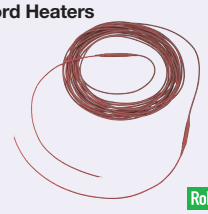
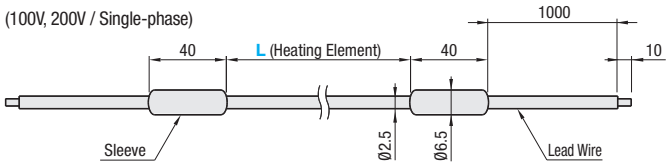
Code Heaters, Heat Resistance Tapes

■Cord Heaters



RoHS 10

MCDH (100V, 200V / Single-phase)



Maximum Operating Temperature: 180°C

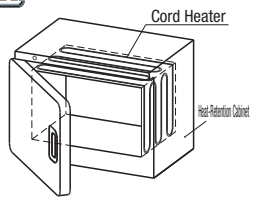
M Material Element : Silicon Rubber
Sleeve : Silicon Rubber

Lead Wire: Copper (Cu)
Lead Wire Film: Silicon Rubber

Part Number Type	No.	L (Heating Element)	W (Electric Power)	V (Voltage)	Electrical Power Density (W/cm²)	Unit Price
MCDH	1	1000	10	100	0.13	
	2	2000	20			
	3	3000	30	200		
	4	4000	40			
	5	5000	50			

Ordering Example — Part Number: MCDH2

ex Example



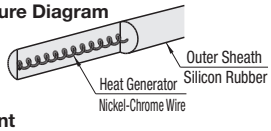
■Features

· Excel in heat resistance as the sheathing of the heater is silicon rubber.
· As the heater is cord shape, it can be fitted in any type of shape.

■Basic Structure

· This is a heater integrating a heat generating body with the silicon rubber.

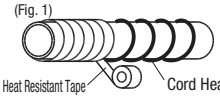
■Basic Structure Diagram



■How to Mount

· Install directly onto piping.
· As an example to secure the heater, heat resistant aluminum tape can be used. (Fig. 1)

(Fig. 1)



■Precautions for Use

- Do not let heater run idle by itself in the atmosphere. It may cause fires and broken wire. Ensure the heater is closely contacted with a heated object when using.
- Do not install by overlapping the heater.
- Pay attention to the current contact conditions to connect wire terminals properly.
- Do not use over the rated voltage (V).
- When removing the heater from the heated object, make sure the power is turned off. Do not touch the heater immediately after the power is turned off.

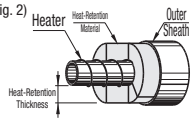
■How to Determine the Number of Winding

See P.1644.

■Selecting Method (Cord Heaters and Silicon Belt Heaters)

Specify the heat insulating thickness, size of piping, temperature of piping and temperature difference from the external atmospheric temperature, and calculate the calories required for the heater by using the following formula.
(Refer to Fig. 2, Table 1 and 2)

(Fig. 2)



Heat Quantity Required for The Heater (W) = Wattage per 1m of Pipe (W/m) x Length of Pipe (m)

Ex.) For piping size 15A (1/4B) and length 1m to be 30°C
(Heat-insulation thickness is 25mm and external atmospheric temperature is 20°C)
From Table 1, when the insulation thickness is 25mm, piping size is 15A (1/4B) and the temperature difference between pipe temperature (30°C) and external atmospheric temperature (20°C) is 10°C, the wattage is 4.0 (W/m). Thus,

Heat Quantity Required for The Heater (W) = 4.0(W/m)x1(m)=4.0W

Table 1 When heat-retention thickness is 25 mm — Unit: W/m (Wattage per 1m of Pipe)

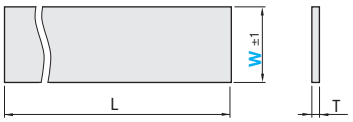
Pipe Size		Temperature Difference between Pipe Temperature and External Atmospheric Temperature					
A	B	10°C	20°C	30°C	40°C	60°C	80°C
15	1/4	4.0	8.1	12.1	16.1	24.4	32.6
20	1/2	4.6	9.2	13.9	18.5	27.6	36.9
25	1	5.4	10.6	16.0	21.4	32.0	42.8
32	1 1/4	6.3	12.5	18.8	24.9	37.5	50.1
40	1 1/2	6.9	13.7	20.5	27.5	41.3	54.9
50	2	8.1	16.1	24.2	32.2	48.4	64.5
65	2 1/2	9.5	19.1	28.6	38.3	57.2	76.4
80	3	10.9	21.6	32.5	43.4	65.0	86.6
100	4	13.2	26.6	39.9	53.3	79.6	126.5
150	6	18.2	36.5	54.8	73.1	109.5	145.9
200	8	23.3	46.5	69.6	92.9	139.1	185.5
250	10	28.1	56.3	84.4	112.5	168.8	225.0

Table 2 When heat-retention thickness is 50 mm — Unit: W/m (Wattage per 1m of Pipe)

Pipe Size		Temperature Difference between Pipe Temperature and External Atmospheric Temperature					
A	B	10°C	20°C	30°C	40°C	60°C	80°C
15	1/4	2.7	5.6	8.4	11.3	16.9	22.5
20	1/2	3.1	6.2	9.4	12.5	18.8	25.5
25	1	3.5	7.0	10.6	14.1	21.1	28.1
32	1 1/4	4.0	8.0	12.0	16.0	24.1	32.1
40	1 1/2	4.4	8.6	13.0	17.3	26.0	34.7
50	2	5.0	9.9	14.9	19.7	29.9	39.8
65	2 1/2	5.7	11.5	17.3	23.1	34.5	46.0
80	3	6.4	12.9	19.2	25.6	38.5	51.2
100	4	7.6	15.4	23.0	30.8	46.0	61.4
150	6	10.2	20.4	30.6	40.9	61.1	81.5
200	8	12.8	25.4	38.1	50.9	76.1	101.5
250	10	15.1	30.4	45.5	60.8	91.0	121.4

■Heat Resistance Tapes

RoHS 10



	Type	M Material Surface	Heater	Adhesive Part	Heat Resistance Temperature
①	MCAT	Aluminum	Glass Cloth	Acrylic Adhesive Material	150°C
②	MCTF	Fluororesin (PTFE)		Silicon Adhesives	200°C
③	MCTFG	Fluororesin (PTFE)	Glass Cloth	Silicon Adhesives	200°C

- Peel off backing paper and adhere the tape to an object. (MCAT only)
  Wipe off oil and dust on the mating surface before adhering.
- Can be cut with a utility knife.

Part Number Type	W(mm)	L(m)	T(mm)	Unit Price
MCAT	20	20	0.25	
	50			
MCTF	25	10	0.23	
	50			
MCTFG	25	10	0.18	
	50			

L dimension is by the meter.

Ordering Example — Part Number: MCAT20

■Characteristic Values of Heat Resistance Tapes (Listed values are not guaranteed values but reference values.)

Item	MCAT	MCTF	MCTFG
Operating Temperature (°C)	150	200	200
Tensile Strength (N/cm)	24	108	330
Elongation (%)	12.5	20.0	4.7
Adhesive Strength (N/25mm Width)	16	10	12.9

* The adhesive strength means the 180 degree peeling strength. (When adhered to SUS304)