ITW Dynatec®

Adhesive Application Solutions | ISO 9001 certified

Dynaflex Heated Hoses

UL and CSA certified

Technical Documentation, No. 30-07, Rev.12.24

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.

ITW Dynatec Service Parts and Technical Service:

AMERICAS

ITW Dynatec
31 Volunteer Drive
Hendersonville, TN 37075
USA
Tel. +1.615.824.3634
info@itwdynatec.com
service@itwdynatec.com

EUROPE, MIDDLE EAST & AFRICA

ITW Dynatec
Industriestrasse 28
40822 Mettmann
Germany
Tel. +49.2104.915.0
info@itwdynatec.de
service@itwdynatec.de

ASIA PACIFIC

ITW Dynatec
No. 2 Anzhi Street,
SIP, Suzhou, 215122
China
Tel. +86.512.6289.0620
info@itwdynatec.cn
service@itwdynatec.cn

ITW Dynatec
Tsukimura Building 5th Floor
26-11, Nishikamata 7-chome
Ota-ku, Tokyo 144-0051,
Japan
Tel. +81.3.5703.5501
info@itwdynatec.co.jp
service@itwdynatec.co.jp

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Conformity Declaration

EC Declaration of Conformity

according to the EU Machinery Directive 2006/42/EG

Manufacturer:
ITW Dynatec GmbH
Industriestraße 28
40822 Mettmann
Germany

Person established in the Community authorized to complete the relevant technical documentation:
Andreas Pahl
ITW Dynatec GmbH
Industriestraße 28
40822 Mettmann
Germany

We hereby declare that the design and construction of our products listed below, as well as the version we have put into circulation, comply with the basic health and safety requirements of the

- EU Low Voltage Directive 2014/35 / EU (2014) and UK Electrical Equipment (Saftey) Regulations 2016.

In case of modification of our products without our authorization, this Declaration of Conformity loses its validity.

Description of the products:

- All heated hoses, AutoEndure hoses, type K, KF, KX, for usage in hotmelt application systems and similar units / devices / systems including robots and drag chains.

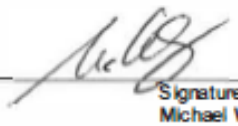
Compliance with the following standards is declared:

- IEC 60204-1 (2019) Safety of machinery - Electrical equipment of machines
- IEC 60519-1 (2020) Safety in heating installations, general requirements
- IEC 60519-10 (2014) Special requirements for electrical resistance trace heaters for industrial and commercial purposes
- IEC 61140 (2016) Protection against electric shock

Compliance with other directives of the European Parliament and the Council and standards that also apply to the aforementioned products is declared:

- 2014/68/EU (2014) Directive on the harmonization of the laws of the Member States relating to the making available on the market of prèssure equipment and/or Pressure Equipment (Saftey) Regulations 2016.
- 2011/65/EU (2011) Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment
- IEC 60364-4-42 (2011) + A1 (2015) Low voltage electrical installations - Part 4/42: Protection for Safety Protection against thermal effects

Mettmann, Nov. 2022
Place, Date



Signature
Michael Wallner
Global Operations Director

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 repair work on the heated hose (from here on also product, hose) must be performed by trained technical personnel.**

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.
   In addition, comply with all local occupational health and safety regulations (e.g. OSHA or CanOSH) that apply where the product is installed.

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. Subject to technical modifications without notice!

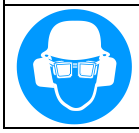
5. To ensure proper operation of the equipment, use specified electrical supply sources.

6. Do not attempt to alter the design of the equipment unless written approval is received from ITW Dynatec. Any unauthorized modification of the product will render the product unsafe and void the warranty.

7. Keep all manuals readily accessible at all times and refer to it often for the best performance from your equipment.

1.2 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!**
	**Warning of danger from toxic material!** This symbol indicates that there is a possible risk of injury from inhaling potentially dangerous fumes from hot melt material. **Risk of injury, danger to life!**

Prohibition signs

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

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

1.3 Safe Installation and Operation

Read and adhere to the manual!

1. Read this manual before switching on the system to which the heated hoses are connected. The equipment may be damaged by incorrect electrical connection.

2. To avoid possible problems related to the hoses, you must ensure that the hoses are routed correctly and avoid kinks, too tight bend radii and contact with abrasive materials. Heated hoses must not be exposed to heat-absorbing surfaces such as cold floors or metal ducts for long periods of time. Such heat-absorbing surfaces can alter the flow of the adhesive and lead to incorrect calibration. Hoses must never be covered or surrounded by materials that prevent heat dissipation (e.g. insulation or sheathing). The hoses must be routed so that they do not come into direct contact with each other.

3. **Safety warnings and instructions:**
   This product is an industrial electric heating system. When planning, designing, testing, operating and maintaining the system, observe to the installation and operation instructions and comply with all local occupational health and safety regulations (such as OSHA or CanOSH) installation site of the product. Also comply with instructions in the international standards IEC60204-1, IEC 60519-1, IEC 60519-2 and IEC 61140.

EXPLOSION HAZARD

Heating of explosive media or media which release explosive gases when heated will lead to explosions.

- **Do not install the heated hose in a hazard zone (potentially explosive atmosphere).**

RISK OF BURNS

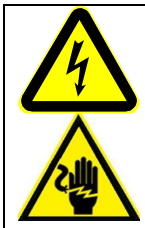
Parts of the heated hose, such as the fittings, and hot melt material can be very hot causing severe burns.

- **Wait for the hot parts to cool completely before touching them.**
- **Use personal protective equipment, such as safety goggles, heat-resistant protective gloves and safety clothing.**

RISK OF OVERHEATING

Without a temperature control, the hose can heat up exceeding the maximum operating temperature. This can result in injuries, destruction of the heated hose and destruction of your system.

- **Never operate the heated hose without a temperature sensor and without a temperature control.**



RISK OF ELECTRIC SHOCK

The heated hose is an electrical device. There is an electric shock hazard if the hose is improperly handled. Failure to follow safety procedures can result in injury or death.

- **Only suitably trained specialist personnel (qualified electricians) are permitted to connect the equipment electrically based on local connection requirements and regulations.**
- **Always connect the equipment to ground/earth (refer to IEC 61140 "protective earthing").**
- **Never squeeze the electric cable or operate the heated hose with a damaged electric cable.**

TOXIC MATERIAL HAZARD

There may be a risk of injury through inhalation of potentially hazardous hot melt material vapors.

- **Carefully read the Safety Data Sheet (SDS) provided by your supplier and head the instructions.**

HAZARD OF HIGH PRESSURE - RISK OF SKIN INJURY

The heated hose carries media under high pressure. Hot, fluid media that escapes under high pressure in defective, leaky heated hoses or cracked components can cause burns and other damage to the skin. This requires immediate medical attention!

- **To avoid damage caused by impact from pressurized fluids, relieve the pressure before opening any connection or performing maintenance work.**
- **Regularly check the hose for cuts, bulges or other damage.**
- **To avoid damage caused by the impact of pressurized fluids, relieve the pressure before opening any connection or performing maintenance work.**

Smoking, fire and open flames are prohibited! Fire danger!

Make absolutely sure that there is no smoking and no fire being lit in the work area!

1.4 Explosion/ Fire Hazard

1. Never operate this unit in an explosive environment.
2. Only use cleaning compounds recommended by ITW Dynatec or your adhesive supplier.
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.

1.5 Use of PUR (Polyurethane) Adhesives

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 an equipment, the equipment 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.

1.6 Personal Protective Equipment

WARNING
PERSONAL PROTECTIVE EQUIPMENT REQUIRED

1. Wear long **protective clothing** that covers all vulnerable parts of the body.

2. It is very important that you PROTECT YOUR EYES when working around hot melt adhesive equipment!
   Wear a face shield conforming to ANSI Z87.1 or **safety glasses** with side shields which conform to ANSI Z87.1 or EN166.
   Failure to wear a face shield or safety glasses could result in severe eye injury.

3. It is important to protect yourself from potential burns when working around hot melt adhesive equipment.
   Wear **heat-resistant protective gloves** and long-sleeved, protective clothing to prevent burns that could result from contact with hot material or hot components.

4. Always wear steel-reinforced **safety shoes**.

1.7 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. A secure connection to a reliable earth ground is essential for safe operation.

3. An electrical disconnect switch with lockout capability must be provided in the line ahead of the equipment. Wiring used to supply electrical power should be installed by a qualified electrician.

4. Notify the maintenance personnel immediately, if cables are damaged. Provide for exchanging the defective components immediately.

1.8 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.

1.9 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.

1.10 High Pressure

WARNING
HIGH PRESSURE PRESENT

1. 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.

2. 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.

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

4. Keep the given operating pressure.

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

1.11 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. Any defects in the equipment that impact safe operation have to be repaired immediately.

4. Check screws that have been loosened during the repair or maintenance, if they are tight again.

5. Adhere to the current safety data sheet of the manufacturer when using hazardous materials (cleaning agents, etc.)!

1.12 Secure transport, Unpacking, Storage

1. Examine the equipment 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. Only pack and transport the hose when it is cool. Protect the ends of the hose with the fittings and the connecting cable with the corresponding plug.

4. When packing or unpacking very long and/or very heavy heated hoses please make sure that at least 2 employees handle these hoses safely.

5. The heated hose should be packed properly for transport. The ends of the heated hose with the fittings and the electrical connection with the plug should be protected additionally with bubble wrap for example. The minimum bending radius of the hose must not be exceeded (see Ch.2.2.3 Specifications by hose type).

6. **Unpacking:**
   Do not damage the heating hose when unpacking!
   Handle the fittings, protective caps and connection cable with care.
   Be careful not to kink the heated hose.
   Do not bend more than the minimum bend radius (see Ch.2.2.3 Specifications by hose type).

7. **Storage:**
   Store the hose away from direct sunlight or intense UV light. Do not allow the hose to come into contact with flammable material. Make sure that the storage temperature is between 0 and 50 °C (32 and 122 °F) and the humidity between 35 and 85% RH.

1.13 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.

1.14 Measures in case of fire

1. Please heed that hot melt equipment 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 pay attention to the safety data sheet given by the adhesive manufacturer.

EXTINGUISH FIRE

Appropriate extinguishing agents:
Foam extinguisher, Dry powder, Spray, Carbon dioxide (CO2), Dry sand.

For safety reasons not appropriate extinguishing agents: None.

Firefighting - burning electrical equipment:

Appropriate extinguishing agents:
Carbon dioxide (CO2), Dry powder.

1.15 Keep attention to environmental protection standards

1. When working on or with the equipment, 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 are 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 heated hose (also hose) is intended for industrial use only and may only be used to supply suitable materials, e.g. adhesives, from an Adhesive Supply Unit (ASU) to an Applicator. When in doubt, seek permission from ITW Dynatec.

The heated hose may only be operated within the **maximum limits for connection voltage, operating temperature and operating pressure** specified in the technical data.

The heated hose may only be handled (installed, used, maintained) by qualified and authorized personnel.

If the hose 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.
- comply with the legal regulations on occupational safety and health protection.

Any other use is considered to be unintended.

2.1.2 Unintended Use, Examples

The heated hose may not be used under the following conditions:
- In defective condition.
- In a potentially explosive atmosphere.
- Operation in systems with dust and corrosive gas.
- With unsuitable operating/processing materials.
- When the values stated under Specifications are not complied with.
- Operation in disregard of safety regulations
- The heated hose may never be operated without a temperature sensor (regulated via temperature) otherwise it will heat up uncontrolled and the maximum operating temperature exceeds which can cause injuries of the personnel or a complete destruction of the hose and your system.

The heated hose may not be used to process the following materials:
- Toxic, explosive and easily flammable materials, or media which produces explosive substances, when heated up.
- Erosive and corrosive materials.
- Substances that are not compatible with the materials of the inner tube.
- Food products.

2.1.3 Residual Risks

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

Personnel should be aware of the following:

- Due to the connection related, non-insulated fittings there is a permanent risk of burns! The operator of the system to which the hose or the hoses are connected needs to provide some kind of insulation or cover up for the bare metal parts because they can heat up dangerously. Always wear personal protective equipment!
- Risk of burns from hot material, heated hoses, melters and application heads.
- Risk of burns when attaching and removing heated hoses.
- Risk of injury from equipment to which the hose is attached, e.g. robots.
- Danger from potentially dangerous adhesive fumes. Avoid inhalation. If necessary, exhaust material vapors and/or provide sufficient ventilation of the location of the system.

- The heated hose is designed in a way that the resulting high temperatures remain inside the hose, due to thermal insulation. Due to thermal insulation, only temperatures occur on the external protection that are below the risk threshold, according to IEC 60364-4-42/A1 Construction of low-voltage systems.
- If a higher temperature is set than the max. specified operating temperature of the heated hose, it can cause a considerable damage for people, machinery or buildings as far as smoke or fire damages.
- If the heated hose is operated with a higher operating pressure than the specified max. operating pressure displayed on the type label, the heated hose may burst and cause serious injury or death to employees and damages to the equipment/system.

2.1.4 Reasonably foreseeable misuse

The following is considered misuse of the heated hose:

- Use by unqualified or untrained personnel.
- Incorrect connection of the hose.
- Installation of a hose not suitable for the application.
- Improper repair.
- Processing of erosive products.

2.1.5 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.

2.1.6 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.

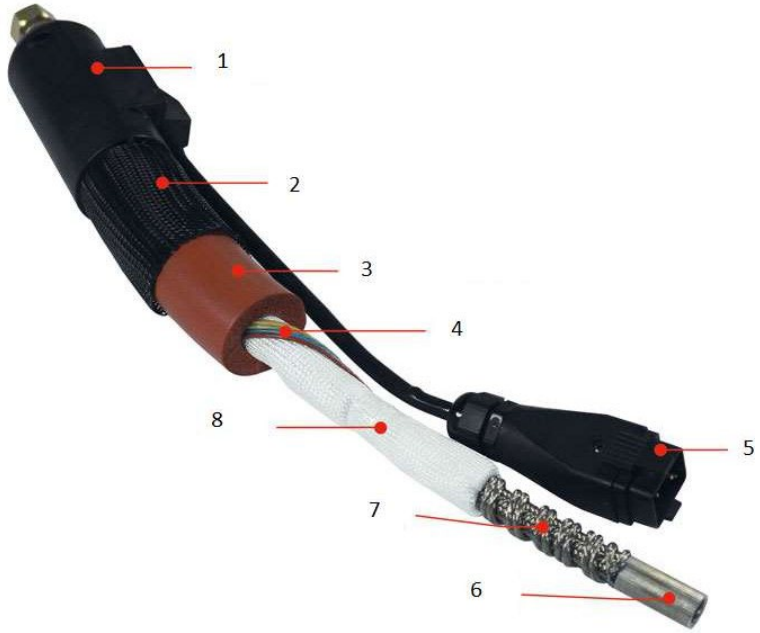
2.1.7 Setting-up operation

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 personnel.

2.2 Description Heated hoses

2.2.1 Description

Example structure of a heated hose:



1. End cap with cable entry
2. Protective sleeve
3. Thermal insulation
4. Control wires
5. Electric connector (Plug)
6. PTFE inner hose with stainless steel protective braid
7. Heating conductor and temperature sensor
8. Heat-resistant felt

The heated hose (also hose) is designed for transporting liquid media (e.g. hot melt adhesives) from a melter (adhesive heating system) to the application head (application device) and has the task of keeping the medium at a constant temperature during transport and compensating for heat losses. It is the link between a melter and an application head or a hand gun and is therefore part of a machine.

To prevent that the medium inside the hose does not lose its necessary consistency due to cooling, the heated hose is equipped with an electric heater. The power supply and the regulation of the needed temperature is provided by the system or the external temperature controller.

A heated hose usually consists of a high-quality **PTFE/PFA inner hose** with a protective braid made of stainless steel through which the liquid or gaseous medium is passed. The inner hose is resistant to high temperatures, high operating pressures and aggressive substances and covers a wide range of applications. Choose the heated hose type depending on your operating pressure and temperature (see table in Ch.2.2.3 Specifications by hose type and Ch. 4 Heated hose options).

An appropriate **fitting** is pressed onto the inner hose. Note that the inner diameter of the fitting differs from the nominal width of the hose and therefore restricts the hose passage due to the design.

The **heating conductor** is designed according to the German VDE guidelines. It is protected against moisture and has a nickel-plated copper braid for grounding.

A **temperature sensor** is installed to control the operating temperature of the heated hose. In the standard configuration, the temperature sensor is located on the inner hose, usually about 500 mm (20 inches) from the electrical connection. Additional temperature sensors and control cables can be installed if required.
All standard hoses (for systems with DynaControl) feature PT100 RTD temperature sensors. Optionally hoses with Ni120 RTD temperature sensors (for systems with NDSN-Control) are also available.

The **thermal insulation** is selected according to the operating temperature and protected against mechanical damage by a **protective sleeve**. **End caps** made of silicone or hard polyamide are attached to both ends of the hot melt hose.

The standard version has a standard plug for connection to the temperature control. The standard plug has pins for the heater and for the temperature sensor. Alternatively, the individual conductors are marked accordingly in non-standard versions. Other plugs on request.

Certification

The heated hoses have been tested in accordance with the Safety Electric Heating Appliances UL 499:2014/R:2017 UL and Construction and Test of Industrial Heating Equipment (R1999) CSA C22.2 No.88:2019.

Washdown versions

Washdown hose models are available. They consist of a standard hose, made water resistant with the addition of a seamless flexible sleeving, sealed end cuffs and liquid-tight electrical conduit and fittings.

2.2.2 Technical Data

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:

Temperature Sensor ..... PT 100 Ohm Platinum (Standard)
Flex hose.....Smooth inner core of extruded PTFE with type 1.4301 stainless steel wire braid reinforcement.
Length tolerance ..... < 1,0 m (3,28 ft) = +/- 4 %
> 1,0 m (3,28 ft) = +/- 2 %

Electrical

Nominal voltage ..... 110 – 480 VAC +/- 10 %
Nominal current/ heating circuit ..... max. 16 A
Nominal frequency .....50-60 Hz
Protection class.....I
Ingress protection (IEC 60529).....IP54 Standard or IP65 or IP66, if not specified otherwise
Electrical safety ..... in accordance with EN IEC 60204-1
Electrical performance tolerance .....+5% / -10%
Thermal conductivity ranges Watt/m .....30 - 600 W/m

Performance

Max. operating temperature..... 428°F (220°C)
Rated pressure ranges .....0 - 500 bar (0 – 7252 psi)
Max. operating pressure, Min. burst pressure, Bend radius .....see Ch.2.2.3 Specifications by hose type

CE Conformity.....yes

Identification plate

Refer to the identification plate for the specifications of your heated hose.
NOTE: All data for pressure and temperature on the type plate are maximum values**.**

- Supply voltage: XX AC +/- 10%
- Electrical performance tolerance: +5% / -10%
- Length tolerance:< 3,28ft (1,0m) = +-4% ; > 3,28ft (1,0m) = +/- 2%
- Sensor: Refer to identification plate
- Electrical connection: As ordered by customer
- Ambient temperature: -40 to 122 °F (-40 to 50°C)
- Ingress protection (IEC 60529): IP54 or IP65 or IP66, if not specified otherwise
- Electrical safety: In accordance with EN IEC 60204-1

2.2.3 Specifications by hose type

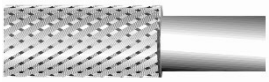
2.2.3.1 NOTE about burst pressure

NOTE about burst pressure:
The burst pressure is always 5 x the operating pressure.
The dynamic operating pressures for UL heated hoses are a factor of 1/5 of the burst pressure.

2.2.3.2 NOTE about hose type

NOTE about hose type:
There are two hose types T1 and T2 with different specifications, listed below.
To determine the hose type used based on the part number of your hose, see Ch. 4, Tables of Standard Hoses,.
If the part number of your hose is missing in the tables of the standard hoses, please contact ITW Dynatec and inquire about the hose type used.
See also the identification plate of the hose

2.2.3.3 Hose type K, PTFE-T1 smooth hose



- With one braided layer of steel wire (1.4301).
- Operating temperature up to max. 220°C/428°F.
- Max. installation length 0.5 to 100m (19.7 to 3937 inch).
- Optionally available with replaceable inner hose. See Ch. 2.2.3.4.

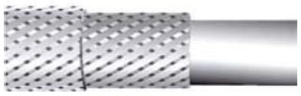
Nominal inner diameter DN (NW)		**mm**	**6**	**8**	**10**	**16**	**25**
		Inch	**0.24**	**0.32**	**0.4**	**0.64**	**1.00**
Max. Operating pressure	**at 20-50°C (68-122°F)**	**Bar**	180	160	140	105	64
		Psi	2610	2320	2030	1523	928
	at 100°C (212°F)	**Bar**	162	144	126	95	58
		Psi	2349	2088	1827	1370	835
	at 200°C (392°F)	**Bar**	144	128	112	84	51
		Psi	2088	1856	1624	1218	742
	at 220°C (428°F)	**Bar**	108	96	84	63	38
		Psi	1566	1392	1218	914	557
Burst pressure At operating pressure 200°C (392°F). See note in Ch. 2.2.3.1.		**Bar**	720	640	560	420	255
		Psi	10440	9280	8120	6090	3710
Outer diameter, circa		**cm**	4.5	4.5	4.5	5.5	5.5
		Inch	1.8	1.8	1.8	2.2	2.2
Min. Bending radius (Outer diameter x 5)		**cm**	23	23	23	28	28
		Inch	9	9	9	11	11
Nominal Wattage in watts per meter (39.37 inches)		**W / m (inch)**	110	130	150	240	350
Formula for calculating the **resistance value** (Ohm) of the hose heater		$\frac{\text{Voltage}^2\ (\text{Volts}^2)}{\text{Wattage (Watts)}}$ = **Resistance (Ohm)**					

2.2.3.4 Hose type KX, PTFE-T1, with replaceable inner hose

- See also Ch. 3.4 Replacement of replaceable inner hose.
- With one braided layer of steel wire (1.4301).
- Operating temperature up to max. 220°C/428°F.
- Max. installation length 0,5 to 10m (19.7 to 393.7 inch).

Nominal inner diameter DN (NW)		**mm**	**6**	**8**	**10**	**16**
		Inch	**0.24**	**0.32**	**0.4**	**0.64**
Max. Operating pressure	**at 20-50°C (68-122°F)**	**Bar**	180	160	140	105
		Psi	2610	2320	2030	1523
	at 100°C (212°F)	**Bar**	162	144	126	95
		Psi	2349	2088	1827	1370
	at 200°C (392°F)	**Bar**	144	128	112	84
		Psi	2088	1856	1624	1218
	at 220°C (428°F)	**Bar**	108	96	84	63
		Psi	1566	1392	1218	914
Burst pressure At operating pressure 200°C (392°F). See note in Ch. 2.2.3.1.		**Bar**	720	640	560	420
		Psi	10440	9280	8120	6090
Outer diameter, circa		**cm**	4.5	5	5.5	7.5
		Inch	1.8	2	2.2	3
Min. Bending radius (Outer diameter x 5)		**cm**	23	25	28	38
		Inch	9	10	11	15
Nominal Wattage in watts per meter (39.37 inches)		**W / m (inch)**	110	130	150	240
Formula for calculating the **resistance value** (Ohm) of the hose heater		$\frac{\textbf{Voltage}^2\ \textbf{(Volts}^2\textbf{)}}{\textbf{Wattage (Watts)}}$ **= Resistance (Ohm)**				

2.2.3.5 Hose type K, PTFE-T2 smooth hose



- With two braided layers of steel wire (1.4301).
- Operating temperature up to max. 220°C/428°F.
- Max. installation length 0.5 to 100m (19.7 to 3937 inch) up to inner diameter 25mm (0.98 inch).
  Max. installation length 0.5 to 48m (19.7 to 1890 inch) up to inner diameter 40mm (1.57 inch).

Nominal inner diameter DN (NW)		**mm**	**6**	**8**	**10**	**16**	**25**	**40**
		Inch	**0.24**	**0.32**	**0.4**	**0.64**	**1.00**	**1.60**
Max. Operating pressure	**at 20-50°C (68-122°F)**	**Bar**	220	200	180	140	104	40
		Psi	3190	2900	2610	2030	1508	580
	at 100°C (212°F)	**Bar**	198	180	162	126	94	36
		Psi	2871	2610	2349	1827	1357	522
	at 200°C (392°F)	**Bar**	176	160	144	112	83	32
		Psi	2552	2320	2088	1624	1206	464
	at 220°C (428°F)	**Bar**	132	120	108	84	62	24
		Psi	1914	1740	1566	1218	905	347
Burst pressure At operating pressure 200°C (392°F). See note in Ch. 2.2.3.1.		**Bar**	880	800	720	560	415	160
		Psi	12760	11600	10440	8120	6030	2320
Outer diameter, circa		**cm**	4.5	4.5	4.5	5.5	5.5	8
		Inch	1.8	1.8	1.8	2.2	2.2	3.2
Min. Bending radius (Outer diameter x 5)		**cm**	23	23	23	28	28	40
		Inch	9	9	9	11	11	16
Nominal Wattage in watts per meter (39.37 inches)		**W / m (inch)**	110	130	150	240	350	500
Formula for calculating the **resistance value** (Ohm) of the hose heater		$\frac{\textbf{Voltage}^2\ \textbf{(Volts}^2\textbf{)}}{\textbf{Wattage (Watts)}} = \textbf{Resistance (Ohm)}$						

2.2.4 Note on Fittings

The fitting size depends on the nominal inner diameter (DN) and the nominal width (NW) of the inner hose. Please note that the inner diameter of the fitting is not identical to the nominal width of the hose. The inner diameter of the fitting therefore restricts the passage of the heated hose due to its design.

Nominal diameter DN (NW) of the PTFE inner hose	**mm**	6	8	10	16	25	40
	inch	0.24	0.31	0.39	0.63	0.98	1.58
Inner diameter of the fitting	**mm**	4.5	6	7.5	12.5	20.1	31.5
	inch	0.18	0.24	0.29	0.49	0.79	1.24

2.3 Installation and Start-up Instructions

2.3.1 Typical Installation

All work on or with this equipment is only permitted for skilled personnel!

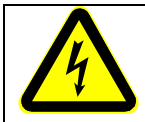
Heed all safety instructions mentioned in chapter 1 and comply with applicable safety regulations, such as, but not limited to, those of the U.S. Federal Agency OSHA (Occupational Safety and Health Administration) requirements, the State's equivalent agency (such as Cal/OSHA in California), or CanOSH in Canada.

Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that covers all exposed parts of the body when working on or with the unit. Risk of burns and risk of injury!

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

The heated hoses and adhesive supply unit's (ASU, Melter) 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!



DANGER HIGH VOLTAGE

ITW Dynatec systems use electrical power that can be life threatening. Disconnect and lock out input power to the application system before connecting, disconnecting or troubleshooting any hose(s).

CAUTION

Failure to follow these installation instructions may result in malfunctions or may not comply with EMC regulations.

1) For mechanical installation, pay attention to the following:

1. **If the hose is cold and contains adhesive,** it may be damaged if it is bent or kinked. To prevent this, turn on power to the hose and wait until the melter temperature gauge indicates that operating temperatures have been reached before routing and installing the hose around surrounding machine equipment.

2. Make sure that the hose is not bent more than the minimum bending radius specified in Ch.2.2.3 Specifications by hose type. Excessive bending can damage the heated hose.

3. Refer to the following illustration as a general hose installation and "Chapter 2.3.2 Hose Installation and Handling Guidelines" on the next pages.

4. Refer to the melter documentation for hose connection location and melter drawing and for installation instructions. The heated hoses connect to the melter at the adhesive port on the filter block (or tank) and to the electrical connector. The other end of the hose connects to the adhesive inlet port on the applicator (or hand gun) and to the electrical connector.

5. A heated hose must be laid in such a way that unintentional contact is not possible. If necessary, hoses must be laid in protected areas of machines or provided with additional covers. If hoses have to be laid in the immediate vicinity of permanently occupied workplaces, a protective cover must always be provided.

6. Lay the cables and heated hoses so that there is no risk or the least possible risk of tripping/stumbling.

7. Do not roll up or stack the heated hose. A heat accumulation can damage the unit and/or the heated hose.

8. Make sure that the fittings are not installed under tension. Excessive tension can damage the fittings.

9. Do not install the hose closer than 20 mm (0.8 inch) to any surface (vertical, horizontal or other).

10. When tightening the hose swivel fittings, hold the hose and end cap firmly to prevent the inner hose from twisting.

11. Tighten the hose on his both ends on Melter and Applicator.

    IMPORTANT: We recommend the following torques for tightening the hoses.

DN (NW)	Tightening torque
6	17 Nm (150 in-lbs)
8	20 Nm (177 in-lbs)
10	35 Nm (310 in-lbs)
16	45 Nm (398 in-lbs)
25	60 Nm (531 in-lbs)
40	100 Nm (885 in-lbs)

12. The hoses must not be covered by machinery or any materials.

13. Do not hang hoses without suitable hose supports.

14. Maintain a minimum of 1 inch (2.5 cm) clearance between adjacent hoses.

15. Do not crimp, clamp, squeeze or tie hoses.

16. Do not bind and/or press hoses together and/or stacked one on the other.

17. Check all screw connections at the equipment and retighten if necessary.

18. High temperatures occur on the two non-insulated fittings due to the hot medium. Direct contact of these parts with these surface temperatures will cause severe burns to the skin. Insulate the bare metal parts that can heat up dangerously or cover them with suitable means. Always wear personal protective equipment!

2) For electrical connection, pay attention to the following:

1. Heed all safety instructions mentioned in chapter 1 and comply with applicable safety regulations, such as, but not limited to, those of the U.S. Federal Agency OSHA (Occupational Safety and Health Administration) requirements, the State's equivalent agency (such as Cal/OSHA in California), or CanOSH in Canada
2. Before connecting a hose to a melter, make sure that the power to the melter is OFF and lock the system against being turned on again during installation of the hot melt hose.
3. Check the hose identification plate and your order information and make sure the specifications match.
4. Make sure that the supply voltage matches the voltage indicated on the identification plate of the heated hose.
5. Make sure that the nominal power for the heated hose does not exceed the maximum output power of the connected temperature controller (resistive load).
6. Connect the heated hoses according to the melter's electrical wiring diagrams. Complete the electrical connections according to the wiring diagram and in compliance with all applicable electrical regulations.
7. Route the electrical cables to the heated hose in such a way that they are free from tension under all conditions and cannot be pinched or sheared off under any circumstances

8. If possible, use shielded cables for the sensor lines and signal wires and shielded compensation wires for the thermocouples.
9. Only install with overcurrent protection device. Protect the heated hose supply circuit against overcurrent using suitable fuses. According to IEC 60519-1, a line protection must ensure that the nominal value of the fuse is matched to the specific load. The line protector must be connected in series before the heated hose (including the controller). However, the maximum fuse value must not exceed 16A. Use a conductor with a cross-section of at least AWG 16 (1.5 mm²).
10. Wiring terminals for permanent connection to the power supply must be provided with wiring terminals or leads for the connection of conductors having an ampacity of at least 125 percent of the current rating of the product! Use only recognized and certified wiring terminals in accordance with the UL 1977 standard and/or CSA-C22.2 No. 182.3 or similar! A terminal intended for connection of a grounded conductor must be made of or coated with a white metal or, or have the word "white.
11. Never connect or disconnect plug-and-socket connections under load!

Hose installation from the Melter to the Applicator or Hand-held Applicator:

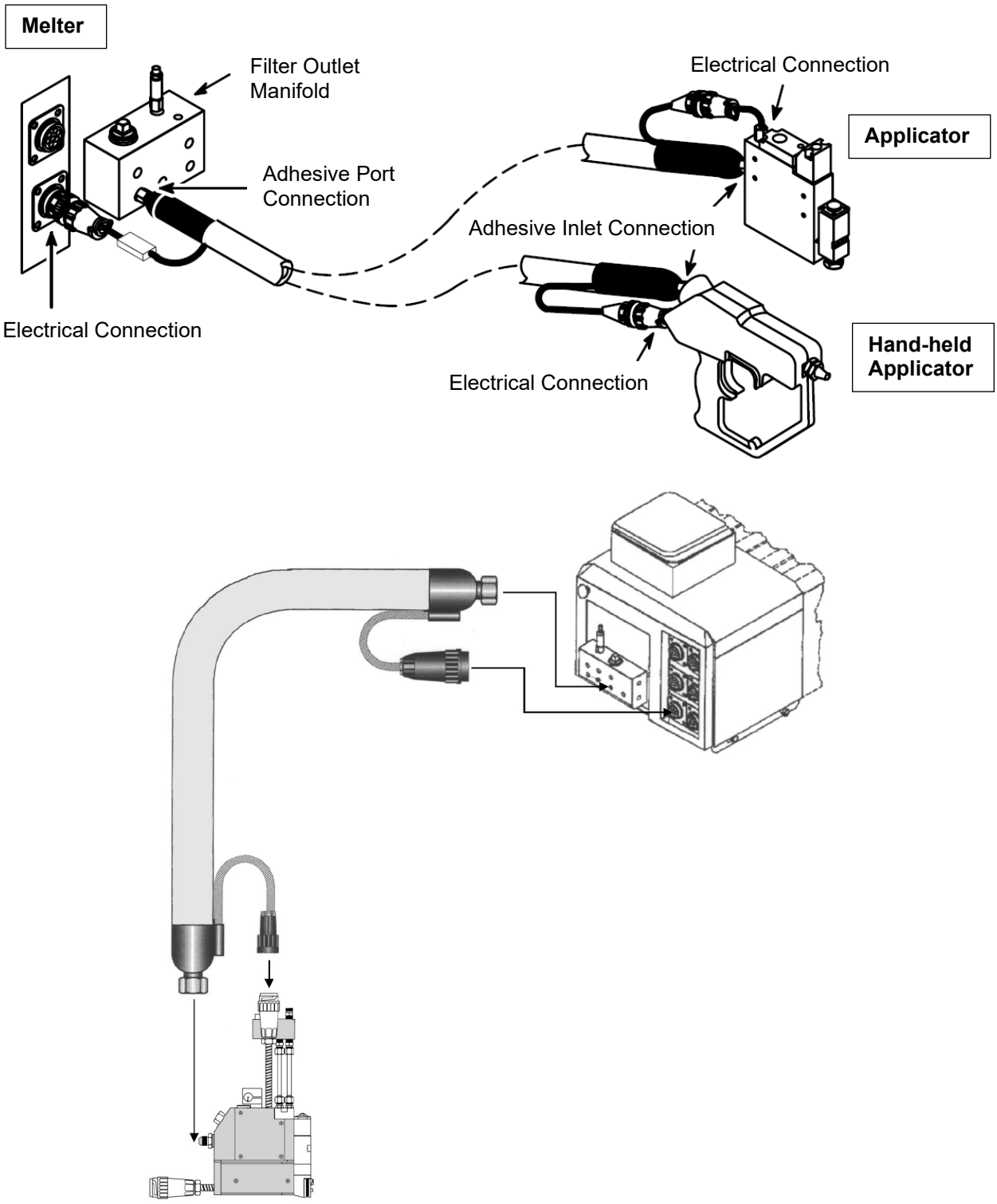


Illustration: Hose installation from the Melter to the Applicator or Hand-held Applicator

2.3.2 Hose Installation and Handling Guidelines

CAUTION

1. **DO NOT** attempt to turn the fitting on a hose with cold, non-melted adhesive inside; the hose core may be damaged.

2. **DO NOT** allow hoses to come into contact with any liquids. If a hose becomes wet, it should be replaced immediately. (Washdown hoses are not subject to this requirement unless the waterproof sleeve is damaged.)

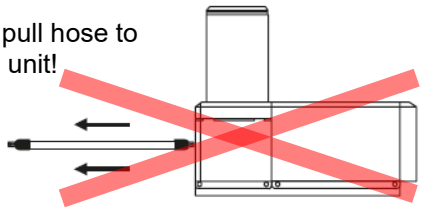
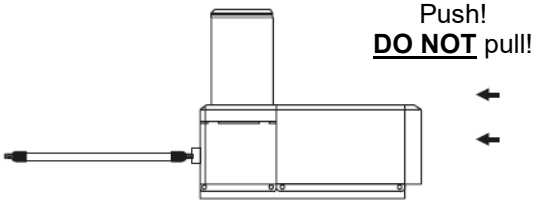
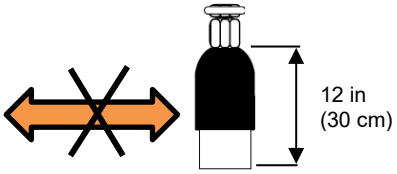
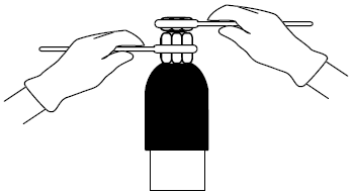
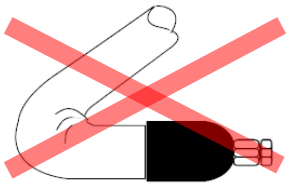
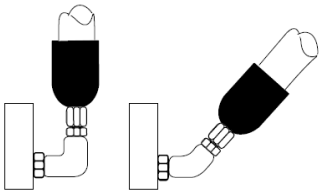
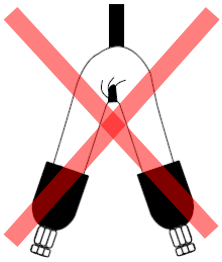
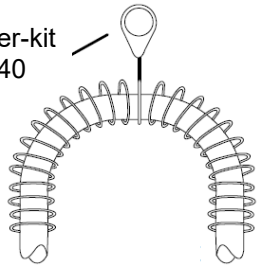
3. **DO NOT** allow hoses to lay on cold surfaces as this may impede glue flow, cause a hose to operate above its temperature set point and reduce the efficiency and life of a hose.

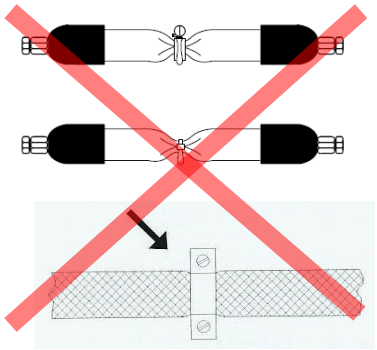
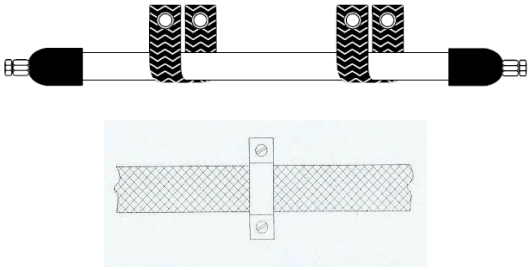
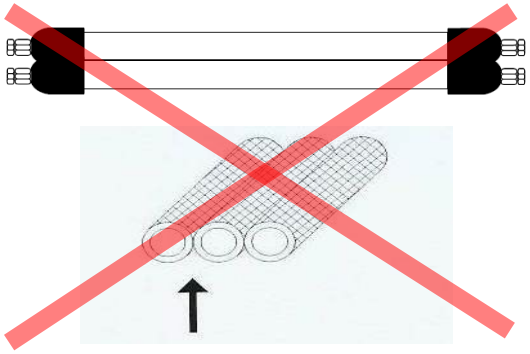
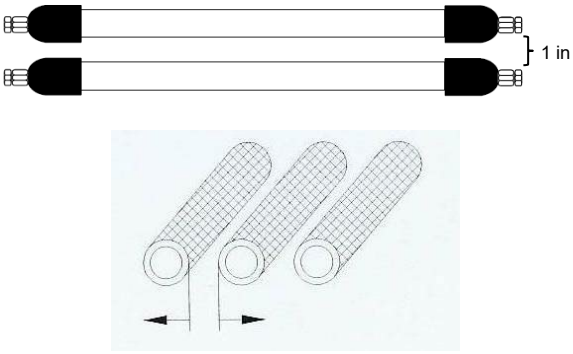
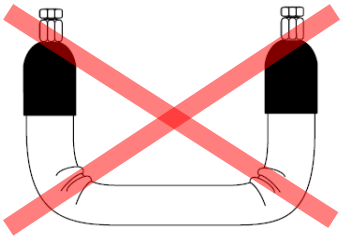
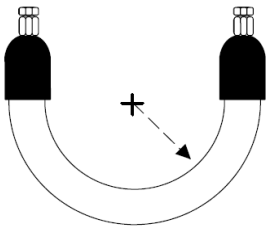
4. **DO NOT** allow hoses to be exposed to surfaces that may cause abrasive wear. If a hose shows abrasive wear, it may have internal damage that may result in erratic operation, injury and damage to equipment due to exposed electrical wires, burning or fire.

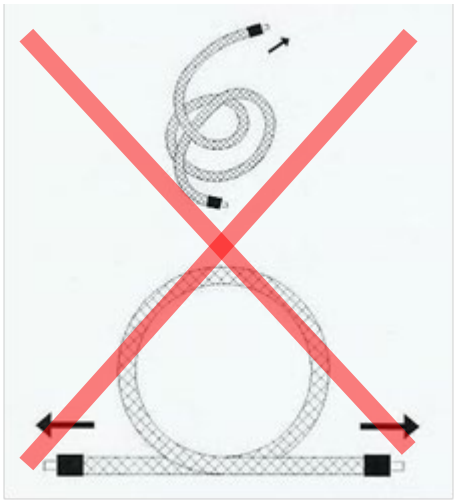
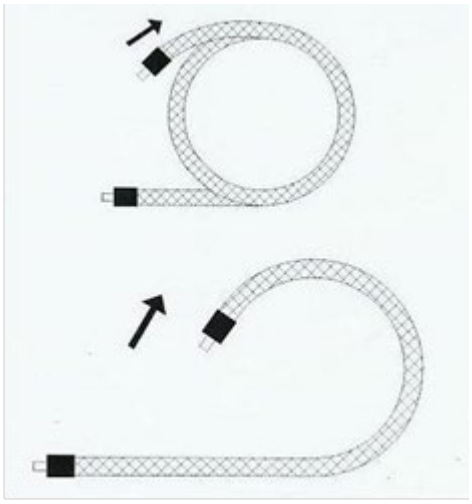
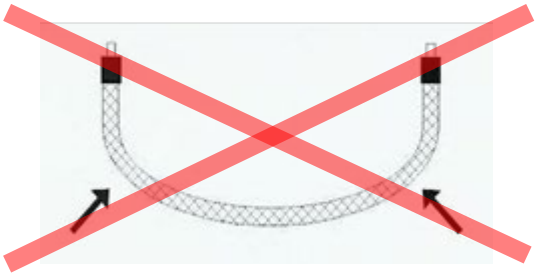
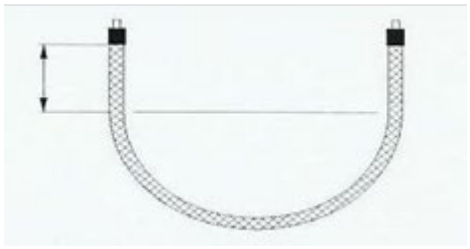
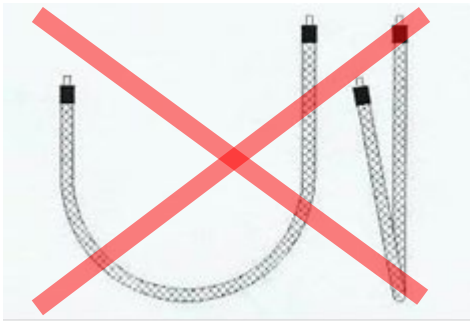
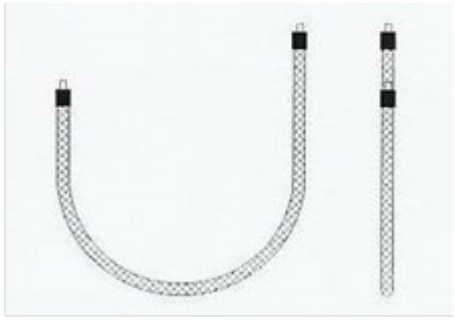
5. **Failure to follow installation and handling guidelines WILL void the hose warranty, reduce the life of the hose and may result in injury and damage to equipment resulting from char, burning or fire.**

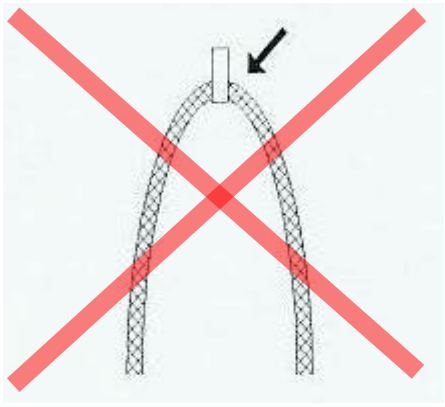
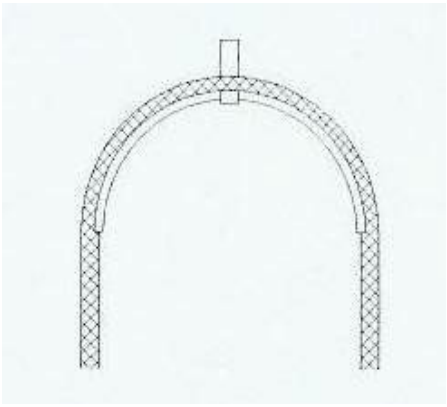
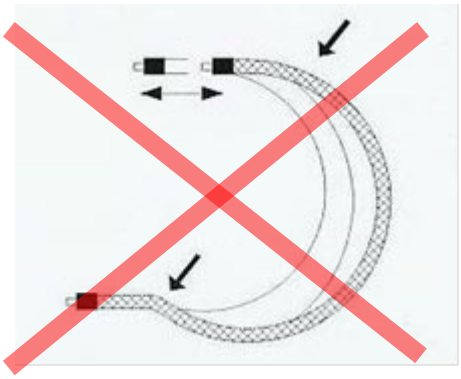
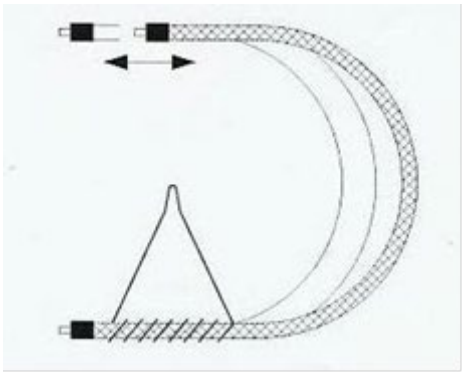
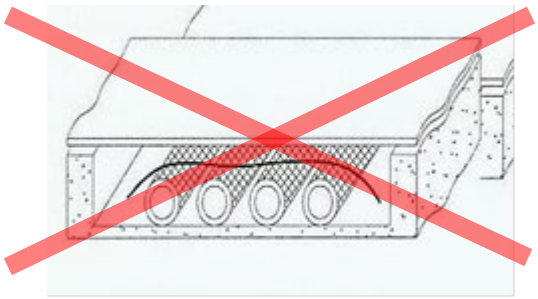
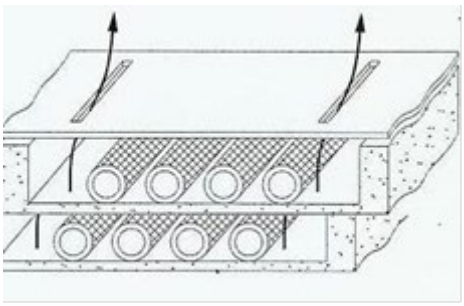
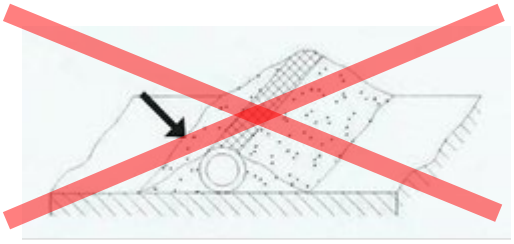
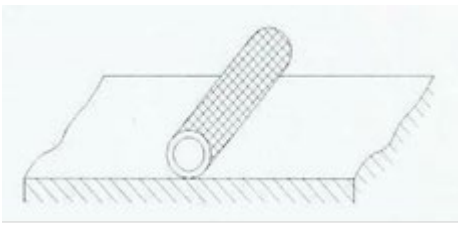
Please heed the instructions on the following pages.

Hose failure due to below listed "WRONG" practices will void hose warranty!

WRONG	CORRECT
DO NOT pull hose to move the unit! 	
 **DO NOT** bend, push or pull hose within the first 12 in (30 cm) of fittings!	-
 **DO NOT** use only one wrench to adjust fittings! If you use only one wrench when connecting the fitting, the heated hose will twist.	 When connecting the fitting, **always** use a second wrench to avoid twisting the heated hose!
 **DO NOT** bend or crimp hose beyond minimum bend radius!	 **Heed the min. bending radii; see Ch.2.2.3 Specifications by hose type.** Use 45° hose fitting (PN N07831) or 90° hose fitting (PN N07830) to bend hose.
 **DO NOT** hang hose without support!	Hose-balancer-kit PN 084F440  Use hose support with hose-balancer-kit to hang hose.

WRONG	CORRECT
	
DO NOT clamp, squeeze or tie hoses! Do not squeeze the thermal insulation on the brackets so that the outer braid is not pressed onto the heating conductor. Failure to do so can damage the protective braid, destroy the heated hose or damage the medium.	Use hose supports (5-pack is PN 113342). When installing, do not press the external thermal insulation onto the heating conductor more than 10% of the diameter. When installing heated hoses with a corrugated pipe, use the optional special brackets for external protection.
	
DO NOT squeeze, press or tie hoses together! A bundling or embedding of heated hoses with contact areas between them will cause overheating of the contact areas.	Maintain a minimum distance of 1 inch (2.5 cm) between hoses.
	
DO NOT flex, kink or bend hoses when they are cold!	Allow hoses to heat up to operating temperature before flexing, kniking or bending! **Heed the min. bending radii; see Ch.2.2.3 Specifications by hose type.**

WRONG	CORRECT
	
Pulling the rolled up heated hoses at the hose ends causes torsional stress and a critically small bending radius. **CAUTION: The heated hose must not be operated when rolled up or stacked! Danger of heat accumulation - the heated hose can be destroyed!**	Carefully unwind the heated hose from the roll without pulling on it!
	
If the heated hoses are too short, they will be kinked at the connection ends.	Provide a straight section of the heated hose at the connections to avoid kinking of the inner hose. **Heed the min. bending radii; see Ch.2.2.3 Specifications by type.** A lager bending radius ensures a longer service life.
	
The heated hoses can be destroyed by torsional motions if installed incorrectly.	Make sure that the axes of the heated hose are parallel and that all motions of the hose are always in the same plane.

WRONG	CORRECT
 Avoid diversions. These can cause kinking and bending stress.	 Use a saddle-shaped device or roll with the appropriate diameter to ensure the minimum bending radius. **Heed the min. bending radii; see Ch.2.2.3 Specifications by hose type.**
 Inappropriate installation may cause the heated hose sag.	 Use a spiral heated hose suspension.
 Heated hoses mounted within a closed channel or shaft will cause heat built-up.	 Heated hoses must not touch each other. Provide sufficient ventilation!
 Heated hoses will overheat if powdery substances, adhesives or other thermo-insulating materials are spilled on them.	 Lay the hoses freely. Regularly clean the heated hoses and eliminate the cause of the spill.

2.3.3 Start-up

Before putting the heated hose into operation, observe the following:

WARNING

- Heated hoses that are filled with either adhesive or cleaner **should generally not be moved unheated** in order to avoid damages.
- For a movement, e.g. when Teaching, we recommend a temperature lower than the application temperature in order to protect the adhesive. The temperature can therefore be below the application temperature, but it should be set well above the softening point of the respective adhesive or cleaner according to the data sheet.

WARNING

- **There is a risk of overheating if the heated hose is heated without a temperature controller.** Without a proper temperature controller, the heated hose can heat up and exceed the maximum operating temperature. This can cause injury to personnel, damage to the heated hose, and destruction of your system. **Therefore, always operate the heated hose with a temperature controller and only use temperature controllers that are compatible with the type of temperature sensor in the heated hose.**

- An incorrect electrical connection can cause serious damage to the heated hose or the entire system. Check the electrical connections carefully. The supply voltage must match the voltage indicated on the identification plate.

- Before putting the system into operation, make sure you follow the instructions in this manual and any local Occupational Health and Safety Regulations (such as OSHA or CanOSH) that apply where the product is installed. Also observe the instructions in the International Standards IEC60204-1, IEC 60519-1, IEC 60519-2 and IEC 61140. Document all checks performed to demonstrate compliance with these regulations and standards.

- During initial start-up, make sure that the heated hose is not in a critical process state, such as incorrect temperature, incorrect pressure, incorrect flow, etc. Since the temperature control is not yet adapted to the system, this can lead to malfunctions and damage. Follow the instructions in the temperature control manual to configure the process.

- The heated hose must not be used at operating temperatures exceeding the operating temperature specified in Chapter 2.2.2 Specifications and on the identification plate.

- **The heated hose must reach its operating temperature before you can increase the system pressure to your operating pressure, as the medium in the fittings may not yet be liquid, i.e. solid, and could block the flow. The heated hose needs about 15 to 30 minutes to reach its operating temperature.**

NOTE: When the heated hose has reached operating temperature, retighten the fittings.

WARNING: Exposed parts such as fittings may be very hot and could cause serious injury if touched.

- When starting up or restarting the system, make sure that the medium in the heated hose has reached its processing temperature in order to avoid damage to the inner hose; i.e. a longer heating-up time is to be expected.

- The pressure resistance of the flexible heated hose depends on the operating temperature range (for operating temperatures up to 220°C (428°F), refer to the tables in Ch.2.2.3 Specifications by hose type).

  WARNING: Never exceed the specified operating pressure!
  The operating pressure must not be exceeded, otherwise this overload can lead to leaks or even bursting of the heated hose, which poses a high risk of injury and burns due to hot parts and molten hot material (glue) being thrown out.

  Make sure that there are no pressure surges. These can be very high and are not indicated by normal pressure gauges.

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

Operation:

	**NOTES:** The operation is carried out via the corresponding superior Controller/Regulator, see the corresponding operating manual. With long heating hoses > 6.0m, it may happen that a material flow stagnation can lead to a temperature increase above the set operating temperature on the opposite site of the sensor position. Therefore, a temperature reduction of approx. 10°K (°C) should be provided for material flow stagnation of temperature critical media.

Installation into a new machine or system:

NOTES: When installing the heated hose into a new machine or system, it is as client your responsibility to comply with all relevant regulation such as, but not limited to, U.S. Federal OSHA (Occupational Safety and Health Administration) requirements, the State's equivalent agency (such as Cal/OSHA in California) or CanOSH in Canada.

- During installation, observe all safety instructions and residual risks in this operating manual.
- Provide complete technical documentation including the operating manual for the completed system.

Installation of this heated hose into a machine or system can add additional hazards. Check whether it is necessary to add further instructions to the machine's or system's operating instructions because of these hazards.
Make sure that all persons working on or with the machine have read this operating manual before starting to work on or with the machine.

2.3.4 Handling of heated hoses when used for industrial robots

The heated hoses for industrial robots are characterized by their special design. Due to the heavy dynamic load caused by the robot, the hose is equipped with a special outer sheath and a protective element for the inner temperature sensor in addition to various other specific measures.

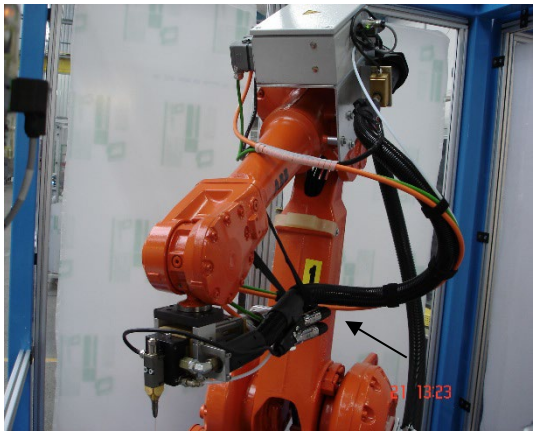


Figure 1

Figure 2

Please make sure that the heated hose has a contact surface which is as large as possible and that it is attached to the robot with special hose protection elements (see figures 1 and 2). Do not use any cable ties to this end.

Important:

- It is of paramount importance not to undercut the specified bending radius of the heated hose.
- For specific applications which demand a bending radius which is close to the limit and/or for excessively dynamic movements of the industrial robot, the heated hoses must be protected with hose protection springs or the like (see figures 3 and 4).
- In the area of the temperature sensor the movement must be kept as low as possible.
- In addition, you must make sure that the heated hose is neither compressed, twisted nor overstretched.
- Furthermore, you must pay attention to the fact that the heated hose is not pulled over any sharp edges or that it is not constantly subject to abrasion e.g. at a robot arm.

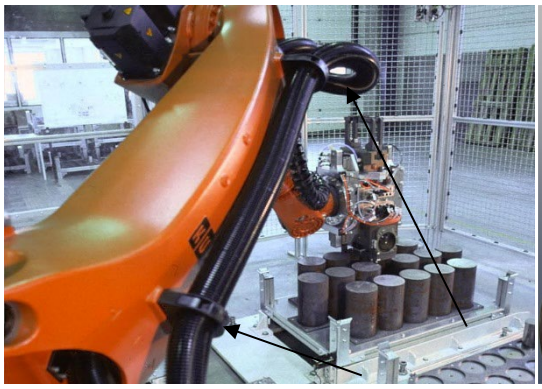


Figure 3

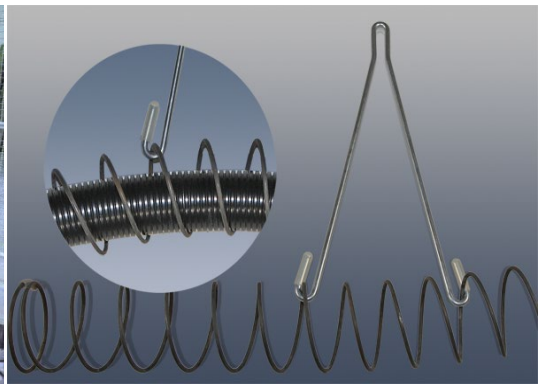
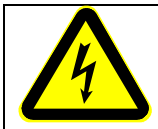


Figure 4

The more frequently a heated hose executes a movement per minute, the more important is the ideal choice of the outer sheath and its attachment to the robot. The service life of the heated hose (multi-shift operation) is the shorter, the more movements the hose is subject to per day.

2.4 Disconnect Hose from Melter or Applicator



HAZARD OF ELECTRICAL VOLTAGE AND ELECTRIC SHOCK!

- If the system in which the heated hose is installed is still under voltage, there is a risk of electric shock! Risk of injury, danger to life!
- Follow the lockout/tagout procedure:
  Switch off the main switch of the power supply and secure it with a padlock to protect it from being switched on unintentionally while the heated hose is being removed.

WARNING
HIGH PRESSURE, HOT ADHESIVE!
RISK OF BURNS AND RISK OF INJURY!

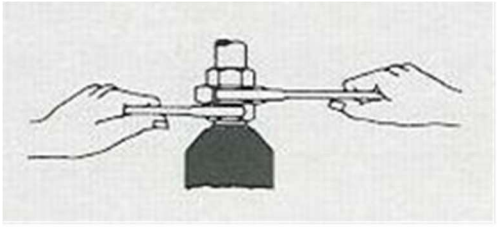
- **The system and the adhesive are under pressure. When loosening the hose, adhesive can spray out and cause serious burns. Therefore, never attempt to remove a hose from its adhesive connection before ensuring that the entire system pressure has been relieved. Release the pressure before removing the hot melt hose.**
- **If you disassemble (loosen) a hose or hose cap, hot glue can escape from the filter block and hose ends under high pressure.**
  Place a heat-resistant container under the hose ends and under the hose connections on the melter and applicator and stay at a safe distance until all pressure is relieved.

- Always wear heat-resistant protective gloves, safety goggles (or face shield) and protective clothing!

- Only touch the hot surfaces/parts and melted adhesive with heat-resistant protective gloves! Device parts and adhesive can remain hot long after the device has been switched off and cause severe burns.

Carry out the following steps to dismount (disconnect) a hose from the melter or application head:

1. Before dismounting (disconnecting) a hose, turn OFF the melter pump/motor.
2. Then activate (open) the application head to relieve the adhesive pressure in the system.
3. Disconnect all electrical connections.
4. Loosen the union nuts of the connections with two wrenches as shown.



5. Remove the hose.

Chapter 3
Repair, Maintenance & Troubleshooting

3.1 General Advices on Repair and Maintenance

WARNING! RISK OF BURNS!
HOT FITTINGS, HOT ADHESIVE!

- Repair and maintenance work must be carried out by trained technical personnel who have sufficient knowledge.
- Heed all safety instructions mentioned in chapter 1.
- Exposed parts, such as fittings, may be extremely hot and contact with them may cause serious injury.
- Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that covers all exposed parts of the body when working on or with the unit. Risk of burns and risk of injury!
- When handling hazardous substances (cleaning agents, etc.), observe the current safety data sheets.

ADVICES ON REPAIR AND MAINTENANCE

- Observe the maintenance plan in Chapter 3.2 as preventive maintenance.
- Stop using the heated hose if the heated hose or the system it is part of…
  - is damaged,
  - no longer functions as intended,
  - has been subjected to overload or overheating.
  - has been subjected to any type of overload that exceeds the permissible limits (e.g. overpressure, overtemperature, overvoltage, or during storage or transport).
- If the heated hose can no longer be used safely, it must be taken out of service and locked to prevent accidental reuse. Attach a **"Defective, do not use"** sign or similar.
- If the heated hose is repaired or technically modified by anyone other than the manufacturer ITW Dynatec, all guarantees and warranties will be void.
- Repairs may only be carried out in the ITW Dynatec factory! If the heated hose is defective, send it to ITW Dynatec with a description of the defect.

ADVICES ON CLEANING FROM THE OUTSIDE

- If the visual inspection reveals that the outside of the heated hose is heavily soiled, it can be cleaned with a damp cloth and a suitable cleaning agent when it is switched off.
- When handling hazardous substances (cleaning agents, etc.), observe the current safety data sheets.

3.1.1 Service life, Shelf life and Storage

NOTES ON Service life, Shelf life and Storage

According to the European standard EN 20066, heated hoses must not be used longer than 6 years including storage of any kind. The maximum shelf life (storage period) is 2 years, which must not be exceeded.

3.2 Maintenance Plan

WARNING! HIGH PRESSURE, HOT ADHESIVE!

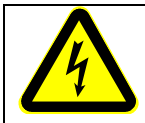
- Repair and maintenance work must be carried out by trained technical personnel who have sufficient knowledge.
- Heed all safety instructions mentioned in chapter 1.
- Exposed parts, such as fittings, may be extremely hot and contact with them may cause serious injury.
- Always wear safety shoes, heat-resistant protective gloves, safety goggles and protective clothing that covers all exposed parts of the body when working on or with the unit. Risk of burns and risk of injury!
- When handling hazardous substances (cleaning agents, etc.), observe the current safety data sheets.
- Comply with all local occupational health and safety regulations (e.g. OSHA or CanOSH) that apply where the product is installed.

Maintenance plan:

Operating time/ interval	Inspection point / maintenance notes
Daily	• Clean any spilled out materials or other debris from heated hoses to prevent overheating. • Visually inspect for leaks, cuts, dents or other damage. Replace if damaged.
Monthly	• Check all hose connections and fittings for leaks and tighten them if necessary.
Yearly	• Check heater and temperature control for proper operation.

3.3 Troubleshooting

3.3.1 Safety instructions for Troubleshooting



DANGER HIGH VOLTAGE

Disconnect and lock out the input power to the application system before proceeding with these instructions.

The Hoses and Adhesive Supply Unit use electrical power that can be life threatening and hot-melt adhesives that can cause serious burns.

All troubleshooting procedures must be performed by qualified, trained technicians. Please re-read all security advices given in Chapter 1 before performing any troubleshooting procedures.

WARNING! HIGH PRESSURE, HOT ADHESIVE!

Some of the procedures in the following Troubleshooting Guide require working near hot adhesive. Severe burns can occur if unprotected skin comes in contact with molten adhesive or hot application system parts.

When disconnecting a hose or hose cap, hot adhesive can escape from both the manifold and from the end of the hose under high pressure. Place a heat-resistant container under the filter block and the hose end. Stand clear until all pressure is relieved.

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.

3.3.2 Hose Troubleshooting Tip

Hose problems can be isolated by electrically connecting the hose to an alternate socket on the Melter. If the malfunction goes with the hose, the problem will usually be in the hose that was moved. If the malfunction does not move with the hose, the problem is probably in the Melter.

3.3.3 Troubleshooting Guide

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 (tank) 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.

Troubleshooting Guide:

Problem	Possible Cause	Solution
Hose does not heat or does not reach operating temperature.	1. System is switched off. 2. The electrical connections are loose or the connector is broken. 3. Temperature adjustment on the controller is not correct. 4. Connector from hose to Melter is not plugged on correctly. 5. Heater in hose defect. 6. Temperature sensor defect. 7. Mechanical damage to the hose insulating. 8. Standby on the controller activated.	1. Switch the system on. 2. Tighten or replace the connectors. 3. Check temperature adjustment and adjust if necessary. 4. Check connector. 5. Check heater. 6. Check temperature sensor. 7. Check hose and replace if necessary. 8. Activate operating temperature.
No adhesive flowing out of hose.	1. Hose has kinks. 2. Adhesive pressure too low.	1. Check hose if kinked. 2. Check operating temperature and pressure adjustment.

3.3.4 Measuring Resistance of the Hoses

The ITW Dynatec's adhesive hoses are designed with built-in heater and sensor backups to aid the user in the event of a failure in these two components.

Follow the following procedure to determine if the failure of a hose is due to a faulty heater or RTD sensor.

1. Make sure that incoming line power to the Melter and that the unit's Main Power Switch are turned OFF.

2. Disconnect hose from Melter or applicator following the instructions under Ch. "2.4 Disconnect Hose from Melter or Applicator".

3. Test resistance using the pins within the hose connector:

a. *Measuring Resistance on the RTD temperature sensor:*

- The temperature sensor in DynaControl hoses is a 100 Ohm platinum RTD. The temperature coefficient is 0.00385 Ohms/ Ohm/ °C.

- When temperature sensor resistance is being verified, refer to the Resistance Table on next pages.

- The resistance value (Ohms) of your temperature sensor depends on the temperature of the sensor at the time it is being tested.

- With an ohmmeter, contact pins 9 and 10 and measure resistance. A tolerance range of ± 5% is allowed.

- Refer to the Melter service manual for system wattage limitations.

b. Measuring Resistance on the heater:

- With an ohmmeter, contact pins 11 and 12 and measure resistance. Heater circuit resistance is listed on the red hose warranty tag attached to the adhesive supply unit end of the power cord.
  A tolerance range of ± 10% is allowed.

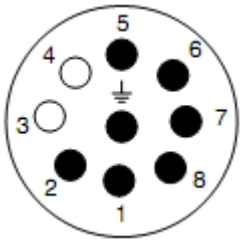
- The resistance value (Ohms) of your hose heater may be calculated using the formula:

$$\frac{\textbf{Voltage}^2\ \textbf{(Volts}^2\textbf{)}}{\textbf{Wattage (Watts)}} = \textbf{Resistance (Ohm)}$$

3.3.5 Circular plug, DynaControl, Connector view 9/15-Pin (for Standard Hoses)

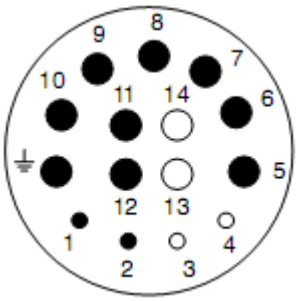
Connector view: The connectors shown from the front:

9-Pin Connector *(female)*
End of hose on Applicator



1	Trigger, impulse only electric head
2	Trigger, impulse only electric head
3	NC
4	NC
5	Head sensor PT100
6	Head sensor PT100
7	Head heater
8	Head heater
⏚	Ground

15-Pin Connector (male)
End of hose on Melter



1	Trigger, impulse only electric head
2	Trigger, impulse only electric head
3	NC
4	NC
5	Head sensor PT100
6	Head sensor PT100
7	Head heater
8	Head heater
9	Hose sensor PT100
10	Hose sensor PT100
11	Hose heater
12	Hose heater
13	NC
14	NC
⏚	Ground

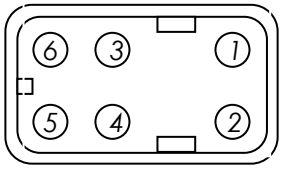
3.3.6 Resistance Table for Temperature Sensor PT100 RTD IEC 751 / DIN EN 60751

Temp. °C	Resistance in Ω									
	0	1	2	3	4	5	6	7	8	9
20	107.79	108.18	108.57	108.96	109.35	109.73	110.12	110.51	110.90	111.28
30	111.67	112.06	112.45	112.83	113.22	113.61	113.99	114.38	114.77	115.15
40	115.54	115.93	116.31	116.70	117.08	117.47	117.85	118.24	118.62	119.01
50	119.40	119.78	120.16	120.55	120.93	121.32	121.70	122.09	122.47	122.86
60	123.24	123.62	124.01	124.39	124.77	125.16	125.54	125.92	126.31	126.69
70	127.07	127.45	127.84	128.22	128.60	128.98	129.37	129.75	130.13	130.51
80	130.89	131.27	131.66	132.04	132.42	132.80	133.18	133.56	133.94	134.32
90	134.70	135.08	135.46	135.84	136.22	136.60	136.98	137.36	137.74	138.12
100	138.50	138.88	139.26	139.64	140.02	140.39	140.77	141.15	141.53	141.91
110	142.29	142.66	143.04	143.42	143.80	144.17	144.55	144.93	145.31	145.68
120	146.06	146.44	146.81	147.19	147.57	147.94	148.32	148.70	149.07	149.45
130	149.82	150.20	150.57	150.95	151.33	151.70	152.08	152.45	152.83	153.20
140	153.58	153.95	154.32	154.70	155.07	155.45	155.82	156.19	156.57	156.94
150	157.31	157.69	158.06	158.43	158.81	159.18	159.55	159.93	160.30	160.67
160	161.04	161.42	161.79	162.16	162.53	162.90	163.27	163.65	164.02	164.39
170	164.76	165.13	165.50	165.87	166.24	166.61	166.98	167.35	167.72	168.09
180	168.46	168.83	169.20	169.57	169.94	170.31	170.68	171.05	171.42	171.79
190	172.16	172.53	172.90	173.26	173.63	174.00	174.37	174.74	175.10	175.47
200	175.84	176.21	176.57	176.94	177.31	177.68	178.04	178.41	178.78	179.14
210	179.51	179.88	180.24	180.61	180.97	181.34	181.71	182.07	182.44	182.80

3.3.7 Rectangular plug, NDSN-Control, Connector view 6/12-Pin (Optional)

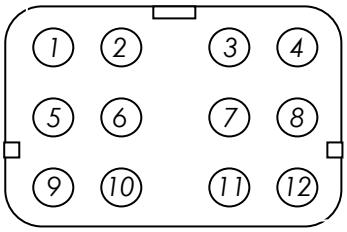
Connector view: The connectors shown from the front:

6-pin Connector (female)
Applicator side



1	Head heater
2	Head heater
3	Head sensor Ni 120
4	Head sensor Ni 120
5	NC
6	Ground / protective conductor

12-pin Connector (male)
Melter side



1	Head heater
2	Head heater
3	Head sensor Ni 120
4	Hose heater
5	NC
6	Hose heater
7	Ground / protective conductor
8	Hose sensor Ni 120
9	NC
10	NC
11	Hose sensor Ni 120
12	Head sensor Ni 120

3.3.8 Resistance Table for Temperature Sensor Ni120 RTD

Temp. °C	Resistance in Ω										
	0	1	2	3	4	5	6	7	8	9	10
0	120,0	120,7	121,4	122,1	122,9	123,6	124,3	125,0	125,7	126,4	127,2
10	127,2	127,9	128,6	129,4	130,1	130,8	131,6	132,3	133,0	133,8	134,5
20	134,5	135,3	136,0	136,8	137,5	138,3	139,0	139,8	140,5	141,3	142,1
30	142,1	142,8	143,6	144,4	145,1	145,9	146,7	147,5	148,2	149,0	149,8
40	149,8	150,6	151,4	152,2	153,0	153,8	154,5	155,3	156,1	156,9	157,8
50	157,8	158,6	159,4	160,2	161,0	161,8	162,6	163,4	164,3	165,1	165,9
60	165,9	166,7	167,6	168,4	169,2	170,1	170,9	171,7	172,6	173,4	174,3
70	174,3	175,1	176,0	176,8	177,7	178,5	179,4	180,3	181,1	182,0	182,9
80	182,9	183,7	184,6	185,5	186,3	187,2	188,1	189,0	189,9	190,8	191,6
90	191,6	192,5	193,4	194,3	195,2	196,1	197,0	197,9	198,8	199,7	200,6
100	200,6	201,6	202,5	203,4	204,3	205,2	206,1	207,1	208,0	208,9	209,9
110	209,9	210,8	211,7	212,7	213,6	214,5	215,5	216,4	217,4	218,3	219,3
120	219,3	220,3	221,2	222,2	223,1	224,1	225,1	226,0	227,0	228,0	229,0
130	229,0	229,9	230,9	231,9	232,9	233,9	234,9	235,9	236,8	237,8	238,8
140	238,8	239,8	240,8	241,9	242,9	243,9	244,9	245,9	246,9	247,9	249,0
150	249,0	250,0	251,0	252,0	253,1	254,1	255,1	256,2	257,2	258,3	259,3
160	259,3	260,3	261,4	262,5	263,5	264,6	265,6	266,7	267,8	268,8	269,9
170	269,9	271,0	272,1	273,1	274,2	275,3	276,4	277,5	278,6	279,7	280,8
180	280,8	281,9	283,0	284,1	285,2	286,3	287,4	288,6	289,7	290,8	292,0
190	292,0	293,1	294,2	295,4	296,5	297,7	298,8	300,0	301,1	302,3	303,5
200	303,5	304,6	305,8	307,0	308,2	309,3	310,5	311,7	312,9	314,1	315,3
210	315,3	316,5	317,7	318,9	320,2	321,4	322,6	323,8	325,1	326,3	327,5
220	327,5	328,8	330,0	331,3	332,5	333,8	335,1	336,3	337,6	338,9	340,1
230	340,1	341,4	342,7	344,0	345,3	346,6	347,9	349,2	350,5	351,8	353,1
240	353,1	354,5	355,8	357,1	358,5	359,8	361,1	362,5	363,8	365,2	366,5

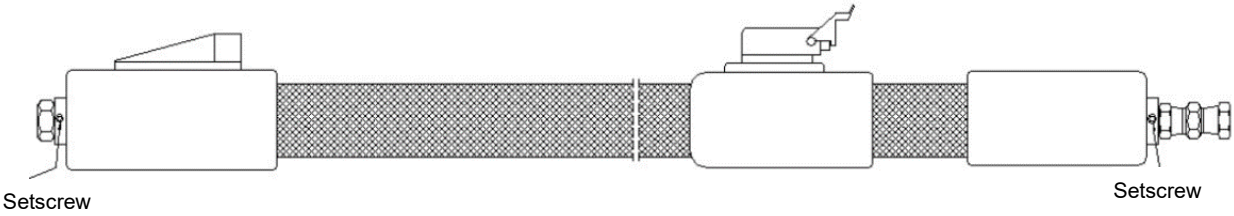
3.4 Replacement of replaceable inner hose in KX-hoses (optional)

This heated hose system consists of a carrier hose and a replaceable inner hose (core hose, medium hose). The nominal size of the carrier hose depends on the required nominal size of the inner hose. Due to the structure and handling, the hose length is limited to max. 12m.

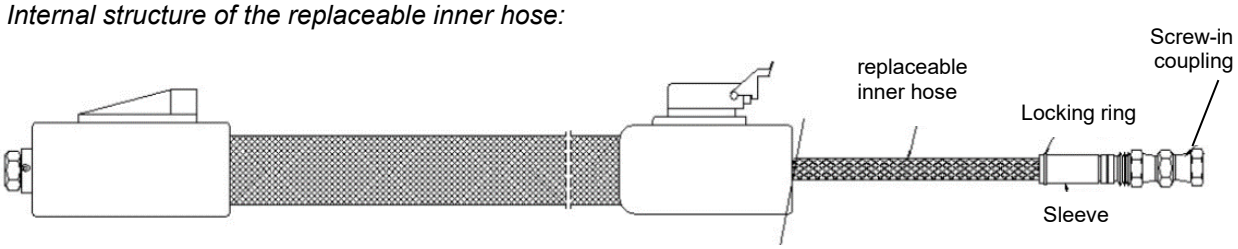
These hose systems are particularly suitable for processing reactive adhesives. In the event of contamination or blockage, only the inner hose will be replaced, the carrier hose (on which the heater is located) will be retained. The replacement can only be carried out with straight heated hoses.

This heated hose system is designed for an operating temperature of max. 210°C (see nameplate). The pressure load relates to the inner hose and can be seen in Chapter 2.2.3.4 Hose type KX, PTFE-T1, with replaceable inner hose.

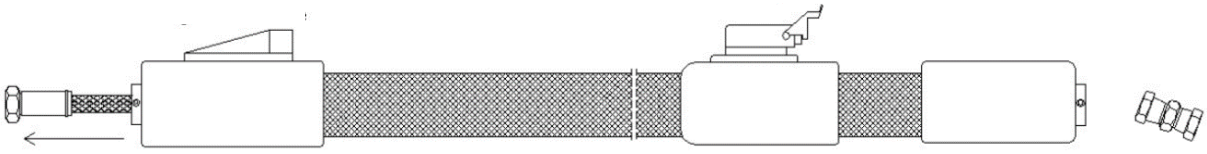
General view of heated hose with replaceable inner hose:



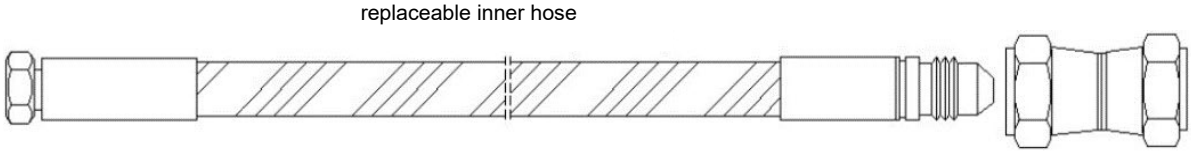
Internal structure of the replaceable inner hose:



Disassembly of the inner hose:



View of the inner hose:



Procedure for replacing the inner hose:

1. Before the inner hose can be replaced, please take the following precautions.

- Check the new inner hose for correct nominal size, thread type of the fittings and length.
- Disconnect the electrical connector of the heated hose from the power supply and secure it against being switched on again.
- Let the heated hose cool down completely to room temperature.
- For the replacement, provide the appropriate wrenches for the union nuts of the fittings and a 2.5 mm Allen key.
- Loosen the union nuts of the fittings on both ends of the heated hose to the system and to the applicator.
- Lay the heated hose straight along its entire length on a table top or on the floor.
- Clean the fittings and setscrews from adhesive residue.

Example heated hose

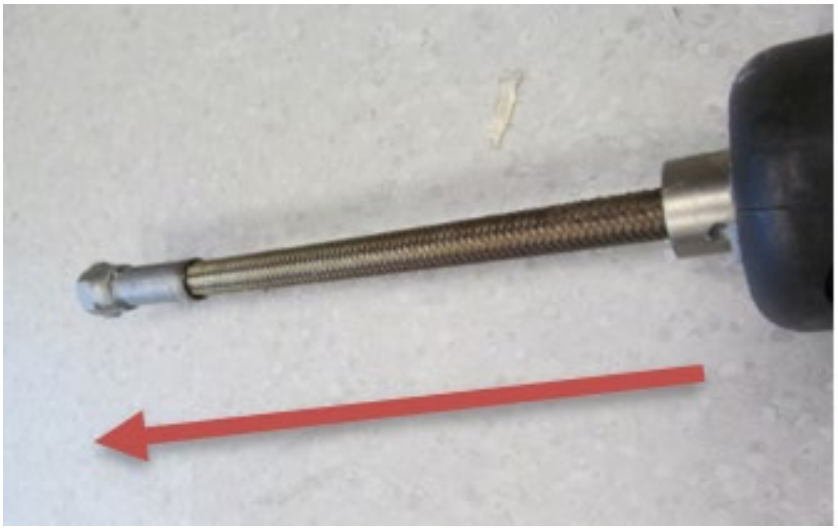
2. Loosen the double fitting using a wrench with suitable wrench size (the setscrews must still be tightened).

3. Loosen all setscrews in the holding fittings of the carrier hose with an Allen key (2.5mm).

4. Pull out the inner hose on the side with the fixed fitting and possibly clean the carrier hose fittings.

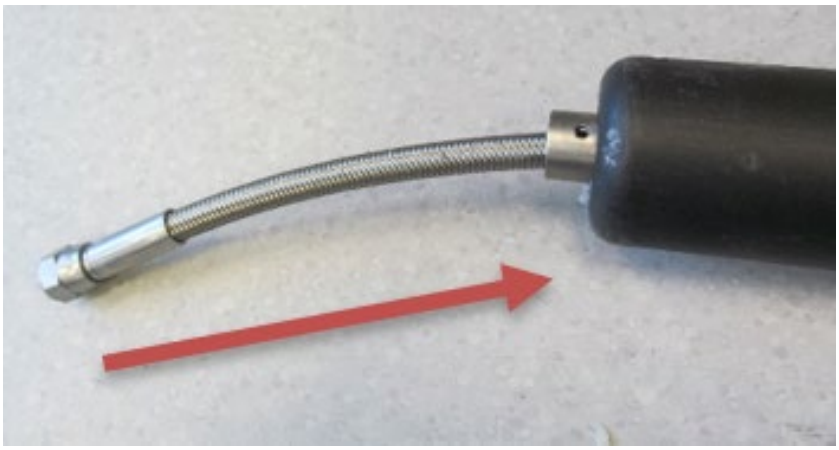
If the inner hose does not come loose because the adhesive is stuck between the carrier and the inner hose, the heated hose must be heated up to operating temperature until the inner hose can be easily pulled out.

CAUTION: risk of burns!
Wear gloves and protective clothing.



5. Pull in the new inner hose as follows:

- Loosen the double fitting on the new inner hose.
- Insert the inner hose.
  When inserting the new inner hose into the carrier hose, make sure that the external thread looks completely out of the carrier hose fitting.
  Secure the threads of the setscrews with thread lock, e.g. LOCTITE 243.
  Tighten all setscrews and make sure they are tight.



6. Fasten the double fitting with the appropriate wrench.

7. Install the heated hose in the system and ensure that the inner hose is well connected to the ground via the system and the applicator, since the detachable connection of the inner hose of the carrier hose means that a reliable and firm connection cannot be established.

8. Then put the system back into operation and retighten the fittings after the operation temperature has been reached before starting with adhesive flow. During operation, check the hose for leaks at both ends.

3.5 Disposal

Dispose of the heated hose in accordance with the local electrical waste regulations.

The original packaging protects the heated hose from damage during transportation. The packaging material is recyclable in accordance with environmental and technical disposal criteria.

Chapter 4
Available Options & Accessories

4.1 Standard Dynaflex Hoses, 9/15-pole plug, DynaControl

4.1.1 Dynaflex Hoses #6, DN8, for DCL

- For Dynamini, Dynamelt SR, D & M Series DCL ASU.
- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meter	Feet
102137	0.6	2
101083	1.2	4
101084	1.8	6
101085	2.4	8
101086	3.0	10
101087	3.6	12
101088	4.8	16
102138	6.0	20
101089	7.2	24

4.1.2 Dynaflex Hoses #6, DN8, 120V, for DCL

- For Dynamini DCL ASU, 120V.
- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meter	Feet
105951	0.6	2
102437	1.2	4
102438	1.8	6
102439	2.4	8
102440	3.0	10
102441	3.6	12
109483	4.8	16

4.1.3 Dynaflex Hoses #6, DN8, for DCL

- For Dynamelt SR & D Series and Dynamini DCL ASU
- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meter	Feet
109895	0.6	2
109896	1.2	4
109897	1.8	6
109898	2.4	8
109899	3.0	10
109900	3.6	12
109901	4.8	16
109903	6.0	20
109904	7.2	24

4.1.4 Dynaflex Hoses, #8, DN10, for DCL

- For DCL (Optional for Dynamelt M Series ASUs only).
- Also requires a PN 103949 Fitting (8 JIC).
- Hose type K, PTFE-T1.
- The nominal wattage for the DN10 hoses is 150 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meter	Feet
103316	1.2	4
103317	1.8	6
103318	2.4	8
103319	3.0	10
103320	3.6	12
103321	5.5	18
103322	7.2	24
106030	9.1	30
106031	11	36
106176	12.2	40

4.1.5 Dynaflex Hoses #12, DN16, for DCL

- Optional for Dynamelt M Series DCL ASUs only.
- PN 110901 Fitting is available for high flow applications.
- Hose type K, PTFE-T1.
- The nominal wattage for the DN16 hoses is 240 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meter	Feet
105236	1.8	6
105237	2.4	8
105238	3.0	10
105239	3.6	12
106363	4.2	14
105240	5.5	18
105241	7.2	24

4.1.6 Dynaflex Hoses #6, DN8, for DCL

- Optional for Dynamelt M Series DCL ASUs only.
- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meter	Feet
105187	9.1	30
106216	11	36
105601	12.2	40

4.1.7 Dynaflex Spray (Swirl) Hoses #6, DN8, for DCL

- For Standard Dynamini, Dynamelt SR, D & M Series DCL ASUs.
- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meters	Feet
102173	2.4	8
102174	3.0	10
102175	3.6	12
102176	4.9	16
102177	6	20
102178	7.2	24

4.1.8 Dynaflex Spray (Swirl) Hoses #6, DN8, 120V, for DCL

- For Dynamini DCL ASUs.
- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meters	Feet
102442	2.4	8
102443	3.1	10
102444	3.7	12
112911	6	20

4.1.9 Dynaflex Abrasion Resistant Hoses #6, DN8, for DCL

- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

Length		PN for 120V Bead Applicator	PN for 120V Spray Applicator	PN for 200/240V Bead Applicator	PN for 200/240V Spray Applicator
Meters	Feet				
1.8	6	104633	n. a.	104561	n. a.
2.4	8	104634	104637	104562	104640
3.1	10	104635	104638	104563	104641
3.7	12	104636	104639	104564	104642
4.9	16	n. a.	n. a.	104565	104643
6	20	112912	112913	104566	104644
7.2	24	n. a.	n. a.	104567	104645

* n. a. = not available.

4.1.10 Dynaflex Washdown Hoses #6, DN8, for DCL

- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meters	Feet
105089	0.6	2
105133	1.2	4
103710	1.8	6
103711	2.4	8
103712	3.1	10
103713	3.7	12
103714	4.9	16
103716	6	20
103717	7.2	24

4.1.11 Dynaflex Challenger Hoses #6, DN8, Sensor Ni 120

- Hose type K, PTFE-T1.
- The nominal wattage for the DN8 hoses is 130 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN - US	PN - EMEA	Length	
		Meters	Feet
100120	15321	1.2	4
100121	15322	1.8	6
100122	15323	2.4	8
100123	15324	3.0	10
100124	15325	3.6	12
100125	15328	4.8	16
107842	15329	6	20
100126	15327	7.2	24
107843	*	9.2	30

*on request.

4.2 Dynaflex KX-Hoses #8, DN10, PT100, with replaceable inner hose

- Hose type K, PTFE-T1.
- The nominal wattage for the DN10 hoses is 150 watts per meter (39.37 inches).
- See further specifications in chapter 2.2.3 Specifications by Hose Type.

PN	Length	
	Meters	Feet
118368-KX	4.3	14
118369-KX	4.9	16
103321-KX	5.5	18
116471-KX	6.1	20
118374-KX	7.9	26

4.2.1 Replaceable inner hoses for Dynaflex KX-Hoses #8, DN10

Replaceable inner hose PN	For Dynaflex KX-Hoses #8, DN10 Length	
	Meters	Feet
118368-KX-E	4.3	14
118369-KX-E	4.9	16
103321-KX-E	5.5	18
116471-KX-E	6.1	20
118374-KX-E	7.9	26

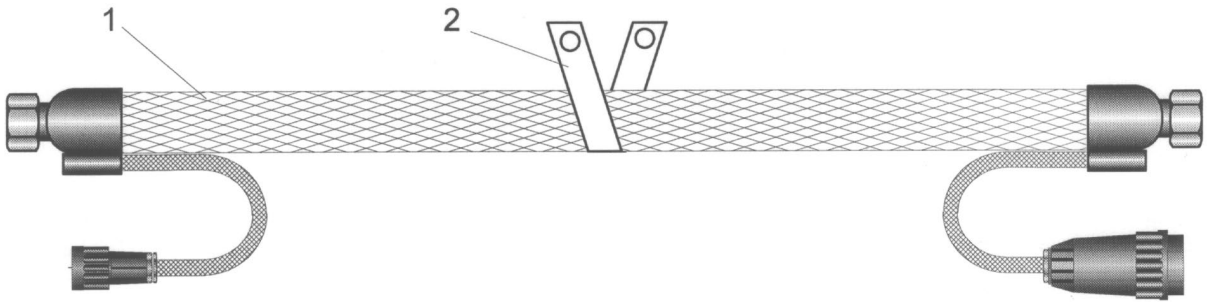
4.3 Spray (Swirl) Air Regulator Kit

- An air control kit, consisting of a regulator and a choice of three solenoid valves (see chart below) is available for swirl applications. To order, specify both regulator and solenoid valve part numbers.

PN	Description	Voltage
084M008	Regulator	-
Select one of the following solenoid valves:		
030A014	Pneumatic solenoid valve, 3 way	120 V
030A013	Pneumatic solenoid valve, 3 way	240 V
030A016	Pneumatic solenoid valve, 3 way	24 V

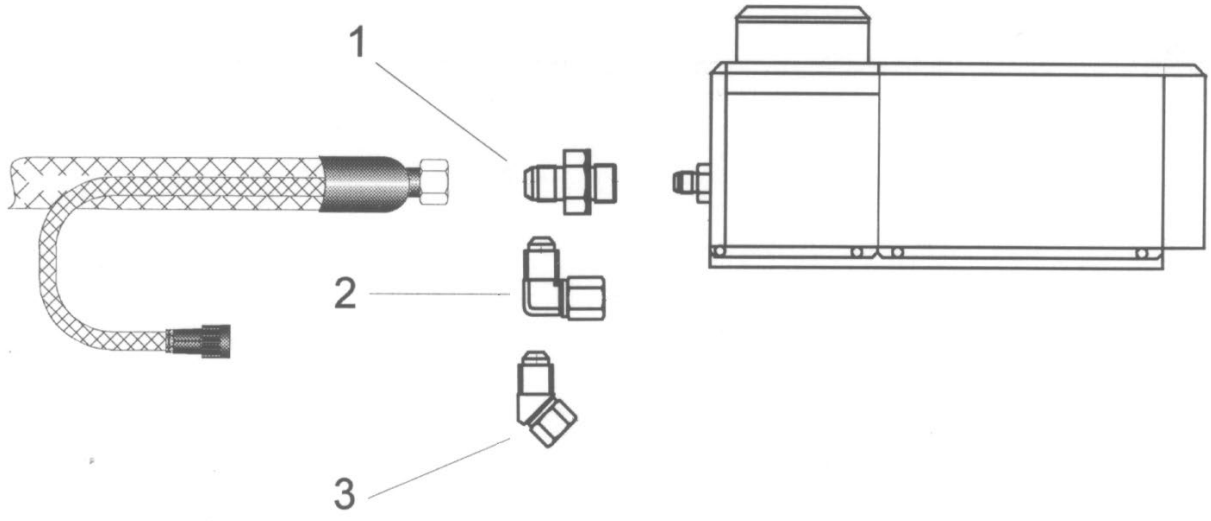
4.4 Hanger Strap Kit PN 113342

In applications where a hose is routed through or over a machine, straps may be used to suspend it to prevent the hose from laying on the ground or on machinery. Nylon hanger straps are recommended, set at an interval of every four feet. The strap kit consists of five hanger straps.



Item	PN	Description
1	Optional	Hose
2	113342	Hanger strap kit (it consists of five hanger straps)

4.5 Hose Fittings

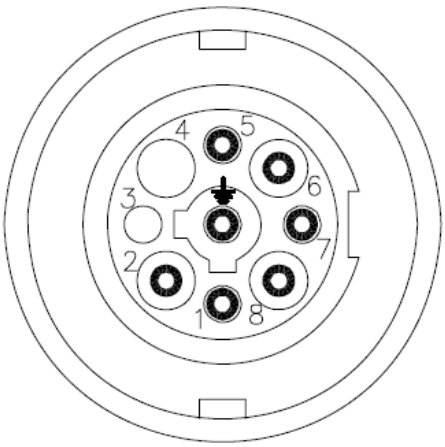


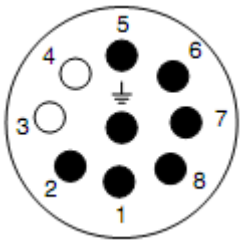
Item	PN	Description
1	101624 (07.00600.120)	Hose fitting adapter, straight G1/4 – 9/16-UNFG UNF
2	N07830	Swivel fitting 90°, DN8, 9/16G UNF
	07.08990.102	Swivel fitting 90°, DN8, adjustable, UNF9/16-18G-G1/45
	07.10990.101	Swivel fitting 90°, DN10, UNF3/4 -16G (2*)
	I07.11090.102	Swivel fitting 90°, DN16 (Dynatec), 1 1/16"-12UN JIC 37°
	I07.11090.101	Swivel fitting 90°, DN16 (Inatec), UNF 7/8"-14 - 90°
3	N07831	Swivel fitting 45°, DN8, 9/16G UNF
	07.08945.102	Swivel fitting 45°, DN8, adjustable, UNF9/16-18G-G1/4
	07.10945.101	Swivel fitting 45°, DN10, UNF3/4 -16G (2*)
	I07.11045.162	Swivel fitting 45°, DN16 1.1/16"-12 UN
	I07.11045.101	Swivel fitting 45°, DN16 (Inatec)

Chapter 5
Schematics

5.1 Pin Connectors for Heated hose

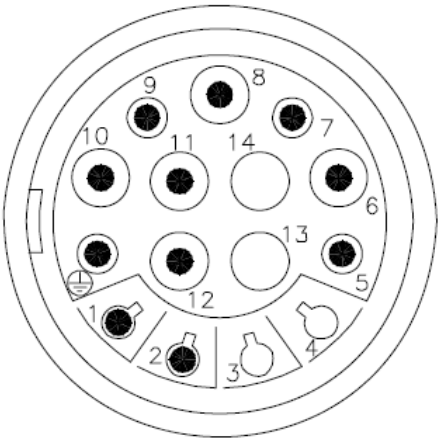
9-Pin Connector *(female)*
End of hose on Applicator

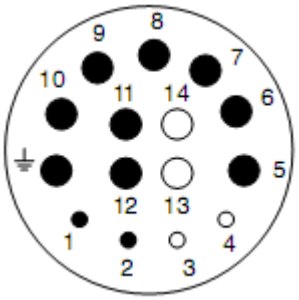




1	Trigger, impulse only electric head
2	Trigger, impulse only electric head
3	NC
4	NC
5	Head sensor PT100
6	Head sensor PT100
7	Head heater
8	Head heater
⏚	Ground

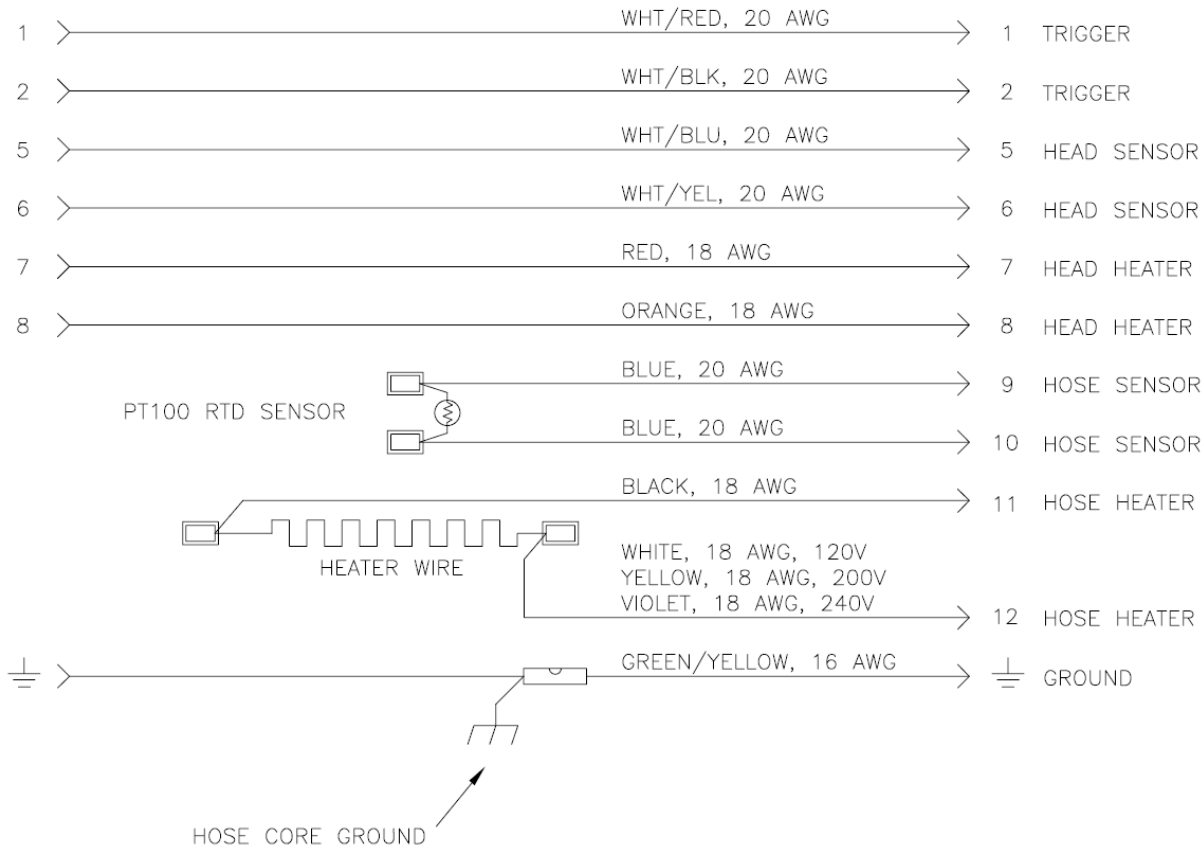
15-Pin Connector (male)
End of hose on Melter





1	Trigger, impulse only electric head
2	Trigger, impulse only electric head
3	NC
4	NC
5	Head sensor PT100
6	Head sensor PT100
7	Head heater
8	Head heater
9	Hose sensor PT100
10	Hose sensor PT100
11	Hose heater
12	Hose heater
13	NC
14	NC
⏚	Ground

5.2 Schematics 101082-G: DynaControl Hoses

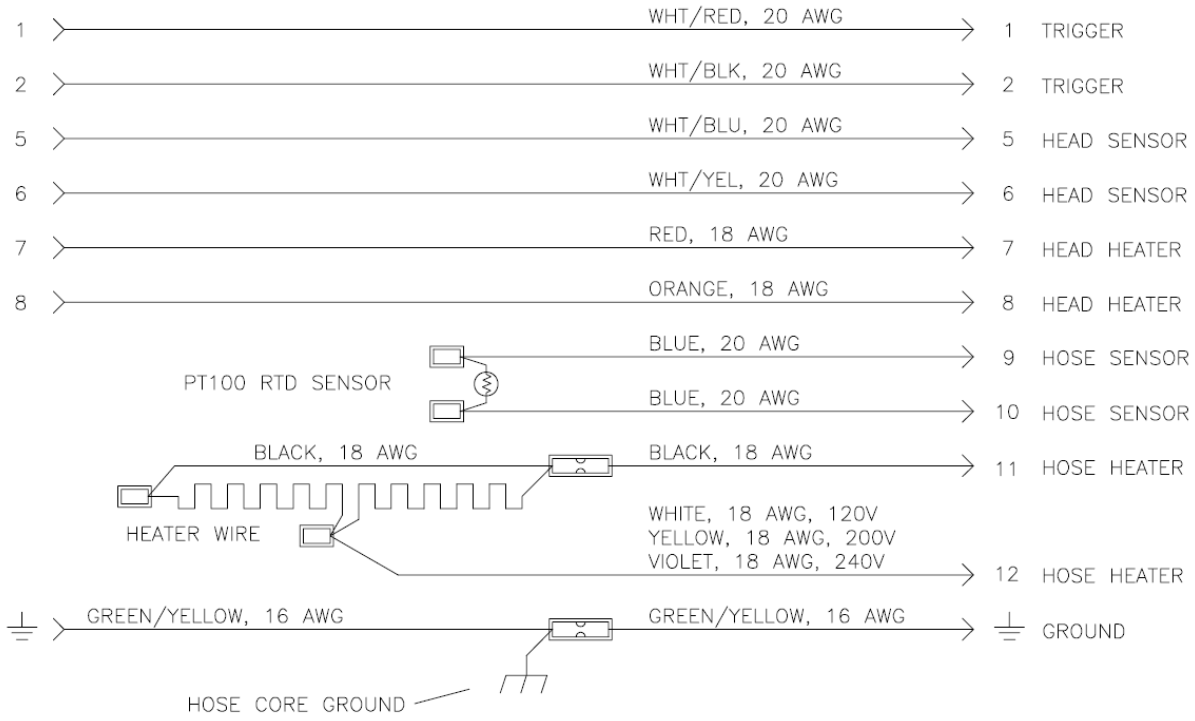


NOTES:
1. All wiring is routed through the hose.
2. Wire sizes shown are for no. 6 and no. 8 hoses up to 24 ft (730 cm) in length. For larger diameter and longer hoses, heater lead wires are 16 AWG. Other wire sizes and colors may be changed in special hoses per customer request.

5.3 Schematic 112633, Rev.A: Dynaflex Hoses, with a heater wire circuit divided in 2 separate segments, DynaControl

Used on longer hoses (over 45 feet / 13.7 m) and on the #8, 8 ft. (2.4 m) hose.

Applicator end **ASU end**



NOTES:

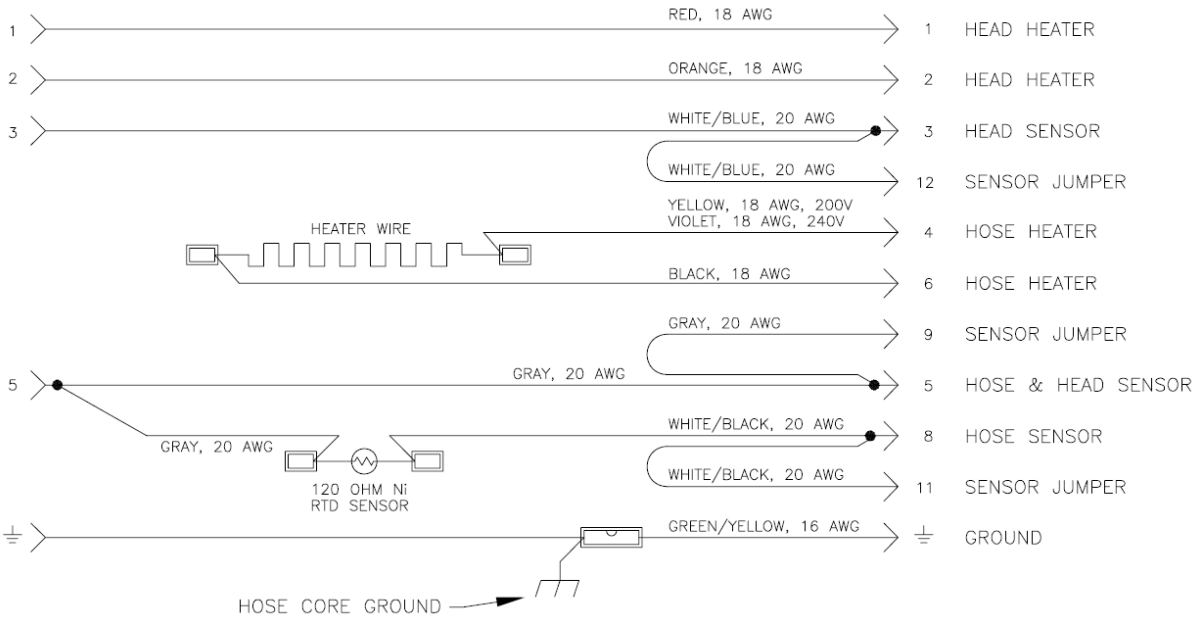
1. All wiring is routed through the hose.

2. The heater wire circuit is divided into two separate segments, each segment wound over half the hose length and wired in parallel connection to the hose supply voltage.

3. Wire sizes shown are for no. 8 hoses up to 24 ft (730 cm) in length. For larger diameter and longer hoses, heater lead wires are 16 AWG. Other wire sizes and colors may be changed in special hoses per customer request.

5.4 Schematic 100951, Rev. B, Upgrade NDSN Hoses

Applicator end **ASU end**



NOTES:

1. All wiring is routed through the hose.

2. Jumpers at ASU end pins 9, 11 and 12 are to be contained within the ASU end connector body.

3. Wire sizes shown are for no. 6 and no. 8 hoses up to 24 ft (730 cm) in length. For larger diameter and longer hoses, heater lead wires are 16 AWG. Other wire sizes and colors may be changed in special hoses per customer request.

Revisions

Revision	Ch./ Page no.	Update description
12.24	-	Manual to UL&CSA version updated.

ITW Dynatec Service Parts and Technical Service:

AMERICAS

ITW Dynatec
31 Volunteer Drive
Hendersonville, TN 37075
USA
Tel. +1.615.824.3634
info@itwdynatec.com
service@itwdynatec.com

EUROPE, MIDDLE EAST & AFRICA

ITW Dynatec
Industriestrasse 28
40822 Mettmann
Germany
Tel. +49.2104.915.0
info@itwdynatec.de
service@itwdynatec.de

ASIA PACIFIC

ITW Dynatec
No. 2 Anzhi Street,
SIP, Suzhou, 215122
China
Tel. +86.512.6289.0620
info@itwdynatec.cn
service@itwdynatec.cn

ITW Dynatec
Tsukimura Building 5th Floor
26-11, Nishikamata 7-chome
Ota-ku, Tokyo 144-0051,
Japan
Tel. +81.3.5703.5501
info@itwdynatec.co.jp
service@itwdynatec.co.jp