage..... 230 V AC/ 50-60 Hz

Models and Power requirements:

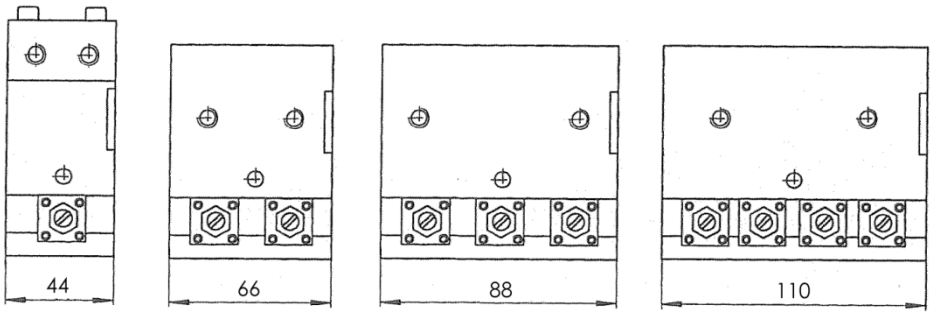
Model no.	Module quantity	Module distance	Coating width maximum	Wattage
Dyna BFC 44/1	1	-	34 mm	380 Watt
Dyna BFC 66/2	2	25 mm	56 mm	480 Watt
Dyna BFC 88/3	3	25 mm	78 mm	640 Watt
Dyna BFC 110/4	4	25 mm	100 mm	720 Watt
Dyna BFC 154/6	6	25 mm	144 mm	840 Watt
Dyna BFC 198/8	8	25 mm	190 mm	1000 Watt

2.2.3 Dimensions

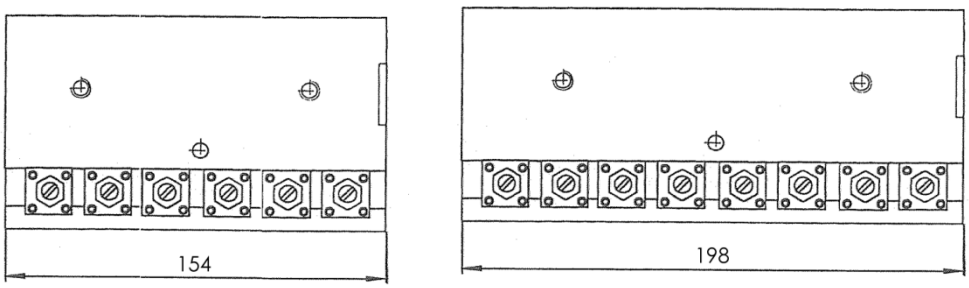
Dimensions are expressed as “mm [inch]”.



BFC 44/1 **BFC 66/2** **BFC 88/3** **BFC 110/4**



BFC 154/6 **BFC 198/8**



Chapter 3
Installation & Start-up Operation

CAUTION

- Before start-up, please read this documentation carefully.
- Pay attention to all the installation and connecting advices.
- Heed all safety instructions mentioned in chapter 1.

3.1 Conditions for set-up and mounting

Place requirement

Install the Applicator in the machine so that the operator is able to work on it from all sides, for e.g. for adjusting, preparing, maintaining, repairing, cleaning, etc. See drawing of the unit for admeasurements.

Mounting and alignment

- The complete unit has to be set up 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 connection has to be provided. See electrical schematics.
- Never connect or disconnect plug-and-socket connections under load!
- The supply part's incoming electrical power and temperature control is supplied through the flexible cable exiting the adhesive supply hose cuff. The applicator has a circular, plastic connector which mates with the connector attached to this cable.

Pneumatic connection

- In any case the air has to be clean and dry! See advice in chapter 3.3 "Quality of compressed air".
- Please heed that units with high air demand may not be used at the same time with the same air supply.

ADVICES

- Check all screw connections at the unit and retighten if necessary.
- Lay the cables and heated hoses so that no risk or least possible risk of stumbling occurs.

3.2 Installation

Typical Installation

CAUTION

- All work on or with this unit is only permitted for skilled personnel!
- Pay attention to the electrical schematics!
- Clean and dry air to the applicator solenoids is required.
- 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.

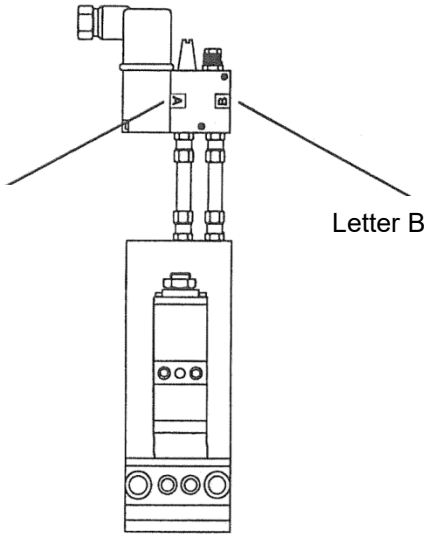
WARNING

- Risk of burns and risk of injury!
- While installing the Applicator, use an appropriate protection device to avoid unintended contact with heated parts and with spilling out Hotmelt. The protection device has to prevent also the operator against not reaching into the adhesive application and against injuring.

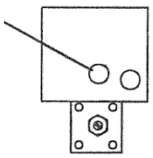
1. Using the brackets, install the applicator into the machine at the position intended for the adhesive application. See pictures on the following pages.

2. Install the solenoid according to the illustration below.

A 4/2-way-solenoid with the electrical power of 12.7 W is available!



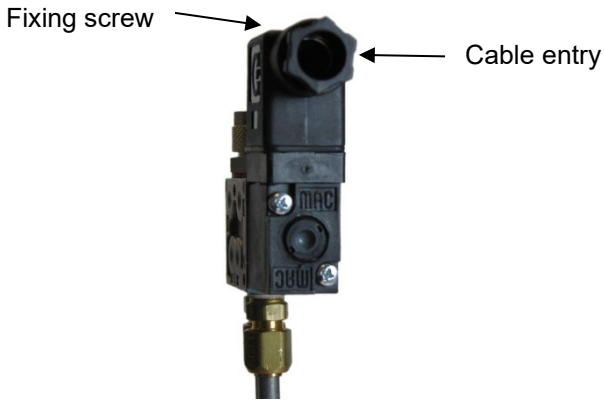
The connection side A is a bit set back



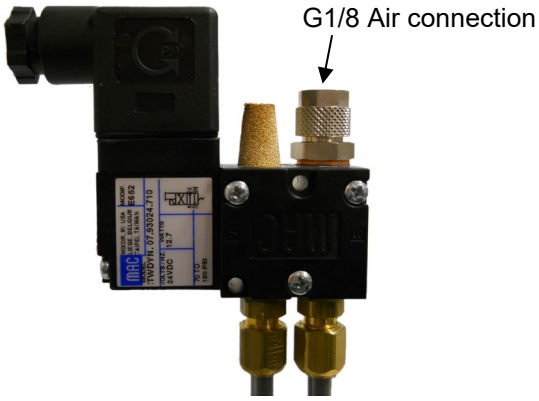
Top view

3. Connect the control line (cable) to the plug of the solenoid valve. Insert the plug and tighten the fixing screw.

   Note! Take the pin assignment of the plug from the data sheet of the solenoid's manufacturer. If you use solenoids from other manufacturers, find out about the type of cable routing.



4. Screw the air connection with a G1/8 thread into the solenoid valve.



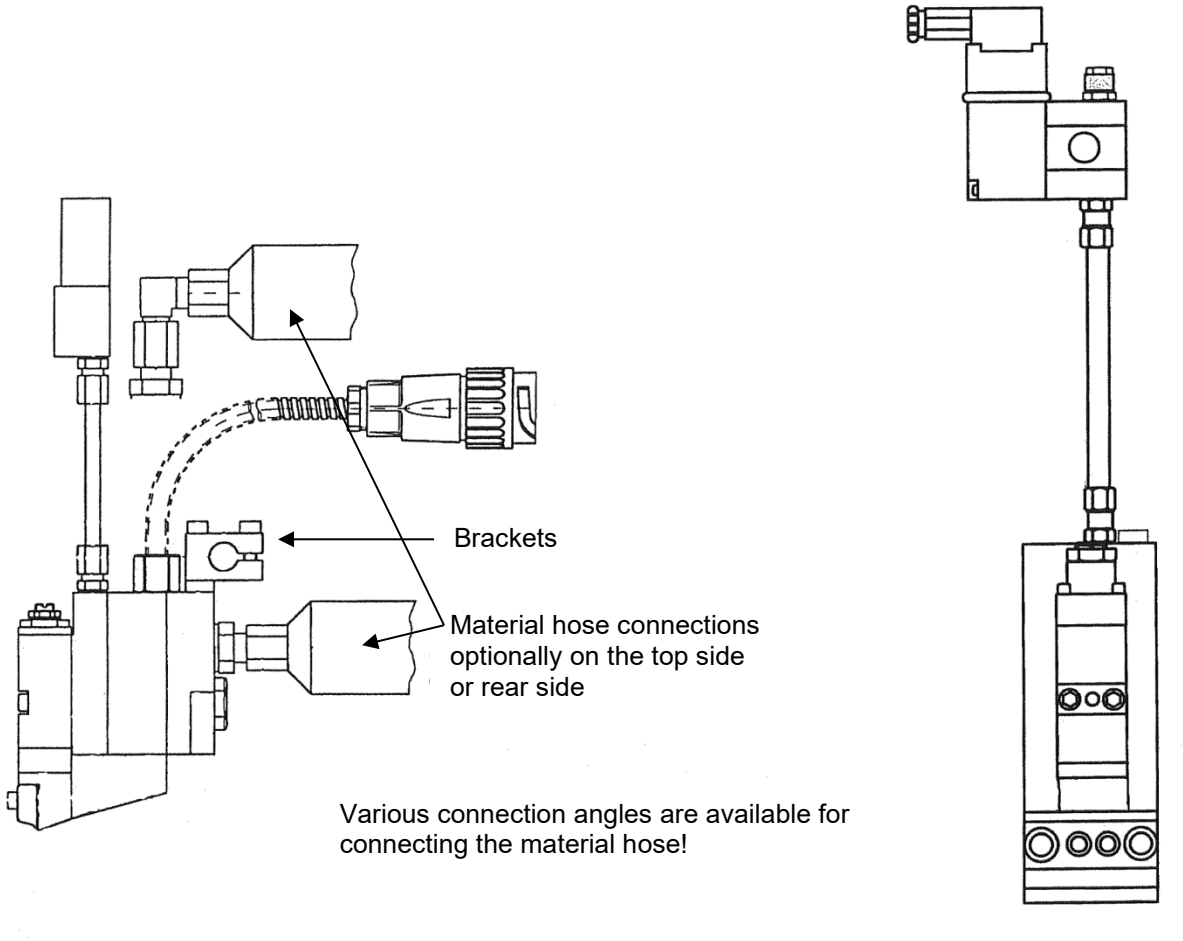
5. Make an air line to the air inlet ports of the solenoid valve.

CAUTION

- **Do not use lubricating oil with the air supply because the solenoid valves are factory lubricated and do not require lubrication during operation.**
- **The min. requirement for compressed air supply to solenoids to control automatic Applicators is ISO 8573-1:2010 class 2:4:3. See advice in chapter 3.3 "Quality of compressed air".**

6 bar air pressure are required. **Reason:**

- 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.



6. Before connecting the material hose to the applicator, align the material hose with its electrical connector by aligning it with the electrical connector on the top of the applicator.

   Connect the swivel fitting of the material hose to the hose nipple of the supply part with a wrench SW18. When attaching the hose, secure the hose cuff to prevent twisting of the hose core.

ADVICE

Heed the following for the installation of the heated hoses:

- Heated hoses may be damaged by overheating, if they are laid faulty.
- The heated hoses may not be stacked one on the other!
- The heated hoses may not be pressed together and / or bound.
- Put the hoses separated next to each other!
- The connections for supply resp. return hoses may not be mixed up.
- It is essential that the hoses will be laid without twisting!
- Heated hoses may not be fastened with binders or similar.
- Heated hoses may not be laid on a sharp edge.
- When using a balancer, a hose support with a radius of 400mm has to be mounted.
  Reason: The sensor cables and heating cables within the hoses can be damaged. As they cannot be repaired the hose would have to be changed completely.

7. Make the electrical connections as follows:
   Connect the hose connector to the applicator connector.
   Connect all cables of the system components according to the electrical wiring diagrams (e.g. melter, hoses, applicators, etc.).

8. Interconnect the components with the foreseen Profibus (or EtherNet, etc.) interface cables (if applicable).

3.3 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.**
- **We recommend installing the ITW Dynatec's Air Control Kit PN 100055 (see Appendix).**

Compressed air quality classes according to ISO 8573-1:2010 class 2:4:3:

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

3.4 Advices for the start-up operation

WARNING

Start with set-up operation not until

- the functioning of the unit is known, and
- the unit installation for start-up operation has been done according to the details given in the chapter Installation. That means all unit components are connected ready for operation.

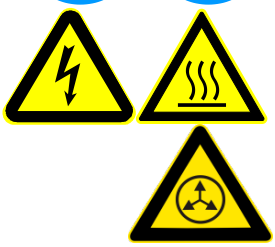
Read the documentation thoroughly to avoid breakdowns caused by faulty handling.

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 untrained personal.

Allow only skilled expert staff to do the start-up operation!

Always wear safety shoes, heat-resistant 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!

CAUTION

During operating the unit, heed the following:

- Heed all safety instructions mentioned in chapter 1.
- Install an appropriate protection device to avoid unintended contact with heated parts and with spilling out hot adhesive. The protection device has to prevent also the operator against not reaching into the adhesive application and against injuring.
- 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.

CAUTION

The unit is ready for operation, when

- all temperatures are within the tolerances,
- 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).

3.5 Start-up operation, in general

This is a generic start-up and purging process:

1. Check the complete unit and the traverse paths for safety. Fix visible damages immediately.
2. Before switching the unit on, make sure that the starting unit could hurt no one!
3. Remove all material or other things not needed for the production from the workspace of the unit!
4. To turn the unit power on.

   Once the operating temperature has been reached, purging can begin!

WARNING HIGH PRESSURE
RISK OF BURNS AND RISK OF INJURY!

- During the purging process, hot adhesive and oil may come out of the applicator under high pressure.
- The unit operates with very high temperatures and high adhesive pressure.
- Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing when working on or with the unit. Risk of burns and risk of injury!
- Molten adhesives at operating temperature could cause heavy burns.
- Do not touch the hot surfaces or parts without wearing heat-resistant protective gloves!

5. Adjust the adhesive pressure by the pressure regulator or by the motor control.
6. Place a heat resistant container under the applicator to collect the material that drains from it.
7. Start the motor/pump of the Melter.

8. Purge the applicator of air and oil:
   Turn the applicator ON electrically and pneumatically.

   Manually open the solenoids using the controller or by pushing (with a small screwdriver or other suitable tool) the purge button located on the solenoid coil.

Manual purge button to activate the solenoid.
On solenoid valves from other manufacturers, the manual button may be located elsewhere.

   Continue to hold in the purge button until all air and oil have drained and only adhesive flows from the module. Allow adhesive to flow out until no more air bubbles are visible.

9. Clean the slot nozzle from adhesive residuals.

10. Remove the heat resistant container.

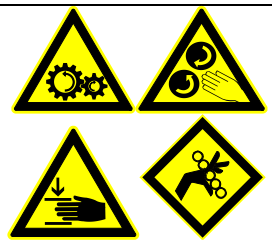
11. Switch the controller to automatic mode.

12. Set the unit parameters respectively check if they are set correct.

WARNING

Avoid collision!
In case of a collision with the rolls several parts of the coating station and of the applicator can be destroyed!

Make sure unconditionally, that there is no mechanical contact possible between the applicator's slot nozzle and the rolls.



The basic requirement for proper coating is a tight guidance of the material web.

Varying material tension may cause wrinkles within the material web.

Keep your hands, head, etc. away from running rolls! Limbs may be drawn in. Risk of crushing!

13. Start the unit (web material). Make sure that the material web runs even.

14. Activate the module solenoids for the adhesive application. Adhesive will be applied; the adhesive film will be formed!

15. Production is running.

Daily operation

Purge the Applicator before every start of production respectively of a shift by allowing the adhesive flows out until the adhesive film is clean and without tears.

Then switch off the adhesive and clean the nozzle lip from adhesive.

Bring the Applicator in work position and continue production.

3.6 Shut Down Procedure

CAUTION! RISK OF BURNS AND INJURY!

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

ADVICE

Do not switch off the controller and the main switch, if the unit has to be operated by weekly timer.

Effect following steps for switching the unit off:

1. Switch all pumps respectively motors off.
2. Switch the main switch off!

Removing dirt:

Remove dirt from all unit components immediately.

Wooden scrapers, lint-free cloth with cleaner may only be used for cleaning.

Metallic scrapers or other tools made from steel, like knife or blades, may not be used under any circumstances.

Chapter 4
Maintenance and Repair Notes

4.1 Security advices for maintenance and repair

Heed all security advices given in chapter 1.

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!

WARNING: 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.
3. Open the pressure relief screws on the applicators.

4.1.1 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.

4.1.2 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 N07588).

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.

4.2 Maintenance plan

CAUTION

- Heed all security advices given in chapter 4.1.
- Use only original parts from ITW Dynatec, otherwise ITW Dynatec's warranty is void!
- When handling hazardous substances (cleaning agents, etc.), heed the instructions in the current safety data sheets.
- 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 container/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!
- Clean the applicator from adhesive with a clean cloth while still hot at the end of each shift, taking care not to damage the shim/slot nozzle. Inspect the applicator periodically as outlined in the following table.

Maintenance plan:

Operating time/ frequency	Inspection point / maintenance notes
Continuous	• Remove dropped out adhesive and scrap adhesive and search for the cause of that, eliminate the cause.
Once a day	• Clean the Applicator and components from dirt.
Once a week	• Check the Slot nozzle for proper operation and clean the nozzle assembly if necessary or replace it. • Check filter for clogging and replace if necessary. • Check modules on Applicator if leaky and replace if necessary. Check if adhesive flows out of "Weep holes". • Check air supply connections for leaks and tighten if loose or replace if necessary. • Check all hose fittings for leaks and tighten if necessary. • Check the solenoid valves for proper function and replace it if necessary.
Every 3 months	• Due to temperature differences a loosening of threads (threaded connections) is possible. Check all parts with threads, all screw fittings and fasteners for tightness and tighten them if necessary.
Once a year	• Clean the Applicator. • Complete check-up for wearing.
Every two years	• Complete maintenance.

4.3 Pressure Relief Process

WARNING

Heed all security advices given in chapter 4.1.

Maintenance and repair work is only permitted for skilled personnel!

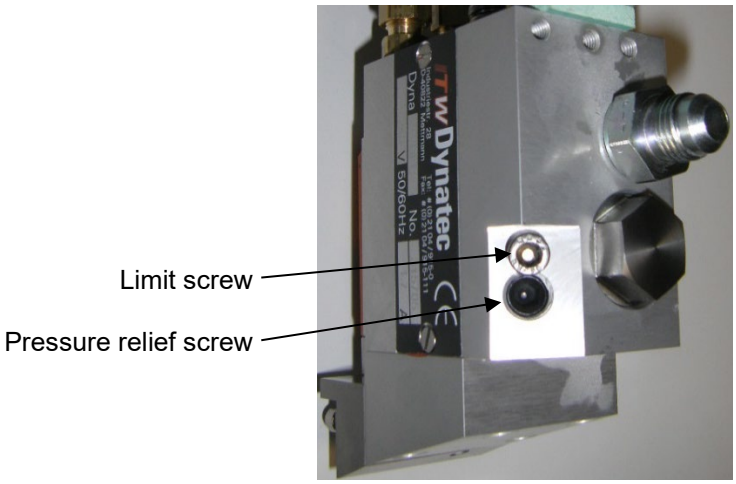
Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

During this procedure, hot adhesive can come out of the Applicator under high pressure.

Components and adhesive are hot when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.

1. The Applicator must be at operating temperature.
2. Turn the Melter's pump/ motor OFF.
3. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the Applicator.
   Hot adhesive may come out!
6. Using a hexagon socket wrench SW5, unscrew the pressure relief screw until the limit stop (limit screw).

   CAUTION: When unscrewing the pressure relief screw hot adhesive will come out under pressure at the bottom of the supply part.
   CAUTION: Do not loosen or remove the limit screw!



7. Allow the adhesive to flow until the residual pressure has been relieved.
8. Tighten the pressure relief screw again until it stops.

After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

4.4 Replacement of the Filter element

WARNING

Heed all security advices given in chapter 4.1.

Maintenance and repair work is only permitted for skilled personnel!

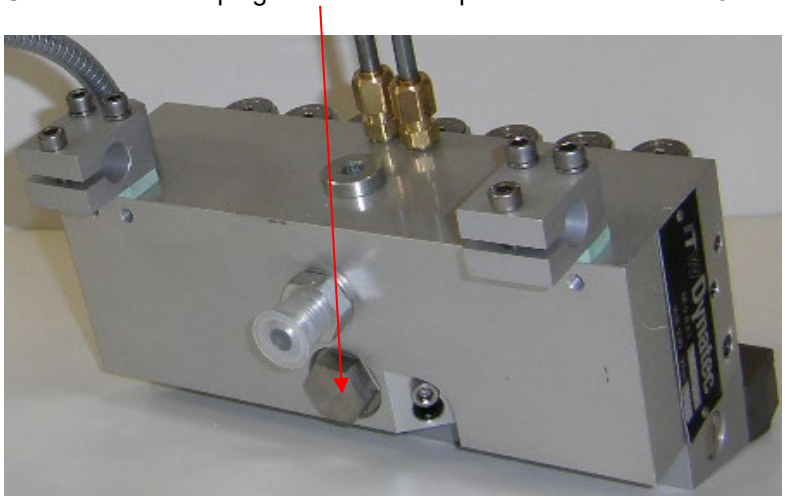
Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that cover all vulnerable parts of the body while working on the heated unit! Risk of injury or severe burns!

During this procedure, hot adhesive can come out of the Applicator under high pressure.

Components and adhesive are hot when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.

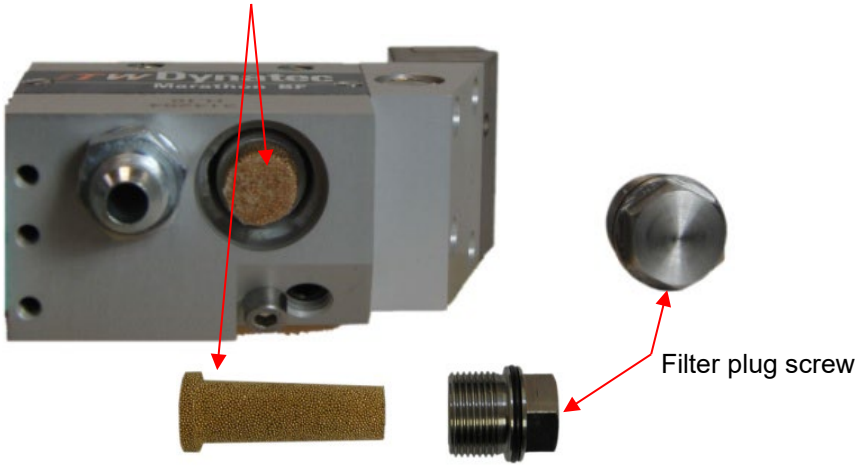
NOTE: For preventive maintenance and to avoid disturbances, we recommend checking the filter element after circa 200 operating hours and renewing it if necessary.

1. The Applicator must be at operating temperature.
2. Turn the Melter's pump/ motor OFF.
3. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the Applicator.
   Hot adhesive may come out!
6. Relieve the system pressure according to point 4.3 Pressure Relief Process.
7. Unscrew the filter plug screw with an open-end wrench SW19.



Note! *Inspect the O-ring for damage and replace if necessary.*

8. Pull out the filter element.



Options:

- Filter element SikaB150, fine = PN 07.41200.501
- Filter element SikaB200, coarse = PN 07.41200.502
- O-ring = PN 06.02035.019

9. Insert a new filter element.

10. Grease the O-ring on the filter screw with heat-resistant silicone grease and screw in the filter plug screw with an open-end wrench SW19.

After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Continue production.

4.5 Disassembling and Cleaning of the Slot Plate

WARNING

Heed all security advices given in chapter 4.1.

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 severe burns!

During this procedure, hot adhesive can come out of the Applicator under high pressure.

Components and adhesive are hot when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.

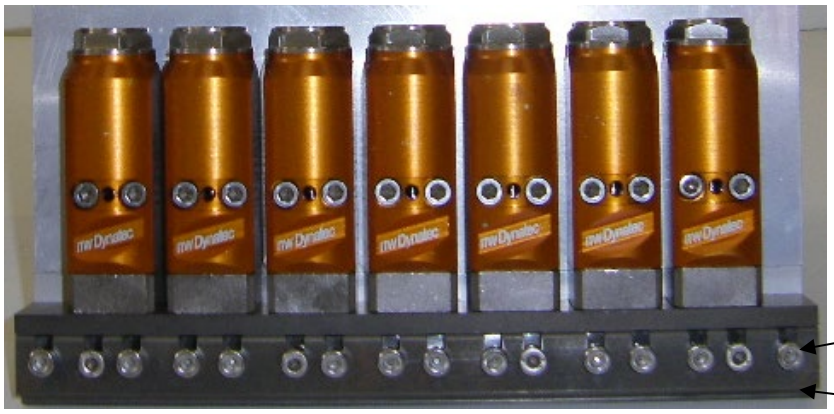
1. The Applicator must be at operating temperature.
2. Turn the Melter's pump/ motor OFF.
3. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the Applicator.
   Hot adhesive may come out!
6. Relieve the system pressure according to point 4.3 Pressure Relief Process.

CAUTION

During this procedure, be careful not to damage, scratch or cut the ground (smoothed) surfaces of the parts of the slot nozzle lip kit.

7. Loosen all fixing screws with an Allen key SW4 and remove the front plate.

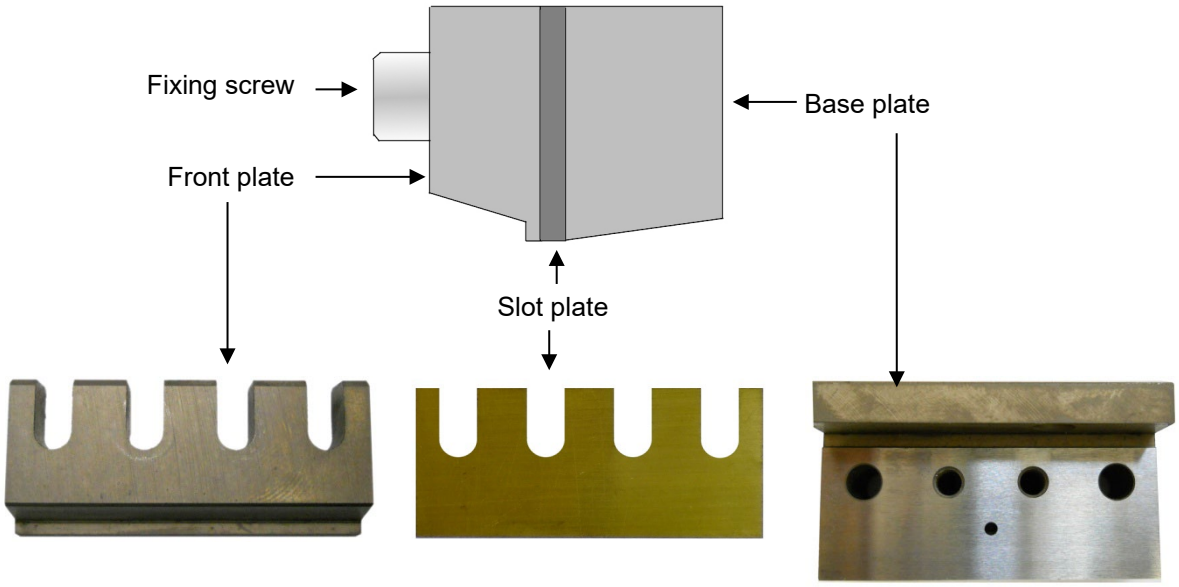
   CAUTION: When unscrewing the last screw, secure the front plate against falling down! Otherwise, the outlet lip can be damaged!



8. Remove the slot plate and clean all parts with suitable hot melt cleaners.

   CAUTION: When cleaning, DO NOT damage or bend the slot plate!

   Note! Refer to the information sheet of the hot melt cleaner.



9. Replace the slot plate and reassemble all parts in reverse order.

After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Test the applicator for proper performance. Adjust as required.

4.6 Replacement of the Module

WARNING

Heed all security advices given in chapter 4.1.

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 severe burns!

During this procedure, hot adhesive can come out of the Applicator under high pressure.

Components and adhesive are hot when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.

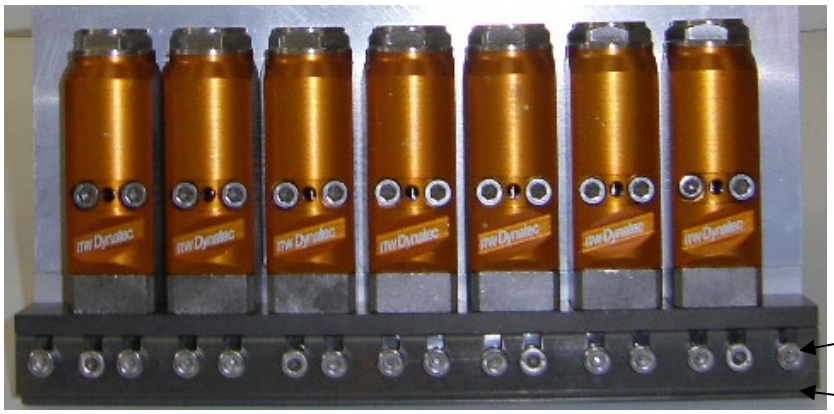
1. The Applicator must be at operating temperature.
2. Turn the Melter's pump/ motor OFF.
3. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
4. Guard the unit against unauthorized restarting.
5. Place a heat-resistant catchment container/underlay under the Applicator.
   Hot adhesive may come out!
6. Relieve the system pressure according to point 4.3 Pressure Relief Process.

CAUTION

During this procedure, be careful not to damage, scratch or cut the ground (smoothed) surfaces of the parts of the slot nozzle lip kit.

7. Loosen all fixing screws with an Allen key SW4 and remove the front plate.

   CAUTION: When unscrewing the last screw, secure the front plate against falling down! Otherwise, the outlet lip can be damaged!



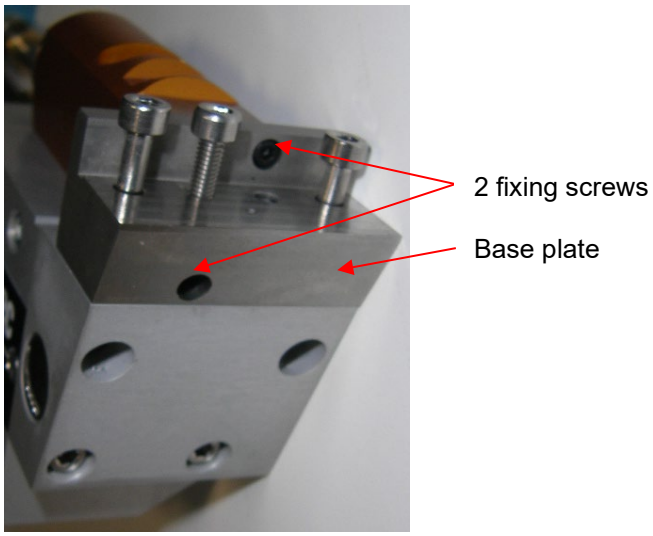
8. Remove the slot plate and clean all parts with suitable hot melt cleaners.

   CAUTION: When cleaning, DO NOT damage or bend the slot plate!

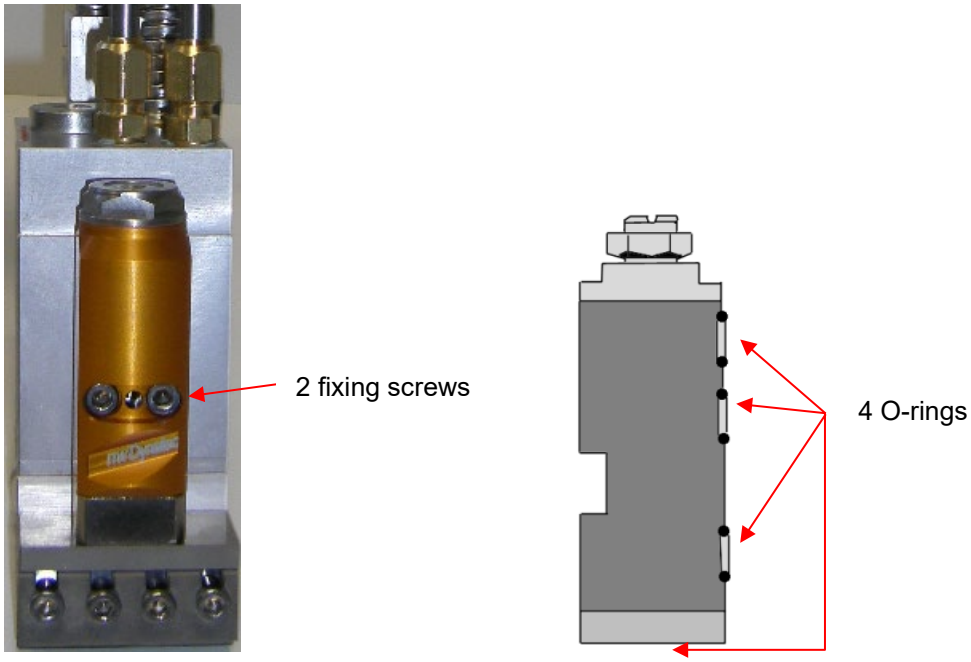
   Note! Refer to the information sheet of the hot melt cleaner.

9. Unscrew both fixing screws with an Allen key SW2.5 and remove the base plate.

   CAUTION: When unscrewing the last screw, secure the base plate against falling down! Otherwise, the outlet lip can be damaged!



10. Unscrew both fixing screws of the module with an Allen key SW4 and remove the module and the corresponding 4 O-rings (PN 06.00528.008).



11. Apply silicone grease to the O-rings of the new module.

12. Install the new module in reverse order.

    Note! Only special screws may be used to attach the module.

After finishing the maintenance or repair works:

- Remove all materials and tools used during the repair or maintenance from the workspace of the unit.
- Connect the voltage supply and the compressed air supply. Heat the unit up. Wait until all temperatures are within the tolerances and the adhesive in the hopper is molten completely.
- Test the applicator for proper performance. Adjust as required.

4.7 Testing and Replacement of the Heater cartridge and Temperature sensor

WARNING

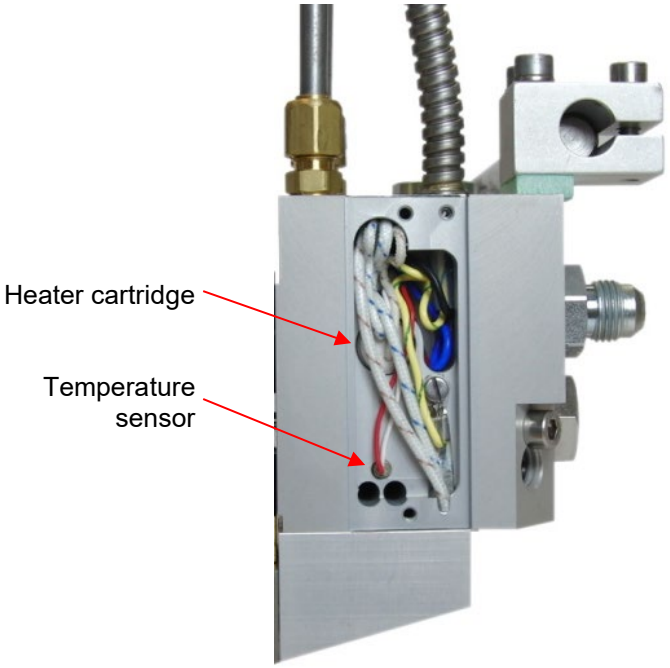
Heed all security advices given in chapter 4.1.

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 severe burns!

During this procedure, hot adhesive can come out of the Applicator under high pressure.

Components and adhesive are hot when this procedure is being done. Take every precaution to prevent the material and hot surfaces from contacting the skin.



1. Turn the Melter's pump/ motor OFF.
2. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
3. Guard the unit against unauthorized restarting.
4. Relieve the system pressure according to point 4.3 Pressure Relief Process.
5. Disconnect the electrical connection between the applicator and the hose.
6. Calculate the resistance value of the heating element:

$$\frac{\text{Operating voltage}^2 \text{ of the applicator (Volt}^2\text{)}}{\text{Power consumption of the applicator (Watt)}} = \text{Resistance value (Ohm)}$$

7. Use an Ohmmeter to grip the pins 7 and 8 of the connector plug.

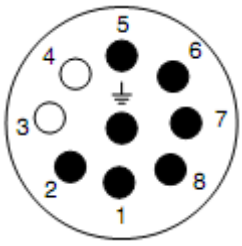
8. Set the Ohmmeter to the appropriate resistance range.

9. Now measure the resistance value of the heater cartridge.
   Consider a tolerance range of ± 20%.

10. To test the temperature sensor, use an Ohmmeter to grip the pins 5 and 6 of the connector plug.

    The resistance value of the temperature sensor depends on the applicator's temperature. In practice, resistance values of 110-180 Ohms will be measured.

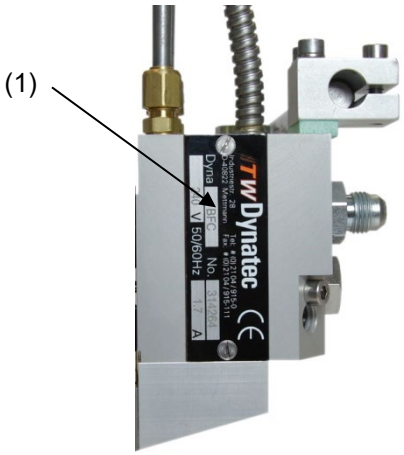
Connector plug



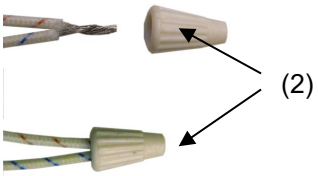
1	Pulse electrical applicator
2	Pulse electrical applicator
3	NC
4	NC
5	Temperature sensor Pt 100 applicator
6	Temperature sensor Pt 100 applicator
7	Heater applicator
8	Heater applicator
⏚	Ground

4.7.1 Replacement of the Heater cartridge in Supply part

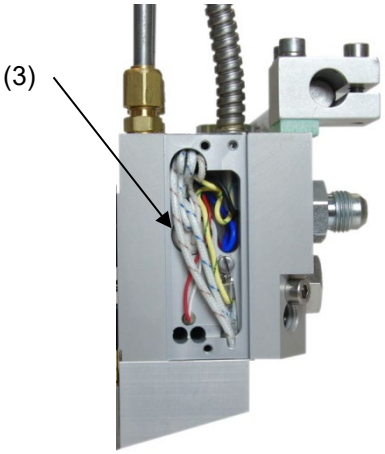
1. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
2. Guard the unit against unauthorized restarting.
3. Remove the cover (1).



4. Unscrew the ceramic connectors (2) from the cables and disconnect them.

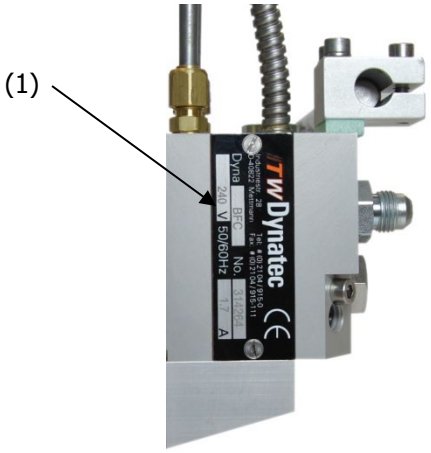


5. Remove the heater cartridge (3) from the supply part and insert a new one.
6. Twist together the wires of the heater cartridge and the supply cable and screw the ceramic connectors onto the twisted cables. Check the connection.
7. Install the cover again.

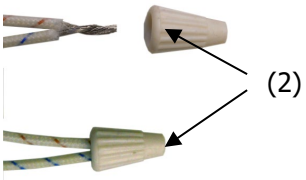


4.7.2 Replacement of the Heater cartridge in the Adapter Plate

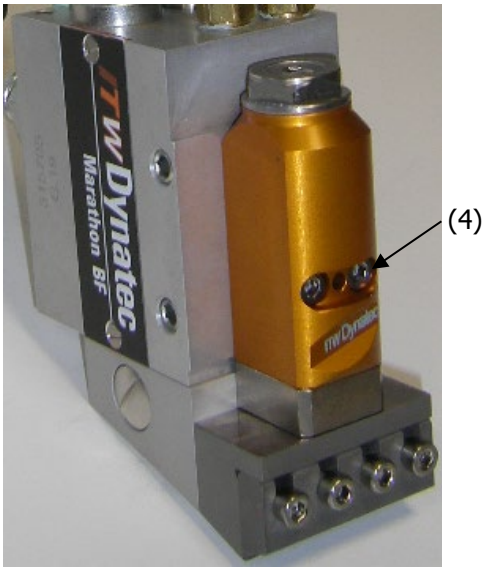
1. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
2. Guard the unit against unauthorized restarting.
3. Remove the cover (1).



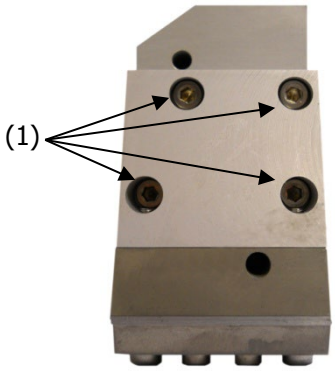
4. Unscrew the ceramic connectors (2) from the cables and disconnect them.



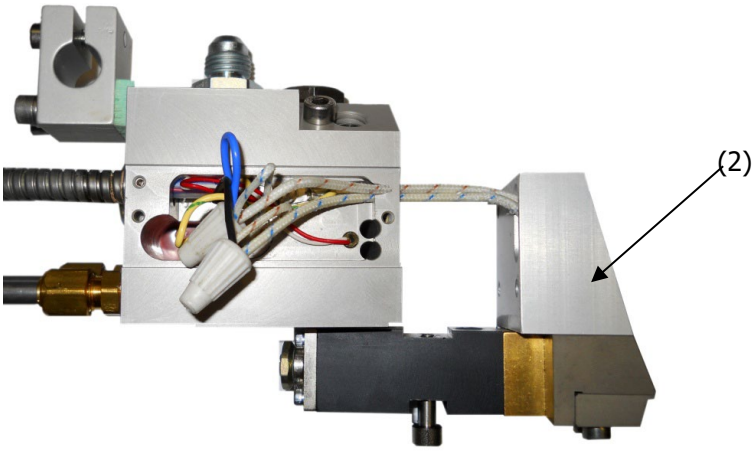
5. Loosen the fixing screws (4) with an Allen key SW4 from the modules.



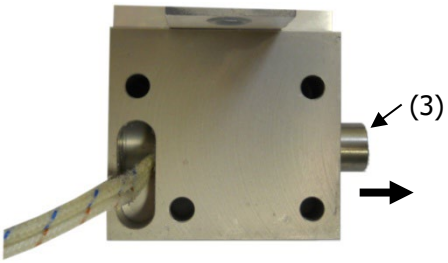
6. Remove the fixing screws (1) with an Allen key SW3 from the adapter plate.



7. Remove the adapter plate with the module (2).



8. Replace the heater cartridge (3).



9. Twist together the wires of the heater cartridges and the supply cable and screw the ceramic connectors onto the twisted cables. Check the connection.

10. Assemble in reverse order.

4.7.3 Testing of the Temperature sensor

1. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.

2. Guard the unit against unauthorized restarting.

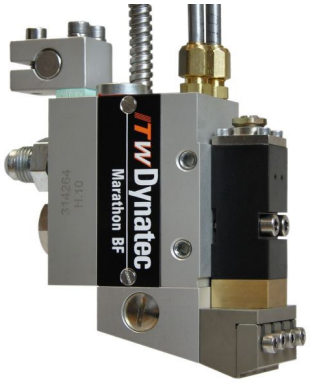
3. Disconnect applicator's connector from the coupling of the material hose.

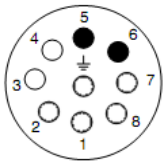
4. Measure the electrical resistance with an Ohmmeter on the pins 5 and 6 (see illustration).

   Note!
   The resistance value of the temperature sensor depends on the applicator's temperature. In practice, resistance values of 110-180 Ohms will be measured.

   Consider a tolerance range of ± 5%.

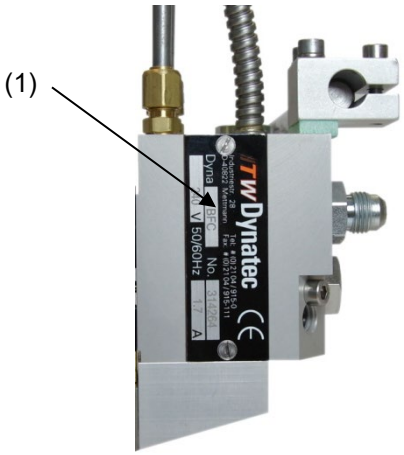
5. If the value is outside the range specified in the table "Resistance-Temperature Tables for Temperature sensors" (see p.47), then the temperature sensor must be replaced.



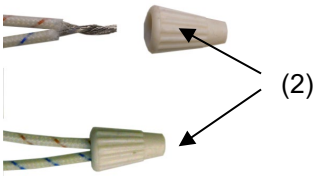


4.7.4 Replacement of the Temperature sensor in Supply part

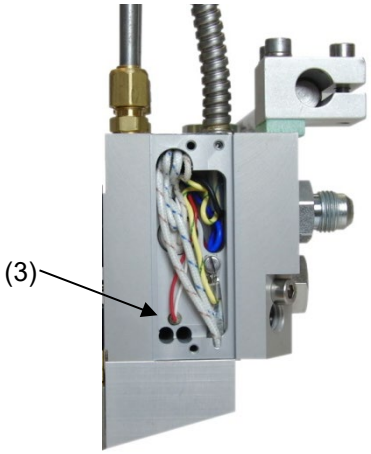
1. Switch the unit voltage-free and pressureless according to the instructions under point 4.1.
2. Guard the unit against unauthorized restarting.
3. Remove the cover (1).



4. Unscrew the ceramic connectors (2) from the cables and disconnect them.



5. Remove the temperature sensor (3) from the supply part and insert a new one.
6. Twist together the wires of the temperature sensor and the supply cable and screw the ceramic connectors onto the twisted cables. Check the connection.
7. Install the cover again.



4.7.5 Resistance-Temperature Tables for Temperature sensors

Temperature sensor PT 100 Ohm Controller-Option D		
Temperature		Resistance
°F	°C	in Ohm
32	0	100
50	10	104
68	20	108
86	30	112
104	40	116
122	50	119
140	60	123
158	70	127
176	80	131
194	90	135
212	100	139
230	110	142
248	120	146
268	130	150
284	140	154
302	150	157
320	160	161
338	170	165
356	180	168
374	190	172
392	200	176
410	210	180
428	220	183

Temperature sensor Ni 120 Ohm Controller-Option N		
Temperature		Resistance
°F	°C	in Ohm
32	0	120
50	10	127
68	20	135
86	30	142
104	40	150
122	50	158
140	60	166
158	70	174
176	80	183
194	90	192
212	100	201
230	110	210
248	120	219
268	130	229
284	140	239
302	150	249
320	160	259
338	170	270
356	180	281
374	190	292
392	200	303
410	210	315
428	220	328

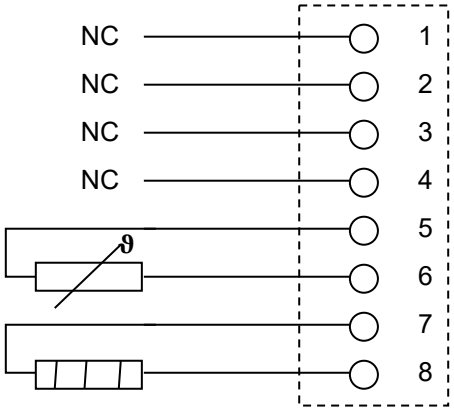
a. The resistance (Ohms) of the temperature sensor depends on the temperature of the temperature sensor and the time of the measurement.

b. Measurements:
   - *If DynaControl/ PLC Controller:* Use an Ohmmeter to measure the resistance at pins 5 and 6.
   - *If Upgrade Controller (Temperature sensor NI):* Use an Ohmmeter to measure the resistance at pins 3 and 5.

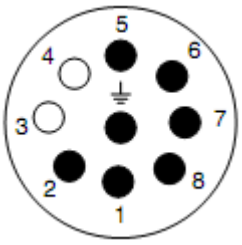
c. A tolerance range of ± 5% is allowed. A temperature sensor measured with values outside this range must be replaced.

4.7.6 Connector pin layout

Dynatec connector:



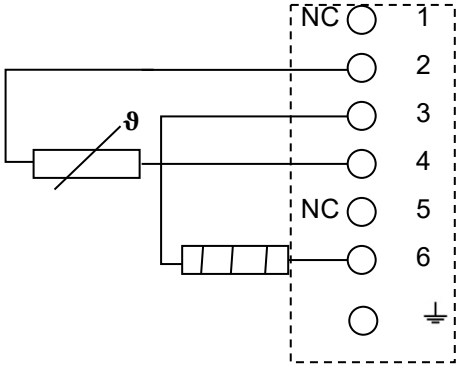
Connector plug



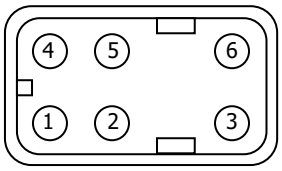
Pins viewed from the front

1	NC
2	NC
3	NC
4	NC
5	Temperature sensor Pt100
6	Temperature sensor Pt100
7	Heater cartridge
8	Heater cartridge
⏚	Ground

NDSN-connector:



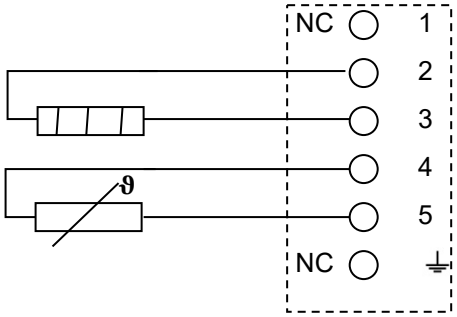
Connector plug



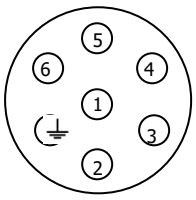
Pins viewed from the front

1	Ground
2	Temperature sensor Ni 120, head
3	Heater cartridge, Kopf
4	Temperature sensor Ni 120, head
5	NC
6	Heater cartridge, head
⏚	Ground

Euchner connector:



Connector plug



Pins viewed from the front

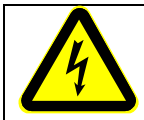
1	NC
2	Heater cartridge
3	Heater cartridge
4	Temperature sensor Pt100
5	Temperature sensor Pt100
⏚	Ground

Chapter 5
Troubleshooting

5.1 Troubleshooting In General

NOTE: Please re-read all security advices given in chapter 1 before performing any troubleshooting or repair procedures.

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



DANGER HIGH VOLTAGE

The Melter and Applicator use electrical power that can be life threatening and hot-melt adhesives that can cause serious burns. Only qualified persons should perform service on the Melter and Applicator.

WARNING HOT SURFACE

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.

5.2 Troubleshooting Guide

NOTE: The troubleshooting guide is a summary of typical faults and their possible causes on the applicators. Obvious defects such as mechanical damage or damaged electrical and pneumatic lines are not considered. These faults should be detected and eliminated during the periodic inspection of the system.

NOTE: 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
Verify the following before proceeding:

- All pneumatic and electrical connections are correct.
- The Melter is supplied with power and the main power switch is ON.
- Adhesive is in the hopper and the Melter's pump is ON.
- The Melter and Applicator have sufficient air pressure.
- The temperature controller is in operation. The setpoints are correct for the application, Melter, Heated Hoses and Applicators. All components are heating properly.

Problem	Possible Cause	Solution
Module does not open.	1. Temperature adjustment of the melter, hoses or applicators is set too low.	1. Check temperature adjustment.
	2. Inoperative solenoid valve.	2. Push the solenoid's manual button. If it opens, the problem is electrical.
	3. Module does not switch.	3. Replace module.
	4. Air pressure for applicator is too low.	4. Check air pressure. The air pressure must be 6 bar.
	5. Standby activated.	5. Deactivate standby.
No adhesive flowing out of module or nozzle.	1. Nozzle is clogged.	1. Clean the nozzle.
	2. Filter element is dirty.	2. Replace filter element.
	3. Module O-rings are inoperative.	3. Check module O-rings.
	4. Module defective.	4. Replace module.
	5. Melter's hopper is empty.	5. Re-fill hopper.
	6. Adhesive is too cold.	6. Adjust temperatures.
	7. Solenoid valve is not switching.	7. Check solenoid valve.
Adhesive is coming out of the module's "weep" holes.	1. Module seals are damaged.	1. Replace module.

Problem	Possible Cause	Solution
Applicator does not reach operating temperature.	1. Applicator's temperature setpoint is too low. 2. Inoperative heater cartridge. 3. Inoperative temperature sensor.	1. Change setpoint. 2. Check/ replace heater cartridge. 3. Check/ replace sensor.
Applicator is too hot.	1. Applicator's temperature setpoint is too high. 2. Inoperative temperature sensor. 3. Controller defective.	1. Change setpoint. 2. Check/ replace sensor. 3. Check/ replace controller.
Air escapes from module.	1. Inoperative piston O-ring. 2. O-rings located between module and supply part are inoperative.	1. Replace module. 2. Remove module and replace O-rings.
Application pattern is erratic.	1. Adhesive pressure is too low. 2. Pattern controller's adjustment is improper.	1. *a. For units without pressure control:* increase adhesive pressure at melter. *b. For units with pressure control (tach follower):* adjust pump speed control. 2. See pattern controller manual for proper adjustment.
Adhesive flow breaks off	1. Slot plate too thin. 2. Temperature too low. 3. Material pressure too low.	1. Change slot plate. 2. Increase temperatures. 3. Increase material pressure.
Adhesive amount too high	1. Slot plate too thick 2. Temperature too high. 3. Material pressure too high.	1. Change slot plate. 2. Check and change temperature setting. 3. Reduce material pressure.
Adhesive application is not steady	1. Mounting position of the applicator is wrong.	1. Check and set up correctly.

Chapter 6
Component Illustrations and Bill of Materials

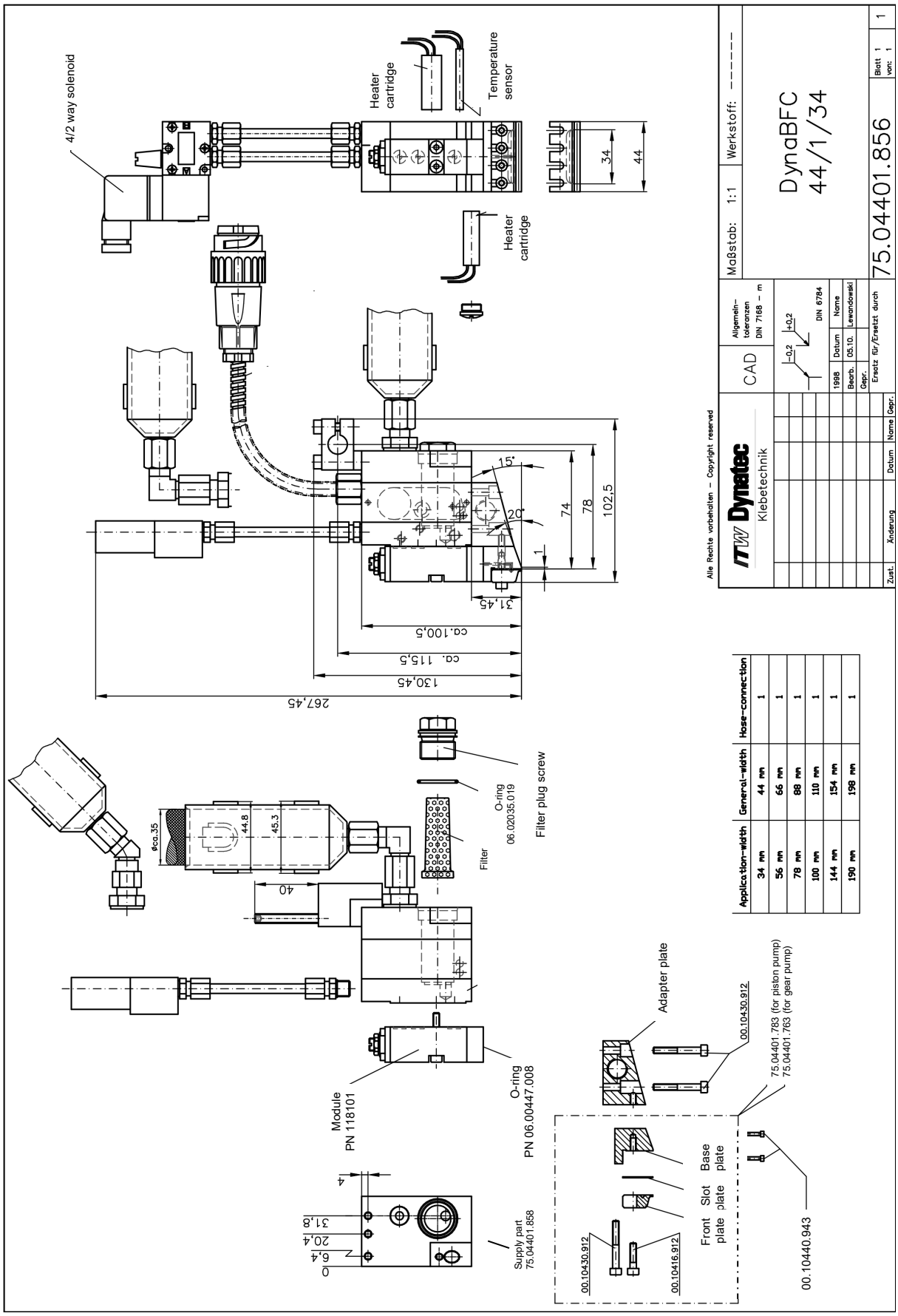
WARNING

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. These drawings are useful for finding part numbers as well as for use when maintaining or repairing the equipment.

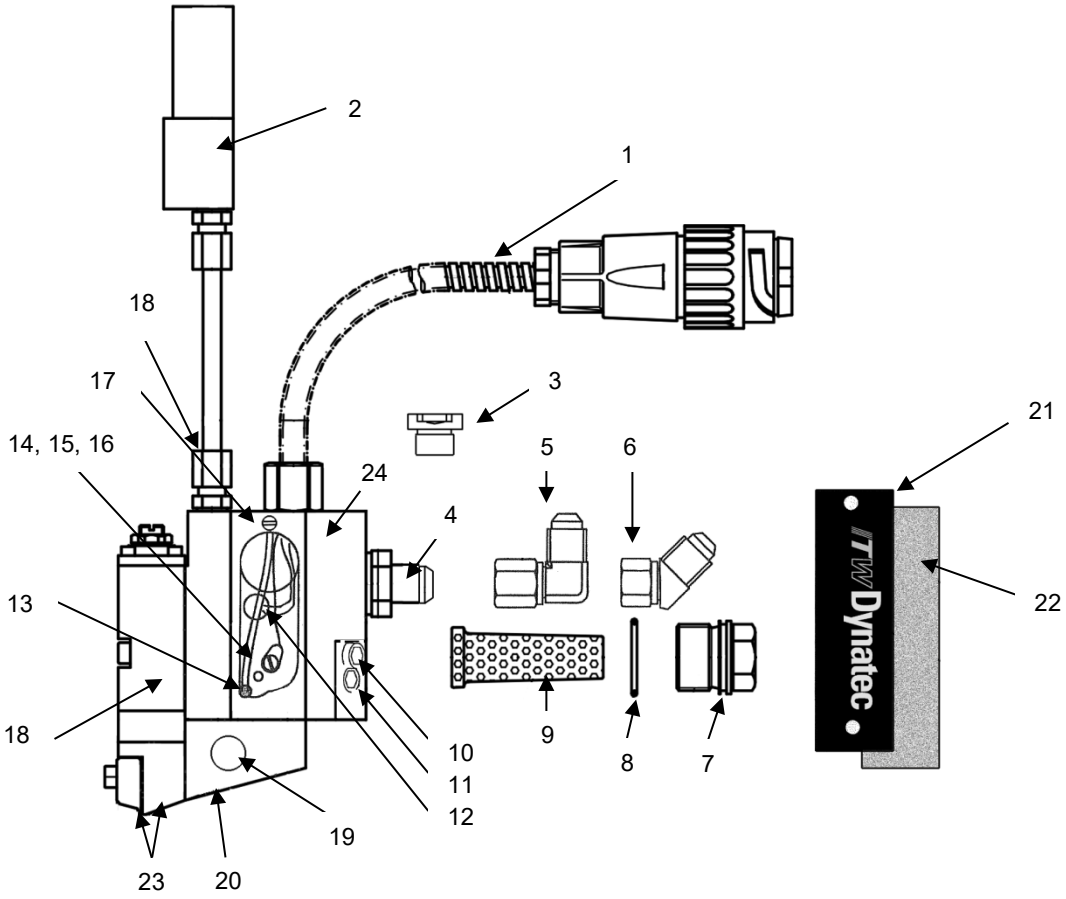
Note: Most common screws, nuts and washers called out in the manual are not for sale and they can be obtained locally at your hardware Store. Specialty fasteners are available by contacting ITW Dynatec's Customer Service.

6.1 Dyna BFC Drawing & Dimensions



Application-width	General-width	Hose-connection
34 mm	44 mm	1
56 mm	66 mm	1
78 mm	88 mm	1
100 mm	110 mm	1
144 mm	154 mm	1
190 mm	198 mm	1

6.2 Applicator Dyna BFC 44/1, 66/2, 88/3, 110/4, 154/6, 198/8



See bill of material on next page.

Bill of Material Dyna BFC

- Applicator Base Body Dyna BFC 44/1, 44mm, 1 Modul, PN 75.04401.856
- Applicator Base Body Dyna BFC 66/2, 66mm, 2 Modules, PN 75.06602.856
- Applicator Base Body Dyna BFC 88/3, 88mm, 3 Modules, PN 75.08803.856
- Applicator Base Body Dyna BFC 110/4, 110mm, 4 Modules, PN 75.11004.856
- Applicator Base Body Dyna BFC 154/6, 154mm, 6 Modules, PN 75.15406.856
- Applicator Base Body Dyna BFC 198/8, 198mm, 8 Modules, PN 75.19808.856

Note = The parts marked with a * are not included in the applicator assembly.

Item	Part Number	Description	Qty.
1	103467 71.00061.870	Connection kit with temp. sensor Pt100 (BF 44/1) Connection kit with temp. sensor Pt100 (BF 66/2, 88/3, 110/4, 154/6, 198/8)	1
2	07.93024.712	4/2-way solenoid 12,7W 24VDC with accessories	1
3	00.61320.102	Plug screw G 1/4	1
4	07.00600.120	Hose connection nipple DN8, straight, G1/4A AUF 9/16-18UNF	1
5	N07830	Swivel fitting DN8 90°	1
6	N07831	Swivel fitting DN8 45°	1
7	71.01000.359	Filter screw	1
8	06.02035.019	O-ring	1
9	07.41200.502	Filter cartridge 200µm, sintered bronze, coarse	1
10	00.10510.912	Hexagon socket screw M5 x 12	1
11	00.81010.914	Headless screw	1
12	 104128D 05.30240.001 05.30320.001 05.30360.001 05.30420.001 05.30500.005	**Heater cartridge for Base Body:** Heater cartridge BF 44/1, Ø12,5x34mm, 230V, 200W Heater cartridge BF 66/2, Ø10x56mm, 230V, 240W Heater cartridge BF 88/3, Ø10x75mm, 230V, 320W Heater cartridge BF 110/4, Ø10x97mm, 230V, 360W Heater cartridge BF 154/6, Ø10x138mm, 230V, 420W Heater cartridge BF 198/8, Ø10x185mm, 230V, 500W	1
13	05.63040.015	Temperature sensor (included in item 1)	1
14	00.20306.084	Screw M3x6 mm	1
15	02.70320.797	Toothed washer D3.2	1
16	02.00320.125	Washer D3.2	1
17	00.50308.963	Countersunk head screw M3x5 mm	1
18	118101	ModPlus Application Module for Dyna BFC	1
19	 05.30180.001 05.30240.001 05.30320.001 05.30360.001 05.30420.001 05.30500.005	**Heater cartridge for Adapter Plate:** Heater cartridge BF 44/1, Ø10x34mm, 230V, 180W Heater cartridge BF 66/2, Ø10x56mm, 230V, 240W Heater cartridge BF 88/3, Ø10x75mm, 230V, 320W Heater cartridge BF 110/4, Ø10x97mm, 230V, 360W Heater cartridge BF 154/6, Ø10x138mm, 230V, 420W Heater cartridge BF 198/8, Ø10x185mm, 230V, 500W	1
20	 75.04401.500 75.06602.500 75.08803.500 75.11004.500 75.15406.500 75.19808.500	**Adapter Plate for Slot Nozzle:** Adapter Plate for Slot Nozzle BFC 44/1 Adapter Plate for Slot Nozzle BFC 66/2 Adapter Plate for Slot Nozzle BFC 88/3 Adapter Plate for Slot Nozzle BFC 110/4 Adapter Plate for Slot Nozzle BFC 154/6 Adapter Plate for Slot Nozzle BFC 198/8	1
21	103347 103733 09.700002.187	Cover (BF 44/1) ITW Logo Cover (BF 44/1) Type plate Cover (BF 66/2, 88/3, 110/4, 154/6, 198/8)	1

22	75.00000.127	Sealing	1
23	75.04401.763 * 75.06602.763 * 75.08803.763 * 75.11004.763 * 75.15406.763 * 75.19808.763 *	Slot nozzle BFC 44/1, application width max. 34 mm Slot nozzle BFC 66/2, application width max. 56 mm Slot nozzle BFC 88/3, application width max. 78 mm Slot nozzle BFC 110/4, application width max. 100 mm Slot nozzle BFC 154/6, application width max. 144 mm Slot nozzle BFC 198/8, application width max. 188 mm	1
24	75.04401.858	Supply part BF44, without accessories	1

* The slot nozzle and appropriate shim are not included in the applicator assembly and need to be ordered separately. See the table below for shim options.

6.2.1 Shims for Slot Nozzle

NOTE: The shim thickness determines the adhesive application quantity; the greater the thickness, the more adhesive is applied. Further shims/thicknesses are available upon request.

Slot nozzles	Shim t = thickness
PN 75.04401.763 Slot nozzle BFC 44/1, application width max. 34 mm	Shim for BFC 44/1; t = 0.10 mm, PN 75.04401.210 Shim for BFC 44/1; t = 0.15 mm, PN 75.04401.215 Shim for BFC 44/1; t = 0.20 mm, PN 75.04401.220 Shim for BFC 44/1; t = 0.25 mm, PN 75.04401.225 Shim for BFC 44/1; t = 0.30 mm, PN 75.04401.230 Shim for BFC 44/1; t = 0.40 mm, PN 75.04401.240 Shim for BFC 44/1; t = 0.50 mm, PN 75.04401.250 Shim for BFC 44/1; t = 0.60 mm, PN 75.04401.260
PN 75.06602.763 Slot nozzle BFC 66/2, application width max. 56 mm	Shim for BFC 66/2; t = 0.10 mm, PN 75.06602.210 Shim for BFC 66/2; t = 0.15 mm, PN 75.06602.215 Shim for BFC 66/2; t = 0.20 mm, PN 75.06602.220 Shim for BFC 66/2; t = 0.25 mm, PN 75.06602.225 Shim for BFC 66/2; t = 0.30 mm, PN 75.06602.230 Shim for BFC 66/2; t = 0.40 mm, PN 75.06602.240 Shim for BFC 66/2; t = 0.50 mm, PN 75.06602.250 Shim for BFC 66/2; t = 0.60 mm, PN 75.06602.260 Shim for BFC 66/2; t = 0.80 mm, PN 75.06602.280 Shim for BFC 66/2; t = 1.00 mm, PN 75.06602.211
PN 75.08803.763 Slot nozzle BFC 88/3, application width max. 78 mm	Shim for BFC 88/3; t = 0.10 mm, PN 75.08803.210 Shim for BFC 88/3; t = 0.15 mm, PN 75.08803.215 Shim for BFC 88/3; t = 0.20 mm, PN 75.08803.220 Shim for BFC 88/3; t = 0.25 mm, PN 75.08803.225 Shim for BFC 88/3; t = 0.30 mm, PN 75.08803.230 Shim for BFC 88/3; t = 0.40 mm, PN 75.08803.240 Shim for BFC 88/3; t = 0.50 mm, PN 75.08803.250
PN 75.11004.763 Slot nozzle BFC 110/4, application width max. 100 mm	Shim for BFC 110/4; t = 0.10 mm, PN 75.11004.210 Shim for BFC 110/4; t = 0.15 mm, PN 75.11004.215 Shim for BFC 110/4; t = 0.20 mm, PN 75.11004.220 Shim for BFC 110/4; t = 0.30 mm, PN 75.11004.230 Shim for BFC 110/4; t = 0.40 mm, PN 75.11004.240 Shim for BFC 110/4; t = 0.50 mm, PN 75.11004.250 Shim for BFC 110/4; t = 0.60 mm, PN 75.11004.260 Shim for BFC 110/4; t = 0.70 mm, PN 75.11004.270 Shim for BFC 110/4; t = 0.80 mm, PN 75.11004.280

PN 75.15406.763 Slot nozzle BFC 154/6, application width max. 144 mm	Shim for BFC 154/6; t = 0.10 mm, PN 75.15406.210 Shim for BFC 154/6; t = 0.15 mm, PN 75.15406.215 Shim for BFC 154/6; t = 0.20 mm, PN 75.15406.220 Shim for BFC 154/6; t = 0.25 mm, PN 75.15406.225 Shim for BFC 154/6; t = 0.30 mm, PN 75.15406.230 Shim for BFC 154/6; t = 0.40 mm, PN 75.15406.240
PN 75.19808.763 Slot nozzle BFC 198/8, application width max. 188 mm	Shim for BFC 198/8; t = 0.10 mm, Nr. 75.19808.210

6.3 Accessories

Part Number	Description
07.00600.120	Hose connection nipple DN8, straight, G1/4A AUF 9/16-18UNF for piston pump
N07830	Swivel fitting, DN8 90°
N07831	Swivel fitting, DN8 45°
07.93024.710	4/2-way solenoid 24VDC, 12,7 W, without accessories
07.93024.712	4/2-way solenoid 24VDC, 12,7 W, with accessories

6.4 Recommended Spare Parts

As a general rule, we recommend that you have the same quantity of the following parts as listed in the parts lists in Chap. 6.2, 6.3 and listed in your order:

- *Modules*
- *Slot nozzle*
- *Sims*
- *Heater cartridges*
- *Temperature sensor*
- *O-rings, seals*
- *Filters*
- *Solenoid valve*

Manual Revisions

Revision	Page/ Ch.	Description
Rev.8.19	Kap.6	Bill of material updated.
Rev.8.23	P.1	Manual language added.
Rev.4.24	6.2	BOM updated.
	6.2.1	Shims for Slot Nozzle – list added.
	6.4	Recommended Spare Parts added.

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