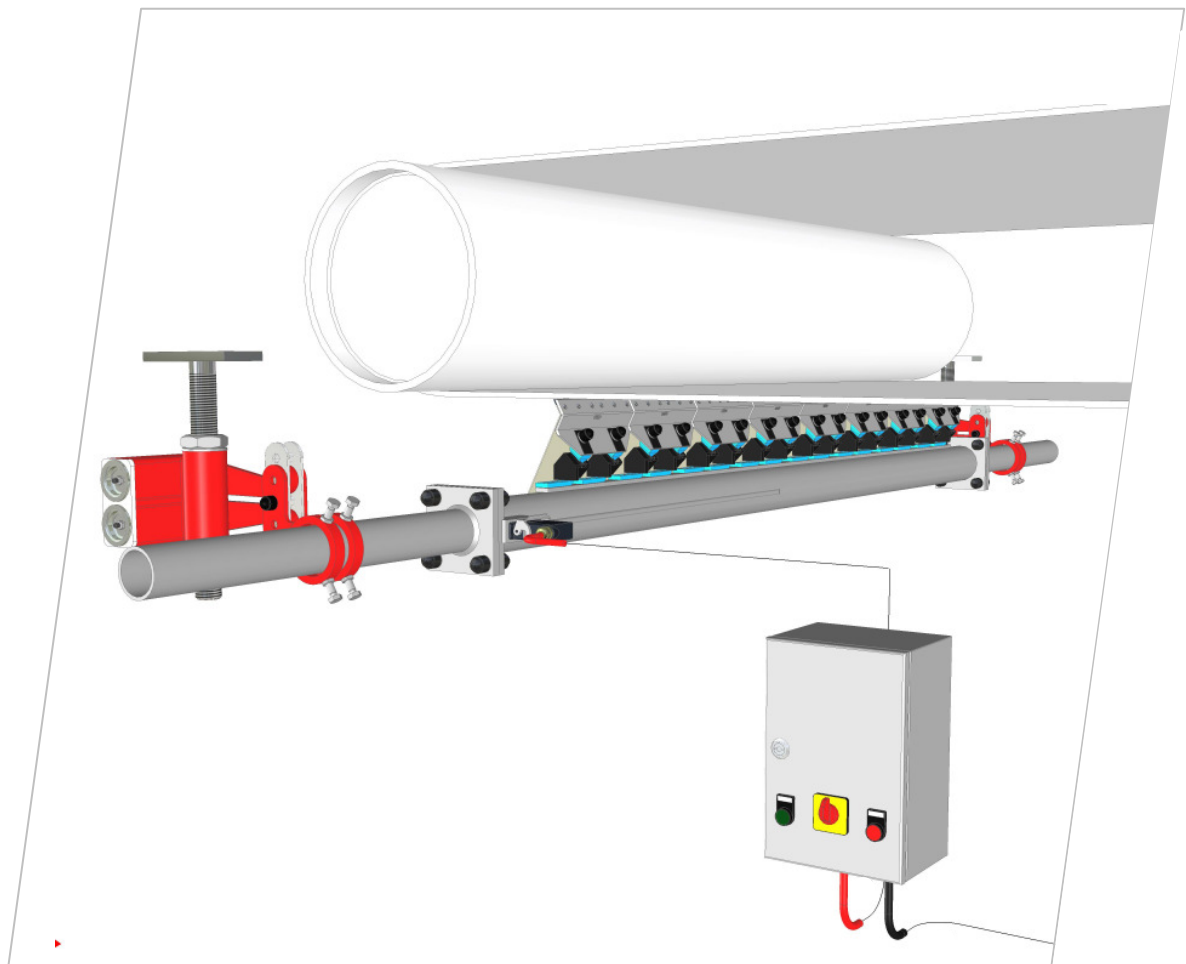


HOSCH Sprung blade scraper with heating system



Documentation Type B6C/H

HOSCH Sprung blade scraper Type B6-C/H with heating system

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1 Intended use

1.1 Use

Scrapers for conveyor belts can become blocked when used in very cold surroundings due to freezing bulk goods or ice formation due to snow or rain. This is a particular danger during standstills of a belt system. HOSCH therefore equips its scraper types B6C, C2, C3, and CT optionally with an electric heating system.

1.2 General operating conditions

The electric heating system for HOSCH sprung blade scrapers consists of special heating mats, thermo switches and sensors which are inserted into the system carrier mid section of the scraper. All thermo elements are wired to a plug installed on the bracket of the scraper shaft. The corresponding control system (control panel, 8.0 m supply line and socket plug, ready for connection) is connected to the scraper.

- The heating system is only intended to be used with HOSCH sprung blade scrapers Type B6-C , C2 , C3 and CT.
- It can be used for belt widths 650 – 2200 mm
- The system is intended for system carrier tube \varnothing 76 mm.
- The electric power input is approx. 500 W per meter belt width, the supply voltage is 230 V - 50 Hz / AC.
- Protection class is min. IP 54
- The heating system may not be operated on belt systems subject to the ATEX directives
- The heating system is self-regulating and can be used in ambient temperatures to - 35°C.

Optional operating conditions

The heating system may not be used in flammable or explosive areas.

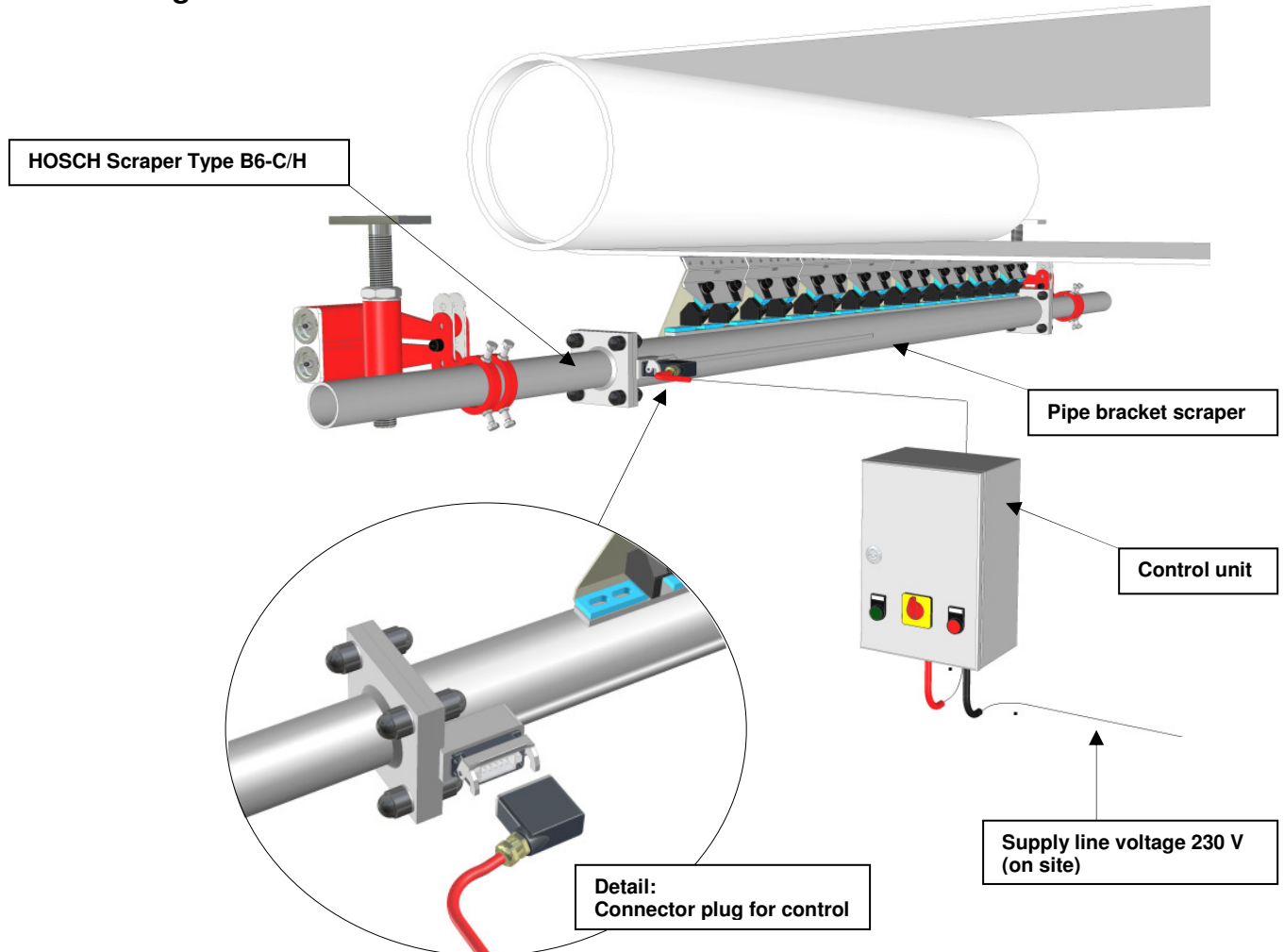
1.3 Note

The general assembly and maintenance regulation of each scraper will determine the type of installation, maintenance and operation of the scraper. The installation instructions for the electric heating system is supplemental to the scraper documentation.

The electrical heating system for HOSCH sprung blade scrapers may not be used without consultation or release by HOSCH in case of deviating operating conditions. The technical specifications are subject to technical modifications.

2 Description of operation

2.1 Design



2.2 Function

One or two heating mats, depending on the belt width, are inserted into the assembly carrier tube of the scrapers. Mat lengths of 650 mm (300 W), 850 mm (400 W) and 1050 mm (500 W) are available. Once power is switched on, the heating mats will transfer the generated heat to the tube wall through surface contact.

Each inserted heating mat is equipped with a thermo element for safety reasons which will prevent overheating in case of control failure. The power supply is interrupted once the mat temperature reaches 130 °C (surface temperature of the assembly carrier tube 75 °C at environment room temperature).

The temperature in the heating mats is controlled by a control relay in the fuse box. It is connected to a temperature sensor on the scraper and evaluates the measured surface temperature. If the value of the surface temperature set at the relay is exceeded (can be set from -10 °C bis +50 °C), the power supply will be interrupted. A restart of the heating system while the scraper shaft is cooling down is carried out automatically in correspondance with the start-up temperature set at the control relay (hysteresis 1 °C bis 6 °C).

The control unit is linked to the scraper by a cable, 8.0 long, with connector plug. It is the operator's responsibility to ensure power supply of the control unit on site. The required power is 230 V-50Hz / AC. A cable cross-section of 3x 1.5mm² (L1,N, PE) is required, the cable bushing at the control unit should have a diameter of 8 – 13 mm.

The heating system prevents the build-up of ice formation on the scraper. Ice bridges to the cleaning modules / blades are also melted off. One requirement is the start-up of the heating system with the beginning of frost period and permanent operation thereafter.

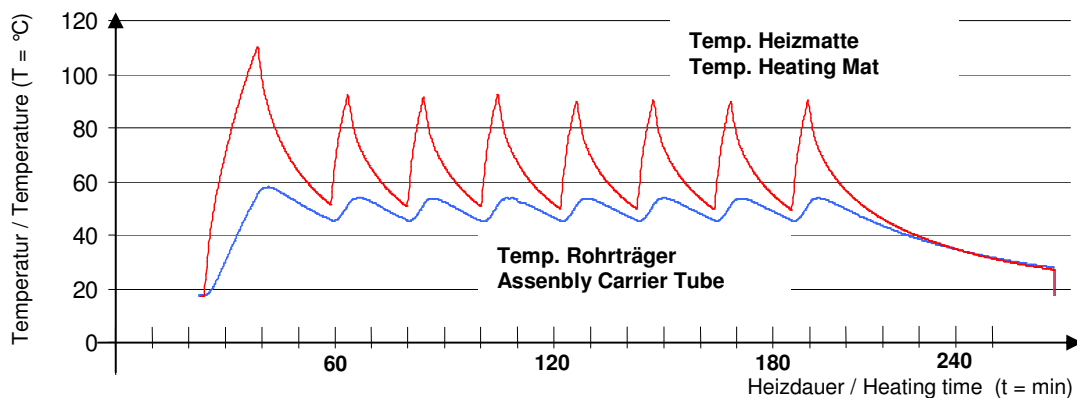
2.3 Technical data

2.3.1 Delivery overview Beumer – Project No. 607-0263

Pos. Item	Gurtbreite Belt width (mm)	Abstreifertyp Scraper type	Trägerrohr / Carrier-tube		Heizmatten / Heating Mats			Summe Heizleistung Total heating energy (Watt)	Spannung Currency supply (Voltage)	Steuerung Control unit (piece)
			Ø /DIA (mm)	Länge / Length (mm)	Anzahl / No's					
1	650	B6-CH - 650	76	760	1			300	220 V-50Hz/AC	1
2	800	B6-CH - 800		880		1		400		1
3	1000	B6-CH - 1000		1120			1	500		1
4	1200	B6-CH - 1200		1240			1	500		1
5	1400	B6-CH - 1400		1480	2			600		1
6	1600	B6-CH - 1600	101	1720	1	1		700		1
7	1800	B6-CH - 1800		1840		2		800		1
8	2000	B6-CH - 2000		2080	1	1		900		1
9	2200	B6-CH - 2200	121	2320			2	1000		1
10	2400	B6-CH - 2200		2440			2	1000		1

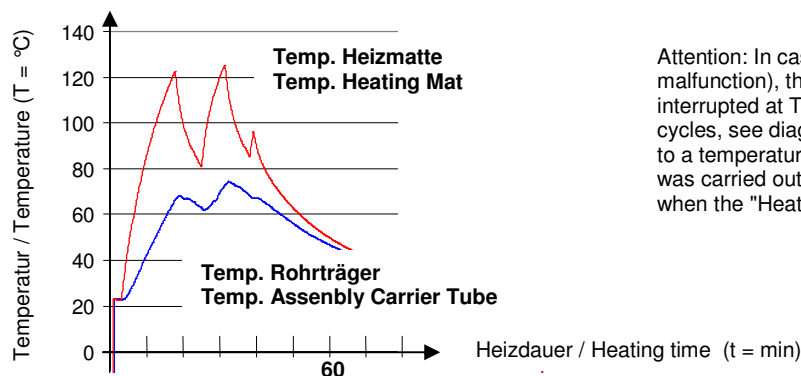
2.3.2 Heating power diagram, regular operation

Tmax. Controller +50°C / Hysteresis 6°C - Ambient temperature 18°C



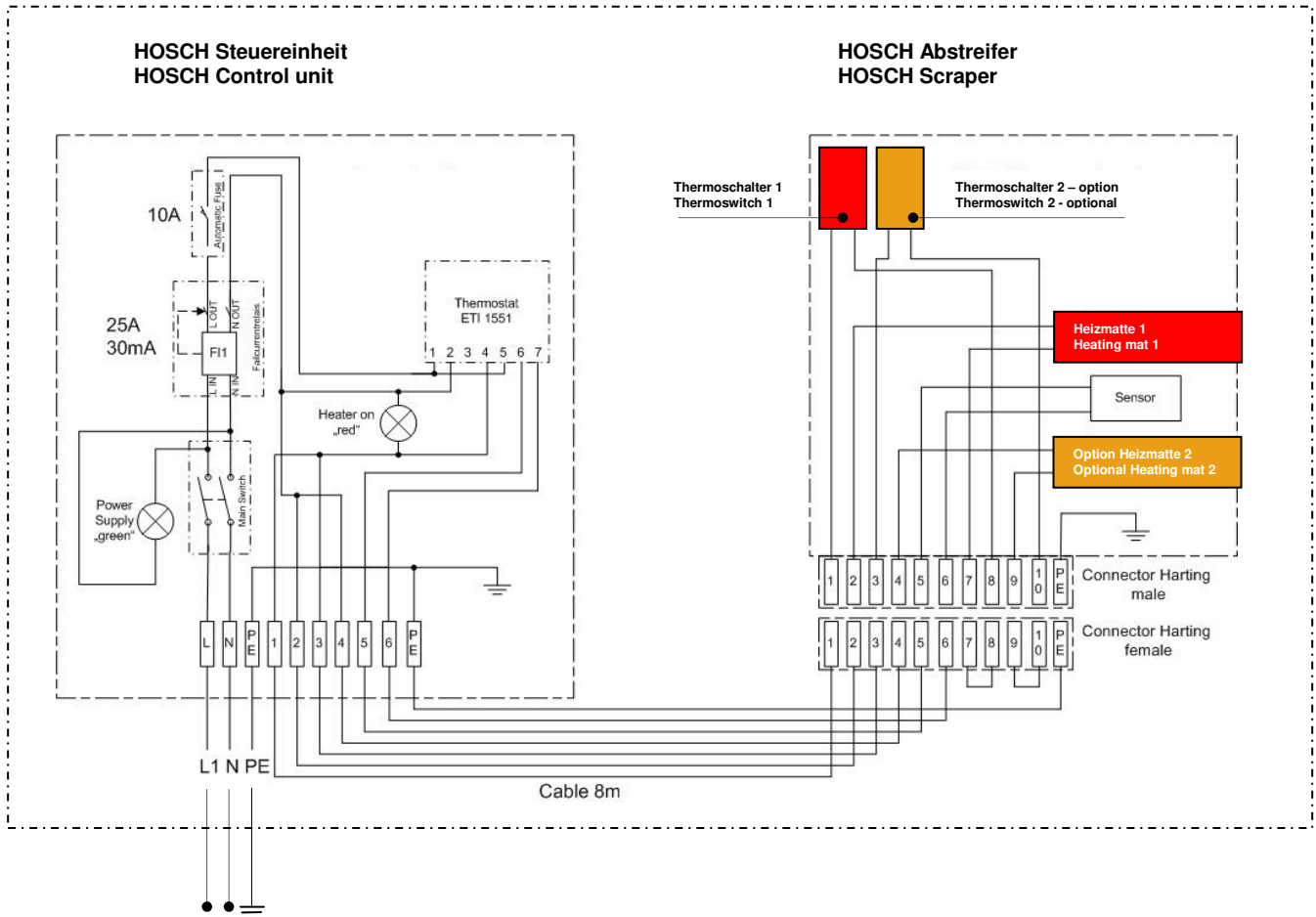
2.3.3 Heating power diagram, irregular operation (safety limit)

Thermo switch +130°C / Ambient temperature 22°C



Attention: In case of irregular operation (control malfunction), the power supply to the heating mats is interrupted at T max = 130°C. The process is repeated in cycles, see diagram. The carrier shaft temperature is set to a temperature of approx. 75°C. The test measurement was carried out at 22°C. A control malfunction is signalled when the "Heater on" light no longer reacts.

2.3.4 Circuit diagram



Stromanschluss bauseits
Power supply by customer
 (220 V-50Hz-AC / max. 1000 W)

Attention:

Scrapers with a belt width exceeding 1400 mm are generally equipped with 2 heating mats (see options 1 and 2), for smaller belt widths only one mat is installed. The max. permissible belt width is 2200 mm which corresponds to a heating power of 1000 W. The smallest belt width is 650 mm at 300 W.

The electronic control of the heating system can be used for power from 300 – 1000 Watts. The corresponding plug connection is equipped for 2 heating mats.

3 Safety information

- The installation and maintenance of live components may only be carried out by expert personnel. Power supply should be interrupted for all work measures and secured against unintended start-up.
- Please proceed with care when installing the scraper; any and all damage to the heating mats, thermo sensors and plug connectors should be avoided.
- For residual current discharge, the connection on site should be equipped with equipotential bonding (three-wire cable). Its grounding should be tested by an expert electrician.
- Attention during maintenance, hot components may cause injury.
- The control unit for the scraper may not be modified, for example by drilling bores. Otherwise, protection class IP 65 can no longer be guaranteed.
- The information provided by the manufacturer should be adhered to during assembly and operation (see Chapter 4).
- For assembly and maintenance of the scraper, the standard HOSCH installation and operating instructions of the corresponding scraper type should be used (see Chapter 4). Restrictions as listed in Chapter 1 take precedence.
- The use of spray water for cleaning the scraper or its surroundings for maintenance purposes is not permitted.

4 Installation and operating instructions

4.1 HOSCH Sprung blade scraper with heating system

HOSCH sprung blade scrapers with heating systems do not differ in design and mechanical function from models without heater. Only the electric connector unit on the assembly carrier and the protection tube for the thermo sensor are different features in appearance and structure.

Therefore, the standard HOSCH installation and operating instructions for the corresponding scraper type should be used for installation. These installation and operating instructions are attached as Appendix.

In addition, please note:

- When installing the scraper, the connection bracket on the assembly system carrier and the protection tube for the thermo sensor should not be damaged.
- Please ensure that the sealings for thermal separation between end section flange and mid-section carrier flange are not damaged and installed properly.
- Please ensure that the connection cable from the control unit box is locked at the socket and that it is laid without kinks.
- The cable may neither be crushed nor chafed anywhere. Please note the mechanical adjustment range and the spring motion of the scraper.

4.2 Electronic control unit for HOSCH sprung blade scraper with heating system

The heatable HOSCH sprung blade scraper is equipped with a separate control and regulation unit for each scraper. It can be used for all heatable scraper types with belt widths of 650 – 2200 mm.

The control unit was manufactured by ENVIMETER on behalf of HOSCH and is only intended to be used with HOSCH scrapers. The following information provided by ENVIMETER should be noted for installation and operation.



ENVIMETER
INNOVATIVE MESSTECHNIK GMBH
ENVIMETER GMBH • FAHRENHEITSTR. 1 • D-28359 BREMEN

Installation and Operating Instructions Heating System Control Unit 081004

Control Unit for HOSCH Scraper Heating System



Delivery

Components

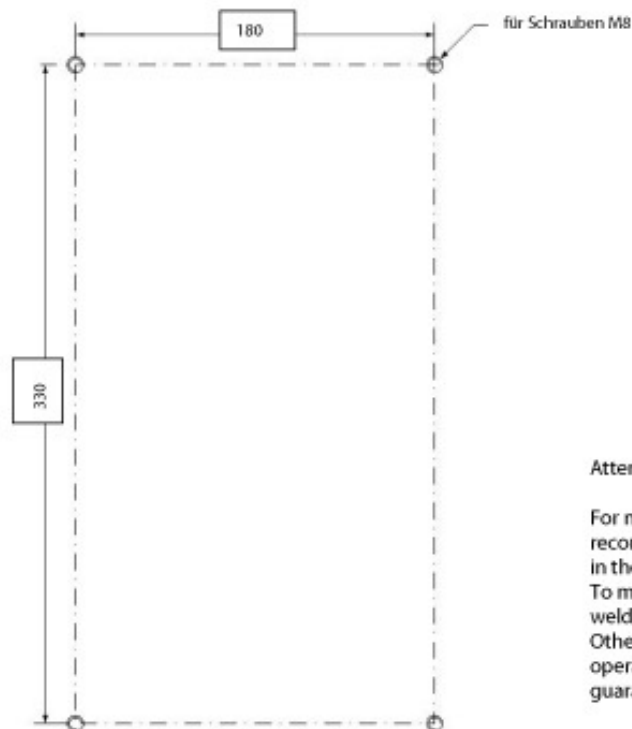
- Plastic coated steel box with mounting brackets and assembly base plate, IP 65
- Cable duct edge shield M20x1,5 for cable dia 8 - 13mm, IP 68 at 5bar
- Circuit safety cut-out switch 25A/30mA
- Fuse 10A/B
- Heat control ETI thermostat
- Busbar 10 pol.
- Luminous indication - green, „POWER ON“, IP 65
- Luminous indication - red, „HEATER ON“, IP 65
- Main switch, IP 65
- PUR Power supply cable (orange), Length 8 m, with plug-in socket.



Installation and Operating Instructions Heating System Control Unit 081004

Box Installation

The control box must be fixed with M8 hex bolts and nuts. The sketch below shows the drilling scheme.



Attention:

For mounting of the control box, it is recommended to use the pre-drilled holes in the back-wall of the box. To modify the box by additional drillings or weldings for brackets are not allowed. Otherwise the function and the safe operation of the system is out of guarantee.

Power Supply

For the power supply a suitable cable with a cross-section area of min. $3 \times 1,5 \text{ mm}^2$ per wire is requested. As cable entry into the control box the left cable duct edge (M20) must be used. The outside dia. of the cable must be in a range of 8 – 13 mm.

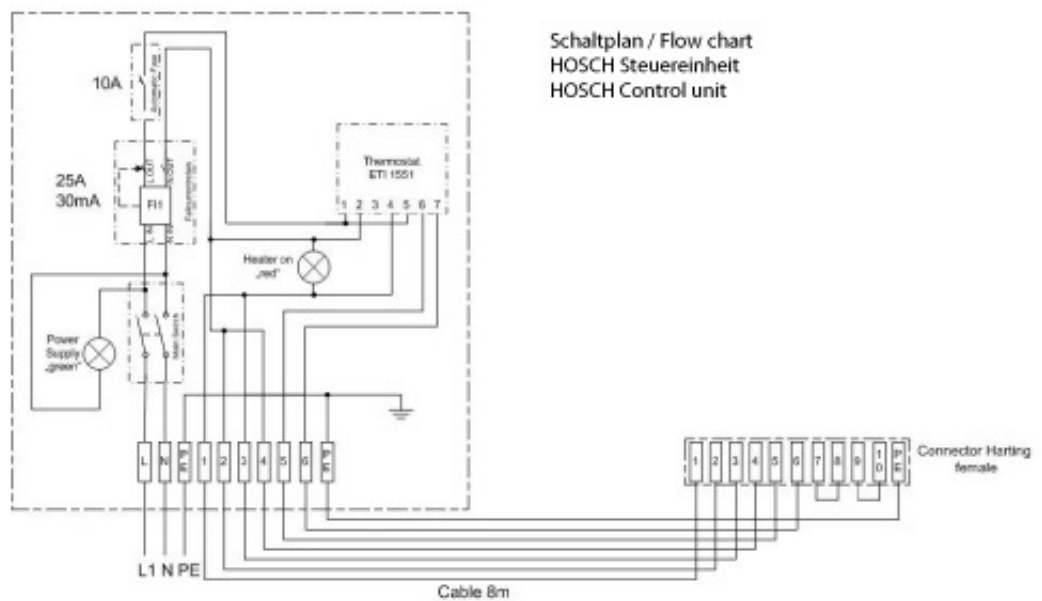
The needed power of the heating system is limited at a maximum of 1,1 KW. For safe operation it is recommended to adapt a 16 A/B protection switch to the power supply cable.

The cable must be connected to the free clamps on the left side of the bus-bar, seriated as phase, neutral wire and earth return (L1, N, PE).



Installation and Operating Instructions Heating System Control Unit 081004

Attention! The power connection must be carried out by authorized and qualified personal only!



Operation mode

After the control-box has been mounted and connected to the power supply according to page 2 & 3 of this instruction, the heating system can set into function.

For adjustment of the operation parameters the master switch must be set to "0" position.

Now open the front-door of the control box and adjust the thermostat relay to the required scraper temperature. The adjustment range is between -10° and +50°C, due to the ambient temperatures the preferred adjustment is set to +30° up to +40°C. For this reason turn the potentiometer of the thermostat relay to the referred value. The second, smaller potentiometer on the same relay is used for setting the hysteresis, which means the temperature difference between the switching points "on" and "off". The adjustment range is between 0° and 6°C due to the individual environmental conditions.

Ex work, the supplied control systems are adjusted to +30° C for operating temperatures and 3°C for the hysteresis.

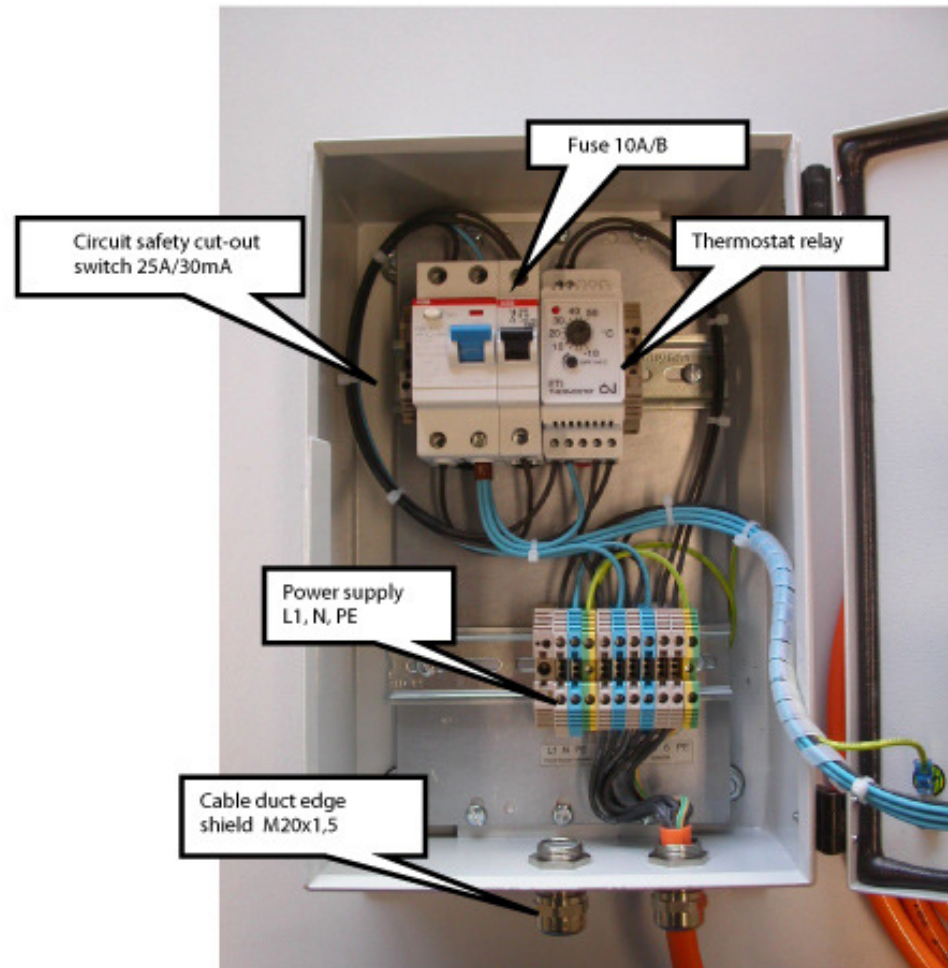
After locking the control box, the system must be started by setting the master switch to position „on“. The green lamp „POWER ON“ lights up, the system is supplied with electrical energy.



Installation and Operating Instructions Heating System Control Unit 081004

If the actual scraper temperature is below the adjusted working temperature, the scraper will be automatically heated up now. The heating mode is indicated by the lighted red lamp „HEATER ON“ on the front panel. If the working temperature of the scraper is on the adjusted level, the thermostat interrupts the energy flow. The heating mode starts again automatically, if the temperature loss increases to the adjusted hysteresis value.

Control box inside view





Installation and Operating Instructions Heating System Control Unit 081004

Function problems

Error function	Possible reason	Help
Green lamp is not lighten if master switch is in "Power on" position	No power supply	Check cable and feeded electric energy
No heating function, red lamp for "Heater on" is not lighten if scraper is below hysteresis temp.	<ul style="list-style-type: none"> - Circuit safety cut-out has switched off - Fuse has switched off - Breakage of sensor cable 	<ul style="list-style-type: none"> - Switch on circuit safety cut-out- Check reason for failure - Switch on Fuse – Check reason for failure - Check / Replace sensor
No heating function, red lamp for "Heater on" is permanent lighten	<ul style="list-style-type: none"> - Heating mat failure - Cable breakage 	<ul style="list-style-type: none"> - Check / Replace heating mat - Check / Replace cable

4.3 Service and maintenance

For service and maintenance of the scraper, the corresponding HOSCH installation and operating instructions should be used.

Attention: Before working on the scraper, the cable should be unplugged and the power switched off.

The electric components do not require maintenance. At the end and beginning of each heating period, the control unit and the plug and cable connections should be inspected. The following maintenance is required:

- Operating test of control unit, heating mats, and FI safety switch by an electrician.
- Inspection of all electrical components for mechanical damage.
- Inspection and adjustment, if required, of the heating temperature.
- Inspection of the connector locks.
- Removal of material build-up from the entire system and drain condense water.

All maintenance work **may** only be carried out by authorised expert personnel. Only original HOSCH spare parts may be used.

5 Declarations of conformity

5.1 Conformity for entire device – HOSCH

Certificate of Conformity

Manufacturer: **HOSCH Fördertechnik Recklinghausen GmbH
Am Stadion 36
45659 Recklinghausen**

Product designation: Sprung Blade Scraper with heating system

Product description: Sprung Blade Scraper Type B6-C/H

The product complies with following European Directive:

2006/95/EC – Low Voltage Directive

The Certificate of Conformity refers only to the design and the manufacturing of the above mentioned components according to Directive 2006/95/EC, under application of the following harmonised norms :

EN 60320
EN 60799
EN 60204
DIN EN ISO 12100
DIN EN ISO 1050

It is strictly forbidden to modify the products without the express and written consent of the manufacturer.

The new risks arising by incorporating these devices into another machine have to be assessed by the manufacturer of the new machine.

For the manufacturer: Werner Schulz, Technical Director

Place, Date: Recklinghausen, 30.04.2008

5.2 Conformity for heating pads – Dansk Varmekabel

Declaration of Conformity



Manufacturer's Name: **Dansk Varmekabel A/S**
Manufacturer's Address: Lundagervej 102
DK-8722 Hedensted
Denmark

Manufacturer's Logo:



Declare under responsibility that the products under the Brand **HANDYHEAT** with
the
Identification mark:

Heating Unit Mat 300 watt, 150 x 625 mm
Heating Unit Mat 400 watt, 150 x 825 mm
Heating Unit Mat 500 watt, 150 x 1050 mm

To which this declaration relates, is in conformity with the European Directive:

73/23/EEC

Including Amendments

"Council Directive of 19 February 1973 on harmonization and laws of the Member States"
relating to


"Electrical equipment designed for use within certain voltage limits"




Hedensted, September 2006
Place and date

Flemming Bjørn Hansen
Managing Director

5.3 Conformity for control unit – Envimeter





ENVIMETER
INNOVATIVE MESSTECHNIK GMBH
ENVIMETER GMBH • FAHRENHEITSTR. 1 • D-28359 BREMEN

EG - Konformitätserklärung

Hersteller: ENVIMETER GmbH

Adresse: Fahrenheitstraße 1
28359 Bremen
-Germany-

Produktbeschreibung : Schaltschrank für Heizungsregelung, Typ 081004

Das bezeichnete Produkt stimmt mit den Vorschriften folgender Europäischer Richtlinien überein:

Nummer: 2006/95/EG vormals 73/23/EWG

Text: Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (Niederspannungsrichtlinie)

Datum der Anbringung der Kennzeichnung: 08

Die Übereinstimmung mit den genannten Richtlinien wird durch die Einhaltung folgender Normen nachgewiesen:

Nationale Normen:

- VDE 0100 (DIN VDE 0100 / 410 Nr. 411.3.3)
- VDE 0100 (DIN VDE 0100 / 0100-430)
- BGV A3 (in der Fassung vom 01.01.1997, Nachdruckfassung 2005)

Europäische Normen:

- EN 60204-1

Aussteller: Rolf Schröder, Geschäftsführer

Ort, Datum: Bremen, 15.04.2008

Diese Erklärung bestätigt die Übereinstimmung mit den genannten Richtlinien, sie beinhaltet keine Geräteeigenschaften. Die Hinweise in der Montage- und Betriebsanleitung sind zu beachten. Desweiteren wird auf die CE-Konformitätserklärungen der Hersteller der verbauten Komponenten verwiesen.

6 Appendix

The following dimension and spare parts drawings as well as the assembly and operating instructions for the standard scraper Type B6-C are part of this documentation.

6.1 Type B6-C/H with Z-blades 120 mm

6.2 Type B6-C/H with Z-blades 240 mm

6.3 Type B6-C/H with V/Z-blades 240 mm

6.4 Type B6-C/H - Control unit

6.5 Type B6-C Assembly and operating instructions

HOSCH Vertriebs- und Servicestützpunkt



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