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OWNER'S MANUAL

THERMOSTATIC PVC HEATING TAPE

TYPE 26178

1 - APPLICATION :

Tracing to maintain piping or tanks frost-free (minimum diameter 1").

2 - DESCRIPTION :

Consult our manual "Thermostatic PVC heating tape type 26178" and the corresponding drawing in the case of special manufacturing.

3 - PRECAUTIONS FOR USE :

3 - 1 - CHECKING BEFORE INSTALLATION :

- Make sure that the equipment received is compliant with the order and has not been damaged by transport.
- Ensure that the temperature of the fluid to be maintained frost-free is not liable to exceed 65°C during process operation.
- Make sure that the service voltage available on site is that of the tape : generally 230 V single-phase standard.
- Because these tapes are unsuitable for explosive atmospheres, they must never be used in an environment liable to be or become explosive because of the emanations resulting from a heated fluid, for instance.
- In the case of the product being heated in a recipient :
 - take all necessary precautions to avoid the overflowing of the liquid,
 - the boiling point can be reached easily. Take all necessary steps (venting) to prevent the pressurizing of the recipient.
- Trace the route of the heating tape over the pipe or tank and locate any points where accessories and components are located on this route.
- Make sure that the pipe is free of burrs, rough surfaces or sharp edges liable to damage the tape. Deburr if necessary.
- Make sure that coatings and paint on the pipe or tank are dry before installing the tape.

3 - 2 - HANDLING THE HEATING ELEMENT:

- When handling the tape (paying, application), avoid sharp edges, excessive voltage, twisting or crushing.
- Pay out the entirety of the tape near the pipe or tank to be equipped, working it around the supports and equipment, before attaching it.
- If the final application of the tape and insulation cannot be carried out quickly, protect it temporarily from damp, contamination, mechanical accidents or other risks.

NOTE : If the tape is particularly rigid because of a reduction in the ambient storage temperature, it will be necessary to heat it, preferably by placing it in a room at a temperature of approximately 20°C or connecting it electrically for a few moments (first paying it out entirely) until it becomes malleable.

3 - 3 - ATTACHMENT OF HEATING TAPE :

- Use attaching collars capable of supporting the temperatures set out every 300 mm at the most, and less if necessary (in pipe bends for instance).

4 - ASSEMBLY AND ELECTRICAL CONNECTION :

4 - 1 - INSTALLATION OF THE HEATING TAPE :

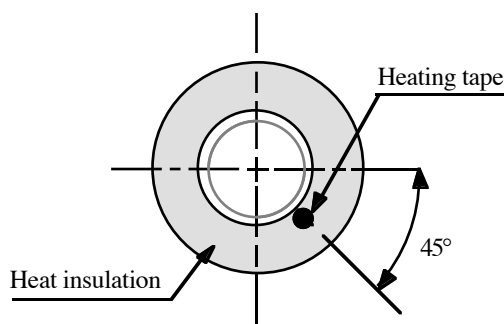
The tape can be applied in lines (one or several tapes depending on the power to be installed) or can be spiral wound, depending upon the specifications of the technical survey.

The thermostat (black pad on orange potted case) must be applied carefully to the pipe (or tank wall) in the point considered to be coldest : it measures the surface temperature of the pipe (or on the tank wall) and energizes the heating tape when the temperature drops below 3°C or so and switches it off when it exceeds this 3°C threshold by a few degrees.

- NOTES :
- In no case may a tape be shortened.
 - The tape must never be overlaid on itself (no overlapping).
 - The entire length of the tape must be applied at all points of the surface to be traced.
 - For tracing plastic piping : apply aluminum tape over the entire length to improve the thermal transfer quality.

4 - 1 - 1 - LINEAR TRACING :

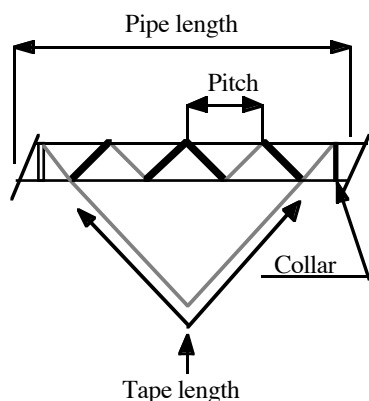
- Trace the pipe linearly (unless a technical investigation suggests spiral winding).
- For horizontal pipes, apply the tape as indicated in the figure below and not on the lower generating line :



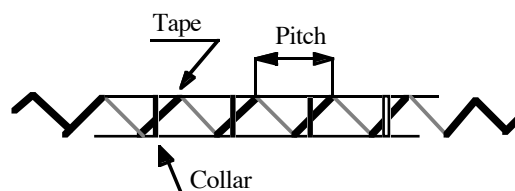
- A tape of length L can be used for tracing a pipe with length L/2. In this case, place each arm of the heating element diametrically opposite on the pipe.

4 - 1 - 2 - SPIRAL TRACING :

There are two possible methods of spiral winding, in accordance with the following schematic diagram :



METHOD No.1



METHODE No. 2

To determine the pitch, valid for the 2 spiral winding methods, see the following paragraph.

Allow for a spiral winding pitch of at least 25 mm.

- Method No. 1 :
 - Prepare the loop and attach the tape at either end.
 - Wind the loop around the pipe.
 - Space the turns regularly and attach the tape with collars.
- Method No. 2 :
 - Mark the pipe with the spiral pitch value.
 - Form the turns and attach the tape gradually as it is positioned, using collars.

DETERMINATION OF SPIRAL WINDING PITCH :

The table below indicates the spiral winding pitch as a function of the diameter of the pipe and the spiral winding ratio obtained, by devoting the length of the tape by the length of the pipe :

PIPE DIAMETER			SPIRAL TRACING : APPROXIMATE HELIX PITCH IN CM									
external (mm)	nominal		RATIO = (Length of tape) / (Length of pipe)									
	ND	(Inches)	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	1,9	2
27	20	3/4"	23	16	12	11						
42	32	1 1/4"	33	23	18	15	13	12				
48	40	1 1/2"	38	25	21	18	15	14	13			
60	50	2"	45	31	25	21	19	17	15	13		
73	65	2 1/2"	52	36	29	24	21	19	17	16	15	
89	80	3"	65	45	36	30	27	24	22	19	18	17
114	100	4"	82	57	45	38	34	30	27	25	23	21
168	150	6"	119	82	66	56	49	43	40	36	33	31
219	200	8"	154	107	85	72	63	57	51	47	43	40
273	250	10"	191	132	106	89	78	70	64	58	53	50
324	300	12"	226	156	125	106	93	83	75	68	64	60

E.g. : For a pipe measuring ND 80 (3"), requiring 1.3 meters of tape per meter of pipe, the spiral winding pitch is 36 cm.

4 - 2 - RECOMMENDATION FOR APPLICATION TO PIPE ACCESSORIES :

4 - 2 - 1 - VALVE:

Refer to the specification regarding the length to be applied to the valve; remember that the tape must never be overlapped (no crossing) or come in contact with itself (a minimum interval of 13 mm must be allowed for).

Attach with collars (see § 3-3).

4 - 2 - 2 - BEND :

Locate the tape on the external generating line of the bend.

Attach with collars (see § 3-3).

4 - 2 - 3 - FLANGE :

The length of the supplementary tape needed equals twice the diameter of the pipe.

Attach with collars (see § 3-3).

4 - 3 - HEAT INSULATION AND MARKING :

4 - 3 - 1 - CHECKING BEFORE HEAT INSULATION :

- Visually ensure that the tape is properly installed and is free of damage.
- Make sure the tape is firmly attached at every point of the pipe to avoid any risks of including the insulation between it and the pipe (sufficiently closely located attaching collars - special precautions to be taken on the valves and flanges).
- It is recommended to check the insulation resistance (megger) before carrying out insulation.

4 - 3 - 2 - RECOMMENDATION FOR APPLICATION OF HEAT INSULATION :

- A correct tracing installation calls for dry insulation that is properly installed and sealed (the tape is not protected against damp).
Caution : the thickness of the heat insulation shall not exceed 25 mm because thermal overinsulation can cause the overheating of the tape, even if the thermostat is properly installed.
- It is essential to use the correct type and thickness of heat insulation and a protective plate that is suitable, allowing for the utilization temperature.
- To reduce the risk of the possible damage to the tape, apply the heat insulation immediately after application and checking (§ 4-3-1).
- Check that the entire pipe, the thermostat of the tape, the flanges, the bulkhead feed-throughs and other surfaces have been entirely heat insulated.
- Make sure that all the cut-outs in the heat insulation are sealed (on the valves, supports, thermostat probes, etc.).

4 - 3 - 3 - MARKING :

- Affix "Electrical tracing" labels (a label is supplied with each tape) either side and along the heat insulated piping, every 3 meters, for correct signaling (we can supply you with additional regular aluminum 50 x 100 mm labels : Reference 26180-05).
- On the protective plate, indicate the positions of components such as tape ends.

4 - 4 - ELECTRICAL CONNECTION :

30 mA differential protection is recommended in the case of :

- risks of mechanical damage,
- a damp environment.

The tape must be electrically connected to a suitably protected network (differential, circuit breakers, fuses) and for which installation ground continuity complies with the current standards by means of the connection cable, length 2000 mm, with male connector (10/16 A) 2 Ph + G.

It is advisable to use a thermal safety device that irreversibly cuts off the electric supply of the tape in the event of overheating while an alarm is in effect.

NOTE : It is highly advisable to check the insulation resistance again on the initial commissioning.

5 - MAINTENANCE :

- Before each winter:
 - Visually inspect the heat insulation to make sure that there is no mechanical damage
 - Check the insulation resistance of the tape.
 - Check the operation of the electrical protection devices as well as the regulation and safety devices.
- Repairs :
 - Never attempt to repair a defective tape. Replace it immediately.
 - Whenever repairs are made to the pipes, disconnect the heating tape and remove it before going any further.
 - To install a new tape, refer back to the operations of § 3 and 4.

- For energy saving concerns, it is more reasonable to turn off the electric supply of the tape during periods when there is no risk of freezing.

5 - **GUARANTEE** :

Our guarantee complies with the inter-union agreements of the electrical construction industry and our general conditions of sale.

Any deterioration caused by :

- use at more than 10% of the set rated voltage,
- faulty maintenance, impact, clumsy or inexperienced use,
- failure to comply with the present manual, the state-of-the-art rules and the legislation,

are not binding upon our responsibility.