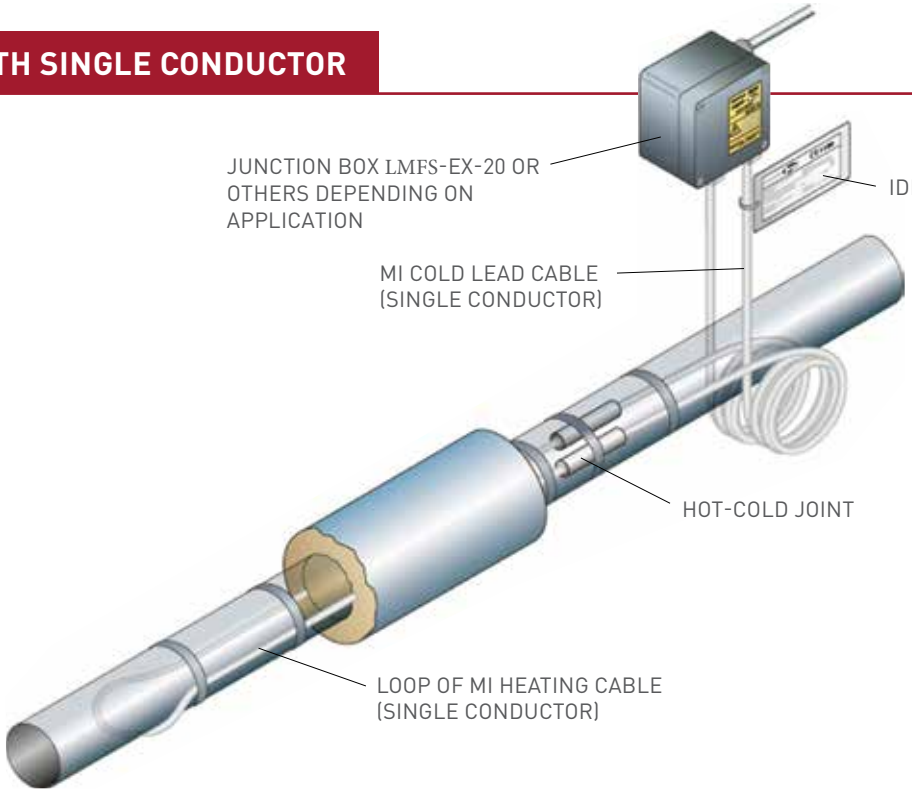
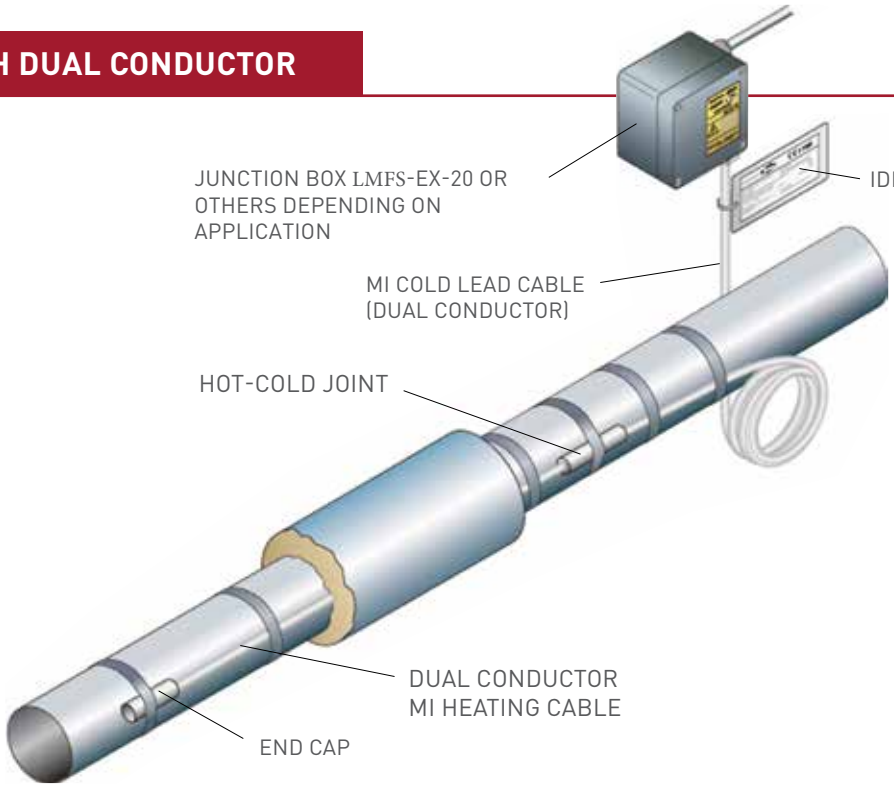
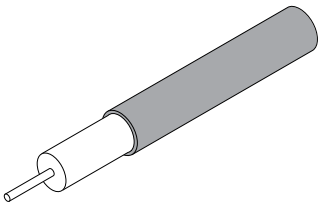
TYPICAL CONFIGURATION FOR SANTO MI HEATING CABLE SYSTEMS

SYSTEMS WITH SINGLE CONDUCTOR



SYSTEMS WITH DUAL CONDUCTOR



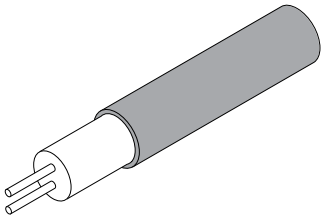


HCH/HCC

Copper sheathed MI cable approved for use in hazardous areas (gas and dust environments). The maximum exposure temperature s is 200°C and the typical maximum load is 50 W/m*. Copper cables are also available with an over-sheath in HDPE (max. 80°C) or FEP (max. 200°C) for enhanced corrosion protection.

HDF/HDC

Cupro-nickel (70/30) sheathed MI cable approved for use in hazardous areas (gas and dust environments). The maximum exposure temperature is 400°C and the typical maximum load is 70 W/m*.



HSQ

Stainless steel (321) sheathed Mineral Series (MI) heating cable approved for use in hazardous areas (gas and dust environments). The maximum exposure temperature is dependent on the technology used for the hot-cold joint assembly. Silver solder joints allow for exposure temperatures up to 450°C while laser welded joints can withstand 600°C.
The typical maximum load is 150 W/m*.

HAx

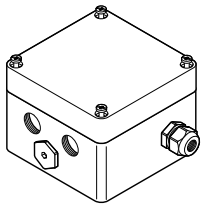
Alloy 825 sheathed MI cable approved for use in hazardous areas (gas and dust environments) are available in both single and dual conductor versions. Dual conductor heating cables are available for voltage ratings of 300 Vac (HAx2M) and 600 Vac (HAx2N). The maximum exposure temperature is dependent on the technology used for the hot-cold joint (and end cap) assembly.

Silver solder joints (and end caps) allow for exposure temperature up to 550°C while laser welded joints (and end caps) can withstand 650°C. The typical maximum load for single conductor cables is 210 W/m while dual conductors can be powered up to 270 W/m*.

HIQ

Inconel 600 sheathed MI cable approved for use in hazardous areas (gas and dust environments). The maximum exposure temperature is dependent on the technology used for the hot-cold joint assembly. Silver solder joints allow for exposure temperature up to 450°C while laser welded joints can withstand 600°C. The typical maximum load is 300 W/m*.

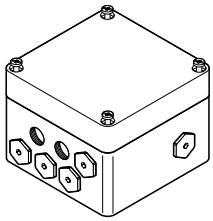
JUNCTION BOXES



MF-EX-20

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

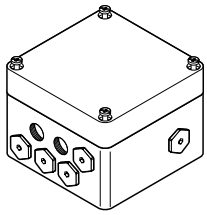
Typical use as power-box for PI/MI heating cables. Also available with earth plate (reference MF-EX-20).



MF-EX-21

Junction box, 6 x M20 and 1 x M32 entries for use in hazardous areas. Power cable gland (M32) must be purchased separately.

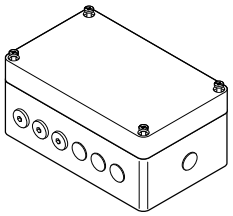
Typical use as power-, splice- and end-box for 3-phase systems with PI/MI heating cables.



MF-EX-21/35MM2

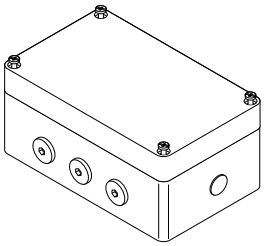
High load junction box, 6 x M20 and 1 x M40 entries, approved for use in hazardous areas. Power cable gland (M40) must be purchased separately.

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



MF-EX-25/35MM2

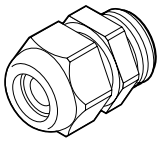
High load junction box, 6 x M25 and 1 x M40 entries, approved for use in hazardous areas. Power cable gland (M40) must be purchased separately. Typical use as power-, splice- and end-box for 3-phase systems with MI heating cables.



MF-EX-32/35MM2

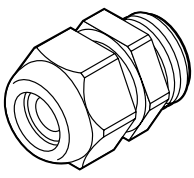
High load junction box, 3 x M32 and 1 x M40 entries, approved for use in hazardous areas. Power cable gland (M40) must be purchased separately.

Typical use as power-, splice- and end-box for 3-phase systems with MI heating cables, in particular for dual conductor heating elements.



GL-45-M32

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

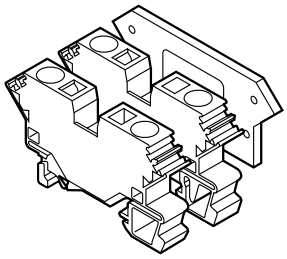


GL-51-M40

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

DT-PLUG-M20-EXE-PLASTIC

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



FJ-WAGO-PHASE

Phase/neutral terminal (Ex e), spare part for various junction boxes, max. 10 mm² solid/stranded.

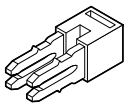
FJ-WAGO-EARTH

Earth terminal (Ex e), spare part for various junction boxes, max. 10 mm² solid/stranded.

FJ-WAGO-ENDPLATE

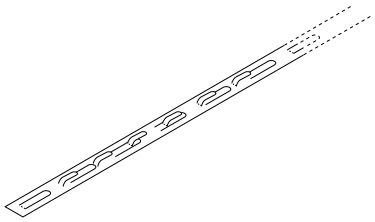
End plate for terminals FJ-WAGO-..., 10 mm² terminals, spare part.

FJ-WAGO-JUMPER



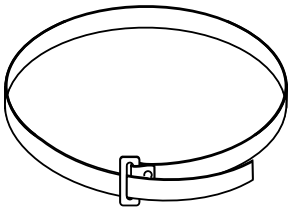
Jumper to bridge terminals FJ-WAGO-..., 10 mm² terminals, spare part.

FIXING/INSTALLATION MATERIALS



Steel strip

Pre-punched strap in stainless steel, which controls spacing distances when heating cables are attached to surfaces of bigger pipes and vessels. Punch interval: 25 mm.

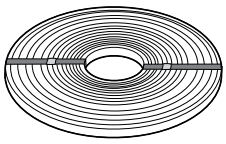


AVAILABLE PIPE STRAPS

Stainless steel pipe straps for holding MI cable onto pipe. Tighten with pliers.

Allow one strap per 30 cm of pipe

PART NO.	PIPE DIAMETER	PACKING QTY
PB 125	to 1 ¼" (32 mm)	50 pc
PB 300	1 ½" to 3" (38 - 75 mm)	35 pc
PB 600	3 ½" to 6" (89 - 150 mm)	25 pc
PB 1000	6" to 10" (150 - 250 mm)	1 pc
PB 1200	to 12" (300 mm)	1pc
PB 2400	to 24" (600 mm)	1pc
PB 3600	to 36" (900 mm)	1pc

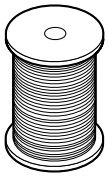


SNLS

Plain stainless steel banding/strip for holding MI cables in place on pipes. 30 m roll. Secured with buckles.

SNLK

Stainless steel buckles for use with metal banding strip type SNLS.



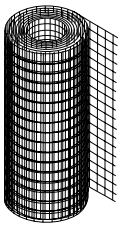
RMI-TW

Tie wire for fastening steel heating cables on pipes. Especially suitable for irregular shaped objects such as pumps, valves, flanges. Supplied in 50 m reels.

Do not use with copper or cupro nickel sheathed heating cables; use straps wherever possible.

ALLOWANCES FOR TIE WIRE AND BANDING ON PIPES.

Pipe Size (mm)	25	40	50	100	150	200	250	300	350	400	450	500	600	750	900	1200
Required length (m) per m of pipe	0.8	1.1	1.2	1.6	2.1	2.8	3.5	4.2	4.6	5.2	5.9	6.5	7.9	9.8	11.8	15.7



FT-19/FT-20

Zinc-plated metal mesh (FT-19) or stainless steel metal mesh (FT-20) for holding MI heating cables in place on pipes, tanks or other equipment.

Supplied in 25 m rolls (approx. width 1 m).

FJ-MESH-SS-50MM-10M

Self adhesive warning label: For proper marking of electrical trace heating systems. One label per 5 m of traced pipe.

Attach to outside of thermal insulation weather barrier on both sides of pipe and also at equipment such as valves, pumps requiring periodic maintenance.

WARNING LABELS

JSBQ-MI

Self adhesive warning label: For proper marking of electrical trace heating systems. One label per 5 m of traced pipe.

Attach to outside of thermal insulation on both sides of pipe and also at equipment such as valves, pumps requiring periodic maintenance.

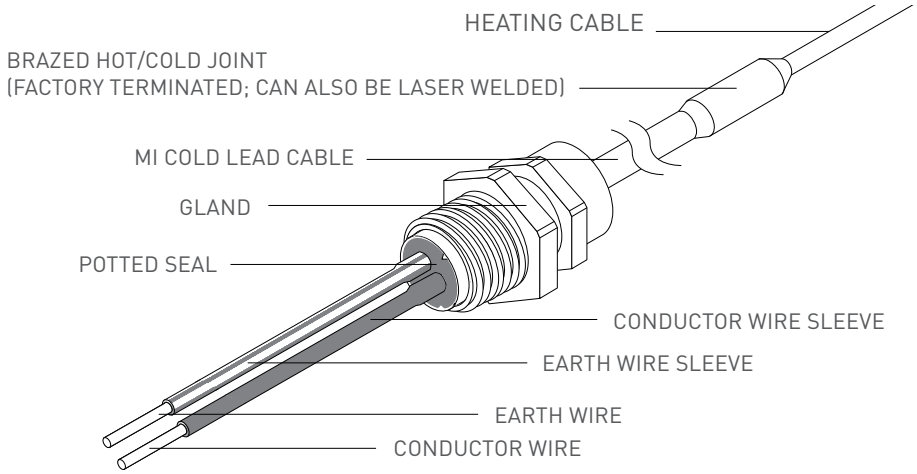
TEMPERATURE CONTROLS

See control and monitoring product range.

The termination of MI heating units requires adequate training and sufficient experience. In particular for hazardous area applications, factory termination of the MI heating units is strongly recommended.

For possible combinations and detailed order information of glands, seals, joints and other accessories also refer to datasheet for **MI Termination Accessories** (reference DOC), or contact SANTO

TYPICAL TERMINATION OF MI HEATING CABLE



PRE-TERMINATED MI DOUBLE COLD ENDS

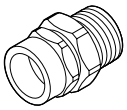
To facilitate occasional on-site termination and eventual repairs, SANTO offers Pre-terminated MI double Cold Ends (PCE).

The standard PCEs consist of 4m of cold lead cable of the appropriate type which ends are pre-terminated with a factory seal, gland assembly and insulated flexible tails. The use of Pre-terminated Cold Ends (PCE) significantly increases the reliability of field-termination and repairs of cold leads since they are fully factory tested and assembled in a controlled manufacturing environment.

A PCE with a single conductor cable includes two terminations, sufficient for the termination of an MI heating unit type B. A PCE with dual conductor cable includes two terminations, sufficient for the termination of two MI heating unit type D or for one MI heating unit type E.

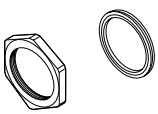
Any ingress of moisture is minimized, if the PCE is cut (typically in the middle) just before the connection to a heating cable. Unused ends can be sealed for storage using wax or other appropriate sealing methods. More details on the available types can be found in MI Termination Accessories (reference DOC).

GLANDS, SEALS, JOINTS, FERRULES



GL

Metric brass glands are standard.



GLM20

M20 brass lock nuts for securing glands

GLM25

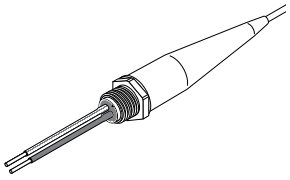
M25 brass lock nuts for securing glands.

SATP20

Fibre washers for glands, M20

SATP25

Fibre washers for glands, M25

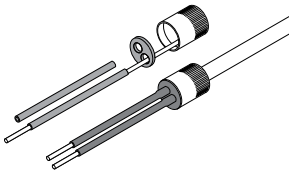


GLHG20

M20 gland shrouds for enhanced gland protection

GLHG25

M25 gland shrouds for enhanced gland protection



U-MI

Hazardous and ordinary area seals are supplied with 300 mm tails including earth tail.