1 Hydro unit HE

1-1. Specifications

1) Technical specifications

Model				AM160FNBDEH***	AM320FNBDEH***	AM500FNBDEH***
Power Supply			Ø, #, V, Hz	1, 2, 220-240, 50	1, 2, 220-240, 50	1, 2, 220-240, 50
Mode			-	HP/HR	HP/HR	HP/HR
Performance	Capacity (Nominal)	Cooling *1)	kW	14.0	28.0	44.8
			Btu/h	47,800	95,600	152,900
		Heating *2)	kW	16.0	31.5	50.4
			Btu/h	54,600	107,500	172,000
Power	Power Input (Nominal)	Cooling *1)	W	10.00	10.00	10.00
		Heating *2)		10.00	10.00	10.00
	Current Input (Nominal)	Cooling *1)	A	0.05	0.05	0.05
		Heating *2)		0.05	0.05	0.05
	MCA (Including External Contact)			2.2	2.2	2.2
	MFA		A	2.75	2.75	2.75
Compressor	Type		-	-	-	-
	Output		kW × n	-	-	-
	Model Name		-	-	-	-
	Oil	Type	-	-	-	-
		Initial Charge	cc	-	-	-
Heat Exchanger	Type		-	PHE	PHE	PHE
	Quantity		-	1	1	1
	Pipe Size		Ø, inch	PT 1 (25A)	PT 1 (25A)	PT 1-1/4 (32A)
	Water Flow Rate		LPM	48	92	150
	Flow Switch		LPM	20	30	50
Option Code			-	01004C-105000-208C8C-332200	01004C-105000-231C1C-332200	01004C-105000-232D2D-332200
Piping Connections	Liquid Pipe		Ø, mm	9.52	9.52	12.7
			Ø, inch	3/8”	3/8”	1/2”
	Gas Pipe		Ø, mm	15.88	22.2	28.58
			Ø, inch	5/8”	7/8”	1 1/8”
	Drain Pipe		Ø,mm	-	-	-
FieldWiring	Power Source Wire (L<10m, Single Installation)		mm2	2.5	2.5	2.5
	Transmission Cable		mm2	0.75 ~ 1.5	0.75 ~ 1.5	0.75 ~ 1.5
Refrigerant	Type		-	-	-	-
	Control Method		-	EEV	EEV	EEV
Sound	Sound Pressure *3)		dB(A)	27	28	31
	Sound Power			-	-	-
Dimensions	Net Weight		kg	29.00	33.00	40.00
	Shipping Weight		kg	31.00	35.00	42.00
	Net Dimensions (W×H×D)		mm	518 x 627 x 330	518 x 627 x 330	518 x 627 x 330
	Shipping Dimensions (W×H×D)		mm	652 x 700 x 426	652 x 700 x 426	652 x 700 x 426
Operating Temp. Range	Ambient	Cooling	℃	-5.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0
		Heating	℃	-20 ~ 24	-20 ~ 24	-20 ~ 24
		Hot Water (Main Cooling, HR)	℃	-20.0 ~ 24 (30)	-20.0 ~ 24 (30)	-20.0 ~ 24 (30)
	Leaving Water	Cooling	℃	5.0 ~ 30.0	5.0 ~ 30.0	5.0 ~ 30.0
		Heating	℃	20.0 ~ 50.0	20.0 ~ 50.0	20.0 ~ 50.0

* Specifications may be subject to change without prior notice for product improvement.

*1) Nominal cooling capacities are based on;
- Water temperature : 23°C inlet, 18°C outlet
- Indoor temperature : 27°C DB, 19°C WB
- Outdoor temperature : 35°C DB, 24°C WB

*2) Nominal heating capacities are based on;
- Water temperature : 30°C inlet, 35°C outlet
- Indoor temperature : 20°C DB
- Outdoor temperature : 7°C DB, 6°C WB

*3) Sound pressure was acquired in an anechoic room. Thus actual noise level may be different depending on the installation conditions.

1-2. Capacity tables

1) Cooling

Capacity (kW)	Outdoor temperature (°C)	Water inlet temperature (°C)				
	DB	10	15	20	25	30
14.0	-5	11.2	12.6	14.5	15.8	16.6
	-3	11.2	12.6	14.5	15.8	16.6
	-1	11.2	12.6	14.5	15.8	16.6
	0	11.2	12.6	14.5	15.8	16.6
	2	11.2	12.6	14.5	15.8	16.6
	4	11.2	12.6	14.5	15.8	16.6
	6	11.2	12.6	14.5	15.8	16.6
	8	11.2	12.6	14.5	15.8	16.6
	10	11.2	12.6	14.5	15.8	16.6
	12	11.2	12.6	14.5	15.8	16.6
	14	11.2	12.6	14.5	15.8	16.6
	16	11.2	12.6	14.5	15.8	16.6
	18	11.2	12.6	14.5	15.8	16.6
	20	11.2	12.6	14.5	15.8	16.6
	22	11.2	12.6	14.5	15.8	16.4
	24	11.2	12.6	14.3	15.6	16.2
	26	11.2	12.4	14.1	15.4	16.0
	28	10.8	12.2	14.0	15.1	15.8
	30	10.4	12.0	13.8	14.9	15.6
	32	10.1	11.8	13.6	14.7	15.5
	34	9.7	11.6	13.4	14.5	15.3
	36	9.3	11.4	13.3	14.3	15.1
	38	8.9	11.2	13.1	14.1	14.9
	40	8.6	11.0	13.0	13.8	14.7
28.0	-5	22.4	28.0	30.9	34.0	35.3
	-3	22.4	28.0	30.9	34.0	35.3
	-1	22.4	28.0	30.9	34.0	35.3
	0	22.4	28.0	30.9	34.0	35.3
	2	22.4	28.0	30.9	34.0	35.3
	4	22.4	28.0	30.9	34.0	35.3
	6	22.4	28.0	30.9	34.0	35.3
	8	22.4	28.0	30.9	34.0	35.3
	10	22.4	28.0	30.9	34.0	35.3
	12	22.4	28.0	30.9	34.0	35.3
	14	22.4	28.0	30.9	34.0	35.3
	16	22.4	28.0	30.9	34.0	35.3
	18	22.4	28.0	30.9	34.0	35.3
	20	22.4	28.0	30.9	34.0	35.3
	22	22.4	28.0	30.9	34.0	34.7
	24	22.4	28.0	30.3	33.2	34.0
	26	22.4	27.2	29.7	32.4	33.3
	28	21.6	26.5	29.0	31.5	32.5
	30	20.9	25.7	28.4	30.7	31.8
	32	20.1	24.9	27.8	29.9	31.1
	34	19.4	24.2	27.2	29.1	30.4
	36	18.6	23.4	26.6	28.3	29.7
	38	17.9	22.7	26.0	27.4	28.9
	40	17.2	21.9	25.4	26.5	28.2
44.8	-5	35.8	40.3	46.3	50.5	53.1
	-3	35.8	40.3	46.3	50.5	53.1
	-1	35.8	40.3	46.3	50.5	53.1
	0	35.8	40.3	46.3	50.5	53.1
	2	35.8	40.3	46.3	50.5	53.1
	4	35.8	40.3	46.3	50.5	53.1
	6	35.8	40.3	46.3	50.5	53.1
	8	35.8	40.3	46.3	50.5	53.1
	10	35.8	40.3	46.3	50.5	53.1
	12	35.8	40.3	46.3	50.5	53.1
	14	35.8	40.3	46.3	50.5	53.1
	16	35.8	40.3	46.3	50.5	53.1
	18	35.8	40.3	46.3	50.5	53.1
	20	35.8	40.3	46.3	50.5	53.1
	22	35.8	40.3	46.3	50.5	52.4
	24	35.8	40.3	45.8	49.8	51.8
	26	35.8	39.7	45.3	49.2	51.3
	28	34.6	39.0	44.7	48.5	50.7
	30	33.4	38.4	44.2	47.8	50.1
	32	32.2	37.7	43.7	47.1	49.5
	34	31.0	37.1	43.1	46.4	48.9
	36	29.8	36.4	42.6	45.7	48.3
	38	28.6	35.8	42.0	45.0	47.7
	40	27.4	35.1	41.4	44.3	47.1

1-2. Capacity tables

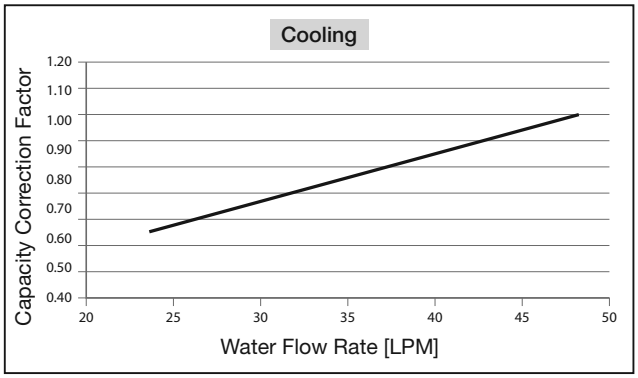
1) Heating

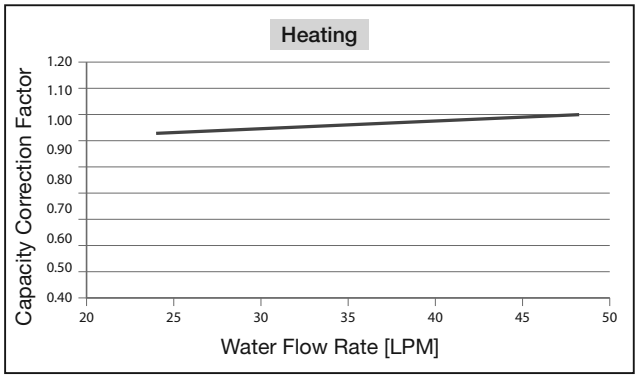
Capacity (kW)	Outdoor temperature (°C)		Water inlet temperature (°C)			
	DB	WB	20	30	40	45
16.0	-20.0	-20.2	12.4	11.7	7.2	4.7
	-18.4	-18.6	12.7	12.0	7.8	5.5
	-16.7	-17.0	13.0	12.2	8.3	6.1
	-15.0	-15.3	13.4	12.5	8.9	6.8
	-13.4	-13.8	13.7	12.8	9.4	7.4
	-11.7	-12.1	14.0	13.0	10.0	8.0
	-10.0	-10.5	14.3	13.3	10.6	8.6
	-8.4	-8.9	14.6	13.6	11.1	9.2
	-6.7	-7.3	15.0	13.9	11.7	9.6
	-5.0	-5.6	15.3	14.1	12.3	9.6
	-3.4	-4.1	15.6	14.4	12.8	9.6
	-1.7	-2.4	15.9	14.7	12.8	9.6
	0.0	-0.7	16.3	14.9	12.8	9.6
	1.6	0.8	16.6	15.2	12.8	9.6
	3.3	2.5	16.9	15.5	12.8	9.6
	5.0	4.1	17.2	15.7	12.8	9.6
	6.6	5.7	17.5	16.0	12.8	9.6
	7.0	6.0	17.6	16.0	12.8	9.6
	8.3	7.3	17.6	16.0	12.8	9.6
	10.0	8.9	17.6	16.0	12.8	9.6
	11.6	10.4	17.6	16.0	12.8	9.6
	13.3	12.1	17.6	16.0	12.8	9.6
	15.0	13.7	17.6	16.0	12.8	9.6
31.5	-20.0	-20.2	24.4	23.1	14.2	7.9
	-18.4	-18.6	25.4	23.9	15.5	9.2
	-16.7	-17.0	26.5	24.9	17.0	10.6
	-15.0	-15.3	27.5	25.8	18.4	12.0
	-13.4	-13.8	28.5	26.7	19.8	13.3
	-11.7	-12.1	29.5	27.7	21.3	14.8
	-10.0	-10.5	30.5	28.6	22.7	16.2
	-8.4	-8.9	31.5	29.5	24.1	17.5
	-6.7	-7.3	32.6	30.4	25.5	18.9
	-5.0	-5.6	33.6	31.4	27.0	18.9
	-3.4	-4.1	33.8	31.5	28.4	18.9
	-1.7	-2.4	33.8	31.5	28.4	18.9
	0.0	-0.7	33.8	31.5	28.4	18.9
	1.6	0.8	33.8	31.5	28.4	18.9
	3.3	2.5	33.9	31.5	28.4	18.9
	5.0	4.1	33.9	31.5	28.4	18.9
	6.6	5.7	33.9	31.5	28.4	18.9
	7.0	6.0	34.1	31.5	28.4	18.9
	8.3	7.3	34.1	31.5	28.4	18.9
	10.0	8.9	34.1	31.5	28.4	18.9
	11.6	10.4	34.1	31.5	28.4	18.9
	13.3	12.1	34.1	31.5	28.4	18.9
	15.0	13.7	34.1	31.5	28.4	18.9
50.4	-20.0	-20.2	39.1	36.9	22.7	15.2
	-18.4	-18.6	40.1	37.7	24.5	17.2
	-16.7	-17.0	41.1	38.6	26.3	19.2
	-15.0	-15.3	42.1	39.4	28.1	21.3
	-13.4	-13.8	43.1	40.2	29.7	23.2
	-11.7	-12.1	44.1	41.1	31.5	25.2
	-10.0	-10.5	45.2	42.0	33.3	27.2
	-8.4	-8.9	46.1	42.8	35.0	29.1
	-6.7	-7.3	47.1	43.6	36.8	30.2
	-5.0	-5.6	48.2	44.5	38.6	30.2
	-3.4	-4.1	49.1	45.3	40.3	30.2
	-1.7	-2.4	50.2	46.2	40.3	30.2
	0.0	-0.7	51.2	47.1	40.3	30.2
	1.6	0.8	52.2	47.9	40.3	30.2
	3.3	2.5	53.2	48.7	40.3	30.2
	5.0	4.1	54.2	49.6	40.3	30.2
	6.6	5.7	55.2	50.4	40.3	30.2
	7.0	6.0	55.4	50.4	40.3	30.2
	8.3	7.3	55.4	50.4	40.3	30.2
	10.0	8.9	55.4	50.4	40.3	30.2
	11.6	10.4	55.4	50.4	40.3	30.2
	13.3	12.1	55.4	50.4	40.3	30.2
	15.0	13.7	55.4	50.4	40.3	30.2

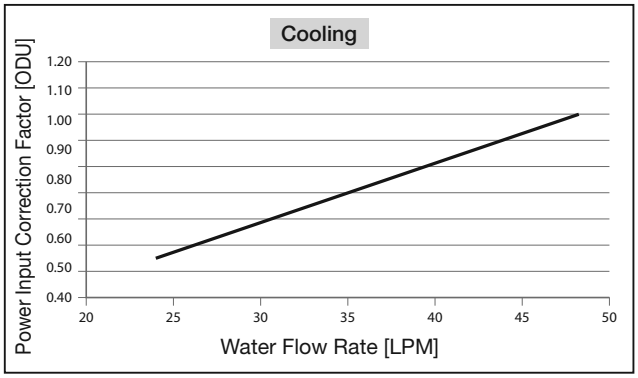
1-3. Capacity & Power input correction

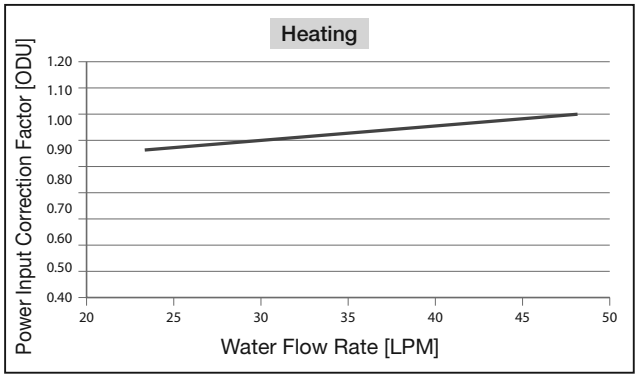
1) By water flow rate

(1) AM160FNBDEH✳✳✳

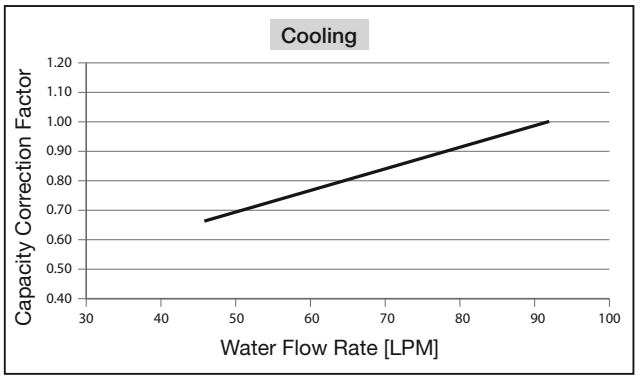


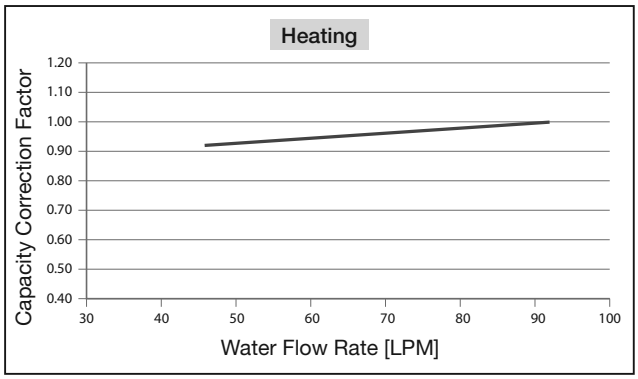


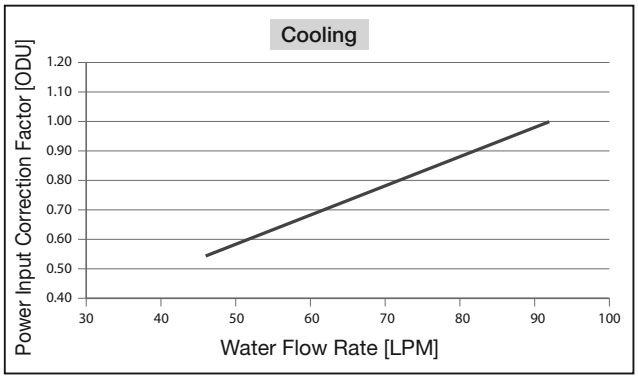


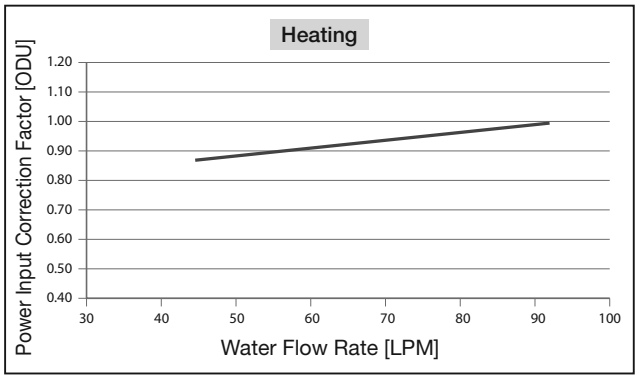


(2) AM320FNBDEH✳✳✳





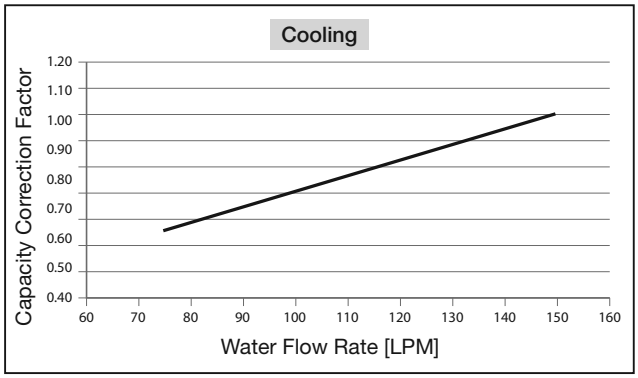


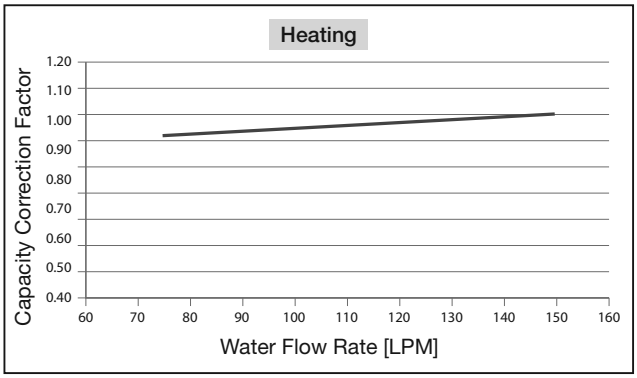


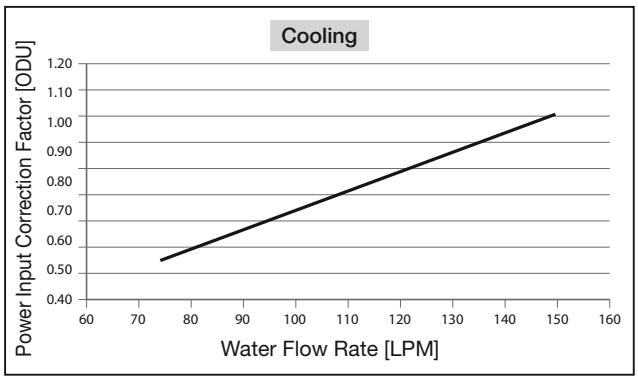
1-3. Capacity & Power input correction

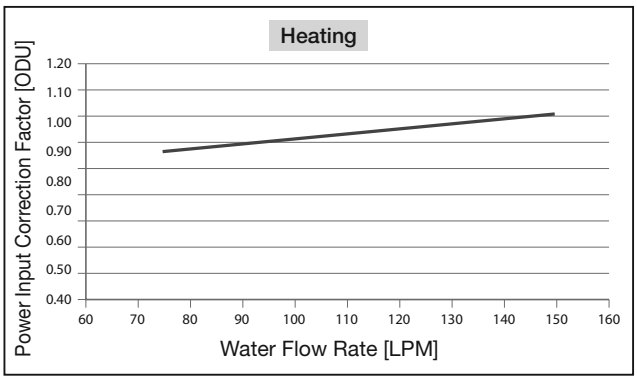
1) By water flow rate

(3) AM500FNBDEH✳✳✳







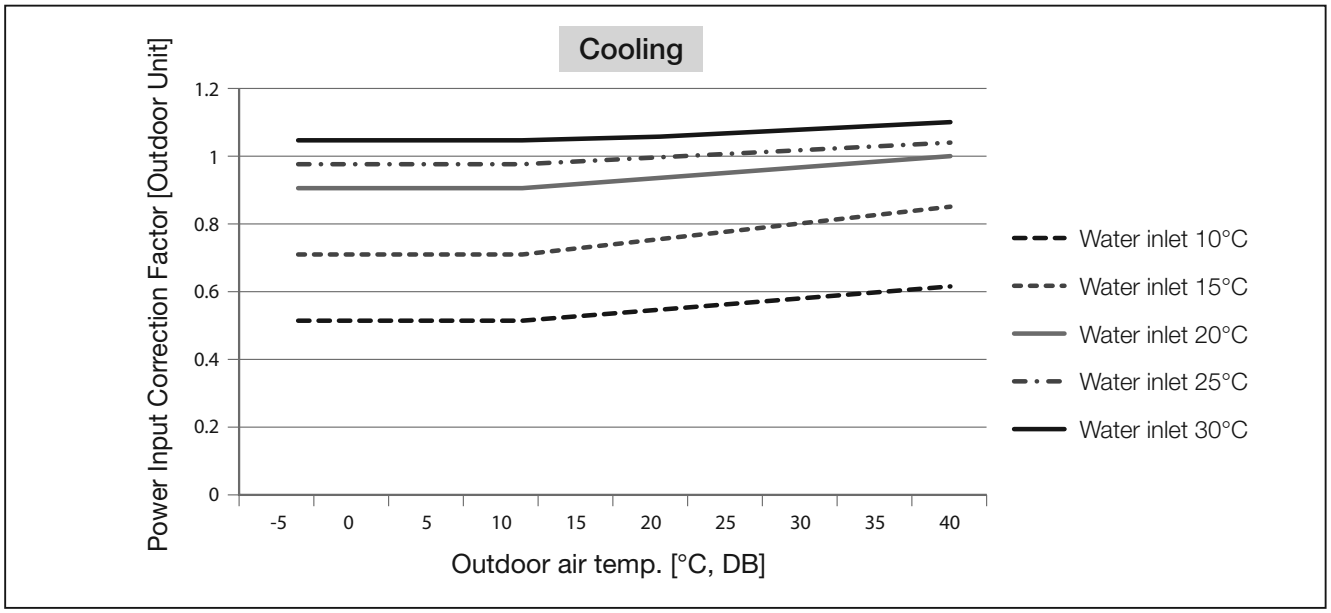


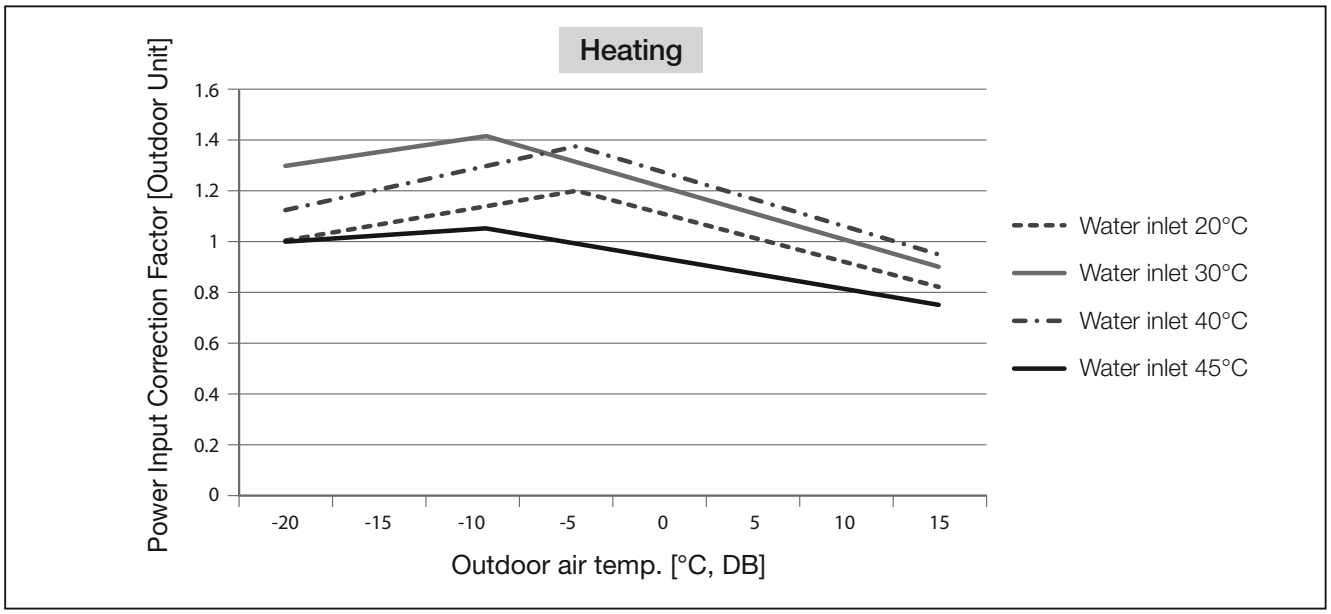
◆ Flow rate by △T

Flow Rate [LPM]	5HP	10HP	16HP
△T=10°C	24.0	46.0	75.0
△T=5°C	48.0	92.0	150.0

❇ Minimum flow rate of the Hydro unit is 50% of rated flow rate.

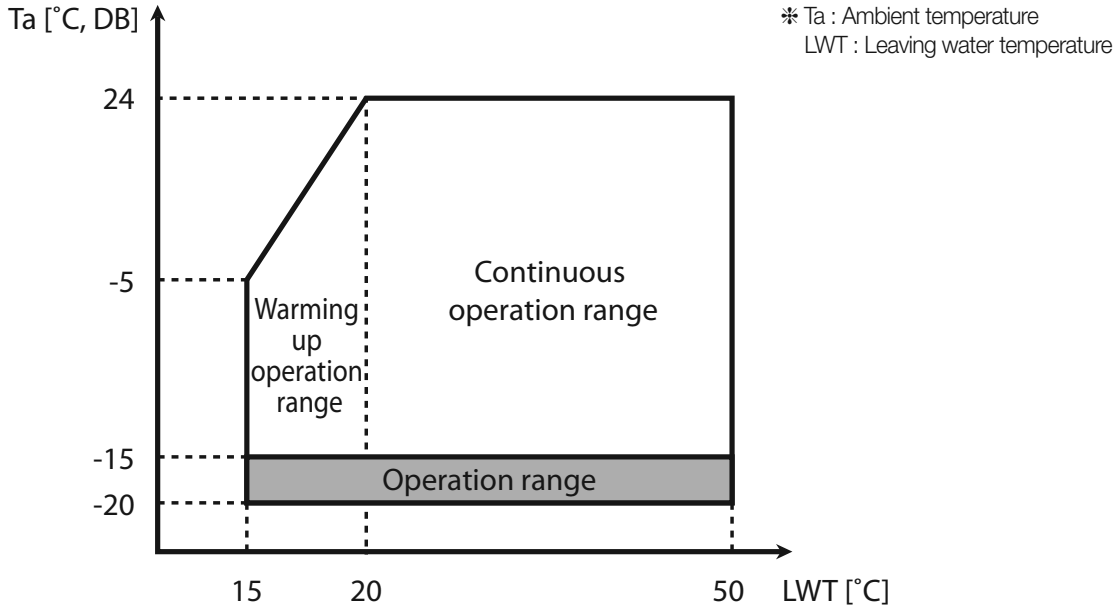
2) By outdoor air temperature





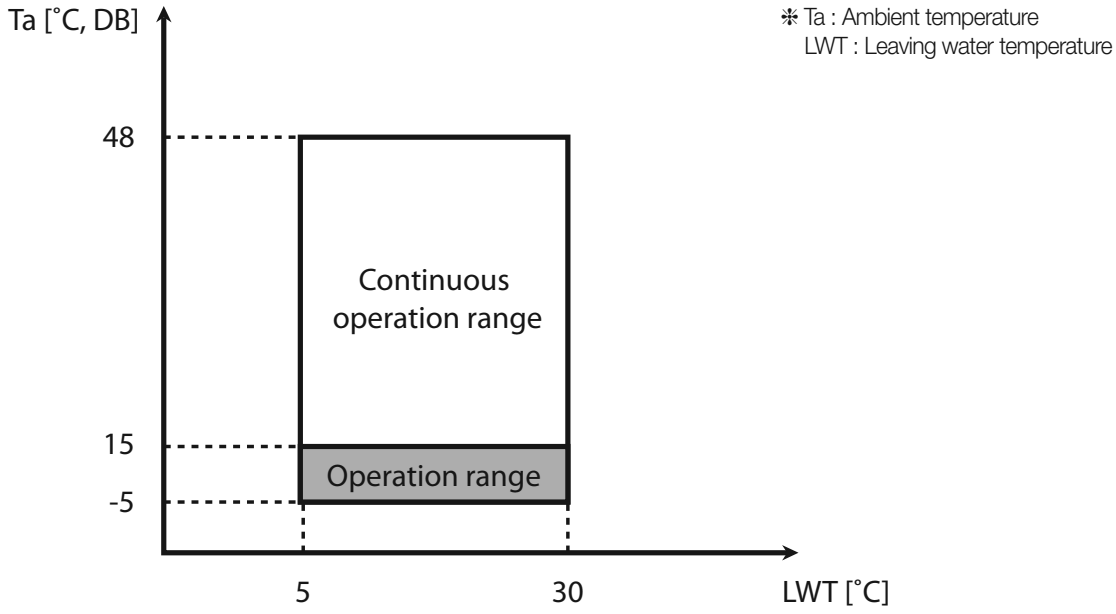
1-4. Operation range

1) Heating



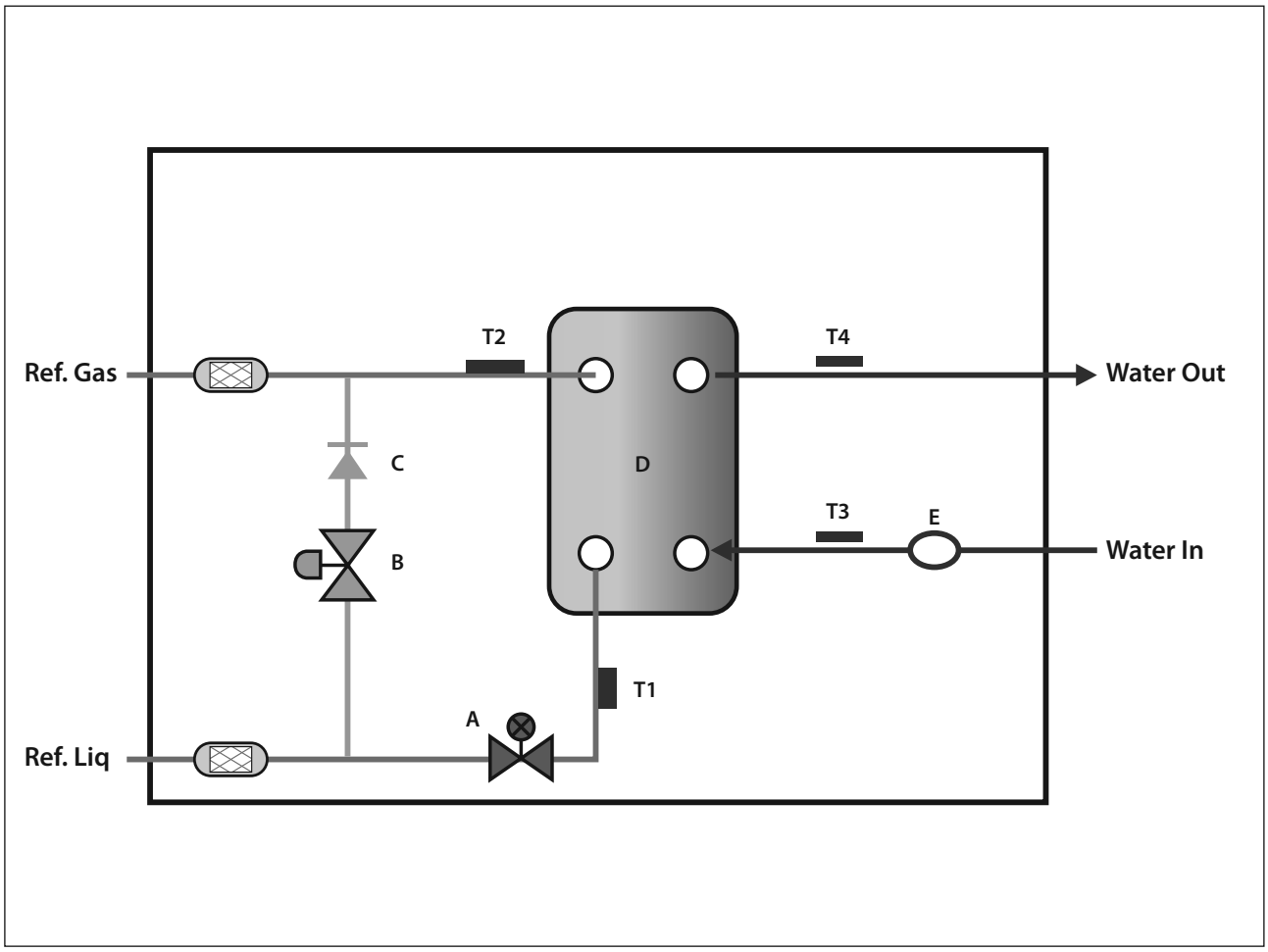
※ Ta : Ambient temperature
LWT : Leaving water temperature

2) Cooling



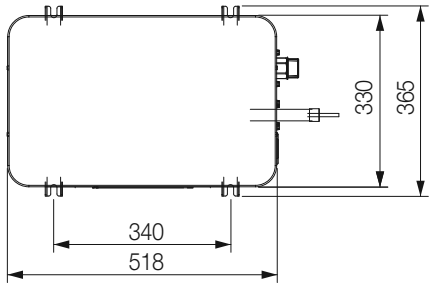
※ Ta : Ambient temperature
LWT : Leaving water temperature

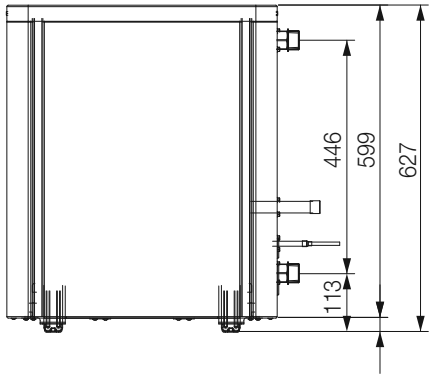
1-5. Cycle diagram

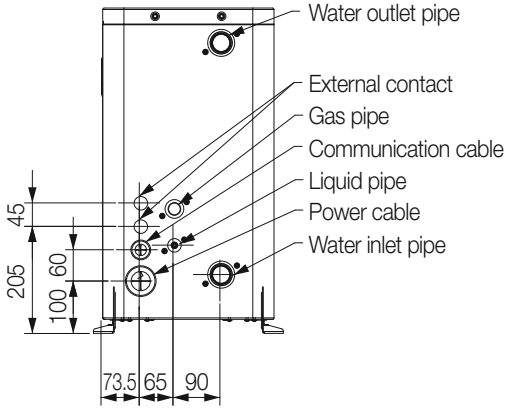


Symbol	Name
A	EEV
B	Bypass Valve for Defrost
C	Check Valve
D	Heat Exchanger
E	Flow Switch
T1	Eva. Inlet Temp. Sensor
T2	Eva. Outlet Temp. Sensor
T3	Water Inlet Temp. Sensor
T4	Water Outlet Temp. Sensor

1-6. Dimensional drawing

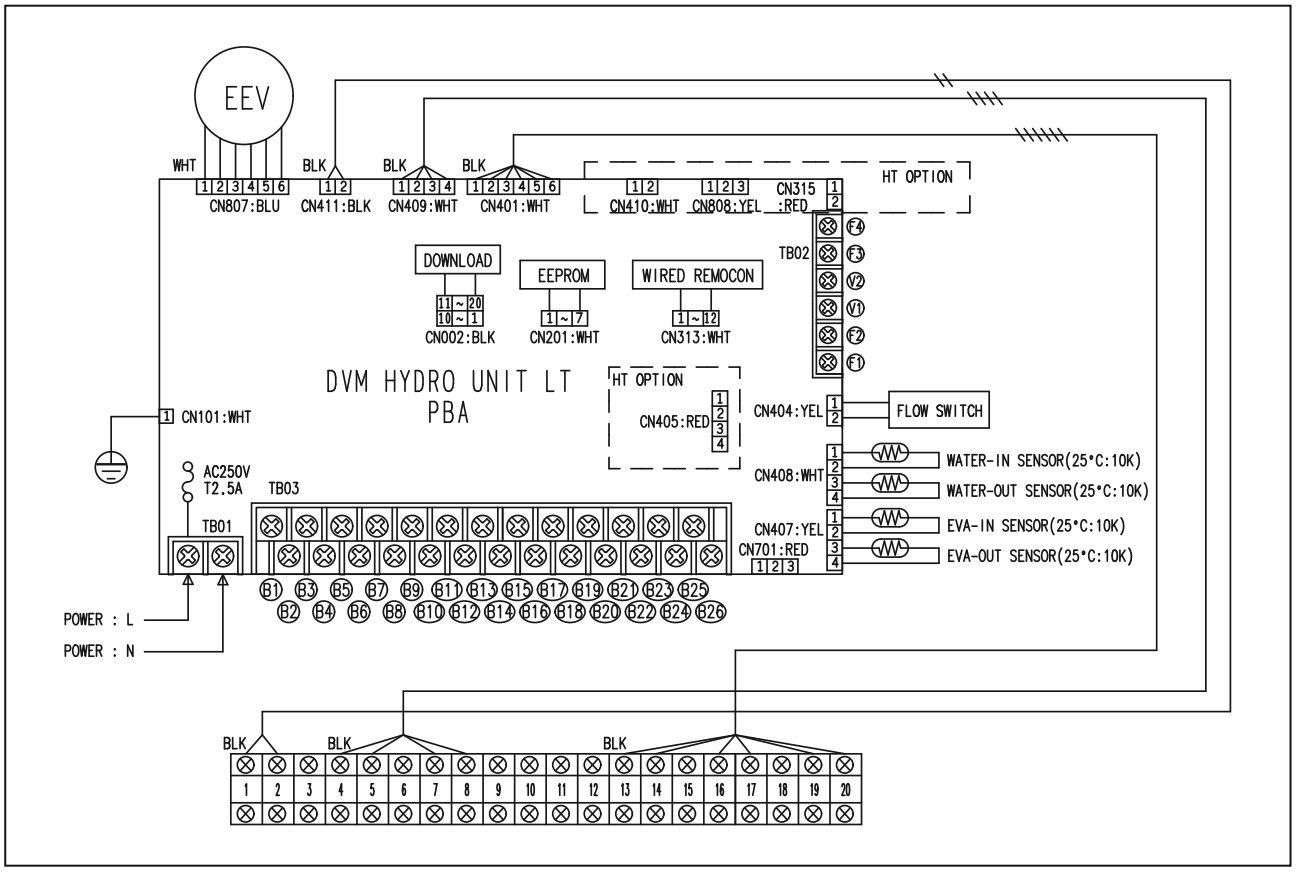






Model name of DVM Hydro unit		AM160FNBDEH✶✶✶	AM320FNBDEH✶✶✶	AM500FNBDEH✶✶✶
Refrigerant side	Liquid pipe	3/8" (ø9.52)	3/8" (ø9.52)	1/2" (ø12.7)
	Gas pipe	5/8" (ø15.88)	7/8" (ø22.23)	1-1/8" (ø28.58)
Water side	Water inlet/outlet pipe	PT 1 (25 A)	PT 1 (25 A)	PT 1-1/4 (32 A)

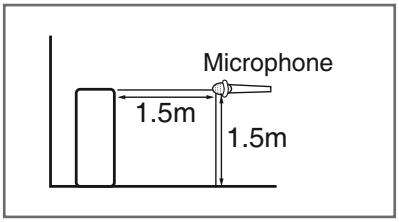
1-7. Electrical wiring diagram



Terminal No.	External contact	Operation status/inspection checklist	Remarks
B1 - B2	Operation check	Check on/off status for operation lamp of the control panel on the site	Optional
B3 - B4	Alarm	Check on/off status for alarm lamp of the panel on the site	Optional
B5 - B6	Main pump	Check the status of the pump operation signal and on/off status of operation at the control panel on the site	Mandatory
B7 - B8	Heater	Check the status of the heater operation signal output at the control panel on the site	Optional
B9 - B10 - B11	3Way 1 V/V	Check the status of signal output and on/off status of valve operation (Direction switch of the indoor hot water tank)	Optional
B12 - B13 - B14	3Way 2 V/V	Check the status of signal output and on/off status of valve operation (Inter locked with solar energy pump signal)	Optional
B15 - B16 - B17	2Way V/V	Check the status of signal output or operation status of the valve	Optional
B19 - B20	AC 230, Thermostat 1	Check the connection status of the thermostat and operation status of the product (cooling)	Optional
B21 - B22	AC 230, Thermostat 2	Check the connection status of the thermostat and operation status of the product (heating)	Optional
B23 - B24	AC 24, Thermostat 1	Check the connection status of the thermostat and operation status of the product (cooling)	Optional
B25 - B26	AC 24, Thermostat 2	Check the connection status of the thermostat and operation status of the product (heating)	Optional
1 - 2	Roon temp	Check the temperature display on the wired remote controller after separately installing the indoor temperature sensor (Refer to option setting of the wired remote controller)	Optional
7 - 8	Water tank temp	Check the temperature display on the wired remote controller after installing the the 4~20mA temperature sensor (0℃: 4mA, 100℃: 20mA)	Mandatory (hot water supply)
13 - 14	Solar pump	Check the solar pump contact signal input and status of the operation	Optional
16 - 17	EXT. Control	Check the contact signal input and status of the operation	Optional
19 - 20	Smart Grid	Check the Smart Grid contact input and the signal	Optional

1-8. Sound pressure level

1) Operation sound level



Unit : dB(A)

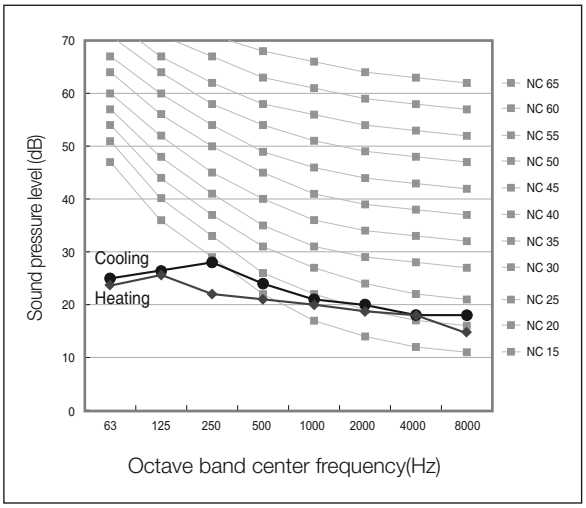
Model	Cooling	Heating
AM160FNBDEH✳✳✳	27	26
AM320FNBDEH✳✳✳	28	27
AM500FNBDEH✳✳✳	30	31

☑ *Note*

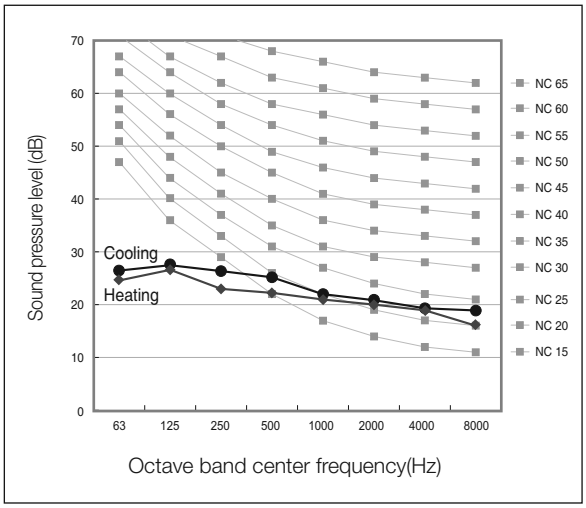
- ◆ These operation values were obtained in an anechoic room. Sound pressure level will vary depending on a range of factors such as the construction of the particular room where the equipment is installed.
- ◆ Operation sound level may differ depending on operation and ambient conditions.

2) NC curves

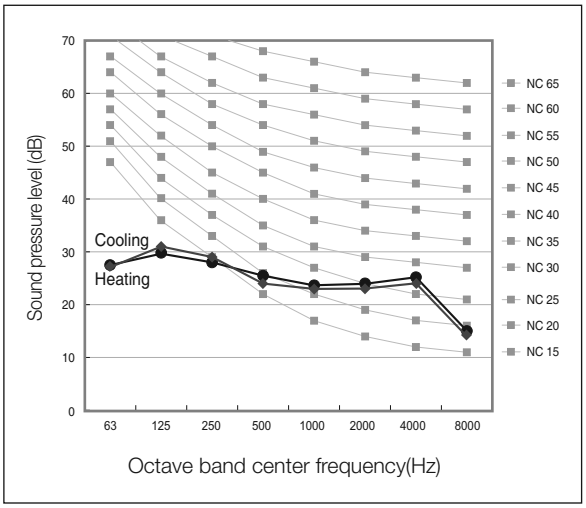
(1) AM160FNBDEH✳✳✳



(2) AM320FNBDEH✳✳✳

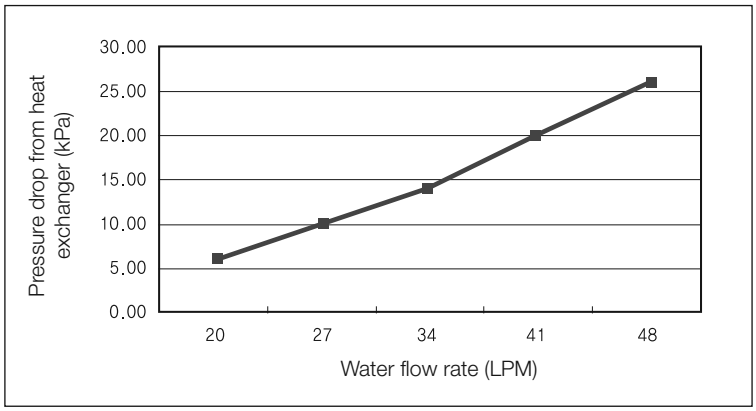


(3) AM500FNBDEH✳✳✳

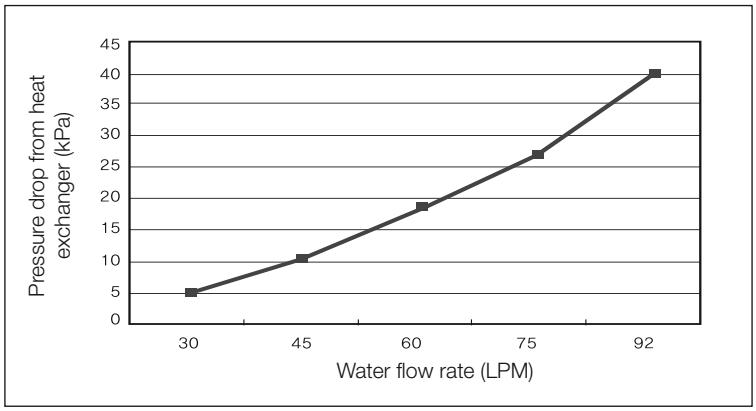


1-9. Hydraulic performance

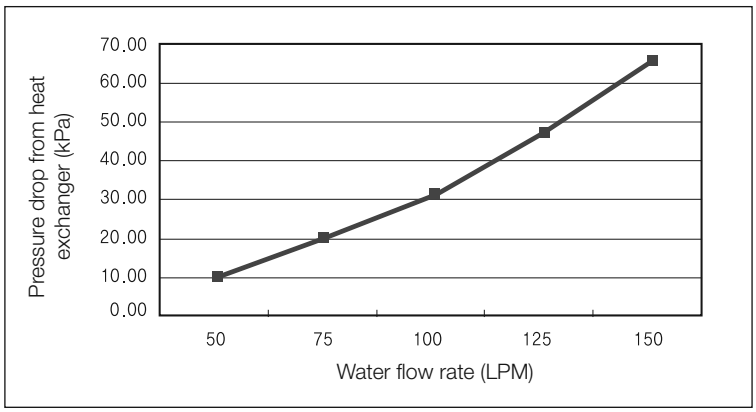
1) AM160FNBDEH✳✳✳



2) AM320FNBDEH✳✳✳



3) AM500FNBDEH✳✳✳



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