CONNECT AND PROTECT

POLYMER INSULATED (PI) SERIES HEATING SYSTEMS

nVent

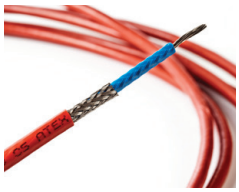
RAYCHEM

Innovation

Since nVent first introduced its high-performance XPI series heating cable in collaboration with Hew-Kabel (Germany), its customers have been able to take advantage of a series of innovative product developments that have made these systems yet simpler, more versatile and economical to use.

The development of XPI cables provided customers with highest quality series heating systems featuring higher temperature and power ratings than ever before.

They also benefited from improved flexibility of maintenance, through the development of a fully compatible range of components which also simplified circuit assembly. XPI heating cables were further developed, with an even more robust construction allowing easier termination and customers were able to select from a wider range of options where high impact resistance is vital. RAYCHEM XPI (previously branded HEW-THERM) meets the highest standards for Polymer Insulated (PI) series heating cables.



2003

Joint development of **XPI heating system** with **Hew-Kabel**

Raychem 2014

HEW-THERM products rebranded to **nVent RAYCHEM**

2006

Improved construction of **XPI,** development of **XPI-NH & XPI-S**

2017

Development of RAYCHEM **XPI-F** heating cable

2011

IECEx approvals for entire range

Polymer Insulated (PI) Series Constant WATTAGE Technology

INTRODUCTION

The most proven and reliable range of nVent RAYCHEM XPI heating systems is the industry-preferred solution when circuit lengths exceed the ratings of parallel heating cables and the number of power supply points is a constraint.

Operating to voltages up to 750 V

Temperature maintenance up to 200°C

Short term exposure temperatures up to 100°C (XPI-F) or 300°C (XPI and XPI-S)

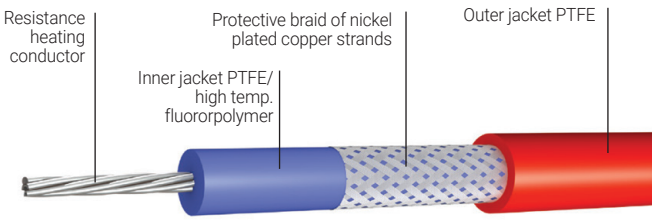
Circuit lengths up to 5 kilometres

Approved to various international standards, refer to datasheets for more detailed information.

CONSTRUCTION

XPI AND XPI-S :

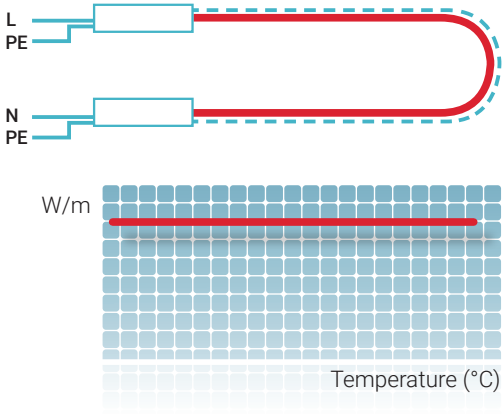
The stranded high temperature conductor is nickel plated to ensure a long life at elevated temperatures in corrosive environments. It is electrically isolated using an innovative sandwich construction of selected high-temperature fluoropolymers. A braid of nickel plated copper strands provides extra mechanical protection as well as a low Ohmic resistance earth path. A final PTFE jacket ensures optimum chemical resistance and highest temperature withstand capabilities.



XPI-F :

The XPI-F cable is a low temperature variant of the XPI family, designed for frost protection and low temperature applications. The construction combines in the inner jacket the advantages of PTFE in a sandwich construction, but this time with a polymer rated for lower temperatures. The outer jacket is a made of a hybrid low temperature polymer and the braid is tin plated instead, in line with the lower temperature ratings.

The end result is a robust alternative for frost protection and low temperature maintain applications for less demanding environment and exposure conditions



HOW IT WORKS

Heat is generated in the central conductor through the principle of Ohmic resistance heating. A variety of conductor materials is used, depending on the specific resistance requirements.

Power output and temperature of a PI series heating system depend on the specific application. Design parameters including type/ resistance used, circuit length, applied voltage and electrical configuration directly influence the performance of the heating system. Design and product selection should be carried out by qualified personnel using appropriate design software. Any change to these parameters can be critical and requires a re-validation of the design.

BENEFITS

LARGE VARIETY OF RESISTANCES

RAYCHEM XPI heating cables are available in a very wide resistance range to meet the requirements of the broadest range of applications. And for the less demanding applications (e.g. freeze protection), there is also a low temperature variant XPI-F available.

EASY TERMINATION ON-SITE WITH RELIABLE COMPONENTS

RAYCHEM PI heating cables can easily be terminated in the field. The fabrication method keeps the cables very flexible and allows for easy stripping while printed metre marks facilitate on-site handling.

The components for our XPI systems are specifically developed to ensure maximum reliability of the heat tracing system and deal with the fact that the electrical connections are subjected to extreme temperature conditions.

These additional technical requirements have lead to the development of custom made connections in combination with specific tooling and installation methods, resulting in the most reliable connections in the market.

MAXIMUM CHEMICAL RESISTANCE OF PTFE

The use of PTFE provides maximum chemical resistance and ensures the highest lifetime insulation resistance over the entire temperature range.

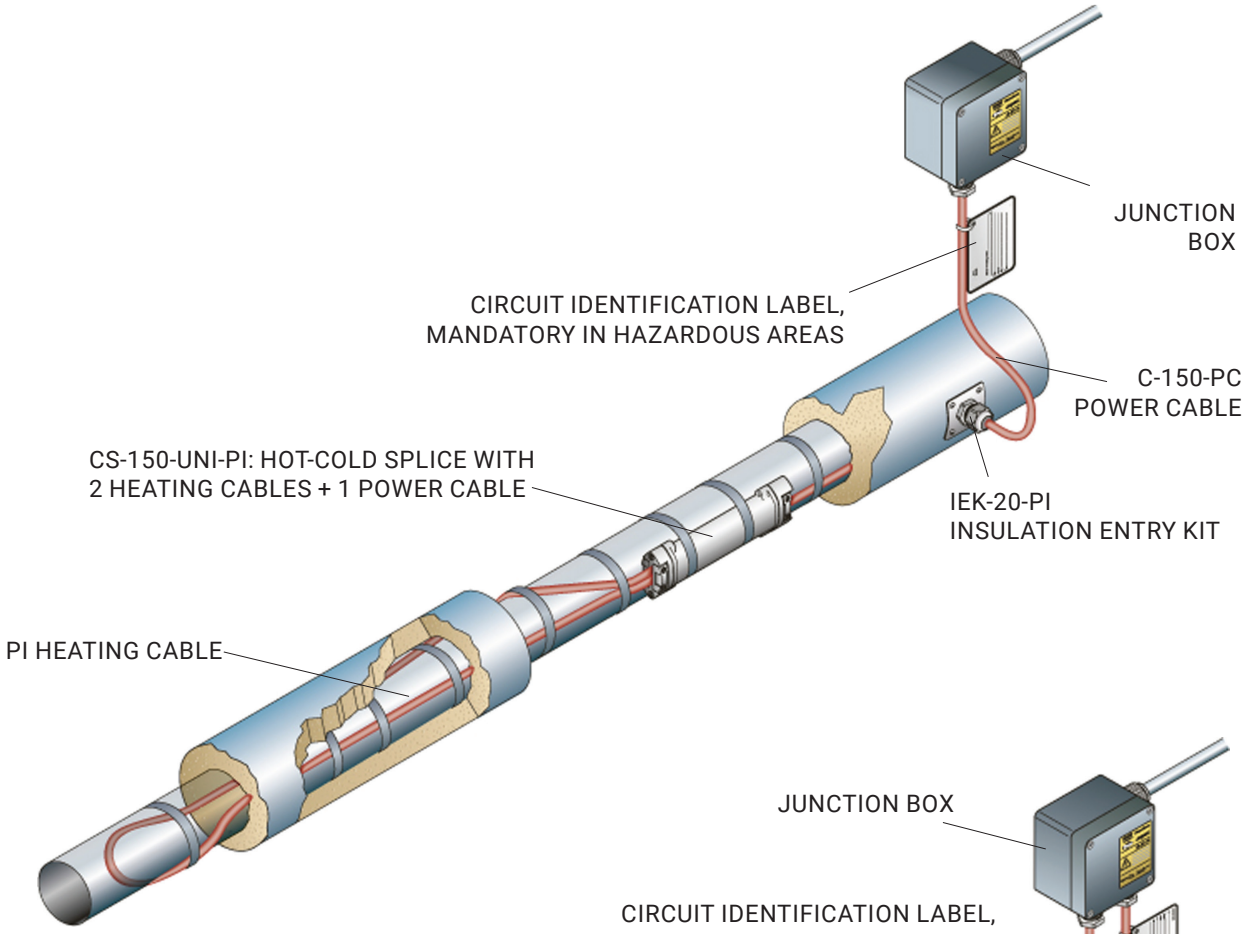
APPLICATIONS

PI heating systems can be used for applications involving maintain temperatures up to 200°C and exposure temperatures up to 300°C. Maximised circuit lengths can significantly reduce the total installed cost.

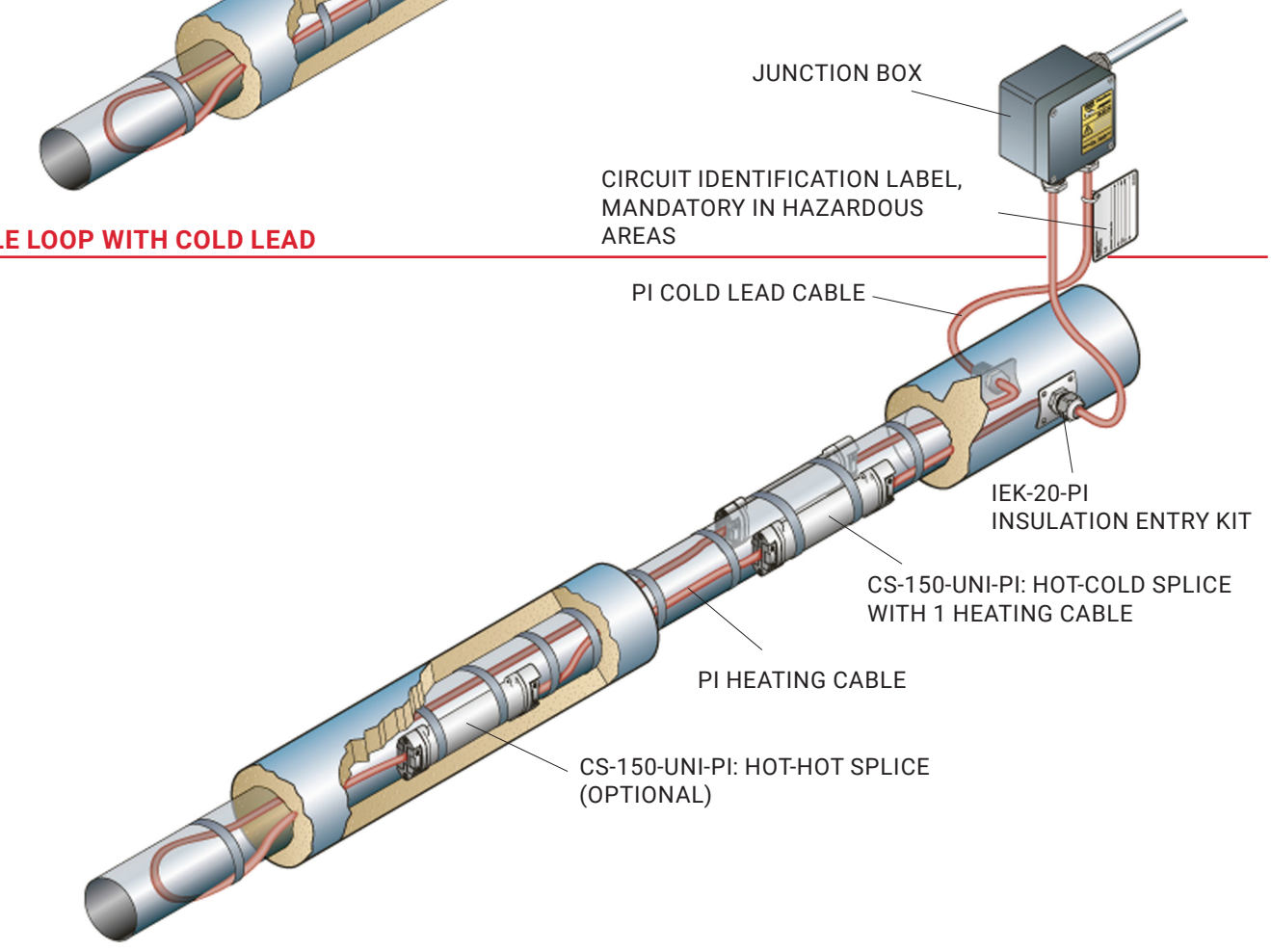
REFINERIES	NATURAL GAS PLANTS	GENERAL INDUSTRIAL FACILITIES
Crude oil gathering lines (viscosity control)	Natural gas lines (condensation prevention)	Tank farms
Off-site crude oil lines	Sulphur lines (viscosity control & melting)	Storage facilities
Fuel oil lines	Transfer lines	Bitumen lines
Sulphur lines (viscosity control & melting)	Caustic soda lines	Product transfer lines
Transfer lines	Waste water lines	Frost protection of long transfer lines
Caustic soda lines		
Waste water lines		

Typical Configurations for RAYCHEM PI Heating Systems

SINGLE LOOP DIRECTLY CONNECTED WITH FLEXIBLE POWER CABLE

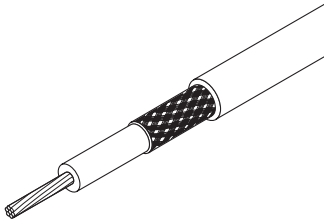


SINGLE LOOP WITH COLD LEAD



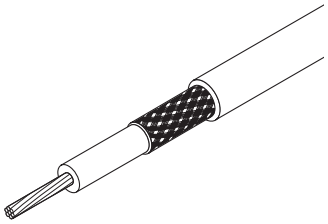
nVent offers Polymer Insulated heating cables in a very wide range of resistances as well as a complete range of components and accessories to build a complete heat-tracing system. All components are fully compatible across the three types and entire range of resistances.

HEATING CABLES



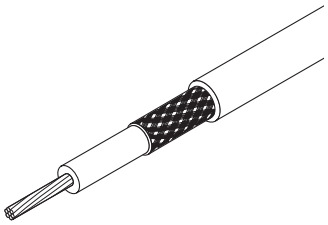
XPI-F

RAYCHEM PI series heating cable for use in hazardous area (gas and dust environments). The heating cable can be used for temperatures up to 90°C with an intermittent exposure up to 100°C. The inner insulation layer consists of a sandwich construction of a polymer rated for lower temperatures and PTFE and the outer jacket is made of a hybrid low temperature polymer, providing a highly flexible, easy to terminate, robust heating cable with good chemical resistance and excellent mechanical strength (4 J impact resistance).



XPI

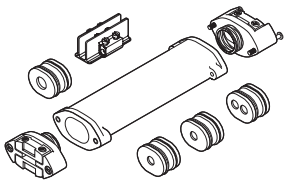
RAYCHEM PI series heating cable for use in hazardous areas (gas and dust environments). The heating cable can be used for temperatures up to 260°C with an intermittent exposure up to 300°C. The inner insulation layer consists of a sandwich construction of high temperature fluoropolymers and PTFE and the outer jacket is made of PTFE, providing a highly flexible, easy to terminate robust heating cable with the highest chemical resistance and excellent mechanical strength (4 J impact resistance), particularly at elevated temperatures.



XPI-S

RAYCHEM PI series heating cable for use in hazardous areas (gas and dust environments). The heating cable can be used for temperatures up to 260°C with an intermittent exposure up to 300°C. The inner insulation layer consists of an extra thick sandwich construction of high temperature fluoropolymers and PTFE and the outer jacket is made of PTFE, providing a highly flexible, easy to terminate very robust heating cable with the highest chemical resistance and most excellent mechanical strength (7 J impact resistance), particularly at elevated temperatures.

COMPONENTS AND ACCESSORIES

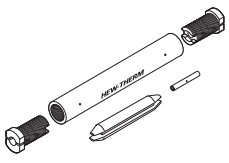


CS-150-UNI-PI

Universal under insulation connection kit for PI heating cables. Approved for use in hazardous areas, cold applied, using screw terminals.

For the splicing and the connection of PI heating cables to cold leads (max 32A) or a 3-core flexible power cable (max 25A).

Glands (M20) and appropriate insulation entry kits need to be ordered separately.

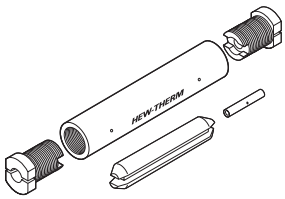


CS-150-2.5-PI

Under insulation splice/connection kit for PI heating cables.

Approved for use in hazardous areas, silicone filled, using crimp connectors.

For the splicing and the connection of PI heating cables to cold leads with a maximum cross section of 2.5 mm^2. Glands (M20) and appropriate insulation entry kits as well as the conductor crimp, need to be ordered separately.

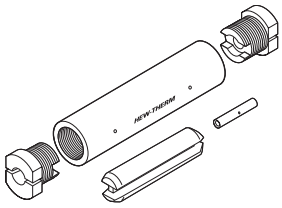


CS-150-6-PI

Under insulation splice/connection kit for PI heating cables.

Approved for use in hazardous areas, silicone filled, using crimp connectors.

For the splicing and the connection of PI heating cables to cold leads with a cross section from 4 to 6 mm^2. Glands (M20) and appropriate insulation entry kits as well as the conductor crimp, need to be ordered separately.

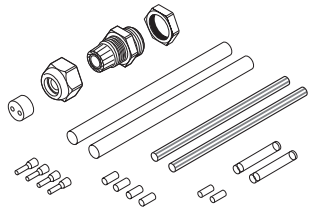


CS-150-25-PI

Under insulation splice/connection kit for PI heating cables.

Approved for use in hazardous areas, silicone filled, using crimp connectors.

For the splicing and the connection of PI heating cables to cold leads with a cross section from 10 to 25 mm^2. Glands (M20) and appropriate insulation entry kits as well as the conductor crimp, need to be ordered separately.

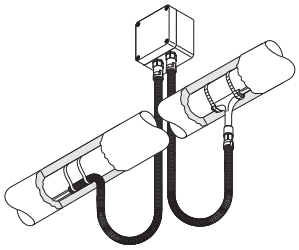


CS20-2.5-PI-NH

Non hazardous area under insulation splice/connection kit for PI heating cables.

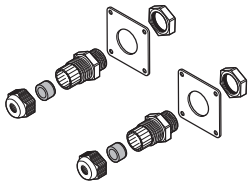
For use in non-hazardous areas only. Heat shrink technology, using crimp connectors.

For the splicing and the connection of PI heating cables to cold leads with a maximum cross section of 2.5 mm^2. Kit includes material for connection of two cold leads and a dual hole grommet/gland (M20).



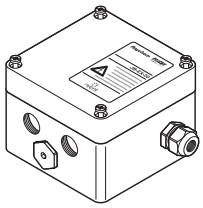
CCON2X.. AND ACCESSORIES

Conduit system for additional mechanical protection of PI heating cables. Designed to allow for usage in hazardous areas and to provide an additional mechanical protection of heating cables or cold lead cables between the junction box and entry into the insulation. Conduit system available in different materials for different temperatures and fully supported with all required accessories for different set ups.



IEK-20-PI

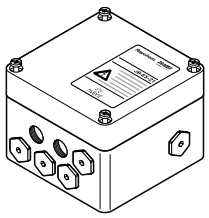
Insulation entry kit for two PI cold leads. Includes two cable glands (M20) with mounting plates. Diameter range: 5-13 mm.



JB-EX-20 (-EP)

Junction box, 3 x M20 entries and 1 x M25 with gland, approved for use in hazardous areas.

Typical use as power-box for PI/MI heating cables. Also available with earth plate (reference JB-EX-20-EP).



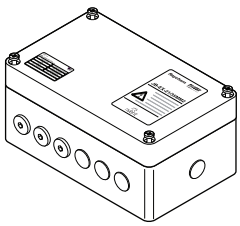
JB-EX-21-EP

Junction box, 6 x M20 and 1 x M32 entries for use in hazardous areas.

Power cable gland (M32) must be purchased separately.

Typical use as power-, splice- and end-box for 3-phase systems with PI/MI heating cables.

Also available with earth plate (reference JB-EX-21-EP)

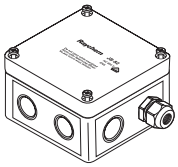


JB-EX-21/35MM2-EP

High load junction box, 6 x M20 and 1 x M40 entries, approved for use in hazardous areas.

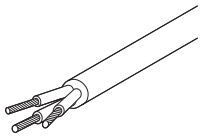
Power cable gland (M40) must be purchased separately.

Typical use as power-, splice- and end-box for 3-phase systems with PI/MI heating cables.



JB-82

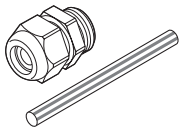
Junction box, 4 x M20/M25 pre-punched holes and M25 cable gland for use in non-hazardous areas.



C-150-PC

3-core flexible power cable for connection to CS-150-UNI-PI,

3 x 2.5 mm^2, silicone insulation, temperature range: –40°C to +180°C, short term: 215°C.



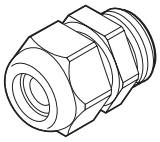
GL-20-PI-PA-KIT

Cable gland Ex e (M20), polyamide, for use with XPI cold leads up to -40°C. Also includes green/yellow sleeve for braid and locknut.

GL-20-PI-M0-KIT

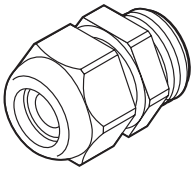
Cable gland Ex e (M20), nickel-plated brass, for use with XPI cold leads up to -55°C. Also includes green/yellow sleeve for braid and locknut.

To be used with metallic or earth plated junction boxes.



GL-45-M32

Cable gland Ex e (M32), polyamide, for use with power cables with a diameter range of 12 - 21 mm.

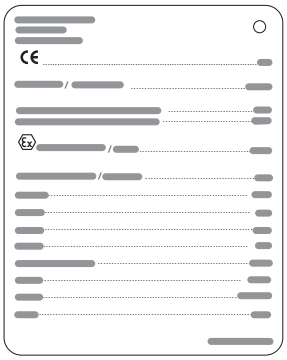


GL-51-M40

Cable gland Ex e (M40), polyamide, for use with power cables with a diameter range of 17 - 28 mm.

HWA-PLUG-M20-EXE-PLASTIC

Stopping plug Ex e (M20), polyamide, spare part for various junction boxes.



PI-LABEL-EX

Circuit identification label for PI heating cables, aluminium, required for marking in hazardous area applications, includes cable tie.

PI-LABEL-NH

Circuit identification label for PI heating cables, aluminium, strongly recommended for marking in non-hazardous area applications, includes cable tie.

LAB-I-01

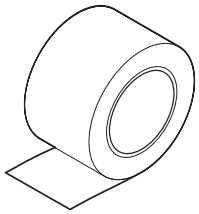
Self adhesive warning label: For proper marking of electric heat-tracing systems.

One label per 5 m of traced pipe.

GT-66 AND GS-54

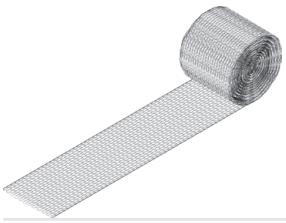
GT-66: Glass fibre fixing tape for polymer insulated heating cables on pipes. Not to be used on stainless steel. 20 m/roll, width: 12 mm.

GS-54: Glass fibre fixing tape for polymer insulated heating cables on stainless steel pipes. 16 m/roll, width: 12 mm.



ATE-180

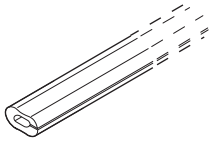
Aluminum adhesive tape, for polymer insulated cables on tanks and pipes, including stainless steel. 55 m/roll, width: 63.5 mm.



HWA-METAL-MESH-SS-50MM-10M

Stainless steel mesh for fixing heating cables on valves, pumps or other odd-shaped surfaces. This mesh provides optimum contact and heat transfer between heating cables and heated equipment and can be used for exposure temperatures of up to 400°C.

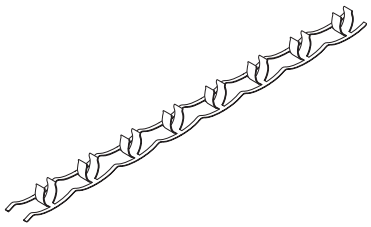
10 m/roll, width: 50 mm.



G-02

Silicone rubber sleeve, mechanically protects heating cables on edges, flanges, insulation cladding. Cut-to-length on-site.

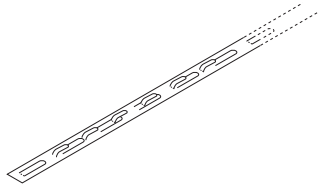
1 m long, temperature resistant up to 215°C.



HWA-PI-FIX-SS-XMM-10M

Stainless steel clip band to attach polymer insulated series heating cables to pipes. Clips at regular distances to allow for even heater spacing. Band available in two sizes for different diameter ranges.

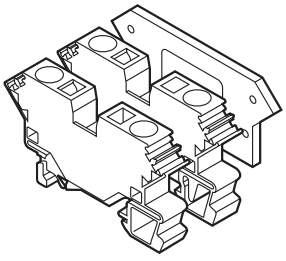
Rolls of 10 m.



HARD-SPACER-SS-25MM-25M

Pre-punched stainless steel strap, which allows fixed distances, when heating cables are attached to surfaces of bigger pipes and vessels.

Punch interval: 25 mm, length: 25 m.



HWA-WAGO-PHASE

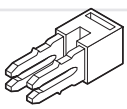
Phase/neutral terminal (Ex e), spare part for various junction boxes, max. 10 mm^2 solid/stranded.

HWA-WAGO-EARTH

Earth terminal (Ex e), spare part for various junction boxes, max. 10 mm^2 solid/stranded.

HWA-WAGO-ENDPLATE

End plate for terminals HWA-WAGO-..., 10 mm^2 terminals, spare part.



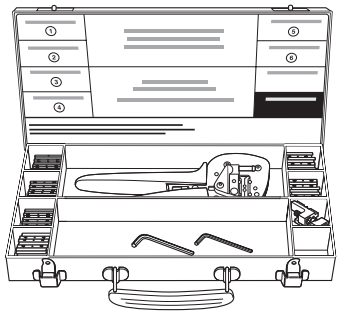
HWA-WAGO-JUMPER

Jumper to bridge terminals HWA-WAGO-..., 10 mm^2 terminals, spare part.

TEMPERATURE CONTROLS

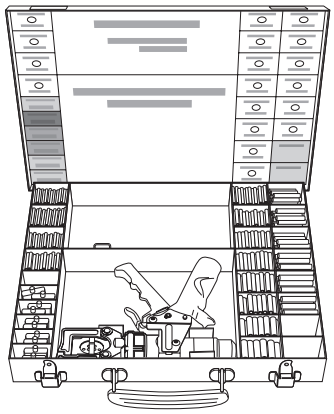
See control and monitoring product range.

SPECIAL TOOLS



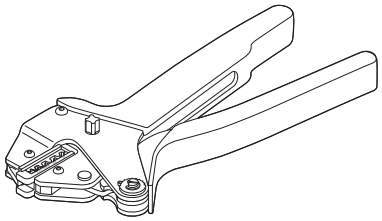
PI-TOOL-SET-01

Metal toolbox containing a mechanical crimp tool, crimping dies and the crimps required for the connection of PI heating cables and cold leads in conjunction with the connection/splice kit type
CS-150-2.5-PI (cross section up to 2.5 mm^2). This tool is required for a reliable connection and is also recommended for maintenance purposes.



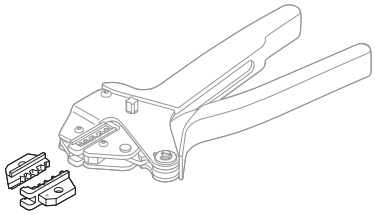
PI-TOOL-SET-02

Metal toolbox containing a hydraulic crimp tool, crimping dies and the crimps required for the connection of PI heating cables and cold leads in conjunction with the connection/splice kits type CS-150-6-PI (cross section 4 - 6 mm^2) and CS-150-25-PI (cross section 10 - 25 mm^2). This tool is required for a reliable connection and is also recommended for maintenance purposes.



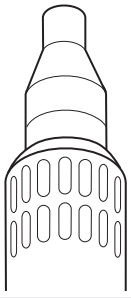
CW-CT-KIT

Crimp tool with dies for installation of crimps for the connection/splice kits type: CS-20-2.5-PI-NH.



CW-CT-DIE

Spare set of dies for crimp tool CW-CT-KIT and crimps of 2.5 mm^2.



CV-1983-220V-3060W

High power heat gun for heat shrink based components. Power output: 3 kW.

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