TEKNISK ELVARME

VARMESLANGER

GENERELLE TEKNISKE INFORMATIONER

NEWTRONIC

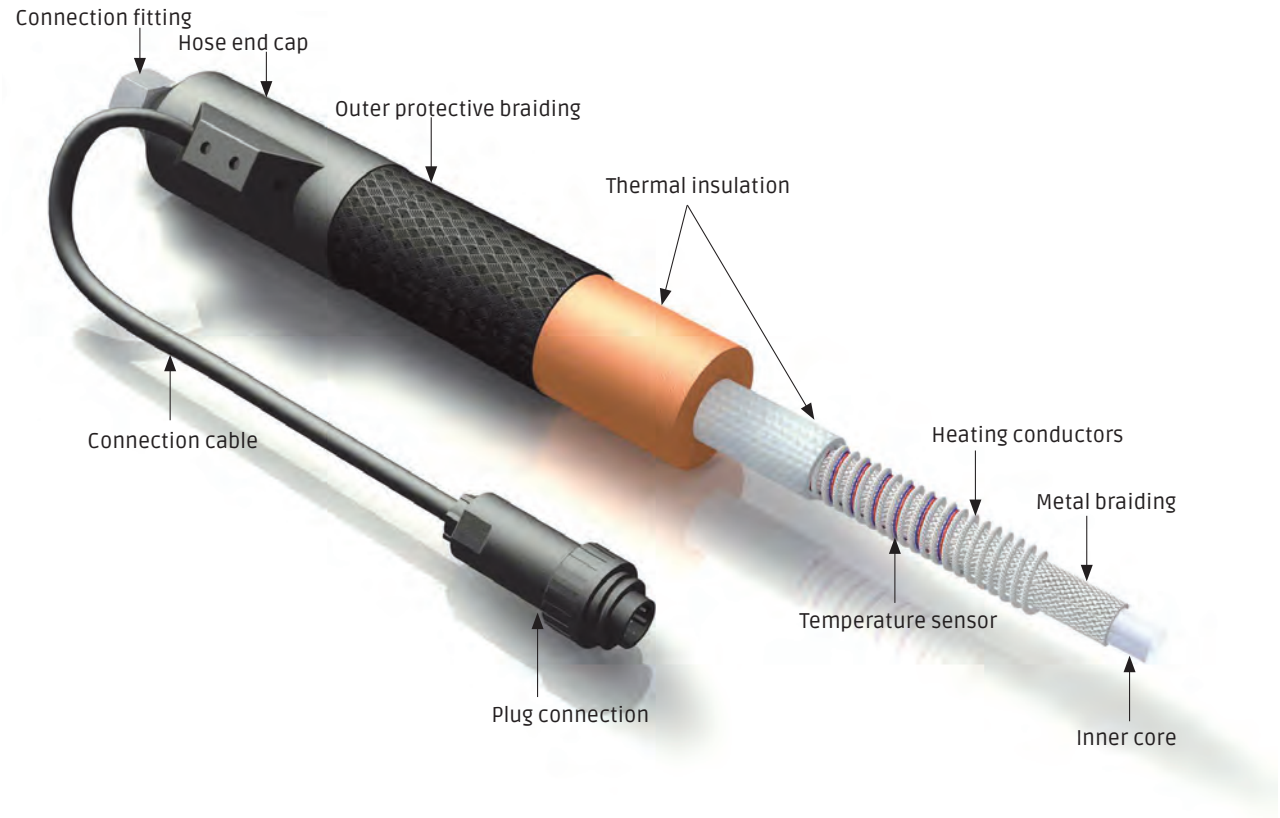
DESCRIPTION AND STRUCTURE OF OUR HEATING HOSES

Whenever hot and warm media have to be transported from a device to another part of the device or plant without heat loss and the lines are not intended be rigidly routed, flexible heating hoses are recommended as conveying elements.

In most applications, it is necessary to maintain the product temperature at a predefined value. By using Hillesheim heating hoses, a constant temperature of the material conveyed is ensured through to the application site, without the material temperature being influenced by ambient temperatures and heat losses along the way.

WHY HEATING HOSES ARE USED:

- To keep media fluid for processing
- To achieve their optimum properties for processing
- To avoid condensation of gaseous media
- To process in a more rational way (robotic applications)
- To ensure consistent quality
- To avoid having to produce in a particular place
- To connect moving parts and devices



The structure shown is a schematic representation of the heating hose. There may be differences, however, depending on the hose type and application. Similarly, the structure can change with new developments and advancements.

APPLICATION EXAMPLES

PLASTICS PROCESSING
Injection moulding
Extrusion, Co-extruders
Mould-making

ADHESIVES AND DOSING SYSTEMS
Hot-melt equipment
Adhesive robots
Packaging equipment
Dosing equipment

SURFACE TECHNOLOGY
Bitumen plants
Spray-coating plants
Airless equipment

ISOLATION TECHNOLOGY
Packaging foam equipment
PUR foam equipment
2-component equipment
4-component equipment

PROCESS AND ENVIRONMENTAL TECHNOLOGY
Exhaust gas stations
Exhaust gas measurement technology
Sampling probes
Flue gas analytical
Emission measurements

CHEMICAL THERMAL PROCESS ENGINEERING
Heavy fuel oil systems
Chemical pipelines
Fluid metals
Silo heating systems

EXPLOSION HAZARD AREAS
Ex-heated hoses
Ex-heated plates
Ex-control technology

TRANSPORTATION TECHNOLOGY
Transfer and delivery hoses
Silo and levelling hoses

PLANT AND APPARATUS ENGINEERING
Filling and sealing equipment
Food processing
Tool heating

ELECTRICAL HEATING INFO

INFORMATION ABOUT OUR HEATING HOSES

ELECTRICAL ENGINEERING: The mains power and sensor cables are prepared for connection to the specified mains voltage (measurement voltage) and the sensor type. The standard connection design complies with the CE standard (DIN-VDE). Designs can be realised in accordance with other directives (UL, CSA, SEV...).

The heating system is designed such that optimal heat distribution is achieved over the entire length of the heating hose.

Hillesheim heating hoses are equipped with temperature sensors and have to be monitored with the suitable controllers. For unsupervised operation, we can fit additional sensors (bimetal monitors, temperature fuses ...) or additional temperature sensors for connection to controller/ limiter combinations (Safety in electrical heating installations DIN EN 60519-2.

ATTENTION! Standard heating hoses must not be operated in explosion-risk-areas. Only our specially explosion-protected heating hoses with ATEX-approved components may be used in explosion-prone areas.

NOMINAL DIAMETER: The nominal diameter (inner diameter) (DN for short) is determined from the flow rate and the viscosity of the medium. Standard sizes for hoses are 4....50 mm. Larger diameters are available on request (also see Transfer and delivery hoses).

PRESSURE HOSES: The pressure hose type is usually determined from the same parameters as the nominal diameter. The required operational pressure also applies in this case. Other selection criteria, such as heat transfers, bend radii or strong pulsing loads are also important parameters. Please always refer to the tables for bend radii and operating pressures. We also heat special hoses made of Viton, silicone, NBR ... that can also be provided by the customer.

ATTENTION! → The pressure specifications in the table are defined at 20...50°C. Increasing temperatures reduce the pressure loading capacity. Please observe temperature correction factors.

CONNECTION FITTINGS: The selection of fittings is dependent on the nominal diameter and the pressure loading capacity (light, medium and heavy duty fitting series) of the hose. The heating hose may have different fittings attached as both ends. Open ends without fittings and many types of special fittings (clamp, flange, milk pipe ...) are also possible.

TEMPERATURE SENSORS: Our heating hoses come equipped with Fe-CuNi (J) thermoelements as standard. NiCr-Ni (K) thermoelements and PT100 PTC sensors in 2, 3 or 4-wire connections are also possible. Other thermoelements and PTC/NTC sensors are available on request. A variety of sensors may also be installed depending on the application. The HTI and HTP integral integral controllers monitor the temperature directly at the heating wire with PTC response, without additional sensors on the heating system.

CONTROL LINES:The heating hose can have electrical connections, flexible empty pipes for air, test gas or fluid media or combinations of these incorporated. The entry and exit points and the relevant connecting elements (extension connectors, couplings ...) have to be specified. Parallel pickups allow further loads to be connected. Wire cross-sections and pipe diameters depend on the loads connected.

CONNECTION CABLE: As described in the 'Connection cable outlet' sheet, the mains cable exits from the end caps. Industrial hoses have 1.5 m analysis lines and 3.0 m connection cables as standard. Special designs with recessed cable outlets, other dimensions, separated cables for heating, sensors and control lines ... are possible.

ELECTRICAL HEATING INFO

PLUG CONNECTIONS: The plug connections on Hillesheim standard heating hoses are equipped with a plug compatible with one of our controllers. The HT43 temperature controller is provided with a round socket as standard.

Please note that for unsupervised operation. there must be an additional safety device (limiter, temperature fuse...) fitted in the heating system.

We can also supply our hoses without plugs for connecting the cable to terminals or for fitting to customer plugs. We use plug connectors from many well-known manufacturers. We can also fit their plugs on our hoses for you if you state the order reference and the pin configuration.

HEATING_UP TIME / SAFETY: Under normal conditions (closed room, approx. +20°C) the time for Hillesheim heating hoses to heat up to 200°C is 15 to 30 minutes. Before putting your system into operation, it has to be ensured that the medium in the hose and in the connection parts has reached its processing temperature. Bending loads and blockages in the fittings can damage the hose before the processing temperature is attained.

Please read the operating instructions and assembly guidelines before starting operation for the first time.

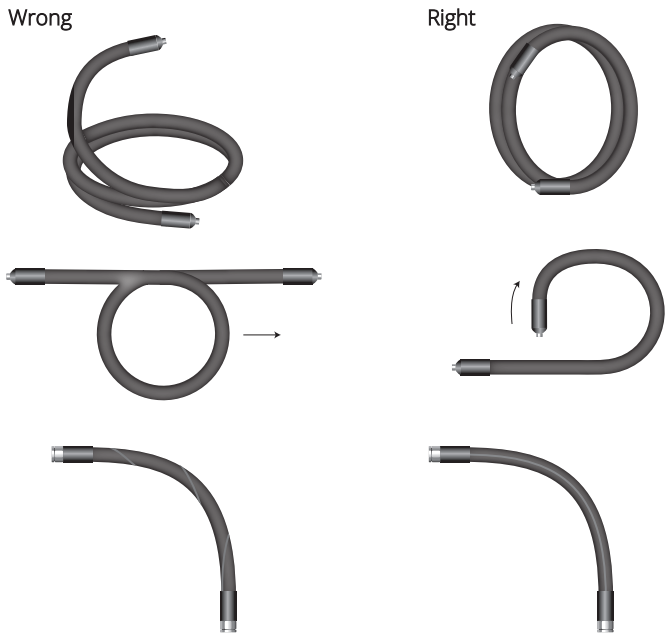
Certification

INSTALLATION RECOMMENDATIONS

ALONG THE LINES OF DIN 20066

Pulling on the ends of rolled hoses causes torsional stress and can subject them to bending radii smaller than is permissible.

Hoses are not to be twisted.



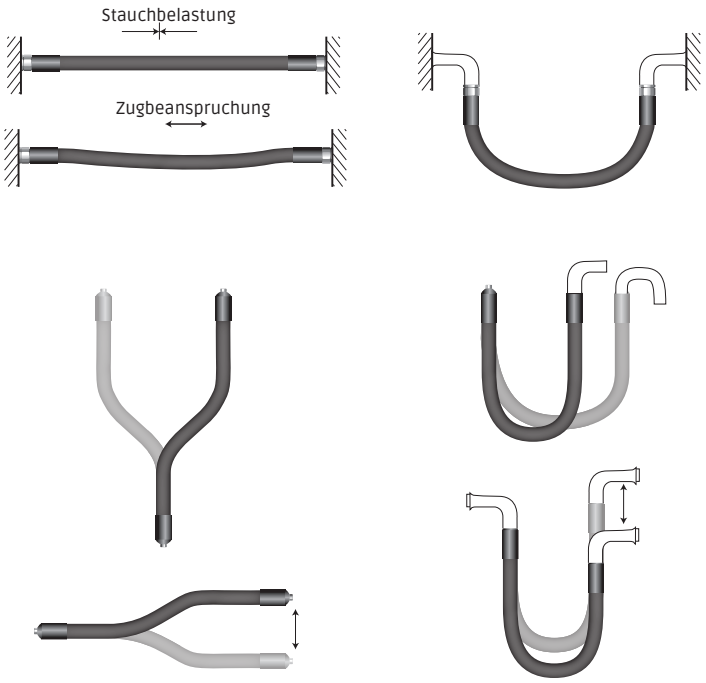
Remedy: unroll the ring of hose rather than pulling it off.

Hose lines should be installed in such a manner that they are free of tensile stress in all operational states; similarly, jamming stress (i.e. axial compression along the length) on short lengths of hose is to be avoided.

Axial compression due to incorrect installation or space-reducing motion degrades the hose's pressure resistance.

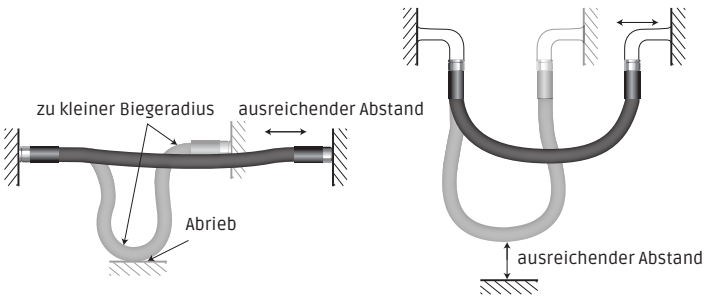
Compensation of expansion due to hoses installed in straight sections can lead to their destruction.

Remedy: place elbow fittings at connecting points.



Do install straight sections of hose which are subjected to a large range of motion, make such hose connections in a U-shape.

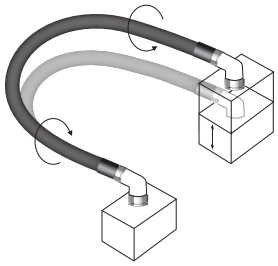
When connecting hose lines to moving parts, the hose length must be calculated such that the hose's smallest permissible bending radius is not underrun in any possible position and/ or that the hose is not subjected to tensile stress.

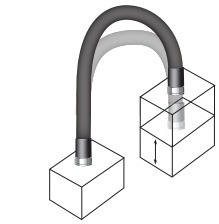


INSTALLATION RECOMMENDATIONS

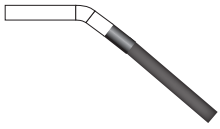
Wrong

Right



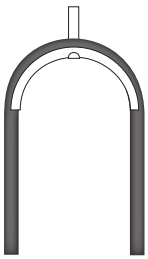


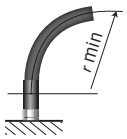
Avoid twisting the hose when connecting it to moving parts, particularly when motion and bending take place in the same plane. This can be achieved through proper installation or design measures (e.g. swivel joint).

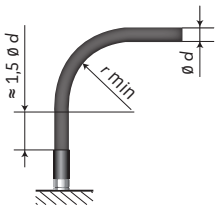


The danger of kinking is particularly high for handheld devices.

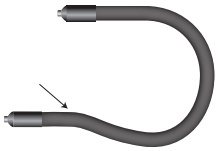
Remedy: Depending on the operating position, install a elbow or kink protection (e.g. corrugated hose).

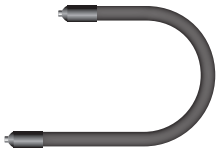






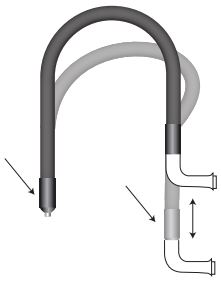
For installation in an arc, a hose length should be selected such that the intended bend can be formed beyond a length of ≈ 1.5 d_0 ; kink protection may also be necessary (e.g. hard cap).

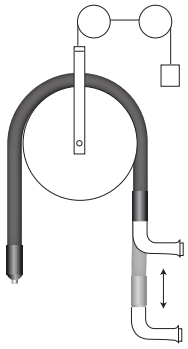


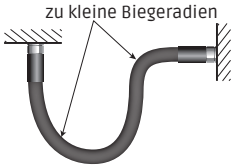


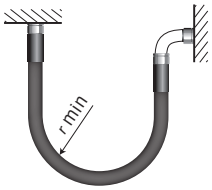
It is disadvantageous to allow free-hanging spans.

Remedy: supports or counterweight rollers.





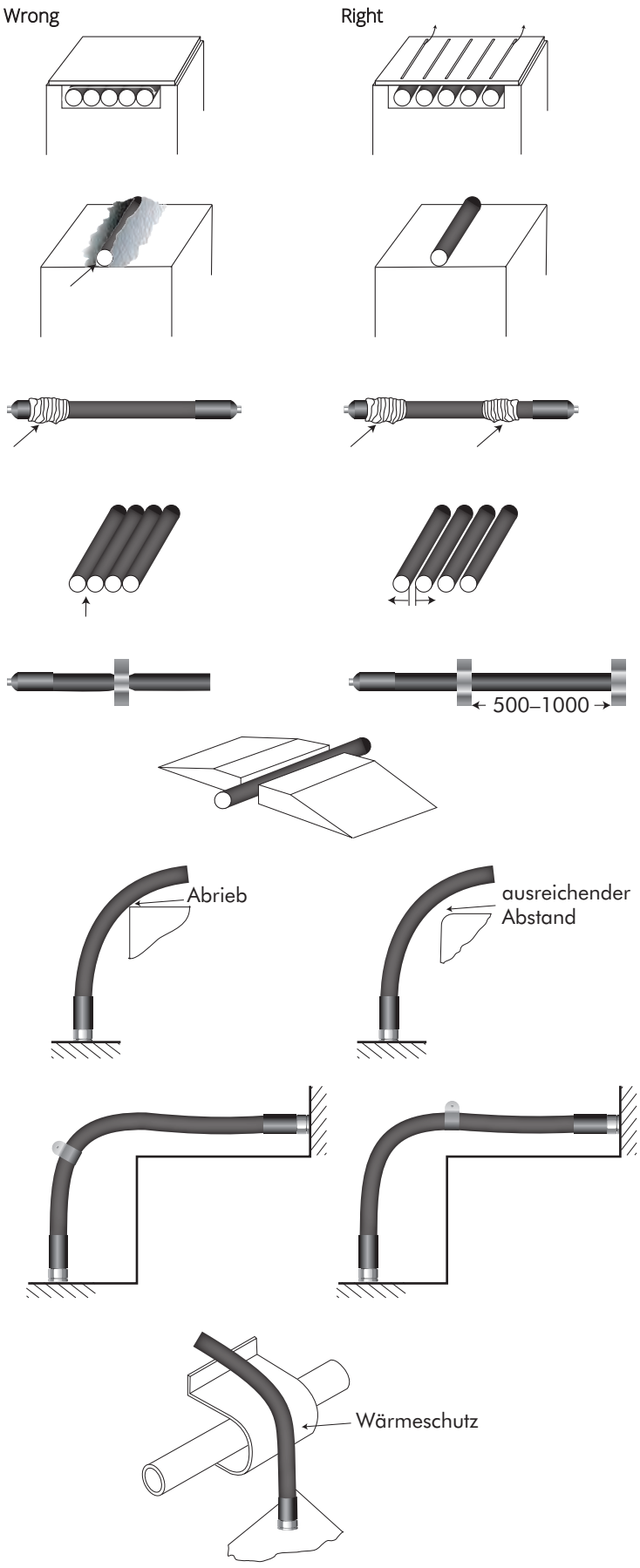




Hose lines should be installed as close as possible to their natural position, whereby their smallest permissible bend radius must be observed.

Additional stresses on the hose can be avoided through the use of suitable fittings and adapters.

INSTALLATION RECOMMENDATIONS



Heat build-up will occur if heating hoses are routed through a closed channel or shaft.

Remedy: hoses may not touch one another. Furthermore, sufficient ventilation is to be provided.

If, for example, powder-like substances, adhesives or other thermally insulating materials accumulate on heating hoses, then overheating will occur at such points.

Remedy: eliminate the cause with regular cleaning to remove such materials.

Heat build-up is caused by incorrect wrapping of the heating hose with other materials. The heating hose will overheat at such points. If the sensor area is wrapped, then the remainder of the hose will cool off.

Bundling or routing that permits contact between hoses will lead to overheating at these points of contact.

Remedy: route with open space between hoses.

Do not fasten clips or brackets so tightly that they cause the hose's outer braiding to be pressed internally against the heat conductor.

Disregard for this rule can lead to damage of the protective braiding and the hose.

Openly routed hose lines along paths where there is vehicle or pedestrian traffic are to be protected against damage from abrasion and deformation, e.g. by using hose bridges.

Appropriate measures can be taken to arrange and affix hose lines to prevent them from being damaged externally by external mechanical influences. To the extent necessary, hoses are to be secured in place, e.g. by protective jackets. Sharp-edged components should be avoided.

Hose brackets are to be avoided at points where they would prevent the heating hose's natural free movement and length changes.

Where hose lines are exposed to high external temperatures, they must either have sufficient physical separation from the external heat source or be protected by appropriate measures (e.g. shielding).

PROTECTION TYPE / PROTECTION CLASS

PROTECTION TYPES FOR ELECTRICAL EQUIPMENT ACCORDING TO EN 60529

Protection types against solid foreign objects, denoted by the first numeral

FIRST NU-MERAL	SHORT DESCRIPTION	DEFINITION
0	Not protected	–
1	Protected against solid foreign objects 50 mm diameter and larger	The object probe, a sphere of 50 mm diameter shall not fully penetrate
2	Protected against solid foreign objects 12.5 mm diameter and greater	The object probe, a sphere of 12.5 mm diameter shall not fully penetrate
3	Protected against solid foreign objects 2.5 mm diameter and greater	The object probe, a sphere of 2.5 mm diameter shall not fully penetrate
4	Protected against solid foreign objects 1 mm diameter and greater	The object probe, ball 1 mm diameter must not penetrate at all
5	Dust-protected	Ingress of dust is not completely prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the device or impair safety
6	Dust-tight	No ingress of dust

* Note: The full diameter of the object probe must not pass through an opening of the enclosure

Protection type against water, denoted by the second numeral

SECOND NU-MERAL	SHORT DESCRIPTION	DEFINITION
0	Not protected	–
1	Protected against falling water drops	Vertically falling drops shall have no harmful effects
2	Protected against falling water drops when the enclosure is tilted up to 15°	Vertically falling drops shall have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical
3	Protected against spraying water	Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects
4	Protected against splashing water	Water splashed against the enclosure from any direction shall no harmful effects
5	Protected against water jet	Water projected in jets against the enclosure from any direction shall no harmful effects
6	Protected against powered water jets	Water projected in powerful jets against the enclosure from any direction shall no harmful effects
7	Protected against the effects of temporary immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when enclosure is temporarily immersed in water under standardised conditions of pressure and time
8	Protected against the effects of continuous immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when enclosure is continuously immersed in water under conditions which shall be agreed between manufacturer and user but which are more severe than for numeral 7 However, these conditions must be more stringent than those described under numeral 7
9	Water at high pressure / steam jet cleaning	

Example numerals IP 6 8

PROTECTION CLASSES

Electrical devices and enclosures require safety requires protective measures to prevent exposed metal parts from conducting electric current in the event of a fault. Classification into protection classes provides information about the given measures taken.

PROTEC-TION CLASS	SYMBOL	PROTECTIVE MEASURES
I		All exposed metal parts are galvanically connected to one another and also connected to the mains protective earth conductor.
II		The device is appropriately isolated such that it has no exposed metal parts that can conduct electric current in the event of a fault. A protective earth conductor is not implemented.
III		The device is operated on low voltage, not in excess of 42 V, which is obtained from a safety transformer or battery.

ELVARME

VORES PRODUKTSORTIMENT INKLUDERER:

INDUSTRIELLE VARMESLANGER

ANALYSEMÅLING

REGULATORER

HSHP

SELVREG. VARMEKABLER

TEMPERATUR SENSORER

VI FØRER PRODUKTER INDENFOR KATEGORIERNE:

AUTOMATIK

HVAC & BYGNINGS-AUTOMATIK

KØLEPROFILER

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