

# Heat Insulation Sheets / Heat Insulation Tapes

# Heat Sinks / Heat Radiation Gel Sheets

3rd day shipping is available for Heat Insulation Sheets.

**Heat Insulation Sheets**

**HOPES**  
(Standard Type)

RoHS

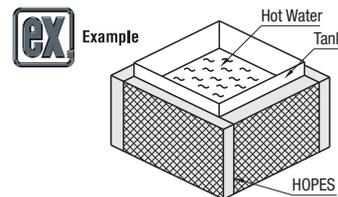
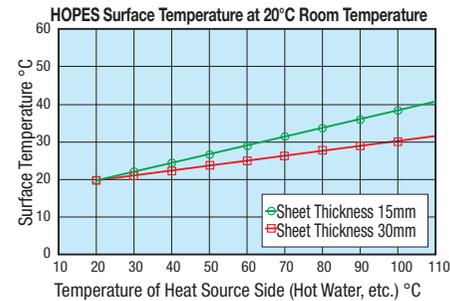
\* Temperature limit for seals is 80°C.

Type	Material	Adhesive Part
HOPES	High Density Polyethylene	Acrylic Adhesive

Characteristic Value		
Item	Unit	HOPES
Heat Resistance Temperature	°C	105
Thermal Conductivity	W/mK	0.03
Water Absorption Ratio	mg/cm <sup>2</sup>	0.1
Surface Density	kg/m <sup>2</sup>	0.39
Color	-	White

Part Number	Type	T	A Selection	Unit Price				
				B Selection	100	200	300	400
HOPES	15	15	100					
			200					
			400					
	30	30	100					
			200					
			400					

Ordering Example: Part Number - A - B  
HOPES15 - 100 - 200



- Peel off backing paper (with 1cm grids) to adhere it to an object. Clean the mating surface off oil and dust.
- Can be cut with a utility knife. Cut with the adhesive side up.
- Adhesive Strength (90 Peeling Strength): 19.6N/25mm Width (When affixed to SUS304)

3rd day shipping is available for Heat Insulation Tapes.

**Heat Insulation Tapes**

**HOPET**

RoHS

\* Temperature limit for seals is 80°C.

Type	Material	Adhesive Part
HOPET	Heat Resistant Polyethylene	Acrylic Adhesive

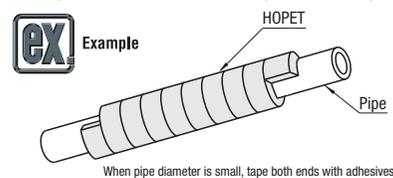
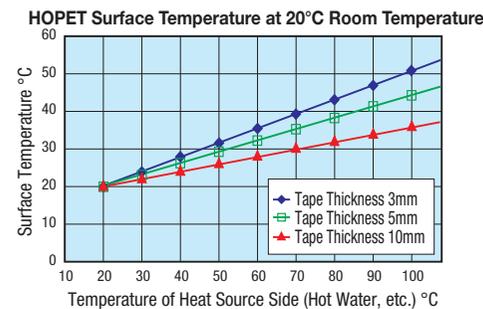
Characteristic Value		
Item	Unit	HOPET
Heat Resistance Temperature	°C	105
Thermal Conductivity	W/mK	0.03
Water Absorption Ratio	mg/cm <sup>2</sup>	0.1
Surface Density	kg/m <sup>2</sup>	0.30*
Color	-	Gray

\* When T=3

Part Number	Type	T (mm)	W (mm) Selection	Unit Price			
				L (m) Selection	5	10	15
HOPET	3	3	30				
			50				
			100				
	5	5	30				
			50				
			100				
10	10	30					
		50					
		100					

L dimension is in meters.

Ordering Example: Part Number - W - L  
HOPET3 - 100 - 5



- Peel off backing paper (with 1cm grids) to adhere it to an object. Clean the mating surface off oil and dust.
- Can be cut with a utility knife. Cut with the adhesive side up.
- Adhesive Strength (90 Peeling Strength): 19.6N/25mm Width (When affixed to SUS304)

**Heat Sinks**

RoHS

Type	Material	Surface Treatment
HEAT	A6063S-T5	Clear Anodize
HEATW		Black Anodize
HEATB		

No. 0.5: Number of Fins 6 No. 0.7: Number of Fins 7 No. 1: Number of Fins 7 No. 2: Number of Fins 10

Part Number	Type	No.	L 1mm Increments	W	A	E	T	t	Number of Fins

No.	Unit Price														
	HEAT					HEATW					HEATB				
0.5	50-100	101-200	201-300	301-400	401-500	50-100	101-200	201-300	301-400	401-500	50-100	101-200	201-300	301-400	401-500
0.7															
1															
2															

Ordering Example: Part Number - L - TP  
HEAT 1 - 200 - TP

Alterations: Alterations are not applicable to No. 0.5 and No. 0.7.

Alteration	Code (Number of Holes)	Spec.
Mounting Tapped Hole	TP	Adds tapped holes (M3 (Coarse)) between the fins.

**Heat Radiation Gel Sheets**

RoHS

Type	Material	Hardness Penetration
HTCH (High Thermal Conduction)	Silicone	50

**How to Use**

- Peel off single side of backing paper slowly.
- Paste it on the heat-generating part carefully so that air bubbles don't get trapped in. Then peel off the rest of the backing paper.
- Paste it carefully so that air bubbles don't get in between the heat radiation gel and heat-discharging part.

**Accuracy Standards**

• Dimension Tolerance of A and B

50mm or Less ±0.5 51~100 ±1.0 101~200 ±1.5 201 or More ±2.0

Penetration: JIS K2207 See P391

Ordering Example: Part Number - A - B  
HTCH0.5 - 300 - 190

Part Number	Type	T	1mm Increment	
			A	B
HTCH	0.5	1	10~350	10~350
		1		
		2		

Part Number	Type	T	A	Unit Price			
				10-100	101-200	201-300	301-350
HTCH	0.5	1	10-100				
			101-200				
			201-300				
	1	1	10-100				
			101-200				
			201-300				
2	1	10-100					
		101-200					
		201-300					

**Example**

Can be used between internal parts of computers (CPU, boards and etc.) or heat-generating sources such as power supply parts and heat sinks or enclosures.

Heat Sink, Heat Generator, Entrapped Air, Antivibration Gel Sheets

- Features**
- With excellent flexibility and adhesiveness, it can closely adhere to concave or convex surface without trapping air.
  - Excels in electric insulation and flame resistance.
  - With low temperature dependency, it is suitable for use in wide temperature range from -40°C to 200°C.

Item	Unit	HTCH
Thermal Conductivity (Hot Wire Method)	W/m·K	2.1
Appearance	-	Gray
Specific Gravity	-	2.8
Hardness	Penetration: 1/10mm	50
Volume Resistivity	Ω·cm	5.7x10 <sup>12</sup>
Tensile Strength	MPa	0.12
Elongation	%	220
Compression Set	%	92
Dielectric Breakdown Strength	kV/mm	7.2
Content of Low-Molecule Siloxane	ppm	300 or Less
Flame Resistance	-	V-0
Normal Temperature Range	°C	-40~200
Magnetic Permeability (Magnetic Loss)	<1GHz	-



# Band Heaters, Quartz Far-Infrared Heaters

Note that, for some of the types shown here, order might be unable to be received by the MISUMI Indonesia offices.

# Peltier Effect Cooling Units Controller

Instruction manual is available online:  
http://fa.misumi.jp/ht/

### Band Heaters

**MBHS (One-piece)**  
(Single-phase 200V)

**MBHS40 only**

**MBHD (Two-piece)**  
(Single-phase 200V)

**Example**

OK: The heater is closely contacting the heated object.

NG: The heater is not contacting the heated object.

Accessory: Insulation Glass (MBHS: 2 pcs. / MBHD: 4 pcs.)

Maximum Operating Temperature: 300°C  
Material: Cover of the Heater: SUS430  
Mica for Insulation: Synthetic Mica  
Nickel-chrome Wire: Nickel Chrome Ribbon Wire

Part Number Type	No.	(d)	V (Voltage)	W (Electric Power)	L	Electrical Power Density (W/cm <sup>2</sup> )	Unit Price
MBHS	40	40	200	150	30	4.0	
	50	50		200			
	100	100		250			
MBHD	120	120	200	300	50	2.0	
	150	150		400			

- #### Features
- The band heater is a thin cylinder heater, coated with stainless steel plate, whose nickel-chrome wire is insulated with the heat-resistant mica board.
  - One-piece type and two-piece type are available for different diameters of the heated object.
  - One-piece Type: Suitable for the cylinder of small diameter. 1 unit (2 pcs.) of terminals are included.
  - Two-piece Type: Suitable for the cylinders of relatively large diameter. 2 units (4 pcs.) of terminals are included.

- #### Usage
- Band heater can be used for cylinder shaped heated objects (workpiece).
  - Principal usages are: Heating of hot nozzles, pipes and cylinder shaped metal plates

- #### Precautions for Use
- Never operate the heater when it is empty. Doing so may result in damage to the unit.
  - Apply electric power under the condition in which an object such as metal to be heated is attached to the heater.
  - Attach the object so that the heater comes into close contact with the surface to be heated. Leaving a gap will cause the wire to break earlier than its service life.
  - After installation, energize it for several minutes, and tighten them once more after heated. In doing so, be sure to avoid burn injury.
  - The heater is not waterproof. Never expose the heater to water or any other liquids.
  - Do not use over the rated voltage (V).
  - Use the temperature controller for safety.
  - Do not mount One-piece Type flat. (Put the heated object through the heater).

### Quartz Far-Infrared Heaters

**MPHHS** (Quartz Far-Infrared Heater + Reflection Mirror + Mounting Holder 2 pcs.) Single-phase 100V/200V

**MPHH** (Quartz Far-Infrared Heater) Single-phase 100V/200V

**Material**

Quartz Tube: Quartz Glass  
Heater Cap: Brass + Nickel Plating  
Terminal: SUS303

**Reflection Mirror Material**

Reflection Mirror: A1050  
Side Plate: A1050  
Holder Mounting Metal Fitting: SS400 + Ni Chrome Plating

The customer should assemble the MPHHS (set), which is a set of quartz far infrared heater, reflection mirror and mounting holder.

#### How to Mount

- Fix the "mounting holder" to the "mounting metal" installed on the reflection mirror.
- Fix the reflection mirror and mounting holder to the designated place by using M5 screw for mounting holder or by drilling holes on reflection mirror body.
- Hold the "heater cap" of quartz far infrared heater by "mounting holder". Do not hold it by "quartz tube" or "safety insulator".

#### Cautions on Installation

- After heating, tighten the nuts once more. (By heat expansion, it may be loosened.)
- Additional tightening of the tightening bolt is recommended to only one side as Quartz Far Infrared Heater may be broken due to the different coefficient of heat expansion.

Part Number Type	L (Effective Length) 10mm Increment	V (Voltage) Selection	W (Electric Power)	Unit Price	
				MPHHS	MPHH
MPHHS (Set)	150~240	100	250		
	250~340	100	400		
	350~440	200	500		
		100	500		
MPHH (Quartz Far Infrared Heater only)	450~540	100	600		
	550~600	200	600		
		100	1000		
	200	800			

- #### Features
- The quartz far infrared heater has Nickel-chrome wires wrapped inside the quartz glass tube, which irradiate far infrared ray to the heated objects.
  - Although its function is similar to that of far infrared ceramic heaters, compared with ceramic heaters, it has the features as follows: ① Rise/Drop in temperature are quick after the power is supplied; ② Relatively broad heat distribution; ③ Irradiant heat radiation direction is easily controlled.
  - The far infrared ray uniformly heats the surface and interior of the object.
  - The temperature adjustment can be done by adjusting the distance to the heated object.
  - This is a clean heater with little dust scattering. The used quartz tube has excellent chemical resistance.
  - By using the reflection mirror, the irradiation direction of far infrared ray can be controlled, and more effective heat radiation can be obtained.

- #### Cautions for Use
- These products are made of glass. Be extremely careful with handling since it is easy to break. Turn off the power immediately when the glass is broken during operation.
  - These products are for horizontal (lateral) use. Not usable in position of vertical (standing positioned) and slant (oblique positioned).
  - This heater becomes very hot. If it is touched while the power is on or immediately after the power is turned off, this might cause burn injury.
  - The cap part (insulators on both ends of quartz tube) should be used at the temperature lower than 100°C.
  - Do not touch the glass tube by bare hand. Sodium from sweat decreases the mechanical strength of quartz tubes.
- #### Usage
- Desiccation of the Base and Material
  - Baking Finish and Desiccation of the Paint
  - Baking (Processing), Dehydration and Desiccation of Food
- Because infrared ray heats the object directly through no air, it is more efficient.

Features: Special controllers designed to adjust the temperature of Peltier Effect Cooling Units on P.1649. Excels in high precision control.

RoHS

**PLCN**

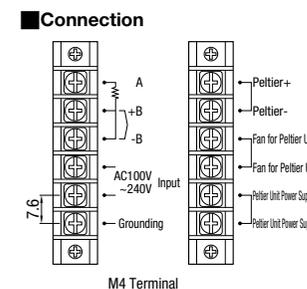
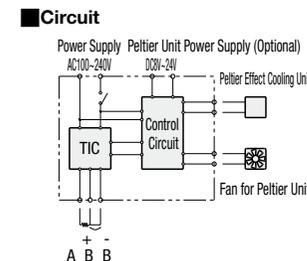
Part Number	Unit Price
PLCN	1 ~ 2 pc(s).

For orders larger than indicated quantity, please check with WOS.

Ordering Example: **PLCN**

Input	Thermocouple (K, J, R, T, N, S, B), Temperature Measuring Resistor (Pt100 JPt100)
<b>Control Method</b>	PID control with auto tuning, PID control with self tuning, ON/OFF control
<b>Indication Accuracy (Thermocouple)</b>	The bigger one of ±0.3% of specified value +1 digit or ±2°C
<b>Indication Accuracy (Temperature Measuring Resistor)</b>	The bigger one of ±0.3% of specified value +1 digit or ±0.9°C
<b>Indication Accuracy Maintenance Temperature Range</b>	Ambient Temperature: 23±10°C
<b>Display Breakdown Capability</b>	0.1°C
<b>Temperature Setting Range</b>	-30°C~120°C
<b>Proportional Control (P)</b>	0.1~200%
<b>Integration Time (I)</b>	0 ~ 3,600 sec.
<b>Derivative Time (D)</b>	0 ~ 3,600 sec.
<b>Peltier Driving Method</b>	PWM driving
<b>Power Supply</b>	Supplied externally (DC9 ~ 24V)
<b>Consumption Current</b>	15VA
<b>Peltier Driving Capability</b>	DC24V 7A (maximum in regular time)
<b>Operating Environment</b>	Indoors
<b>Operating Temp. Range</b>	+10~40°C
<b>Operating Humidity Range</b>	85% or Less (No Condensation)
<b>Sampling Frequency</b>	500mS
<b>Storage Element</b>	EEPROM
<b>Power Supply Voltage</b>	AC 100~240V (Allowable Voltage Change Range 85 ~ 264V)
<b>Power Consumption</b>	15VA (max.)
<b>Mass</b>	Approx. 2.7kg

**Overview**  
Peltier Effect Cooling Unit (P.1649) Temperature adjustment controllers capable of heating/cooling control of Peltier Effect Cooling Units. Owing to the compact design specialized in control function, suitable for not only offline use but also for being built into devices such as small size chillers and testers. (Power source needs to be obtained by customer.)



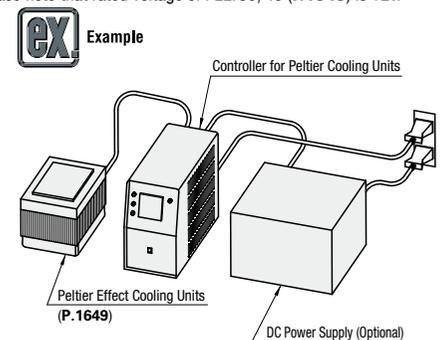
- #### Precautions for Use
- Only one Peltier Effect Cooling Unit (P.1649) can be connected to one controller.
  - DC power source or power plug is not included.
  - This product can be used at 9 ~ 24V DC, but please note that rated voltage of PELT30, 40 (P.1649) is 12V.

#### Sensor Input Types and Sensor Range

Sensor	Lower to Upper Limit	Setting of Decimal Point
00 K Thermocouple	-200~1372	-199.9~990.0
01 J Thermocouple	-200~850	-199.9~850.0
02 R Thermocouple	0~1700	
03 T Thermocouple	-200~400	-199.9~390.0
04 N Thermocouple	-200~1300	-199.9~990.0
05 S Thermocouple	0~1700	
06 B Thermocouple	0~1800	
10 Pt100Ω	-199~500	-199.9~500.0
11 JPt100Ω	-199~500	-199.9~500.0

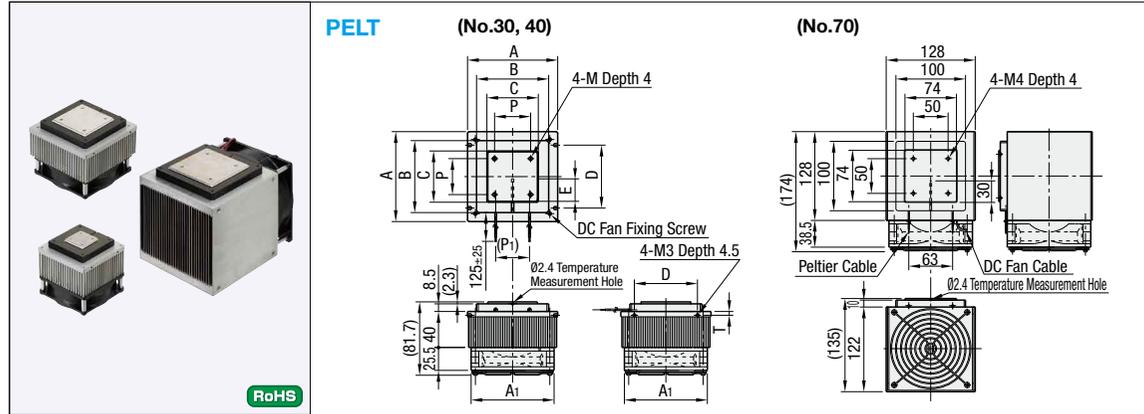
#### Warranty

Warranty Period: One year from the shipping date.  
Warranty Condition: Please present the guarantee card included at the time of delivery.  
Coverage of Warranty: Problems or damages arising through the normal usage in compliance with the instruction manual included at the time of delivery.  
If trouble occurs during the warranty period even though the unit has been used in the proper manner, we will collect and repair/replace the unit.  
In the following cases, repairs are fare-paying services. We will collect the product and make an quotation.  
① When the damage is caused by a factor other than covered by the warranty and the product is repairable.  
② When the damage has occurred beyond the warranty period and the product is repairable.



# Peltier Effect Cooling Units

Instruction manual is available online:  
<http://fa.misumi.jp/ht/>



Part Number		A	A1	B	C	D	T	P	(P1)	E	M	Mass (g)	Unit Price
Type	No.	1 - 3 pc(s).											
PELT	30	80	80	60	30	50	4.2	20	24	15	M3	450	
	40	100	92	80	55	70	4.2	40	38	25	M4	700	
	70	-	-	-	-	-	-	-	-	-	-	2300	

Ordering Example  
**PELT40**

## Specification

No.	30	40	70
Cooling Capacity [W]	18	35	80
Max. Temperature Gaps [°C]	48	45	48
Peltier Heat Resistance Temperature [°C]	120		
DC Fan Allowable Temperature [°C]	70		
Heating Capacity [W]	36	70	140
Rated Voltage [V]	12	12	24
Starting Current [A]	4	6.3	6.5
Noise [dB]	35	37	39
Allowable Load [N]	200	300	500
Ambient Operating Temperature Range [°C]	-20~+70		
Ambient Operating Humidity [%RH]	85 or Less		

For orders larger than indicated quantity, please check with WOS.

### (Terminology)

Cooling capability ... The amount of heat it can remove (cool) at full capacity. Please choose Unit No. so that the heat amount is at cooling capability or less. (Refer to Selecting Method on the next page.)

Maximum temperature difference ... It is temperature difference between room temperature and the cooled surface. It might vary depending on the room temperature.  
 (Ex.: With No. 30 and at room temperature 25°C, the maximum controllable operation temperature is 25-48= -23°C.)

The values are representative values and not a guarantee.

Allowable Load is a value when load is applied evenly.

Do not apply unbalanced load.

While the upper temperature limit for the Peltier itself is 120°C, be sure to operate at the temperature which does not exceed the allowable temperature (70°C: temperature for continuous use) for DC fan.

## Features

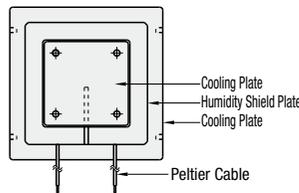
- A unit product has brought ease of use of a Peltier device which simultaneously provides cooling and heating by direct-current.
- Using in combination with a controller designed for Peltier Effect Cooling Units Controller (P.1648) enables easy control.

## Principle

With a DC current, temperature difference occurs on the Peltier element, and A side will be cooled, and B side will be heated. (Fig. 1) If the electrical polarity is reversed, A side will be heated and B side will be cooled. (Fig. 2)

## Basic Structure

A unit product with DC fan and heat sink assembled in a Peltier device.

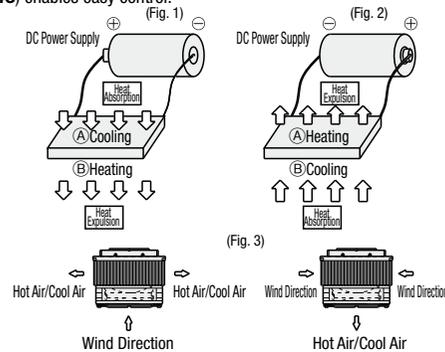


Parts	Material
Peltier	Semiconductor device having Bismuth Telluride as chief material packaged with ceramic
Heatsinks	A6063
DC Fan	ABS, PBT Synthetic-resin
Cooling Plate	A5052

As for direction of the wind, as Figure 3 shows, it can be used from any direction. (Heat efficiency is same.)

## Precautions for Use

- Please do NOT stop heat radiation fan while using Peltier Effect Cooling Units. It might cause damage because of the rise of temperature of Peltier element.
- Please ensure the power source polarity to be correct. Voltage must remain within the rated value. If the voltage is below the standard, the heat dissipation fan might stop. Combination use with MISUMI's Peltier Effect Cooling Units Controller (P.1648) is recommended for safety use.
- Be sure that impact or excess load is not applied to the Peltier device. (Please refer to allowable load of above specifications.)
- Apply insulation to cooling surface to prevent condensation. Wipe off water droplet when condensation occurs. Continuous use might cause internal corrosion because of the water intrusion into Peltier element.
- Please insert temperature sensor into Ø2.4 hole for temperature measurement and fix it with silicon adhesive bond or similar things.



## Selecting Method: This is a calculation when most appropriate heat exchanger is used at a cooling side. Values change depending on performance of heat exchanger.

Ex.) To lower current temperature (Tr)=25°C to achieving temperature inside the cooling box (Tc)=5°C

1) Obtain the surface area S (m<sup>2</sup>) of the box to cool.  
 Ex.) For a box with internal dimensions of 270x210x420 (mm)  
 $S(m^2) = (0.27 \times 0.21 + 0.42 \times 0.21 + 0.42 \times 0.27) \times 2 = 0.52(m^2)$

2) Calculate the heat Q<sub>1</sub> (W) that comes in via heat insulating material by the following formula.

$$Q_1(W) = \frac{(\text{Current Temperature } Tr(°C) - \text{Achieving Temperature } Tc(°C)) \times \text{Heat Conductivity } K(W/m \cdot K) \times \text{Surface Area } S(m^2)}{\text{Thickness of Insulating Plate } T(m)}$$

Ex.) Urethane foam used as insulator. When thermal conductivity (K) = 0.03 (W/m · K), and thickness (T) = 30 (mm) = 0.03 (m)

$$Q_1(W) = \frac{(25(°C) - 5(°C)) \times 0.03(W/m \cdot K) \times 0.52(m^2)}{0.03(m)} = 10.4 \approx 10(W)$$

3) Determine the heat generated by the stirring fan and the amount of loss from heat exchange Q<sub>2</sub> (W).

Ex.) Q<sub>2</sub> = 10 (W)  
 (Though it is difficult to obtain precise figures as these differ depending on fan type or insulating property, general value range is 5 ~ 15 (W). When fan speed is decreased, value of Q<sub>2</sub> is reduced.)

4) Determine the heat generated by the heat source in the box Q<sub>3</sub> (W).

Ex.) Q<sub>3</sub> = 5 (W) when a motor generating 5 watts of heat in the box.  
 (Applicable only when there is a heat source such as a motor or IC board. When the box is empty, Q<sub>3</sub> = 0 (W).)

5) Calculate the total heat amount U (W). (Appropriate safety coefficient is 0.6 ~ 0.8.)

$$U(W) = \frac{(Q_1 + Q_2 + Q_3)}{\text{Safety Factor}} = \frac{(10 + 10 + 5)}{0.7} = 35.7 \approx 36(W)$$

6) Choose the best unit from the heat absorption property of the unit in the graph.  
 Ex.) Choose No.70 whose heat absorption capacity beyond 40W on the ΔT (Tr-Tc)=20°C line.

Ex.) To lower current temperature (Tr)=25°C to achieving temperature inside the water tank (Tc)=15°C

1) Obtain the surface area S (m<sup>2</sup>) of the water tank to cool.  
 Ex.) For internal dimensions of water tank 60x60x100 (mm):  
 $S(m^2) = (0.06 \times 0.06 + 0.06 \times 0.1 + 0.06 \times 0.1) \times 2 = 0.031(m^2)$

2) Calculate the heat Q<sub>1</sub> (W) that comes in via heat insulating material by the following formula.

$$Q_1(W) = \frac{(25(°C) - 15(°C)) \times 0.03(W/m \cdot K) \times 0.031(m^2)}{0.03(m)} = 0.31(W) \approx 0.3(W)$$

3) Determine the heat generated by the stirring pump and the amount of loss from heat exchange Q<sub>2</sub> (W).

Ex.) Q<sub>2</sub> = 10 (W) (Though it is difficult to obtain precise figures as these differ depending on fan type or insulating property, general value range is 5 ~ 15 (W). The values of Q<sub>2</sub> is also lowered by decreasing the pump output.)

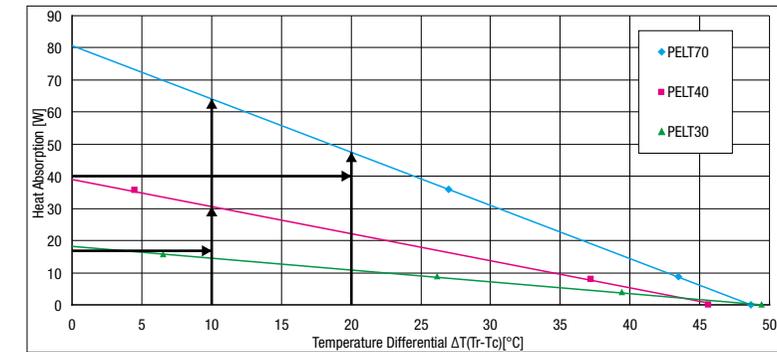
4) Determine the heat generated by the heat source in the water tank Q<sub>3</sub> (W).

Ex.) When the water tank is empty, Q<sub>3</sub> = 0 (W) (When heat source is in the water tank, define its calorific value as Q<sub>3</sub> (W).)

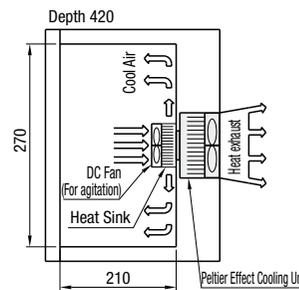
5) Calculate the total heat amount U (W). (Appropriate safety coefficient is 0.6 ~ 0.8.)

$$U(W) = \frac{(Q_1 + Q_2 + Q_3)}{\text{Safety Factor}} = \frac{(0.3 + 10 + 0)}{0.6} = 17.2 \approx 17(W)$$

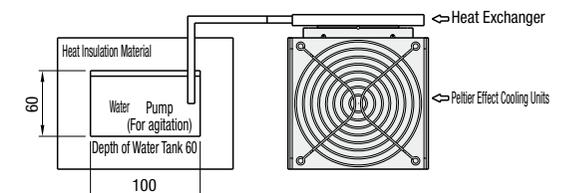
6) Choose the best unit from the heat absorption property of the unit in the graph.  
 Ex.) Choose No.40 or No.70 whose heat absorption capacity beyond 15W on the ΔT (Tr-Tc)=10°C line.



## Example



(Example at the time of air-cooling) \*DC fan (for agitation) needs to be obtained by customer.



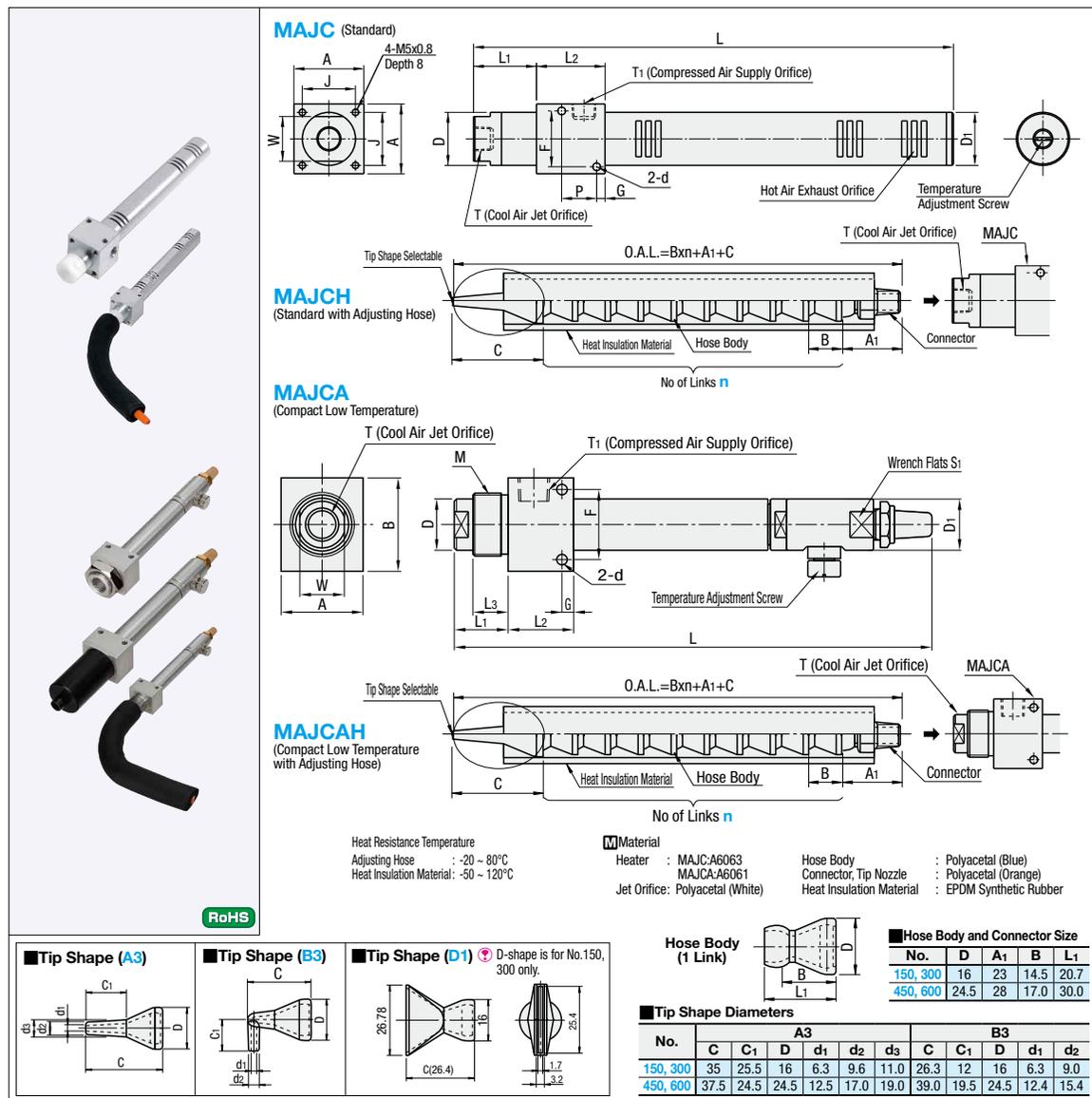
\*Heat Exchanger needs to be obtained by customer.

(Example at the time of water-cooling)

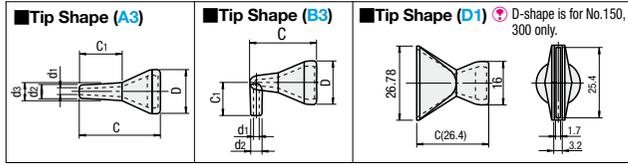
# Jet Air Coolers

Standard, Compact Low Temperature, Adjusting Hose

Instruction manual is available online:  
<http://fa.misumi.jp/ht/>



RoHS



Part Number	No.	L	D1	L1	D	W	T Rc(PT)	L2	F	P	G	T1 Rc(PT)	d	A	B	M	J	L3	S1	Operating Pressure (MPa)	Pressure Resistance (MPa)	Weight (kg)	Unit Price
(Standard) MAJC	150	228	25	26	22	19	1/8	31	26	12	5	1/8	4.5	35	-	-	25	-	-	0.2~0.5	1.0	0.25	
	300	315	30	31	28	24	1/4	38	33	18	5	1/4	5.5	40	-	-	30	-	-			0.45	
	600	343	38	45	38	32	3/8	49	40	25	6	3/8	5.5	50	-	-	38	-	-			0.85	
(Compact Low Temperature) MAJCA	150	198	20	21	20	17	1/8	24	24	-	5	1/8	4.5	30	35	M24x1.5	-	13	18	0.3~0.7	1.0	0.2	
	300	204	22	23	22	19	1/4	28	30	-	5	1/4	4.5	35	40	M27x1.5	-	15	19			0.25	
	600	272	32	27	30	26	3/8	37	36	-	7	3/8	6.6	40	50	M33x1.5	-	15	27			0.55	

Part Number	Type	Link Number n Configurable	Tip Shape Selectable	Hose Body			Jet Cooler Unit Price	Connector Unit Price	Link Unit Price	Tip Shape Unit Price		
				Hose I.D.	D	B				L1	A3	B3
(Standard with Adjusting Hose) MAJCH	150	0~30	A3, B3, D1	1/4 inch	16	14.5	20.7					
	300			1/2 inch	24.5	17.0	30.0					
	600											
(Compact Low Temperature with Adjusting Hose) MAJCAH	150	0~30	A3, B3, D1	1/4 inch	16	14.5	20.7					
	300			1/2 inch	24.5	17.0	30.0					
	450											
600												

Ordering Example  
 Part Number - Number of Links - Tip Shape  
 MAJC150 - 10 - D1  
 MAJCH300 - 10 - D1

Alterations	With Hex Nut	With Silencer																																																	
Code	N	S																																																	
Spec.	Hex nut is included. Ordering Code N Not applicable to MAJC and MAJCH.	A silencer is included. Ordering Code S Applicable to MAJCA (Compact Low Temperature) only.																																																	
	Dimension of a Hex Nut <table border="1"> <thead> <tr> <th>No.</th> <th>M</th> <th>H</th> <th>S2</th> </tr> </thead> <tbody> <tr> <td>150</td> <td>M24x1.5</td> <td>7</td> <td>32</td> </tr> <tr> <td>300</td> <td>M27x1.5</td> <td>7</td> <td>36</td> </tr> <tr> <td>450</td> <td>M33x1.5</td> <td>10</td> <td>46</td> </tr> <tr> <td>600</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	M	H	S2	150	M24x1.5	7	32	300	M27x1.5	7	36	450	M33x1.5	10	46	600				Dimension of Silencer <table border="1"> <thead> <tr> <th>No.</th> <th>L</th> <th>L1</th> <th>D</th> <th>D1</th> <th>D2</th> </tr> </thead> <tbody> <tr> <td>150</td> <td>60</td> <td>10</td> <td>30</td> <td>10</td> <td>11</td> </tr> <tr> <td>300</td> <td>63</td> <td>10</td> <td>32</td> <td>12</td> <td>13</td> </tr> <tr> <td>450</td> <td>81</td> <td>15</td> <td>40</td> <td>14</td> <td>15</td> </tr> <tr> <td>600</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No.	L	L1	D	D1	D2	150	60	10	30	10	11	300	63	10	32	12	13	450	81	15	40	14	15	600				
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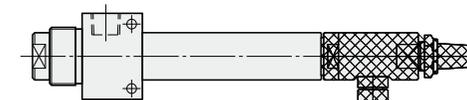
**Features**

- The jet air cooler is a cool air generating device without moving part, to which the principle of vortex theory is applied.
- Only by supplying compressed air, MAJC jets out up to 40°C cooler air, and MAJCA jets out up to 60°C cooler air, than the temperature of the supplied air.
- Neither refrigerant nor electricity is used.

**Precautions for Use**

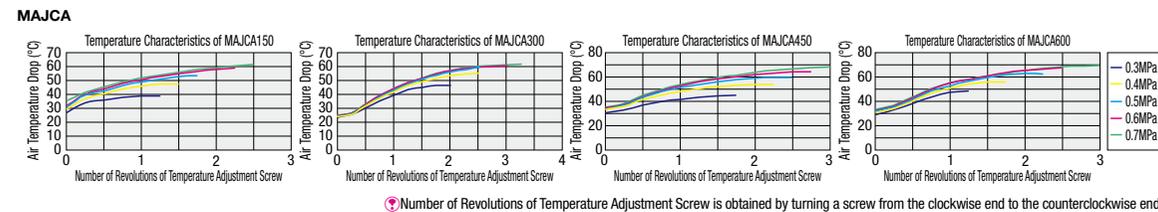
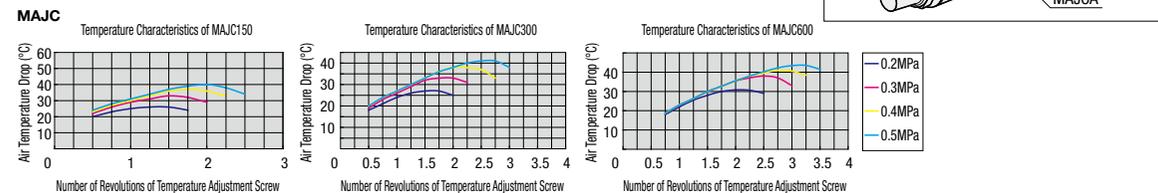
- In air supply, use the air filter and reducing valve.
- Use an air dryer to avoid from freezing when using at low temperature. Pay attention to the surrounding components when condensation on the tip of the hose causes water droplet.
- Adjusting Hose Type should be used at temperature -20°C or higher.
- Please read the manual and use the product correctly.
- When air flow volume is 100L/min or less or supply air pressure is 0.2MPa or less, effective cooling cannot be achieved.

\* Especially for MAJCA and MAJCAH, the temperature of parts marked with mesh may rise up to 70°C, depending on conditions of use, when air temperature at the entrance is 20°C. Be sure to avoid burn injury.

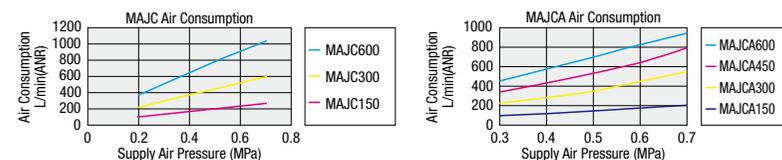


**Temperature Property**

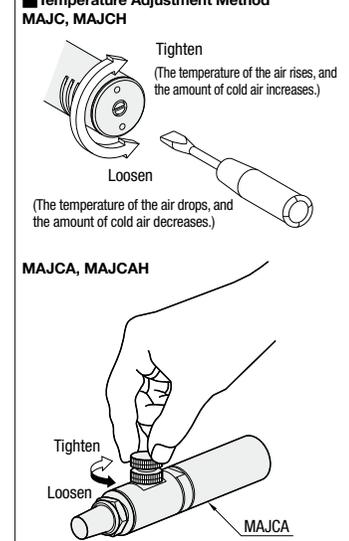
\* The air descent temperature is the descent temperature against the air temperature at the entrance.



**Air Consumption**



**Temperature Adjustment Method**



**Example**

