HEAT SOURCE UNITS

WR2 575V

Heat Source Model				PQRY-P72ZLMU-A	
Indoor Model				Non-Ducted	Ducted
Power source				3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)		*1	BTU/h	72,000	
			kW	21.1	
	Power input		kW	3.23	
(575)	Current input		A	3.6	
(Rated)			BTU/h	69,000	
			kW	20.2	
	Power input		kW	2.96	3.12
(575)	Current input		A	3.3	3.4
Temp. range of cooling	Indoor		W.B.	59~75°F (15~24°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	80,000	
			kW	23.4	
	Power input		kW	3.63	
(575)	Current input		A	4.0	
(Rated)			BTU/h	76,000	
			kW	22.3	
	Power input		kW	3.34	3.36
(575)	Current input		A	3.7	3.7
Temp. range of heating	Indoor		D.B.	59~81°F (15~27°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity			50~150% of heat source unit capacity	
	Model/Quantity			P06~P96/1~18	
Sound pressure level (measured in anechoic room)			dB <A>	46.0	
Refrigerant piping diameter	High pressure		in. (mm)	5/8 (15.88) Brazed	
	Low pressure		in. (mm)	3/4 (19.05) Brazed	
Minimum Circuit Ampacity			A	5	
Maximum Overcurrent Protection			A	15	
Circulating water	Water flow rate		G/h	1,522	
			G/min (gpm)	25.4	
			m^3/h	5.76	
			L/min	96	
			cfm	3.4	
	Pressure drop		psi	3.48	
			kPa	24	
	Operating volume range		G/h	793 ~ 1,902	
			G/min (gpm)	13.2 ~ 31.7	
			m^3/h	3.0 ~ 7.2	
Compressor	Type x Quantity			Inverter scroll hermetic compressor x 1	
	Manufacture			AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method			Inverter	
	Motor output		kW	4.3	
	Case heater		kW	-	
	Lubricant			MEL32	
External finish				Galvanized steel sheets	
External dimension H x W x D			in.	43-5/16 x 34-11/16 x 21-11/16	
			mm	1,100 x 880 x 550	
Protection devices	High pressure protection			High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit			Over-heat protection, Over-current protection	
	Compressor			Over-heat protection	
Refrigerant	Type x original charge			R410A x 11 lbs + 1 oz (5.0 kg)	
	Control			Indoor LEV and BC controller	
Net weight			lbs (kg)	408 (185)	
Heat exchanger				plate type	
	Water volume in plate		G	1.32	
			l	5.0	
	Water pressure Max.		psi	290	
			MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)				-	
Drawing	External			KS94G402	
	Wiring			KE94G219	
Standard attachment	Document			Installation Manual	
	Accessory			Details refer to External Drw	
Optional parts				joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R160-J1 BC controller: CMB-P104, 105, 106, 108, 1010, 1013, 1016NU-G1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks				Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

Heat Source Model			PQRY-P96ZLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal) *1		BTU/h	96,000	
		kW	28.1	
	Power input	kW	4.65	
(575)	Current input	A	5.1	
(Rated)		BTU/h	92,000	
		kW	27.0	
	Power input	kW	4.26	5.19
(575)	Current input	A	4.7	5.7
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal) *2		BTU/h	108,000	
		kW	31.7	
	Power input	kW	5.05	
(575)	Current input	A	5.6	
(Rated)		BTU/h	103,000	
		kW	30.2	
	Power input	kW	4.65	4.48
(575)	Current input	A	5.1	4.9
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity		50~150% of heat source unit capacity	
	Model/Quantity		P06~P96/1~24	
Sound pressure level (measured in anechoic room)		dB <A>	48.0	
Refrigerant piping diameter	High pressure	in. (mm)	3/4 (19.05) Brazed	
	Low pressure	in. (mm)	7/8 (22.2) Brazed	
Minimum Circuit Ampacity		A	7	
Maximum Overcurrent Protection		A	15	
Circulating water	Water flow rate	G/h	1,522	
		G/min (gpm)	25.4	
		m^3/h	5.76	
		L/min	96	
		cfm	3.4	
	Pressure drop	psi	3.48	
		kPa	24	
	Operating volume range	G/h	793 ~ 1,902	
		G/min (gpm)	13.2 ~ 31.7	
		m^3/h	3.0 ~ 7.2	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter	
	Motor output	kW	6.0	
	Case heater	kW	-	
	Lubricant		MEL32	
External finish			Galvanized steel sheets	
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16	
		mm	1,100 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	408 (185)	
Heat exchanger			plate type	
	Water volume in plate	G	1.32	
		l	5.0	
	Water pressure Max.	psi	290	
		MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)			-	
Drawing	External		KS94G402	
	Wiring		KE94G219	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R160-J1 BC controller: CMB-P104, 105, 106, 108, 1010, 1013, 1016NU-G1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter

BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

WR2 575V

Heat Source Model				PQRY-P120ZLMU-A	
Indoor Model				Non-Ducted	Ducted
Power source				3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)		*1	BTU/h	120,000	
			kW	35.2	
	Power input		kW	7.24	
(575)	Current input		A	8.0	
(Rated)			BTU/h	114,000	
			kW	33.4	
	Power input		kW	6.66	7.35
(575)	Current input		A	7.4	8.2
Temp. range of cooling	Indoor		W.B.	59~75°F (15~24°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	135,000	
			kW	39.6	
	Power input		kW	6.83	
(575)	Current input		A	7.6	
(Rated)			BTU/h	129,000	
			kW	37.8	
	Power input		kW	6.29	5.92
(575)	Current input		A	7.0	6.6
Temp. range of heating	Indoor		D.B.	59~81°F (15~27°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity			50~150% of heat source unit capacity	
	Model/Quantity			P06~P96/1~30	
Sound pressure level (measured in anechoic room)			dB <A>	54.0	
Refrigerant piping diameter	High pressure		in. (mm)	3/4 (19.05) Brazed	
	Low pressure		in. (mm)	7/8 (22.2) Brazed	
Minimum Circuit Ampacity			A	11	
Maximum Overcurrent Protection			A	15	
Circulating water	Water flow rate		G/h	1,522	
			G/min (gpm)	25.4	
			m^3/h	5.76	
			L/min	96	
			cfm	3.4	
	Pressure drop		psi	3.48	
			kPa	24	
	Operating volume range		G/h	793 ~ 1,902	
			G/min (gpm)	13.2 ~ 31.7	
			m^3/h	3.0 ~ 7.2	
Compressor	Type x Quantity			Inverter scroll hermetic compressor x 1	
	Manufacture			AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method			Inverter	
	Motor output		kW	7.7	
	Case heater		kW	-	
	Lubricant			MEL32	
External finish				Galvanized steel sheets	
External dimension H x W x D			in.	43-5/16 x 34-11/16 x 21-11/16	
			mm	1,100 x 880 x 550	
Protection devices	High pressure protection			High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit			Over-heat protection, Over-current protection	
	Compressor			Over-heat protection	
Refrigerant	Type x original charge			R410A x 11 lbs + 1 oz (5.0 kg)	
	Control			Indoor LEV and BC controller	
Net weight			lbs (kg)	408 (185)	
Heat exchanger				plate type	
	Water volume in plate		G	1.32	
			l	5.0	
	Water pressure Max.		psi	290	
			MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)				-	
Drawing	External			KS94G402	
	Wiring			KE94G219	
Standard attachment	Document			Installation Manual	
	Accessory			Details refer to External Drw	
Optional parts				joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-R160-J1 BC controller: CMB-P104, 105, 106, 108, 1010, 1013, 1016NU-G1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks				Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	$=m^3/min$ x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

Heat Source Model			PQRY-P144ZLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal) *1		BTU/h	144,000	
		kW	42.2	
	Power input	kW	8.78	
(575)	Current input	A	9.7	
(Rated)		BTU/h	137,000	
		kW	40.2	
	Power input	kW	8.07	9.98
(575)	Current input	A	9.0	11.1
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal) *2		BTU/h	160,000	
		kW	46.9	
	Power input	kW	8.11	
(575)	Current input	A	9.0	
(Rated)		BTU/h	152,000	
		kW	44.5	
	Power input	kW	7.47	7.90
(575)	Current input	A	8.3	8.8
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity		50~150% of heat source unit capacity	
	Model/Quantity		P06~P96/1~36	
Sound pressure level (measured in anechoic room)		dB <A>	54.0	
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	
Minimum Circuit Ampacity		A	13	
Maximum Overcurrent Protection		A	20	
Circulating water	Water flow rate	G/h	1,902	
		G/min (gpm)	31.7	
		m^3/h	7.20	
		L/min	120	
		cfm	4.2	
	Pressure drop	psi	6.38	
		kPa	44	
	Operating volume range	G/h	1,189 ~ 3,054	
		G/min (gpm)	19.8 ~ 50.9	
		m^3/h	4.5 ~ 11.6	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter	
	Motor output	kW	9.5	
	Case heater	kW	-	
	Lubricant		MEL32	
External finish			Galvanized steel sheets	
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)	
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	510 (231)	
Heat exchanger			plate type	
	Water volume in plate	G	1.32	
		l	5.0	
	Water pressure Max.	psi	290	
		MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)			-	
Drawing	External		KS94G403	
	Wiring		KE94G219	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter

BTU/h =kW x 3,412
cfm =m^3/min x 35.31
lbs =kg/0.4536

*Above specification data is subject to rounding variation.

WR2 575V

Heat Source Model				PQRY-P168ZLMU-A	
Indoor Model				Non-Ducted	Ducted
Power source				3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)		*1	BTU/h	168,000	
			kW	49.2	
	Power input		kW	12.05	
(575)	Current input		A	13.4	
(Rated)			BTU/h	161,000	
			kW	47.2	
	Power input		kW	11.10	11.88
(575)	Current input		A	12.3	13.2
Temp. range of cooling	Indoor		W.B.	59~75°F (15~24°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	188,000	
			kW	55.1	
	Power input		kW	9.86	
(575)	Current input		A	11.0	
(Rated)			BTU/h	179,000	
			kW	52.5	
	Power input		kW	9.09	9.72
(575)	Current input		A	10.1	10.8
Temp. range of heating	Indoor		D.B.	59~81°F (15~27°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity			50~150% of heat source unit capacity	
	Model/Quantity			P06~P96/1~42	
Sound pressure level (measured in anechoic room)			dB <A>	56.0	
Refrigerant piping diameter	High pressure		in. (mm)	7/8 (22.2) Brazed	
	Low pressure		in. (mm)	1-1/8 (28.58) Brazed	
Minimum Circuit Ampacity			A	16	
Maximum Overcurrent Protection			A	25	
Circulating water	Water flow rate		G/h	1,902	
			G/min (gpm)	31.7	
			m^3/h	7.20	
			L/min	120	
			cfm	4.2	
	Pressure drop		psi	6.38	
			kPa	44	
	Operating volume range		G/h	1,189 ~ 3,054	
			G/min (gpm)	19.8 ~ 50.9	
			m^3/h	4.5 ~ 11.6	
Compressor	Type x Quantity			Inverter scroll hermetic compressor x 1	
	Manufacture			AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method			Inverter	
	Motor output		kW	11.0	
	Case heater		kW	-	
	Lubricant			MEL32	
External finish				Galvanized steel sheets	
External dimension H x W x D			in.	57-1/8 x 34-11/16 x 21-11/16	
			mm	1,450 x 880 x 550	
Protection devices	High pressure protection			High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit			Over-heat protection, Over-current protection	
	Compressor			Over-heat protection	
Refrigerant	Type x original charge			R410A x 13 lbs + 4 oz (6.0 kg)	
	Control			Indoor LEV and BC controller	
Net weight			lbs (kg)	510 (231)	
Heat exchanger				plate type	
	Water volume in plate		G	1.32	
			l	5.0	
	Water pressure Max.		psi	290	
			MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)				-	
Drawing	External			KS94G403	
	Wiring			KE94G219	
Standard attachment	Document			Installation Manual	
	Accessory			Details refer to External Drw	
Optional parts				joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks				Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter

BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Heat Source Model			PQRY-P192ZLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal) *1		BTU/h	192,000	
		kW	56.3	
	Power input	kW	15.05	
(575)	Current input	A	16.7	
(Rated)		BTU/h	183,000	
		kW	53.6	
	Power input	kW	13.87	14.19
(575)	Current input	A	15.4	15.8
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal) *2		BTU/h	215,000	
		kW	63.0	
	Power input	kW	11.90	
(575)	Current input	A	13.2	
(Rated)		BTU/h	205,000	
		kW	60.1	
	Power input	kW	10.97	11.56
(575)	Current input	A	12.2	12.8
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity		50~150% of heat source unit capacity	
	Model/Quantity		P06~P96/1~48	
Sound pressure level (measured in anechoic room)		dB <A>	58.0	
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	
Minimum Circuit Ampacity		A	20	
Maximum Overcurrent Protection		A	30	
Circulating water	Water flow rate	G/h	1,902	
		G/min (gpm)	31.7	
		m^3/h	7.20	
		L/min	120	
		cfm	4.2	
	Pressure drop	psi	6.38	
		kPa	44	
	Operating volume range	G/h	1,189 ~ 3,054	
		G/min (gpm)	19.8 ~ 50.9	
		m^3/h	4.5 ~ 11.6	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter	
	Motor output	kW	12.4	
	Case heater	kW	-	
	Lubricant		MEL32	
External finish			Galvanized steel sheets	
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)	
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	510 (231)	
Heat exchanger			plate type	
	Water volume in plate	G	1.32	
		l	5.0	
	Water pressure Max.	psi	290	
		MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)			-	
Drawing	External		KS94G403	
	Wiring		KE94G219	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter

BTU/h =kW x 3,412
cfm =m^3/min x 35.31
lbs =kg/0.4536

*Above specification data is subject to rounding variation.

WR2 575V

Heat Source Model				PQRY-P144ZSLMU-A	
Indoor Model				Non-Ducted	Ducted
Power source				3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)		*1	BTU/h	144,000	
			kW	42.2	
		Power input	kW	7.11	
	(575)	Current input	A	7.9	
	(Rated)		BTU/h	137,000	
			kW	40.2	
		Power input	kW	6.53	7.72
	(575)	Current input	A	7.2	8.6
Temp. range of cooling		Indoor	W.B.	59~75°F (15~24°C)	
		Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	160,000	
			kW	46.9	
		Power input	kW	7.45	
	(575)	Current input	A	8.3	
	(Rated)		BTU/h	152,000	
			kW	44.5	
		Power input	kW	6.86	7.22
	(575)	Current input	A	7.6	8.0
Temp. range of heating		Indoor	D.B.	59~81°F (15~27°C)	
		Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable		Total capacity		50~150% of heat source unit capacity	
		Model/Quantity		P06~P96/1~36	
Sound pressure level (measured in anechoic room)			dB <A>	49.0	
Refrigerant piping diameter		High pressure	in. (mm)	7/8 (22.2) Brazed	
		Low pressure	in. (mm)	1-1/8 (28.58) Brazed	

Set Model

Model			PQRY-P72ZLMU-A	PQRY-P72ZLMU-A
Minimum Circuit Ampacity		A	5	5
Maximum Overcurrent Protection		A	15	15
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min (gpm)	25.4 + 25.4	
		m^3/h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
	Pressure drop	psi	3.48	3.48
		kPa	24	24
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902	
		G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7	
		m^3/h	3.0 + 3.0 ~ 7.2 + 7.2	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	4.3	4.3
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16
		mm	1,100 x 880 x 550	1,100 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	408 (185)	408 (185)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	5/8 (15.88) Brazed	5/8 (15.88) Brazed
	Low pressure	in. (mm)	-	3/4 (19.05) Brazed
Drawing	External		KS94G406	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q100CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	$=m^3/min$ x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

Heat Source Model			PQRY-P168ZSLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal) *1		BTU/h	168,000	
		kW	49.2	
	Power input	kW	9.33	
(575)	Current input	A	10.4	
(Rated)		BTU/h	161,000	
		kW	47.2	
	Power input	kW	8.58	9.22
(575)	Current input	A	9.5	10.2
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal) *2		BTU/h	188,000	
		kW	55.1	
	Power input	kW	9.34	
(575)	Current input	A	10.4	
(Rated)		BTU/h	179,000	
		kW	52.5	
	Power input	kW	8.60	8.03
(575)	Current input	A	9.5	8.9
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity		50~150% of heat source unit capacity	
	Model/Quantity		P06~P96/1~42	
Sound pressure level (measured in anechoic room)		dB <A>	50.0	
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	

Set Model

Model			PQRY-P96ZLMU-A	PQRY-P72ZLMU-A
Minimum Circuit Ampacity		A	7	5
Maximum Overcurrent Protection		A	15	15
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min (gpm)	25.4 + 25.4	
		m^3/h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
	Pressure drop	psi	3.48	3.48
		kPa	24	24
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902	
		G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7	
		m^3/h	3.0 + 3.0 ~ 7.2 + 7.2	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	6.0	4.3
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16
		mm	1,100 x 880 x 550	1,100 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	408 (185)	408 (185)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed	3/4 (19.05) Brazed
	Low pressure	in. (mm)	-	7/8 (22.2) Brazed
Drawing	External		KS94G406	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q100CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

WR2 575V

Heat Source Model				PQRY-P192ZSLMU-A	
Indoor Model				Non-Ducted	Ducted
Power source				3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)		*1	BTU/h	192,000	
			kW	56.3	
	Power input		kW	11.30	
(575)	Current input		A	12.6	
(Rated)			BTU/h	183,000	
			kW	53.6	
	Power input		kW	10.40	10.98
(575)	Current input		A	11.6	12.2
Temp. range of cooling	Indoor		W.B.	59~75°F (15~24°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	215,000	
			kW	63.0	
	Power input		kW	11.02	
(575)	Current input		A	12.2	
(Rated)			BTU/h	205,000	
			kW	60.1	
	Power input		kW	10.16	8.90
(575)	Current input		A	11.3	9.9
Temp. range of heating	Indoor		D.B.	59~81°F (15~27°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity			50~150% of heat source unit capacity	
	Model/Quantity			P06~P96/1~48	
Sound pressure level (measured in anechoic room)			dB <A>	51.0	
Refrigerant piping diameter	High pressure		in. (mm)	7/8 (22.2) Brazed	
	Low pressure		in. (mm)	1-1/8 (28.58) Brazed	

Set Model

Model			PQRY-P96ZLMU-A	PQRY-P96ZLMU-A
Minimum Circuit Ampacity		A	7	7
Maximum Overcurrent Protection		A	15	15
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min (gpm)	25.4 + 25.4	
		m^3/h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
	Pressure drop	psi	3.48	3.48
		kPa	24	24
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902	
		G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7	
		m^3/h	3.0 + 3.0 ~ 7.2 + 7.2	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	6.0	6.0
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16
		mm	1,100 x 880 x 550	1,100 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	408 (185)	408 (185)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed	3/4 (19.05) Brazed
	Low pressure	in. (mm)	-	7/8 (22.2) Brazed
Drawing	External		KS94G406	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q100CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1. Nominal cooling conditions (Test conditions are based on AHRI 1230)
   Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2. Nominal heating conditions (Test conditions are based on AHRI 1230)
   Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	$=m^3/min$ x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

Heat Source Model			PQRY-P216ZSLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal) *1		BTU/h	216,000	
		kW	63.3	
	Power input	kW	14.03	
(575)	Current input	A	15.6	
(Rated)		BTU/h	206,000	
		kW	60.4	
	Power input	kW	12.93	13.24
(575)	Current input	A	14.4	14.7
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal) *2		BTU/h	243,000	
		kW	71.2	
	Power input	kW	12.88	
(575)	Current input	A	14.3	
(Rated)		BTU/h	232,000	
		kW	68.0	
	Power input	kW	11.88	10.35
(575)	Current input	A	13.2	11.5
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity		50~150% of heat source unit capacity	
	Model/Quantity		P06~P96/2~50 (Connectable branch pipe number is max. 48.)	
Sound pressure level (measured in anechoic room)		dB <A>	55.0	
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed (1-1/8 (28.58) Brazed for the part that exceeds 65 m)	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	

Set Model

Model			PQRY-P120ZLMU-A	PQRY-P96ZLMU-A
Minimum Circuit Ampacity		A	11	7
Maximum Overcurrent Protection		A	15	15
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min (gpm)	25.4 + 25.4	
		m^3/h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
	Pressure drop	psi	3.48	3.48
		kPa	24	24
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902	
		G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7	
		m^3/h	3.0 + 3.0 ~ 7.2 + 7.2	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	7.7	6.0
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16
		mm	1,100 x 880 x 550	1,100 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	408 (185)	408 (185)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed	3/4 (19.05) Brazed
	Low pressure	in. (mm)	-	7/8 (22.2) Brazed
Drawing	External		KS94G406	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q100CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual. When the high pressure piping length is 65 m or less, use 7/8 (22.2) pipe. When the high pressure piping length exceeds 65 m, use 7/8 (22.2) pipe until 65 m, use 1-1/8 (28.58) pipe for the part that exceeds 65 m.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

WR2 575V

Heat Source Model				PQRY-P240ZSLMU-A	
Indoor Model				Non-Ducted	Ducted
Power source				3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)		*1	BTU/h	240,000	
			kW	70.3	
	Power input		kW	16.89	
(575)	Current input		A	18.8	
(Rated)			BTU/h	228,000	
			kW	66.8	
	Power input		kW	15.57	16.15
(575)	Current input		A	17.3	18.0
Temp. range of cooling	Indoor		W.B.	59~75°F (15~24°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	270,000	
			kW	79.1	
	Power input		kW	14.58	
(575)	Current input		A	16.2	
(Rated)			BTU/h	258,000	
			kW	75.6	
	Power input		kW	13.45	12.02
(575)	Current input		A	15.0	13.4
Temp. range of heating	Indoor		D.B.	59~81°F (15~27°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity			50~150% of heat source unit capacity	
	Model/Quantity			P06~P96/2~50 (Connectable branch pipe number is max. 48.)	
Sound pressure level (measured in anechoic room)			dB <A>	57.0	
Refrigerant piping diameter	High pressure		in. (mm)	7/8 (22.2) Brazed (1-1/8 (28.58) Brazed for the part that exceeds 65 m)	
	Low pressure		in. (mm)	1-3/8 (34.93) Brazed	

Set Model

Model			PQRY-P120ZLMU-A	PQRY-P120ZLMU-A
Minimum Circuit Ampacity		A	11	11
Maximum Overcurrent Protection		A	15	15
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min (gpm)	25.4 + 25.4	
		m^3/h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
	Pressure drop	psi	3.48	3.48
		kPa	24	24
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902	
		G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7	
		m^3/h	3.0 + 3.0 ~ 7.2 + 7.2	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	7.7	7.7
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16
		mm	1,100 x 880 x 550	1,100 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	408 (185)	408 (185)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed	3/4 (19.05) Brazed
	Low pressure	in. (mm)	-	7/8 (22.2) Brazed
Drawing	External		KS94G406	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q100CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1013, 1016NU-GA1, 108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual. When the high pressure piping length is 65 m or less, use 7/8 (22.2) pipe. When the high pressure piping length exceeds 65 m, use 7/8 (22.2) pipe until 65 m, use 1-1/8 (28.58) pipe for the part that exceeds 65 m.	

Notes:
1. Nominal cooling conditions (Test conditions are based on AHRI 1230)
   Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2. Nominal heating conditions (Test conditions are based on AHRI 1230)
   Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	$=m^3/min$ x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

Heat Source Model			PQRY-P288ZSLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal) *1		BTU/h	288,000	
		kW	84.4	
	Power input	kW	20.42	
(575)	Current input	A	22.7	
(Rated)		BTU/h	275,000	
		kW	80.6	
	Power input	kW	18.82	21.43
(575)	Current input	A	20.9	23.9
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal) *2		BTU/h	323,000	
		kW	94.7	
	Power input	kW	17.50	
(575)	Current input	A	19.5	
(Rated)		BTU/h	308,000	
		kW	90.3	
	Power input	kW	16.13	16.05
(575)	Current input	A	17.9	17.9
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity		50~150% of heat source unit capacity	
	Model/Quantity		P06~P96/2~50 (Connectable branch pipe number is max. 48.)	
Sound pressure level (measured in anechoic room)		dB <A>	57.0	
Refrigerant piping diameter	High pressure	in. (mm)	1-1/8 (28.58) Brazed	
	Low pressure	in. (mm)	1-3/8 (34.93) Brazed	

Set Model

Model			PQRY-P144ZLMU-A	PQRY-P144ZLMU-A
Minimum Circuit Ampacity		A	13	13
Maximum Overcurrent Protection		A	20	20
Circulating water	Water flow rate	G/h	1,902 + 1,902	
		G/min (gpm)	31.7 + 31.7	
		m^3/h	7.20 + 7.20	
		L/min	120 + 120	
		cfm	4.2 + 4.2	
	Pressure drop	psi	6.38	6.38
		kPa	44	44
	Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054	
		G/min (gpm)	19.8 + 19.8 ~ 50.9 + 50.9	
		m^3/h	4.5 + 4.5 ~ 11.6 + 11.6	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	9.5	9.5
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	57-1/8 x 34-11/16 x 21-11/16
		mm	1,450 x 880 x 550	1,450 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)	R410A x 13 lbs + 4 oz (6.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	510 (231)	510 (231)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
	Low pressure	in. (mm)	-	1-1/8 (28.58) Brazed
Drawing	External		KS94G407	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q200CBK joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

WR2 575V

Heat Source Model				PQRY-P312ZSLMU-A	
Indoor Model				Non-Ducted	Ducted
Power source				3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)		*1	BTU/h	312,000	
			kW	91.4	
	Power input		kW	23.41	
(575)	Current input		A	26.1	
(Rated)			BTU/h	297,000	
			kW	87.0	
	Power input		kW	21.59	23.67
(575)	Current input		A	24.0	26.4
Temp. range of cooling	Indoor		W.B.	59~75°F (15~24°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	350,000	
			kW	102.6	
	Power input		kW	19.11	
(575)	Current input		A	21.3	
(Rated)			BTU/h	334,000	
			kW	97.9	
	Power input		kW	17.62	17.96
(575)	Current input		A	19.6	20.0
Temp. range of heating	Indoor		D.B.	59~81°F (15~27°C)	
	Circulating water		°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity			50~150% of heat source unit capacity	
	Model/Quantity			P06~P96/2~50 (Connectable branch pipe number is max. 48.)	
Sound pressure level (measured in anechoic room)			dB <A>	58.0	
Refrigerant piping diameter	High pressure		in. (mm)	1-1/8 (28.58) Brazed	
	Low pressure		in. (mm)	1-3/8 (34.93) Brazed	

Set Model

Model			PQRY-P168ZLMU-A	PQRY-P144ZLMU-A
Minimum Circuit Ampacity		A	16	13
Maximum Overcurrent Protection		A	25	20
Circulating water	Water flow rate	G/h	1,902 + 1,902	
		G/min (gpm)	31.7 + 31.7	
		m^3/h	7.20 + 7.20	
		L/min	120 + 120	
		cfm	4.2 + 4.2	
	Pressure drop	psi	6.38	6.38
		kPa	44	44
	Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054	
		G/min (gpm)	19.8 + 19.8 ~ 50.9 + 50.9	
		m^3/h	4.5 + 4.5 ~ 11.6 + 11.6	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	11.0	9.5
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	57-1/8 x 34-11/16 x 21-11/16
		mm	1,450 x 880 x 550	1,450 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)	R410A x 13 lbs + 4 oz (6.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	510 (231)	510 (231)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
	Low pressure	in. (mm)	-	1-1/8 (28.58) Brazed
Drawing	External		KS94G407	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q200CBK joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1. Nominal cooling conditions (Test conditions are based on AHRI 1230)
   Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2. Nominal heating conditions (Test conditions are based on AHRI 1230)
   Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	$=m^3$/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

Heat Source Model			PQRY-P336ZSLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal) *1		BTU/h	336,000	
		kW	98.5	
	Power input	kW	26.84	
(575)	Current input	A	29.9	
(Rated)		BTU/h	320,000	
		kW	93.8	
	Power input	kW	24.76	25.85
(575)	Current input	A	27.6	28.8
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal) *2		BTU/h	378,000	
		kW	110.8	
	Power input	kW	20.77	
(575)	Current input	A	23.1	
(Rated)		BTU/h	361,000	
		kW	105.8	
	Power input	kW	19.16	20.05
(575)	Current input	A	21.3	22.3
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity		50~150% of heat source unit capacity	
	Model/Quantity		P06~P96/2~50 (Connectable branch pipe number is max. 48.)	
Sound pressure level (measured in anechoic room)		dB <A>	59.0	
Refrigerant piping diameter	High pressure	in. (mm)	1-1/8 (28.58) Brazed	
	Low pressure	in. (mm)	1-5/8 (41.28) Brazed	

Set Model

Model			PQRY-P168ZLMU-A	PQRY-P168ZLMU-A
Minimum Circuit Ampacity		A	16	16
Maximum Overcurrent Protection		A	25	25
Circulating water	Water flow rate	G/h	1,902 + 1,902	
		G/min (gpm)	31.7 + 31.7	
		m^3/h	7.20 + 7.20	
		L/min	120 + 120	
		cfm	4.2 + 4.2	
	Pressure drop	psi	6.38	6.38
		kPa	44	44
	Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054	
		G/min (gpm)	19.8 + 19.8 ~ 50.9 + 50.9	
		m^3/h	4.5 + 4.5 ~ 11.6 + 11.6	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	11.0	11.0
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	57-1/8 x 34-11/16 x 21-11/16
		mm	1,450 x 880 x 550	1,450 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)	R410A x 13 lbs + 4 oz (6.0 kg)
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	510 (231)	510 (231)
Heat exchanger			plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
		MPa	2.0	2.0
HIC circuit (HIC: Heat Inter-Changer)			-	-
Pipe between unit and distributor	High pressure	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
	Low pressure	in. (mm)	-	1-1/8 (28.58) Brazed
Drawing	External		KS94G407	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Q200CBK joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2, CMY-R160-J1 Main BC controller: CMB-P108, 1010, 1016NU-HA1 Sub BC controller: CMB-P104, 108NU-GB1, CMB-P1016NU-HB1	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°FD.B. (40°CD.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. The Heat Source twinning kit (low pressure) should be connected to the low pressure side of the heat source unit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 81°FD.B./66°FW.B. (27°CD.B./19°CW.B.), Water temperature: 86°F (30°C)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 68°FD.B. (20°CD.B.), Water temperature: 68°F (20°C)

Unit converter	
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

PQRY-P72, 96, 120ZLMU-A

Note1. Close a hole of the water piping, the refrigerant piping, the power supply, and the control wiring and unused knockout holes with the putty etc. so as not to infiltrate rain water etc.(field erection work)

Note2. At the time of product shipment, the front side piping specification serves as the local drainage connection. When connecting on the rear side, please remove the rear side plug sealing corks, and attach a front side. Ensure there is no leak after the attachment has been fitted.

Note3. Take notice of service space as Fig.A. (In case of single installation, 600mm(23-5/8) or more of back space asfront space makes easier access when servicing the unit from rear side.)

Note4. If water pipes or refrigerant pipes stretch upward, required space for service and maintenance due to replacement of control box is shown in Fig.B.

Note5. Environmental condition for installation; -20~40°C(DB) (-4~104 °F) as indoor installation.

Note6. In case the temperature around the heat source unit has possibility to drop under 0°C(32 °F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.
- Circulate the water all the time even if the heat source unit is not in operation.
- Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.

Note7. Ensure that the drain piping is downward with a pitch of more than 1/100.

Note8. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248 °F).

<Accessories>
- Refrigerant (high pressure) conn. pipe ····· 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Refrigerant (low pressure) conn. elbow ····· 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Water stopper ····· 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for water stopper ····· 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for field piping (high pressure, low pressure) ····· 1pc. each (P72/P96/P120 ; Packaged in the accessory kit)
- Sealing material for drain socket ····· 1pc. (P72/P96/P120 ; Packaged in the accessory kit)
- Pipe cover for low pressure ····· 1pc. (P72/P96/P120 ; Packaged in the accessory kit)

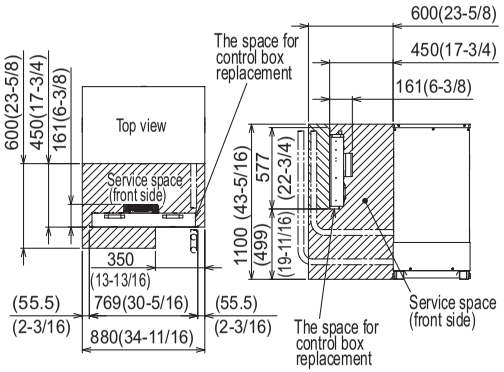
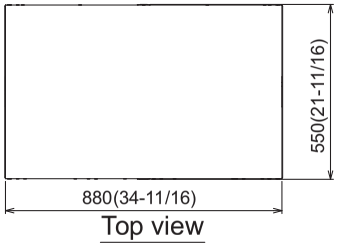


Fig.A Fig.B

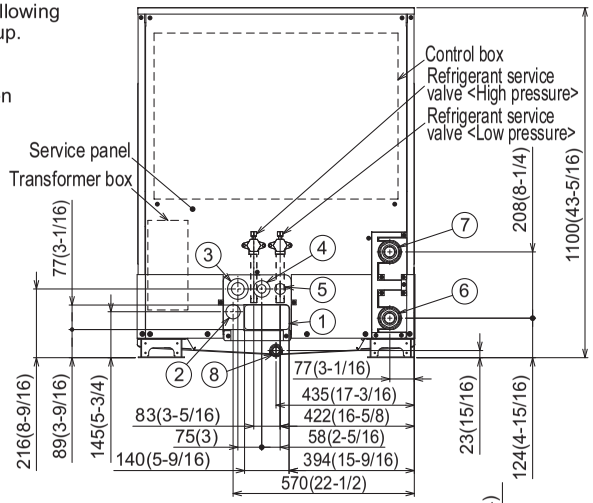
Connecting pipe specifications

Model	Diameter			
	Refrigerant pipe		Service valve	
	High pressure	Low pressure	High pressure	Low pressure
PQRY-P72ZLMU-A	ø15.88 Brazed (5/8) *1 *2	ø19.05 Brazed (3/4) *1 *2	ø19.05 (3/4)	ø25.4 (1)
PQRY-P96ZLMU-A	ø19.05 Brazed (3/4) *1	ø22.2 Brazed (7/8)*1 *2		
PQRY-P120ZLMU-A				

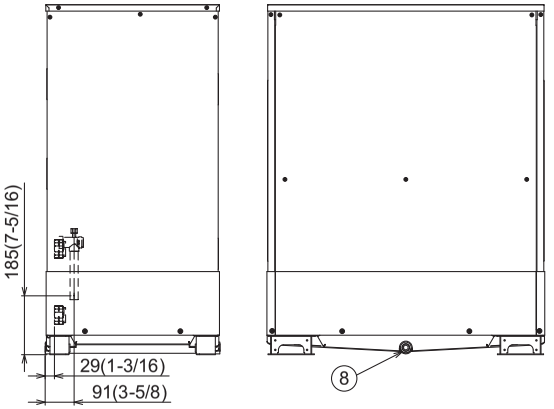
*1.Connect by using the connecting pipes and elbow that are supplied.
*2.Use the pipe joint (field supply) and connect to the refrigerant service valve piping.



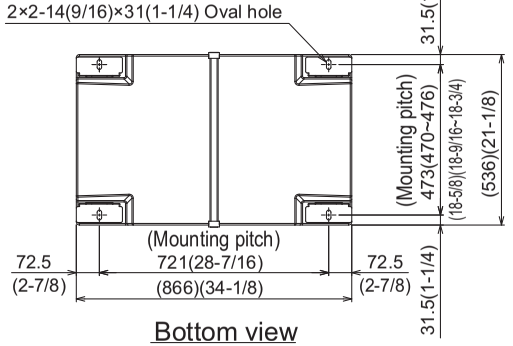
Top view



Front view



Right side view Back view



Bottom view

NO.	Usage		Specifications
①	For pipes	Front through hole	140 × 77 Knockout hole (5-9/16) (3-1/16)
②		Front through hole (Uses when twinning kit (optional parts) is mounted.)	ø45 Knockout hole (1-13/16)
③	For wires	Front through hole	ø62.7 or ø34.5 Knockout hole (2-1/2) (1-3/8)
④		Front through hole	ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
⑤	For transmission cables	Front through hole	ø34 Knockout hole (1-3/8)
⑥	Water pipe	inlet	NPT1-1/2 Screw
⑦		outlet	NPT1-1/2 Screw
⑧	Drain pipe	Rc3/4 Screw	

Unit: mm(in)

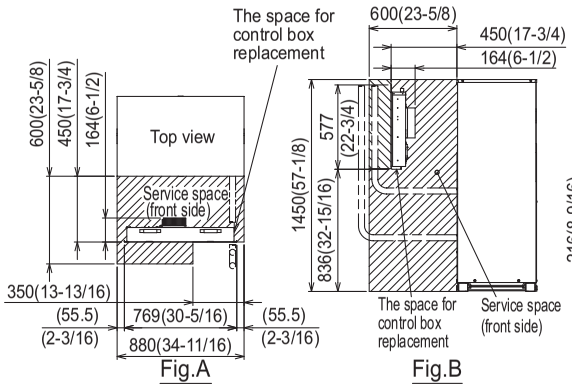
PQRY-P144, 168, 192ZLMU-A

Unit: mm(in)

Note1. Close a hole of the water piping, the refrigerant piping, the power supply, and the control wiring and unused knockout holes with the putty etc. so as not to infiltrate rain water etc.(field erection work)
Note2. At the time of product shipment, the front side piping specification serves as the local drainage connection. When connecting on the rear side, please remove the rear side plug sealing corks, and attach a front side. Ensure there is no leak after the attachment has been fitted.
Note3. Take notice of service space as Fig.A. (In case of single installation, 600mm(23-5/8) or more of back space as front space makes easier access when servicing the unit from rear side.)
Note4. If water pipes or refrigerant pipes stretch upward, required space for service and maintenance due to replacement of control box is shown in Fig.B.
Note5. Environmental condition for installation; -20~40°C(DB)(-4~104 °F) as indoor installation.
Note6. In case the temperature around the heat source unit has possibility to drop under 0°C(32 °F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.
- Circulate the water all the time even if the heat source unit is not in operation.
- Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.

Note7. Ensure that the drain piping is downward with a pitch of more than 1/100.
Note8. At brazing of pipes, wrap the refrigerant refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248 °F).

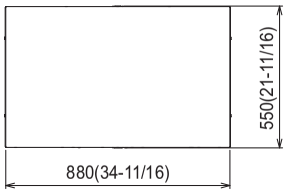
<Accessories>
- Refrigerant (high pressure) conn. pipe • • • • • 1pc. (P144/P168/P192 ; Packaged in the accessory kit)
- Refrigerant (low pressure) conn. pipe • • • • • 1pc. (P144/P168/P192 ; Packaged in the accessory kit)
- Water stopper • • • • • 1pc. (P144/P168/P192 ; Packaged in the accessory kit)
- Sealing material for water stopper • • • • • 1pc. (P144/P168/P192 ; Packaged in the accessory kit)
- Sealing material for field piping (high pressure, low pressure) • • • • • 1pc. each (P144/P168/P192 ; Packaged in the accessory kit)
- Sealing material for drain socket • • • • • 1pc. (P144/P168/P192 ; Packaged in the accessory kit)
- Pipe cover for low pressure • • • • • 1pc. (P144/P168/P192 ; Packaged in the accessory kit)
- Sealing material for base leg (two types) • • • • • 4pcs.each (P144/P168/P192 ; Packaged in the accessory kit)
- Sealing material for panel • • • • • 1pc. (P144/P168/P192 ; Packaged in the accessory kit)



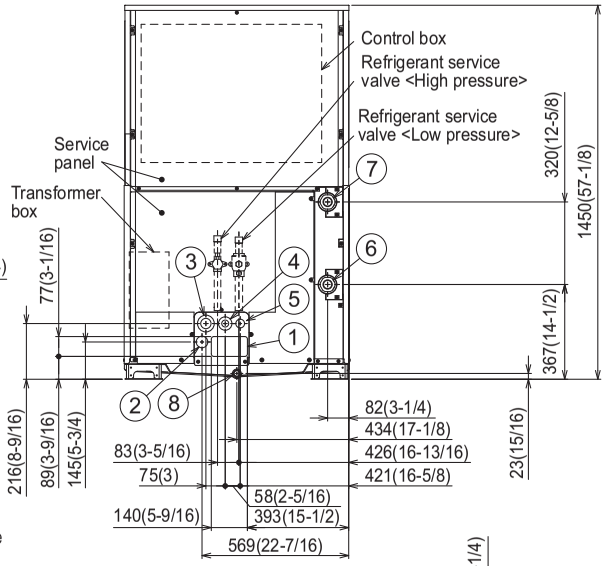
Connecting pipe specifications

Model	Diameter			
	Refrigerant pipe		Service valve	
	High pressure	Low pressure	High pressure	Low pressure
PQRY-P144ZLMU-A	ø22.2 Brazed (7/8)*1	ø28.58 Brazed (1-1/8)*1	ø25.4 (1)	ø28.58 (1-1/8)
PQRY-P168ZLMU-A				
PQRY-P192ZLMU-A				

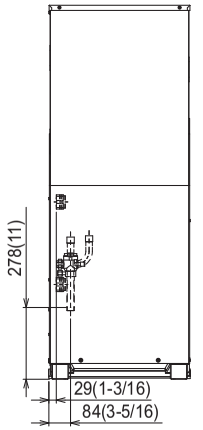
*1.Connect by using the connecting pipes that are supplied.



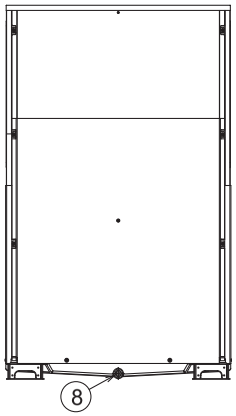
Top view



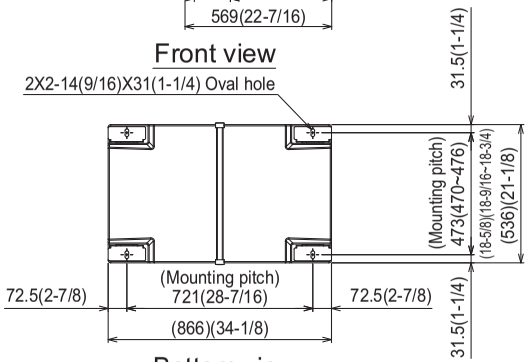
Front view



Right side view



Back view

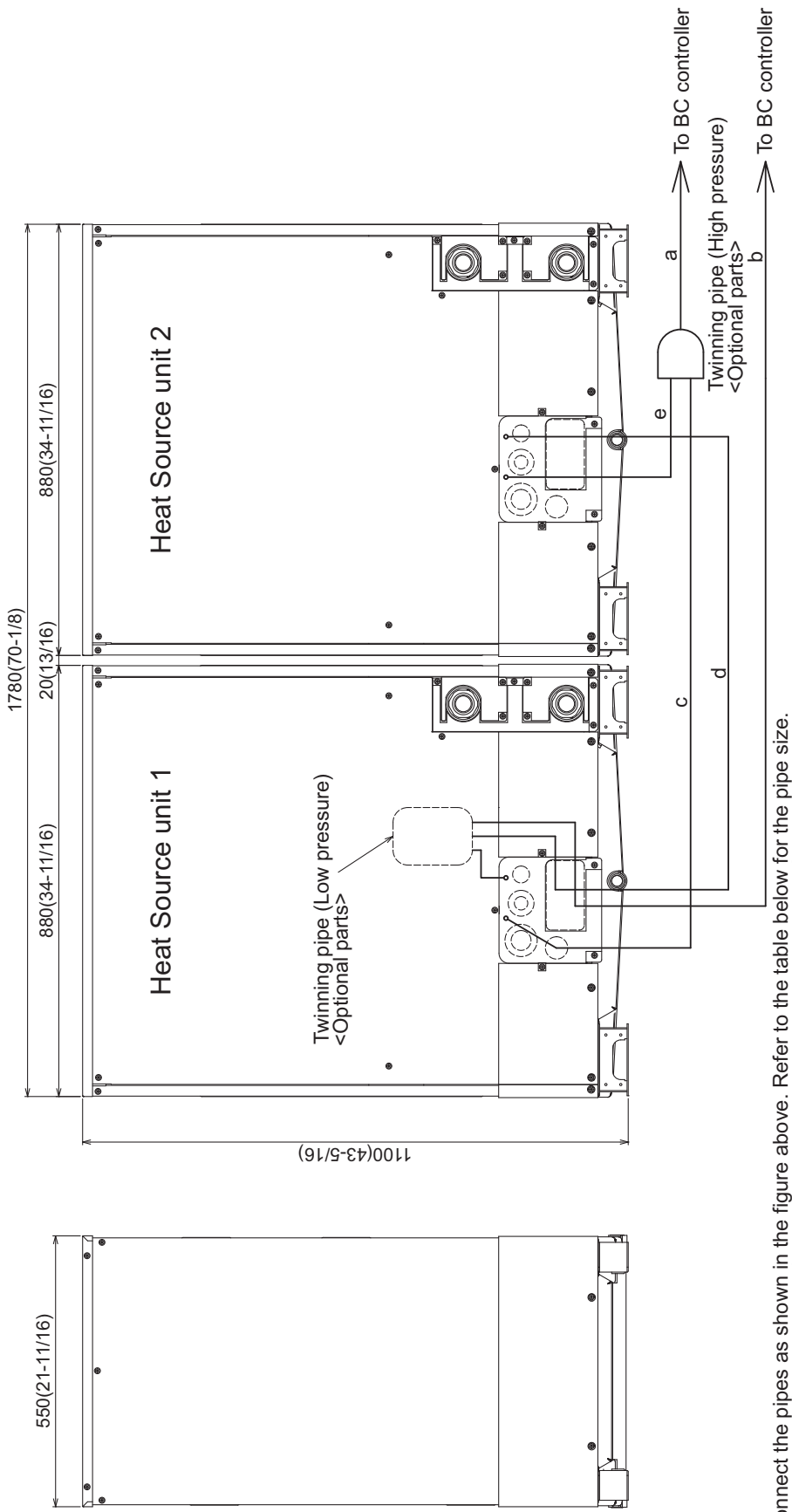


Bottom view

NO.	Usage		Specifications
①	For pipes	Front through hole	140 × 77 Knockout hole (5-9/16) (3-1/16)
②		Front through hole (Uses when twinning kit (optional parts) is mounted.)	ø45 Knockout hole (1-13/16)
③	For wires	Front through hole	ø62.7 or ø34.5 Knockout hole (2-1/2) (1-3/8)
④		Front through hole	ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
⑤	For transmission cables	Front through hole	ø34 Knockout hole (1-3/8)
⑥	Water pipe	inlet	NPT1-1/2 Screw
⑦		outlet	NPT1-1/2 Screw
⑧	Drain pipe	Rc3/4 Screw	

PQRY-P144, 168, 192, 216, 240ZSLMU-A

Unit: mm(in)



Note 1.Connect the pipes as shown in the figure above. Refer to the table below for the pipe size.
2.Twinning pipe (High pressure) should not be tilted more than 15 degrees from the horizontal plane.
3.See the Installation Manual for the details of Twinning pipe installation.
4.Only use the Twinning pipe by Mitsubishi (optional parts).

Twinning pipe connection size

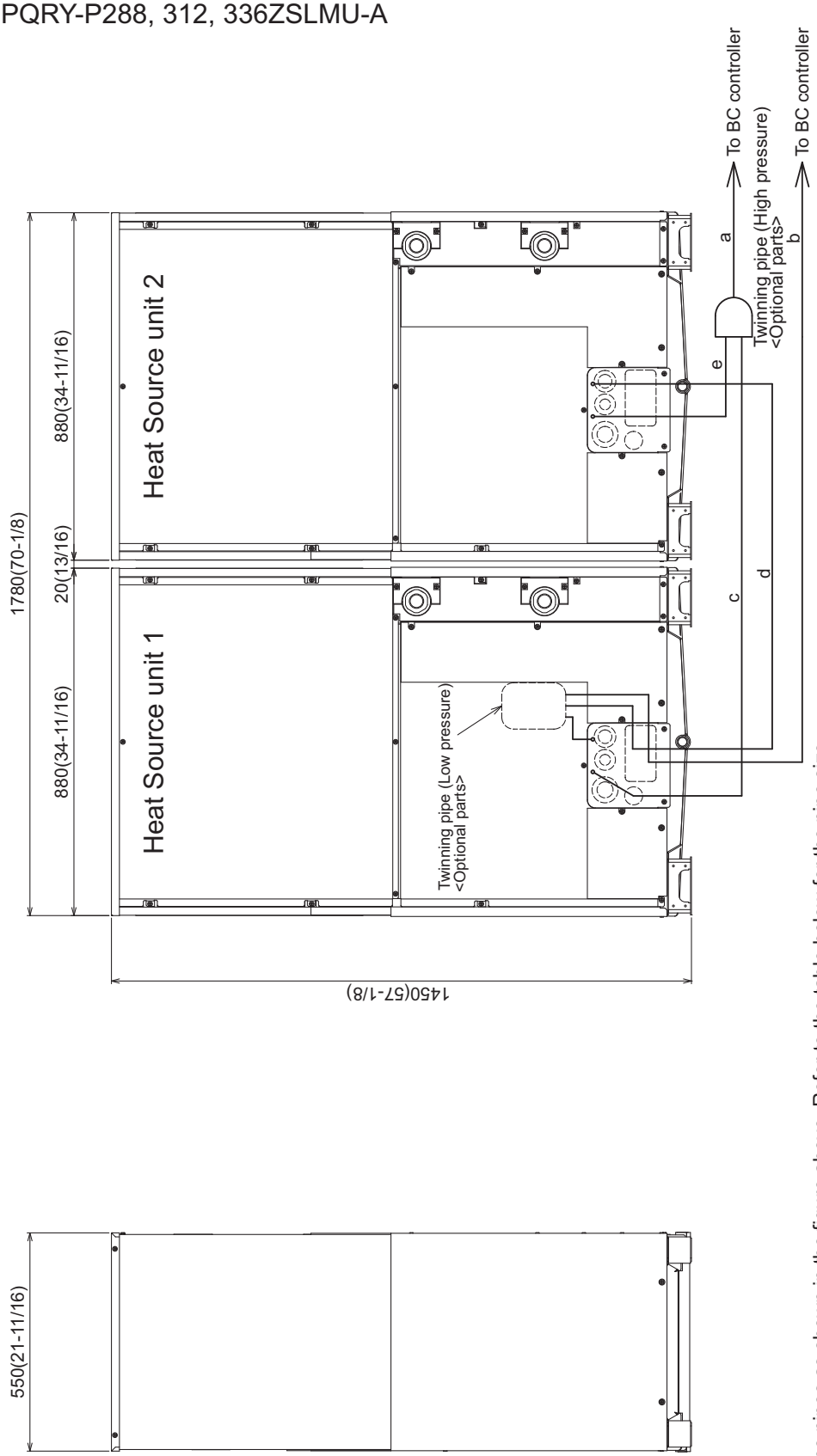
Package unit name			PQRY-P144ZSLMU-A	PQRY-P168ZSLMU-A	PQRY-P192ZSLMU-A	PQRY-P216ZSLMU-A	PQRY-P240ZSLMU-A
Component unit name	Heat Source unit 1		PQRY-P72ZLMU-A	PQRY-P96ZLMU-A	PQRY-P96ZLMU-A	PQRY-P120ZLMU-A	PQRY-P120ZLMU-A
	Heat Source unit 2		PQRY-P72ZLMU-A	PQRY-P72ZLMU-A	PQRY-P96ZLMU-A	PQRY-P96ZLMU-A	PQRY-P120ZLMU-A
Twinning pipe Kit(optional parts)			CMY-Q100CBK2				
BC controller~Twinning pipe	High pressure	a	ø22.2(7/8)			ø22.2(7/8) *1	
	Low pressure	b	ø28.58(1-1/8)			ø34.93(1-3/8)	

	Unit model	High pressure	Low pressure
		c or e	d
Twinning pipe~Heat source unit	P72	ø5.88(5/8) *2	ø19.05(3/4) *2
	P96	ø19.05(3/4)	ø22.2(7/8)
	P120		

*1.When the piping length is 65 m or longer, use the ø28.58(1-1/8) pipe for the part that exceeds 65 m.
*2.When the package unit name"PQRY-P168ZSLMU-A", use the ø19.05(3/4) pipe for high pressure and the ø22.2(7/8) pipe for low pressure.

PQRY-P288, 312, 336ZSLMU-A

Unit: mm(in)



Note 1.Connect the pipes as shown in the figure above. Refer to the table below for the pipe size.
2.Twinning pipe (High pressure) should not be tilted more than 15 degrees from the horizontal plane.
3.See the Installation Manual for the details of Twinning pipe installation.
4.Only use the Twinning pipe by Mitsubishi (optional parts).

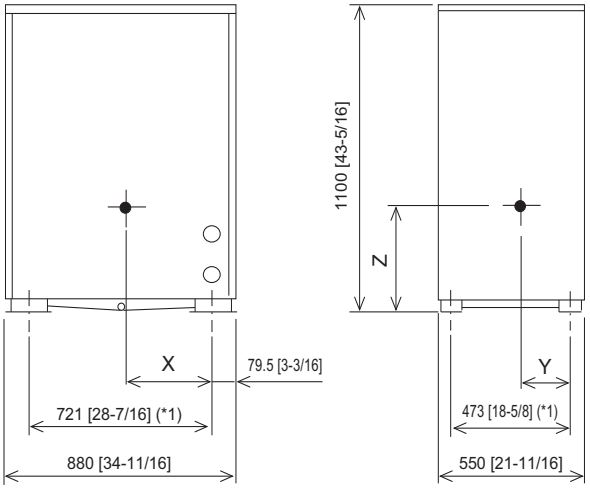
Twinning pipe connection size

Package unit name			PQRY-P288ZSLMU-A	PQRY-P312ZSLMU-A	PQRY-P336ZSLMU-A
Component unit name	Heat Source unit 1		PQRY-P144ZLMU-A	PQRY-P168ZLMU-A	PQRY-P168ZLMU-A
	Heat Source unit 2		PQRY-P144ZLMU-A	PQRY-P144ZLMU-A	PQRY-P168ZLMU-A
Twinning pipe Kit(optional parts)			CMY-Q200CBK		
BC controller~Twinning pipe	High pressure	a	ø28.58(1-1/8)		
	Low pressure	b	ø34.93(1-3/8)		ø41.28(1-5/8)

	Unit model	High pressure c or e	Low pressure d
Twinning pipe~Heat source unit	P144	ø22.2(7/8)	ø28.58(1-1/8)
	P168		

PQRY-P72, 96, 120ZLMU-A

Unit: mm [in.]

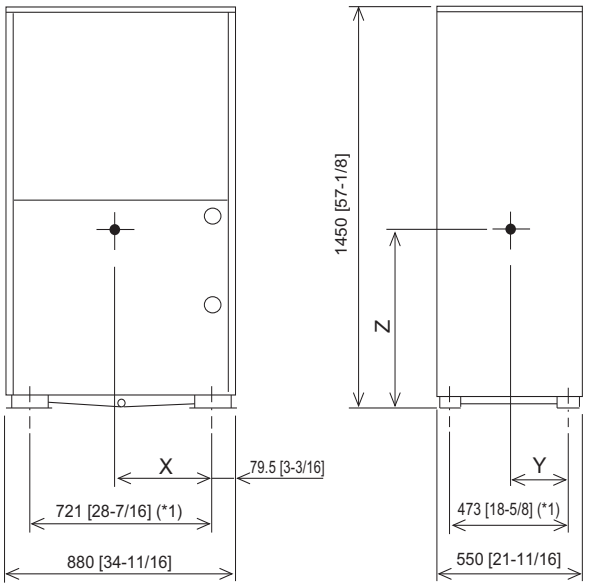


Model	X	Y	Z
PQRY-P72ZLMU-A	367 [14-1/2]	227 [8-15/16]	434 [17-1/8]
PQRY-P96ZLMU-A	367 [14-1/2]	227 [8-15/16]	434 [17-1/8]
PQRY-P120ZLMU-A	367 [14-1/2]	227 [8-15/16]	434 [17-1/8]

*1 Mounting Pitch

PQRY-P144, 168, 192ZLMU-A

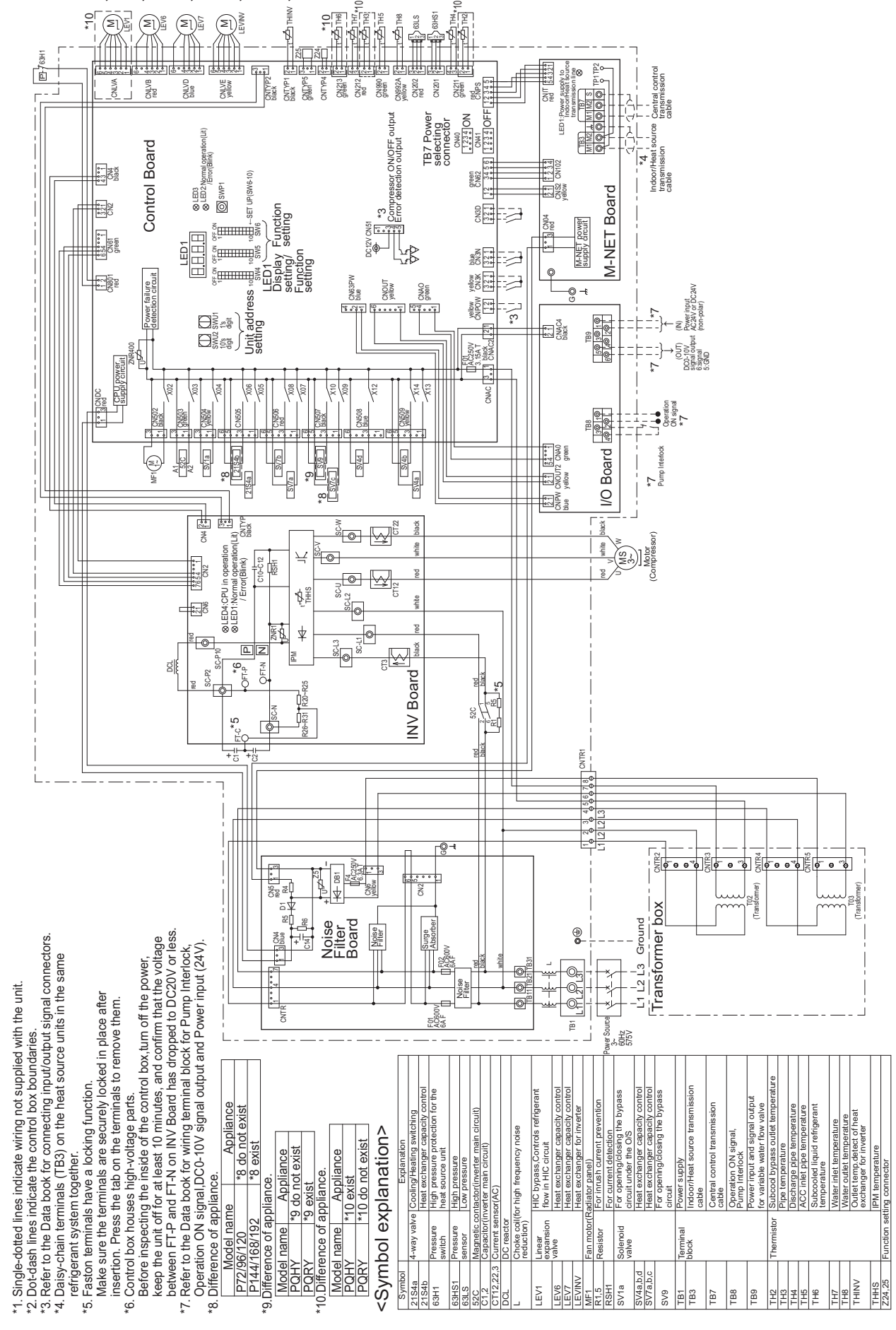
Unit: mm [in.]



Model	X	Y	Z
PQRY-P144ZLMU-A	398 [15-11/16]	228 [9]	618 [24-3/8]
PQRY-P168ZLMU-A	398 [15-11/16]	228 [9]	618 [24-3/8]
PQRY-P192ZLMU-A	398 [15-11/16]	228 [9]	618 [24-3/8]

*1 Mounting Pitch

PQRY-P72, 96, 120, 144, 168, 192ZLMU-A



*1. Single-dotted lines indicate wiring not supplied with the unit.
*2. Dot-dash lines indicate the control box boundaries.
*3. Refer to the Data book for connecting input/output signal connectors.
*4. Daisy-chain terminals (TB3) on the heat source units in the same refrigerant system together.
*5. Faston terminals have a locking function.
Make sure the terminals are securely locked in place after insertion. Press the tab on the terminals to remove them.
*6. Control box houses high-voltage parts.
Before inspecting the inside of the control box, turn off the power, keep the unit off for at least 10 minutes, and confirm that the voltage between FT-P and FT-N on INV Board has dropped to DC20V or less.
*7. Refer to the Data book for wiring terminal block for Pump Interlock, Operation ON signal,DC0-10V signal output and Power input (24V).
*8. Difference of appliance.

Model name	Appliance
P72/96/120	*8 do not exist
P144/168/192	*8 exist

*9.Difference of appliance.

Model name	Appliance
PQHY	*9 do not exist
PQRY	*9 exist

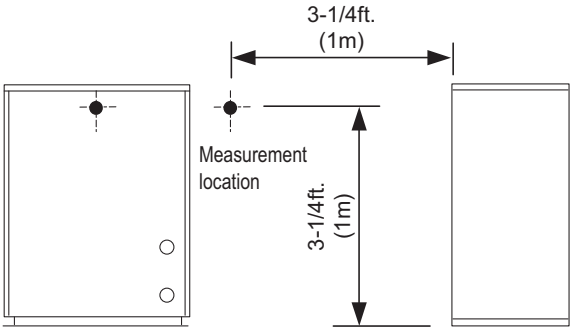
*10.Difference of appliance.

Model name	Appliance
PQHY	*10 exist
PQRY	*10 do not exist

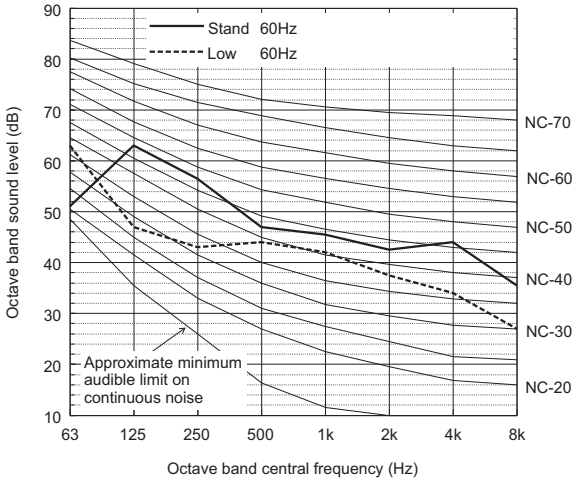
<Symbol explanation>

Symbol	Explanation	
21S4a	4-way valve	Cooling/Heating switching
21S4b		Heat exchanger capacity control
63H1	Pressure switch	High pressure protection for the heat source unit
63HS1	Pressure sensor	High pressure
63LS		Low pressure
52C	Magnetic contactor	(Inverter main circuit)
CT1	Capacitor	(Inverter main circuit)
CT12,22,3	Current sensor	(AC)
DCL	DC reactor	
L	Choke coil	(for high frequency noise reduction)
LEV1	Linear expansion valve	HIC bypass,Controls refrigerant flow in HIC circuit
LEV6		Heat exchanger capacity control
LEV7		Heat exchanger capacity control
LEVINV		Heat exchanger for inverter
MF1	Fan motor	(Radiator panel)
R1,5	Resistor	For inrush current prevention
RSH1		For current detection
SV1a	Solenoid valve	For opening/closing the bypass circuit under the O/S
SV4a,b,d		Heat exchanger capacity control
SV7a,b,c		Heat exchanger capacity control
SV9		For opening/closing the bypass circuit
TB1	Terminal block	Power supply
TB3		Indoor/Heat source transmission cable
TB7		Central control transmission cable
TB8		Operation ON signal, Pump Interlock
TB9		Power input and signal output for variable water flow valve
TH2	Thermistor	Subcool bypass outlet temperature
TH3		Pipe temperature
TH4		Discharge pipe temperature
TH5		ACC inlet pipe temperature
TH6		Subcooled liquid refrigerant temperature
TH7		Water inlet temperature
TH8		Water outlet temperature
THINV		Outlet temp.detect of heat exchanger for inverter
THHS		IPM temperature
Z24,25	Function setting connector	

Measurement condition
PQRY-P72, 96, 120ZLMU-A



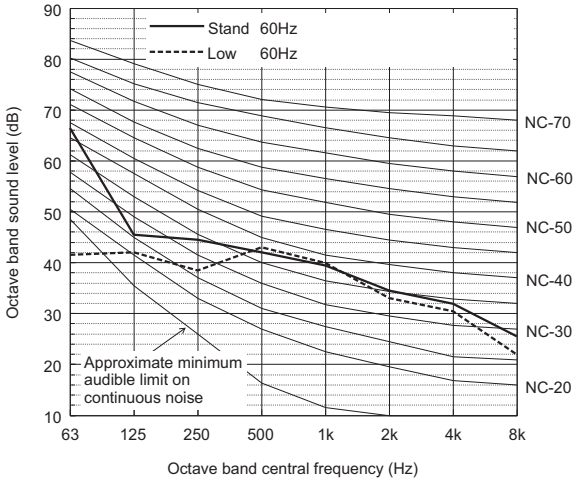
Sound level of PQRY-P120ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	51.0	63.0	56.5	47.0	45.5	42.5	44.0	35.5	54.0
Low noise mode	60Hz	63.0	47.0	43.0	44.0	42.0	37.5	34.0	27.0	47.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

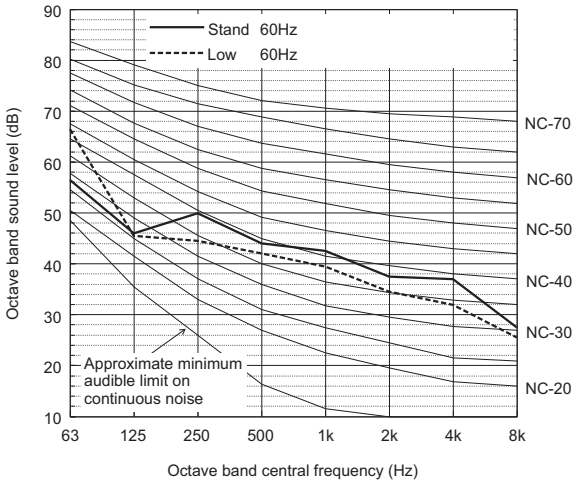
Sound level of PQRY-P72ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	66.5	45.5	44.5	42.0	39.5	34.5	32.0	25.5	46.0
Low noise mode	60Hz	41.5	42.0	38.5	43.0	40.0	33.0	30.5	22.0	44.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQRY-P96ZLMU-A

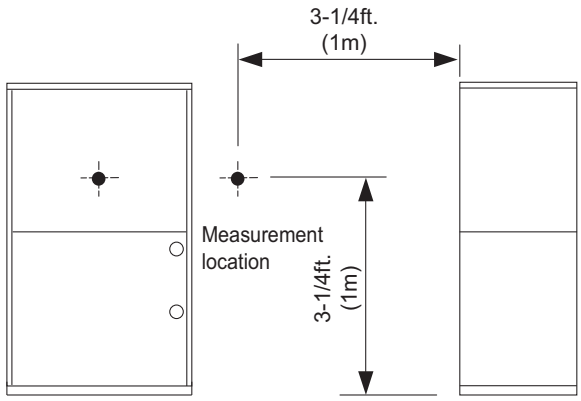


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	56.5	46.0	50.0	44.0	42.5	37.5	37.0	27.5	48.0
Low noise mode	60Hz	66.5	45.5	44.5	42.0	39.5	34.5	32.0	25.5	46.0

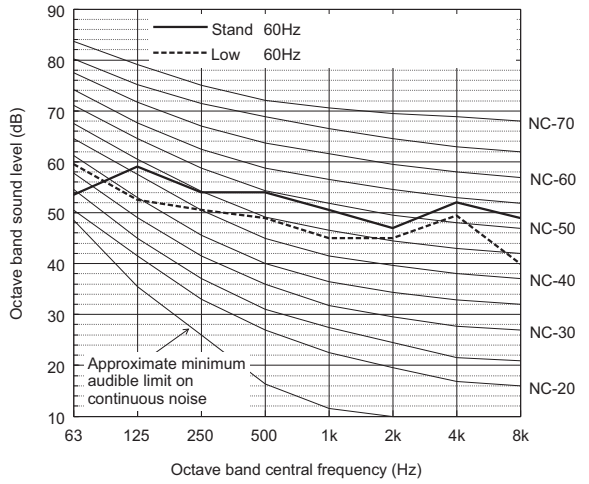
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.
  For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

Measurement condition
PQRY-P144, 168, 192ZLMU-A



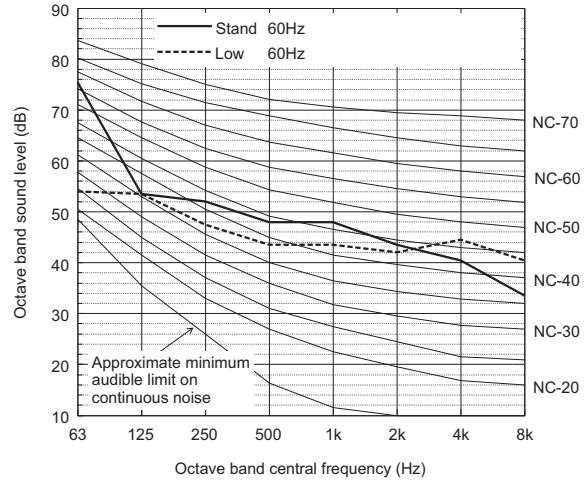
Sound level of PQRY-P192ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	53.5	59.0	54.0	54.0	50.5	47.0	52.0	49.0	58.0
Low noise mode	60Hz	59.5	52.5	50.5	49.0	45.0	45.0	49.5	40.0	54.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

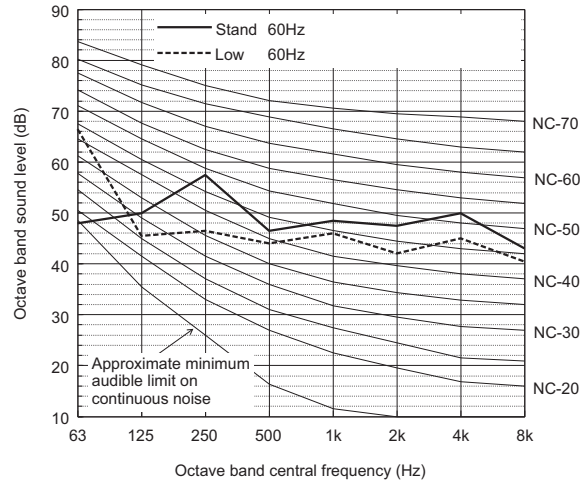
Sound level of PQRY-P144ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	75.5	53.5	52.0	48.0	48.0	43.5	40.5	33.5	54.0
Low noise mode	60Hz	54.0	53.5	47.5	43.5	43.5	42.0	44.5	40.5	50.5

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQRY-P168ZLMU-A

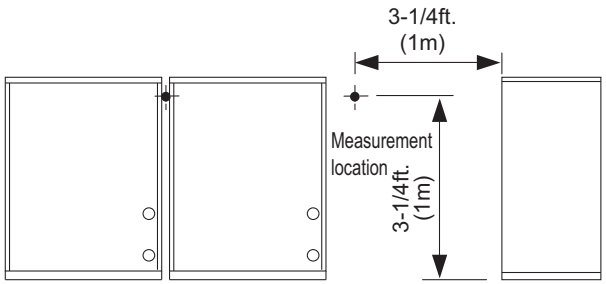


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	48.0	50.0	57.5	46.5	48.5	47.5	50.0	43.0	56.0
Low noise mode	60Hz	66.5	45.5	46.5	44.0	46.0	42.0	45.0	40.5	51.5

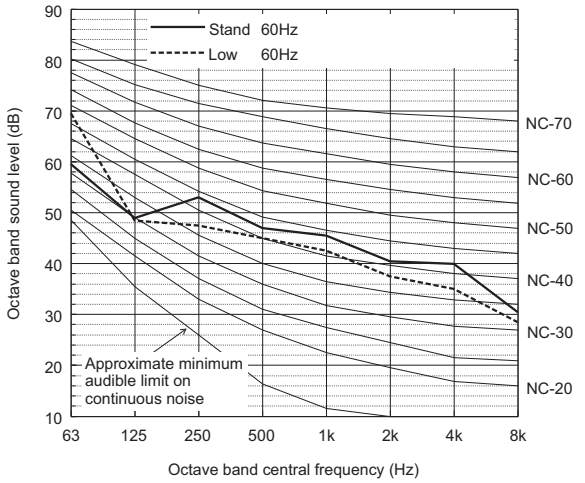
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.
  For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

Measurement condition
PQRY-P144, 168, 192, 216, 240ZSLMU-A



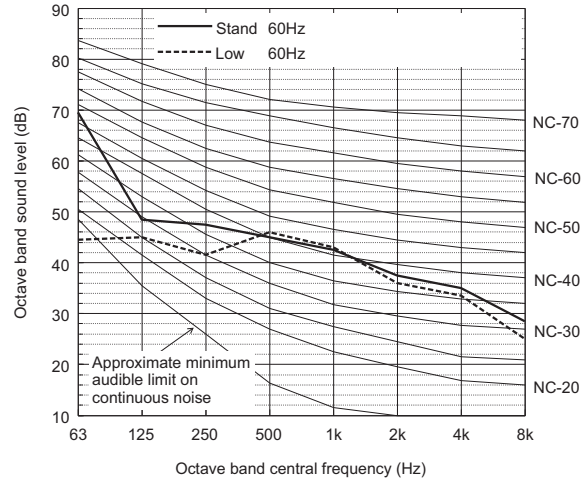
Sound level of PQRY-P192ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	59.5	49.0	53.0	47.0	45.5	40.5	40.0	30.5	51.0
Low noise mode	60Hz	69.5	48.5	47.5	45.0	42.5	37.5	35.0	28.5	49.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

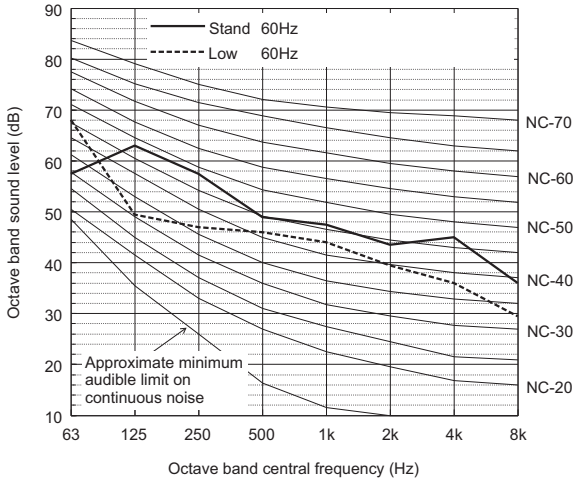
Sound level of PQRY-P144ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	69.5	48.5	47.5	45.0	42.5	37.5	35.0	28.5	49.0
Low noise mode	60Hz	44.5	45.0	41.5	46.0	43.0	36.0	33.5	25.0	47.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

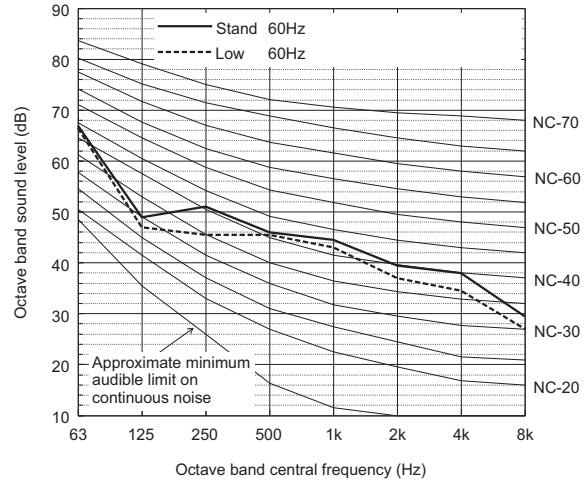
Sound level of PQRY-P216ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	57.5	63.0	57.5	49.0	47.5	43.5	45.0	36.0	55.0
Low noise mode	60Hz	68.0	49.5	47.0	46.0	44.0	39.5	36.0	29.5	49.5

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

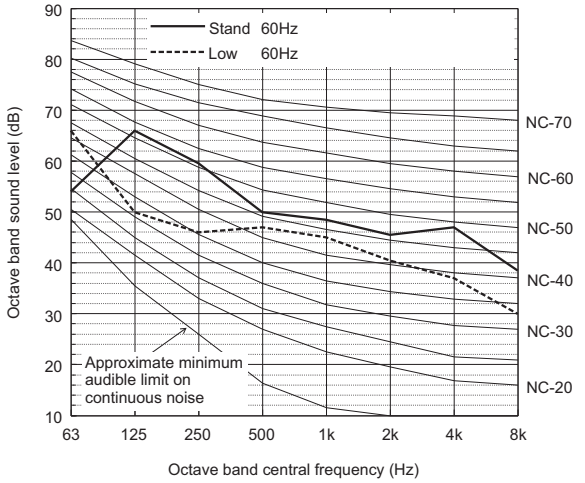
Sound level of PQRY-P168ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	67.0	49.0	51.0	46.0	44.5	39.5	38.0	29.5	50.0
Low noise mode	60Hz	66.5	47.0	45.5	45.5	43.0	37.0	34.5	27.0	48.0

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQRY-P240ZSLMU-A

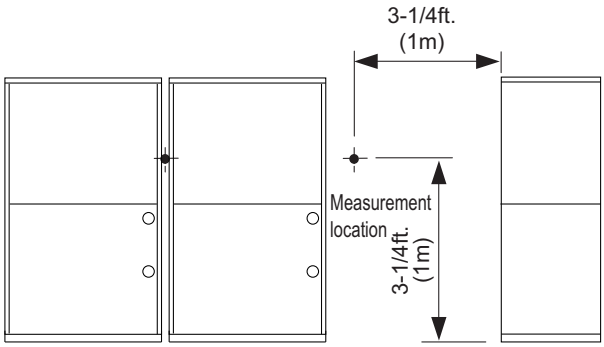


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	54.0	66.0	59.5	50.0	48.5	45.5	47.0	38.5	57.0
Low noise mode	60Hz	66.0	50.0	46.0	47.0	45.0	40.5	37.0	30.0	50.0

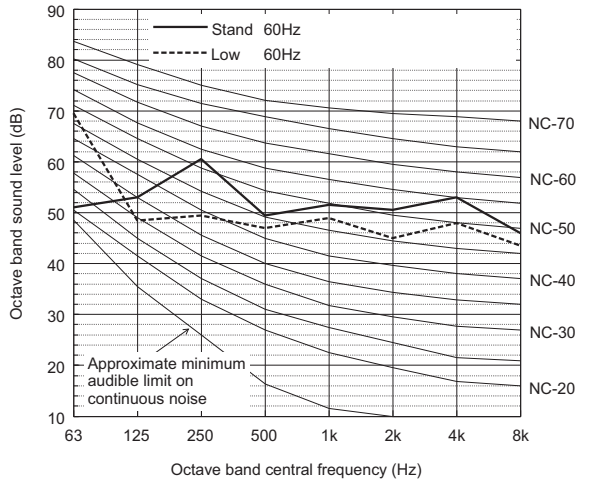
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.
  For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

Measurement condition
PQRY-P288, 312, 336ZSLMU-A



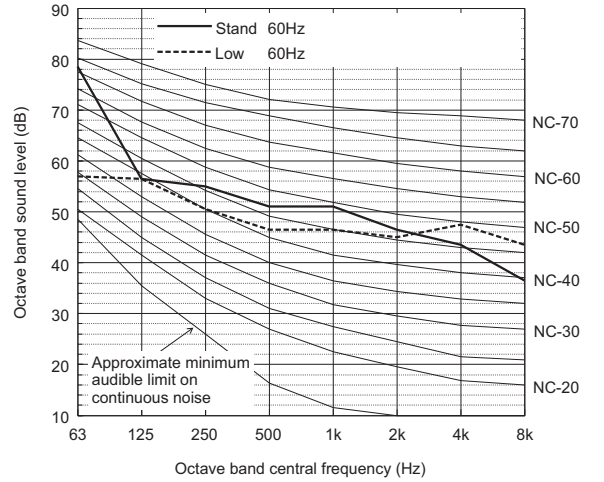
Sound level of PQRY-P336ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	51.0	53.0	60.5	49.5	51.5	50.5	53.0	46.0	59.0
Low noise mode	60Hz	69.5	48.5	49.5	47.0	49.0	45.0	48.0	43.5	54.5

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

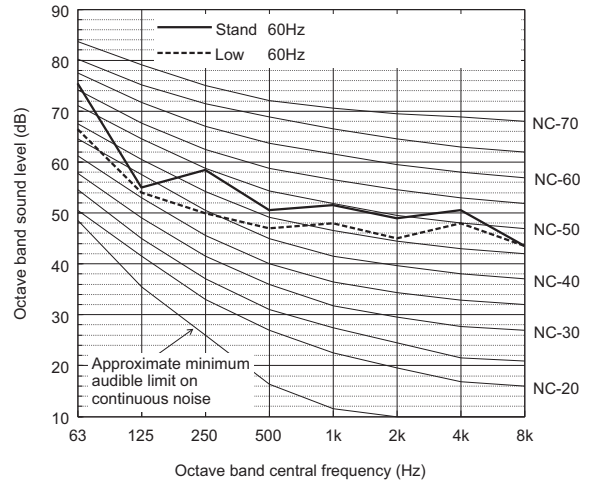
Sound level of PQRY-P288ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	78.5	56.5	55.0	51.0	51.0	46.5	43.5	36.5	57.0
Low noise mode	60Hz	57.0	56.5	50.5	46.5	46.5	45.0	47.5	43.5	53.5

When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQRY-P312ZSLMU-A

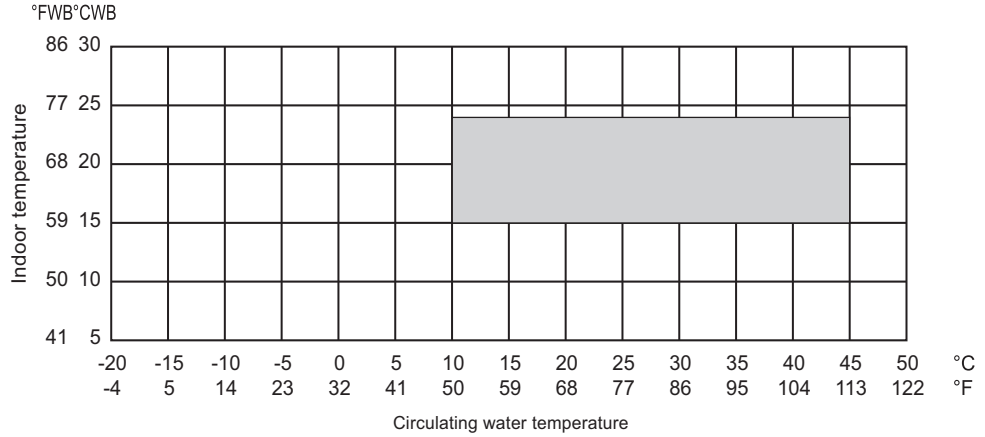


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	75.5	55.0	58.5	50.5	51.5	49.0	50.5	43.5	58.0
Low noise mode	60Hz	66.5	54.0	50.0	47.0	48.0	45.0	48.0	43.5	54.0

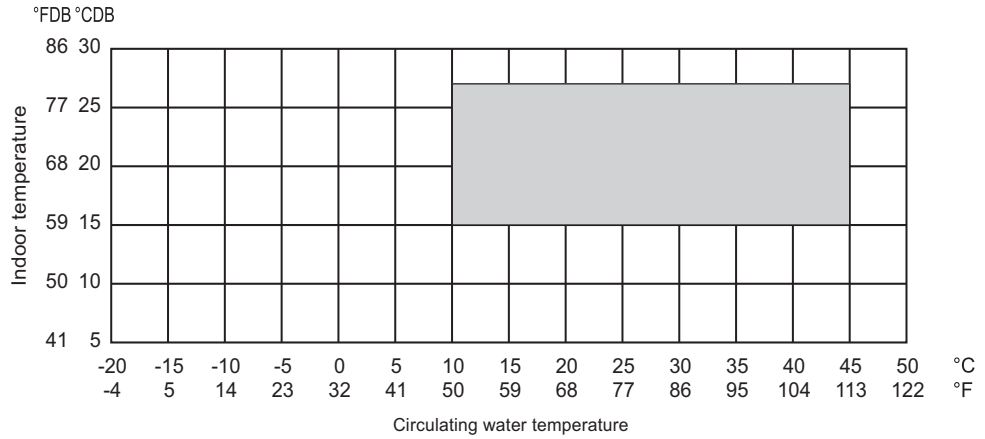
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.
  For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

• Cooling



• Heating



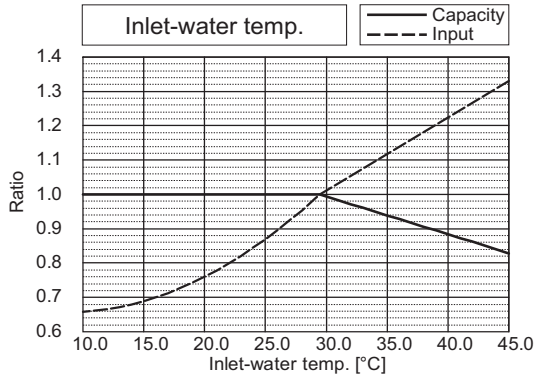
• Combination of cooling/heating operation (Cooling main or Heating main)

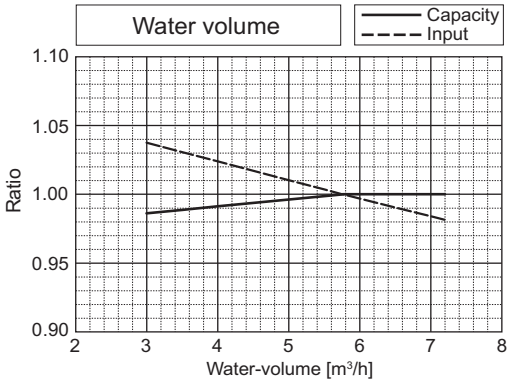
Water temperature	Indoor temperature	
	Cooling	Heating
10 to 45˚C (50 to 113˚F)	15 to 24˚CWB (59 to 75˚FWB)	15 to 27˚CDB (59 to 81˚FDB)

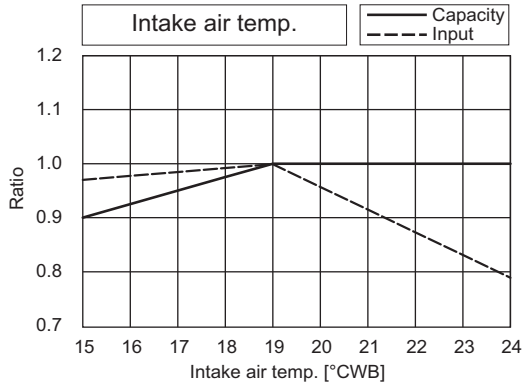
7-1. Correction by temperature

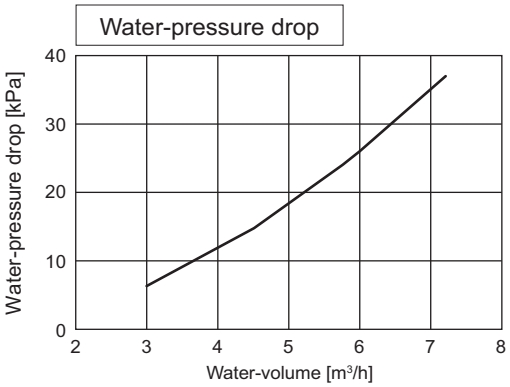
CITY MULTI could have varied capacity at different designing temperature. Using the nominal cooling/heating capacity value and the ratio below, the capacity can be observed at various temperature.

PQRY-		P72ZLMU			
Nominal Cooling Capacity	kW	21.1	Rated Cooling Capacity	kW	20.2
	BTU/h	72,000		BTU/h	69,000
Input	kW	3.23	Input	kW	(Non-Ducted) 2.96 (Ducted) 3.12

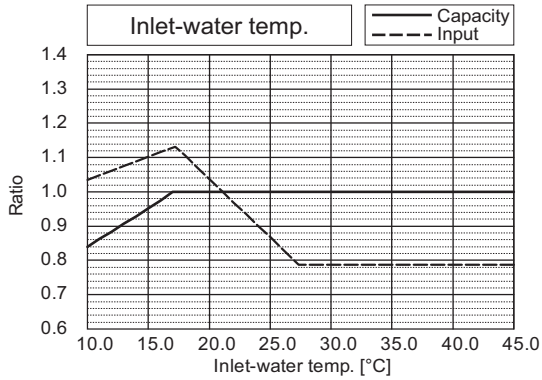


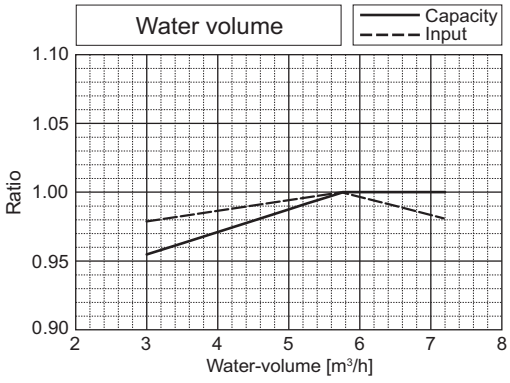


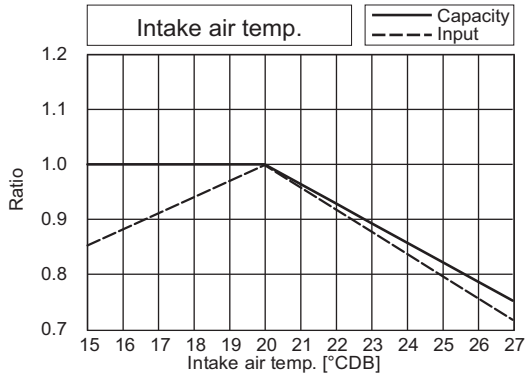


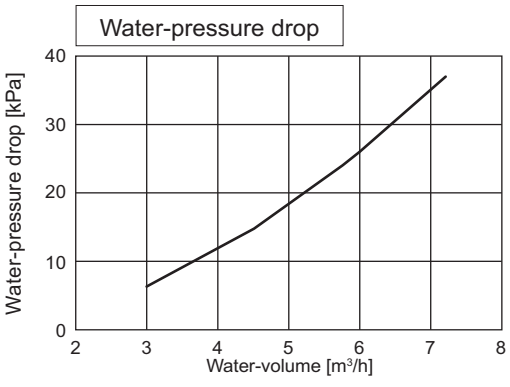


PQRY-		P72ZLMU			
Nominal Heating Capacity	kW	23.4	Rated Heating Capacity	kW	22.3
	BTU/h	80,000		BTU/h	76,000
Input	kW	3.63	Input	kW	(Non-Ducted) 3.34 (Ducted) 3.36

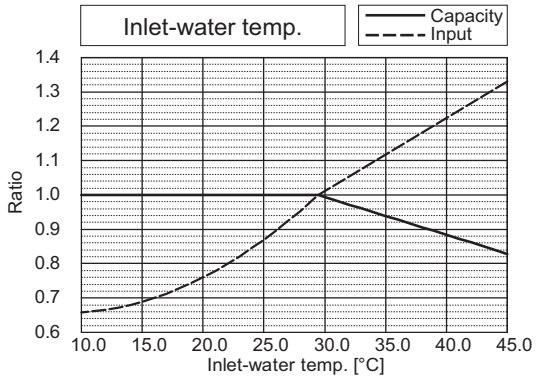


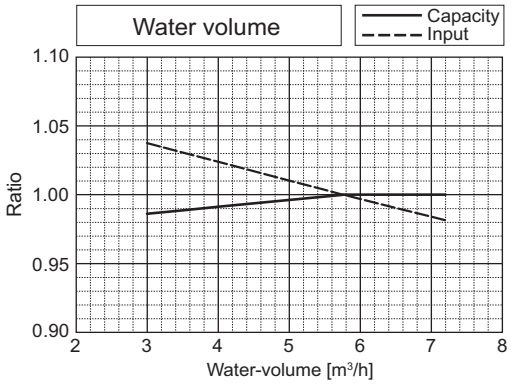


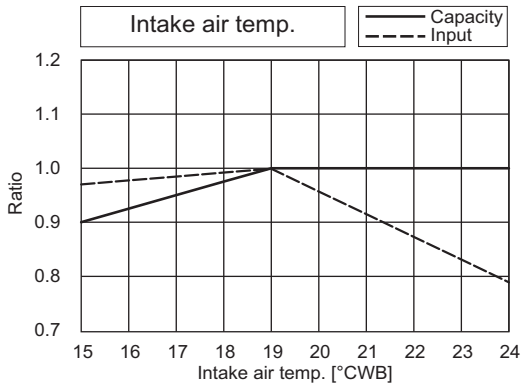


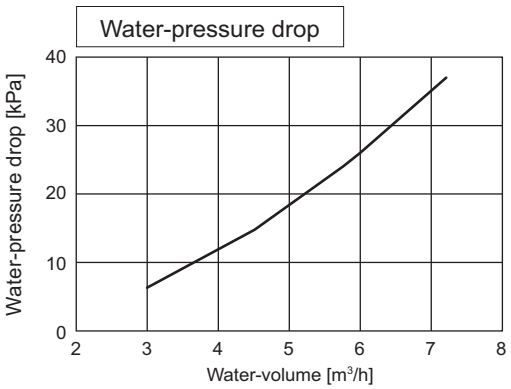


PQRY-		P96ZLMU			
Nominal Cooling Capacity	kW	28.1	Rated Cooling Capacity	kW	27.0
	BTU/h	96,000		BTU/h	92,000
Input	kW	4.65	Input	kW	(Non-Ducted) 4.26 (Ducted) 5.19

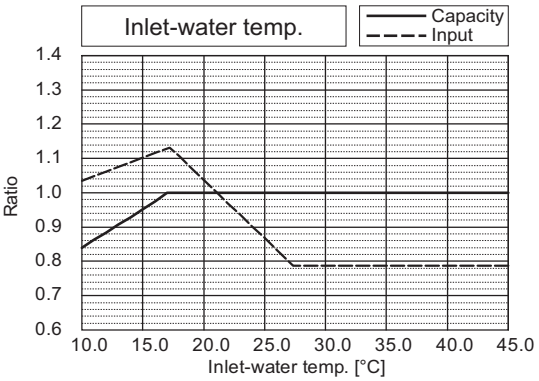


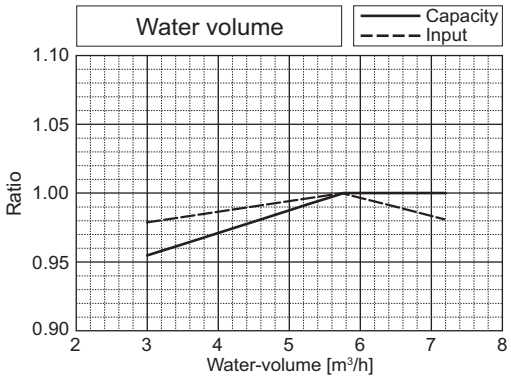


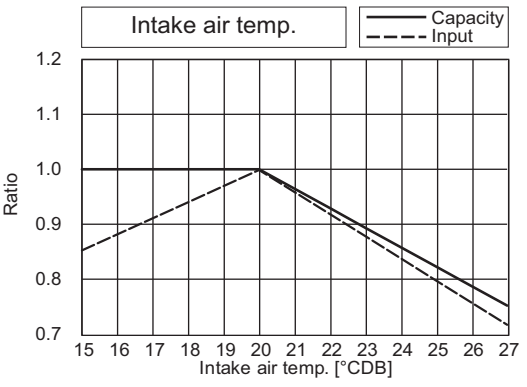


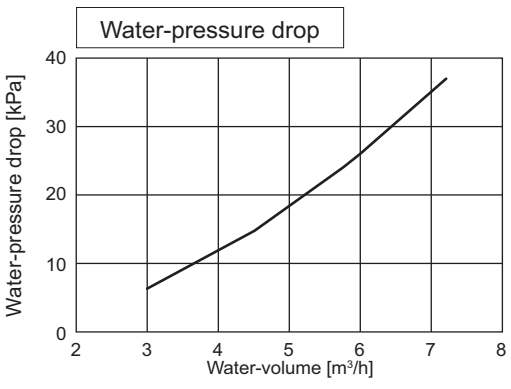


PQRY-		P96ZLMU			
Nominal Heating Capacity	kW	31.7	Rated Heating Capacity	kW	30.2
	BTU/h	108,000		BTU/h	103,000
Input	kW	5.05	Input	kW	(Non-Ducted) 4.65 (Ducted) 4.48

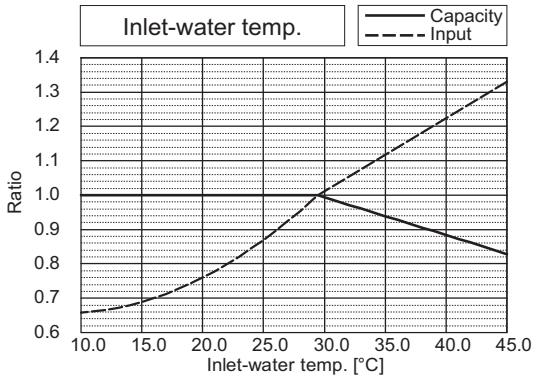


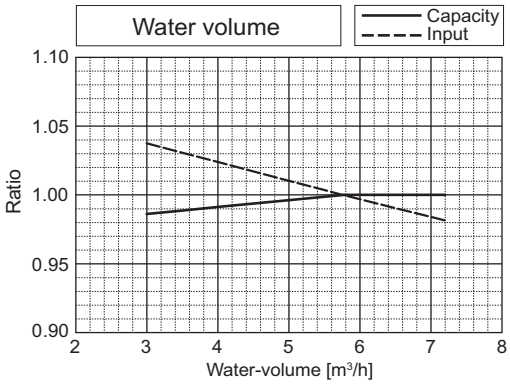


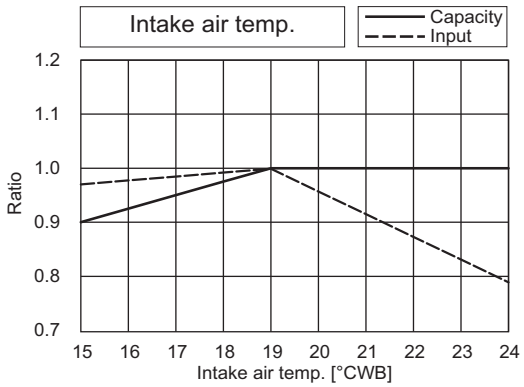


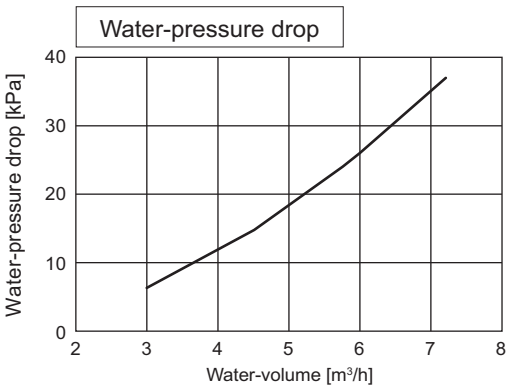


PQRY-		P120ZLMU			
Nominal Cooling Capacity	kW	35.2	Rated Cooling Capacity	kW	33.4
	BTU/h	120,000		BTU/h	114,000
Input	kW	7.24	Input	kW	(Non-Ducted) 6.66 (Ducted) 7.35

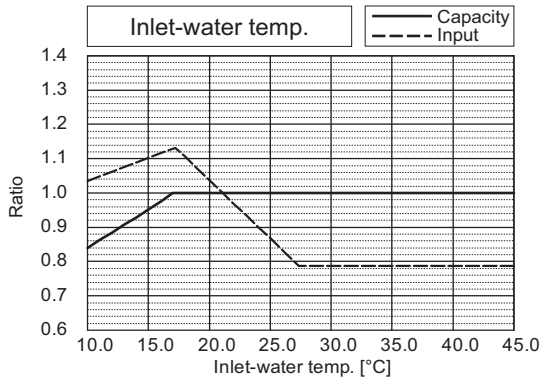


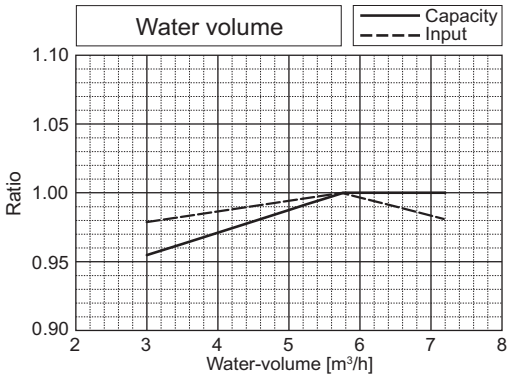


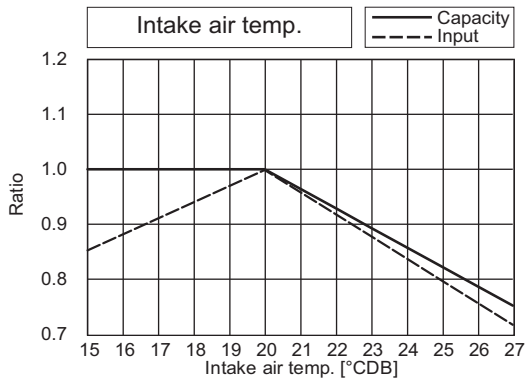


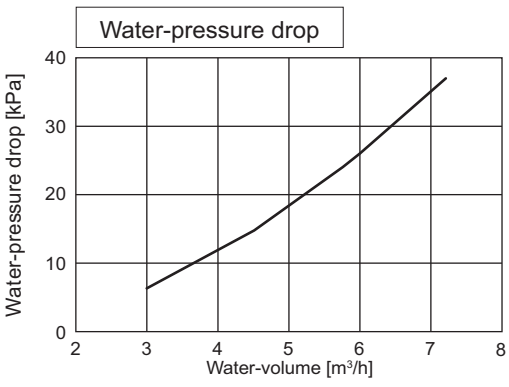


PQRY-		P120ZLMU			
Nominal Heating Capacity	kW	39.6	Rated Heating Capacity	kW	37.8
	BTU/h	135,000		BTU/h	129,000
Input	kW	6.83	Input	kW	(Non-Ducted) 6.29 (Ducted) 5.92



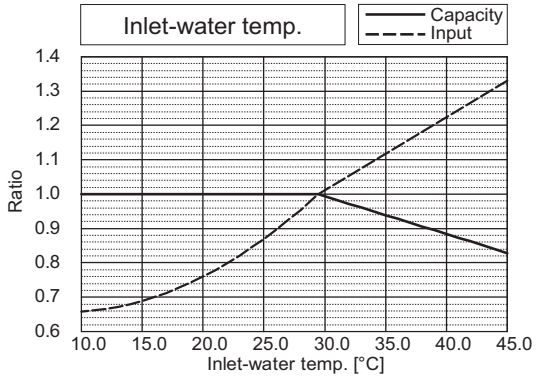


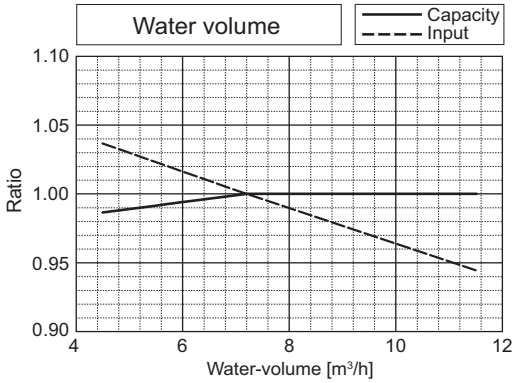


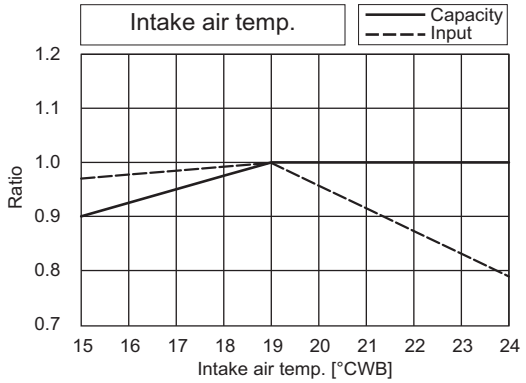


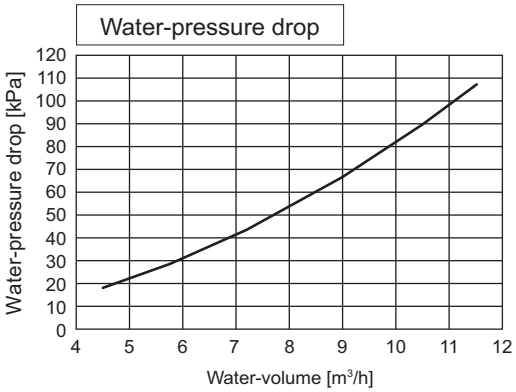
WR2 575V

PQRY-		P144ZLMU			
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	8.78	Input	kW	(Non-Ducted) 8.07 (Ducted) 9.98

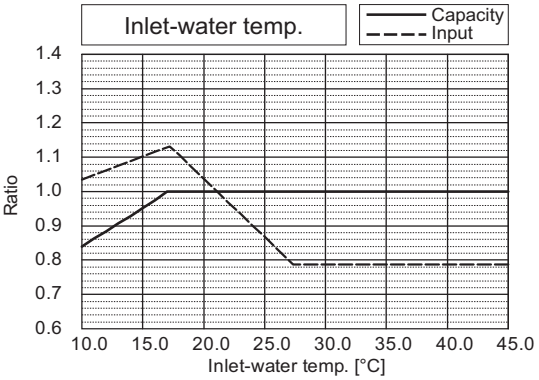


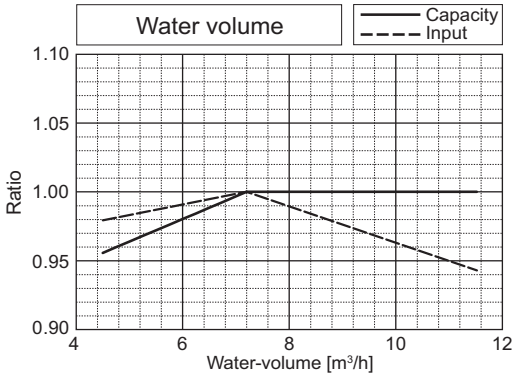


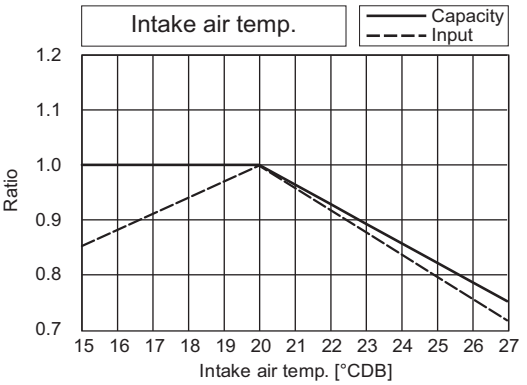


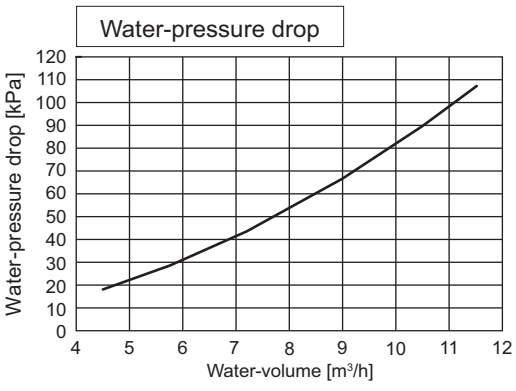


PQRY-		P144ZLMU			
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	8.11	Input	kW	(Non-Ducted) 7.47 (Ducted) 7.90

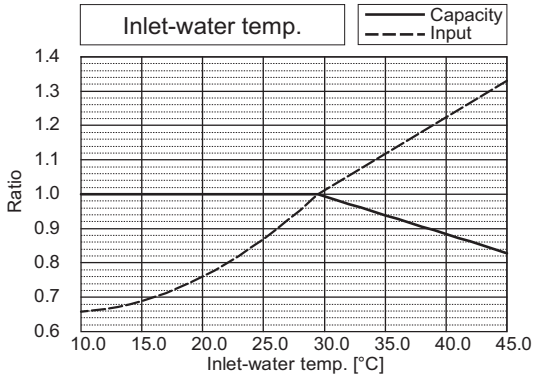


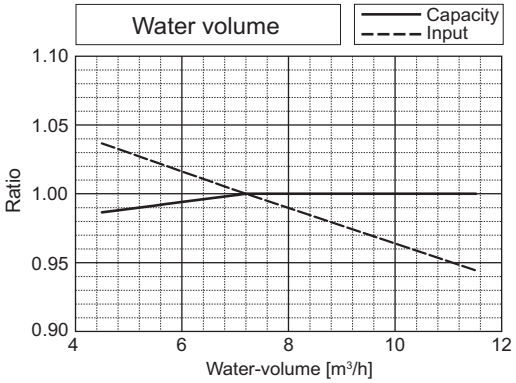


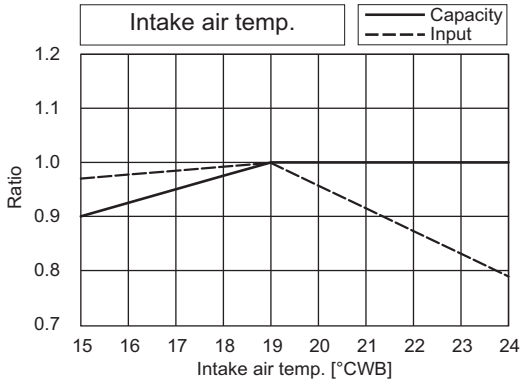


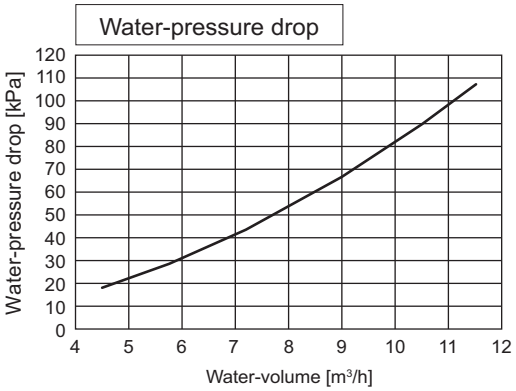


PQRY-		P168ZLMU			
Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	12.05	Input	kW	(Non-Ducted) 11.10 (Ducted) 11.88

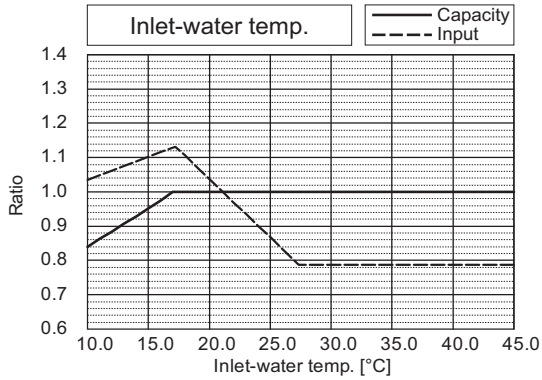


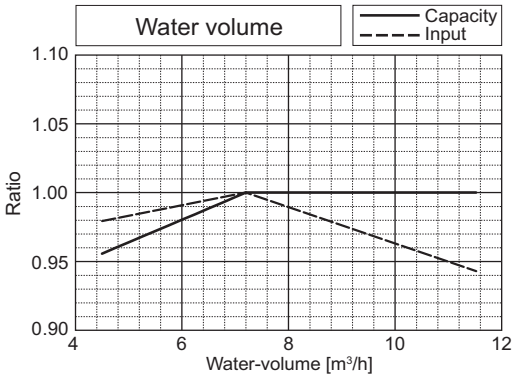


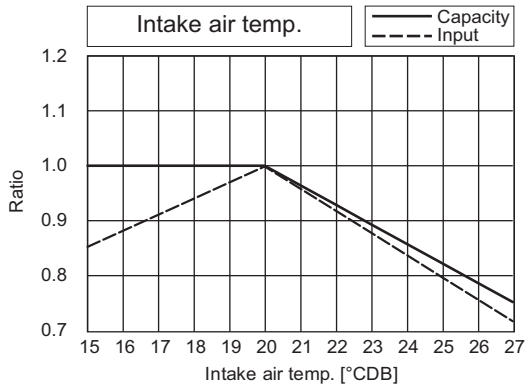


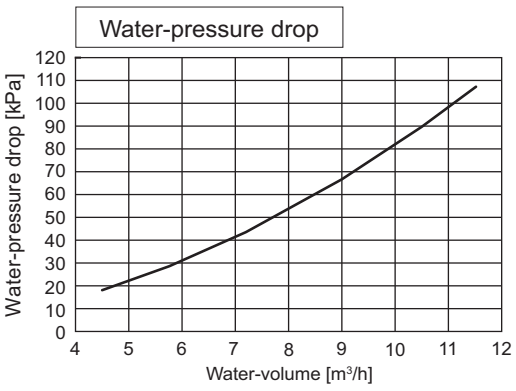


PQRY-		P168ZLMU			
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.86	Input	kW	(Non-Ducted) 9.09 (Ducted) 9.72

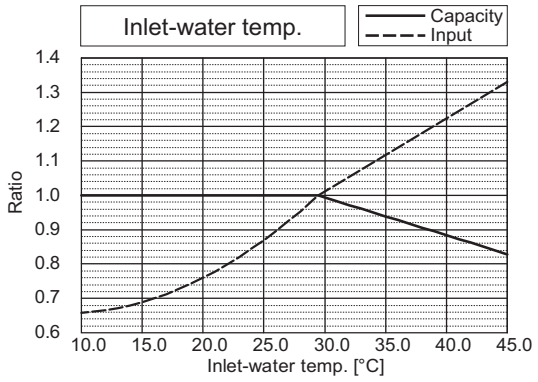


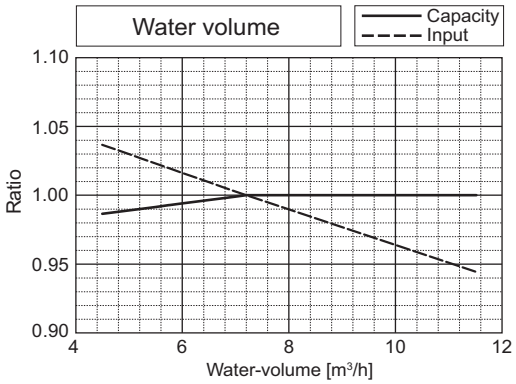


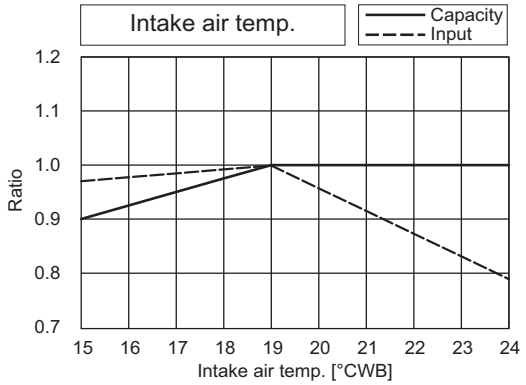


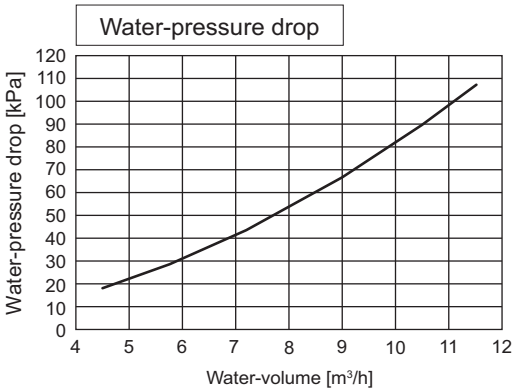


PQRY-		P192ZLMU			
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	15.05	Input	kW	(Non-Ducted) 13.87 (Ducted) 14.19

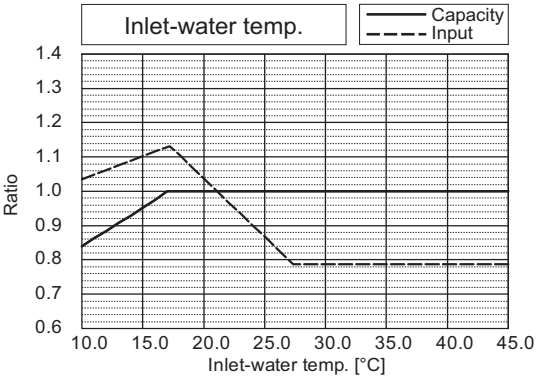


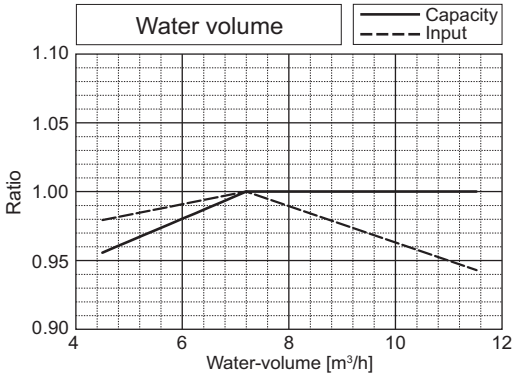


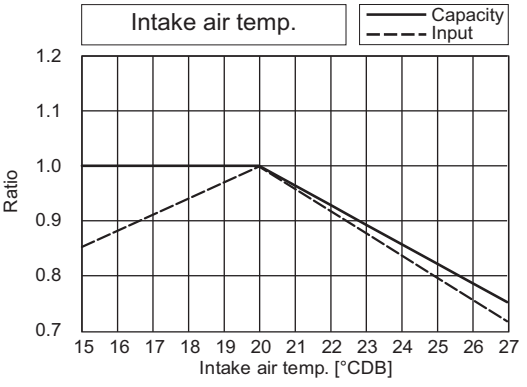


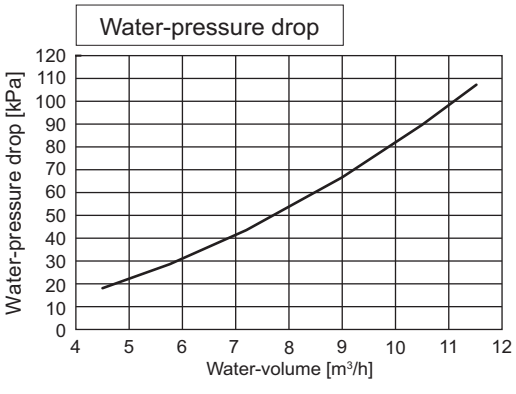


PQRY-		P192ZLMU			
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.90	Input	kW	(Non-Ducted) 10.97 (Ducted) 11.56



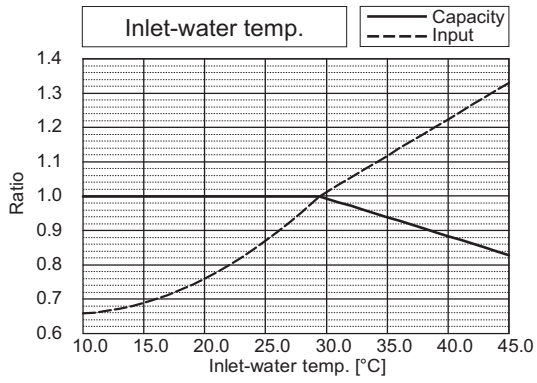


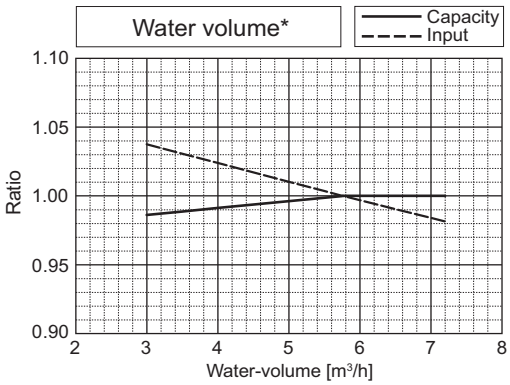


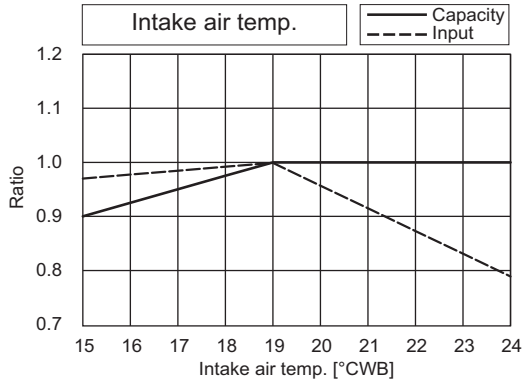


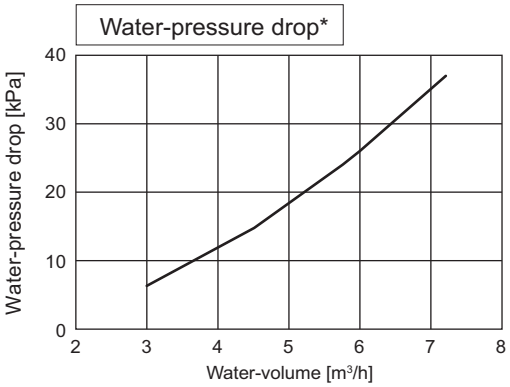
PQRY-		P144ZSLMU			
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	7.11	Input	kW	(Non-Ducted) 6.53 (Ducted) 7.72

*The drawing indicates characteristic per unit.

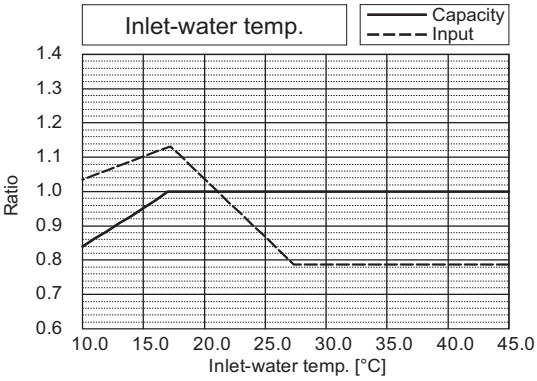


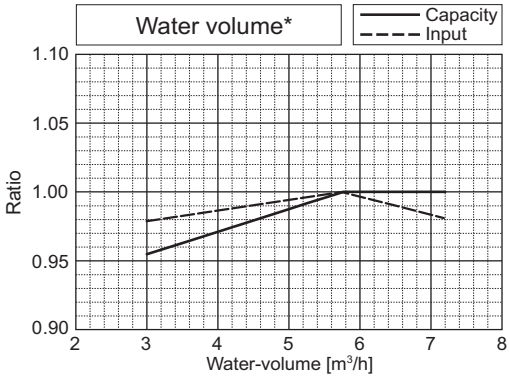


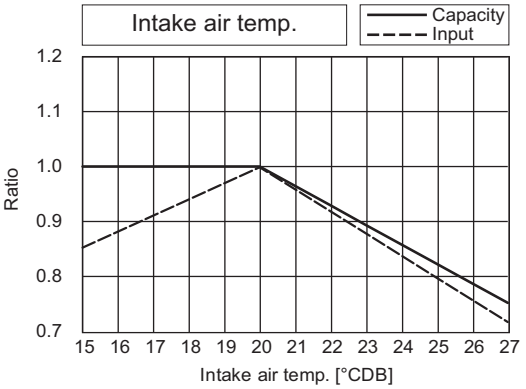


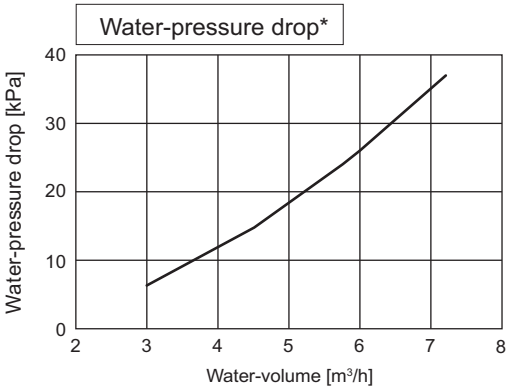


PQRY-		P144ZSLMU			
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	7.45	Input	kW	(Non-Ducted) 6.86 (Ducted) 7.22



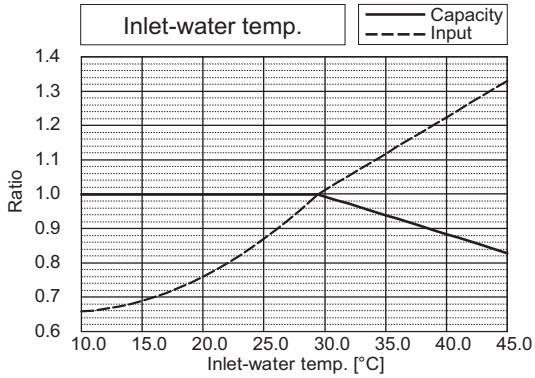


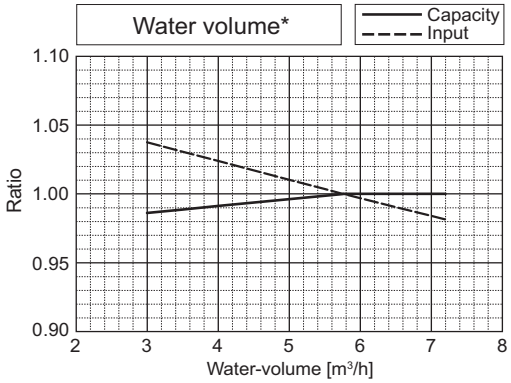


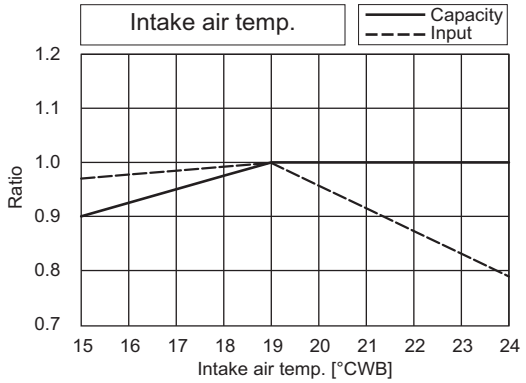


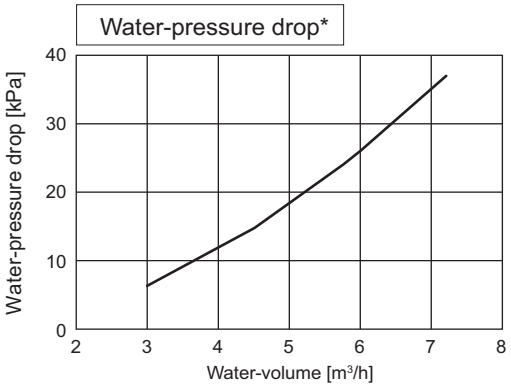
PQRY-		P168ZSLMU			
Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	9.33	Input	kW	(Non-Ducted) 8.58 (Ducted) 9.22

*The drawing indicates characteristic per unit.

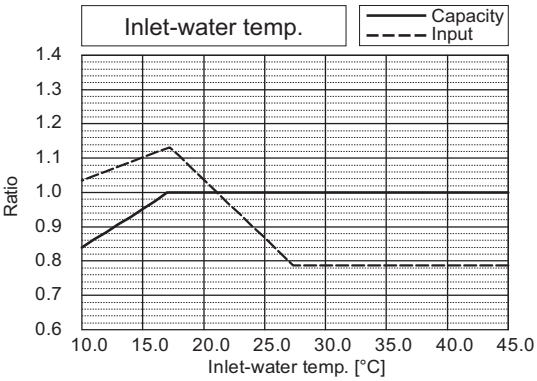


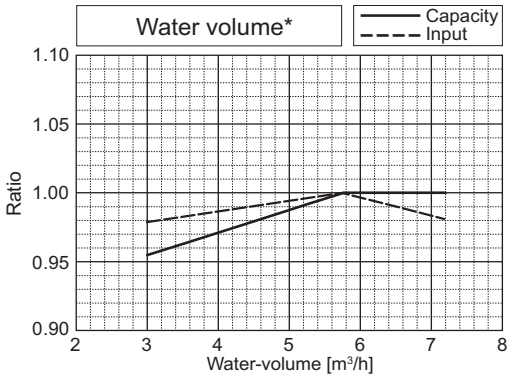


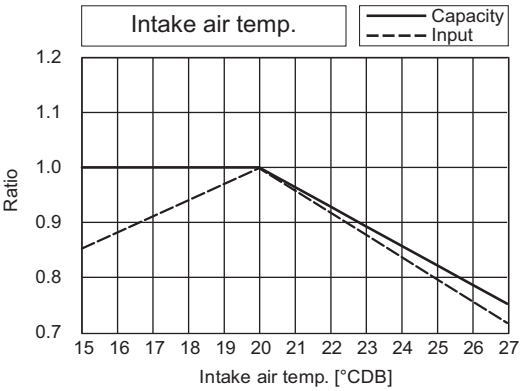


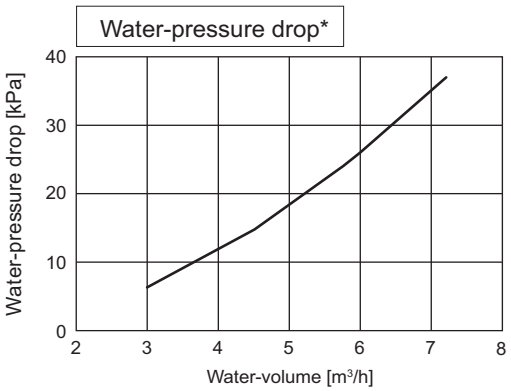


PQRY-		P168ZSLMU			
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.34	Input	kW	(Non-Ducted) 8.60 (Ducted) 8.03



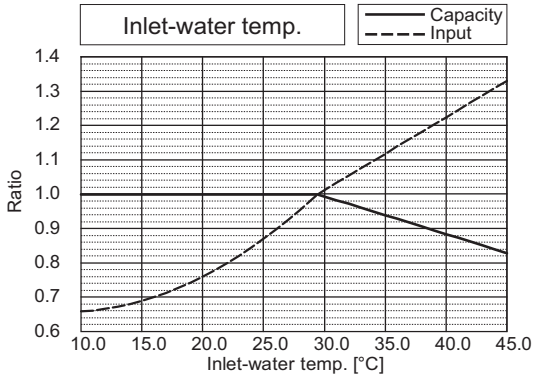


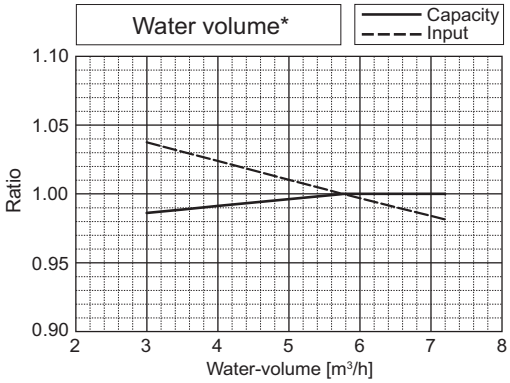


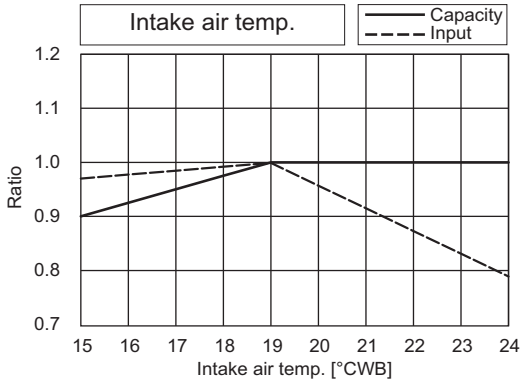


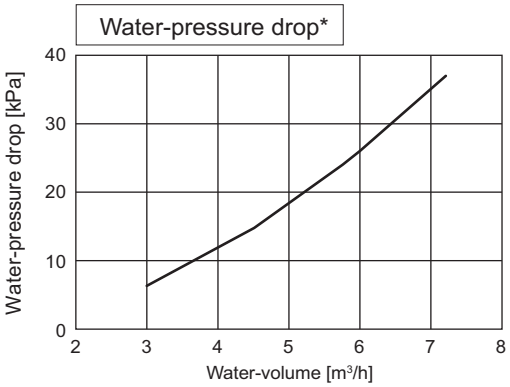
PQRY-		P192ZSLMU			
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	11.30	Input	kW	(Non-Ducted) 10.40 (Ducted) 10.98

*The drawing indicates characteristic per unit.

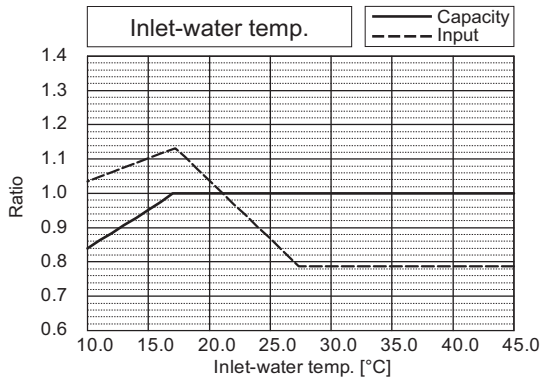


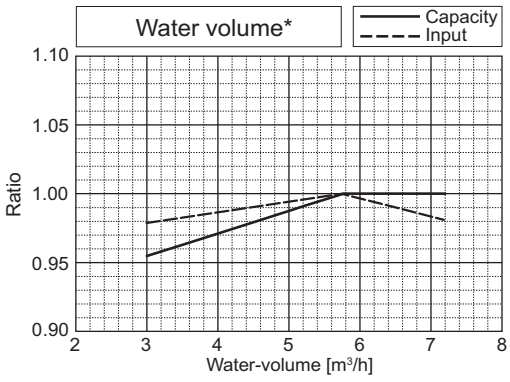


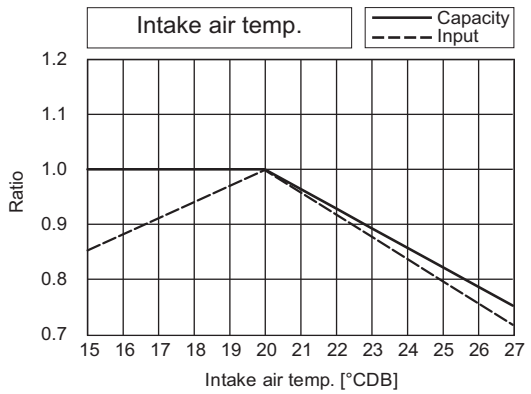


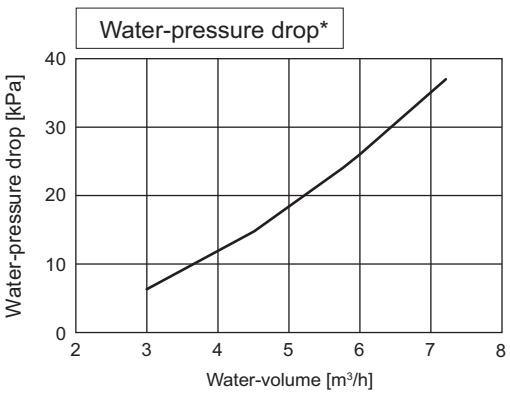


PQRY-		P192ZSLMU			
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.02	Input	kW	(Non-Ducted) 10.16 (Ducted) 8.90



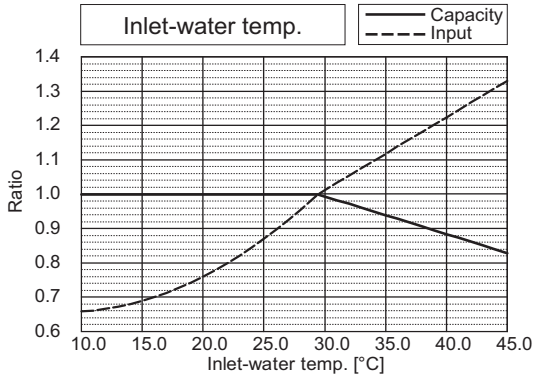


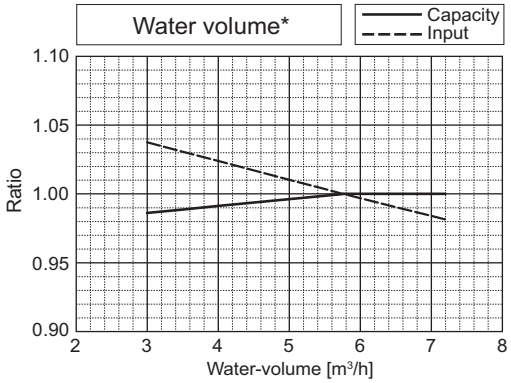


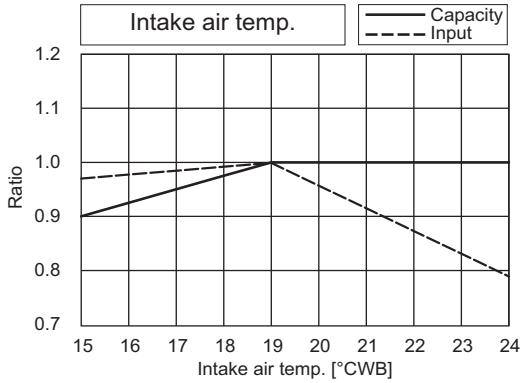


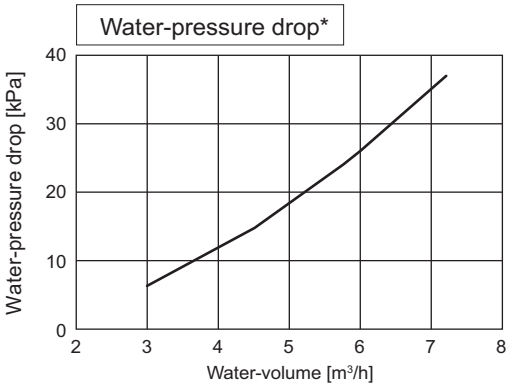
PQRY-		P216ZSLMU			
Nominal Cooling Capacity	kW	63.3	Rated Cooling Capacity	kW	60.4
	BTU/h	216,000		BTU/h	206,000
Input	kW	14.03	Input	kW	(Non-Ducted) 12.93 (Ducted) 13.24

*The drawing indicates characteristic per unit.

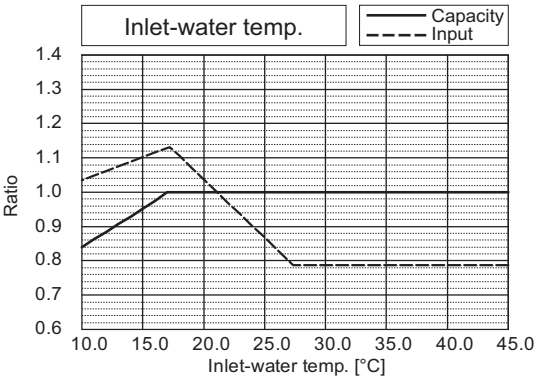


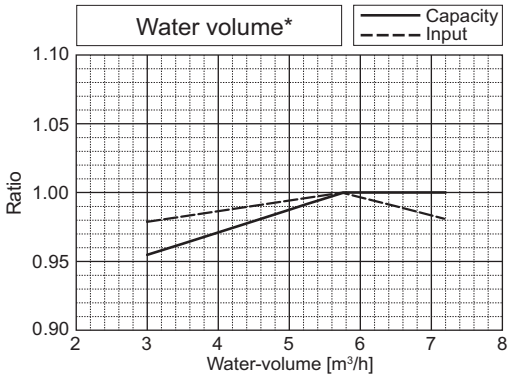


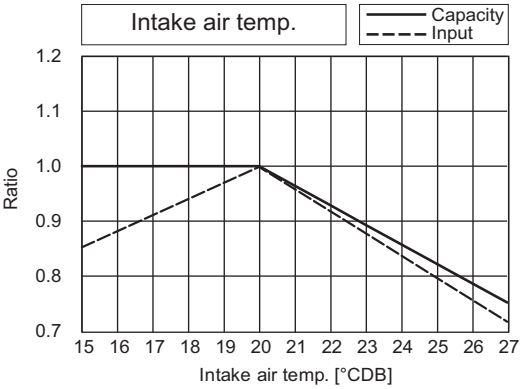


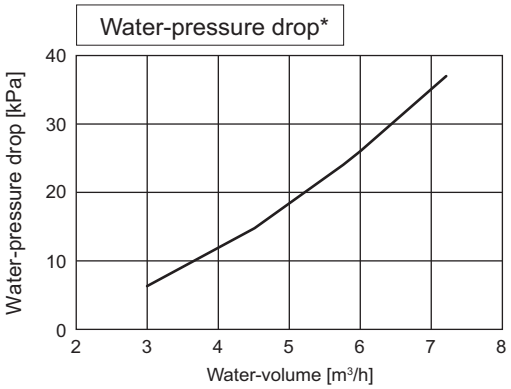


PQRY-		P216ZSLMU			
Nominal Heating Capacity	kW	71.2	Rated Heating Capacity	kW	68.0
	BTU/h	243,000		BTU/h	232,000
Input	kW	12.88	Input	kW	(Non-Ducted) 11.88 (Ducted) 10.35



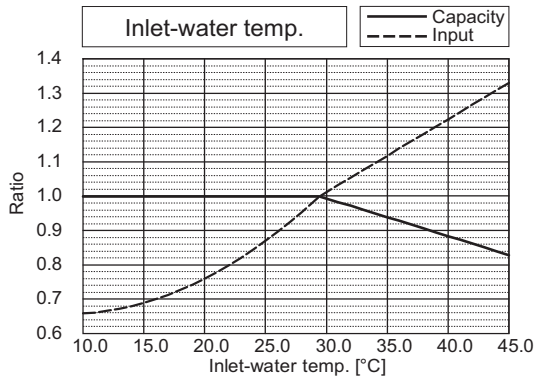


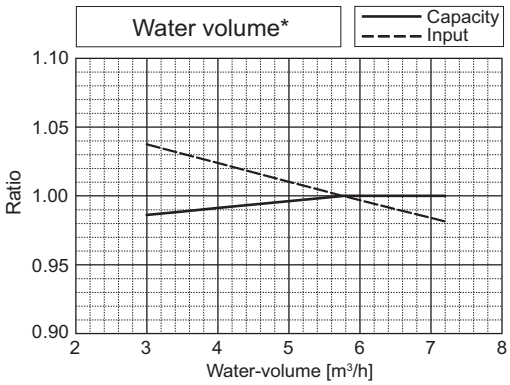


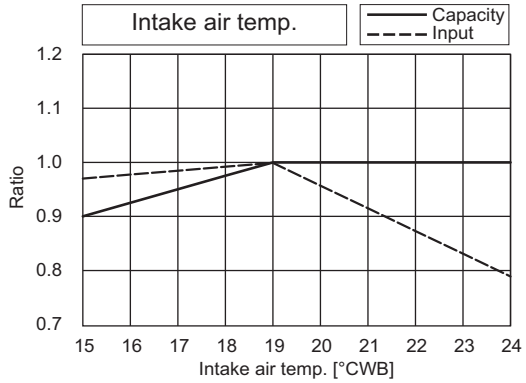


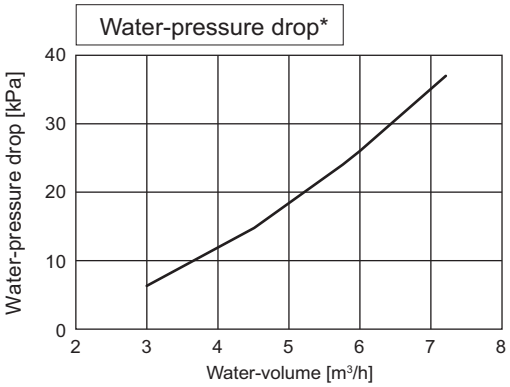
PQRY-		P240ZSLMU			
Nominal Cooling Capacity	kW	70.3	Rated Cooling Capacity	kW	66.8
	BTU/h	240,000		BTU/h	228,000
Input	kW	16.89	Input	kW	(Non-Ducted) 15.57 (Ducted) 16.15

*The drawing indicates characteristic per unit.

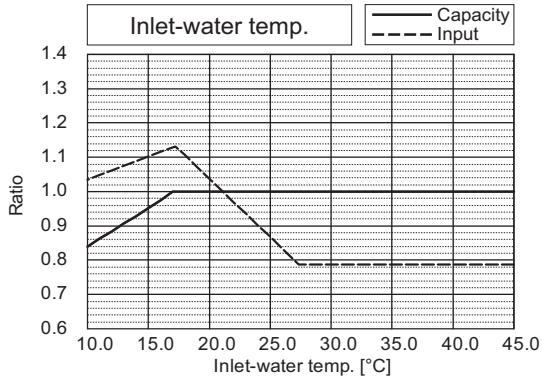


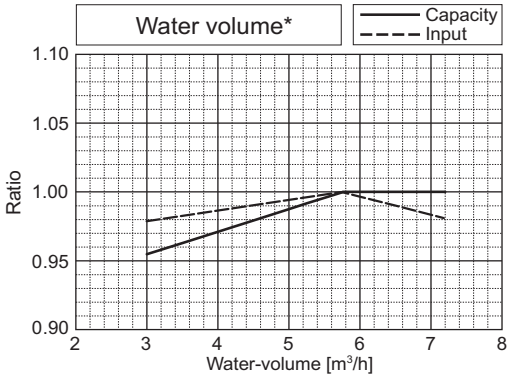


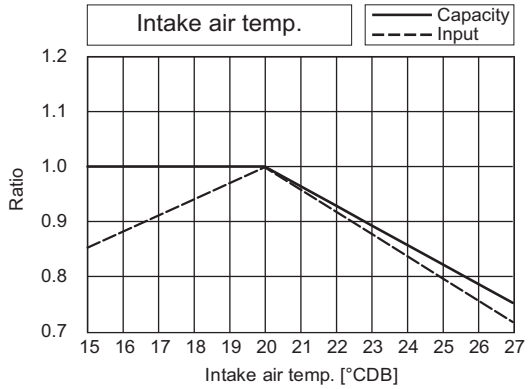


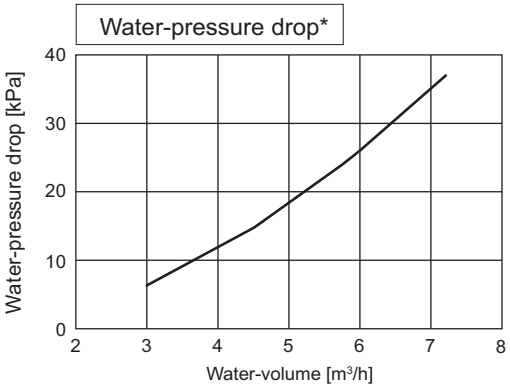


PQRY-		P240ZSLMU			
Nominal Heating Capacity	kW	79.1	Rated Heating Capacity	kW	75.6
	BTU/h	270,000		BTU/h	258,000
Input	kW	14.58	Input	kW	(Non-Ducted) 13.45 (Ducted) 12.02



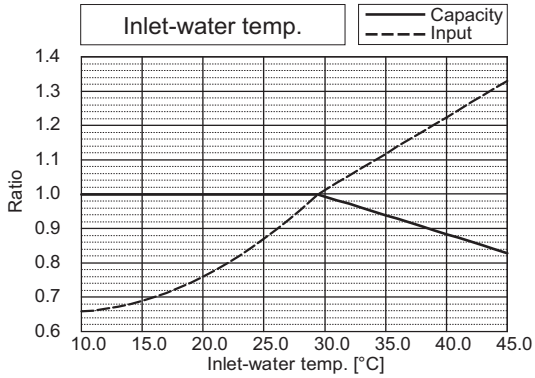


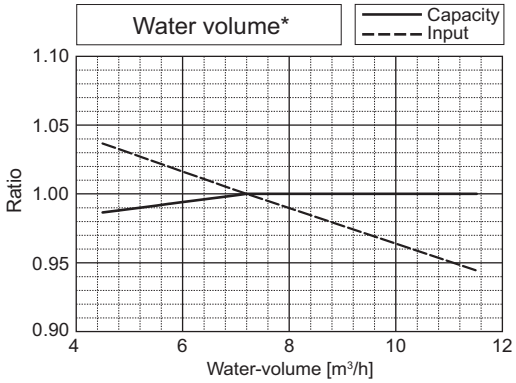


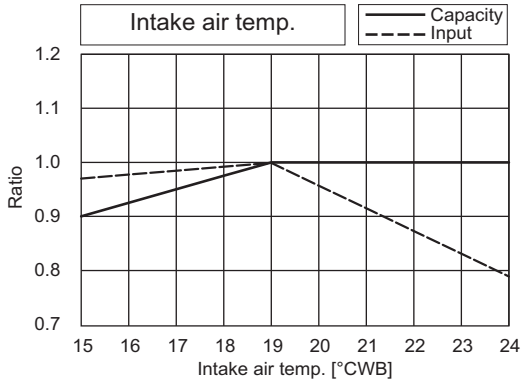


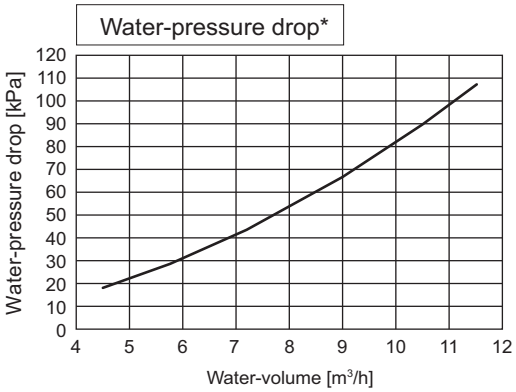
PQRY-		P288ZSLMU			
Nominal Cooling Capacity	kW	84.4	Rated Cooling Capacity	kW	80.6
	BTU/h	288,000		BTU/h	275,000
Input	kW	20.42	Input	kW	(Non-Ducted) 18.82 (Ducted) 21.43

*The drawing indicates characteristic per unit.

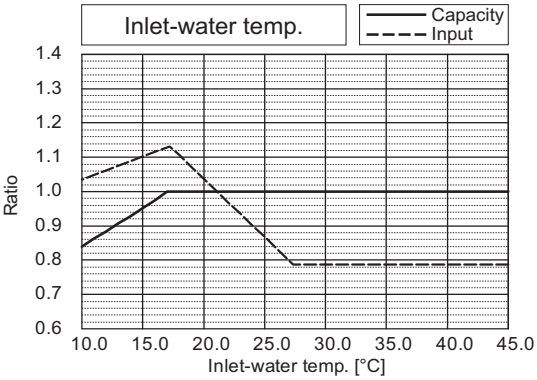


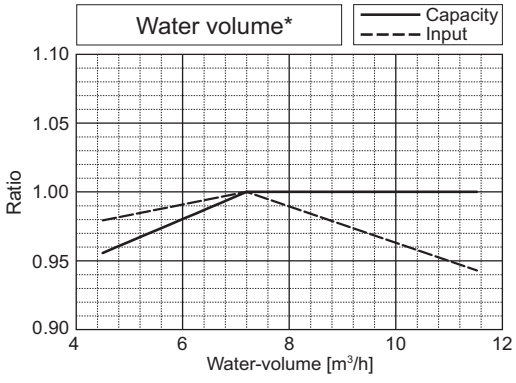


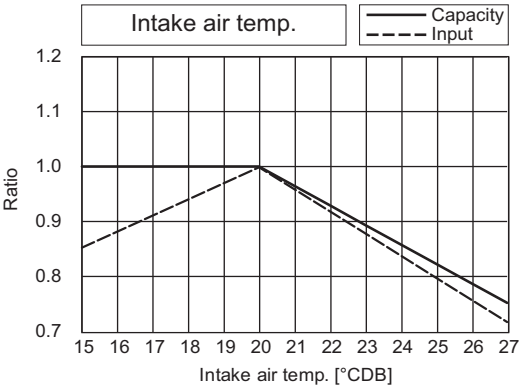


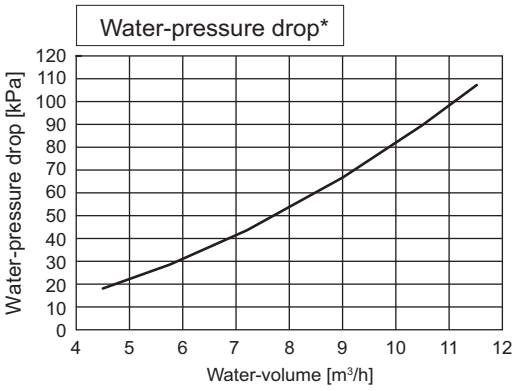


PQRY-		P288ZSLMU			
Nominal Heating Capacity	kW	94.7	Rated Heating Capacity	kW	90.3
	BTU/h	323,000		BTU/h	308,000
Input	kW	17.50	Input	kW	(Non-Ducted) 16.13 (Ducted) 16.05



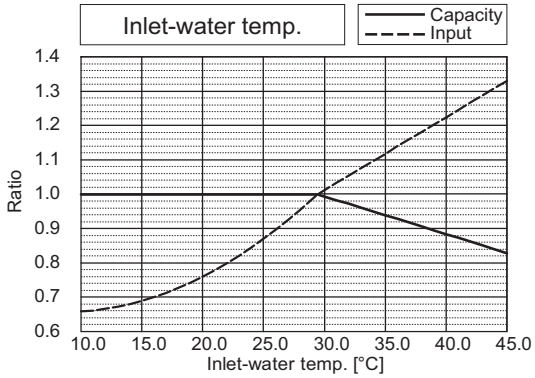


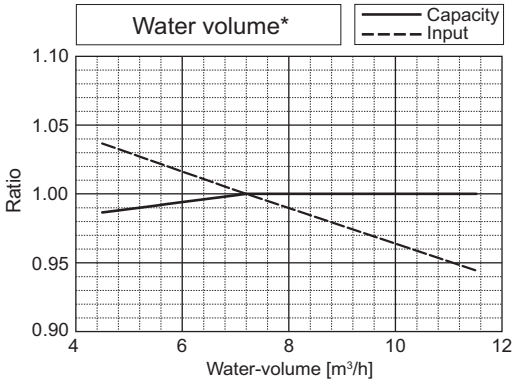


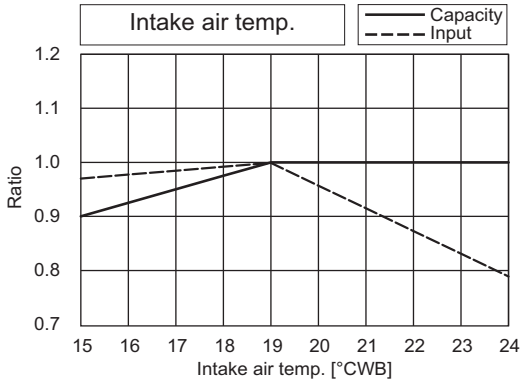


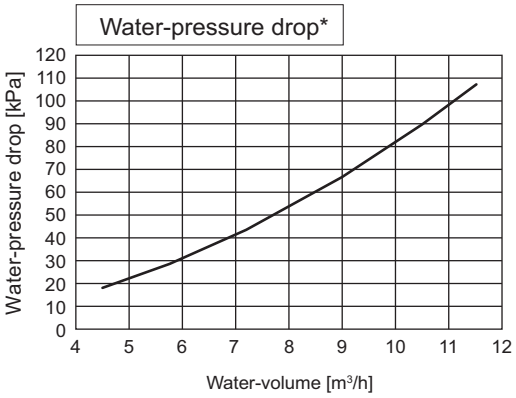
PQRY-		P312ZSLMU			
Nominal Cooling Capacity	kW	91.4	Rated Cooling Capacity	kW	87.0
	BTU/h	312,000		BTU/h	297,000
Input	kW	23.41	Input	kW	(Non-Ducted) 21.59 (Ducted) 23.67

*The drawing indicates characteristic per unit.

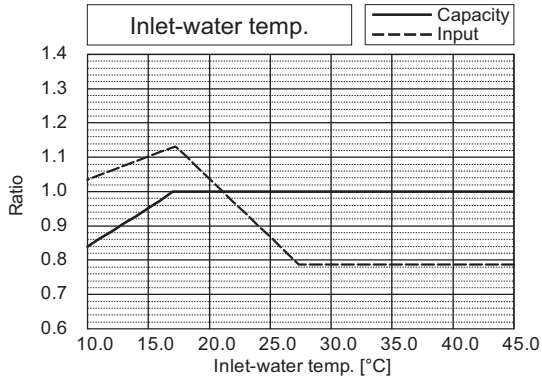


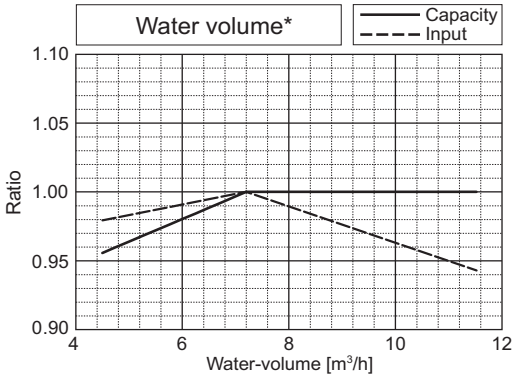


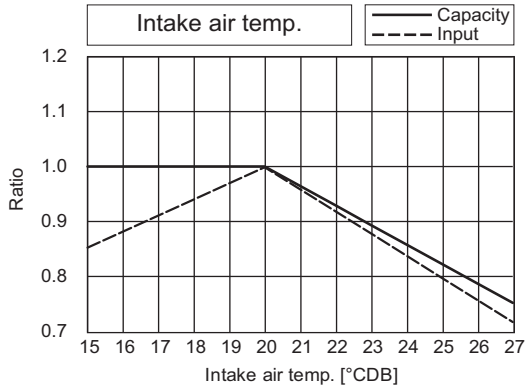


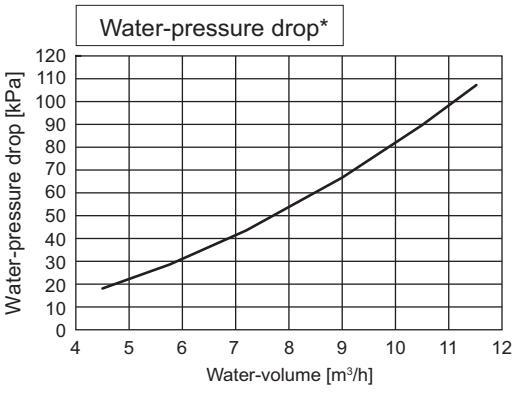


PQRY-		P312ZSLMU			
Nominal Heating Capacity	kW	102.6	Rated Heating Capacity	kW	97.9
	BTU/h	350,000		BTU/h	334,000
Input	kW	19.11	Input	kW	(Non-Ducted) 17.62 (Ducted) 17.96



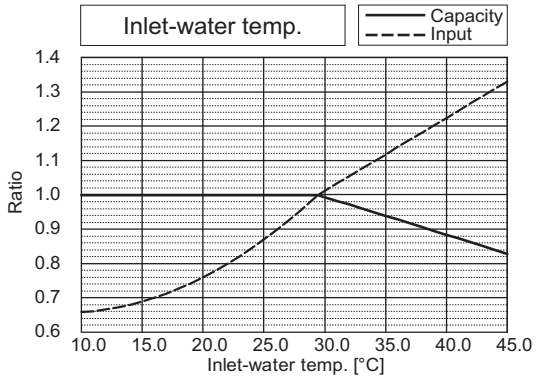


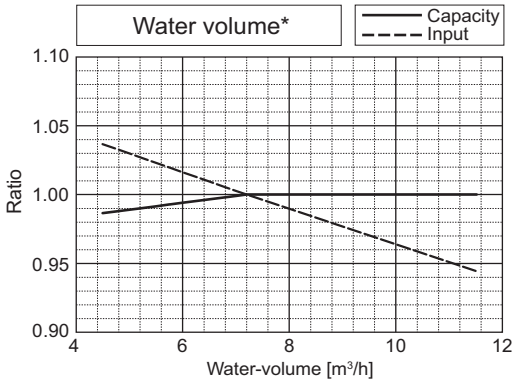


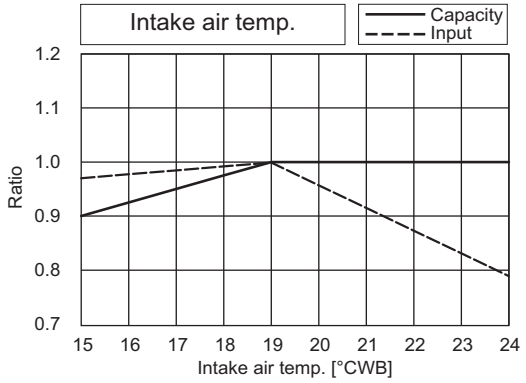


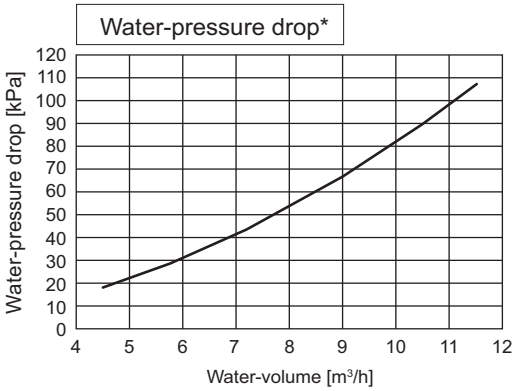
PQRY-		P336ZSLMU			
Nominal Cooling Capacity	kW	98.5	Rated Cooling Capacity	kW	93.8
	BTU/h	336,000		BTU/h	320,000
Input	kW	26.84	Input	kW	(Non-Ducted) 24.76 (Ducted) 25.85

*The drawing indicates characteristic per unit.

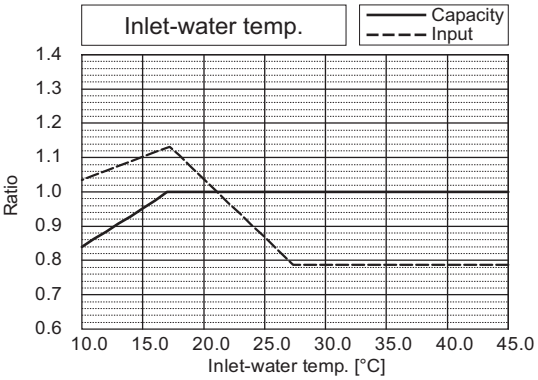


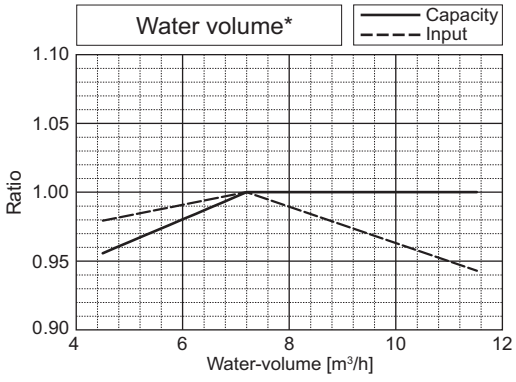


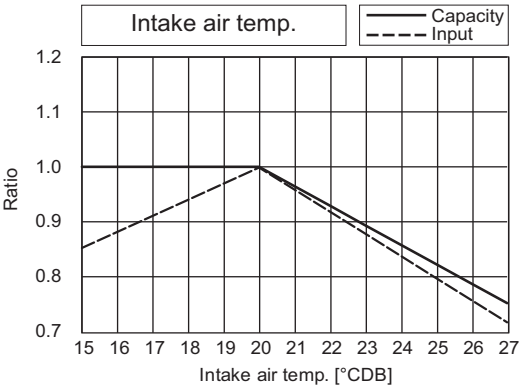


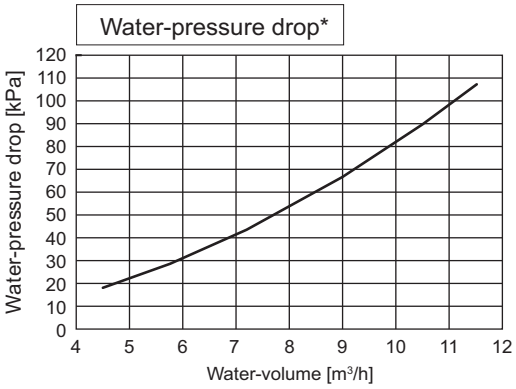


PQRY-		P336ZSLMU			
Nominal Heating Capacity	kW	110.8	Rated Heating Capacity	kW	105.8
	BTU/h	378,000		BTU/h	361,000
Input	kW	20.77	Input	kW	(Non-Ducted) 19.16 (Ducted) 20.05

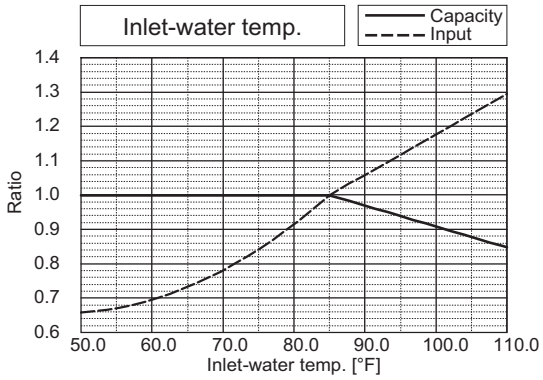


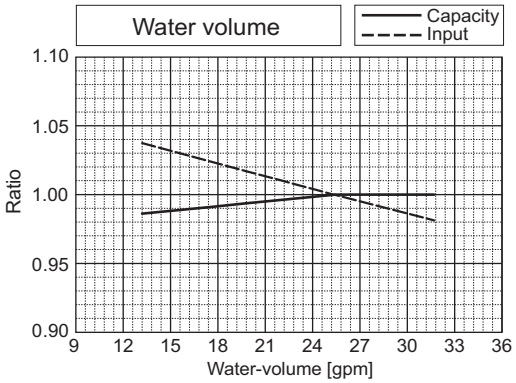


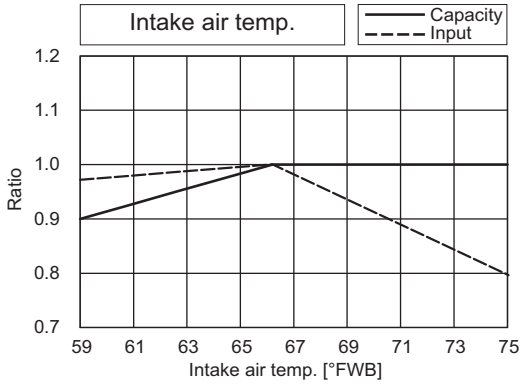


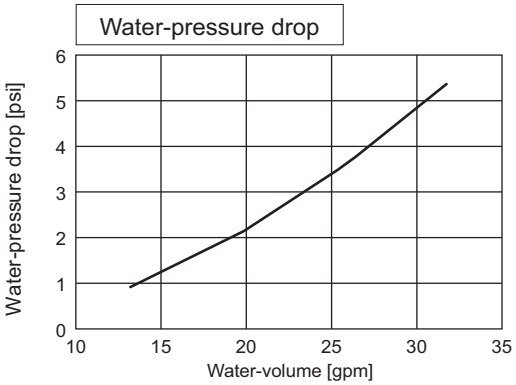


PQRY-		P72ZLMU			
Nominal Cooling Capacity	kW	21.1	Rated Cooling Capacity	kW	20.2
	BTU/h	72,000		BTU/h	69,000
Input	kW	3.23	Input	kW	(Non-Ducted) 2.96 (Ducted) 3.12

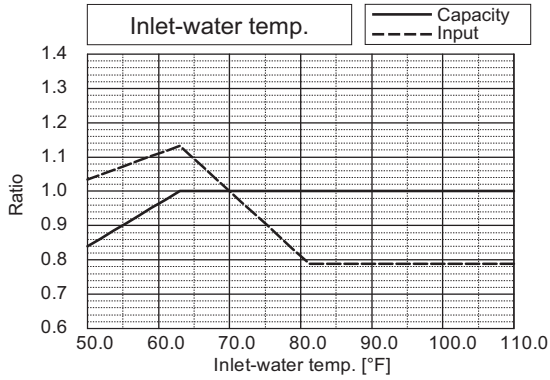


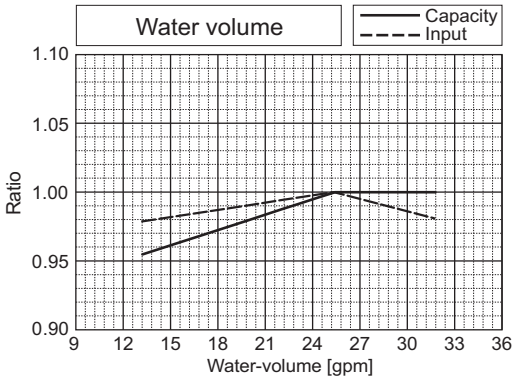


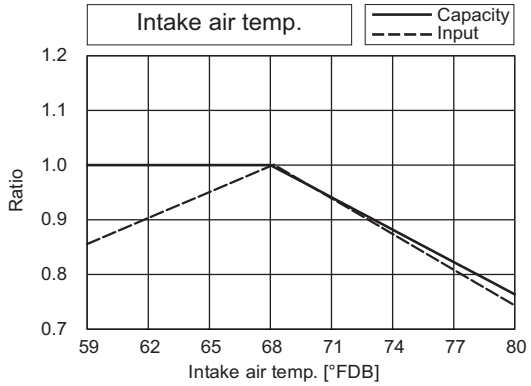


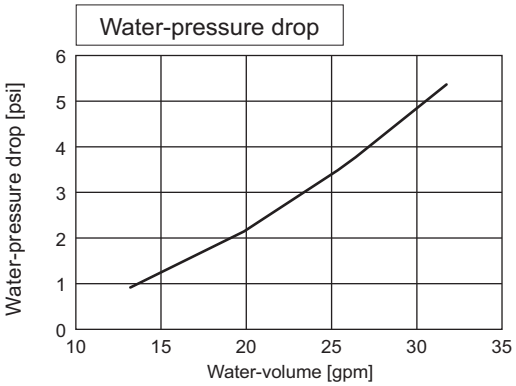


PQRY-		P72ZLMU			
Nominal Heating Capacity	kW	23.4	Rated Heating Capacity	kW	22.3
	BTU/h	80,000		BTU/h	76,000
Input	kW	3.63	Input	kW	(Non-Ducted) 3.34 (Ducted) 3.36

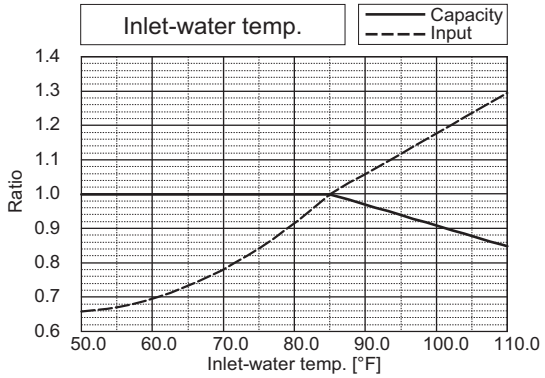


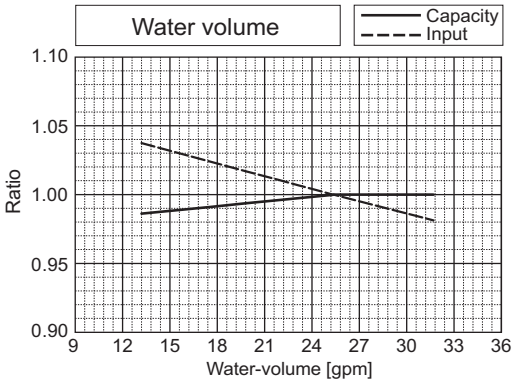


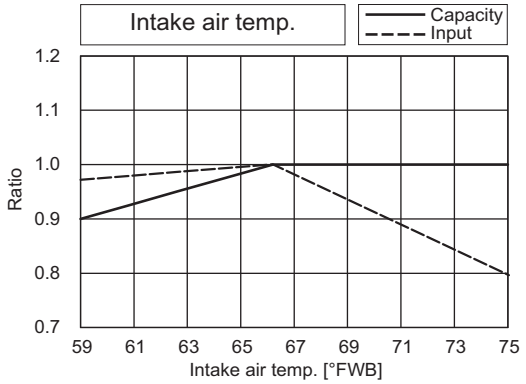


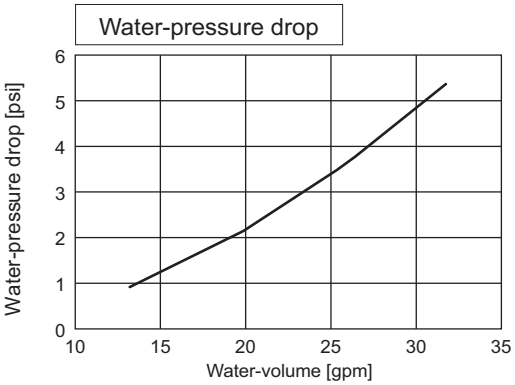


PQRY-		P96ZLMU			
Nominal Cooling Capacity	kW	28.1	Rated Cooling Capacity	kW	27.0
	BTU/h	96,000		BTU/h	92,000
Input	kW	4.65	Input	kW	(Non-Ducted) 4.26 (Ducted) 5.19

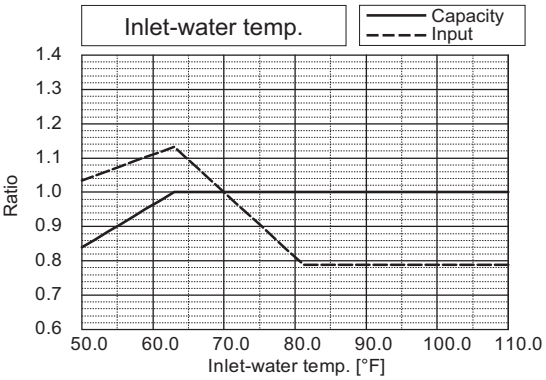


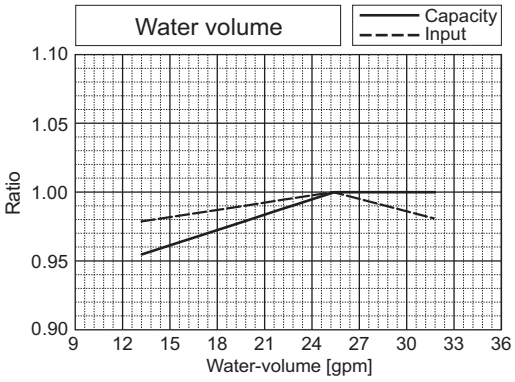


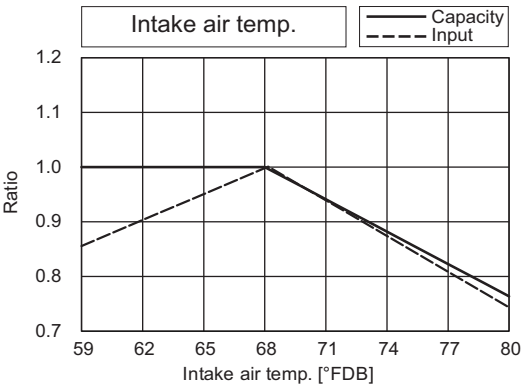


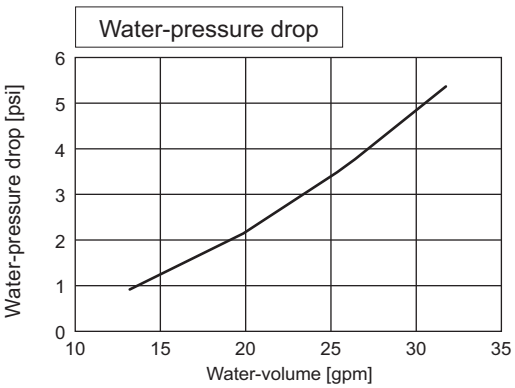


PQRY-		P96ZLMU			
Nominal Heating Capacity	kW	31.7	Rated Heating Capacity	kW	30.2
	BTU/h	108,000		BTU/h	103,000
Input	kW	5.05	Input	kW	(Non-Ducted) 4.65 (Ducted) 4.48

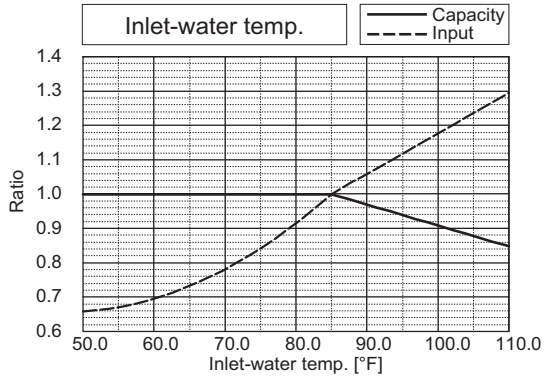


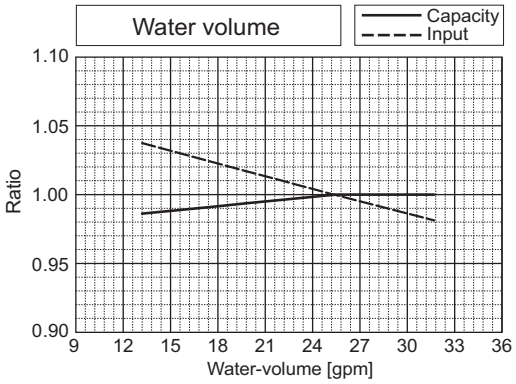


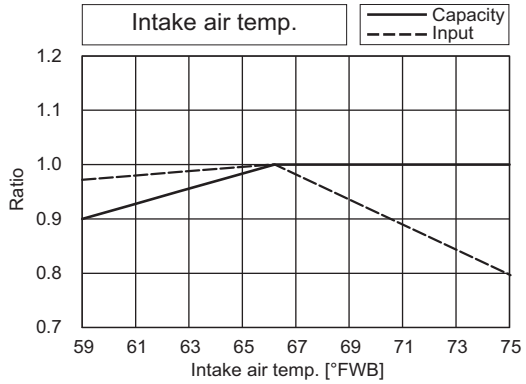


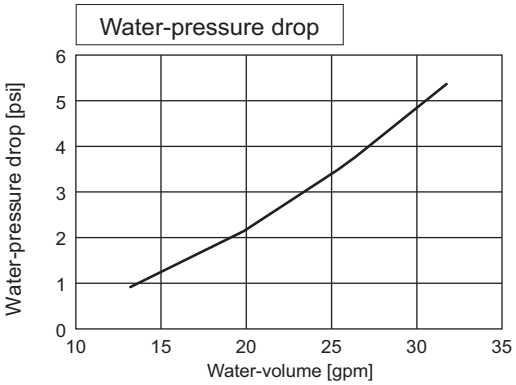


PQRY-		P120ZLMU			
Nominal Cooling Capacity	kW	35.2	Rated Cooling Capacity	kW	33.4
	BTU/h	120,000		BTU/h	114,000
Input	kW	7.24	Input	kW	(Non-Ducted) 6.66 (Ducted) 7.35

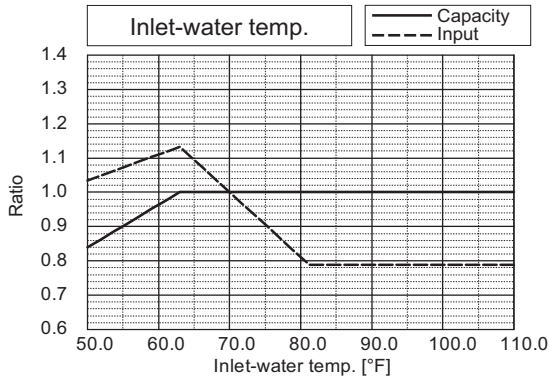


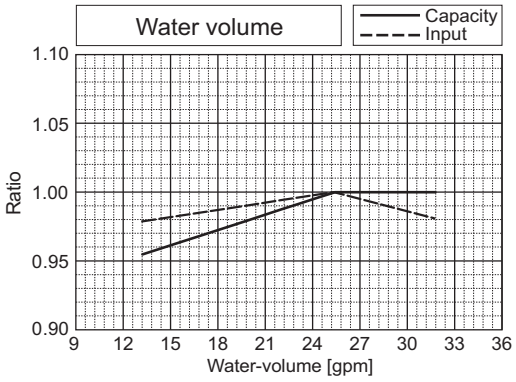


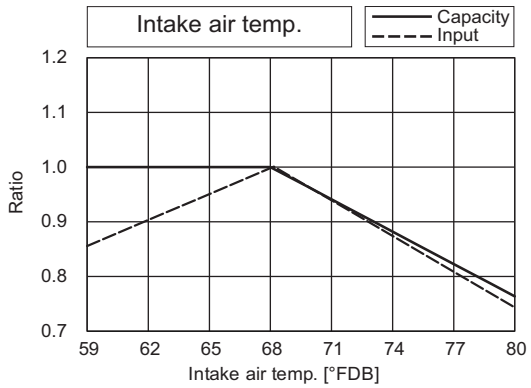


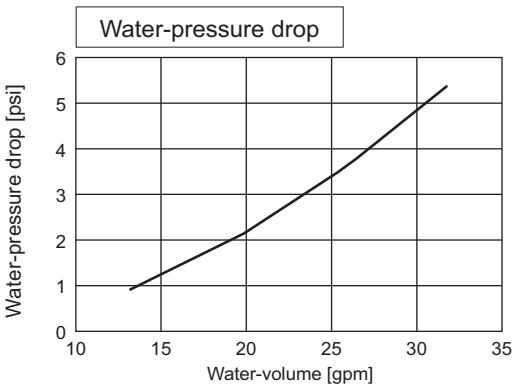


PQRY-		P120ZLMU			
Nominal Heating Capacity	kW	39.6	Rated Heating Capacity	kW	37.8
	BTU/h	135,000		BTU/h	129,000
Input	kW	6.83	Input	kW	(Non-Ducted) 6.29 (Ducted) 5.92

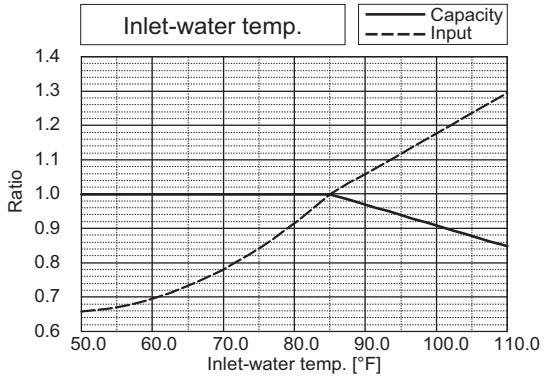


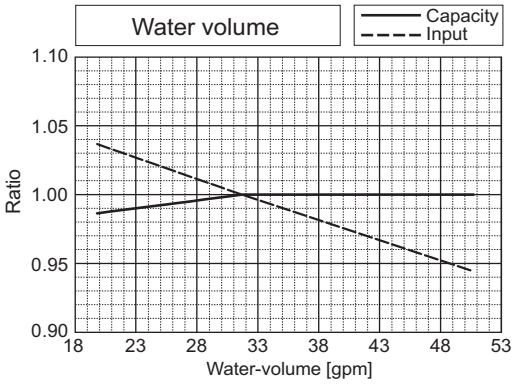


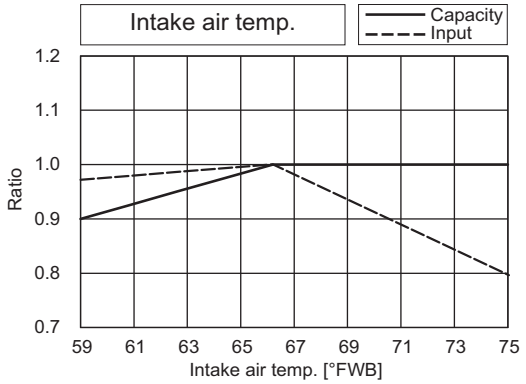


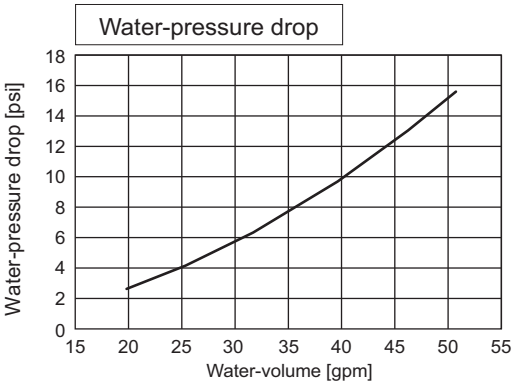


PQRY-		P144ZLMU			
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	8.78	Input	kW	(Non-Ducted) 8.07 (Ducted) 9.98

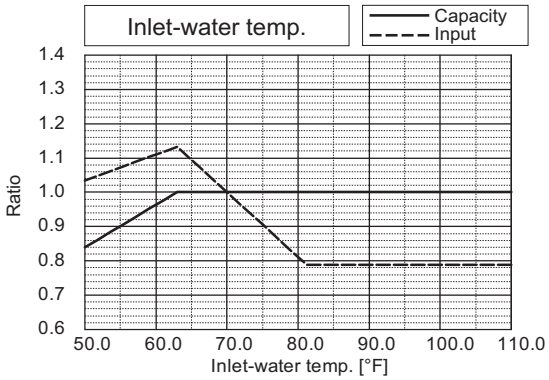


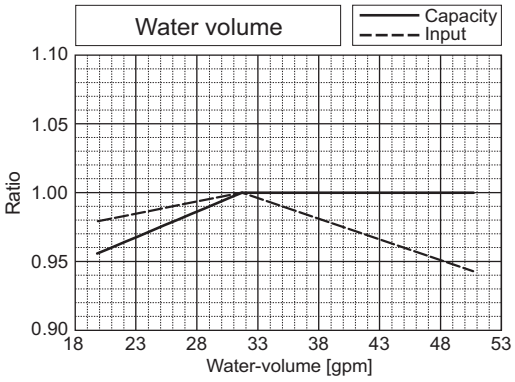


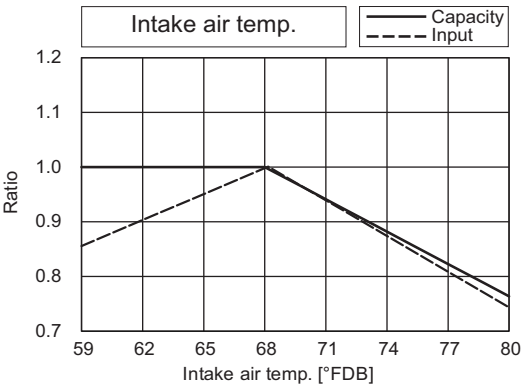


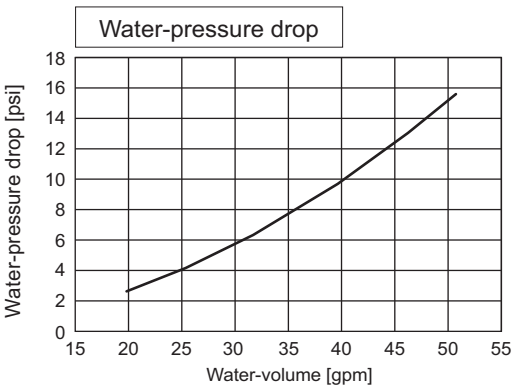


PQRY-		P144ZLMU			
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	8.11	Input	kW	(Non-Ducted) 7.47 (Ducted) 7.90

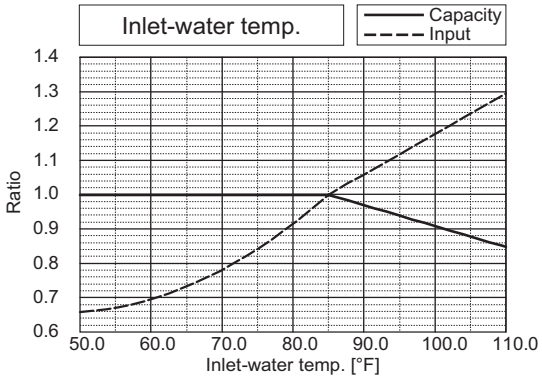


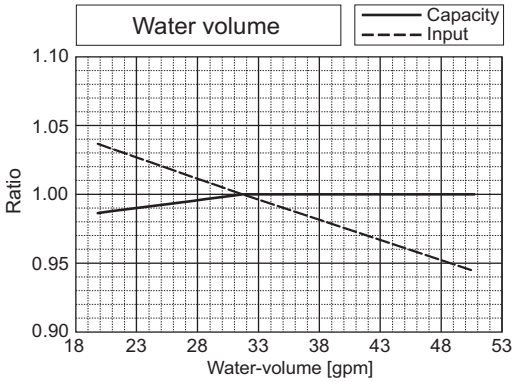


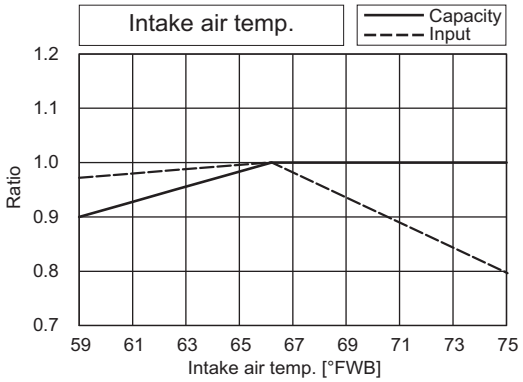


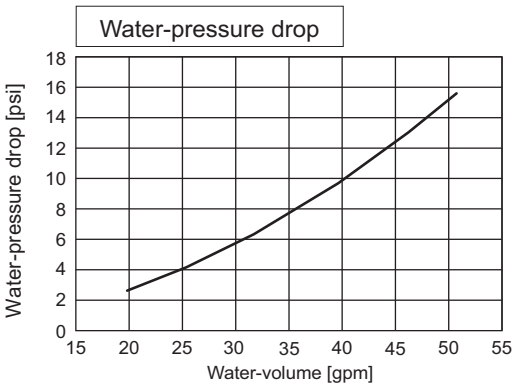


PQRY-		P168ZLMU			
Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	12.05	Input	kW	(Non-Ducted) 11.10 (Ducted) 11.88

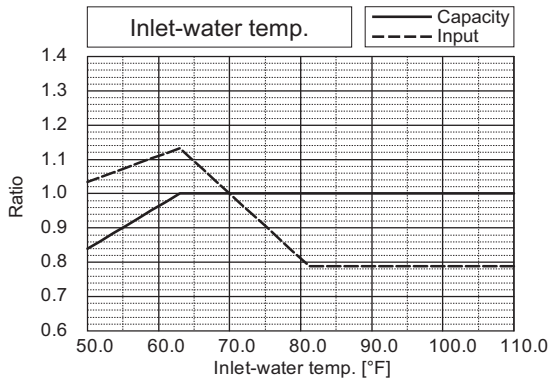


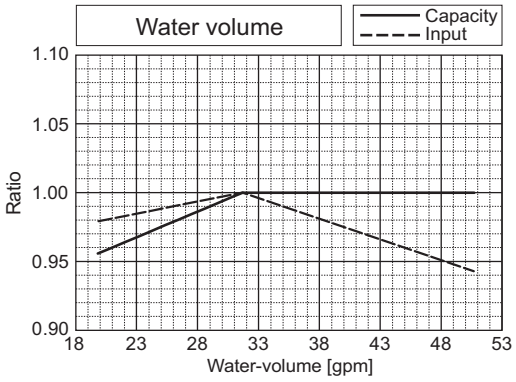


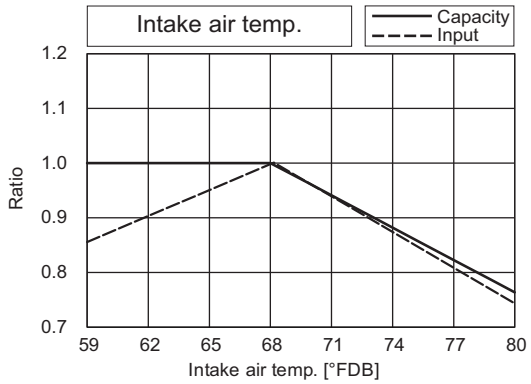


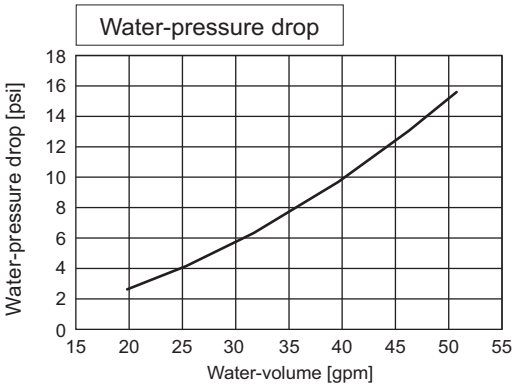


PQRY-		P168ZLMU			
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.86	Input	kW	(Non-Ducted) 9.09 (Ducted) 9.72

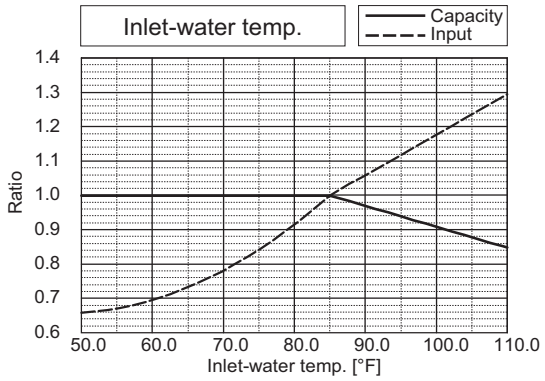


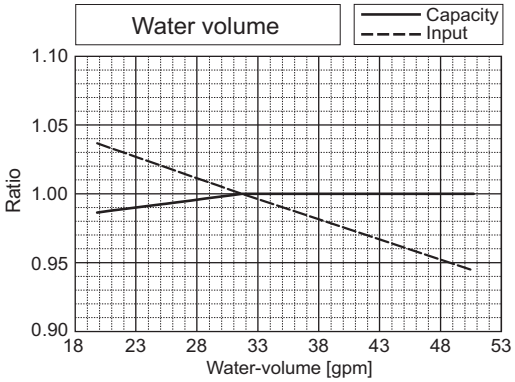


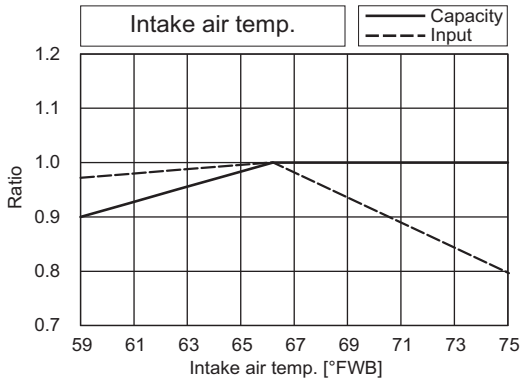


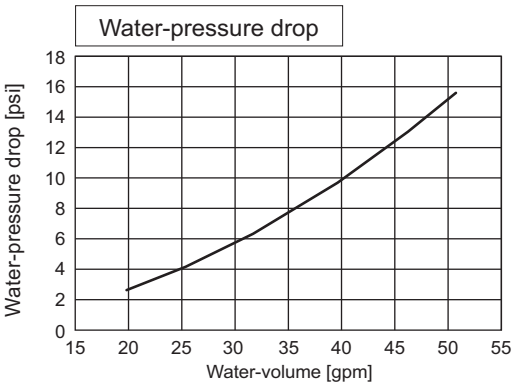


PQRY-		P192ZLMU			
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	15.05	Input	kW	(Non-Ducted) 13.87 (Ducted) 14.19

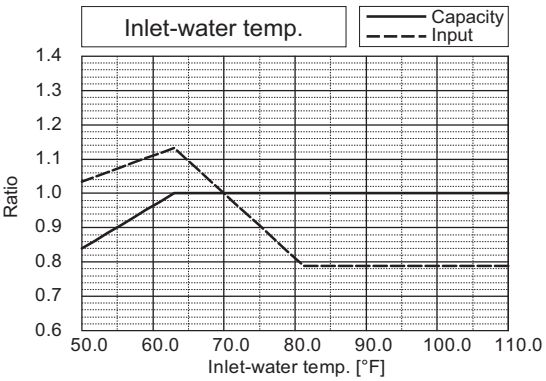


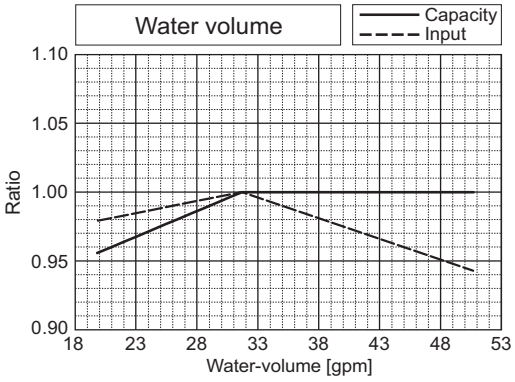


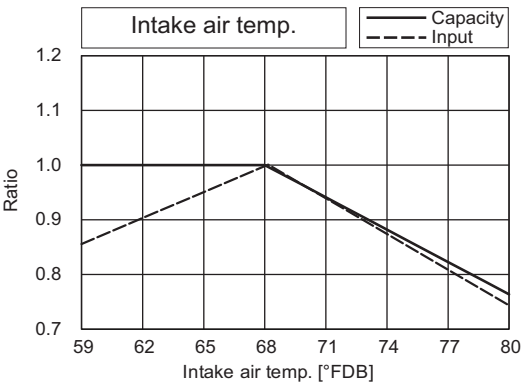


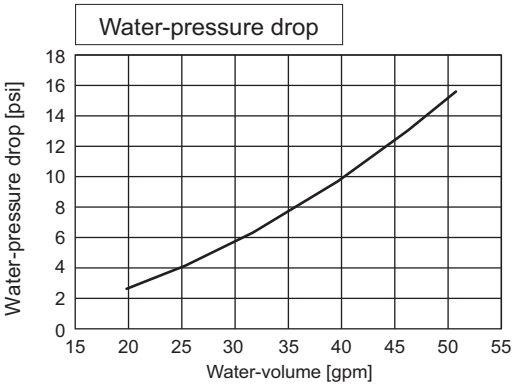


PQRY-		P192ZLMU			
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.90	Input	kW	(Non-Ducted) 10.97 (Ducted) 11.56



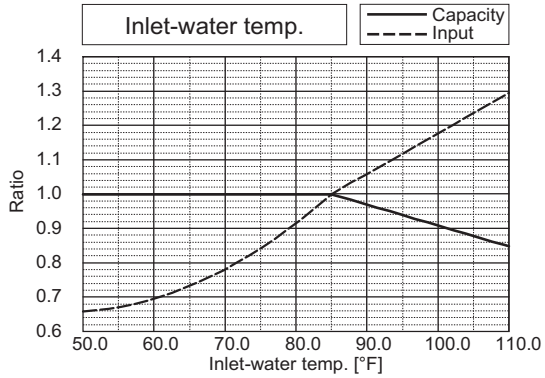


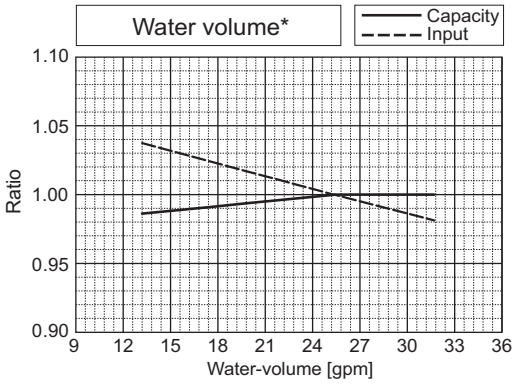


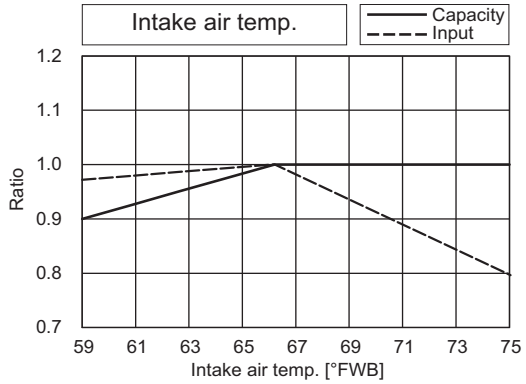


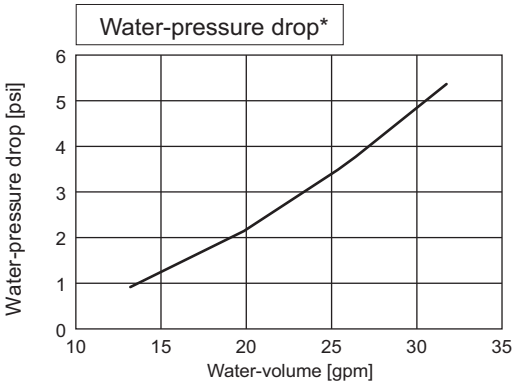
PQRY-		P144ZSLMU			
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	7.11	Input	kW	(Non-Ducted) 6.53 (Ducted) 7.72

*The drawing indicates characteristic per unit.

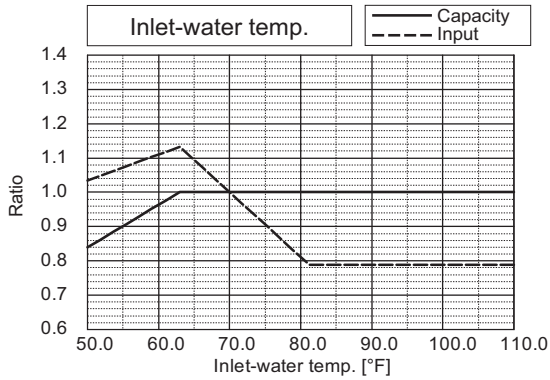


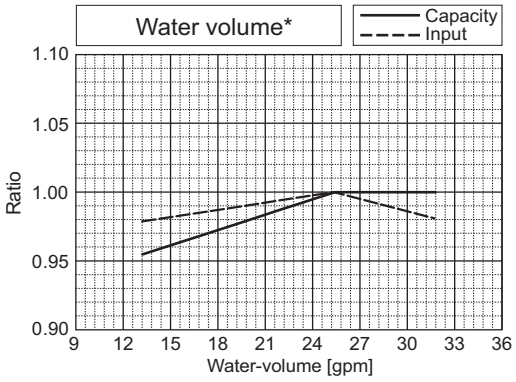


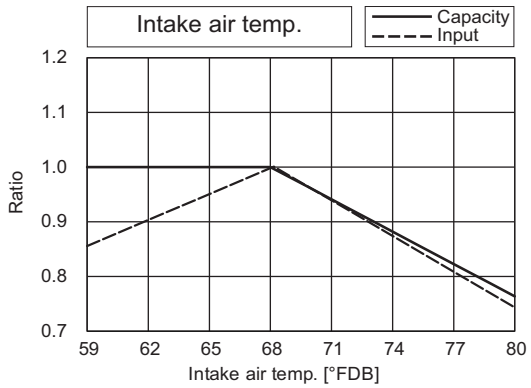


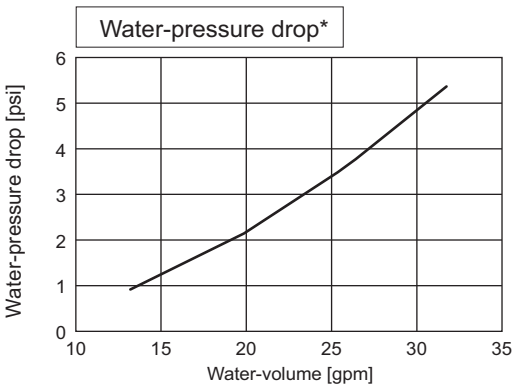


PQRY-		P144ZSLMU			
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	7.45	Input	kW	(Non-Ducted) 6.86 (Ducted) 7.22



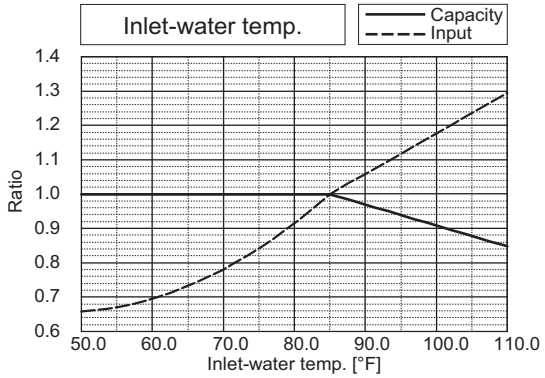


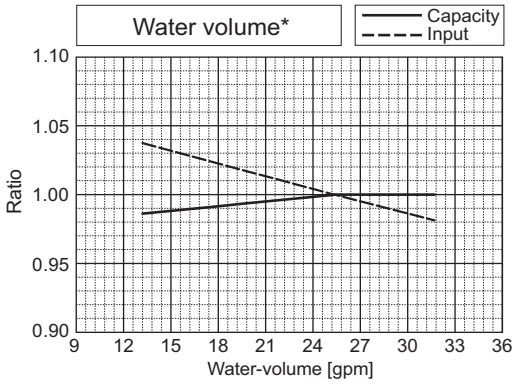


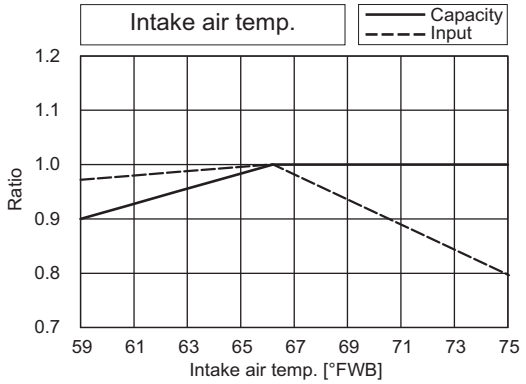


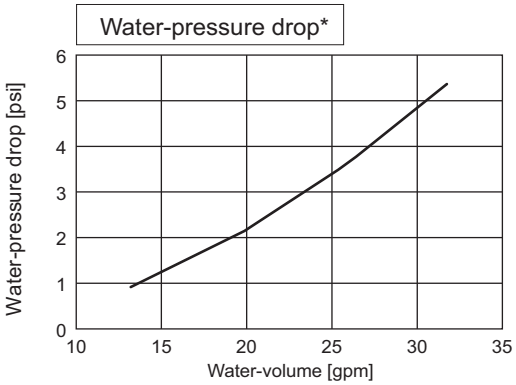
PQRY-		P168ZSLMU			
Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	9.33	Input	kW	(Non-Ducted) 8.58 (Ducted) 9.22

*The drawing indicates characteristic per unit.

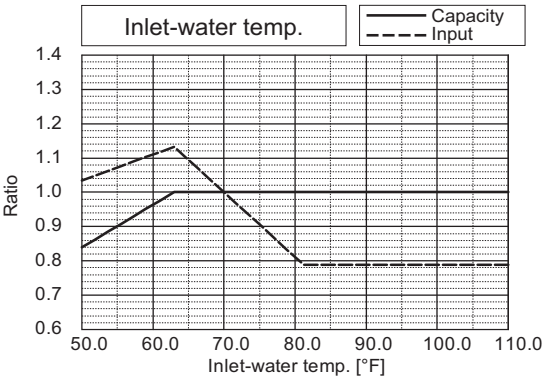


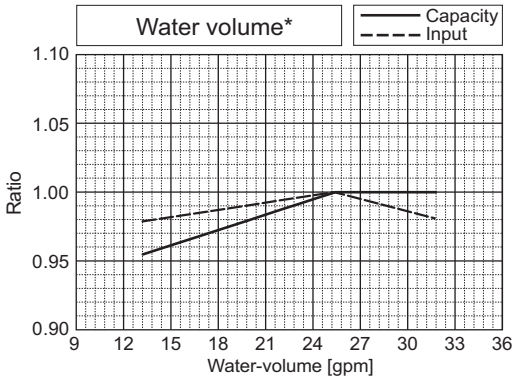


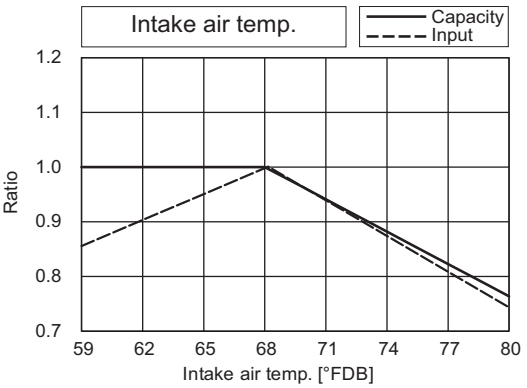


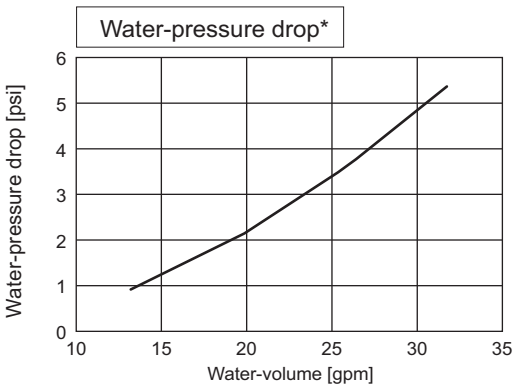


PQRY-		P168ZSLMU			
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.34	Input	kW	(Non-Ducted) 8.60 (Ducted) 8.03



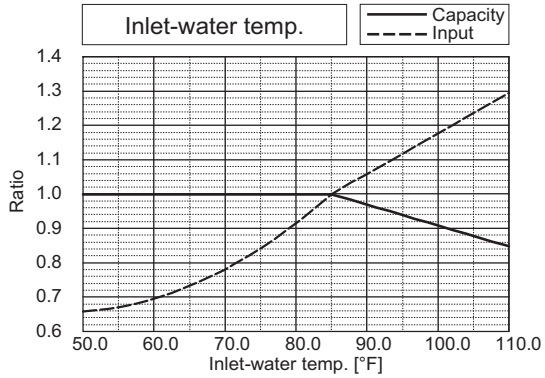


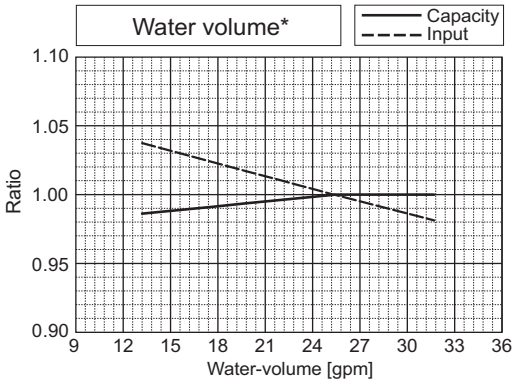


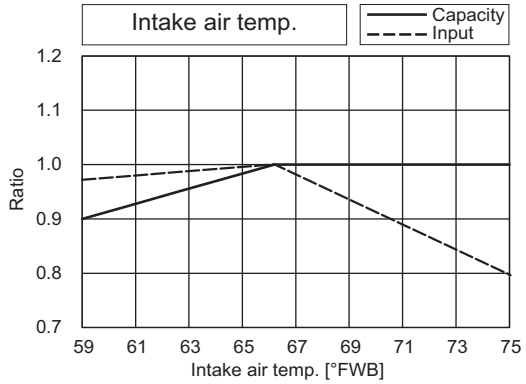


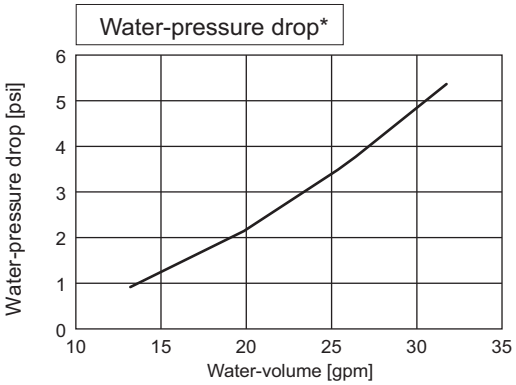
PQRY-		P192ZSLMU			
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	11.30	Input	kW	(Non-Ducted) 10.40 (Ducted) 10.98

*The drawing indicates characteristic per unit.

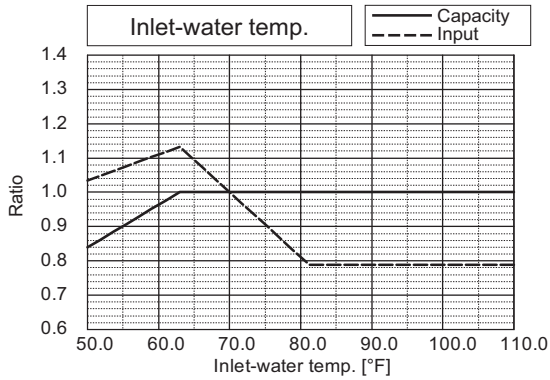


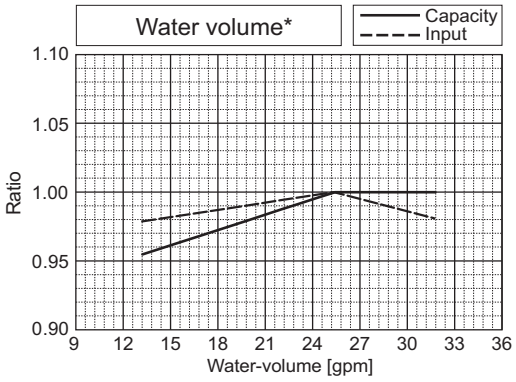


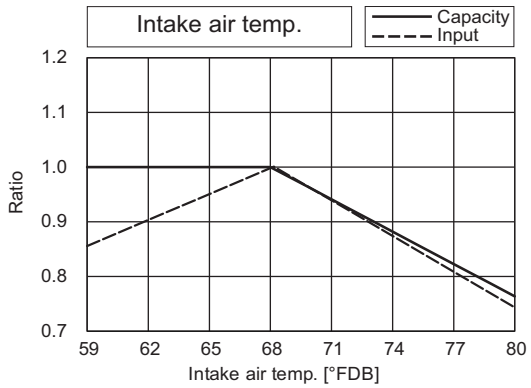


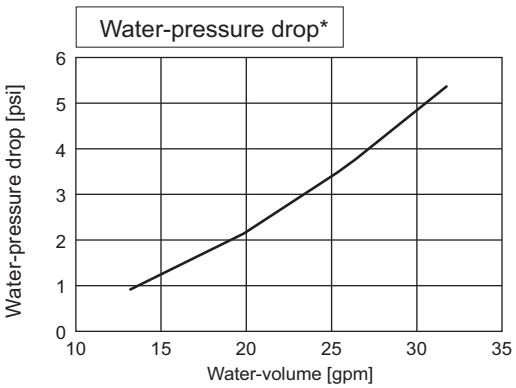


PQRY-		P192ZSLMU			
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.02	Input	kW	(Non-Ducted) 10.16 (Ducted) 8.90



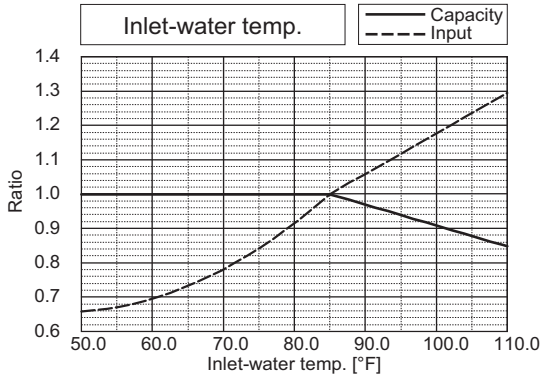


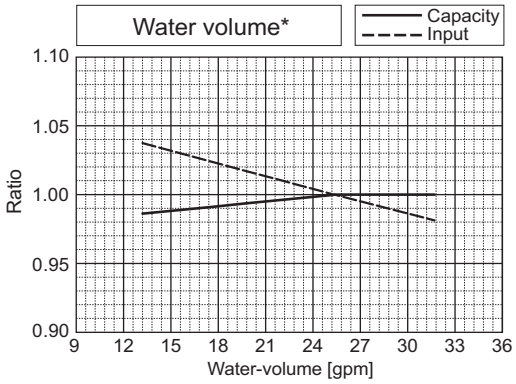


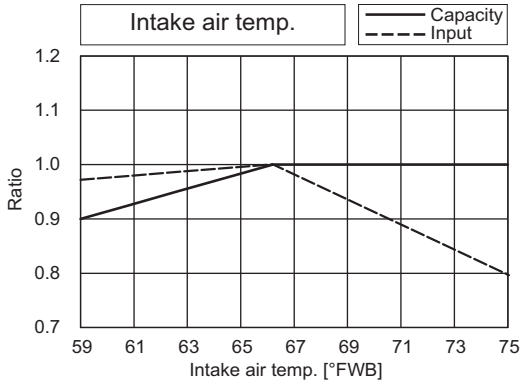


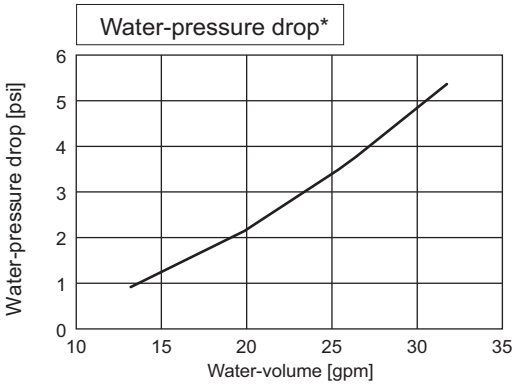
PQRY-		P216ZSLMU			
Nominal Cooling Capacity	kW	63.3	Rated Cooling Capacity	kW	60.4
	BTU/h	216,000		BTU/h	206,000
Input	kW	14.03	Input	kW	(Non-Ducted) 12.93 (Ducted) 13.24

*The drawing indicates characteristic per unit.

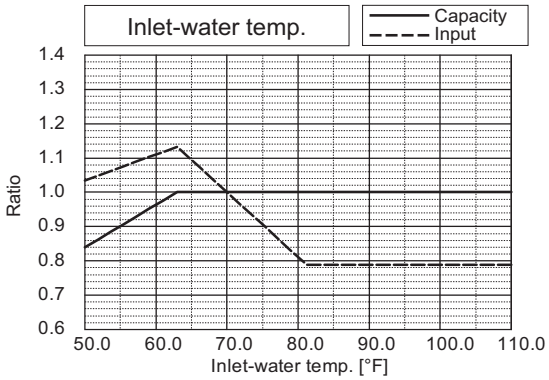


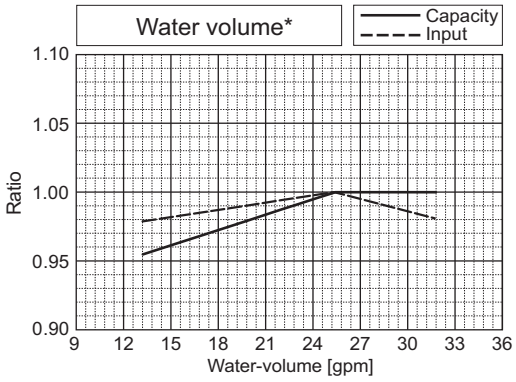


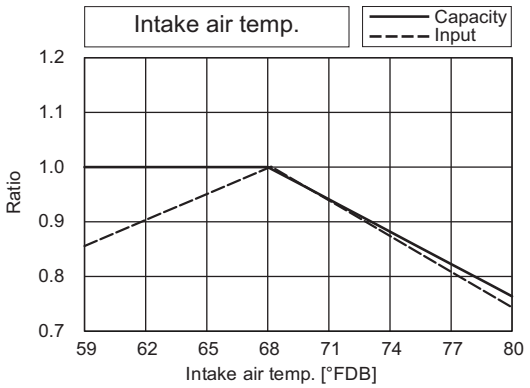


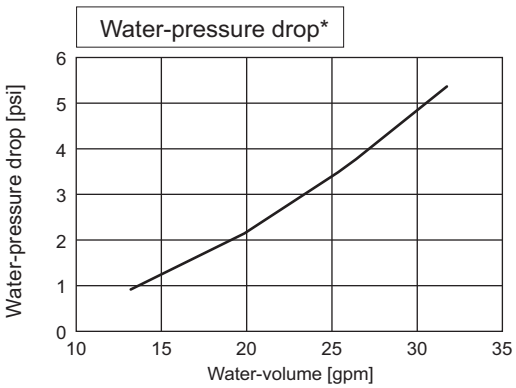


PQRY-		P216ZSLMU			
Nominal Heating Capacity	kW	71.2	Rated Heating Capacity	kW	68.0
	BTU/h	243,000		BTU/h	232,000
Input	kW	12.88	Input	kW	(Non-Ducted) 11.88 (Ducted) 10.35



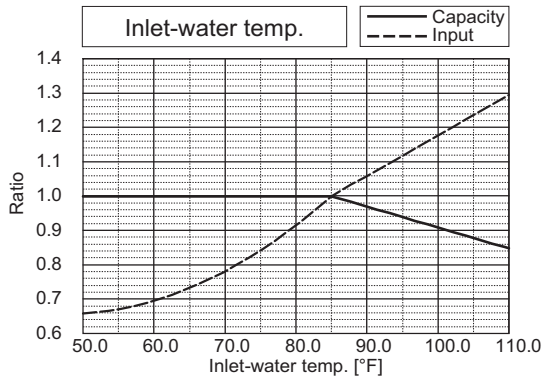


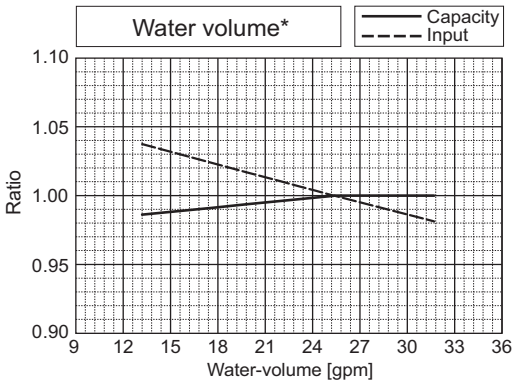


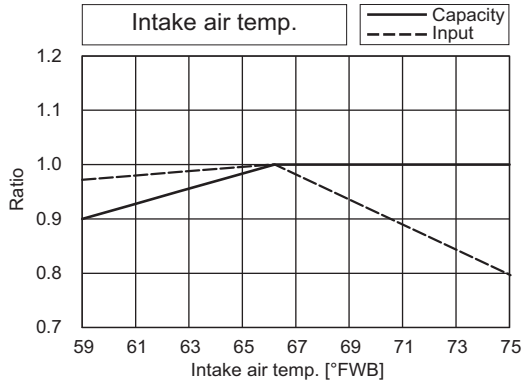


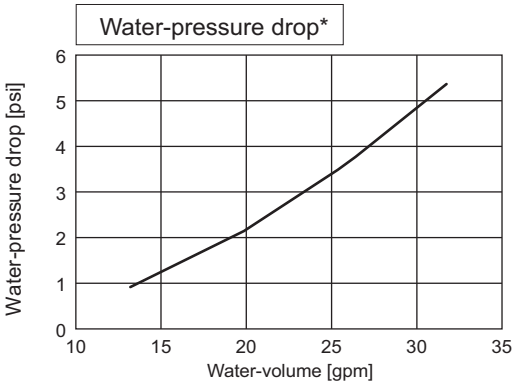
PQRY-		P240ZSLMU			
Nominal Cooling Capacity	kW	70.3	Rated Cooling Capacity	kW	66.8
	BTU/h	240,000		BTU/h	228,000
Input	kW	16.89	Input	kW	(Non-Ducted) 15.57 (Ducted) 16.15

*The drawing indicates characteristic per unit.

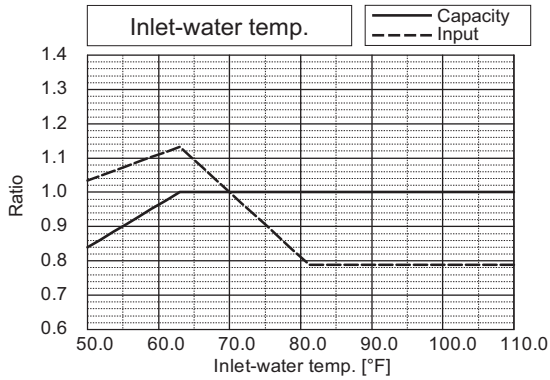


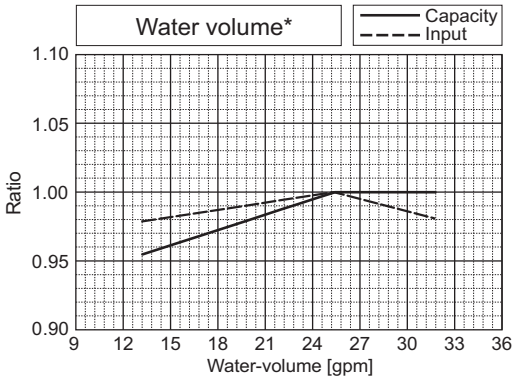


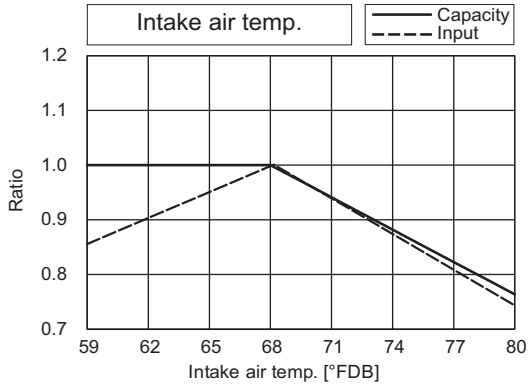


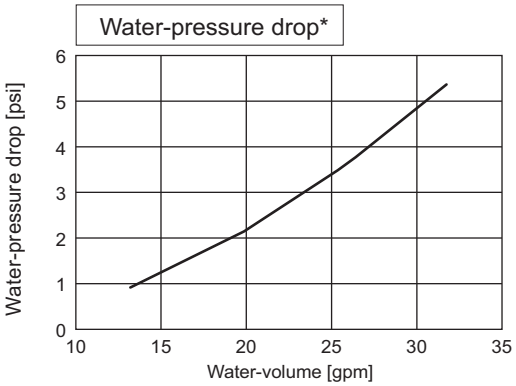


PQRY-		P240ZSLMU			
Nominal Heating Capacity	kW	79.1	Rated Heating Capacity	kW	75.6
	BTU/h	270,000		BTU/h	258,000
Input	kW	14.58	Input	kW	(Non-Ducted) 13.45 (Ducted) 12.02



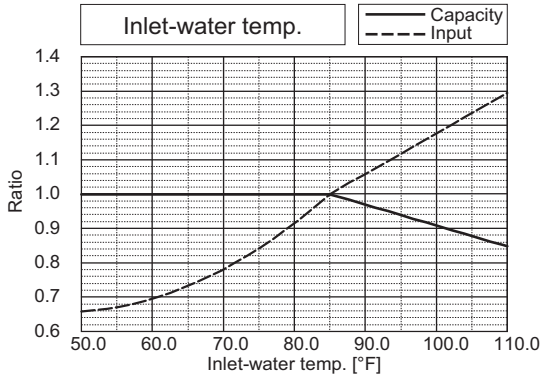


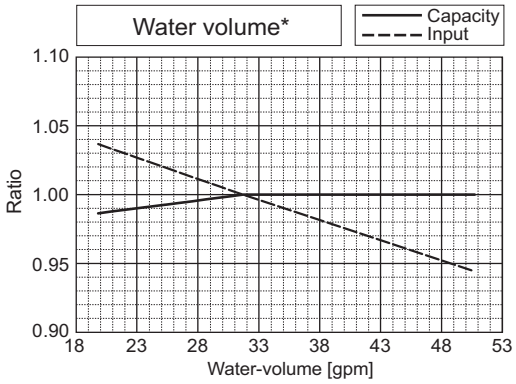


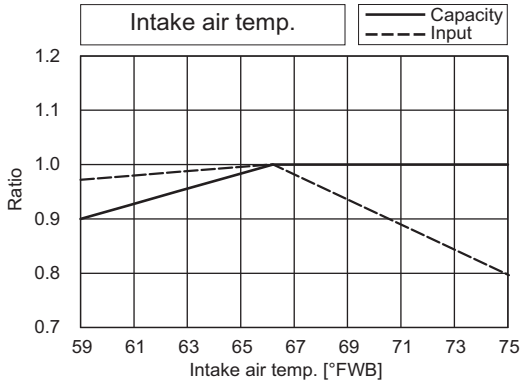


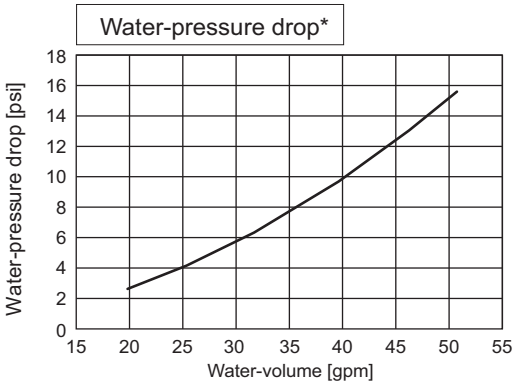
PQRY-		P288ZSLMU			
Nominal Cooling Capacity	kW	84.4	Rated Cooling Capacity	kW	80.6
	BTU/h	288,000		BTU/h	275,000
Input	kW	20.42	Input	kW	(Non-Ducted) 18.82 (Ducted) 21.43

*The drawing indicates characteristic per unit.

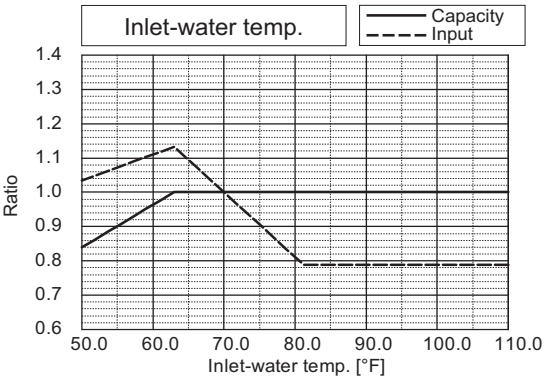


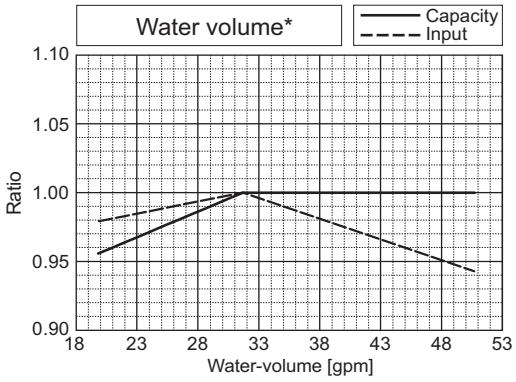


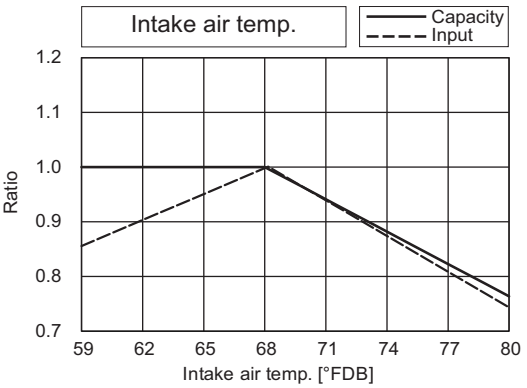


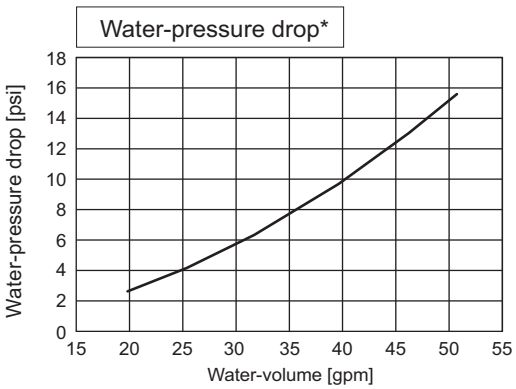


PQRY-		P288ZSLMU			
Nominal Heating Capacity	kW	94.7	Rated Heating Capacity	kW	90.3
	BTU/h	323,000		BTU/h	308,000
Input	kW	17.50	Input	kW	(Non-Ducted) 16.13 (Ducted) 16.05



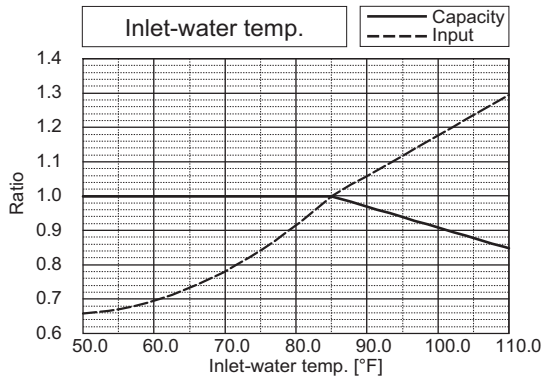


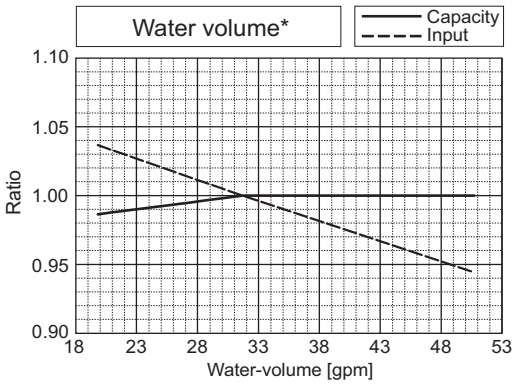


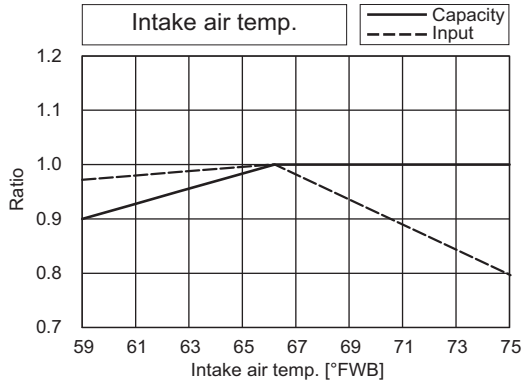


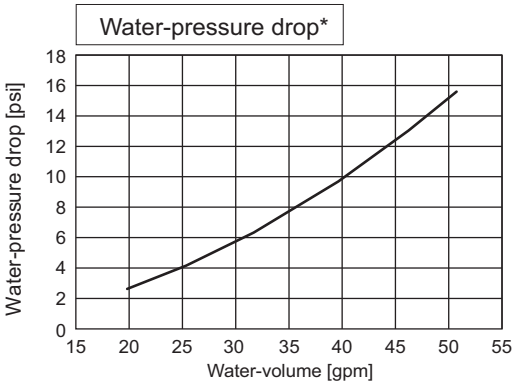
PQRY-		P312ZSLMU			
Nominal Cooling Capacity	kW	91.4	Rated Cooling Capacity	kW	87.0
	BTU/h	312,000		BTU/h	297,000
Input	kW	23.41	Input	kW	(Non-Ducted) 21.59 (Ducted) 23.67

*The drawing indicates characteristic per unit.

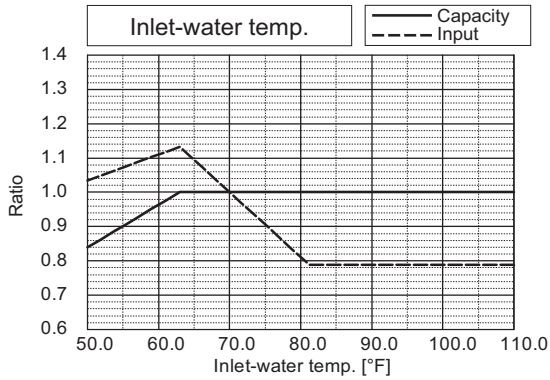


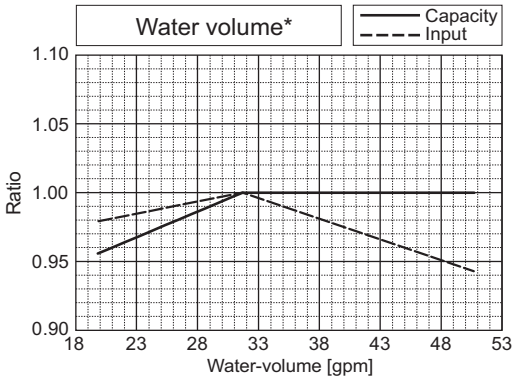


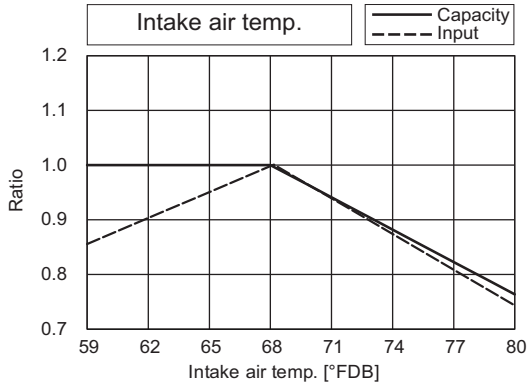


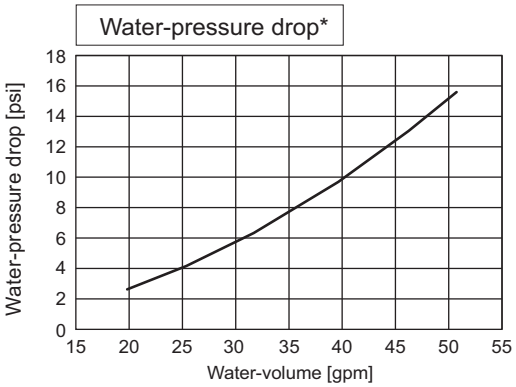


PQRY-		P312ZSLMU			
Nominal Heating Capacity	kW	102.6	Rated Heating Capacity	kW	97.9
	BTU/h	350,000		BTU/h	334,000
Input	kW	19.11	Input	kW	(Non-Ducted) 17.62 (Ducted) 17.96



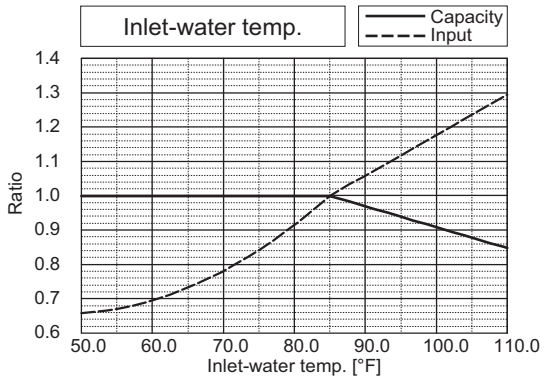


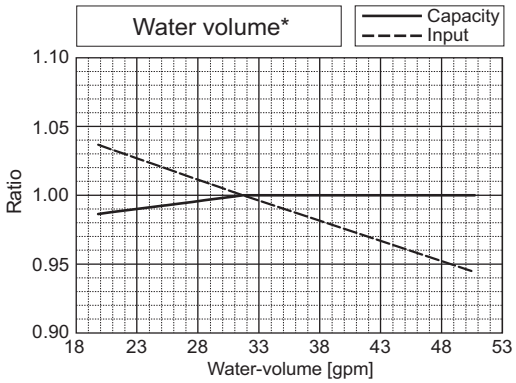


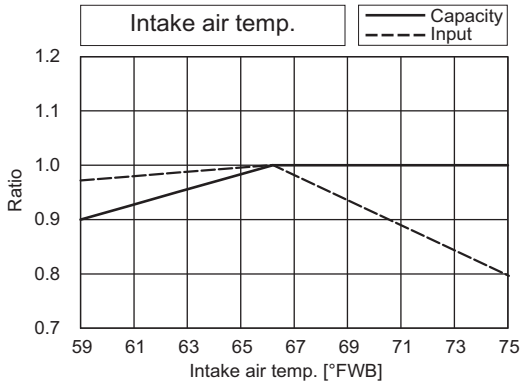


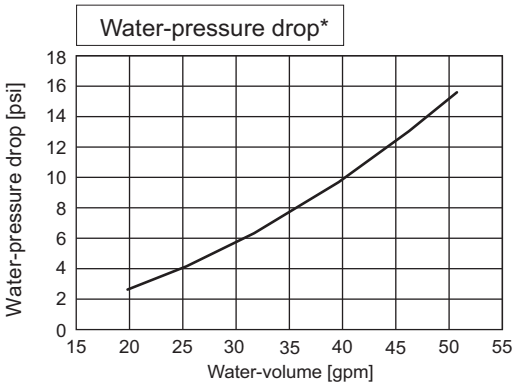
PQRY-		P336ZSLMU			
Nominal Cooling Capacity	kW	98.5	Rated Cooling Capacity	kW	93.8
	BTU/h	336,000		BTU/h	320,000
Input	kW	26.84	Input	kW	(Non-Ducted) 24.76 (Ducted) 25.85

*The drawing indicates characteristic per unit.

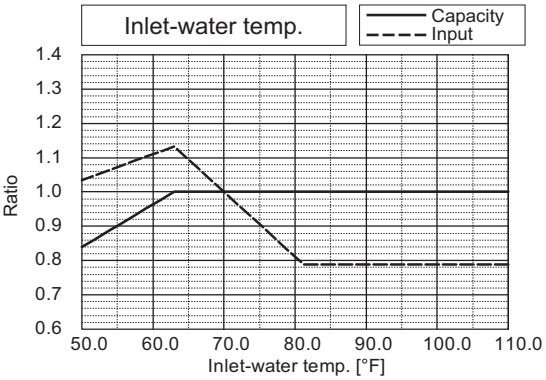


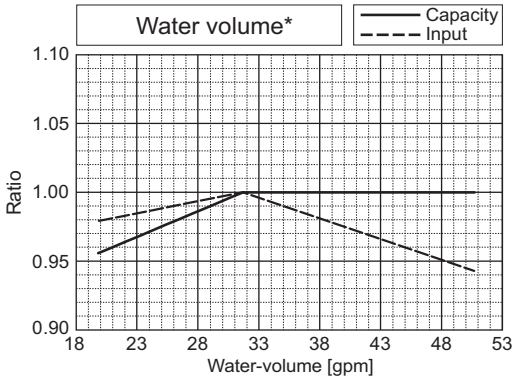


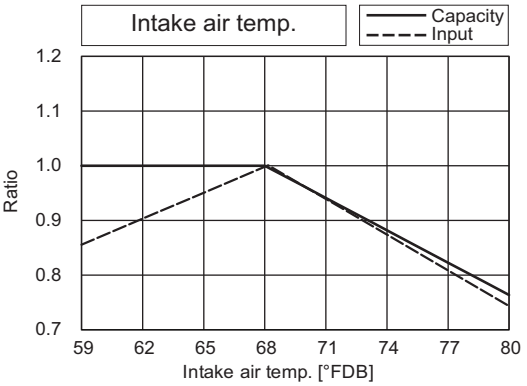


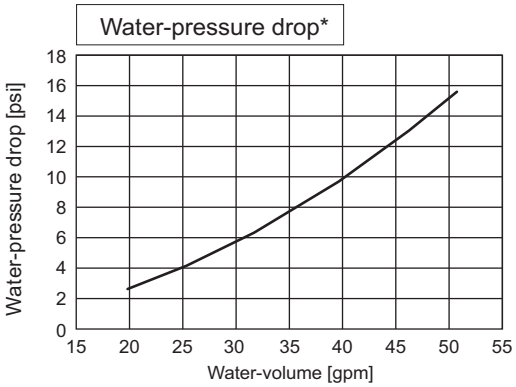


PQRY-		P336ZSLMU			
Nominal Heating Capacity	kW	110.8	Rated Heating Capacity	kW	105.8
	BTU/h	378,000		BTU/h	361,000
Input	kW	20.77	Input	kW	(Non-Ducted) 19.16 (Ducted) 20.05









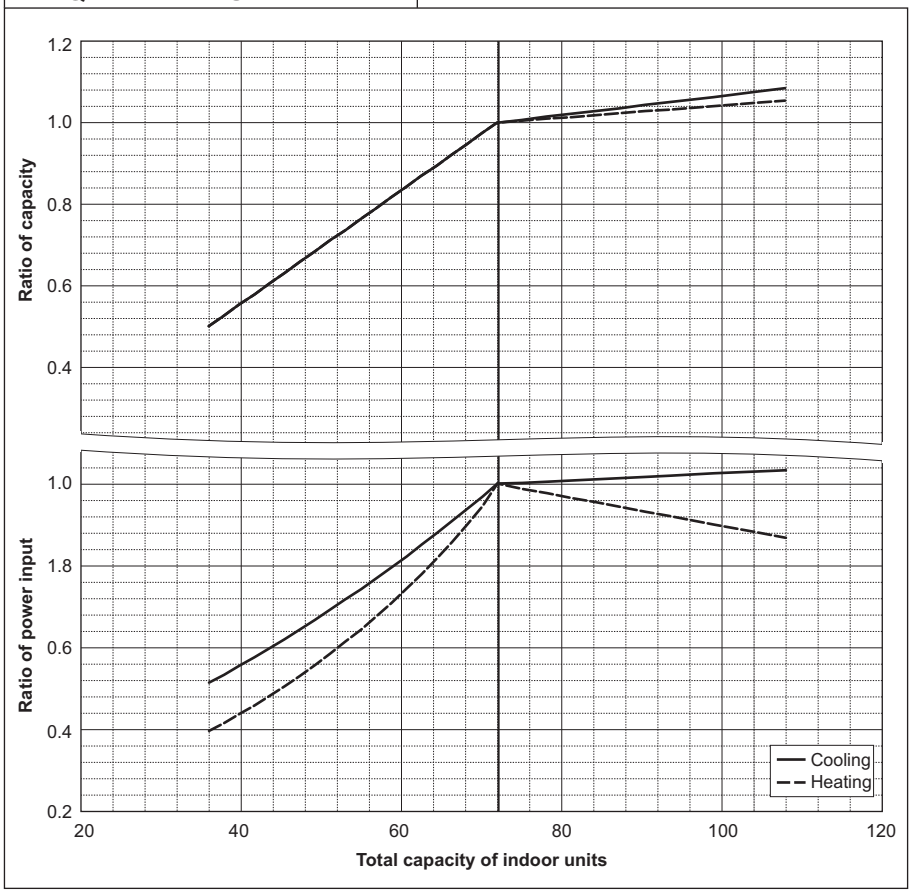
7-2. Correction by total indoor

CITY MULTI system have different capacities and inputs when many combinations of indoor units with different total capacities are connected. Using following tables, the maximum capacity can be found to ensure the system is installed with enough capacity for a particular application.

PQRY-			P72ZLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	72,000	
		kW	21.1	
	Input	kW	3.23	
Rated cooling capacity		BTU/h	69,000	
		kW	20.2	
	Input	kW	2.96	3.12

PQRY-			P72ZLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	80,000	
		kW	23.4	
	Input	kW	3.63	
Rated Heating capacity		BTU/h	76,000	
		kW	22.3	
	Input	kW	3.34	3.36

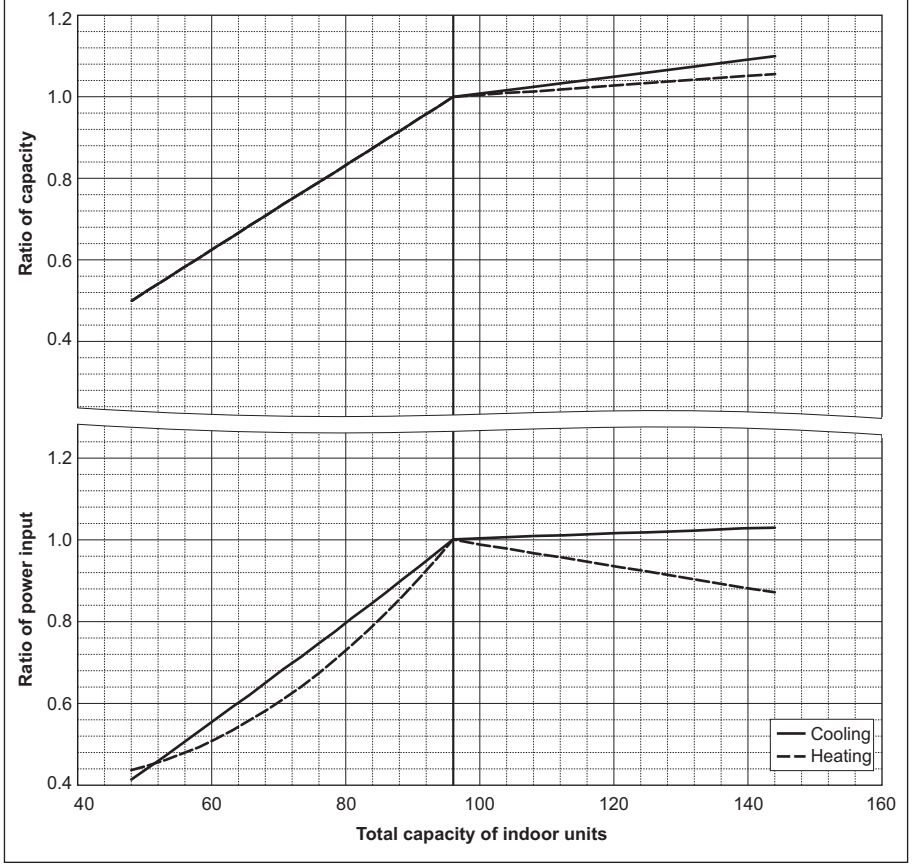
PQRY-P72ZLMU-A



PQRY-			P96ZLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	96,000	
		kW	28.1	
	Input	kW	4.65	
Rated cooling capacity		BTU/h	92,000	
		kW	27.0	
	Input	kW	4.26	5.19

PQRY-			P96ZLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	108,000	
		kW	31.7	
	Input	kW	5.05	
Rated Heating capacity		BTU/h	103,000	
		kW	30.2	
	Input	kW	4.65	4.48

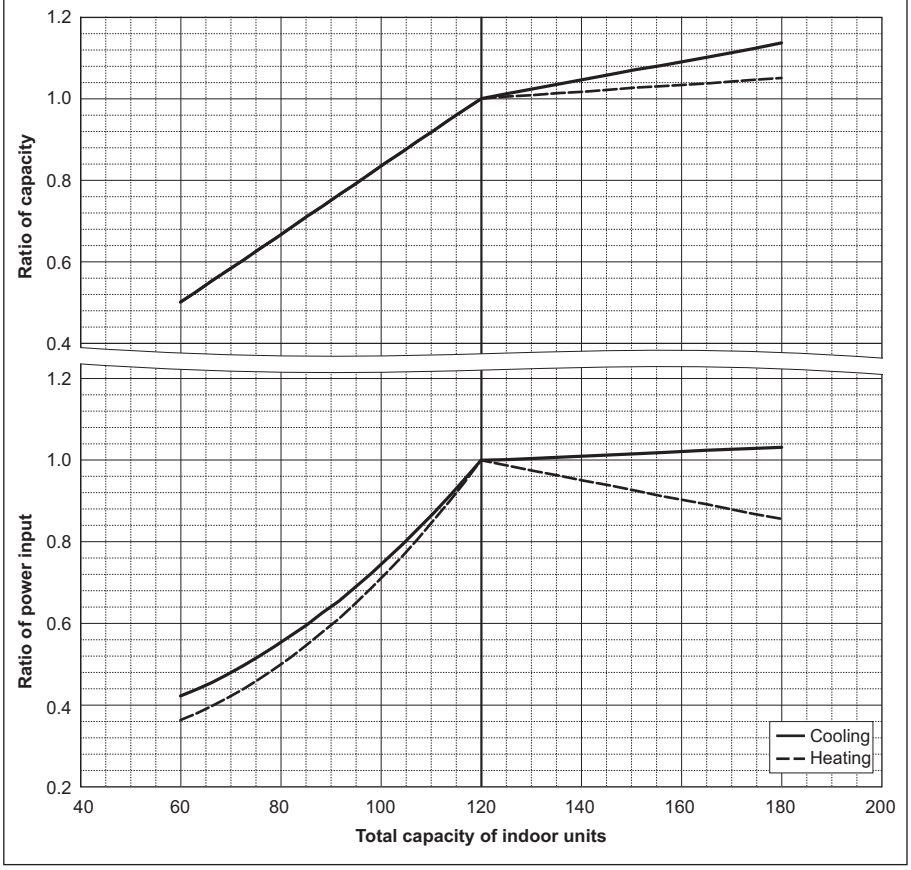
PQRY-P96ZLMU-A



PQRY-			P120ZLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	120,000	
		kW	35.2	
	Input	kW	7.24	
Rated cooling capacity		BTU/h	114,000	
		kW	33.4	
	Input	kW	6.66	7.35

PQRY-			P120ZLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	135,000	
		kW	39.6	
	Input	kW	6.83	
Rated Heating capacity		BTU/h	129,000	
		kW	37.8	
	Input	kW	6.29	5.92

PQRY-P120ZLMU-A



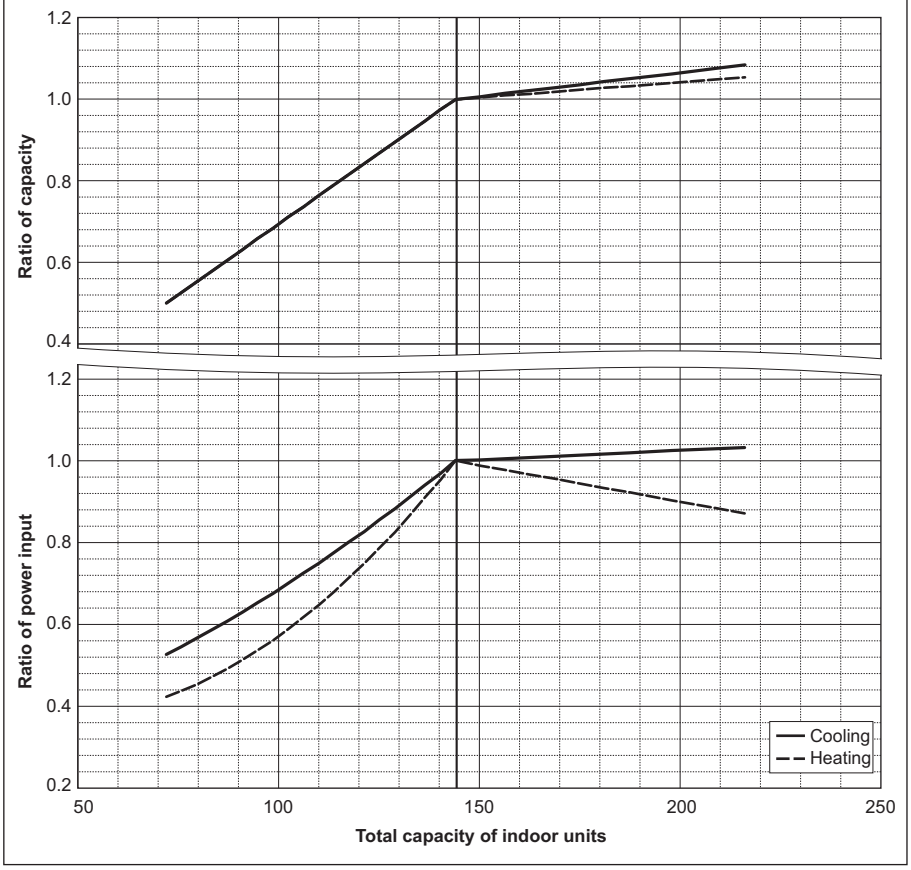
PQRY-			P144ZLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	144,000	
		kW	42.2	
	Input	kW	8.78	
Rated cooling capacity		BTU/h	137,000	
		kW	40.2	
	Input	kW	8.07	9.98

PQRY-			P144ZLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	160,000	
		kW	46.9	
	Input	kW	8.11	
Rated Heating capacity		BTU/h	152,000	
		kW	44.5	
	Input	kW	7.47	7.90

PQRY-			P144ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	144,000	
		kW	42.2	
	Input	kW	7.11	
Rated cooling capacity		BTU/h	137,000	
		kW	40.2	
	Input	kW	6.53	7.72

PQRY-			P144ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	160,000	
		kW	46.9	
	Input	kW	7.45	
Rated Heating capacity		BTU/h	152,000	
		kW	44.5	
	Input	kW	6.86	7.22

PQRY-P144Z(S)LMU-A



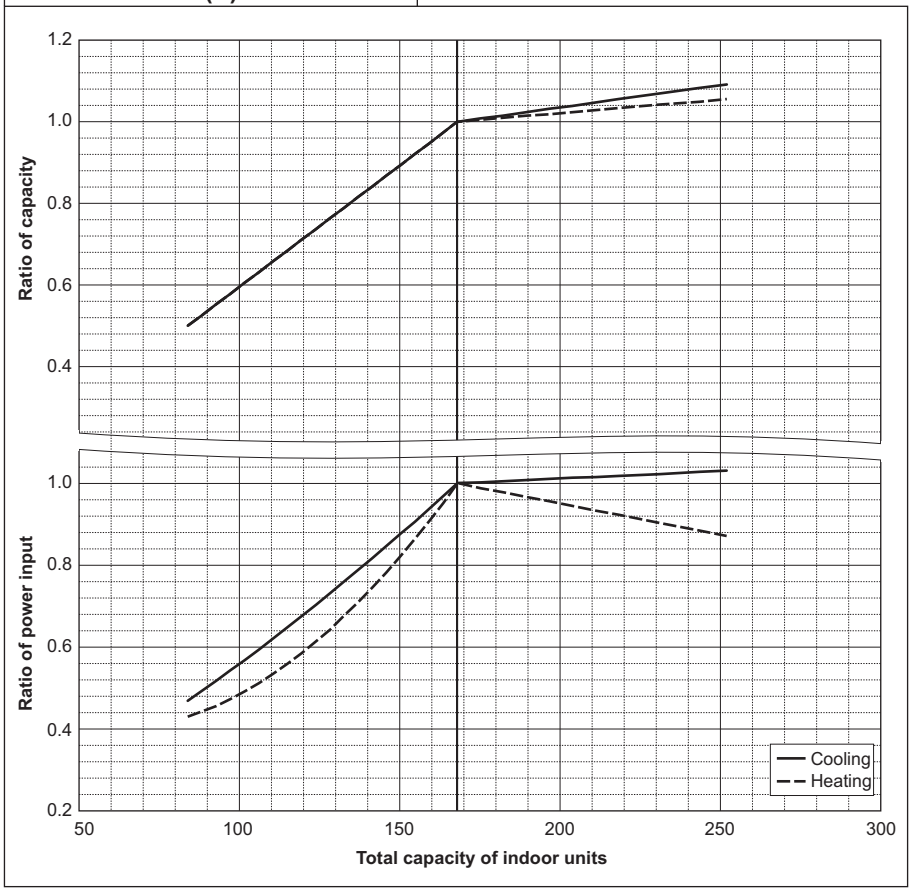
PQRY-			P168ZLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	168,000	
		kW	49.2	
	Input	kW	12.05	
Rated cooling capacity		BTU/h	161,000	
		kW	47.2	
	Input	kW	11.10	11.88

PQRY-			P168ZLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	188,000	
		kW	55.1	
	Input	kW	9.86	
Rated Heating capacity		BTU/h	179,000	
		kW	52.5	
	Input	kW	9.09	9.72

PQRY-			P168ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	168,000	
		kW	49.2	
	Input	kW	9.33	
Rated cooling capacity		BTU/h	161,000	
		kW	47.2	
	Input	kW	8.58	9.22

PQRY-			P168ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	188,000	
		kW	55.1	
	Input	kW	9.34	
Rated Heating capacity		BTU/h	179,000	
		kW	52.5	
	Input	kW	8.60	8.03

PQRY-P168Z(S)LMU-A



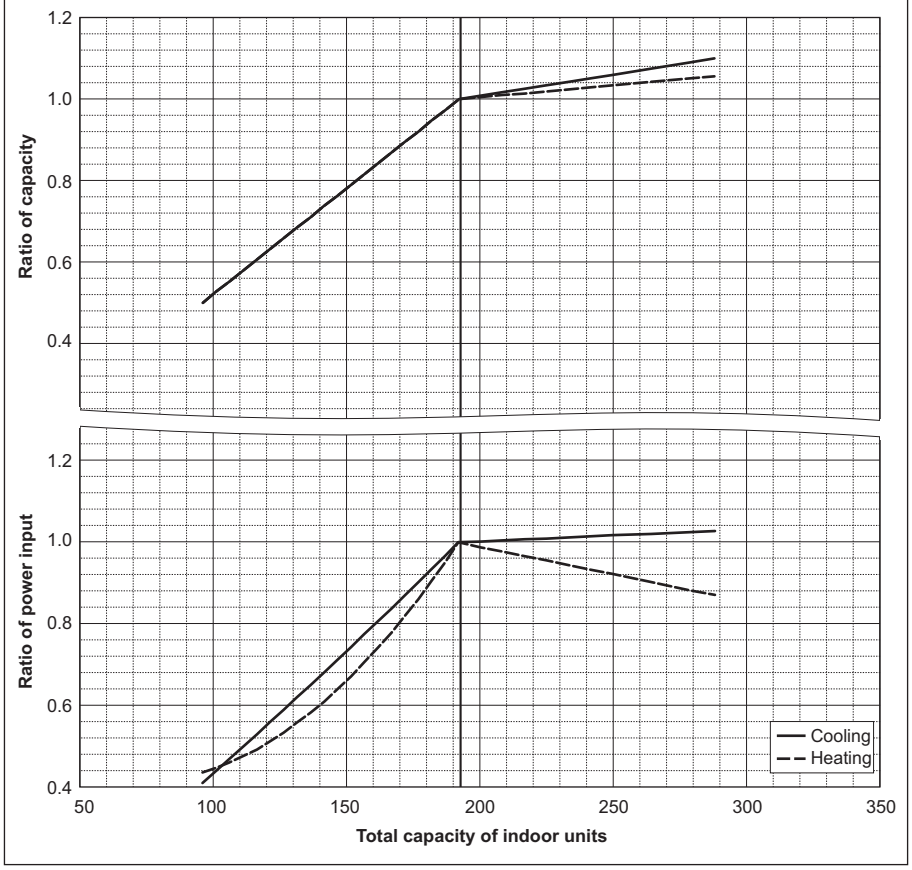
PQRY-			P192ZLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	192,000	
		kW	56.3	
	Input	kW	15.05	
Rated cooling capacity		BTU/h	183,000	
		kW	53.6	
	Input	kW	13.87	14.19

PQRY-			P192ZLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	215,000	
		kW	63.0	
	Input	kW	11.90	
Rated Heating capacity		BTU/h	205,000	
		kW	60.1	
	Input	kW	10.97	11.56

PQRY-			P192ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	192,000	
		kW	56.3	
	Input	kW	11.30	
Rated cooling capacity		BTU/h	183,000	
		kW	53.6	
	Input	kW	10.40	10.98

PQRY-			P192ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	215,000	
		kW	63.0	
	Input	kW	11.02	
Rated Heating capacity		BTU/h	205,000	
		kW	60.1	
	Input	kW	10.16	8.90

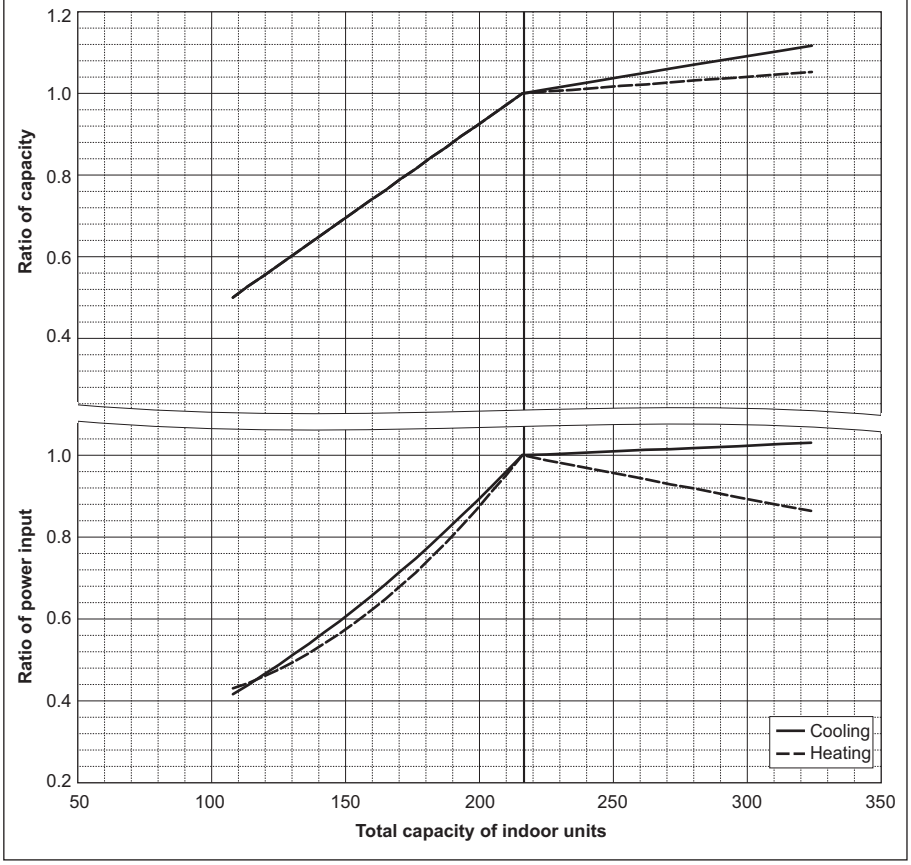
PQRY-P192Z(S)LMU-A



PQRY-			P216ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	216,000	
		kW	63.3	
	Input	kW	14.03	
Rated cooling capacity		BTU/h	206,000	
		kW	60.4	
	Input	kW	12.93	13.24

PQRY-			P216ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	243,000	
		kW	71.2	
	Input	kW	12.88	
Rated Heating capacity		BTU/h	232,000	
		kW	68.0	
	Input	kW	11.88	10.35

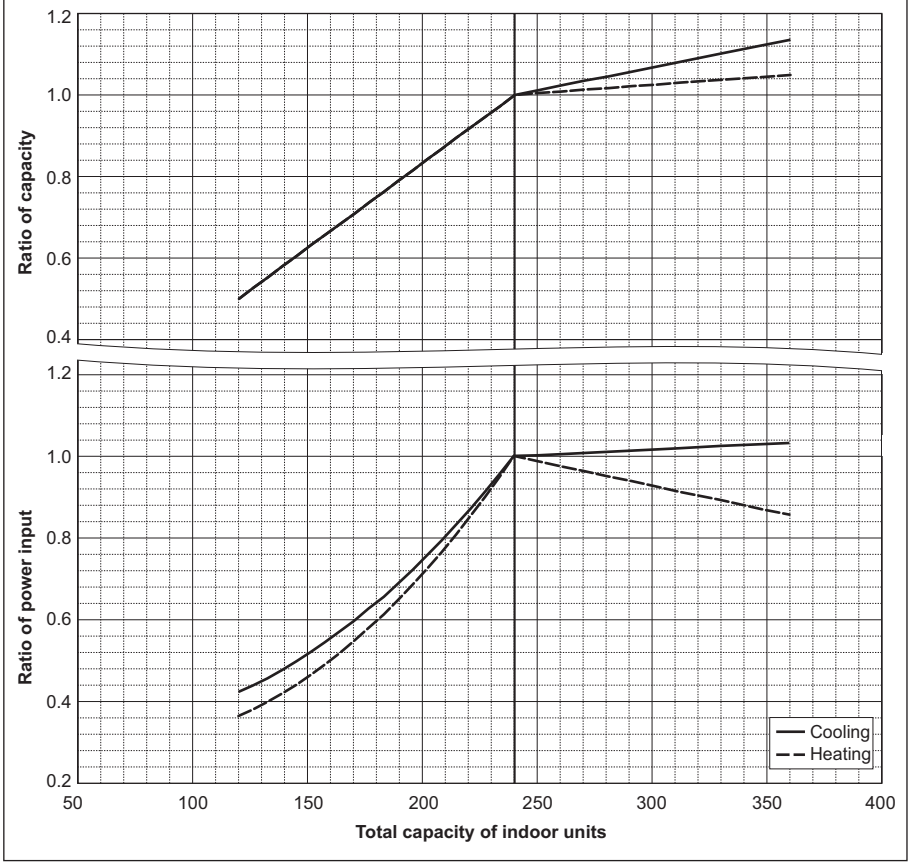
PQRY-P216ZSLMU-A



PQRY-			P240ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	240,000	
		kW	70.3	
	Input	kW	16.89	
Rated cooling capacity		BTU/h	228,000	
		kW	66.8	
	Input	kW	15.57	16.15

PQRY-			P240ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	270,000	
		kW	79.1	
	Input	kW	14.58	
Rated Heating capacity		BTU/h	258,000	
		kW	75.6	
	Input	kW	13.45	12.02

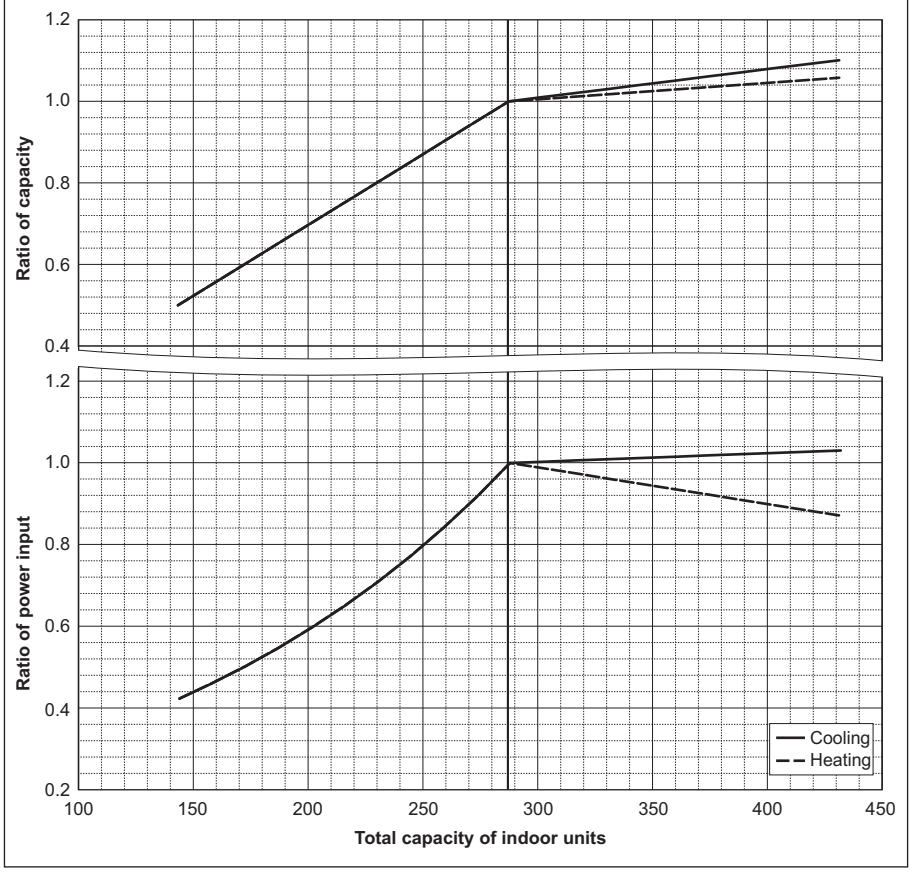
PQRY-P240ZSLMU-A



PQRY-			P288ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	288,000	
		kW	84.4	
	Input	kW	20.42	
Rated cooling capacity		BTU/h	275,000	
		kW	80.6	
	Input	kW	18.82	21.43

PQRY-			P288ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	323,000	
		kW	94.7	
	Input	kW	17.50	
Rated Heating capacity		BTU/h	308,000	
		kW	90.3	
	Input	kW	16.13	16.05

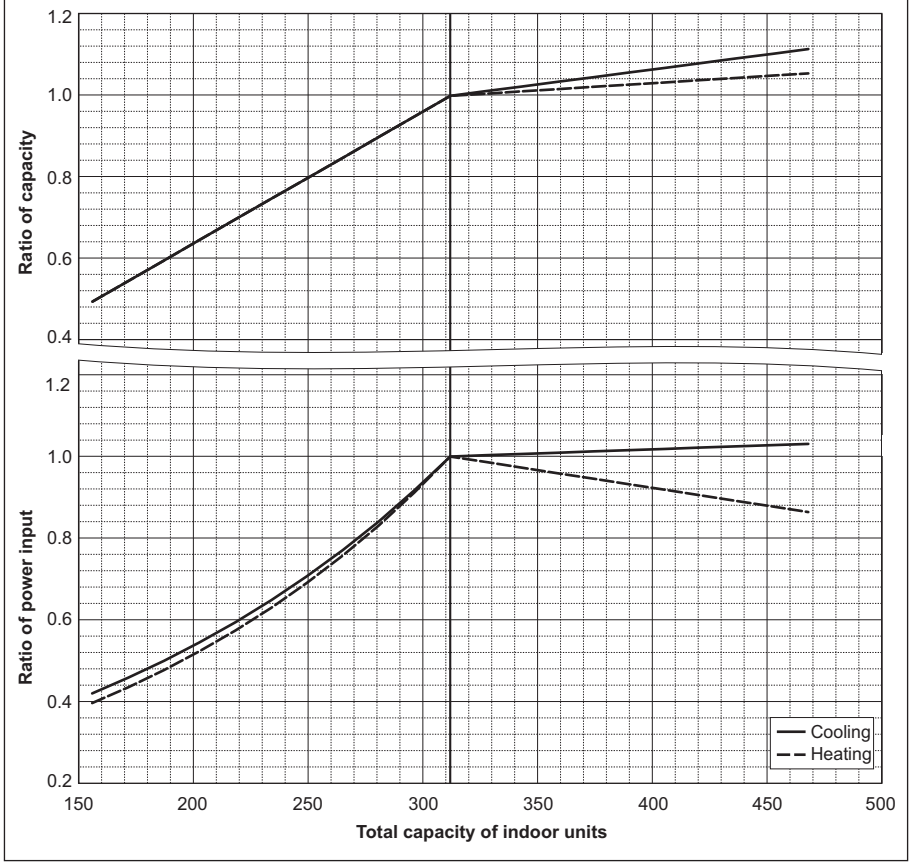
PQRY-P288ZSLMU-A



PQRY-			P312ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	312,000	
		kW	91.4	
	Input	kW	23.41	
Rated cooling capacity		BTU/h	297,000	
		kW	87.0	
	Input	kW	21.59	23.67

PQRY-			P312ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	350,000	
		kW	102.6	
	Input	kW	19.11	
Rated Heating capacity		BTU/h	334,000	
		kW	97.9	
	Input	kW	17.62	17.96

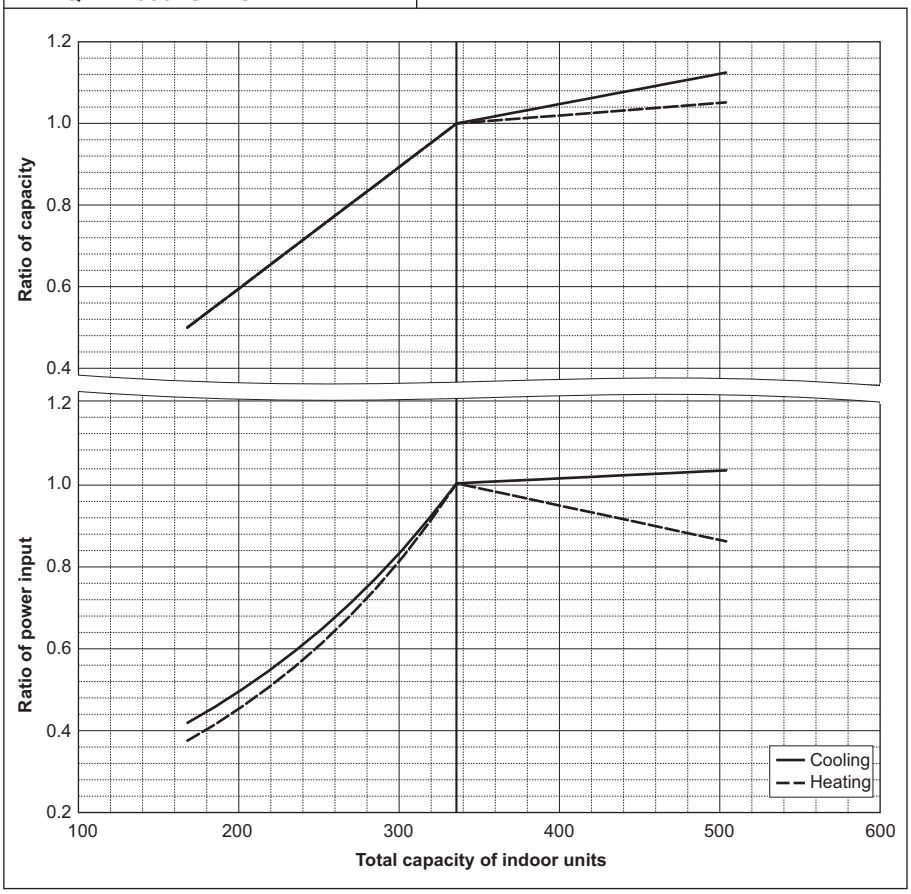
PQRY-P312ZSLMU-A



PQRY-			P336ZSLMU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	336,000	
		kW	98.5	
	Input	kW	26.84	
Rated cooling capacity		BTU/h	320,000	
		kW	93.8	
	Input	kW	24.76	25.85

PQRY-			P336ZSLMU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	378,000	
		kW	110.8	
	Input	kW	20.77	
Rated Heating capacity		BTU/h	361,000	
		kW	105.8	
	Input	kW	19.16	20.05

PQRY-P336ZSLMU-A

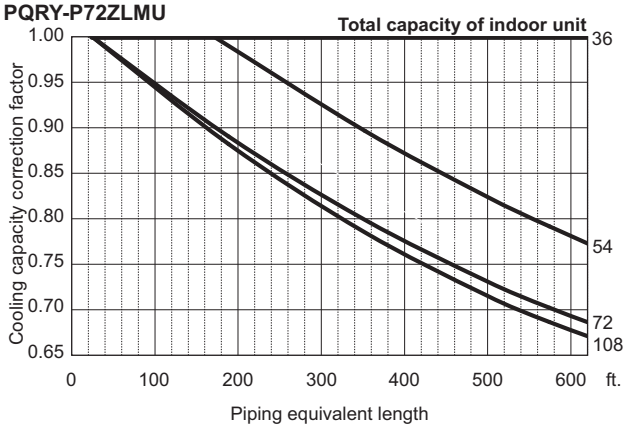


7-3. Correction by refrigerant piping length

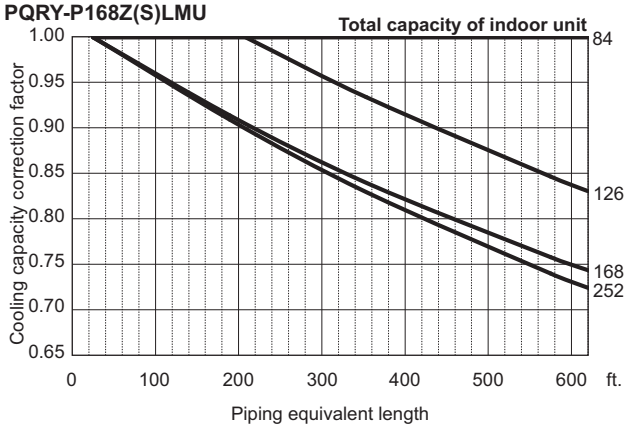
CITY MULTI system can extend the piping flexibly within its limitation for the actual situation. However, a decrease of cooling/heating capacity could happen correspondently. Using following correction factor according to the equivalent length of the piping shown at 7-3-1 and 7-3-2, the capacity can be observed. 7-3-3 shows how to obtain the equivalent length of piping.

7-3-1. Cooling capacity correction

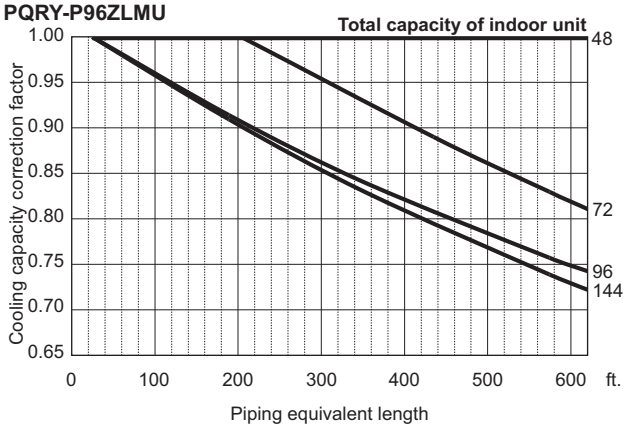
PQRY-P72ZLMU



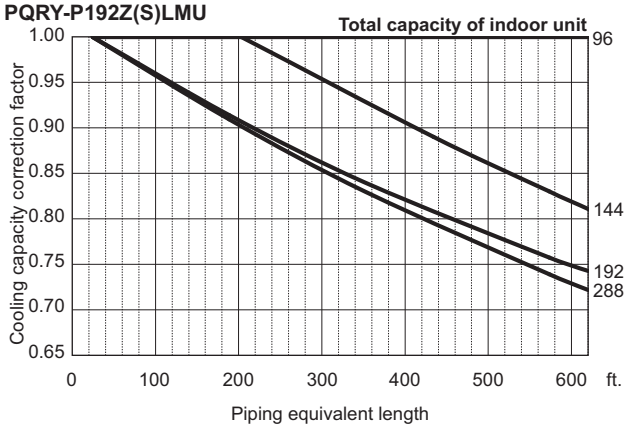
PQRY-P168Z(S)LMU



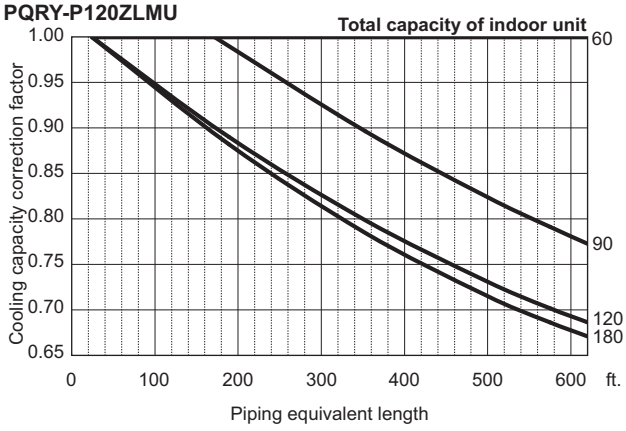
PQRY-P96ZLMU



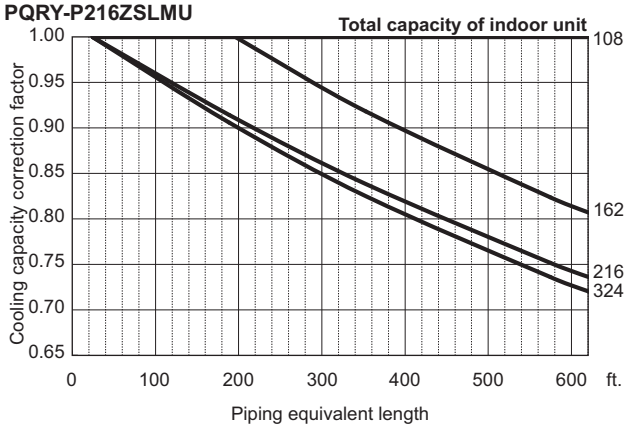
PQRY-P192Z(S)LMU



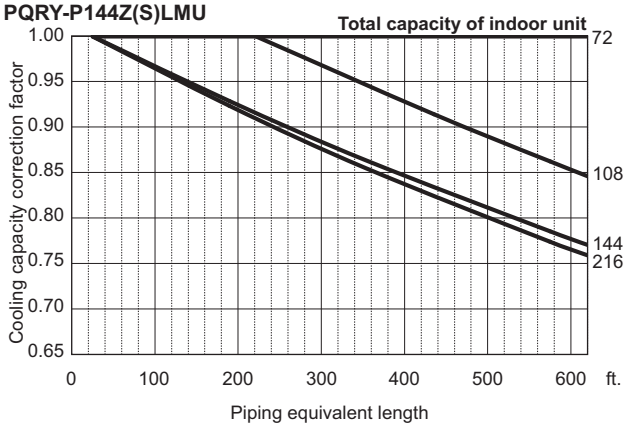
PQRY-P120ZLMU



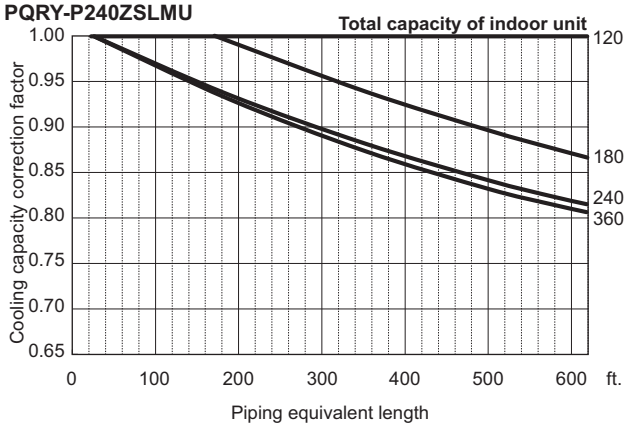
PQRY-P216ZSLMU



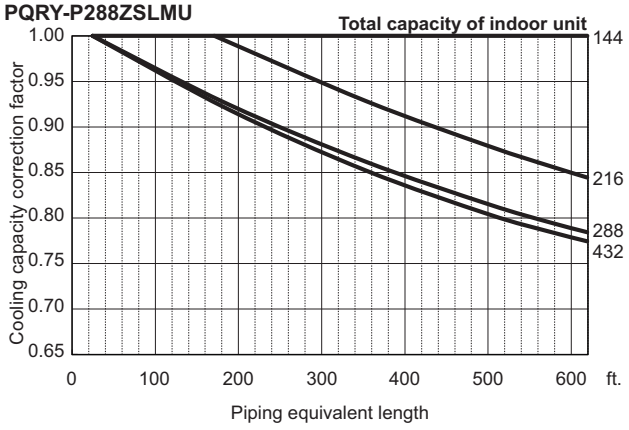
PQRY-P144Z(S)LMU



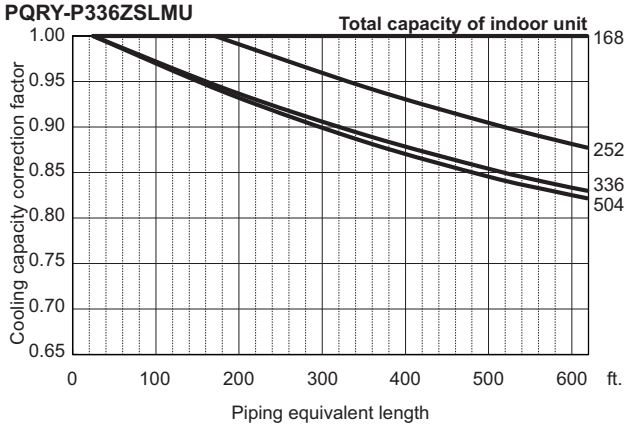
PQRY-P240ZSLMU



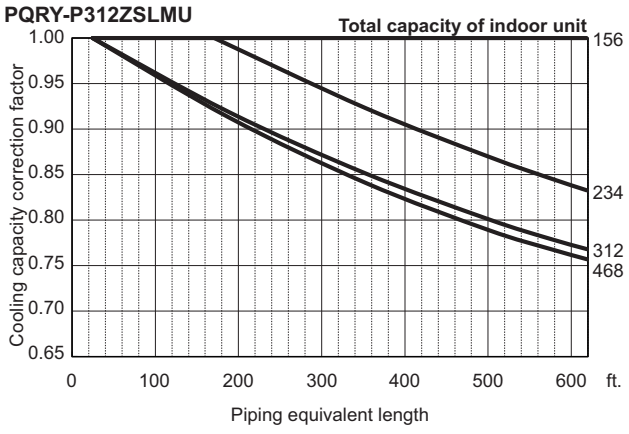
PQRY-P288ZSLMU



PQRY-P336ZSLMU

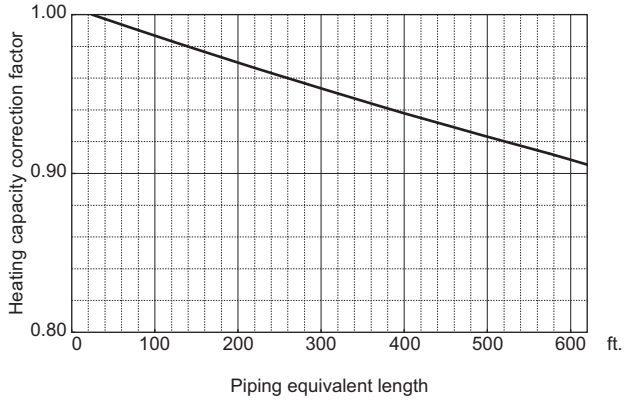


PQRY-P312ZSLMU

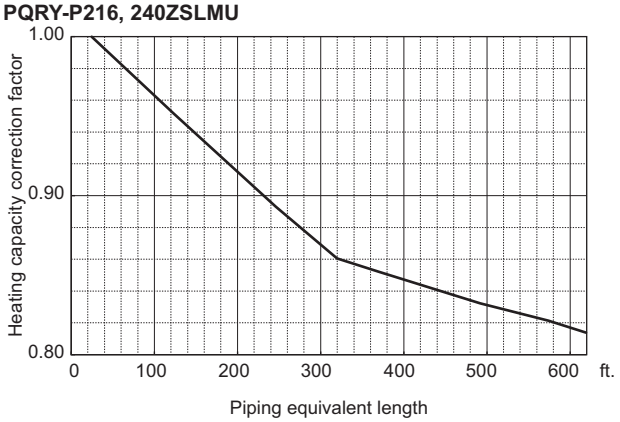


7-3-2. Heating capacity correction

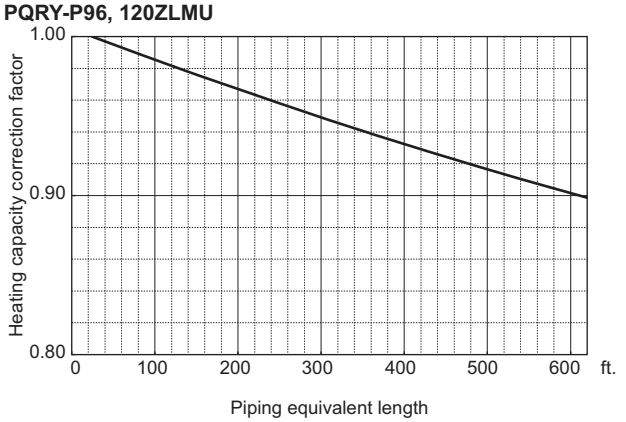
PQRY-P72ZLMU



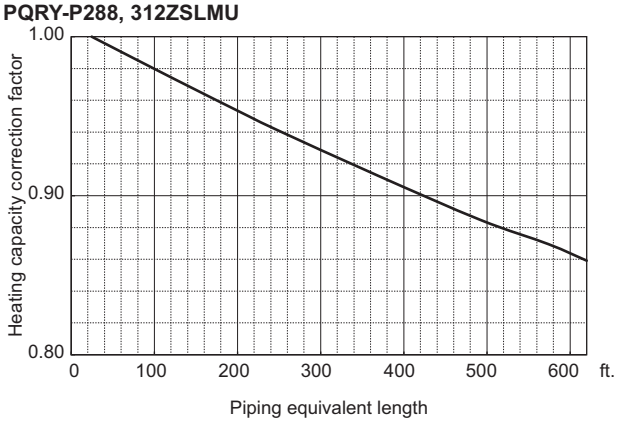
PQRY-P216, 240ZSLMU



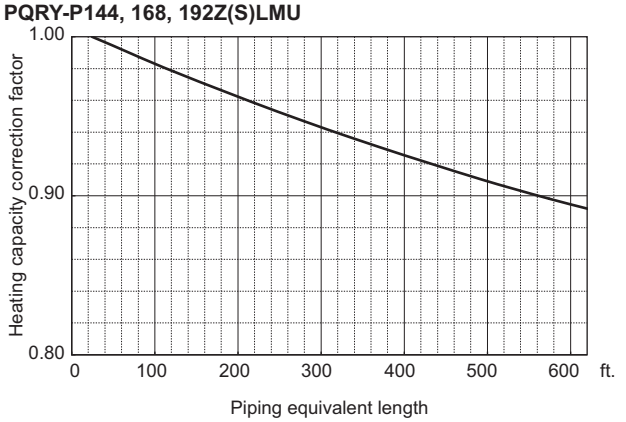
PQRY-P96, 120ZLMU



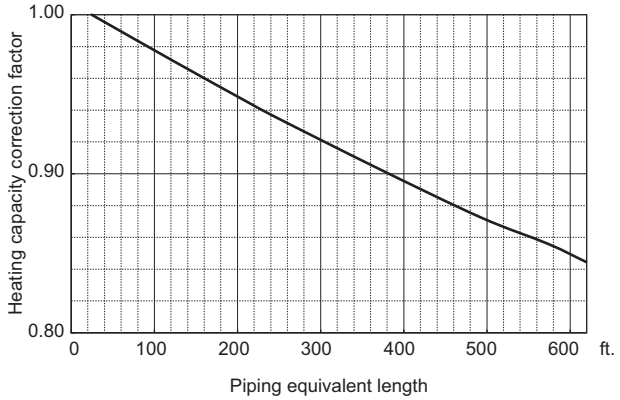
PQRY-P288, 312ZSLMU



PQRY-P144, 168, 192Z(S)LMU



PQRY-P336ZSLMU



7-3-3. How to obtain the equivalent piping length

1. PQRY-P72ZLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.15 x number of bent on the piping) [ft.]
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 x number of bent on the piping) [m]

2. PQRY-P96ZLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.38 x number of bent on the piping) [ft.]
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 x number of bent on the piping) [m]

3. PQRY-P120ZLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.54 x number of bent on the piping) [ft.]
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.47 x number of bent on the piping) [m]

4. PQRY-P144, 168, 192, 216, 240Z(S)LMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.64 x number of bent on the piping) [ft.]
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 x number of bent on the piping) [m]

5. PQRY-P288, 312ZSLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (2.29 x number of bent on the piping) [ft.]
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.70 x number of bent on the piping) [m]

6. PQRY-P336ZSLMU

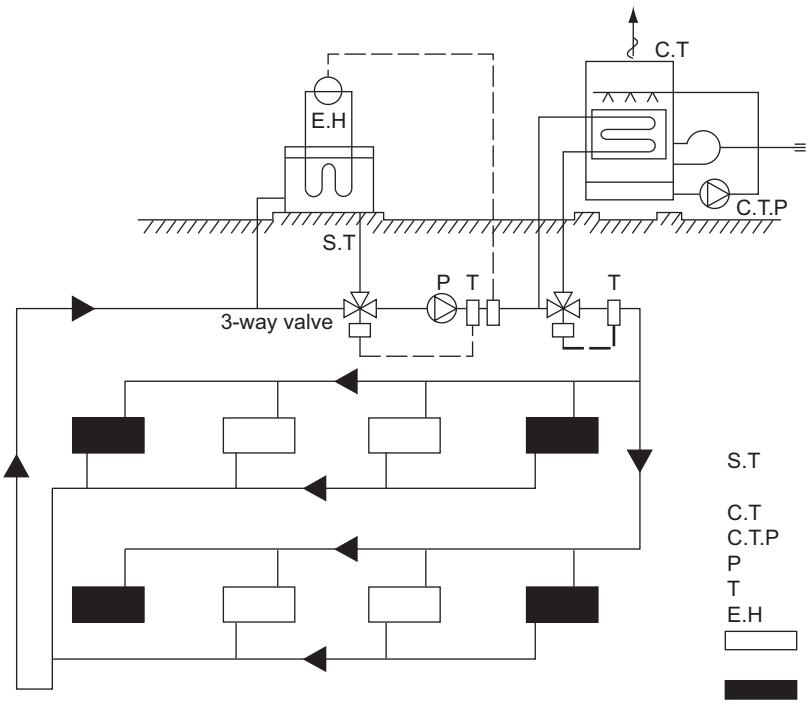
Equivalent length = (Actual piping length to the farthest indoor unit) + (2.70 x number of bent on the piping) [ft.]
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.80 x number of bent on the piping) [m]

8-1. Designing of water circuit system

1) Example of basic water circuit

The water circuit of the water heat source CITY MULTI connects the heat source unit with the cooling tower/auxiliary heat source/heat storage tank/circulation pump with a single system water piping as shown in the figure below. The selector valve automatically controls to circulate water toward the cooling tower in the cooling season, while toward the heat storage tank in the heating season. If the circulation water temperature is kept in a range of 10~45°C [50~113°F]* regardless of the building load, the water heat source CITY MULTI can be operated for either cooling or heating. Therefore in the summer when only cooling load exists, the temperature rise of circulation water will be suppressed by operating the cooling tower. While in the winter when heating load increases, the temperature of circulation water may be dropped below 10°C [50°F]. Under such situation, the circulation water will be heated with the auxiliary heat source if it drops below a certain temperature.
When the thermal balance between cooling and heating operation is in a correct proportion, the operation of the auxiliary heat source and cooling tower is not required.
In order to control the above thermal balance properly and use thermal energy effectively, utilizing of heat storage tanks, and night-time discounted electric power as a auxiliary heat source will be economical.
Meantime as this system uses plural sets of heat source unit equipped with water heat exchangers, water quality control is important. Therefore it is recommended to use closed type cooling towers as much as possible to prevent the circulation water from being contaminated.
When open type cooling towers are used, it is essential to provide proper maintenance control such as that to install water treatment system to prevent troubles caused by contaminated circulation water.

Example of basic water circuit for water heat source CITY MULTI



S.T : Heating tank (Heat storage tank)
C.T : Cooling tower
C.T.P : Cooling water pump
P : Circulation water pump
T : Thermostat for water
E.H : Electric heater
: Heat source unit for cooling operation
: Heat source unit for heating operation

The indoor unit and refrigerant piping system are excluded in this figure.

2) Cooling tower

a) Types of cooling tower

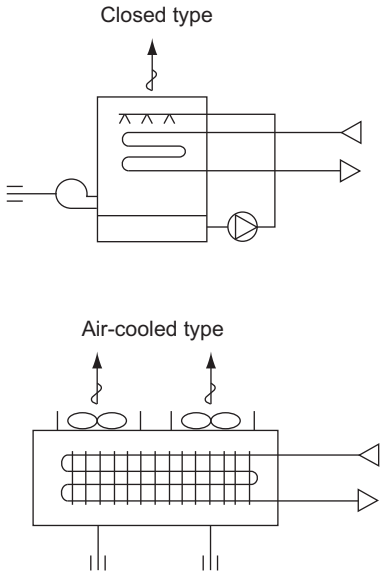
The cooling towers presently used include the open type cooling tower, open type cooling tower + heat exchanger, closed type cooling tower, and air-cooled type cooling tower. However, as the quality control of circulation water is essential when units are installed in decentralized state inside a building, the closed type cooling tower is generally employed in such case.

Although the circulation water will not be contaminated by atmospheric air, it is recommended to periodically blow water inside the system and replenish fresh water instead.

In a district where the coil may be frozen in the winter, it is necessary to apply antifreeze solution to the circulation water, or take freeze protection measures such as to automatically discharge water inside the cooling coil at the stopping of the pump.

When the open type cooling tower is used, be sure to install a water quality control device in addition to the freeze protection measures, as the water may be deteriorated by atmospheric contaminants entered into the cooling tower and dissolved into the circulation water.

Types of cooling towers



b) Calculation method of cooling tower capacity

All units of the water heat source CITY MULTI may possibly be in cooling operation temporarily (at pulling down) in the summer, however, it is not necessary to determine the capacity according to the total cooling capacity of all CITY MULTI units as this system has a wide operating water temperature range.

It is determined in accordance with the value obtained by adding the maximum cooling load of an actual building, the input heat equivalent value of all CITY MULTI units, and the cooling load of the circulating pumps. Please check for the values of the cooling water volume and circulation water volume.

$$\text{Cooling tower capacity} = \frac{Qc + 860 \times (\Sigma Qw + Pw)}{3{,}900} \text{ (Refrigeration ton)}$$

Qc : Maximum cooling load under actual state (kcal/h)
Qw : Total input of water heat source CITY MULTI at simultaneous operation under maximum state (kW)
Pw : Shaft power of circulation pumps (kW)

$$\text{Cooling tower capacity} = \frac{Qc + 3{,}412 \times (\Sigma Qw + Pw)}{15{,}500} \text{ (Refrigeration ton)}$$

Qc : Maximum cooling load under actual state (BTU/h)
Qw : Total input of water heat source CITY MULTI at simultaneous operation under maximum state (kW)
Pw : Shaft power of circulation pumps (kW)

* 1 Refrigerant ton of cooling tower capacity ≈ US refrigerant ton × (1 + 0.3)
= 3,900 kcal/h = 15,500 BTU/h

3) Auxiliary heat source and heat storage tank

When the heating load is larger than the cooling load, the circulation water temperature lowers in accordance with the heat balance of the system. It should be heated by the auxiliary heat source in order to keep the inlet water temperature within the operating range of the water heat source CITY MULTI.

Further in order to operate the water heat source CITY MULTI effectively, it is recommended to utilize the heat storage tank to cover the warming up load in the morning and the insufficient heat amount.
Effective heat utilization can be expected to cover insufficient heat at the warming up in the next morning or peak load time by storing heat by installing a heat storage tank or operating a low load auxiliary heat source at the stopping of the water heat source CITY MULTI. As it can also be possible to reduce the running cost through the heat storage by using the discounted night-time electric power, using both auxiliary heat source and heat storage tank together is recommended. The effective temperature difference of an ordinary heat storage tank shows about 5°C [41°F] even with the storing temperature at 45°C [113°F].
However with the water heat source CITY MULTI, it can be utilized as heating heat source up to 15°C [59°F] with an effective temperature of a high 30°C [54°F] approximately, thus the capacity of the heat storage tank can be minimized.

a) Auxiliary heat source

The following can be used as the auxiliary heat source.

- Boiler (Heavy oil, kerosine, gas, electricity)
- Electric heat (Insertion of electric heater into heat storage tank)
- Outdoor air (Air-heat source heat pump chiller)
- Warm discharge water (Exhaust water heat from machines inside building and hot water supply)
- Utilization of night-time lighting
- Solar heat

Please note that the auxiliary heat source should be selected after studying your operating environment and economical feasibility.

Determining the auxiliary heat source capacity

For the CITY MULTI water heat source system, a heat storage tank is recommended to use. When employment of the heat storage tank is difficult, the warming up operation should be arranged to cover the starting up heating load. Since the holding water inside the piping circuit owns heat capacity and the warming up operation can be assumed for about one hour except that in a cold region, the heat storage tank capacity is required to be that at the maximum daily heating load including the warming up load at the next morning of the holiday. However the auxiliary heat source capacity should be determined by the daily heating load including warming up load on the week day.
For the load at the next morning of the holiday, heat storage is required by operating the auxiliary heat source even outside of the ordinary working hour.

When heat storage tank is not used

$$QH = HC_T \left(1 - \frac{1}{COP_h}\right) - 1000 \times Vw \times \Delta T - 860 \times Pw$$

QH	: Auxiliary heat source capacity	(kcal/h)
HC_T	: Total heating capacity of each water heat source CITY MULTI	(kcal/h)
COP_H	: COP of water heat source CITY MULTI at heating	
Vw	: Holding water volume inside piping	(m^3)
ΔT	: Allowable water temperature drop = $T_{WH} - T_{WL}$	(°C)
T_{WH}	: Heat source water temperature at high temperature side	(°C)
T_{WL}	: Heat source water temperature at low temperature side	(°C)
Pw	: Heat source water pump shaft power	(kW)

$$QH = HC_T \left(1 - \frac{1}{COP_h}\right) - 8.343 \times Vw \times \Delta T - 3412 \times Pw$$

QH	: Auxiliary heat source capacity	(BTU/h)
HC_T	: Total heating capacity of each water heat source CITY MULTI	(BTU/h)
COP_H	: COP of water heat source CITY MULTI at heating	
Vw	: Holding water volume inside piping	(G)
ΔT	: Allowable water temperature drop = $T_{WH} - T_{WL}$	(°F)
T_{WH}	: Heat source water temperature at high temperature side	(°F)
T_{WL}	: Heat source water temperature at low temperature side	(°F)
Pw	: Heat source water pump shaft power	(kW)

When heat storage tank is not used

$$QH = \frac{HQ_{1T} \cdot \left(1 - \frac{1}{COP_h}\right) - 860 \times Pw \times T_2}{T1} \times K \quad \text{(kcal)}$$

QH_{1T}	: Total of heating load on weekday including warming up	(kcal/day)
T_1	: Operating hour of auxiliary heat source	(h)
T_2	: Operating hour of heat source water pump	(h)
K	: Allowance factor (Heat storage tank, piping loss, etc.)	1.05~1.10

HQ_{1T} is calculated from the result of steady state load calculation similarly by using the equation below.

$$HQ_{1T} = 1.15 \times (\Sigma Q'a + \Sigma Q'b + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f)\, T_2 - \psi\, (\Sigma Qe_1 + \Sigma Qe_2 + \Sigma Qe_3)\, (T2 - 1)$$

Q'a	: Thermal load from external wall/roof in each zone	(kcal/h)
Q'b	: Thermal load from glass window in each zone	(kcal/h)
Q'c	: Thermal load from partition/ceiling/floor in each zone	(kcal/h)
Q'd	: Thermal load by infiltration in each zone	(kcal/h)
Q'f	: Fresh outdoor air load in each zone	(kcal/h)
$Q'e_1$	: Thermal load from human body in each zone	(kcal/h)
$Q'e_2$	: Thermal load from lighting fixture in each zone	(kcal/h)
$Q'e_3$	: Thermal load from equipment in each zone	(kcal/h)
ψ	: Radiation load rate	0.6~0.8
T2	: Air conditioning hour	

$$QH = \frac{HQ_{1T} \cdot \left(1 - \frac{1}{COP_h}\right) - 3{,}412 \times Pw \times T_2}{T1} \times K \quad \text{(BTU)}$$

QH_{1T}	: Total of heating load on weekday including warming up	(BTU/day)
T_1	: Operating hour of auxiliary heat source	(h)
T_2	: Operating hour of heat source water pump	(h)
K	: Allowance factor (Heat storage tank, piping loss, etc.)	1.05~1.10

HQ_{1T} is calculated from the result of steady state load calculation similarly by using the equation below.

$$HQ_{1T} = 1.15 \times (\Sigma Q'a + \Sigma Q'b + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f)\, T_2 - \psi\, (\Sigma Qe_1 + \Sigma Qe_2 + \Sigma Qe_3)\, (T2 - 1)$$

Q'a	: Thermal load from external wall/roof in each zone	(BTU/h)
Q'b	: Thermal load from glass window in each zone	(BTU/h)
Q'c	: Thermal load from partition/ceiling/floor in each zone	(BTU/h)
Q'd	: Thermal load by infiltration in each zone	(BTU/h)
Q'f	: Fresh outdoor air load in each zone	(BTU/h)
$Q'e_1$	: Thermal load from human body in each zone	(BTU/h)
$Q'e_2$	: Thermal load from lighting fixture in each zone	(BTU/h)
$Q'e_3$	: Thermal load from equipment in each zone	(BTU/h)
ψ	: Radiation load rate	0.6~0.8
T2	: Air conditioning hour	

b) Heat storage tank

Heat storage tank can be classified by types into the open type heat storage tank exposed to atmosphere, and the closed type heat storage tank with structure separated from atmosphere. Although the size of the tank and its installation place should be taken into account, the closed type tank is being usually employed by considering corrosion problems.

The capacity of heat storage tanks is determined in accordance with the daily maximum heating load that includes warming up load to be applied for the day after the holiday.

When auxiliary heat source is operated during operation and even after stopping of water heat source CITY MULTI unit

$$V = \frac{HQ_{2T}\left(1 - \frac{1}{COP_h}\right) - 860 \times Pw \times T_2 - QH \times T_2}{\Delta T \times 1{,}000 \times \eta V} \quad \text{(ton)}$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (kcal/day)
ΔT : Temperature difference utilized by heat storage tank (°C)
ηV : Heat storage tank efficiency

HQ_{2T} : $1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f)\, T_2 - \psi\, (\Sigma Qe2 + \Sigma Qe3)\, (T2 - 1)$

$$V = \frac{HQ_{2T}\left(1 - \frac{1}{COP_h}\right) - 3{,}412 \times Pw \times T_2 - QH \times T_2}{\Delta T \times \eta V} \quad \text{(lbs)}$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (BTU/day)
ΔT : Temperature difference utilized by heat storage tank (°F)
ηV : Heat storage tank efficiency

HQ_{2T} : $1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f)\, T_2 - \psi\, (\Sigma Qe2 + \Sigma Qe3)\, (T2 - 1)$

When auxiliary heat source is operated after stopping of water heat source CITY MULTI unit

$$V = \frac{HQ_{2T}\left(1 - \frac{1}{COP_h}\right) - 860 \times Pw \times T_2}{\Delta T \times 1{,}000 \times \eta V} \quad \text{(ton)}$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (kcal/day)
ΔT : Temperature difference utilized by heat storage tank (°C)
ηV : Heat storage tank efficiency

HQ_{2T} : $1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f)\, T_2 - \psi\, (\Sigma Qe2 + \Sigma Qe3)\, (T2 - 1)$

$$V = \frac{HQ_{2T}\left(1 - \frac{1}{COP_h}\right) - 3{,}412 \times Pw \times T_2}{\Delta T \times \eta V} \quad \text{(lbs)}$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (BTU/day)
ΔT : Temperature difference utilized by heat storage tank (°F)
ηV : Heat storage tank efficiency

HQ_{2T} : $1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f)\, T_2 - \psi\, (\Sigma Qe2 + \Sigma Qe3)\, (T2 - 1)$

4) Piping system

The following items should be kept in your mind in planning / designing water circuits.

a) All units should be constituted in a single circuit in principle.

b) When plural numbers of the water heat source CITY MULTI unit are installed, the rated circulating water flow rate should be kept by making the piping resistance to each unit almost same value. As an example, the reverse return system as shown below may be employed.

c) Depending on the structure of a building, the water circuit may be prefabricated by making the layout uniform.

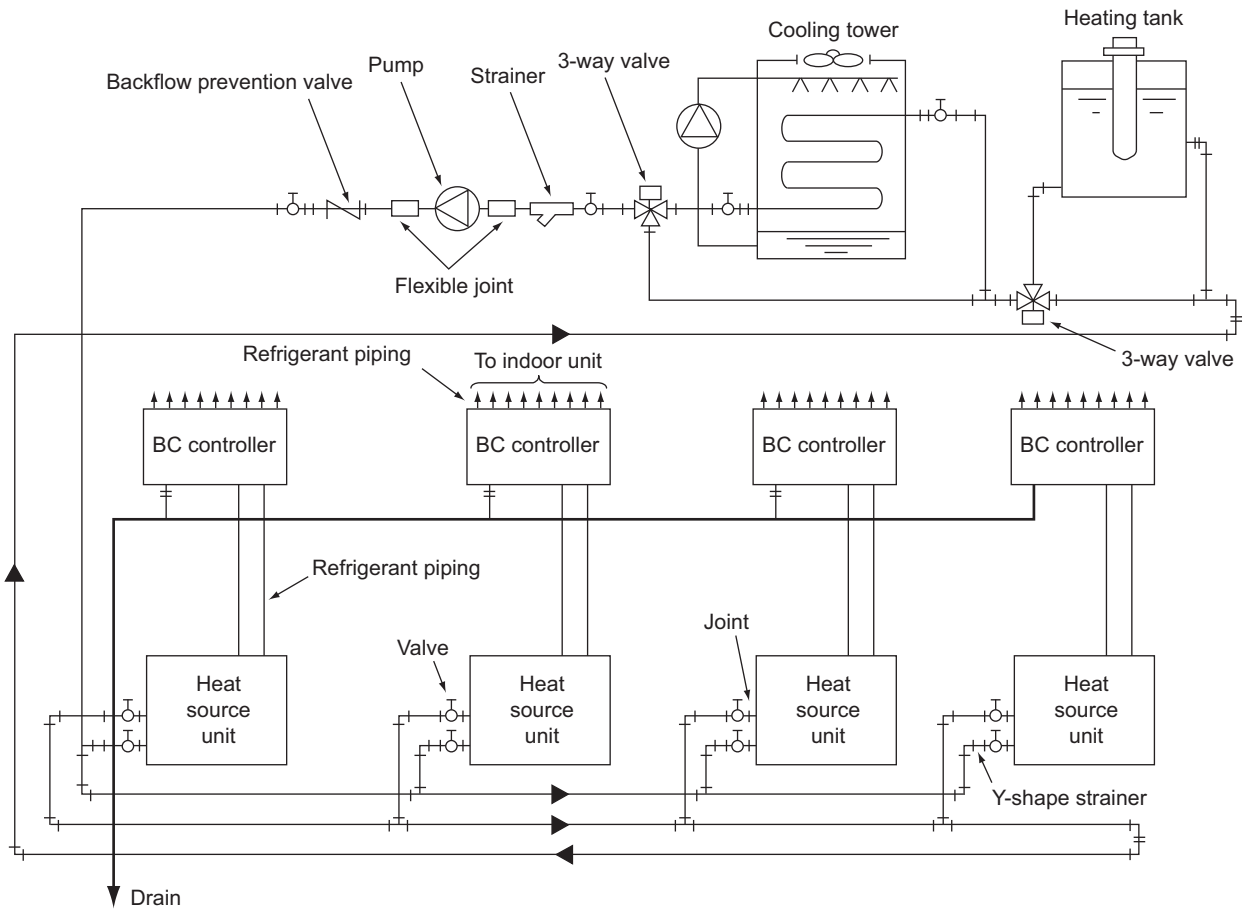
d) When a closed type piping circuit is constructed, install an expansion tank usable commonly for a make-up water tank to absorb the expansion/contraction of water caused by temperature fluctuation.

e) If the operating temperature range of circulation water stays within the temperature near the normal temperature (summer :29.4°C [85°F], winter :21.1°C [70°F]), thermal insulation or anti-sweating work is not required for the piping inside buildings.

In case of the conditions below, however, thermal insulation is required.

- When well water is used for heat source water.
- When piped to outdoor or a place where freezing may be caused.
- When vapor condensation may be generated on piping due to an increase in dry bulb temperature caused by the entry of fresh outdoor air.

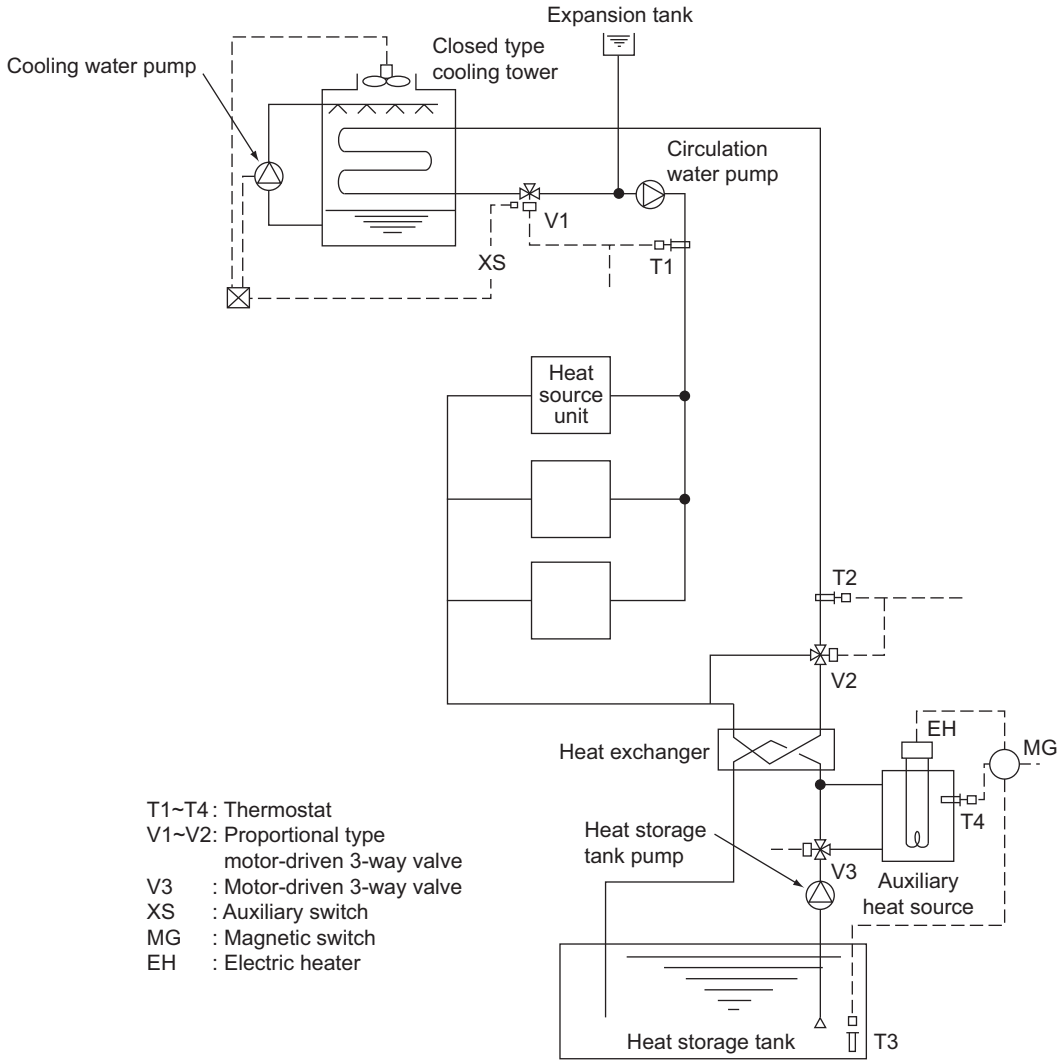
System example of water circuit



5) Practical System Examples and Circulation Water Control

Since the water heat source CITY MULTI is of water heat source system, versatile systems can be constituted by combining it with various heat sources.
The practical system examples are given below.
Either cooling or heating operation can be performed if the circulation water temperature of the water heat source CITY MULTI stays within a range of 15~45°C [59~113°F]. However, the circulation water temperature near 32°C [90°F] for cooling and 20°C [68°F] for heating is recommended by taking the life, power consumption and capacity of the air conditioning units into consideration. The detail of the control is also shown below.

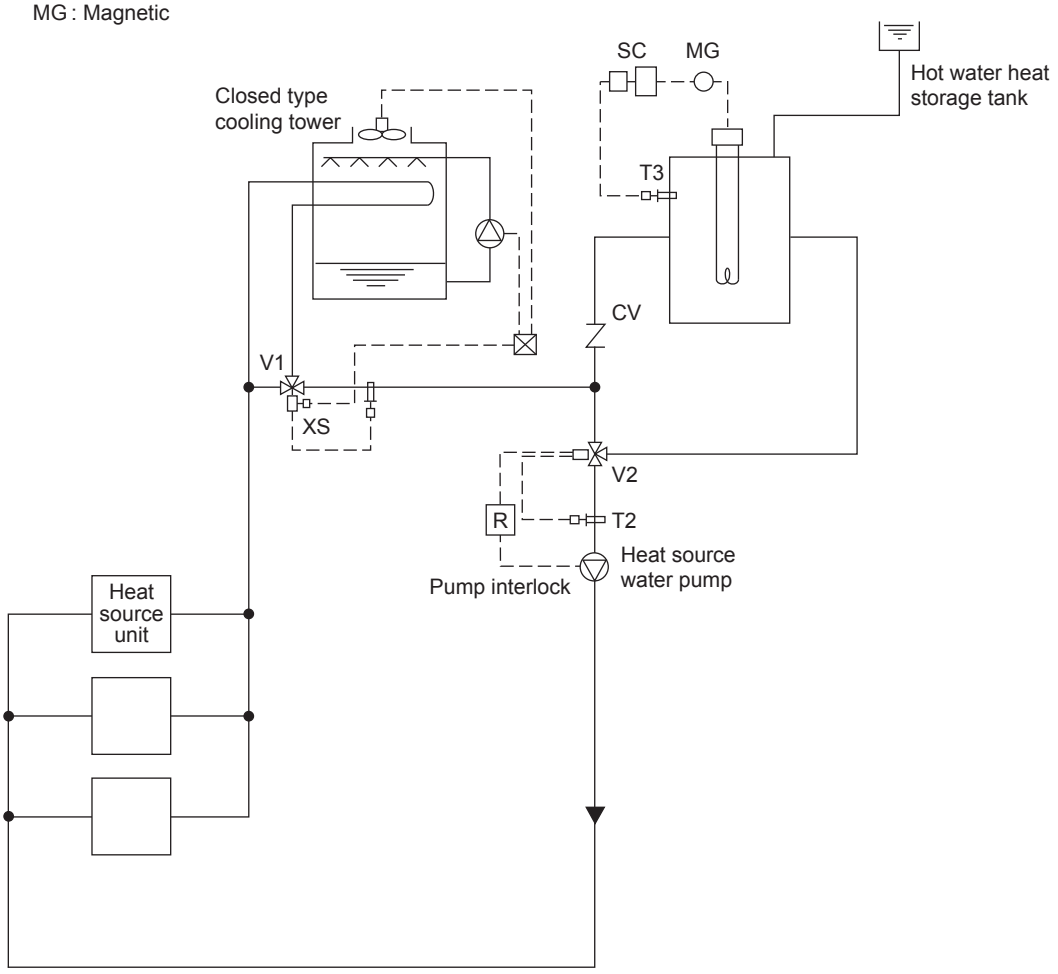
Example-1 Combination of closed type cooling tower and hot water heat storage tank (using underground hollow slab)



By detecting the circulation water temperature of the water heat source CITY MULTI system with T1 (around 32°C [90°F]) and T2 (around 20°C [68°F]), the temperature will be controlled by opening/closing V1 in the summer and V2 in the winter.
In the summer, as the circulation water temperature rises exceeding the set temperature of T1, the bypass port of V1 will open to lower the circulation water temperature. While in the winter, as the circulation water temperature drops, V2 will open following the command of T2 to rise the circulation water temperature.
The water inside the heat storage tank will be heated by the auxiliary heat source by V3 being opened with timer operation in the night-time. The electric heater of the auxiliary heat source will be controlled by T3 and the timer.
The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control of the fan and pump following the command of the auxiliary switch XS of V1, that operates only the fan at the light load while the fan and pump at the maximum load thus controlling water temperature and saving motor power.

Example-2 Combination of closed type cooling tower and hot water heat storage tank

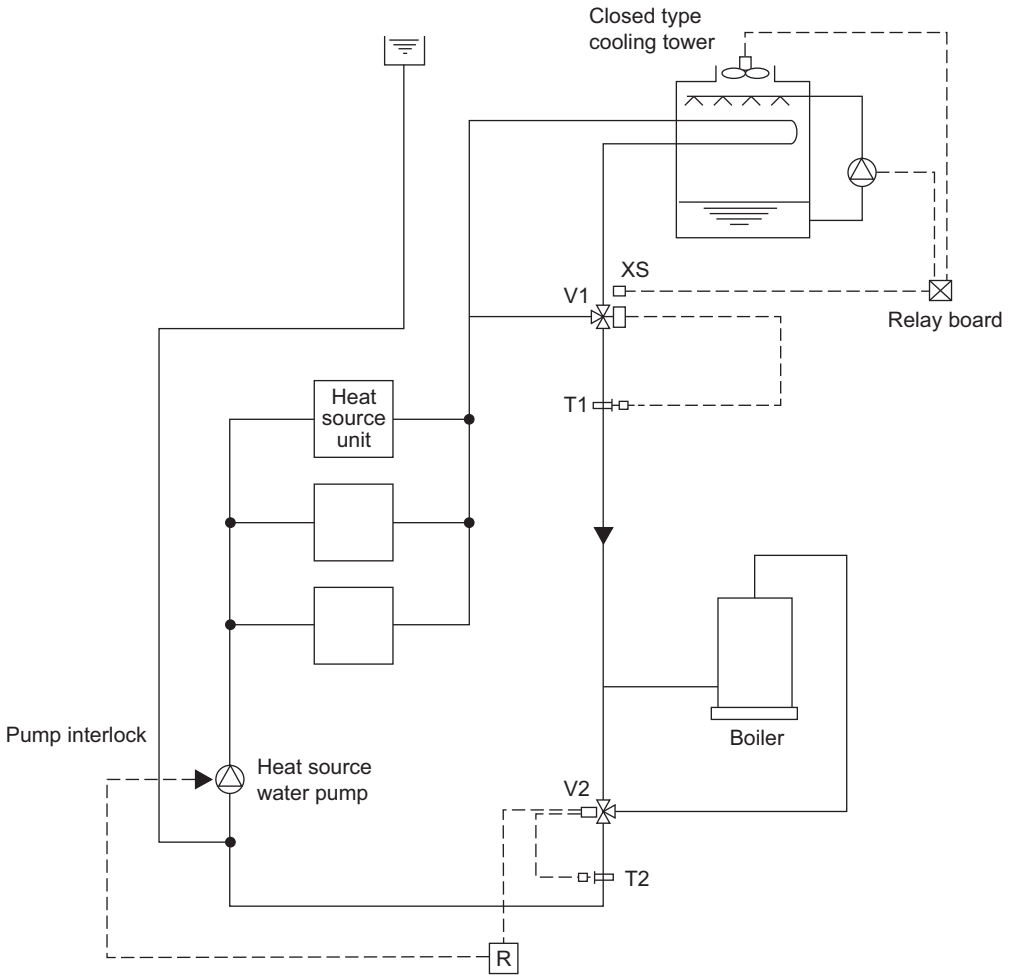
T1 : Proportional type, insertion system thermostat
T2 : Proportional type, insertion system thermostat
T3 : Proportional type, insertion system thermostat
V1 : Proportional type, motor-driven 3-way valve
V2 : Proportional type, motor-driven 3-way valve
XS : Auxiliary switch (Duplex switch type)
SC : Step controller
R : Relay
MG : Magnetic



In the summer, as the circulation water temperature rises exceeding the set temperature of T1, the bypass port of V1 will open to lower the circulation water temperature. In the winter, if the circulation water temperature stays below 25°C [77°F], V2 will open/close by the command of T2 to keep the circulation water temperature constant.
The temperature of the hot water inside the heat storage tank will be controlled through the step control of the electric heater by step controller operation following the command of T3.
During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking thus preventing the high temperature water from entering into the system at the starting of the pump.
The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control of the fan and pump following the command of the auxiliary switch XS of V1, that operates only the fan at the light load while the fan and pump at the maximum load thus controlling water temperature and saving motor power.

Example-3 Combination of closed type cooling tower and boiler

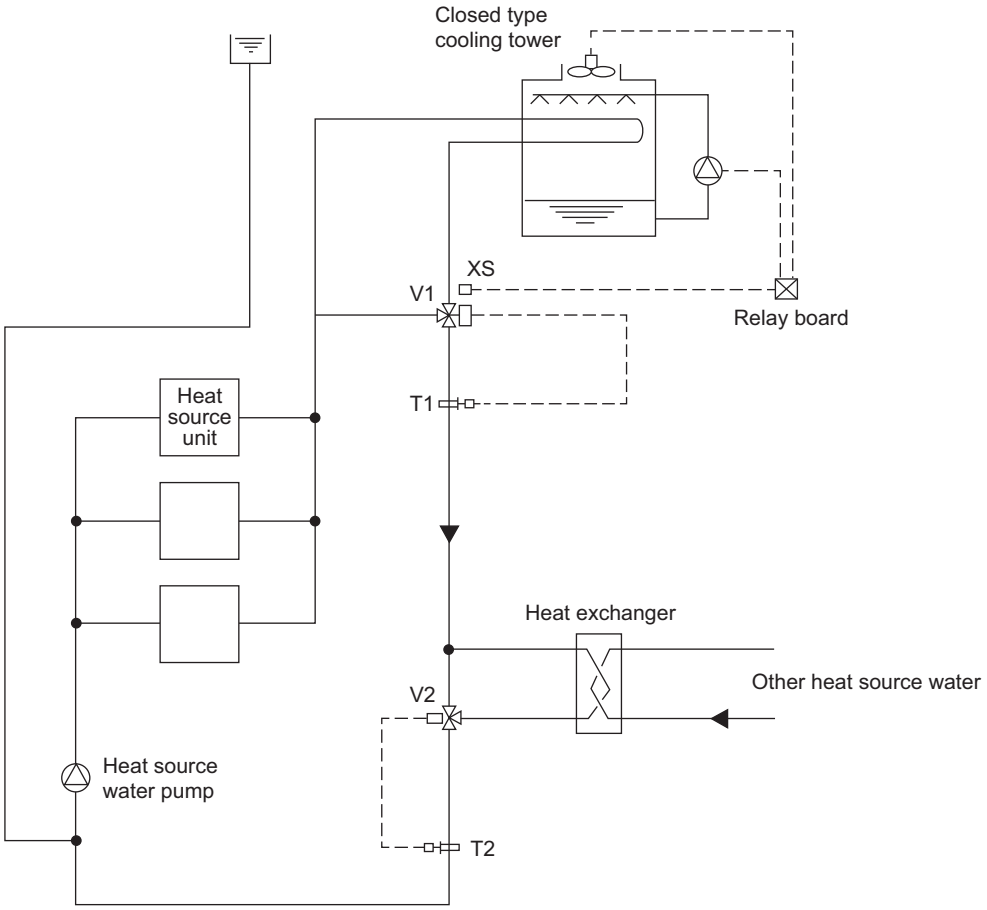
T1 : Proportional type, insertion system thermostat
T2 : Proportional type, insertion system thermostat
T3 : Proportional type, insertion system thermostat
V1 : Proportional type, motor-driven 3-way valve
S : Selector switch
R : Relay
XS : Auxiliary switch (Duplex switch type)



In the summer, as the circulation water temperature rises exceeding the set temperature of T1, the bypass port of V1 will close to lower the circulation water temperature. In the winter, if the circulation water temperature drops below 25°C [77°F], V2 will conduct water temperature control to keep the circulation water temperature constant.
During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking.
The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control following the command of the auxiliary switch XS of V1, thus controlling water temperature and saving motor power.

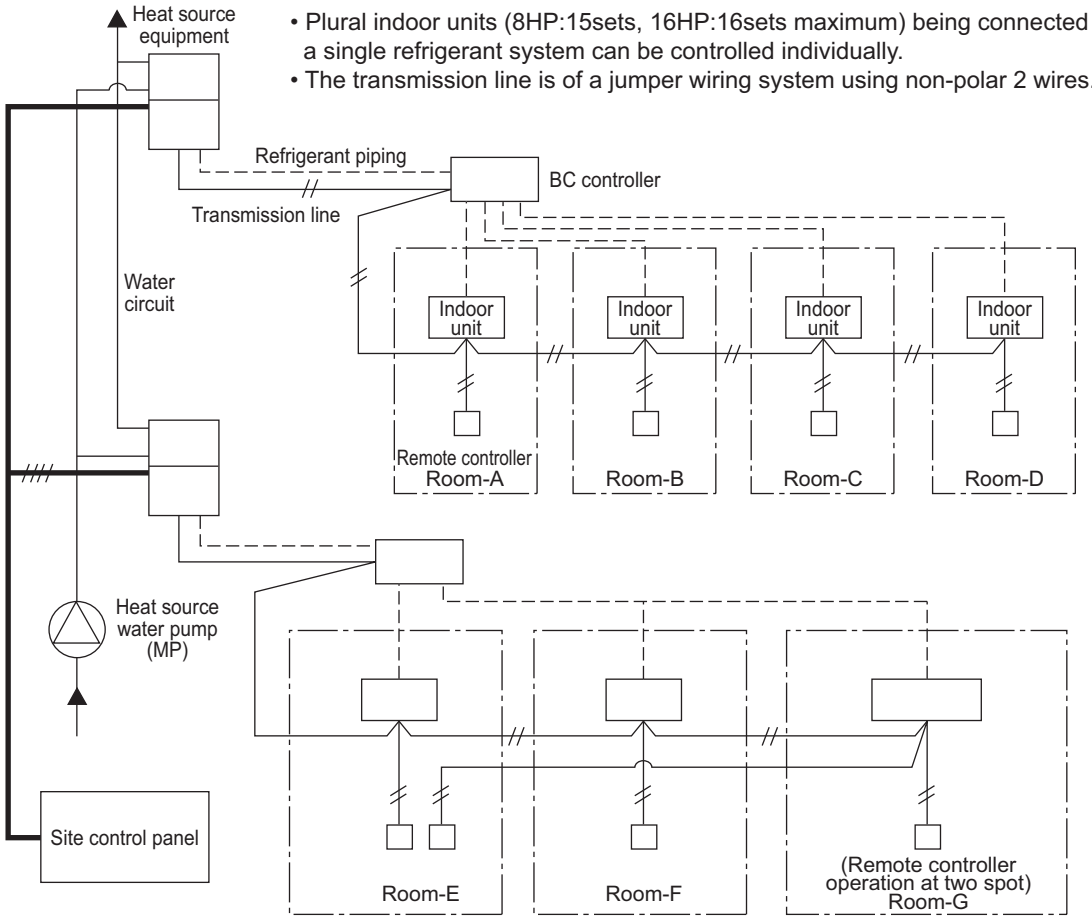
Example-4 Combination of closed type cooling tower and heat exchanger (of other heat source)

T1 : Proportional type, insertion system thermostat
T2 : Proportional type, insertion system thermostat
V1 : Proportional type, motor-driven 3-way valve
V2 : Proportional type, motor-driven 3-way valve
S : Selector switch
R : Relay
XS : Auxiliary switch (Duplex switch type)



In the summer, as the circulation water temperature rises exceeding the set temperature of T1, the bypass port of V1 will close to lower the circulation water temperature. In the winter, if the circulation water temperature drops below 26°C [79°F], V2 will conduct water temperature control to keep the circulation water temperature constant.
During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking.
The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control following the command of the auxiliary switch XS of V1, thus controlling water temperature and saving motor power.

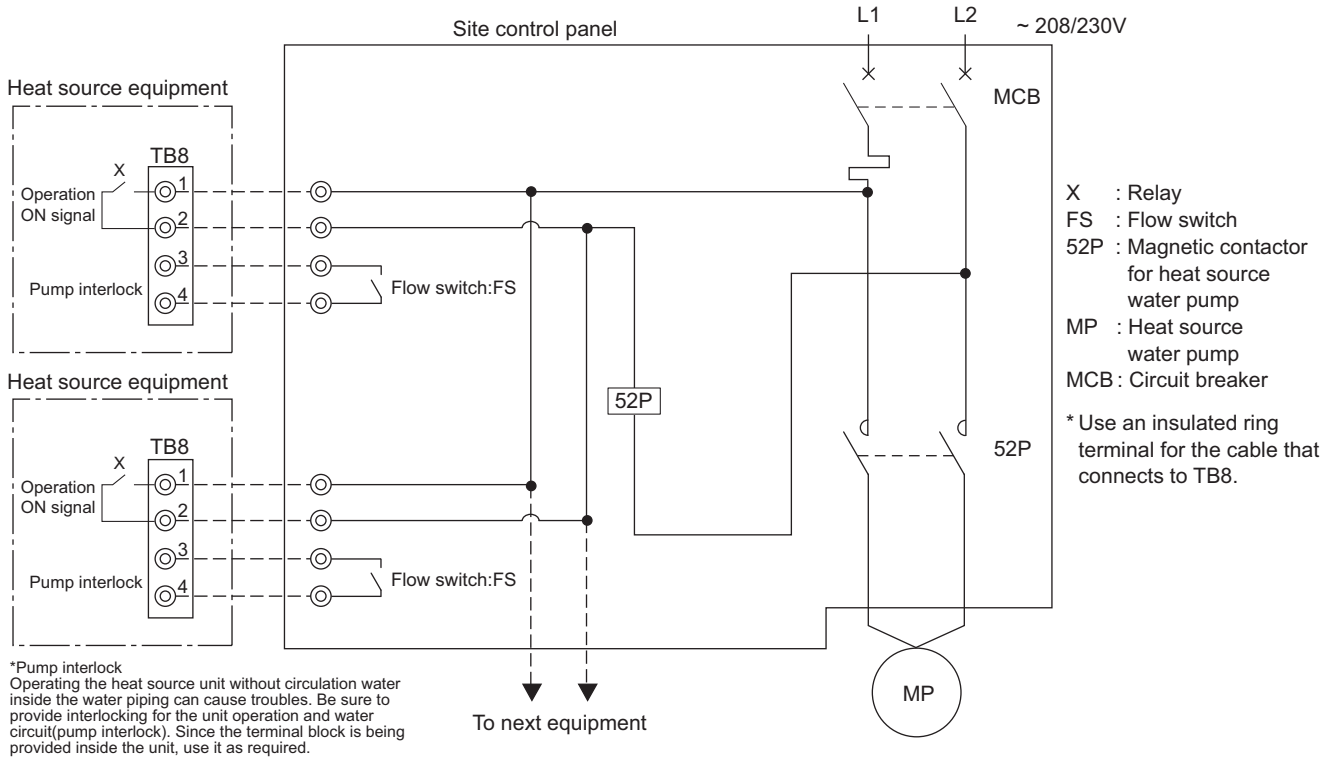
6) Pump interlock circuit



- Plural indoor units (8HP:15sets, 16HP:16sets maximum) being connected to a single refrigerant system can be controlled individually.
- The transmission line is of a jumper wiring system using non-polar 2 wires.

Wiring diagram

This circuit uses the “Terminal block for pump interlock (TB8)“ inside the electrical parts box of the heat source equipment.
This circuit is for interlocking of the heat source equipment operation and the heat source water pump.



*Pump interlock
Operating the heat source unit without circulation water inside the water piping can cause troubles. Be sure to provide interlocking for the unit operation and water circuit(pump interlock). Since the terminal block is being provided inside the unit, use it as required.

Use the flow switch (FS)

Operation ON signal

Terminal No.	TB8-1, 2
Output	Relay contacts output Rated voltage: 3~: 208/230V Rated load: 1 A
Operation	• When setting No.917 for Dip switch 4 (Dip switch 6-10 is ON) is OFF. The relay closes during compressor operation.

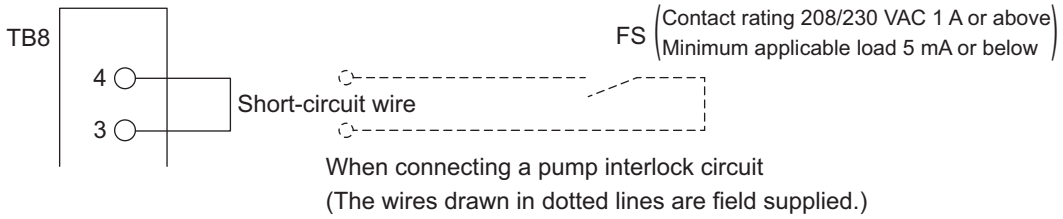
SW4 0: OFF, 1: ON									
1	2	3	4	5	6	7	8	9	10
1	0	1	0	1	0	0	1	1	1

• When setting No.917 for Dip switch 4 (Dip switch 6-10 is ON) is ON.
The relay closes during reception of cooling or the heating operation signal from the controller.
(Note: It is output even if the thermostat is OFF (when the compressor is stopped).)

Pump Interlock

Terminal No.	TB8-3, 4
Input	Level signal
Operation	If the circuit between TB8-3 and TB8-4 is open, compressor operation is prohibited.

*Remove the short circuit wire between 3 and 4 when wiring to TB8.
To prevent a false detection of error resulting from contact failure, use a flow switch with a minimum guaranteed current of 5 mA or below for FS.



When connecting a pump interlock circuit
(The wires drawn in dotted lines are field supplied.)

8-2. Water piping work

Although the water piping for the CITY MULTI WR2 system does not differ from that for ordinary air conditioning systems, pay special attention to the items below in conducting the piping work.

1) Items to be observed on installation work

- The water pressure resistance of the water pipes in the heat source unit is 2.0MPa [290psi].
- In order to equalize piping resistance for each unit, adapt the reverse return system.
- Mount a joint and a valve onto the water outlet/inlet of the unit to allow for maintenance, inspection and replacement work. Be sure to mount a strainer at the water inlet piping of the unit. (The strainer is required at the circulation water inlet to protect the heat source unit.)

* The installation example of the heat source unit is shown right.

- Be sure to provide an air relief opening on the water piping properly, and purge air after feeding water to the piping system.
- Condensate will generate at the low temperature part inside the heat source equipment. Connect drain piping to the drain piping connection located at the bottom of the heat source equipment to discharge it outside the equipment.
- Mount a backflow prevention valve and a flexible joint for vibration control onto the pump.
- Provide a sleeve to the penetrating parts of the wall to prevent the piping.
- Fasten the piping with metal fitting, arrange the piping not to expose to cutting or bending force, and pay sufficient care for possible vibration.
- Be careful not to erroneously judge the position of the inlet and outlet of water.
  (Lower position : Inlet, Upper position : Outlet)
- When connecting heat source unit water piping and water piping on site, apply liquid sealing material for water piping over the sealing tape before connection.
- This unit doesn't include a heater to prevent freezing within tubes. If the water flow is stopped on low ambient, drain the water out.
- The unused knockout holes should be closed and the refrigerant pipes, water pipes, power source and transmission wires access holes should be filled with putty.
- The drain plug is installed on the back of the unit at factory for field-connection of the drain pipes on the front of the unit. Move the plug to the front to connect the drain pipes on the back. Verify that there are no leaks from pipe connections.
- For installing two units, install water pipes in parallel to each other so that the water flow rate through both units will be equal.
- Wrap the sealing tape as follows.

① Wrap the joint with sealing tape in the direction of the threads (clockwise), and do not let the tape run over the edge.
② Overlap the sealing tape by two-thirds to three-fourths of its width on each turn. Press the tape with your fingers so that it is pressed firmly against each thread.
③ Leave the 1.5th through 2nd farthest threads away from the pipe end unwrapped.

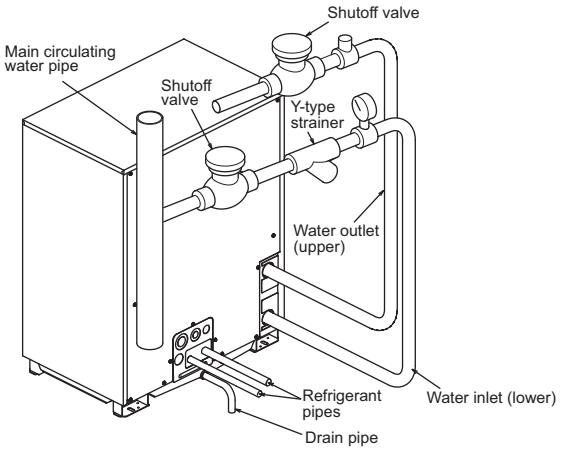
- Hold the pipe on the unit side in place with a spanner when installing the pipes or strainer. Tighten screws to a torque of 150N·m.

2) Thermal insulation work

Thermal insulation or anti sweating work is not required for the piping inside buildings in the case of the CITY MULTI WR2 system if the operating temperature range of circulation water stays within the temperature near the normal (summer : 30°C[86°F], winter : 20°C[68°F]).
In case of the conditions below, however, thermal insulation is required.

- Use of well water for heat source water
- Outdoor piping portions
- Indoor piping portions where freezing may be caused in winter
- A place where vapor condensation may be generated on piping due to an increase in dry bulb temperature inside the ceiling caused by the entry of fresh outdoor air
- Drain piping portions

Installation example of heat source unit



3) Water treatment and water quality control

For the circulation water cooling tower of the CITY MULTI WR2 system, employment of the closed type is recommended to keep water quality. However, in the case that an open type cooling tower is employed or the circulating water quality is inferior, scale will adhere onto the water heat exchanger leading to the decreased heat exchange capacity or the corrosion of the heat exchanger. Be sufficiently careful for water quality control and water treatment at the installation of the circulation water system

- Removal of impurities inside piping
  Be careful not to allow impurities such as welding fragment, remaining sealing material and rust from mixing into the piping during installation work.
- Water treatment
  The water quality standards have been established by the industry (Japan Refrigeration, Air Conditioning Industry Association, in case of Japan) for water treatment to be applied.

Items			Lower mid-range temperature water system		Tendency	
			Recirculating water [20<T<60°C] [68<T<140°F]	Make-up water	Corrosive	Scale-forming
Standard items	pH (25°C[77°F])		7.0 ~ 8.0	7.0 ~ 8.0	○	○
	Electric conductivity	(mS/m) (25°C[77°F])	30 or less	30 or less	○	○
		(μS/cm) (25°C[77°F])	[300 or less]	[300 or less]		
	Chloride ion	(mg Cl⁻/ℓ)	50 or less	50 or less	○	
	Sulfate ion	(mg SO_4^{2-}/ℓ)	50 or less	50 or less	○	
	Acid consumption (pH4.8)	(mg $CaCO_3$/ℓ)	50 or less	50 or less		○
	Total hardness	(mg $CaCO_3$/ℓ)	70 or less	70 or less		○
	Calcium hardness	(mg $CaCO_3$/ℓ)	50 or less	50 or less		○
	Ionic silica	(mg SiO_2/ℓ)	30 or less	30 or less		○
Reference items	Iron	(mg Fe/ℓ)	1.0 or less	0.3 or less	○	○
	Copper	(mg Cu/ℓ)	1.0 or less	0.1 or less	○	
	Sulfide ion	(mg S^{2-}/ℓ)	not to be detected	not to be detected	○	
	Ammonium ion	(mg NH_4^+/ℓ)	0.3 or less	0.1 or less	○	
	Residual chlorine	(mg Cl/ℓ)	0.25 or less	0.3 or less	○	
	Free carbon dioxide	(mg CO_2/ℓ)	0.4 or less	4.0 or less	○	
	Ryzner stability index		–	–	○	○

Reference : Guideline of Water Quality for Refrigeration and Air Conditioning Equipment. (JRA GL02E-1994)

In order to keep the water quality within such standards, you are kindly requested to conduct bleeding-off by overflow and periodical water quality tests, and use inhibitors to suppress condensation or corrosion. Since piping may be corroded by some kinds of inhibitor, consult an appropriate water treatment expert for proper water treatment.

4) Pump interlock

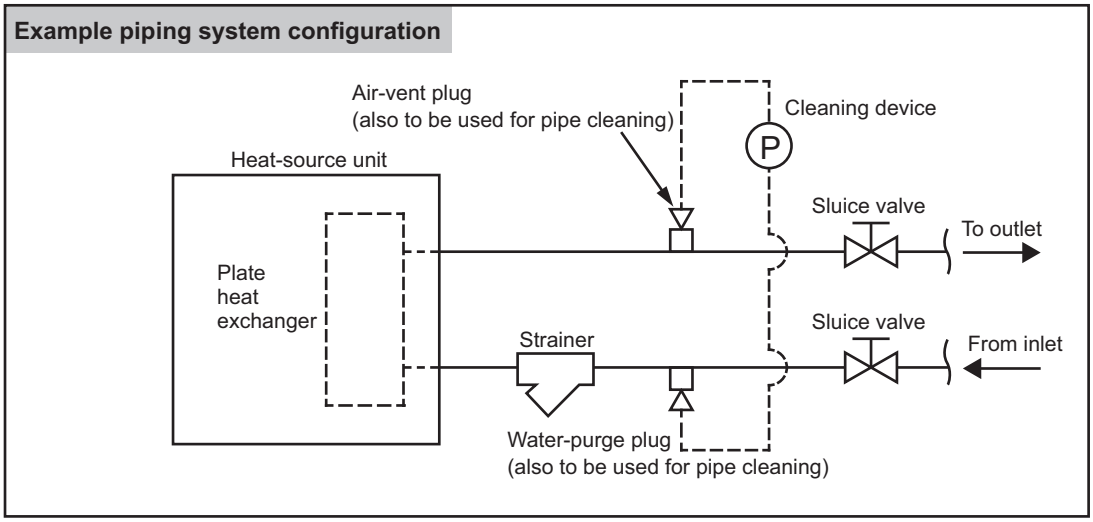
Operating the heat source unit without circulation water inside the water piping can cause a trouble. Be sure to provide interlocking for the unit operation and water circuit. Since the terminal block is being provided inside the unit, use it as required.

5) Handling plate heat exchangers for heat-source units

<Designing the piping system>

- Install a strainer (50 mesh or finer recommended) near the heat-source unit on the inlet side of the hot/cold water pipe and cooling-water pipe (hereafter referred to as water pipes) to prevent an infiltration of foreign materials of solid nature, such as dirt and sand, into the plate heat exchanger.
- Depending on the water quality, scale may form inside plate heat exchangers. Plate heat exchangers must be chemically cleaned regularly to remove scale formation. Install sluice valves on the water pipes, and provide ports for connecting a pipe between the sluice valves and the heat-source unit for chemical cleaning.
- On both the inlet and outlet sides of water pipes, provide a plug to remove trapped air and water (also to be used for cleaning heat-source units and for purging water before a period of nonuse in winter or at the end of an air conditioning season). Also, provide automatic air-vent valves where air is likely to be trapped (such as a pipe that runs vertically).
- In addition to installing the above-mentioned strainers, install a cleanable strainer near the pump pipe inlet.
- Keep the pipes properly insulated and take an appropriate measure against humidity to minimize heat loss and prevent freeze damage in severe cold climate.
- If the system is stopped during winter or at night in subfreezing temperatures, take appropriate measures to protect pipes from freezing (i.e., pipe purging and use of water-circulation pump or heater) and prevent resultant damage to the plate heat exchanger.

Example piping system configuration



<Test run>

- Before performing a test run, check that the piping system is properly installed, especially the strainers, air-vents, automatic water-supply valves, expansion tanks, and systems.
- After the pipe system is filled with water, first, operate the pump alone to check the system for trapped air and adjust the water flow rate to prevent the plate heat exchanger from freezing. Take into consideration the water pressure loss before and after each heat-source unit, and make sure the water flow rate falls within the design water flow rate range. Stop the test run and correct any problems found, if any.
- At the completion of a test run, check the strainer at the inlet pipe of the heat-source unit and clean it as necessary.

<Daily maintenance>

- Controlling the water quality
  Plate heat exchangers cannot be disassembled for cleaning and have no replaceable parts. Watch the water quality to prevent corrosion and scale formation. The quality of the water to be used for plate heat exchangers must meet the water quality guidelines JRA GL-02-1994 specified by Japan Refrigeration and Air conditioning Industry Association (JRAIA). (Refer to 3) Water treatment and water quality control.)
- Controlling the circulation water flow rate
  Insufficient water rate will cause freeze damage to plate heat exchangers. Check for insufficient water flow caused by clogged strainer, trapped air in the system, or malfunction of the circulation water pump. Flow rate can also be checked by measuring the temperature or pressure difference between the inlet and outlet of plate heat exchangers.
  If the temperature or pressure difference goes outside of the specified range, stop the operation, remove the cause of the problem, and resume operation.
- What to do when the freeze protection trips
  If the freeze protection trips during operation, be sure to remove its cause before resuming operation. Tripped freeze protection indicates that the system is partially frozen, and resuming operation without removing the cause of the problem will result in freeze damage to plate heat exchangers and/or pipes as well as resultant refrigerant leaks and infiltration of water into the refrigerant circuit.

<Maintaining plate heat exchangers>

Plate heat exchangers must be maintained in a planned and periodical manner to prevent scale formation, which may cause performance loss or decrease water flow rate that result in freeze damage to the plate heat exchanger.

- Check the following items before the operating season.
  1. Check that the water quality meets the specified water quality.
  2. Clean the strainers.
  3. Check that the water flow rate is adequate.
  4. Check for proper operation (e.g., pressure, flow rate, inlet/outlet temperatures).

- Plate heat exchangers cannot be disassembled for cleaning. Clean them in the following way.
  1. Make sure that there is a pipe connection port on the water inlet pipe.
     Use formic acid, citric acid, oxalic acid, acetic acid, or phosphoric acid diluted to 5% to clean plate heat exchangers. Do not use highly corrosive acids, such as hydrochloric acid, sulfuric acid, or nitric acid.
  2. Make sure that valves are installed before the inlet connection port and after the outlet connection port.
  3. Connect a pipe for circulating cleaning solution to the inlet/outlet pipes of the plate heat exchanger, fill the plate heat exchanger with cleaning solution at a temperature between 50 and 60°C, and circulate the cleaning solution with a pump for 2 to 5 hours. The cleaning time will depend on the temperature of the cleaning solution and the degree of scale formation. Use the color of the cleaning solution as a guide to determine how long the system needs to be cleaned.
  4. When done, discharge the cleaning solution out of the plate heat exchanger, fill it with sodium hydrate (NaOH) or sodium bicarbonate ($NaHCO_3$) diluted with water to 1 to 2%, and let the solution be circulated for 15 to 20 minutes until the cleaning solution is neutralized.
  5. After neutralizing the cleaning solution, thoroughly rinse the plate heat exchanger with clean water.
  6. When using a commercially available cleaning solution, make sure to use a solution not corrosive to stainless steel or copper.
  7. Consult the cleaning solution manufacture for details.

- At the completion of cleaning, check the system for proper operation.

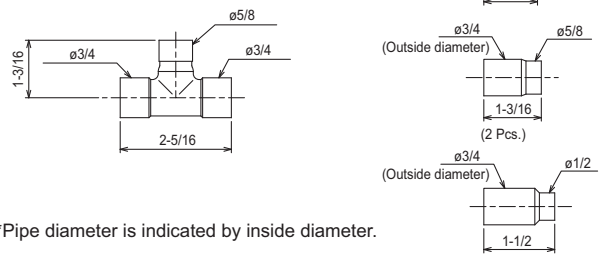
9-1. JOINT

CITY MULTI units can be easily connected by using Joint sets and Header sets provided by Mitsubishi Electric. Four kinds of Joint sets are available for use. Refer to section 3 in "System Design" or the Installation Manual that comes with the Joint set for how to install the Joint set.

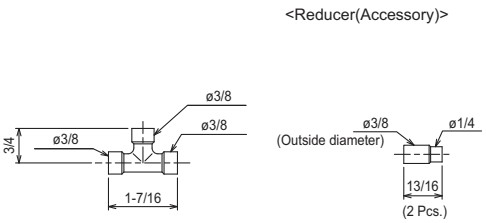
CMY-Y102SS-G2

in.

For Gas pipe:



For Liquid pipe:

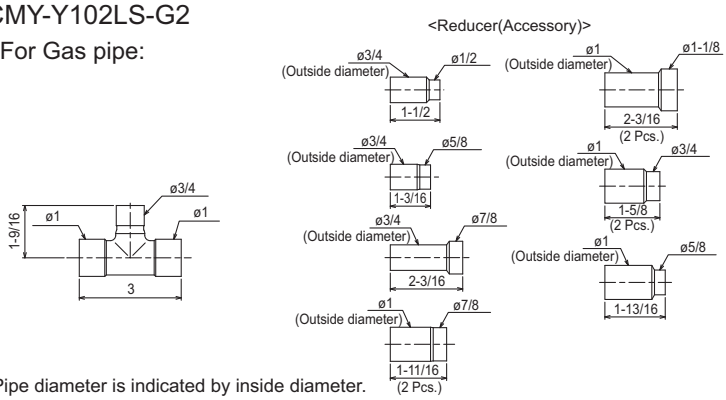


*Pipe diameter is indicated by inside diameter.

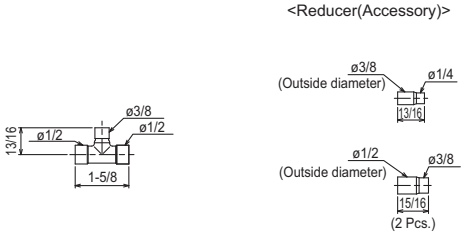
CMY-Y102LS-G2

in.

For Gas pipe:



For Liquid pipe:

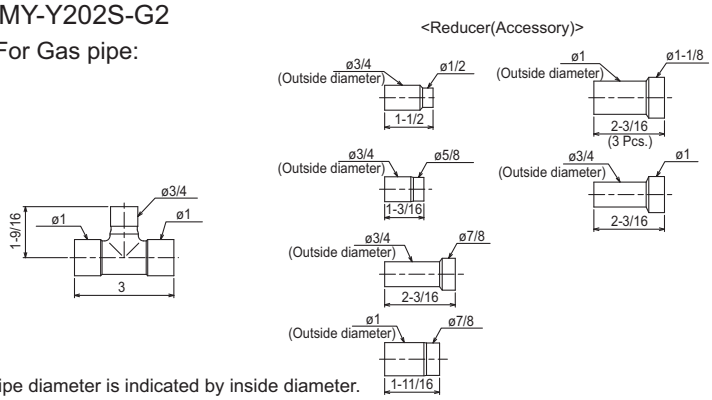


*Pipe diameter is indicated by inside diameter.

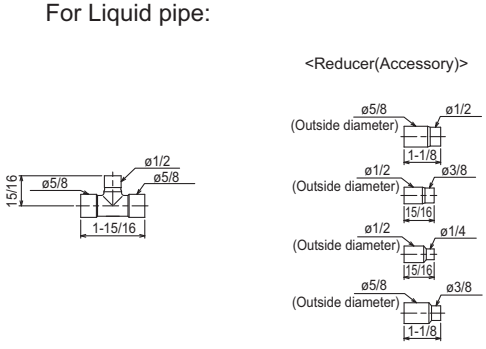
CMY-Y202S-G2

in.

For Gas pipe:



For Liquid pipe:

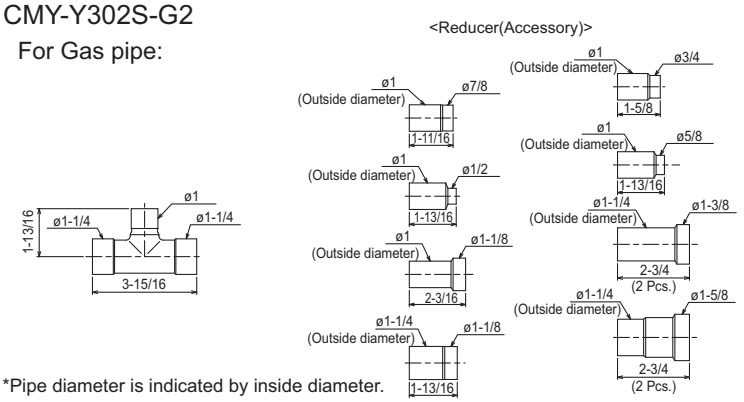


*Pipe diameter is indicated by inside diameter.

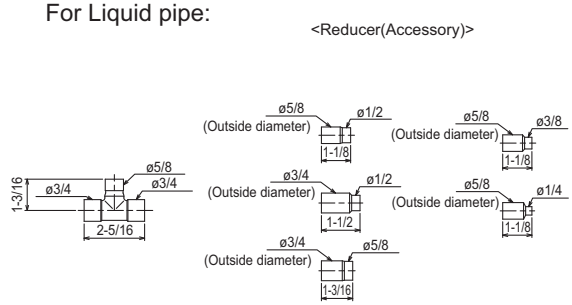
CMY-Y302S-G2

in.

For Gas pipe:



For Liquid pipe:



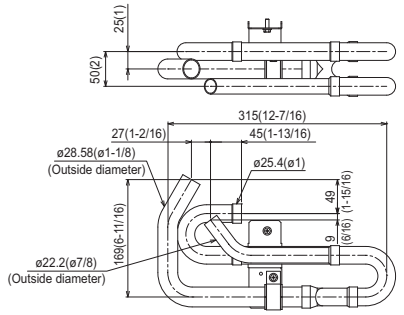
*Pipe diameter is indicated by inside diameter.

9-2. OUTDOOR TWINNING KIT

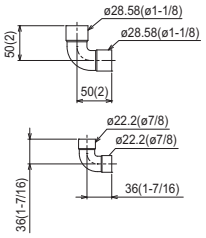
The following optional Outdoor Twinning Kit is needed to use to combine multiple refrigerant pipes. Refer to the chapter entitled System Design Section for the details of selecting a proper twinning kit.

CMY-Q100CBK2

Low-pressure pipe twinning kit



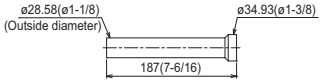
<Elbow pipe(Accessory)>



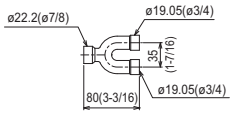
<Accessory>

Fixing screw	• • • 1
Insulation cover	• • • 1
Pipe cover (150mm(5-15/16) Length)	• • • 2
Pipe cover (60mm(2-3/8) Length)	• • • 1
Pipe cover (80mm(3-3/16) Length)	• • • 2
Cable tie	• • • 2
Water stopper	• • • 1
Sealing material (Small)	• • • 1
Sealing material (Large)	• • • 1

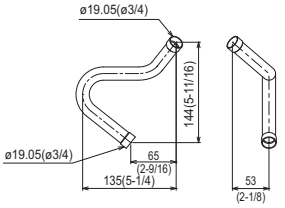
<Pipe for routing through the front (Accessory)>



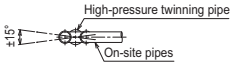
High-pressure twinning pipe



<Pipe for routing through the front (Accessory)>



Note 1. Refer to the figure below for the installation position of the high-pressure twinning pipe.

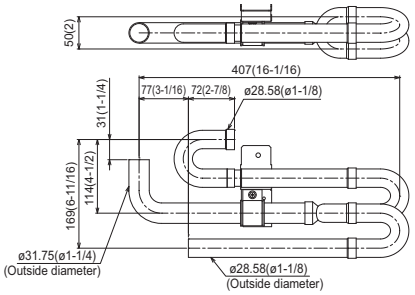


Inclination tolerance of the high-pressure twinning pipe is ±15° relative to the ground.

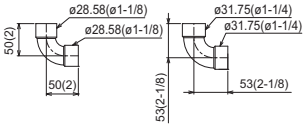
2. Pipe diameter is indicated by inside diameter.

CMY-Q200CBK

Low-pressure pipe twinning kit



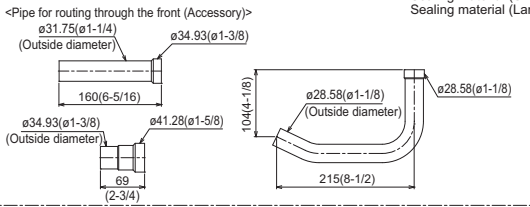
<Elbow pipe(Accessory)>



<Accessory>

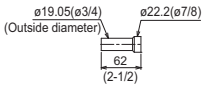
Fixing screw	• • • 1
Insulation cover	• • • 1
Pipe cover (75mm(3) Length)	• • • 1
Pipe cover (360mm(14-3/16) Length)	• • • 1
Pipe cover (70mm(2-13/16) Length)	• • • 1
Pipe cover (130mm(5-1/8) Length)	• • • 1
Pipe cover (100mm(3-15/16) Length)	• • • 1
Pipe cover (160mm(6-5/16) Length)	• • • 1
Cable tie	• • • 2
Water stopper	• • • 1
Sealing material (Small)	• • • 1
Sealing material (Large)	• • • 1

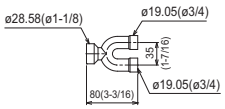
<Pipe for routing through the front (Accessory)>



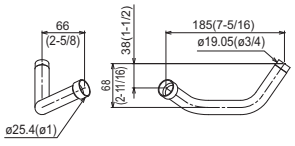
High-pressure twinning pipe

<Deformed pipe(Accessory)>

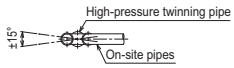




<Pipe for routing through the front (Accessory)>



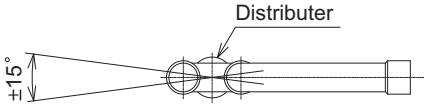
Note 1. Refer to the figure below for the installation position of the high-pressure twinning pipe.



Inclination tolerance of the high-pressure twinning pipe is ±15° relative to the ground.

2. Pipe diameter is indicated by inside diameter.

Note 1. Reference the attitude angle of the branch pipe below the fig.



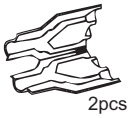
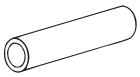
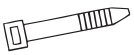
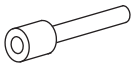
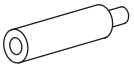
The angle of the branch pipe for hign pressure is within ±15° against the horizontal plane.

2. Use the attached pipe to braze the port-opening of the distributer.
3. Pipe diameter is indicated by inside diameter.

9-3. JOINT KIT "CMY-R160-J1" FOR BC CONTROLLER

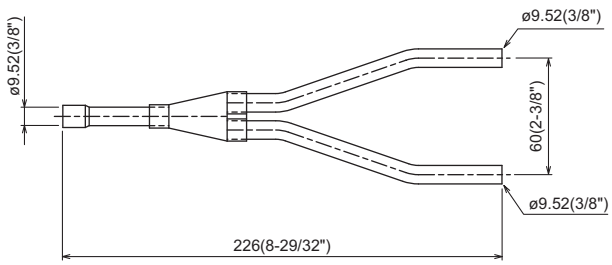
Joint kit "CMY-R160-J1" for BC controller is used to combine 2 ports of the BC controller at a PURY/PQRY system so as to enable down-stream Indoor capacity above P54 as shown in Fig. 1.

The Joint kit include following items:

①Instruction	②Joint pipe(Small)	③Joint pipe(Large)	④Cover 1	⑤Cover 2	⑥Cover 3	⑦Band	⑧Reducer 1	⑨Reducer 2
							OD19.05-ID22.2 	OD19.05-ID15.88 
This sheet 1pc	1pc	1pc	2pcs	1pc for gas side	1pc for liquid side	8pcs	1pc	1pc

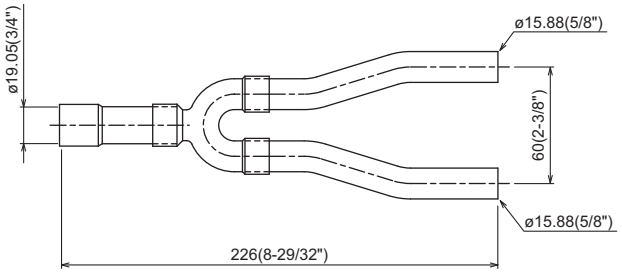
Please prepare the following items in the field. ①Tape for insulation material sealing ②Extension pipe for refrigerant circuit

②Joint pipe (for liquid side)



③Joint pipe (for gas side)

mm (in.)



1. Designing CMY-R160-J1 to a PURY/PQRY system

The maximum down-stream Indoor capacity for 1 port of BC controller is P54. When the down-stream Indoor capacity is above P54, Joint kit CMY-R160-J1 is needed to combined 2 ports of BC controller to enlarge the capacity, like Group 2 and 3 in Fig. 1.

Maximum 3 Indoor units are allowed to connect to 1 port of BC controller or 2 combined ports of BC controller using CMY-R160-J1.

When connecting Indoor units to 1 port of BC controller or 2 combined ports of BC controller using CMY-R160-J1 or CMY-Y102SS-G2 is applicable, like Group 1 and 2 in Fig. 1

Caution: Mixed cooling and heating mode at the same time for Indoor units connecting to 1 port or 2 combined ports is not available.

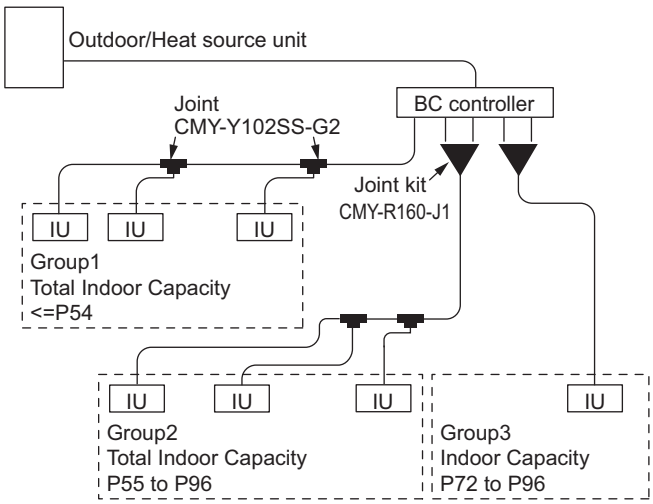
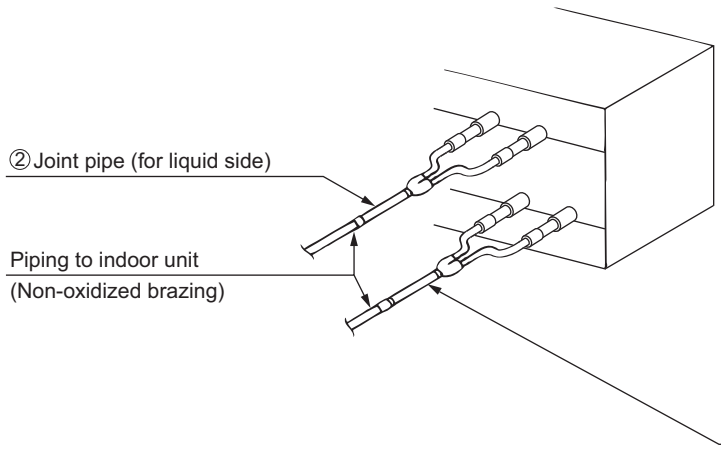


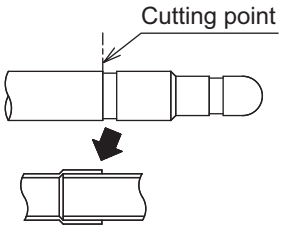
Fig.1. CMY-R160-J1 applying scheme

2. Piping at the installation site

The connection of CMY-R160-J1 to BC controller and pipe leading to Indoor units is referable to Fig. 2. Non-oxidized brazing is necessary. All piping must be careful to avoid foreign material getting inside.

After piping and air-tight testing, insulation work to the Joint and pipe should be done. Details is available at the Installation Manual.





Have pipe expansion of indoor unit connecting port by cutting the piping at the cutting point.
Remove burr after cutting the piping to prevent entering the piping.
Check that there is no crack at the pipe expansion part.

Fig.2. Connecting CMY-R160-J1

Capacity Tables

1-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PEFY-P-NMSU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.5	1.6	1.5	1.7	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8	1.5
08 (2.3)	2.0	1.9	2.1	1.9	2.2	1.9	2.3	1.9	2.3	1.9	2.3	1.9	2.3	1.9
12 (3.5)	3.1	2.5	3.2	2.5	3.3	2.5	3.5	2.5	3.5	2.4	3.5	2.5	3.5	2.5
15 (4.4)	3.9	3.0	4.0	3.0	4.2	3.0	4.4	3.0	4.4	2.9	4.4	2.9	4.4	2.9
18 (5.3)	4.7	3.7	4.8	3.7	5.0	3.8	5.3	3.8	5.3	3.6	5.3	3.7	5.3	3.6
24 (7.0)	6.2	4.9	6.4	4.8	6.7	5.0	7.0	4.9	7.0	4.8	7.0	4.8	7.0	4.8

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMSU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (6,000)	5,300	5,000	5,500	5,000	5,700	5,100	6,000	5,100	6,000	5,000	6,000	5,100	6,000	5,100
08 (8,000)	7,100	6,500	7,300	6,400	7,600	6,600	8,000	6,600	8,000	6,400	8,000	6,500	8,000	6,600
12 (12,000)	10,600	8,500	10,900	8,500	11,400	8,700	11,900	8,700	11,900	8,400	11,900	8,400	11,900	8,400
15 (15,000)	13,300	10,200	13,700	10,200	14,300	10,400	14,900	10,300	14,900	10,000	14,900	10,000	14,900	9,900
18 (18,000)	15,900	12,600	16,400	12,600	17,100	12,800	17,900	12,800	17,900	12,400	17,900	12,400	17,900	12,400
24 (24,000)	21,200	16,700	21,900	16,600	22,900	17,000	23,900	16,900	23,900	16,300	23,900	16,400	23,900	16,300

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

2-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PEFY-P-NMHU-E2 CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
15 (4.4)	3.9	3.1	4.0	3.1	4.2	3.2	4.4	3.2	4.4	3.0	4.4	3.1	4.4	3.1
18 (5.3)	4.7	3.5	4.8	3.5	5.0	3.6	5.3	3.6	5.3	3.4	5.3	3.4	5.3	3.4
24 (7.0)	6.2	4.8	6.4	4.8	6.7	4.9	7.0	4.8	7.0	4.7	7.0	4.7	7.0	4.7
27 (7.9)	7.0	5.4	7.2	5.3	7.5	5.4	7.9	5.4	7.9	5.2	7.9	5.2	7.9	5.2
30 (8.8)	7.8	6.0	8.0	6.0	8.4	6.1	8.7	6.1	8.7	5.9	8.7	5.9	8.7	5.9
36 (10.6)	9.4	8.1	9.7	8.0	10.1	8.2	10.5	8.2	10.5	7.9	10.5	8.0	10.5	8.1
48 (14.1)	12.5	9.5	12.8	9.5	13.4	9.7	14.0	9.6	14.0	9.3	14.0	9.3	14.0	9.2
54 (15.8)	14.0	10.8	14.4	10.7	15.0	10.9	15.7	10.9	15.7	10.5	15.7	10.5	15.7	10.5

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMHU-E2 CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
15 (15,000)	13,300	10,600	13,700	10,500	14,300	10,800	14,900	10,700	14,900	10,400	14,900	10,500	14,900	10,400
18 (18,000)	15,900	12,000	16,400	12,000	17,100	12,200	17,900	12,100	17,900	11,700	17,900	11,700	17,900	11,600
24 (24,000)	21,200	16,400	21,900	16,300	22,900	16,700	23,900	16,600	23,900	16,000	23,900	16,100	23,900	16,000
27 (27,000)	23,900	18,300	24,600	18,200	25,700	18,600	26,800	18,500	26,800	17,800	26,800	17,900	26,800	17,800
30 (30,000)	26,500	20,600	27,300	20,400	28,600	20,900	29,800	20,800	29,800	20,100	29,800	20,100	29,800	20,000
36 (36,000)	31,800	27,400	32,800	27,200	34,300	28,000	35,800	27,900	35,800	27,000	35,800	27,400	35,800	27,500
48 (48,000)	42,400	32,500	43,700	32,300	45,700	32,900	47,700	32,800	47,700	31,600	47,700	31,700	47,700	31,500
54 (54,000)	47,700	36,800	49,200	36,500	51,400	37,300	53,700	37,100	53,700	35,800	53,700	35,900	53,700	35,700

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMHSU-E CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
72 (21.1)	18.6	16.4	19.2	16.3	20.1	16.8	21.0	16.7	21.0	16.2	21.0	16.4	21.0	16.5
96 (28.1)	24.8	20.7	25.6	20.5	26.8	21.1	27.9	21.0	27.9	20.3	27.9	20.5	27.9	20.5

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMHSU-E CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
72 (72,000)	63,600	56,000	65,600	55,600	68,600	57,200	71,600	57,000	71,600	55,200	71,600	56,100	71,600	56,400
96 (96,000)	84,800	70,500	87,500	70,100	91,400	71,900	95,400	71,600	95,400	69,300	95,400	70,000	95,400	70,100

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

3-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PEFY-P-NMAU-E3 CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.7	1.8	1.7	1.8	1.7	1.8	1.7
08 (2.3)	2.0	1.8	2.1	1.8	2.2	1.9	2.3	1.9	2.3	1.8	2.3	1.8	2.3	1.9
12 (3.5)	3.1	2.4	3.2	2.4	3.3	2.5	3.5	2.4	3.5	2.4	3.5	2.4	3.5	2.4
15 (4.4)	3.9	3.3	4.0	3.3	4.2	3.4	4.4	3.4	4.4	3.2	4.4	3.3	4.4	3.3
18 (5.3)	4.7	4.0	4.8	4.0	5.0	4.1	5.3	4.1	5.3	3.9	5.3	4.0	5.3	4.0
24 (7.0)	6.2	5.5	6.4	5.5	6.7	5.7	7.0	5.6	7.0	5.5	7.0	5.6	7.0	5.6
27 (7.9)	7.0	5.9	7.2	5.9	7.5	6.0	7.9	6.0	7.9	5.8	7.9	5.9	7.9	5.9
30 (8.8)	7.8	6.3	8.0	6.2	8.4	6.4	8.7	6.3	8.7	6.1	8.7	6.2	8.7	6.2
36 (10.6)	9.4	7.9	9.7	7.9	10.1	8.1	10.5	8.1	10.5	7.8	10.5	7.9	10.5	7.9
48 (14.1)	12.5	10.0	12.8	9.9	13.4	10.1	14.0	10.1	14.0	9.8	14.0	9.8	14.0	9.8
54 (15.8)	14.0	11.1	14.4	11.1	15.0	11.3	15.7	11.3	15.7	10.9	15.7	11.0	15.7	10.9

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMAU-E3 CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (6,000)	5,300	5,300	5,500	5,500	5,700	5,700	6,000	5,800	6,000	5,600	6,000	5,800	6,000	5,900
08 (8,000)	7,100	6,300	7,300	6,300	7,600	6,500	8,000	6,500	8,000	6,300	8,000	6,400	8,000	6,400
12 (12,000)	10,600	8,300	10,900	8,200	11,400	8,400	11,900	8,400	11,900	8,100	11,900	8,100	11,900	8,100
15 (15,000)	13,300	11,200	13,700	11,200	14,300	11,500	14,900	11,400	14,900	11,100	14,900	11,200	14,900	11,200
18 (18,000)	15,900	13,600	16,400	13,500	17,100	13,800	17,900	13,800	17,900	13,300	17,900	13,500	17,900	13,600
24 (24,000)	21,200	18,900	21,900	18,800	22,900	19,400	23,900	19,300	23,900	18,700	23,900	19,000	23,900	19,100
27 (27,000)	23,900	20,100	24,600	20,000	25,700	20,500	26,800	20,500	26,800	19,800	26,800	20,000	26,800	20,100
30 (30,000)	26,500	21,400	27,300	21,200	28,600	21,800	29,800	21,700	29,800	20,900	29,800	21,100	29,800	21,100
36 (36,000)	31,800	27,000	32,800	26,800	34,300	27,500	35,800	27,400	35,800	26,500	35,800	26,900	35,800	27,000
48 (48,000)	42,400	34,000	43,700	33,800	45,700	34,600	47,700	34,400	47,700	33,200	47,700	33,500	47,700	33,400
54 (54,000)	47,700	38,000	49,200	37,800	51,400	38,700	53,700	38,500	53,700	37,200	53,700	37,400	53,700	37,300

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

4-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PVFY-P-NAMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
12 (3.5)	3.1	2.8	3.2	2.7	3.3	2.8	3.5	2.8	3.5	2.7	3.5	2.8	3.5	2.8
18 (5.3)	4.7	4.0	4.8	4.0	5.0	4.1	5.3	4.0	5.3	3.9	5.3	4.0	5.3	4.0
24 (7.0)	6.2	5.0	6.4	5.0	6.7	5.1	7.0	5.1	7.0	4.9	7.0	4.9	7.0	4.9
30 (8.8)	7.8	6.3	8.0	6.3	8.4	6.5	8.7	6.4	8.7	6.2	8.7	6.3	8.7	6.3
36 (10.6)	9.4	7.6	9.7	7.5	10.1	7.7	10.5	7.7	10.5	7.4	10.5	7.5	10.5	7.5
48 (14.1)	12.5	9.8	12.8	9.8	13.4	10.0	14.0	10.0	14.0	9.6	14.0	9.7	14.0	9.7
54 (15.8)	14.0	10.7	14.4	10.6	15.0	10.9	15.7	10.8	15.7	10.4	15.7	10.5	15.7	10.4

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PVFY-P-NAMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
12 (12,000)	10,600	9,400	10,900	9,400	11,400	9,600	11,900	9,600	11,900	9,300	11,900	9,400	11,900	9,500
18 (18,000)	15,900	13,500	16,400	13,500	17,100	13,800	17,900	13,800	17,900	13,300	17,900	13,500	17,900	13,500
24 (24,000)	21,200	17,100	21,900	17,000	22,900	17,400	23,900	17,300	23,900	16,800	23,900	16,900	23,900	16,900
30 (30,000)	26,500	21,600	27,300	21,500	28,600	22,000	29,800	21,900	29,800	21,200	29,800	21,400	29,800	21,400
36 (36,000)	31,800	25,700	32,800	25,600	34,300	26,200	35,800	26,100	35,800	25,200	35,800	25,400	35,800	25,400
48 (48,000)	42,400	33,600	43,700	33,400	45,700	34,100	47,700	34,000	47,700	32,800	47,700	33,000	47,700	32,900
54 (54,000)	47,700	36,600	49,200	36,400	51,400	37,100	53,700	36,900	53,700	35,600	53,700	35,700	53,700	35,500

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

5-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PMFY-P-NBMU-E CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.5	1.6	1.5	1.7	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8	1.5
08 (2.3)	2.0	1.8	2.1	1.8	2.2	1.8	2.3	1.8	2.3	1.8	2.3	1.8	2.3	1.8
12 (3.5)	3.1	2.3	3.2	2.3	3.3	2.3	3.5	2.3	3.5	2.2	3.5	2.2	3.5	2.2
15 (4.4)	3.9	2.8	4.0	2.8	4.2	2.8	4.4	2.8	4.4	2.7	4.4	2.7	4.4	2.7

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

PMFY-P-NBMU-E CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (6,000)	5,300	5,000	5,500	5,000	5,700	5,100	6,000	5,100	6,000	5,000	6,000	5,100	6,000	5,100
08 (8,000)	7,100	6,100	7,300	6,100	7,600	6,300	8,000	6,200	8,000	6,000	8,000	6,100	8,000	6,200
12 (12,000)	10,600	7,900	10,900	7,800	11,400	8,000	11,900	7,900	11,900	7,600	11,900	7,600	11,900	7,500
15 (15,000)	13,300	9,600	13,700	9,500	14,300	9,700	14,900	9,600	14,900	9,200	14,900	9,200	14,900	9,100

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

6-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PLFY-P-NCMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
08 (2.3)	2.0	1.9	2.1	1.9	2.2	1.9	2.3	1.9	2.3	1.9	2.3	1.9	2.3	1.9
12 (3.5)	3.1	2.5	3.2	2.5	3.3	2.5	3.5	2.5	3.5	2.4	3.5	2.4	3.5	2.4
15 (4.4)	3.9	2.9	4.0	2.9	4.2	2.9	4.4	2.9	4.4	2.8	4.4	2.8	4.4	2.8

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PLFY-P-NCMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
08 (8,000)	7,100	6,500	7,300	6,400	7,600	6,600	8,000	6,600	8,000	6,400	8,000	6,500	8,000	6,600
12 (12,000)	10,600	8,500	10,900	8,400	11,400	8,600	11,900	8,600	11,900	8,300	11,900	8,400	11,900	8,300
15 (15,000)	13,300	9,800	13,700	9,800	14,300	10,000	14,900	9,900	14,900	9,500	14,900	9,500	14,900	9,400

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PLFY-P-NBMU-E2

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
08 (2.3)	2.0	1.9	2.1	1.9	2.2	1.9	2.3	1.9	2.3	1.8	2.3	1.9	2.3	1.9
12 (3.5)	3.1	2.8	3.2	2.8	3.3	2.9	3.5	2.9	3.5	2.8	3.5	2.8	3.5	2.8
15 (4.4)	3.9	3.4	4.0	3.4	4.2	3.5	4.4	3.5	4.4	3.4	4.4	3.5	4.4	3.5
18 (5.3)	4.7	4.0	4.8	3.9	5.0	4.0	5.3	4.0	5.3	3.9	5.3	3.9	5.3	3.9
24 (7.0)	6.2	5.0	6.4	4.9	6.7	5.0	7.0	5.0	7.0	4.9	7.0	4.9	7.0	4.9
30 (8.8)	7.8	6.2	8.0	6.1	8.4	6.3	8.7	6.2	8.7	6.0	8.7	6.1	8.7	6.0
36 (10.6)	9.4	7.3	9.7	7.3	10.1	7.4	10.5	7.4	10.5	7.1	10.5	7.2	10.5	7.1

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PLFY-P-NBMU-E2

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
08 (8,000)	7,100	6,400	7,300	6,400	7,600	6,600	8,000	6,600	8,000	6,400	8,000	6,500	8,000	6,500
12 (12,000)	10,600	9,600	10,900	9,500	11,400	9,800	11,900	9,800	11,900	9,500	11,900	9,700	11,900	9,700
15 (15,000)	13,300	11,700	13,700	11,700	14,300	12,000	14,900	12,000	14,900	11,600	14,900	11,800	14,900	11,900
18 (18,000)	15,900	13,500	16,400	13,400	17,100	13,700	17,900	13,700	17,900	13,200	17,900	13,400	17,900	13,400
24 (24,000)	21,200	17,000	21,900	16,900	22,900	17,300	23,900	17,200	23,900	16,600	23,900	16,700	23,900	16,700
30 (30,000)	26,500	21,000	27,300	20,900	28,600	21,300	29,800	21,200	29,800	20,500	29,800	20,600	29,800	20,600
36 (36,000)	31,800	24,900	32,800	24,700	34,300	25,300	35,800	25,100	35,800	24,300	35,800	24,400	35,800	24,300

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

7-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PCFY-P-NKMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
15 (4.4)	3.9	2.9	4.0	2.9	4.2	3.0	4.4	2.9	4.4	2.8	4.4	2.8	4.4	2.8
24 (7.0)	6.2	4.6	6.4	4.5	6.7	4.6	7.0	4.6	7.0	4.4	7.0	4.4	7.0	4.4
30 (8.8)	7.8	6.1	8.0	6.0	8.4	6.1	8.7	6.1	8.7	5.9	8.7	5.9	8.7	5.9
36 (10.6)	9.4	7.3	9.7	7.3	10.1	7.5	10.5	7.4	10.5	7.2	10.5	7.2	10.5	7.2

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PCFY-P-NKMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
15 (15,000)	13,300	9,900	13,700	9,900	14,300	10,100	14,900	10,000	14,900	9,700	14,900	9,700	14,900	9,600
24 (24,000)	21,200	15,600	21,900	15,500	22,900	15,800	23,900	15,700	23,900	15,100	23,900	15,100	23,900	14,900
30 (30,000)	26,500	20,600	27,300	20,500	28,600	21,000	29,800	20,900	29,800	20,100	29,800	20,200	29,800	20,100
36 (36,000)	31,800	25,000	32,800	24,800	34,300	25,400	35,800	25,200	35,800	24,400	35,800	24,500	35,800	24,400

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

8-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PKFY-P-NBMU,NHMU,NKMU-E2 CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.3	1.6	1.2	1.7	1.3	1.8	1.3	1.8	1.2	1.8	1.2	1.8	1.2
08 (2.3)	2.0	1.9	2.1	1.9	2.2	2.0	2.3	2.0	2.3	1.9	2.3	2.0	2.3	2.0
12 (3.5)	3.1	2.5	3.2	2.5	3.3	2.6	3.5	2.6	3.5	2.5	3.5	2.5	3.5	2.5
15 (4.4)	3.9	3.0	4.0	3.0	4.2	3.1	4.4	3.1	4.4	3.0	4.4	3.0	4.4	3.0
18 (5.3)	4.7	3.5	4.8	3.5	5.0	3.5	5.3	3.5	5.3	3.4	5.3	3.4	5.3	3.4
24 (7.0)	6.2	5.6	6.4	5.6	6.7	5.8	7.0	5.8	7.0	5.6	7.0	5.7	7.0	5.7
30 (8.8)	7.8	6.4	8.0	6.4	8.4	6.5	8.7	6.5	8.7	6.3	8.7	6.3	8.7	6.4

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

PKFY-P-NBMU,NHMU,NKMU-E2 CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (6,000)	5,300	4,200	5,500	4,200	5,700	4,300	6,000	4,300	6,000	4,100	6,000	4,200	6,000	4,100
08 (8,000)	7,100	6,600	7,300	6,600	7,600	6,800	8,000	6,800	8,000	6,600	8,000	6,700	8,000	6,800
12 (12,000)	10,600	8,700	10,900	8,600	11,400	8,800	11,900	8,800	11,900	8,500	11,900	8,600	11,900	8,600
15 (15,000)	13,300	10,400	13,700	10,300	14,300	10,600	14,900	10,500	14,900	10,100	14,900	10,200	14,900	10,200
18 (18,000)	15,900	11,900	16,400	11,800	17,100	12,100	17,900	12,000	17,900	11,600	17,900	11,600	17,900	11,500
24 (24,000)	21,200	19,300	21,900	19,200	22,900	19,800	23,900	19,700	23,900	19,100	23,900	19,400	23,900	19,600
30 (30,000)	26,500	21,800	27,300	21,700	28,600	22,300	29,800	22,200	29,800	21,400	29,800	21,600	29,800	21,700

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

9-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PFFY-P-NEMU/NRMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.5	1.6	1.4	1.7	1.5	1.8	1.5	1.8	1.4	1.8	1.5	1.8	1.5
08 (2.3)	2.0	1.7	2.1	1.6	2.2	1.7	2.3	1.7	2.3	1.6	2.3	1.6	2.3	1.6
12 (3.5)	3.1	2.3	3.2	2.3	3.3	2.4	3.5	2.4	3.5	2.3	3.5	2.3	3.5	2.3
15 (4.4)	3.9	3.0	4.0	2.9	4.2	3.0	4.4	3.0	4.4	2.9	4.4	2.9	4.4	2.9
18 (5.3)	4.7	3.6	4.8	3.6	5.0	3.7	5.3	3.6	5.3	3.5	5.3	3.5	5.3	3.5
24 (7.0)	6.2	4.5	6.4	4.5	6.7	4.6	7.0	4.6	7.0	4.4	7.0	4.4	7.0	4.3

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PFFY-P-NEMU/NRMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (6,000)	5,300	4,900	5,500	4,900	5,700	5,000	6,000	5,000	6,000	4,900	6,000	5,000	6,000	5,000
08 (8,000)	7,100	5,700	7,300	5,700	7,600	5,800	8,000	5,800	8,000	5,600	8,000	5,700	8,000	5,600
12 (12,000)	10,600	8,000	10,900	8,000	11,400	8,100	11,900	8,100	11,900	7,800	11,900	7,800	11,900	7,800
15 (15,000)	13,300	10,100	13,700	10,000	14,300	10,200	14,900	10,200	14,900	9,800	14,900	9,800	14,900	9,800
18 (18,000)	15,900	12,200	16,400	12,200	17,100	12,400	17,900	12,400	17,900	11,900	17,900	12,000	17,900	11,900
24 (24,000)	21,200	15,500	21,900	15,400	22,900	15,700	23,900	15,600	23,900	15,000	23,900	14,900	23,900	14,800

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

10-1. Heating capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

All indoor units SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp. 15°C D.B. SHC	21.1°C D.B. SHC	25°C D.B. SHC	27.2°C D.B. SHC
06 (2.0)	2.0	2.0	2.0	1.7
08 (2.6)	2.6	2.6	2.6	2.2
12 (4.0)	4.0	4.0	4.0	3.4
15 (5.0)	5.0	5.0	5.0	4.3
18 (5.9)	5.9	5.9	5.9	5.1
24 (7.9)	7.9	7.9	7.9	6.8
27 (8.8)	8.8	8.8	8.8	7.6
30 (10.0)	10.0	10.0	10.0	8.6
36 (11.7)	11.7	11.7	11.7	10.1
48 (15.8)	15.8	15.8	15.8	13.6
54 (17.6)	17.6	17.6	17.6	15.2
72 (23.4)	23.4	23.4	23.4	20.2
96 (31.7)	31.7	31.7	31.7	27.3

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412

All indoor units SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp. 59°F D.B. SHC	70°F D.B. SHC	77°F D.B. SHC	81°F D.B. SHC
06 (6,700)	6,700	6,700	6,700	5,800
08 (9,000)	9,000	9,000	9,000	7,800
12 (13,500)	13,500	13,500	13,500	11,600
15 (17,000)	17,000	17,000	17,000	14,700
18 (20,000)	20,000	20,000	20,000	17,200
24 (27,000)	27,000	27,000	27,000	23,300
27 (30,000)	30,000	30,000	30,000	25,900
30 (34,000)	34,000	34,000	34,000	29,300
36 (40,000)	40,000	40,000	40,000	34,500
48 (54,000)	54,000	54,000	54,000	46,500
54 (60,000)	60,000	60,000	60,000	51,700
72 (80,000)	80,000	80,000	80,000	69,000
96 (108,000)	108,000	108,000	108,000	93,100

* The capacity does not depend on the inlet-water temperature. kcal/h = kW x 860, BTU/h = kW x 3,412