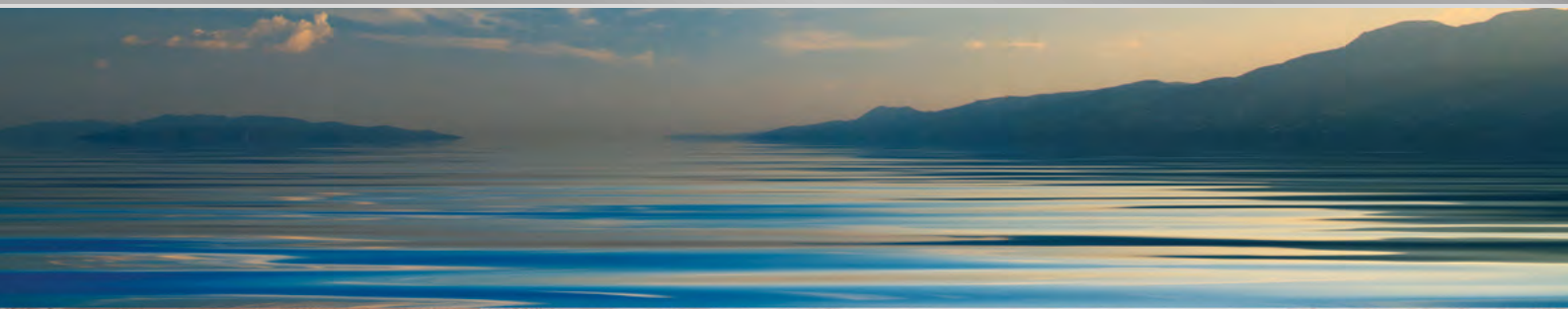




Hot Water Storage Tank

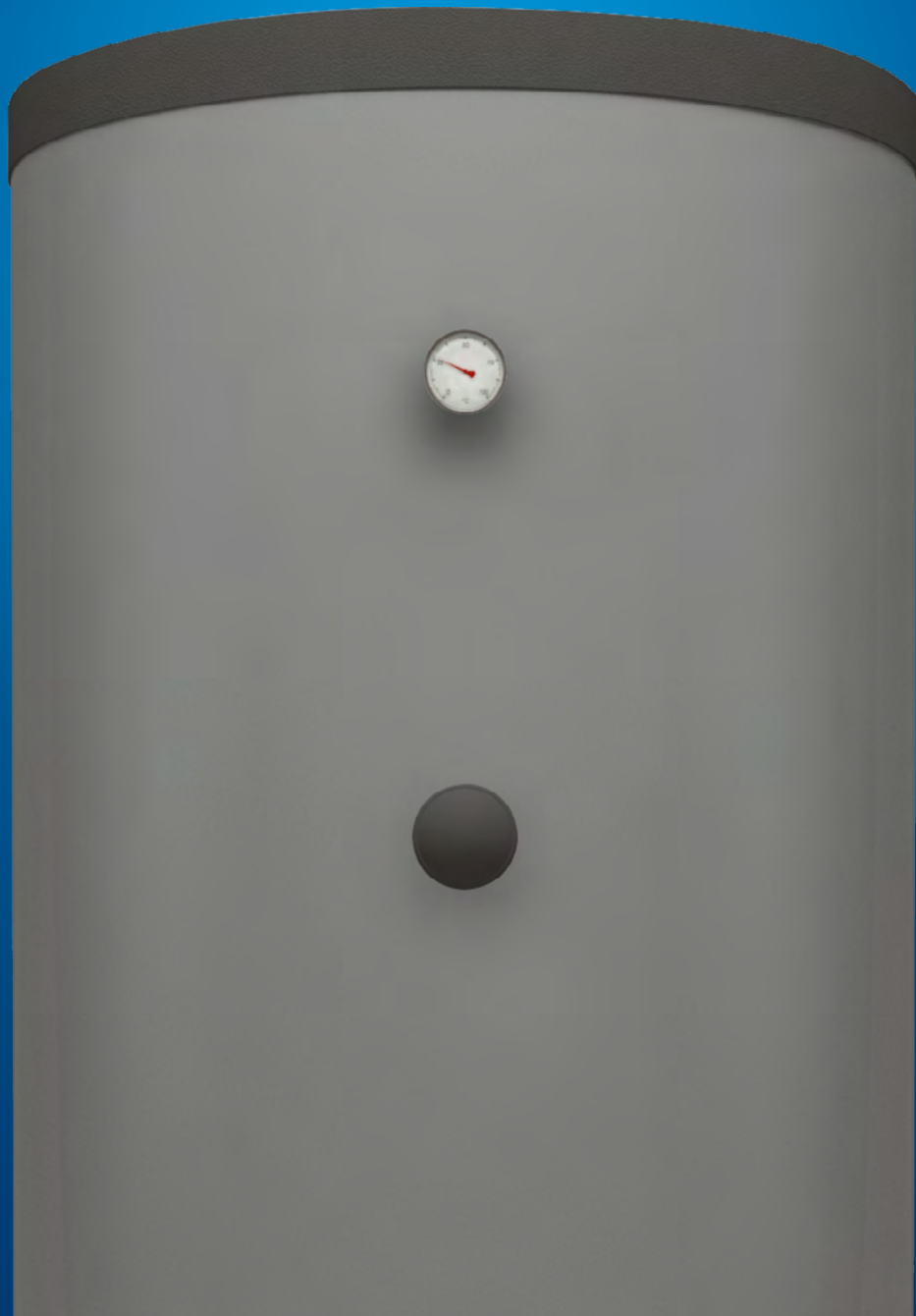


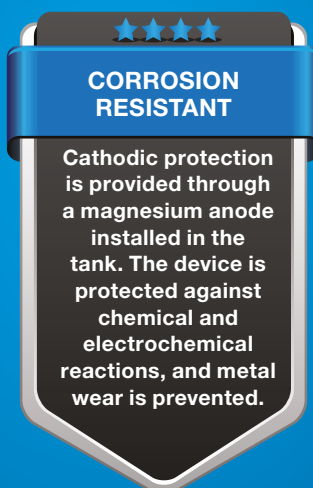
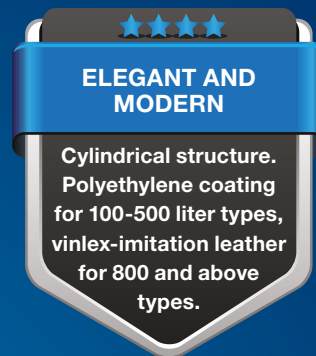
MAXI STORAGE TANK



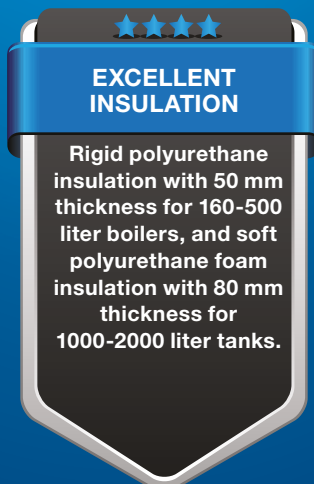
ALARKO MAXI STORAGE TANK

Alarko Maxi Tanks are designed to provide ideal performance even at low temperatures in heat pumps. Maxi Tanks provide higher performance than ASB1 tanks at hot water boiler conditions. Heat is evenly distributed within the tank due to the well-distributed arrangement of spirals through which heating fluid flows from ground to top. Cold regions that cause bacterial growth do not form.

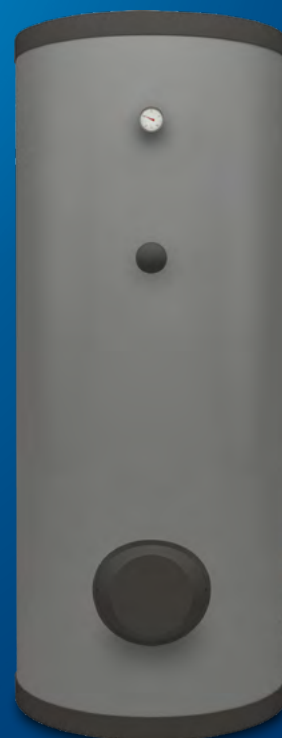




** Standard for 160, 200, and 300 types, optional for others*



Rigid polyurethane foam
tank heat loss~ 1°C/24 hours
Soft polyurethane foam
boiler heat loss ~ 4-6°C/24 hours



Average hot water need at consumption points for 60°C water (l/h)

	Villa	Building	Hospital	Hotel	Workplace	School	Factory
Personal Lavatory	7.5 - 9	7.5 - 9	7.5 - 9	7.5 - 9	7.5 - 9	7.5 - 9	7.5 - 9
Public Lavatory	-	15 - 28	20 - 27	30 - 36	23 - 27	50 - 68	40 - 54
Bathroom	90 - 250	76 - 250	76 - 250	76 - 250	-	-	-
Dishwasher	40 - 68	40 - 68	160 - 680	160 - 760	-	75 - 450	75 - 450
Kitchen sink	35 - 45	35 - 45	70 - 90	70 - 136	38 - 90	35 - 90	70 - 90
Washing machine	70 - 90	70 - 90	75 - 126	75 - 126	-	-	-
Shower	136 - 250	114 - 250	250 - 340	250 - 340	114 - 136	250 - 1000	750 - 1000
Use diversity factor	(1)	(1)	0.25	0.25	0.3	0.4	0.4
Storage factor	0.70	1.25	0.60	0.80	2.00	1.00	1.00

Use diversity factor for residences (TSE1258)

Residences	1	5	10	15	20	30	40	50	80	120	150	200
Use diversity factor	1.00	0.55	0.49	0.45	0.4	0.36	0.34	0.32	0.30	0.30	0.30	0.30

IMPORTANT NOTES:

01) Dishwasher and washing machine hot water need values given in the table above are not taken into account for new machines as they heat the water themselves and don't take it from outside. Also, although it is given in the table, shower hot water need values are taken into account instead of bath hot water need values depending on the changes in application habit.

02) Since the tank power tables are given according to tank operation at 10/60°C, hot water usage should also be determined as 60°C.

Hot water use temperatures in the shower and mixer after mixing the hot water are taken as 45°C.

Mixed hot water consumption with the tank at 60°C;

For 40°C multiplied by 0.6

For 45°C multiplied by 0.7 (45°C value is used mostly)

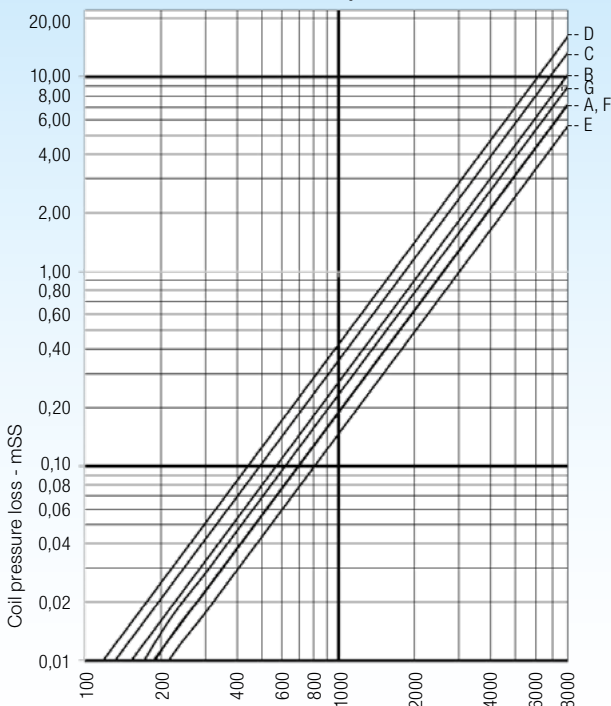
to get water flow rate at 60°C and this value is taken as basis when selecting the tank.

Accordingly, if hot water amount is given as 1500 l/h for 45°C, water flow rate at 60°C as the basis for selecting the tank is $1500 \times 0.7 = 1050$ l/h.

The values in the table are consumption values for 60°C, and cannot be used for 45°C.

Since tank temperature will be 45°C maximum when using a low temperature heat pump, hot water consumption amount for 45°C is directly used for selecting the tank.

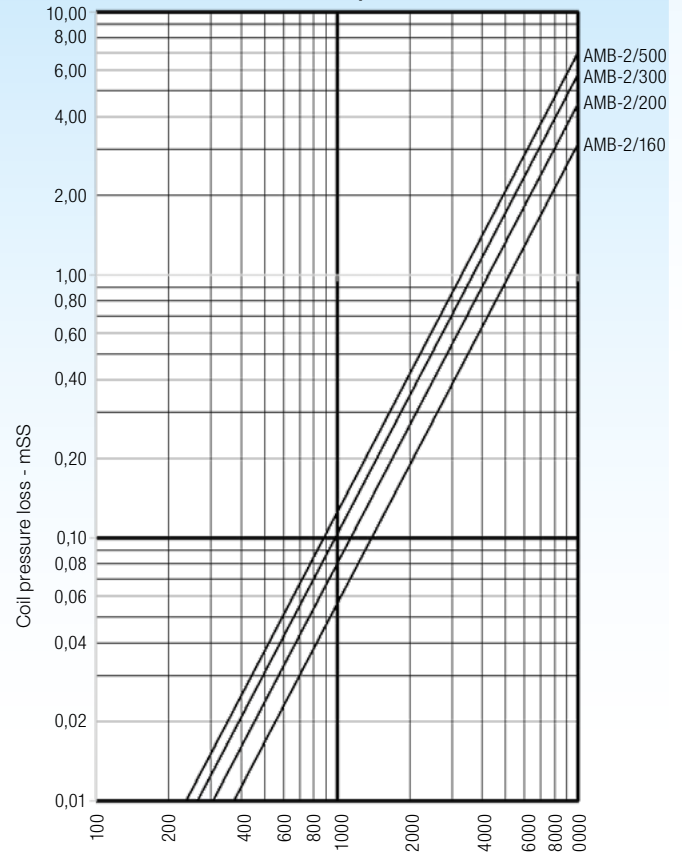
AMB-1 / 160-2000 TANK
Coil flow rate and pressure loss



Coil heating water flow rate - l / h

A..AMB-1/160 B..AMB-1/200 C..AMB-1/300 D..AMB-1/500
E..AMB-1/800-1000 F..AMB-1/1500 G..ASB-1/2000

AMB-2 / 160-500 TANK
Coil flow rate and pressure loss



Coil heating water flow rate - l / h

CORRECT OPERATION

1. WATER QUALITY:

Properties for the water used in the tank
It must comply with regulation on water intended for human consumption of Turkish Republic Ministry of Health. (Regulation of 07/03/2013-28580)
In summary, to minimize the corrosion damage, domestic water chemical properties should be within the limit values given in the adjacent table.

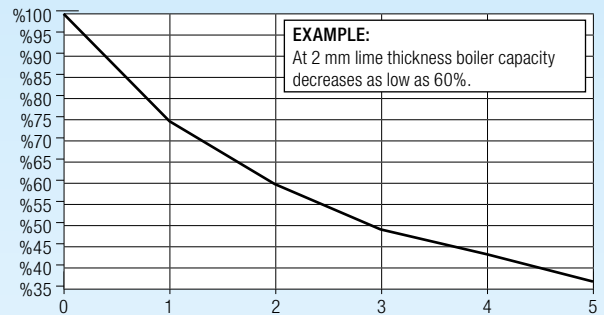
Water chemical properties for tank warranty terms

	Limit values
pH	6,5 - 9,5
Conductivity at 20°C	50 - 500 µS/cm
Total hardness	10 - 20 °Fr (*) (5,5 - 11 °dH, 100 - 200 ppm)
Chloride (Cl)	≤250 mg/l
Sulphate (SO ₄ ²⁻)	≤250 mg/l
Hydrogen carbonate (HCO ₃ ⁻)	70 - 300 mg/l
Free chlorine gas (Cl ₂)	< 1 mg/l (in 5 hours)

* 1 French degree (°F) = 0,56 German degree (°dH) = 10 CaCO₃ (ppm)

Domestic water hardness values

The maximum total hardness value allowed within the water is 10-20°F as given in the table above. On certain temperatures where the hot-cold balance of calcium (calcium carbonate CaCO₃), Magnesium (magnesium carbonate MgCO₃) minerals in water is disrupted, crystallization and therefore lime formation occurs. Lime formation on metal surfaces begins at a water temperature of about 25°C - 40°C depending on the Ca and Mg amount and increases at an equal rate as the temperature. In hot water applications, the negative effect of lime formation on heater surfaces on heat transfer and the capacity drop rates are given in the graph below.

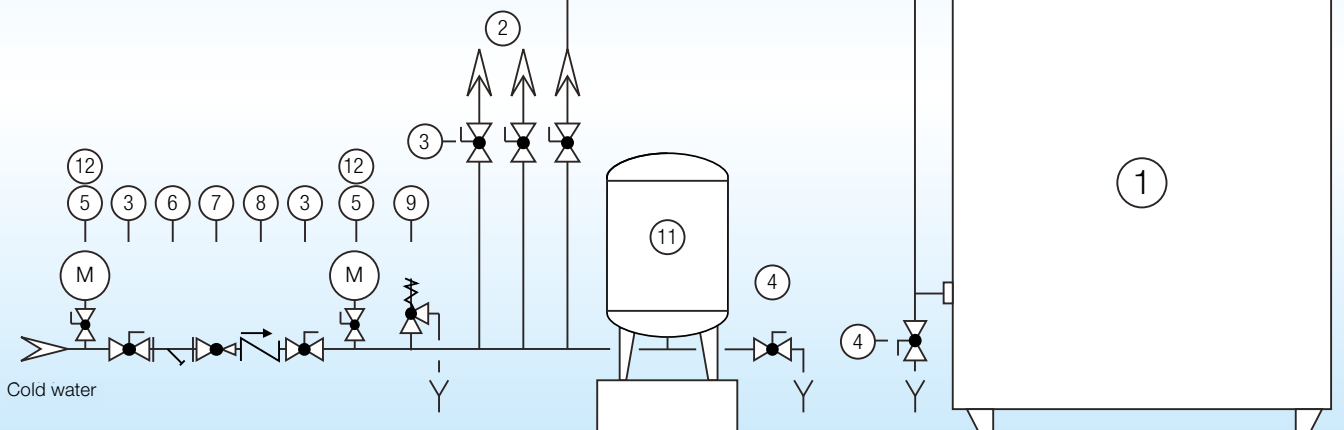


2. ASSEMBLY:

Tank cold water supply system cold water installation schema and armatures (DIN1988)

Tank cold water installation should be according to the schema below.

- | | |
|----------------------------------|-----------------------------|
| 1) Storage and accumulation tank | 7) Pressure reducer |
| 2) Outlet to other tanks | 8) Check valve |
| 3) Cut-off valve | 9) Membrane safety valve |
| 4) Drain valve | 10) Membrane safety valve |
| 5) Manometer cock | 11) Membrane expansion tank |
| 6) Strainer | 12) Manometer |



Dimensions for membrane safety valve and expansion tank that should be used for tank inlet is given below.

Safety valve dimension for systems working with hot water according to tank volume

Storage/accumulation tank volume (l)	≤ 200	201 - 800	1000 - 5000	5001 - 10000	> 10000
Membrane safety valve dimension	½"	¾"	1"	1 ¼"	1 ½"

Tank safety valve maximum opening pressure is 8 bar.

Expansion tank selection according to total tank volume

Total tank volume (l)	≤ 200	201 - 500	501 - 1000	1001 - 2000	2001 - 3000
Expansion tank volume (l)	24	50	80	150	300
Total tank volume (l)	3001 - 5000	5001 - 8000	8001 - 12000	12001 - 15000	15001 - 20000
Expansion tank volume (l)	500	750	1000	1500	2000

Expansion tank volumes are for 10/60°C water temperatures, tank and other installation elements with 10 bar resistance, 6 bar cold water maximum inlet pressure, and safety valve use with 8 bar nominal opening pressure. Expansion tank gas pressure must be set to 6.2 bar.

WORKING PRINCIPLE

Hot water or steam is used as the heating fluid. The heat of the heating fluid is transferred to domestic water by a coil with a large section and large heat transfer surface. Tank installation controlled by pump only works when needed.

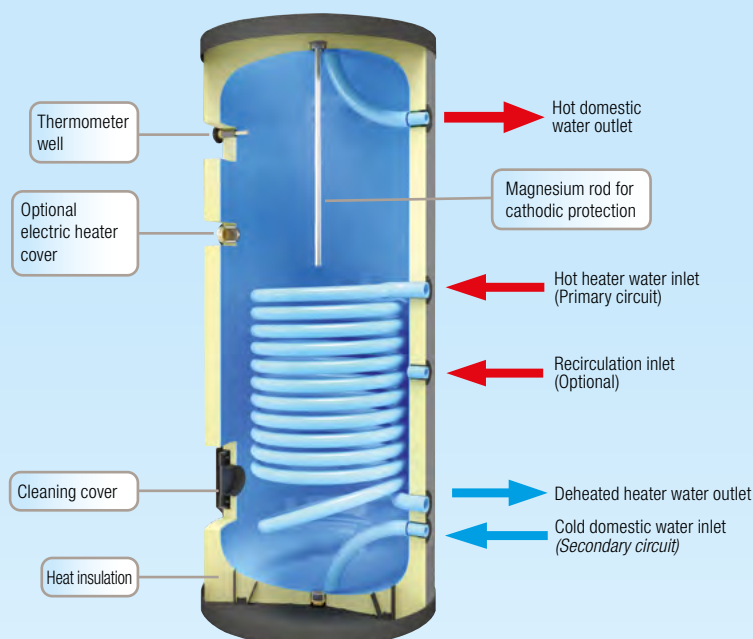


Table 1: Single-Line Coil Maxi Tank (AMB1) Capacity Table

Table 1-a) Tank Circuit: Cold water inlet → 10°C / Hot water outlet → Continuous Capacities For 45°C Heat Pump

Heating coil circuit	Tank model	AMB-1	160	200	300	500	800	1000	1500	2000
55 → 50 °C Heat pump	Tank flow rate	l/h	306	484	504	504	1006	1006	1006	1006
	Tank power	kW	12.2	19.3	20.1	20.1	40.1	40.1	40.1	40.1
	Coil flow rate	m³/h	2.1	3.4	3.5	3.5	7.0	7.0	7.0	7.0
	Coil resistance	mSS	0.48	1.53	2.37	2.93	4.82	4.82	6.29	9.48

Table 1-b) Tank Circuit: Cold water inlet → 10°C / Hot water outlet → Continuous Capacities For 60°C Heat Pump

Heating coil circuit	Tank model	AMB-1	160	200	300	500	800	1000	1500	2000
90 → 70 °C	Tank flow rate	l/h	640	1040	1440	1800	2400	2400	2600	2801
	Tank power	kW	37.2	60.5	83.7	104.7	139.6	139.6	151.2	162.8
	Coil flow rate	m³/h	1.6	2.7	3.7	4.6	6.2	6.2	6.7	7.2
	Coil resistance	mSS	0.34	1.07	2.37	4.41	3.79	3.79	5.85	7.90
80 → 60 °C	Tank flow rate	l/h	400	680	940	1180	1760	1760	2360	2801
	Tank power	kW	23.3	39.5	54.7	68.6	102.3	102.3	137.2	162.8
	Coil flow rate	m³/h	1.0	1.7	2.4	3.0	4.5	4.5	6.0	7.2
	Coil resistance	mSS	0.11	0.52	1.12	2.16	2.07	2.07	4.50	7.90
70 → 50 °C	Tank flow rate	l/h	220	380	540	680	1000	1000	1360	1760
	Tank power	kW	12.8	22.1	31.4	39.5	58.2	58.2	79.1	102.3
	Coil flow rate	m³/h	0.6	1.0	1.4	1.7	2.5	2.5	3.5	4.5
	Coil resistance	mSS	0.02	0.17	0.48	0.85	0.65	0.65	1.55	3.39

Table 2: Double-Line Coil Maxi Tank (AMB2) Capacity Table

Table 2-a) Tank Circuit: Cold water inlet → 10°C / Hot water outlet → Continuous Capacities for 45°C

Heating coil circuit	Tank model	AMB-2	160	200	300	500
55 → 50 °C Heat pump	Tank flow rate	l/h	467	729	1006	1006
	Tank power	kW	18.6	29.1	40.1	40.1
	Coil flow rate	m³/h	3.2	5.1	7.0	7.0
	Coil resistance	mSS	0.24	0.65	1.93	2.53

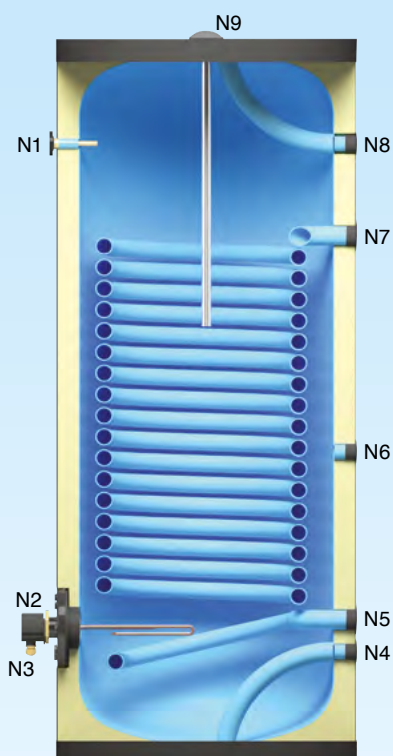
Table 2-b) Tank Circuit: Cold water inlet → 10°C / Hot water outlet → Continuous Capacities for 60°C Heat Pump

Heating coil circuit	Tank model	AMB-2	160	200	300	500
90 → 70 °C	Tank flow rate	l/h	1040	1621	2364	3166
	Tank power	kW	59.2	92.3	134.7	180.4
	Coil flow rate	m³/h	2.6	4.1	6.0	8.0
	Coil resistance	mSS	0.19	0.52	1.42	2.95
80 → 60 °C	Tank flow rate	l/h	656	1043	1540	2077
	Tank power	kW	37.3	59.4	87.7	118.3
	Coil flow rate	m³/h	1.6	2.6	3.9	5.2
	Coil resistance	mSS	0.07	0.28	0.68	1.19
70 → 50 °C	Tank flow rate	l/h	344	572	868	1190
	Tank power	kW	19.5	32.6	49.4	67.8
	Coil flow rate	m³/h	0.9	1.4	2.2	3.0
	Coil resistance	mSS	0.01	0.08	0.25	0.58

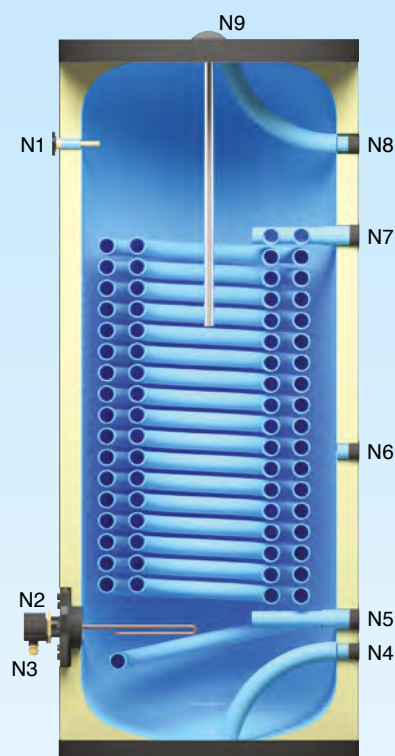
NOTE:

Tank flow rate and power values in the tables are applicable if a circulation pump large enough to provide coil flow rate and resistances is used.

SINGLE-LINE COIL



DOUBLE-LINE COIL



SINGLE-LINE COIL MAXI TANK		AMB 1-160	AMB 1-200	AMB 1-300	AMB 1-500	AMB 1-800	AMB 1-1000	AMB 1-1500	AMB 1-2000
Body Volume	V (l)	160	200	300	500	800	1.000	1.500	2.000
Body Diameter	Ø D (mm)	590	590	700	750	900	1.000	1.120	1.260
Total Height	H (mm)	1.125	1.320	1.210	1.800	2.100	2.070	2.300	2.230
Thermometer Well	N ₁ (inch)	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Additional Electric Heater	N ₂ (inch)	1½"	1½"	1½"	1½"	2"	2"	2"	2"
Cleaning Hole	N ₃ (inch)	4"	4"	4"	4"	5"	5"	5"	5"
Sensor	N ₁ (inch)	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
Domestic Water Diameter	N ₄ - N ₈ (inch)	3/4"	3/4"	1"	1"	1¼"	1¼"	1¼"	1¼"
Coil Diameter	N ₅ - N ₇ (inch)	1"	1"	1"	1"	1¼"	1¼"	1¼"	1¼"
Circulation Diameter	N ₆ (inch)	3/4"	3/4"	1"	1"	1¼"	1¼"	1¼"	1¼"
Magnesium Anode	N ₉ (inch)	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
Insulation type	i (mm)	PU / 50	PU / 50	PU / 50	PU / 50	SU / 80	SU / 80	SU / 80	SU / 80
Weight with Package	(kg)	105	124	135	210	273	298	411	594

DOUBLE-LINE COIL MAXI TANK		AMB 2-160	AMB 2-200	AMB 2-300	AMB 2-500
Body Volume	V (l)	160	200	300	500
Body Diameter	Ø D (mm)	590	590	700	750
Total Height	H (mm)	1.125	1.320	1.210	1.800
Thermometer Well	N ₁ (inch)	1/2"	1/2"	1/2"	1/2"
Additional Electric Heater	N ₂ (inch)	1½"	1½"	1½"	1½"
Cleaning Hole	N ₃ (inch)	4"	4"	4"	4"
Sensor	N ₁ (inch)	1/2"	1/2"	1/2"	1/2"
Domestic Water Diameter	N ₄ - N ₈ (inch)	3/4"	3/4"	1"	1"
Coil Diameter	N ₅ - N ₇ (inch)	1"	1"	1"	1"
Circulation Diameter	N ₆ (inch)	3/4"	3/4"	1"	1"
Magnesium Anode	N ₉ (inch)	1¼"	1¼"	1¼"	1¼"
Insulation type	i (mm)	PU / 50	PU / 50	PU / 50	PU / 50
Weight with Package	(kg)	122	148	167	252

energy
saving

excellent
comfort

superior
technology

high
efficiency

smart
air conditioning

high
performance

environment friendly

Real Comfort

Manufacturer reserves the right to change any product specifications without notice.

ALARKO

Carrier

**ALARKO CARRIER
SANAYİ VE TİCARET A.Ş.**

GOSB-Gebze Organize Sanayi Bölgesi
Şahabettin Bilgisu Cad. 41480 Gebze-Kocaeli/TURKEY
Phone : (90)(262) 648 60 00 PBX
Telefax : (90)(262) 648 61 01
web : www.alarko-carrier.com.tr
e-mail : info@alarko-carrier.com.tr