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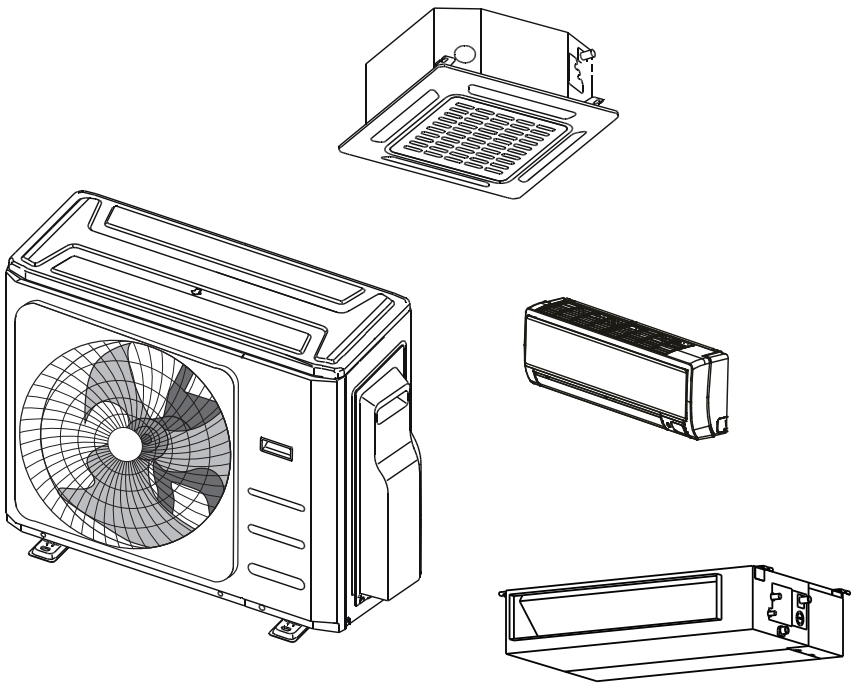
TM_MULTI_R32_3D INV_EU_S_NA_2108

MULTI SPLIT TYPE
R32 INVERTER CONTROL

TECHNICAL MANUAL



*Unit Model refer to Page 5

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Specifications

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1. Model Reference

Refer to the following table to determine the specific indoor and outdoor unit model number of your purchased equipment.

	Capacity (Btu/h)	Power supply	Carrier Model
R32 New Multi CDU	14K-HP-T2	1 Φ, 220-240V~,50Hz	38QUS014D8S2-1
	18K-HP-T2	1 Φ, 220-240V~,50Hz	38QUS018D8S2-2
	21K-HP-T3	1 Φ, 220-240V~,50Hz	38QUS021D8S3-1
	27K-HP-T3	1 Φ, 220-240V~,50Hz	38QUS027D8S3-2
	28K-HP-T4	1 Φ, 220-240V~,50Hz	38QUS028D8S4-1
	36K-HP-T4	1 Φ, 220-240V~,50Hz	38QUS036D8S4-1
	42K-HP-T5	1 Φ, 220-240V~,50Hz	38QUS042D8S5-1
R32 Cool Easy Hiwall IDU	7K-HP	Accord to ODU	42QHE07D8SH
	9K-HP	Accord to ODU	42QHE09D8SH
	12K-HP	Accord to ODU	42QHE12D8SH
	18K-HP	Accord to ODU	42QHE18D8SH
	24K-HP	Accord to ODU	42QHE24D8SH
R32 18C/AG Hiwall IDU	7K-HP	Accord to ODU	42QHG007D8S
	9K-HP	Accord to ODU	42QHG009D8S
	12K-HP	Accord to ODU	42QHG012D8S
	18K-HP	Accord to ODU	42QHG018D8S
	24K-HP	Accord to ODU	42QHG024D8S
R32 IDU New Cassette	7K-HP	Accord to ODU	42QTD007D8S
	9K-HP	Accord to ODU	42QTD009D8S
	12K-HP	Accord to ODU	42QTD012D8S-1
	18K-HP	Accord to ODU	42QTD018D8S-2
	24K-HP	Accord to ODU	42QTD024D8S
R32 IDU New Ducted	7K-HP	Accord to ODU	42QSS007D8S
	9K-HP	Accord to ODU	42QSS009D8S
	12K-HP	Accord to ODU	42QSS012D8S-1
	18K-HP	Accord to ODU	42QSS018D8S-1
	24K-HP	Accord to ODU	42QSS024D8S
R32 IDU Under Ceiling	18K-HP	Accord to ODU	42QZL018D8S-2
	24K-HP	Accord to ODU	42QZL024D8S-1

2. Functions

Functions / Model	A6 Duct type	Cassette type
Standard filter	O	●
Flange	O	X
Healthy filter	X	X
Drainage pump	O	●
IDU auxiliary electric heater	X	X
Infrared wired controller (KJR-12B, KJR-90A)	●	O
485 wired controller (KJR-120C, KJR-120G2)	O	O
2 cores non-polarity wired controller (KJR-120G)	O	O
Wifi	O	O
XYE port for central controller	●	●
Alarm output terminal	●	●
Remote on/off terminal	●	●
Golden Fin(Outdoor unit)	●	●

Note:

●: Standard

O: Optional

X: Not available

Functions / Model	Cool Easy	AG/18C
High Density Filter	●	●
Cold Catalyst Filter	●	●
Fire Proof	●	●
Turbo	●	●
Sleep	●	●
Auto-restart	●	●
Timer	●	●
super ionizer	O	O
horizontal louver autoswing	●	●
2 ways piping connection	●	●
H-shaped installation plate	X	●
Monolithic installation plate	O	O
louver position memory function	●	●
follow me	●	●
ECO	●	●
Remote on/off terminal	O	O
Alarm output terminal	O	O
XYE port for centrol control&weekly timer	O	O
wired controller(simplex KJR-12B,etc.)	O	O
wired controller(duplex KJR-120G/TF-E,non-polarity)	O	O
WIFI	O	O
Golden Fin(Outdoor unit)	●	●

Note:

●: Standard

O: Optional

X: Not available

3. General Specifications

INDOOR UNIT - High Wall 18C HP		42QHG007D8S	42QHG009D8S	42QHG012D8S	42QHG018D8S	42QHG024D8S
Power supply	V-ph-Hz	220-240V~, 50Hz, 1Ph	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz
Cooling Capacity	kW	2.05	2.64	3.52	5.28	7.04
Heating Capacity	kW	2.05	2.64	3.52	5.28	7.04
Indoor fan motor input	W	22	22	20	36	60
Indoor fan motor max current	A	0.5	0.5	0.5	0.5	0.7
Sound power level	dB(A)	56	56	56	58	63
Sound pressure level (Min. ~ Max.)	dB(A)	20~37	20~37	20~37	21~41	22~47
Air flow(Min. ~ Max.)	m^3/h	180~460	180~460	195~530	300~800	480~1090
Weight (Net/Gross)	kg	8.0/10.5	8.0/10.5	8.7/11.5	11.2 / 14.6	13.6 / 17.3
Dimensions (W×D×H)	mm	726×210×291	726×210×291	835×208×295	969×241×320	1083×244×336
Packing (W×D×H)	mm	790×270×375	790×270×375	905×290×355	1045×315×405	1155×315×415
Refrigerant piping (Liquid side/Gas side)	mm(inch)	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ12.7 (1/4"/1/2")	Φ9.52/Φ15.9 (3/8"/5/8")

INDOOR UNIT - High Wall Cool easy HP		42QHE07D8SH(New)	42QHE09D8SH(New)	42QHE12D8SH(New)	42QHE18D8SH(New)	42QHE24D8SH(New)
Power supply	V-ph-Hz	220-240V~, 50Hz, 1Ph	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz
Cooling Capacity	kW	2.05	2.64	3.52	5.28	7.04
Heating Capacity	kW	2.05	2.64	3.52	5.28	7.04
Indoor fan motor input	W	50	50	50	36	58
Indoor fan motor max current	A	0.16	0.16	0.16	0.11	0.21
Sound power level	dB(A)	60	60	60	60	65
Sound pressure level (Min. ~ Max.)	dB(A)	21~37	21~37	22~40	22~41	21~42
Air flow(Min. ~ Max.)	m^3/h	280~530	280~530	290~560	400~685	380~1090
Weight (Net/Gross)	kg	10.2/13	10.2/13	10.2/13	12.3/16.4	20.0/25.3
Dimensions (W×D×H)	mm	795x225x295	795x225x295	795x225x295	965x239x319	1140x370x275
Packing (W×D×H)	mm	870x370x305	870x370x305	870x370x305	1045x400x325	1230x455x355
Refrigerant piping (Liquid side/Gas side)	mm(inch)	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ12.7 (1/4"/1/2")	Φ9.52/Φ15.9 (3/8"/5/8")

INDOOR UNIT - Cassette		42QTD007D8S	42QTD009D8S	42QTD012D8S-1(New)	42QTD018D8S-2(New)	42QTD024D8S(New)
Power supply	V-ph-Hz	220-240V~, 50Hz, 1Ph	220-240V~, 50Hz, 1Ph	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz
Cooling Capacity	kW	2.05	2.64	3.52	5.28	7.04
Heating Capacity	kW	2.05	2.64	4	5.28	7.04
Indoor fan motor input	W	45	45	145	145	120
Indoor fan motor max current	A	0.40	0.40	0.465	0.47	0.39
Sound power level	dB(A)	58	58	57	58	59
Sound pressure level (high/med/low)	dB(A)	42/39/36	42/39/36	42/37.5/34.5	45.4/44.0/39.0	50.0/47.5/42.0
Air flow (high/med/low)	m^3/h	560/430/390	560/430/390	570/485/390	680/585/480	1250/1120/995
Weight (Net/Gross)(Body)	kg	15.0/18.0	15.0/18.0	16.3/20.4	16.0/20.6	21.6/25.4
Weight (Net/Gross)(Panel)	kg	2.5/4.5	2.5/4.5	2.5/4.5	2.5/4.5	6.0 / 9.0
Dimensions (W×D×H)(Body)	mm	570x570x260	570x570x260	570x570x260	570x570x260	830x830x205
Packing(W×D×H)(Body)	mm	662x662x317	662x662x317	662x662x317	662x662x317	910x910x250
Dimensions (W×D×H)(Panel)	mm	647x647x50	647x647x50	647x647x50	647x647x50	950×950×55
Packing(W×D×H)(Panel)	mm	715x715x123	715x715x123	715x715x123	715x715x123	1035×1035×90
Refrigerant piping (Liquid side/Gas side)	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ12.7(1/4"/1/2")	Φ9.52 / Φ15.9 (3/8" / 5/8")

INDOOR UNIT - Ducted		42QSS007D8S	42QSS009D8S	42QSS012D8S-1(New)	42QSS018D8S-1(New)	42QSS024D8S(New)
Power supply	V-ph-Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz
Cooling Capacity	kW	2.05	2.64	3.52	5.28	7.04
Heating Capacity	kW	2.05	2.64	3.52	5.28	7.04
Indoor fan motor input	W	130	130	130	200	200
Indoor fan motor max current	A	1.11	1.11	1.11	1.65	1.65
Sound power level	dB(A)	60	60	58	58	62
Sound pressure level (high/med/low)	dB(A)	42/36/30	42/36/30	34.5/32.0/30.0	42.0/39.0/35.0	49.0/46.0/41.0
Air flow (high/med/low)	m^3/h	580/480/300	580/480/300	600/480/300	910/710/515	1230/1035/825
Weight (Net/Gross)(Body)	kg	18.0 / 22.0	18.0 / 22.0	17.8/21.5	24.4/29.6	32.3/39.1
Dimensions (W×D×H)(Body)	mm	700×450×200	700×450×200	700×506×200	880x674x210	1100x774x249
Packing(W×D×H)(body)	mm	860×540×285	860×540×285	860×540×285	1070x725x280	1305x805x315
Refrigerant piping (Liquid side/Gas side)	mm(inch)	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35/Φ9.52 (1/4"/3/8")	Φ6.35 / Φ12.7 (1/4" / 1/2")	Φ9.52 / Φ15.9 (3/8" / 5/8")

INDOOR UNIT - Console		42QZL018D8S-2(New)	42QZL024D8S(New)
Power supply	V-ph-Hz	220~240V / 1Ph / 50Hz	220~240V / 1Ph / 50Hz
Cooling Capacity	kW	5.28	7.04
Heating Capacity	kW	5.28	7.04
Indoor fan motor input	W	98	98
Indoor fan motor max current	A	0.94	0.94
Sound power level	dB(A)	58	55
Sound pressure level (high/med/low)	dB(A)	44.0/41.0/37.0	51.0 / 47.0 / 43.0
Air flow (high/med/low)	m^3/h	960/840/725	1190 / 1025 / 850
Weight (Net/Gross)	kg	28.0/33.3	28.0 / 33.1
Dimension(W*D*H)	mm	1068x675x235	1068x675x235
Packing(W*D*H)	mm	1145x755x318	1145x755x318
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	Φ6.35/Φ12.7(1/4"/1/2")	Φ9.52 / Φ15.9 (3/8" / 5/8")

INDOOR UNIT - Hydraulic Kit		40ATW027(New)
Power supply	V-ph-Hz	220~240V / 1Ph / 50Hz
Cooling Capacity	kW	8
Heating Capacity	kW	8.00
Indoor fan motor input	W	/
Indoor fan motor max current	A	/
Sound power level	dB(A)	/
Sound pressure level (high/med/low)	dB(A)	34
Air flow (high/med/low)	m^3/h	/
Weight (Net/Gross)	kg	56.0/64.0
Dimension(W*D*H)	mm	918×490×325
Packing(W*D*H)	mm	1055×570×415
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	Φ6.35/Φ12.7(1/4"/1/2")

Outdoor Model		38QUS014D8S2-1			
IDUs Combination for Rating		Hiwall（New） 42QHG007D8S (×2)	Hiwall（New） 42QHE07D8S (×2)	Cassette 42QTD007D8S (×2)	Ducted 42QSS007D8S (×2)
Power supply	V-Hz-Ph	220-240V~, 50Hz, 1Ph			
Cooling capacity	kW	4.1(1.44~4.98)	4.10（1.47~5.42）	4.1(1.31~4.70)	4.10 (1.39~4.98)
Heating capacity	kW	4.4(1.50~4.91)	4.60（1.52~4.94）	4.3(1.47~4.98)	4.66 (1.66~4.98)
Pdesign capacity cooling	kW	4.10	4.1	4.10	4.10
Pdesign capacity heating (average)	kW	3.80	3.8	3.80	4.0
SEER/ SCOP(average)	W/W	7.2/3.9	7.5/4.0	6.1/3.9	6.1 / 3.8
Energy label		A++/A	A++/A+	A++/A	A++/A
Yearly energy consumption	kWh	200/1365	192/1330	236/1365	236/1474
EER/ COP	W/W	3.42/4.11	3.57/4.65	3.42/4.02	3.33/4.24
Standard current (cooling)	A	5.8	5.8	5.8	5.8
Standard input (cooling)	W	1200	1150	1200	1230
Standard current (heating)	A	5.4	5.4	5.4	5.5
Standard input (heating)	W	1070	990	1070	1100
Rated current	A	12.0			
Rated input	W	2750.0			
Outdoor air flow	m^3/h	2100.0			
Outdoor sound pressure level	dB(A)	56.0			
Outdoor sound power level	dB(A)	64.0			
Throttle type		EXV+Capillary			
Dimension (W×D×H)	mm	805x330x554			
Packing (W×D×H)	mm	915x370x615			
Net/ Gross weight	kg	31.6/34.7			
GWP		675			
Refrigerant charge amount, R32	kg	1.1			
Compressor model		KSN140D58UFZ			
Refrigerant oil/ oil quantity	ml	VG74/440			
Design pressure	Mpa	4.3 / 1.7			
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	2 × [Φ6.35/ Φ9.52 (1/4"/ 3/8")]			
Chargeless pipe length	m	7.5*2			
Additional charge	g/m	12			
Max. length for all rooms	m	40			
Max. length for one indoor unit	m	25			
Max. height difference between IDU and	m	15			
Max. height difference between indoor units	m	10			
Temp range cooling	℃	-15 ~ 50			
Temp range heating	℃	-15 ~ 24			

Outdoor Model		38QUS018D8S2-2			
IDUs Combination for Rating		Hiwall 42QHG009D8S (×2)	Hiwall（New） 42QHE09D8S (×2)	Cassette 42QTD009D8S (×2)	Ducted 42QSS009D8S (×2)
Power supply	V-Hz-Ph	220-240V~, 50Hz, 1Ph			
Cooling capacity	kW	5.35(2.26~5.57)	5.79(2.28~5.72)	5.40(2.23~5.72)	5.80(1.32~5.57)
Heating capacity	kW	5.50(2.34~5.63)	5.7(2.40~5.74)	5.50(2.34~5.86)	6.00(1.88~6.00)
Pdesign capacity cooling	kW	5.35	5.79	5.40	5.80
Pdesign capacity heating (average)	kW	4.40	4.50	4.50	4.60
SEER/ SCOP(average)	W/W	7.3/4.0	8.3/4.0	6.2/4.0	6.7/4.1
Energy label		A++/A+	A++/A+	A++ / A+	A++/A+
Yearly energy consumption	kWh	257/1540	245/1575	305/1575	303/1571
EER/ COP	W/W	3.34/3.67	3.86/4.29	3.38/3.79	3.79/4.29
Standard current (cooling)	A	7.1	7.3	7.1	7.3
Standard input (cooling)	W	1600	1500	1600	1530
Standard current (heating)	A	6.6	6.6	6.6	6.6
Standard input (heating)	W	1500	1330	1450	1400
Rated current	A	13.0			
Rated input	W	3050			
Outdoor air flow	m^3/h	2100			
Outdoor sound pressure level	dB(A)	54			
Outdoor sound power level	dB(A)	63			
Throttle type		EXV+Capillary			
Dimension (W×D×H)	mm	805x330x554			
Packing (W×D×H)	mm	915x370x615			
Net/ Gross weight	kg	35.0/38.0			
GWP		675.00			
Refrigerant charge amount, R32	kg	1.25			
Compressor model		KSN140D58UFZ			
Refrigerant oil/ oil quantity	ml	VG74/440			
Design pressure	Mpa	4.3 / 1.7			
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	2 × [Φ6.35/ Φ9.52 (1/4"/ 3/8")]			
Chargeless pipe length	m	7.5*2			
Additional charge	g/m	12			
Max. length for all rooms	m	40			
Max. length for one indoor unit	m	25			
Max. height difference between IDU and	m	15			
Max. height difference between indoor units	m	10			
Temp range cooling	℃	-15 ~ 50			
Temp range heating	℃	-15 ~ 24			

Outdoor Model IDUs Combination for Rating		38QUS021D8S3-1			
		Hiwall 42QHG007D8S (×3)	Hiwall（New） 42QHE07D8S (×3)	Cassette 42QTD007D8S (×3)	Ducted 42QSS007D8S (×3)
Power supply	V-Hz-Ph	220-240V~, 50Hz, 1Ph			
Cooling capacity	kW	6.3(2.0~6.6)	6.6(2.0~6.6)	6.2(2.0~6.6)	6.2(2.0~6.6)
Heating capacity	kW	6.5(2.0~6.68)	6.7(2.0~6.7)	6.5(2.0~6.74)	6.3(2.0~6.68)
Pdesign capacity cooling	kW	6.30	6.6	6.20	6.20
Pdesign capacity heating (average)	kW	5.40	5.2	5.20	5.10
SEER/ SCOP(average)	W/W	7.1/4.1	8.0/4.0	6.4/4.2	6.7/3.8
Energy label		A++ / A+	A++ / A+	A++ / A+	A++ / A
Yearly energy consumption	kWh	311/1844	289/1820	340/1734	324/1879
EER/ COP	W/W	3.50/4.33	4.13/4.9	3.65/4.06	3.83/4.06
Standard current (cooling)	A	8.3	9.0	8.3	8.3
Standard input (cooling)	W	1800	1600	1700	1620
Standard current (heating)	A	7.6	8.1	7.6	7.6
Standard input (heating)	W	1500	1400	1600	1550
Rated current	A	17.0			
Rated input	W	3910			
Outdoor air flow	m^3/h	2100			
Outdoor sound pressure level	dB(A)	58			
Outdoor sound power level	dB(A)	66			
Throttle type		EXV+Capillary			
Dimension (W×D×H)	mm	890x342x673			
Packing (W×D×H)	mm	1030x438x750			
Net/ Gross weight	kg	43.3/47.1			
GWP		675			
Refrigerant charge amount, R32	kg	1.5			
Compressor model		KSN140D58UFZ			
Refrigerant oil/ oil quantity	ml	VG74/440			
Design pressure	Mpa	4.3 / 1.7			
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	3 × [Φ6.35/ Φ9.52 (1/4"/ 3/8")]			
Chargeless pipe length	m	7.5*3			
Additional charge	g/m	12			
Max. length for all rooms	m	60			
Max. length for one indoor unit	m	25			
Max. height difference between IDU and	m	15			
Max. height difference between indoor units	m	10			
Temp range cooling	℃	-15 ~ 50			
Temp range heating	℃	-15 ~ 24			

Outdoor Model IDUs Combination for Rating		38QUS027D8S3-2			
		Hiwall 42QHG009D8S (×3)	Hiwall（New） 42QHE09D8S (×3)	Cassette 42QTD009D8S (×3)	Ducted 42QSS009D8S (×3)
Power supply	V-Hz-Ph	220-240V~, 50Hz, 1Ph			
Cooling capacity	kW	8.15 (2.90~8.50)	8.15(2.79~8.50)	7.5 (2.10~8.50)	8.30(2.90~8.21)
Heating capacity	kW	8.00(2.29~8.50)	8.45(1.90~8.50	7.7(2.29~8.79)	8.1(2.29~8.35)
Pdesign capacity cooling	kW	8.15	8.15	7.50	8.30
Pdesign capacity heating (average)	kW	5.70	6.4	5.30	5.60
SEER/ SCOP(average)	W/W	6.6/4.1	7.5/4.4	6.2/4.1	6.2/4.1
Energy label		A++/A+	A++/A+	A++/A+	A++/A+
Yearly energy consumption	kWh	432/1946	374/2037	423/1810	469/1912
EER/ COP	W/W	3.13/4.00	3.62/4.29	3.07/3.53	3.22/4.05
Standard current (cooling)	A	11.2	11.2	11.2	11.2
Standard input (cooling)	W	2600	2250	2440	2580
Standard current (heating)	A	10.1	10.1	9.8	10.1
Standard input (heating)	W	2000	1970	2180	2000
Rated current	A	18.0			
Rated input	W	4100.0			
Outdoor air flow	m^3/h	3000.0			
Outdoor sound pressure level	dB(A)	58			
Outdoor sound power level	dB(A)	67			
Throttle type		EXV+Capillary			
Dimension (W×D×H)	mm	890x342x673			
Packing (W×D×H)	mm	1030x438x750			
Net/ Gross weight	kg	48.0/51.8			
GWP		675.0			
Refrigerant charge amount, R32	kg	1.85			
Compressor model		KTM240D57UMT			
Refrigerant oil/ oil quantity	ml	VG74 / 670			
Design pressure	Mpa	4.3 / 1.7			
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	3 × [Φ6.35/ Φ9.52 (1/4"/ 3/8")]			
Chargeless pipe length	m	7.5*3			
Additional charge	g/m	12			
Max. length for all rooms	m	60			
Max. length for one indoor unit	m	30			
Max. height difference between IDU and	m	15			
Max. height difference between indoor units	m	10			
Temp range cooling	℃	-15 ~ 50			
Temp range heating	℃	-15 ~ 24			

Outdoor Model IDUs Combination for Rating		38QUS028D8S4		
		Hiwall(New) 42QHG007D8S (×4)	Cassette 42QTD007D8S (×4)	Ducted 42QSS007D8S (×4)
Power supply	V-Hz-Ph	220-240V~, 50Hz, 1Ph		
Cooling capacity	kW	8.20 (2.49~10.26)	8.20 (2.45~10.20)	8.20 (2.85~9.67)
Heating capacity	kW	8.79 (1.61~10.14)	8.79 (1.54~11.43)	8.79 (2.28~11.43)
Pdesign capacity cooling	kW	8.20	8.20	8.20
Pdesign capacity heating (average)	kW	6.80	6.40	6.10
SEER/ SCOP(average)	W/W	7.0/4.0	6.8 / 4.0	6.1 / 3.8
Energy label		A++/A+	A++ / A+	A++ / A
Yearly energy consumption	kWh	410/2380	422 / 2240	471 / 2248
EER/ COP	W/W	3.23/3.71	3.49 / 3.69	3.49 / 3.69
Standard current (cooling)	A	10.9	10.5	10.5
Standard input (cooling)	W	2500	2350	2350
Standard current (heating)	A	10.4	10.7	10.7
Standard input (heating)	W	2400	2380	2380
Rated current	A	19.0		
Rated input	W	4150.0		
Outdoor air flow	m^3/h	3800.0		
Outdoor sound pressure level	dB(A)	63.0		
Outdoor sound power level	dB(A)	70.0		
Throttle type		EXV+Capillary		
Dimension (W×D×H)	mm	946×410×810		
Packing (W×D×H)	mm	1090×500×885		
Net/ Gross weight	kg	62.0 / 67.5		
GWP		675.0		
Refrigerant charge amount, R32	kg	2.1		
Compressor model		KTM240D57UMT		
Refrigerant oil/ oil quantity	ml	VG74 / 670		
Design pressure	Mpa	4.3 / 1.7		
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	3 × [Φ6.35/ Φ9.52 (1/4"/ 3/8")] + 1 × [Φ6.35/ Φ12.7 (1/4"/ 1/2")]		
Chargeless pipe length	m	7.5*4		
Additional charge	g/m	12.0		
Max. length for all rooms	m	80.0		
Max. length for one indoor unit	m	30.0		
Max. height difference between IDU and	m	15.0		
Max. height difference between indoor units	m	10.0		
Temp range cooling	℃	-15 ~ 50		
Temp range heating	℃	-15 ~ 24		

Outdoor Model		38QUS036D8S4-1			
IDUs Combination for Rating		Hiwall(New) 42QHG007D8S (×4)	Cassette 42QTD007D8S (×4)	Ducted 42QSS007D8S (×4)	Hydraulic Kit 40ATW027(x1)+40QSS009D8S(x3)
Power supply	V-Hz-Ph	220-240V~, 50Hz, 1Ph			
Cooling capacity	kW	8.20 (2.49~10.26)	8.20 (2.45~10.20)	8.20 (2.85~9.67)	10.60 (2.73~10.70)
Heating capacity	kW	8.79 (1.61~10.14)	8.79 (1.54~11.43)	8.79 (2.28~11.43)	11.15 (3.66~11.43)
Pdesign capacity cooling	kW	8.20	8.20	8.20	10.60
Pdesign capacity heating (average)	kW	6.80	6.40	6.10	8.80
SEER/ SCOP(average)	W/W	7.0/4.0	6.8 / 4.0	6.1 / 3.8	6.1 / 3.8
Energy label		A++/A+	A++ / A+	A++ / A	A++ / A
Yearly energy consumption	kWh	410/2380	422 / 2240	471 / 2248	608 / 3242
EER/ COP	W/W	3.23/3.71	3.49 / 3.69	3.49 / 3.69	3.01 / 3.71
Standard current (cooling)	A	10.9	10.5	10.5	16.8
Standard input (cooling)	W	2500	2350	2350	3500
Standard current (heating)	A	10.4	10.7	10.7	15
Standard input (heating)	W	2400	2380	2380	3000
Rated current	A	21.5			
Rated input	W	4600.0			
Outdoor air flow	m^3/h	4000.0			
Outdoor sound pressure level	dB(A)	64.0			
Outdoor sound power level	dB(A)	72.0			
Throttle type		EXV+Capillary			
Dimension (W×D×H)	mm	946×410×810			
Packing (W×D×H)	mm	1090×500×885			
Net/ Gross weight	kg	69.0 / 75.5			
GWP		675.0			
Refrigerant charge amount, R32	kg	2.1			
Compressor model		KTF310D43UMT			
Refrigerant oil/ oil quantity	ml	VG74 / 1000			
Design pressure	Mpa	4.3 / 1.7			
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	3 × [Φ6.35/ Φ9.52 (1/4"/ 3/8")] + 1 × [Φ6.35/ Φ12.7 (1/4"/ 1/2")]			
Chargeless pipe length	m	7.5*4			
Additional charge	g/m	12.0			
Max. length for all rooms	m	80.0			
Max. length for one indoor unit	m	35.0			
Max. height difference between IDU and	m	15.0			
Max. height difference between indoor units	m	10.0			
Temp range cooling	℃	-15 ~ 50			
Temp range heating	℃	-15 ~ 24			

Outdoor Model		38QUS042D8S5-1			
IDUs Combination for Rating		Hiwall(New) 42QHG009D8S (×5)	Hiwall（New） 42QHE09D8S (×5)	Cassette 42QTD009D8S (×5)	Ducted 42QSS009D8S (×5)
Power supply	V-Hz-Ph	220-240V~, 50Hz, 1Ph			
Cooling capacity	kW	12.30 (2.64~12.30)	12.30	12.30 (2.73~12.30)	12.30 (2.73~12.30)
Heating capacity	kW	12.30 (3.52~12.30)	11.60	12.30 (2.42~12.30)	12.30 (3.81~12.30)
Pdesign capacity cooling	kW	12.30	12.3	12.30	12.30
Pdesign capacity heating (average)	kW	9.50	9.5	9.50	9.50
SEER/ SCOP(average)	W/W	6.5 / 3.8	7.4/3.7	5.8 / 3.8	6.1 / 3.6
Energy label		A++/A	A++ / A	A+ / A	A++ / A
Yearly energy consumption	kWh	662/3500	582/3595	742 / 3500	706 / 3695
EER/ COP	W/W	3.24/3.73	3.47/4.0	3.23 / 3.73	3.00 / 3.73
Standard current (cooling)	A	17.3	16.0	17.8	18.0
Standard input (cooling)	W	3800	3540	3810	4100
Standard current (heating)	A	15.0	12.5	15.0	15.0
Standard input (heating)	W	3300	2900	3300	3300
Rated current	A	22.0			
Rated input	W	4700.0			
Outdoor air flow	m^3/h	3850.0			
Outdoor sound pressure level	dB(A)	63.0			
Outdoor sound power level	dB(A)	72.0			
Throttle type		EXV+Capillary			
Dimension (W×D×H)	mm	946×410×810			
Packing (W×D×H)	mm	1090×500×885			
Net/ Gross weight	kg	74.1/79.5			
GWP		675			
Refrigerant charge amount, R32	kg	2.9			
Compressor model		KTF310D43UMT			
Refrigerant oil/ oil quantity	ml	VG74 / 1000			
Design pressure	Mpa	4.3 / 1.7			
Refrigerant piping (Liquid side/ Gas side)	mm(inch)	4 × [Φ6.35/ Φ9.52 (1/4"/ 3/8")] + 1 × [Φ6.35/ Φ12.7 (1/4"/ 1/2")]			
Chargeless pipe length	m	7.5*5			
Additional charge	g/m	12.0			
Max. length for all rooms	m	80.0			
Max. length for one indoor unit	m	35.0			
Max. height difference between IDU and	m	15.0			
Max. height difference between indoor units	m	10.0			
Temp range cooling	℃	-15 ~ 50			
Temp range heating	℃	-15 ~ 24			

Notes:

1) Capacities are based on the following conditions:

Cooling(T1): - Indoor Temperature 27°C(80.6°F) DB /19 °C(66.2°F) WB
-Outdoor Temperature 35 °C(95°F) DB /24 °C(75.2°F) WB
-Interconnecting Piping Length 5m
- Level Difference of Zero.

Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
-Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
- Interconnecting Piping Length 5 m
- Level Difference of Zero.

2) Capacities are Net Capacities.

3) Due to our policy of innovation some specifications may be changed without notification.

4. Indoor Unit Combination

M2OG-14HFN8-Q, M2OH-14HFN8-Q

One Unit	Two Units	
7	7+7	9+9
9	7+9	9+12
12	7+12	
18		

M2OC-18HFN8-Q, M2OD-18HFN8-Q, M2OE-18HFN8-Q

One Unit	Two Units	
7	7+7	9+9
9	7+9	9+12
12	7+12	12+12
18		

M3OF-21HFN8-Q, M3OG-21HFN8-Q

One Unit	Two Units		Three Units	
7	7+7	9+9	7+7+7	7+9+9
9	7+9	9+12	7+7+9	9+9+9
12	7+12	9+18	7+7+12	
18	7+18	12+12		

M3OE-27HFN8-Q, M3OF-27HFN8-Q, M3OA-27HFN8-Q

One Unit	Two Units			Three Units		
7	7+7	7+18	9+18	7+7+7	7+9+12	9+9+12
9	7+9	9+9	12+12	7+7+9	7+12+12	9+12+12
12	7+12	9+12	12+18	7+7+12	9+9+9	12+12+12
18				7+9+9		

M4OE-28HFN8-Q

One Unit	Two Units			Three Units			Four Units	
7	7+7	9+9	12+12	7+7+7	7+9+12	9+9+12	7+7+7+7	7+9+9+9
9	7+9	9+12	12+18	7+7+9	7+9+18	9+9+18	7+7+7+9	7+9+9+12
12	7+12	9+18	12+24	7+7+12	7+12+12	9+12+12	7+7+7+12	9+9+9+9
18	7+18	9+24	18+18	7+7+18	9+9+9	12+12+12	7+7+9+9	
24	7+24			7+9+9				

M4OB-36HFN8-Q

One Unit	Two Units			Three Units			
7	7+7	9+9	12+12	7+7+7	7+9+12	7+18+18	9+12+18
9	7+9	9+12	12+18	7+7+9	7+9+18	9+9+9	9+12+24
12	7+12	9+18	12+24	7+7+12	7+9+24	9+9+12	9+18+18
18	7+18	9+24	18+18	7+7+18	7+12+12	9+9+18	12+12+12
24	7+24			7+7+24	7+12+18	9+9+24	12+12+18
				7+9+9	7+12+24	9+12+12	

Four Units			
7+7+7+7	7+7+9+12	7+9+9+12	9+9+9+12
7+7+7+9	7+7+9+18	7+9+9+18	9+9+9+18
7+7+7+12	7+7+12+12	7+9+12+12	9+9+12+12
7+7+7+18	7+7+12+18	7+12+12+12	9+12+12+12
7+7+9+9	7+9+9+9	9+9+9+9	12+12+12+12

M5OD-42HFN8-Q, M5OE-42HFN8-Q

One Unit	Two Units			Three Units				
7	7+7	9+9	12+12	7+7+7	7+9+9	7+12+18	9+9+18	9+18+18
9	7+9	9+12	12+18	7+7+9	7+9+12	7+12+24	9+9+24	12+12+12
12	7+12	9+18	12+24	7+7+12	7+9+18	7+18+18	9+12+12	12+12+18
18	7+18	9+24	18+18	7+7+18	7+9+24	9+9+9	9+12+18	12+12+24
24	7+24			7+7+24	7+12+12	9+9+12	9+12+24	12+18+18

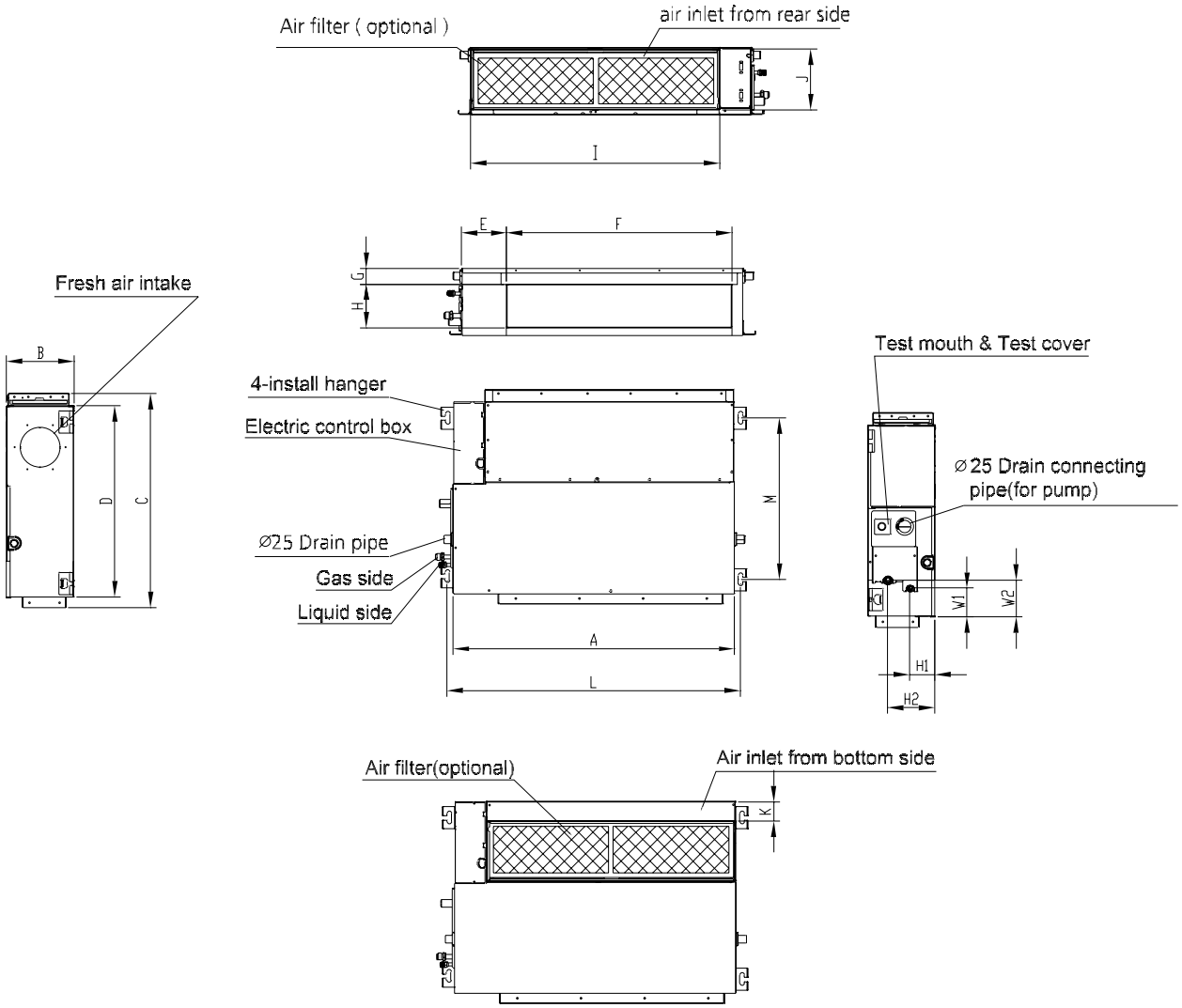
Four Units						
7+7+7+7	7+7+9+9	7+7+12+18	7+9+9+18	7+9+18+18	9+9+9+18	9+12+12+12
7+7+7+9	7+7+9+12	7+7+12+24	7+9+9+24	7+12+12+12	9+9+9+24	9+12+12+18
7+7+7+12	7+7+9+18	7+7+18+18	7+9+12+12	7+12+12+18	9+9+12+12	12+12+12+12
7+7+7+18	7+7+9+24	7+9+9+9	7+9+12+18	9+9+9+9	9+9+12+18	12+12+12+18
7+7+7+24	7+7+12+12	7+9+9+12	7+9+12+24	9+9+9+12	9+9+12+24	

Five Units				
7+7+7+7+7	7+7+7+9+18	7+7+9+12+12	7+9+9+9+18	9+9+9+12+12
7+7+7+7+9	7+7+7+12+12	7+7+9+12+18	7+9+9+12+12	9+9+12+12+12
7+7+7+7+12	7+7+7+12+18	7+7+12+12+12	7+9+12+12+12	
7+7+7+7+18	7+7+9+9+9	7+7+12+12+18	9+9+9+9+9	
7+7+7+9+9	7+7+9+9+12	7+9+9+9+9	9+9+9+9+12	
7+7+7+9+12	7+7+9+9+18	7+9+9+9+12	9+9+9+9+18	

5. Dimensional Drawings

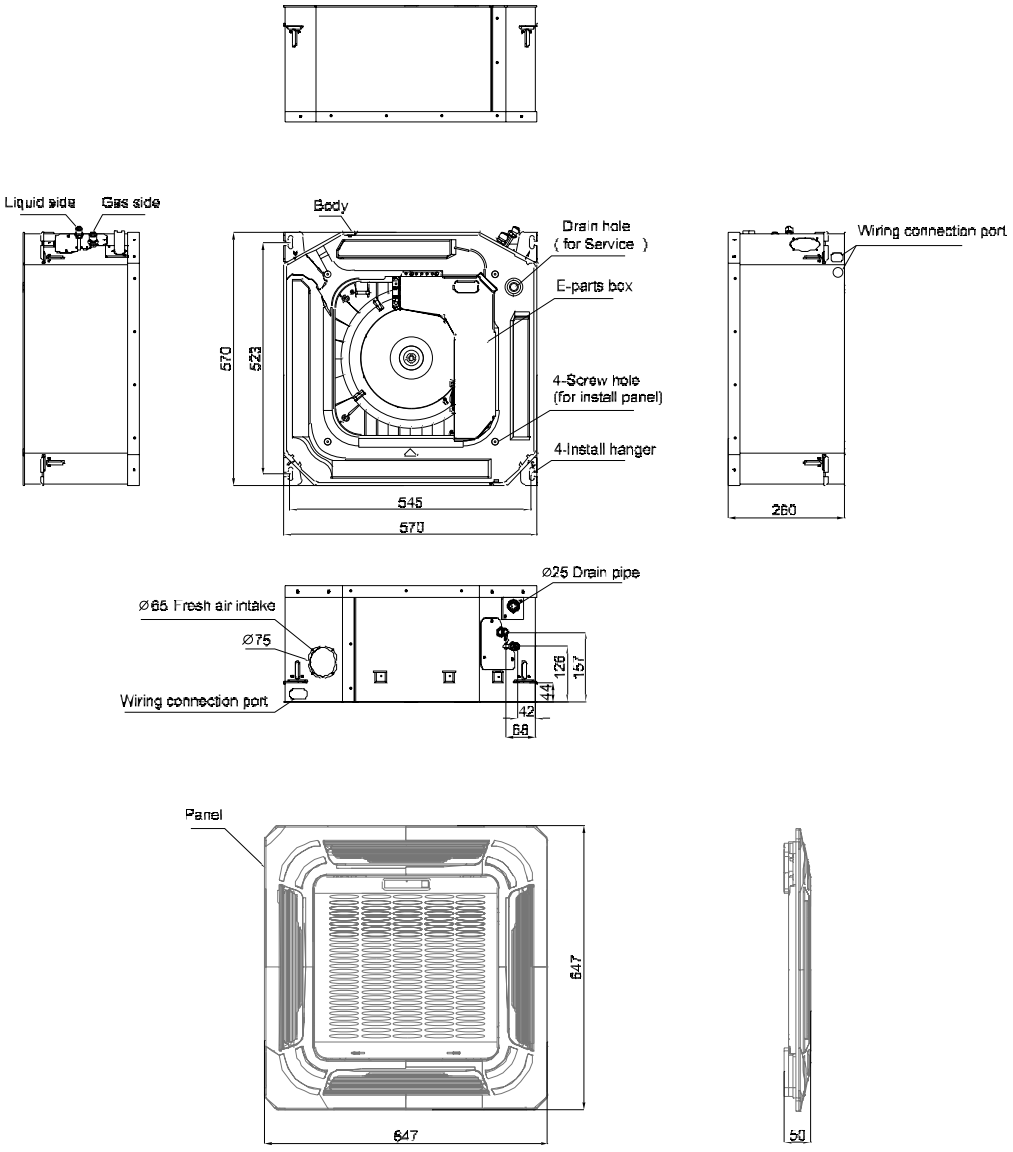
5.1 Indoor Unit

A6 Duct type



Capacity (Btu/h)	unit	A	B	C	D	E	F	G	H	I	J	K	L	M	H1	H2	W1	W2
7k~12k	mm	700	200	506	450	137	537	30	152	599	186	50	741	360	84	140	84	84
	inch	27.56	7.87	19.92	17.72	5.39	21.14	1.18	5.98	23.58	7.32	1.97	29.17	14.17	3.31	5.51	3.31	3.31
18k	mm	880	210	674	600	140	706	50	136	782	190	40	920	508	78	148	88	112
	inch	34.65	8.27	26.54	23.62	5.51	27.8	1.97	5.35	30.79	7.48	1.57	36.22	20	3.07	5.83	3.46	4.41
24	mm	1100	249	774	700	140	926	50	175	1001	228	5	1140	598	80	150	130	155
	inch	43.31	9.80	30.47	27.56	5.51	36.46	1.97	6.89	39.41	8.98	0.2	44.88	23.54	3.15	5.91	5.12	6.10

Compact Cassette type



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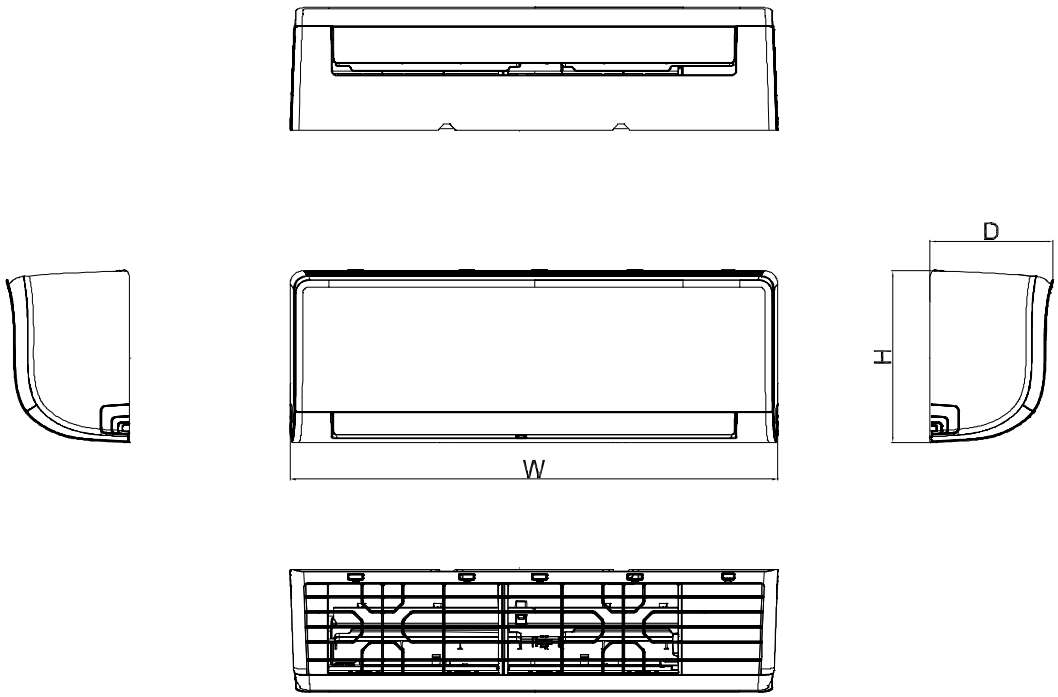
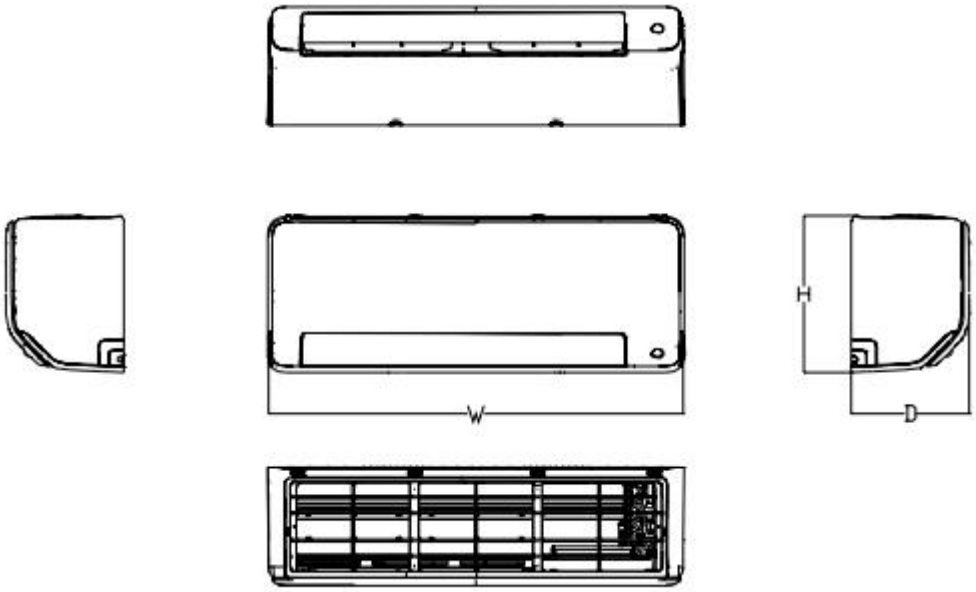


Model	W(mm)	D(mm)	H(mm)
7k/9k	726	210	291
18k	835	208	295
18k	969	241	320
24k	1083	244	336

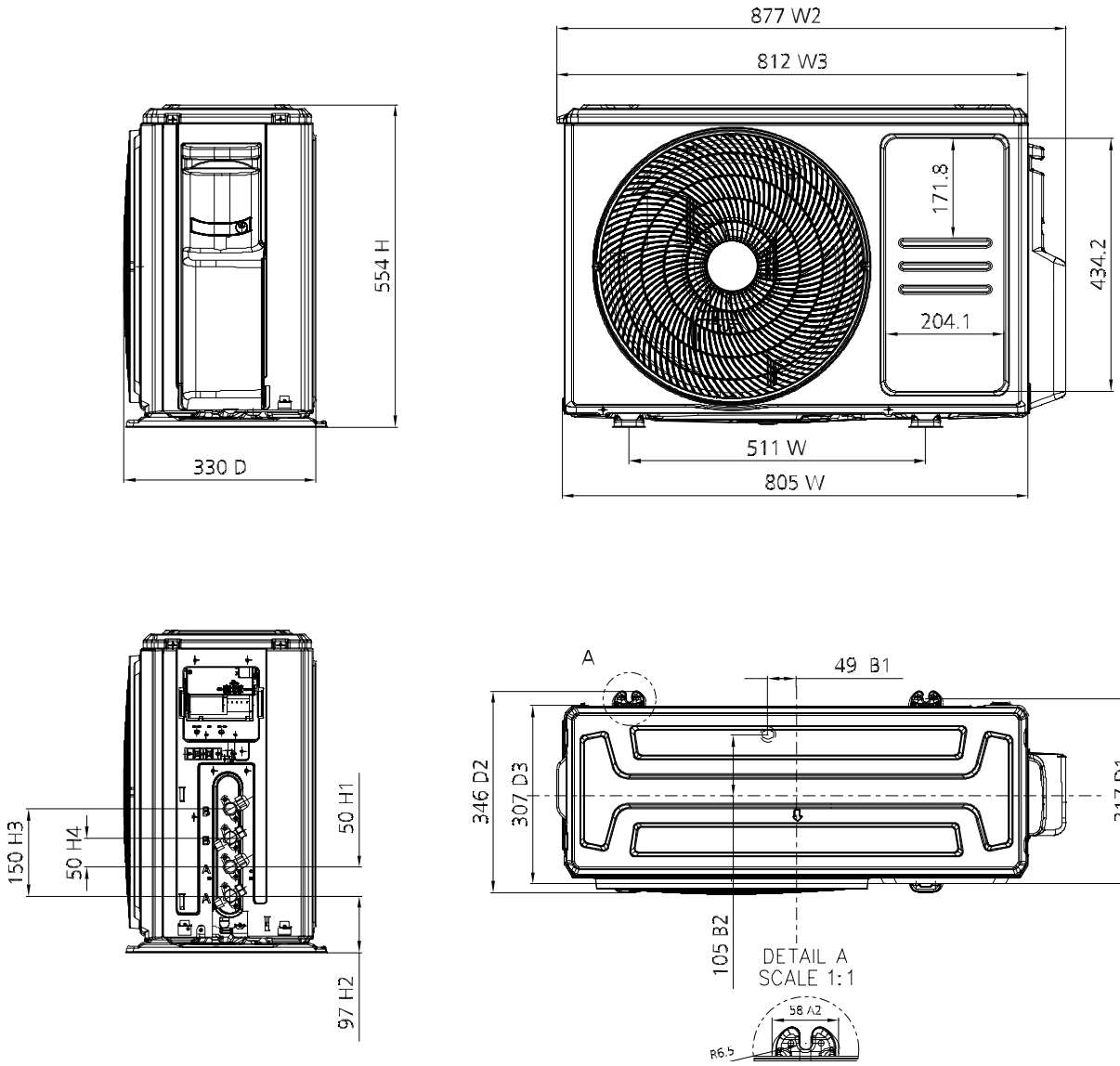
Cool Easy



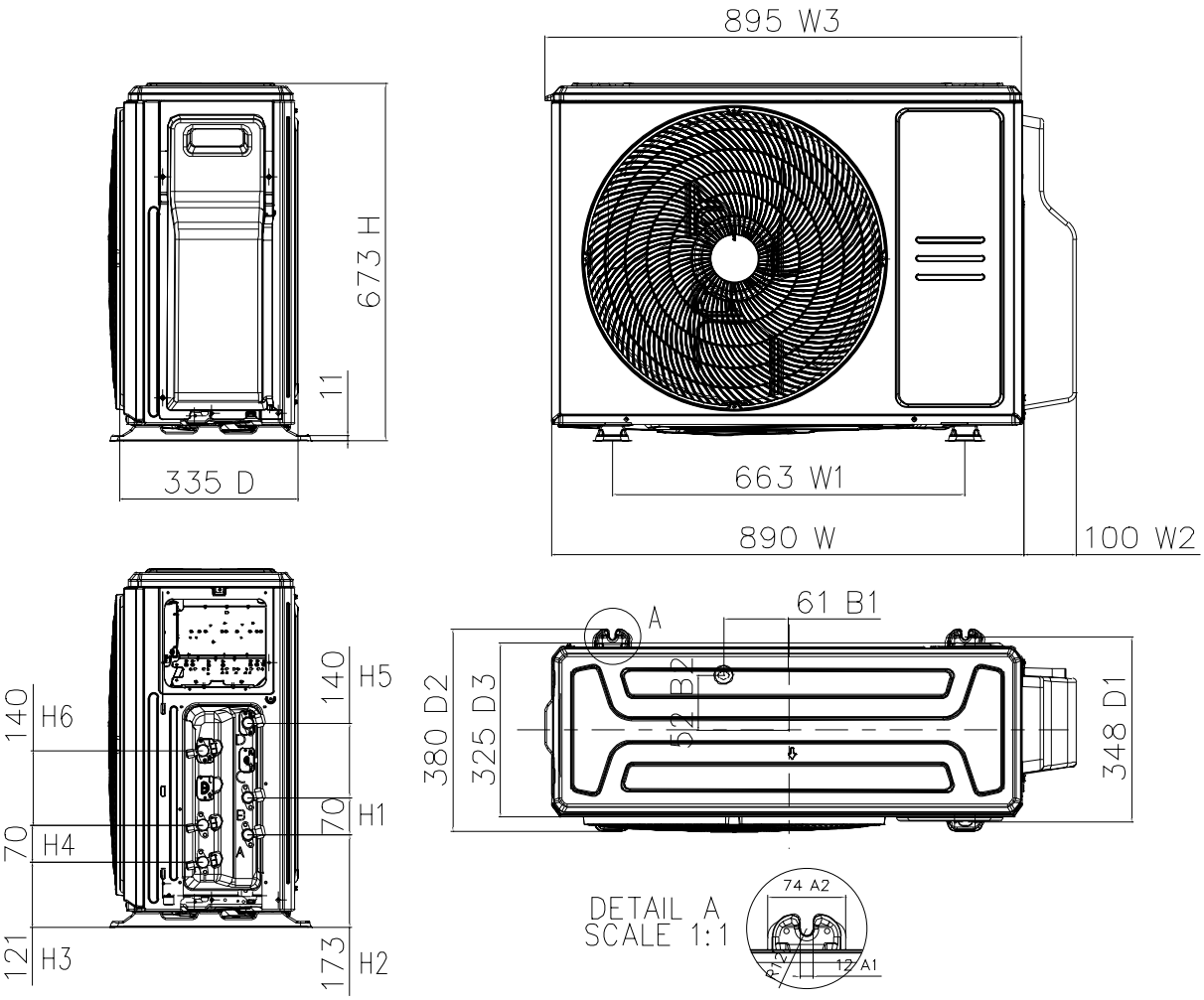
Capacity	W(mm)	D(mm)	H(mm)
9k/12k	795	225	295
18k	965	239	319
24k	1140	275	370

5.2 Outdoor Unit

14K/18K



21K, 27K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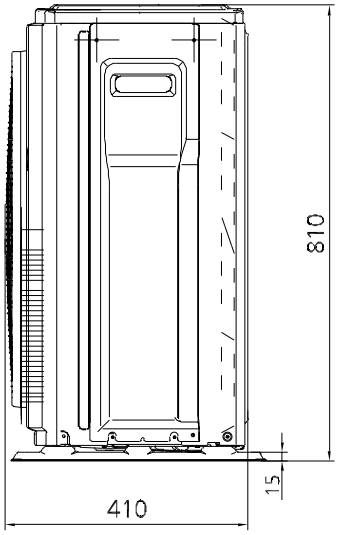
11
335 D
663 W1
890 W
100 W2
140 H5
140 H6
70 H1
70 H4
121 H3
173 H2
61 B1
A
380 D2
325 D3
52 B2
348 D1
DETAIL A
SCALE 1:1
74 A2
12 A1

28K/36K/42K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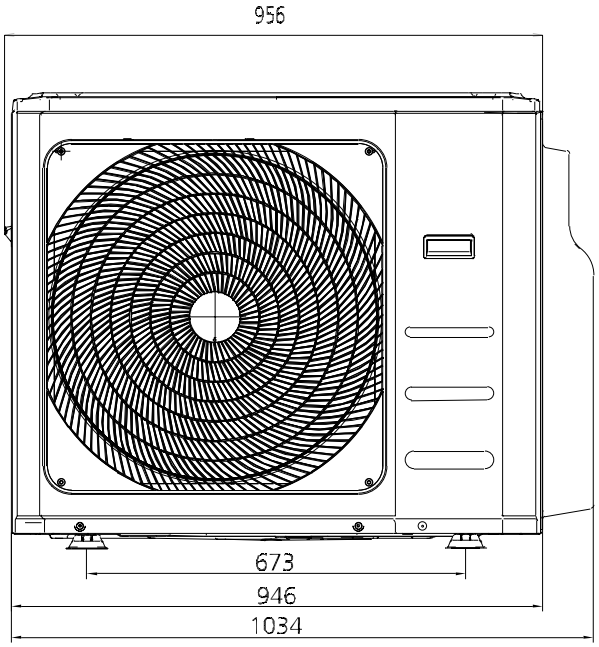
410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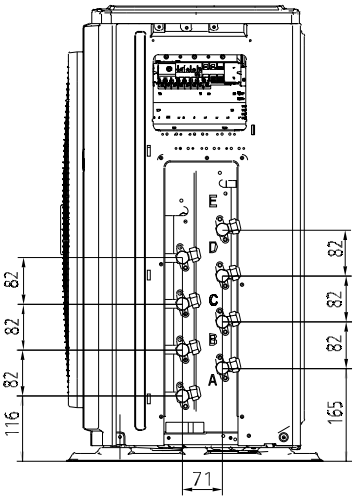
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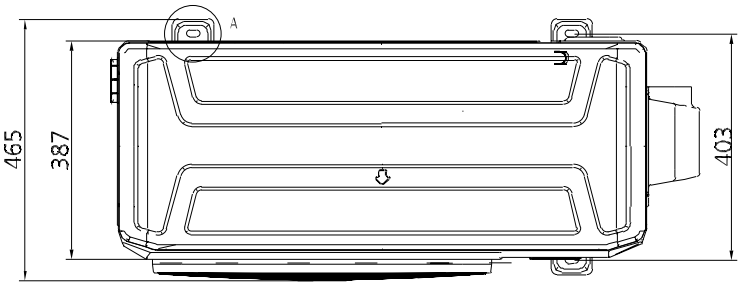
D
C
B
A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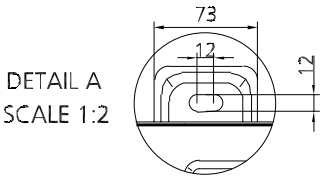
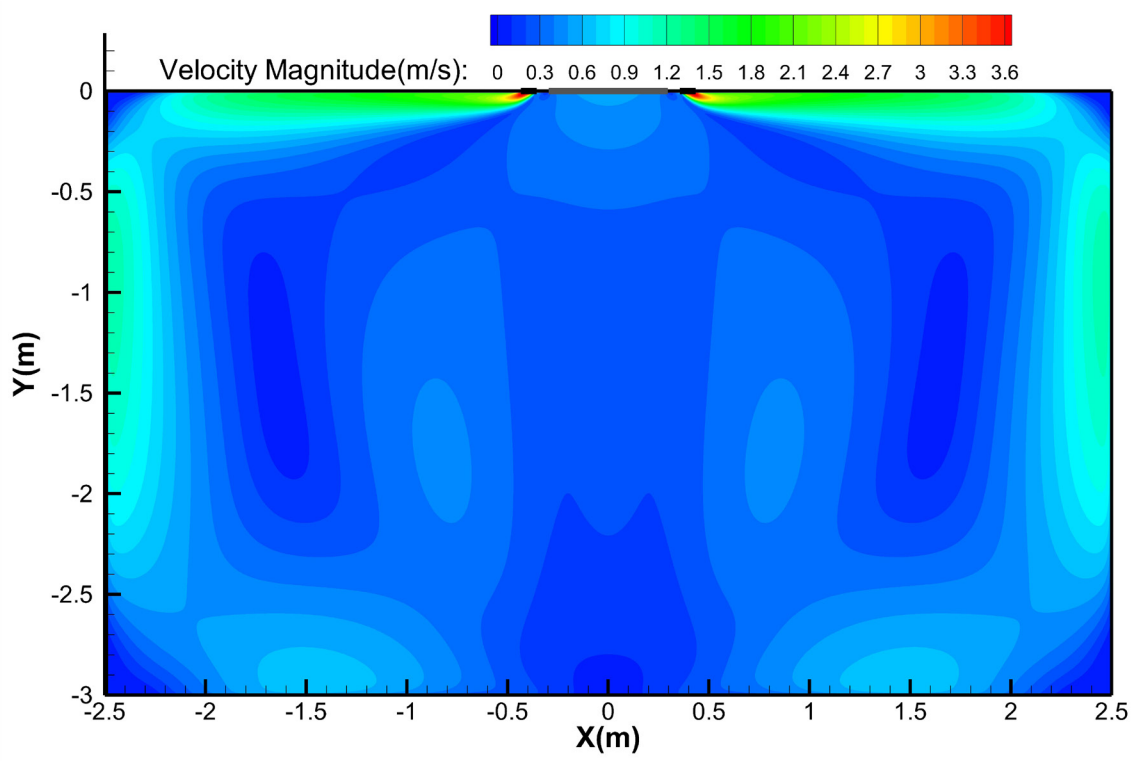

73
12
12
DETAIL A
SCALE 1:2

6. Air Velocity and Temperature Distributions

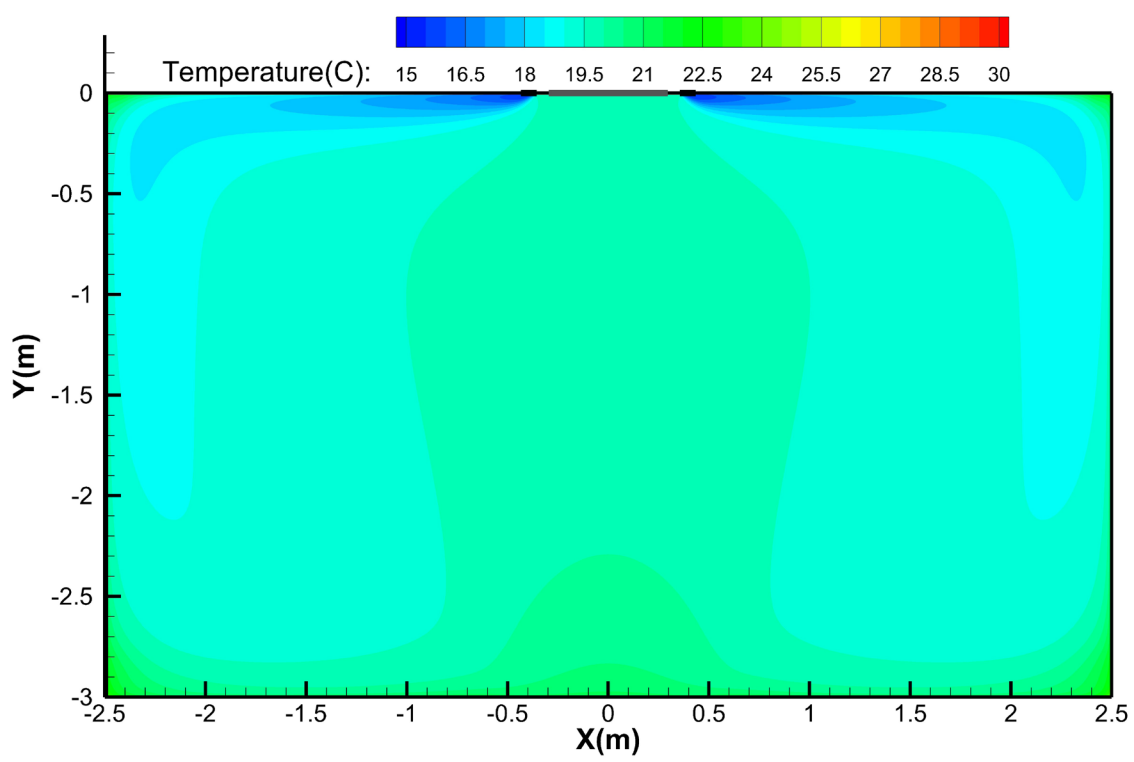
Compact Cassette type -7k, 9k &12k

Discharge Angle 30°

Cooling airflow velocity distributions

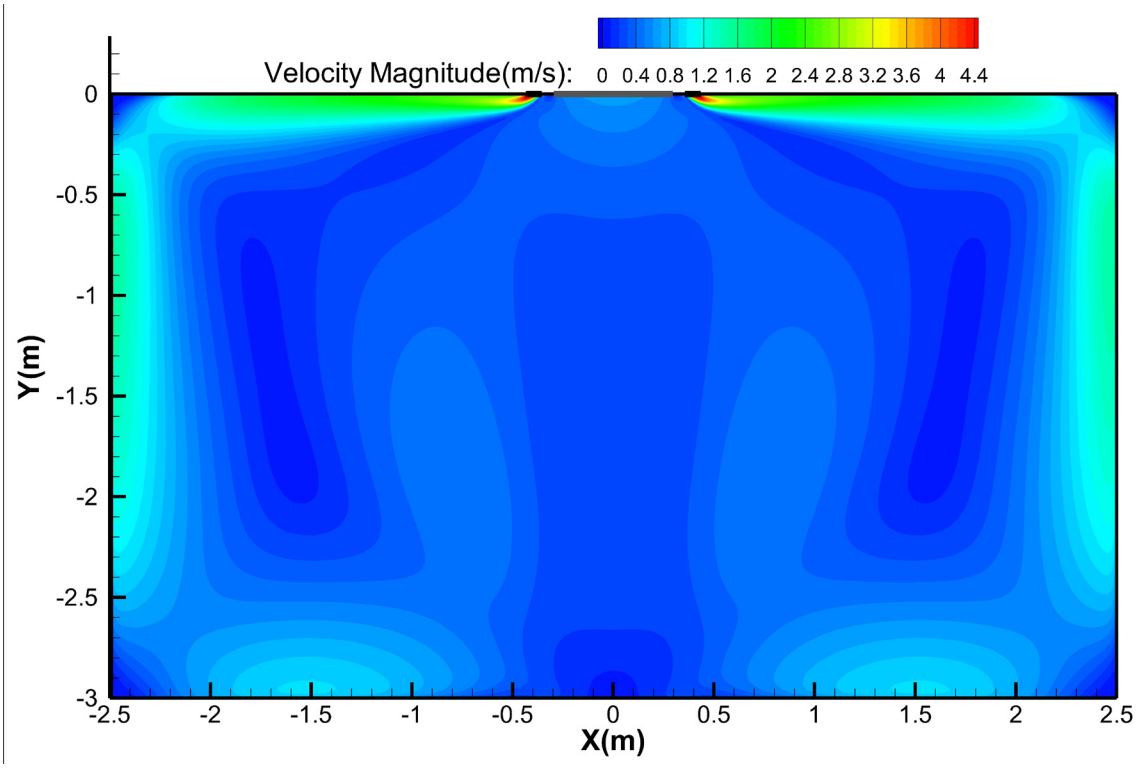


Cooling temperature distributions

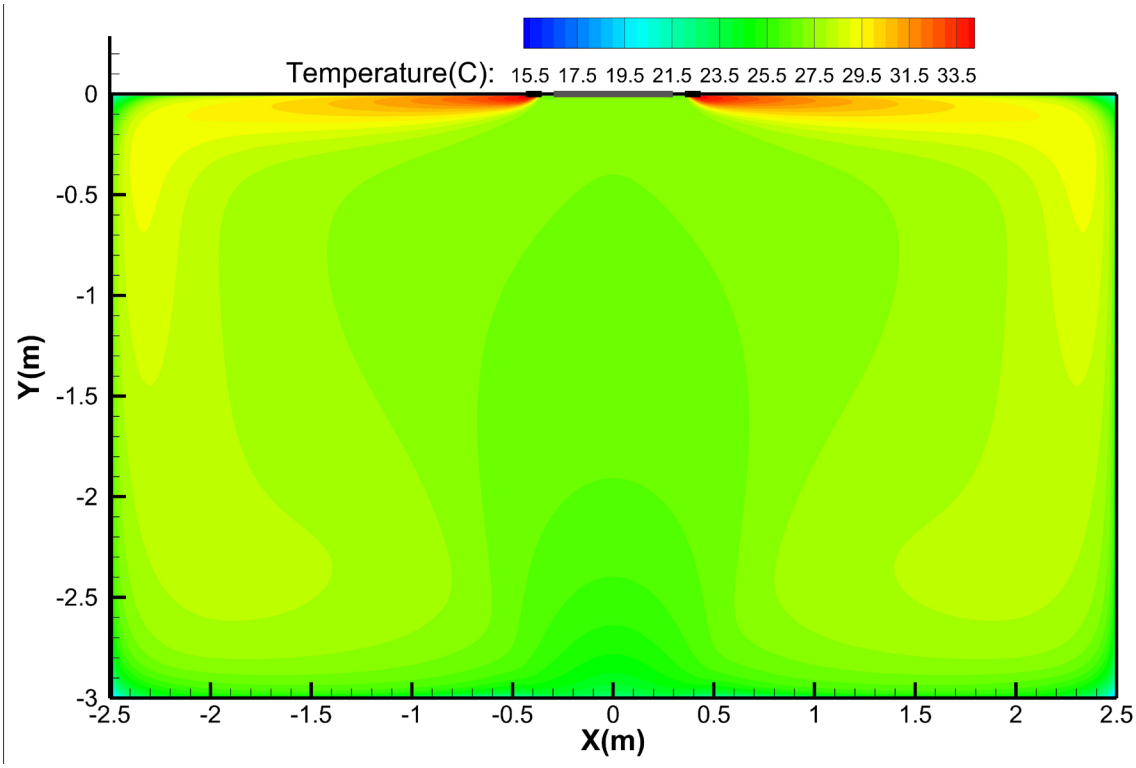


Compact Cassette type -7k, 9k &12k

Heating airflow velocity distributions



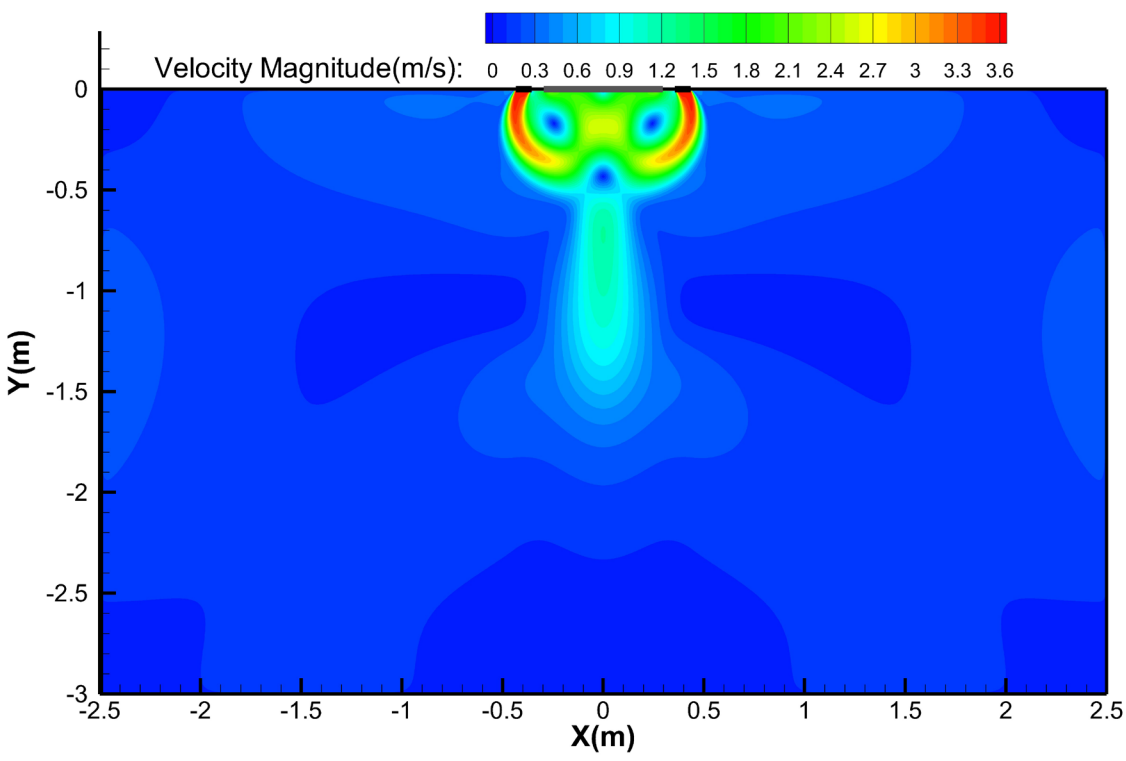
Heating temperature distributions



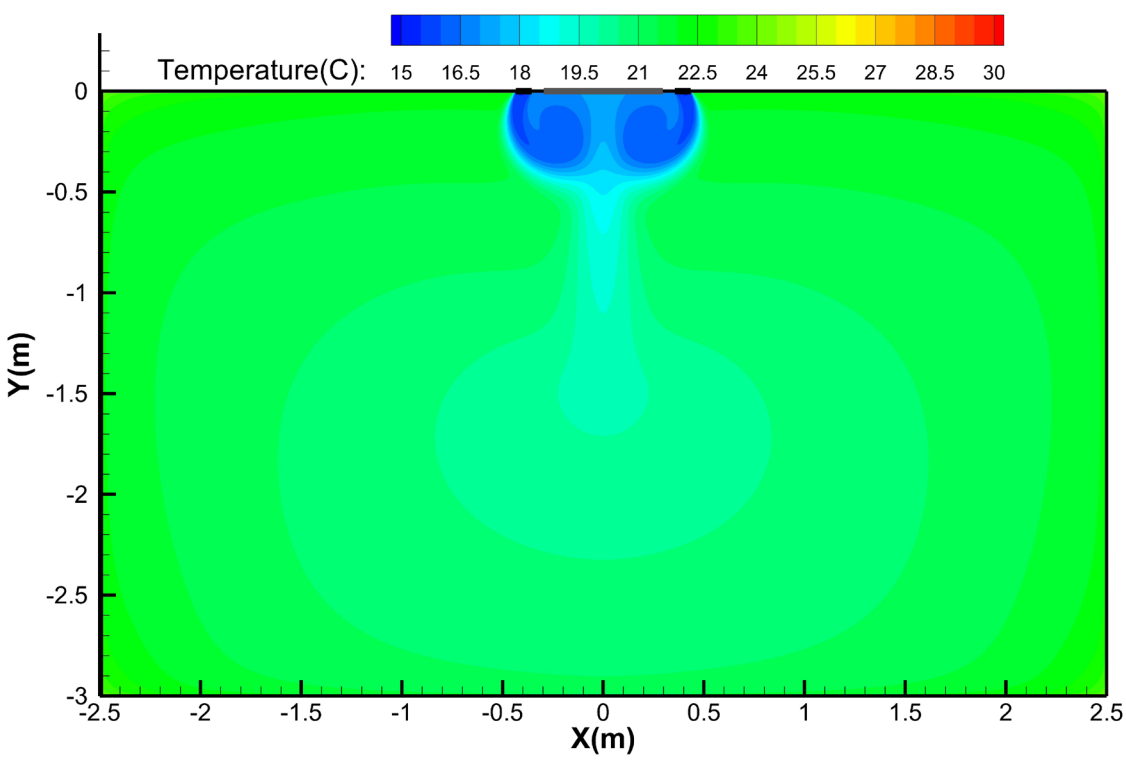
Compact Cassette type -7k, 9k &12k

Discharge Angle 60°

Cooling airflow velocity distributions

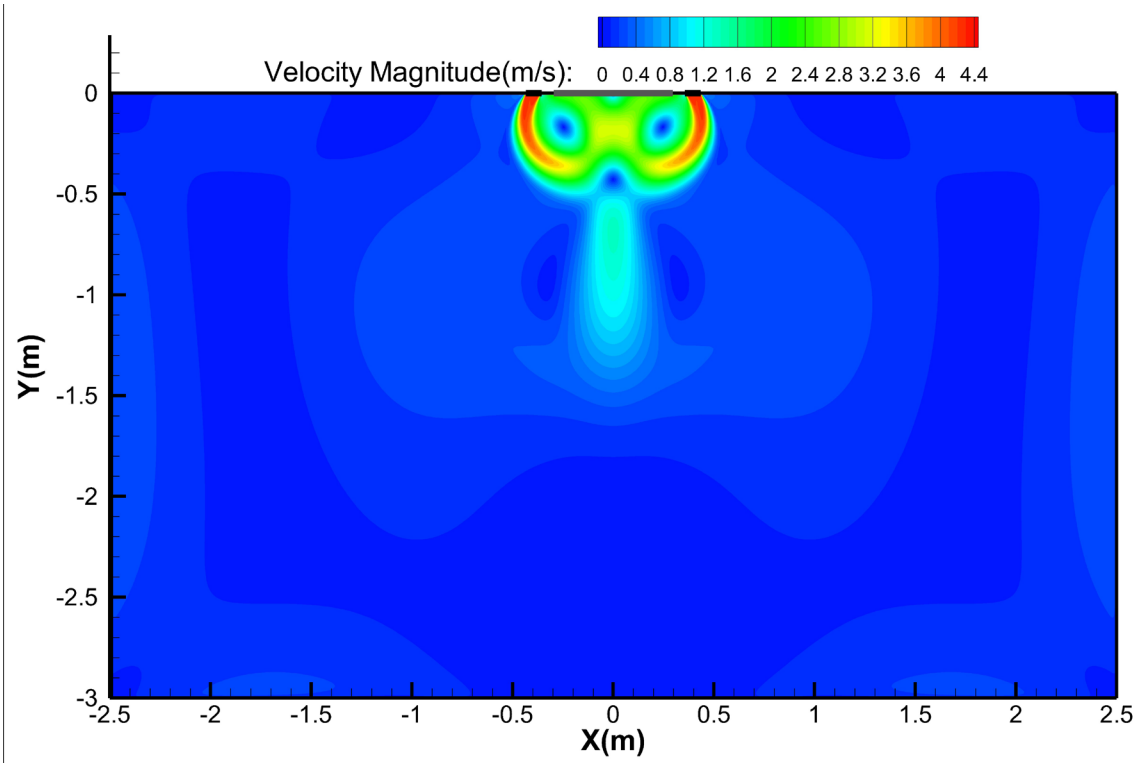


Cooling temperature distributions

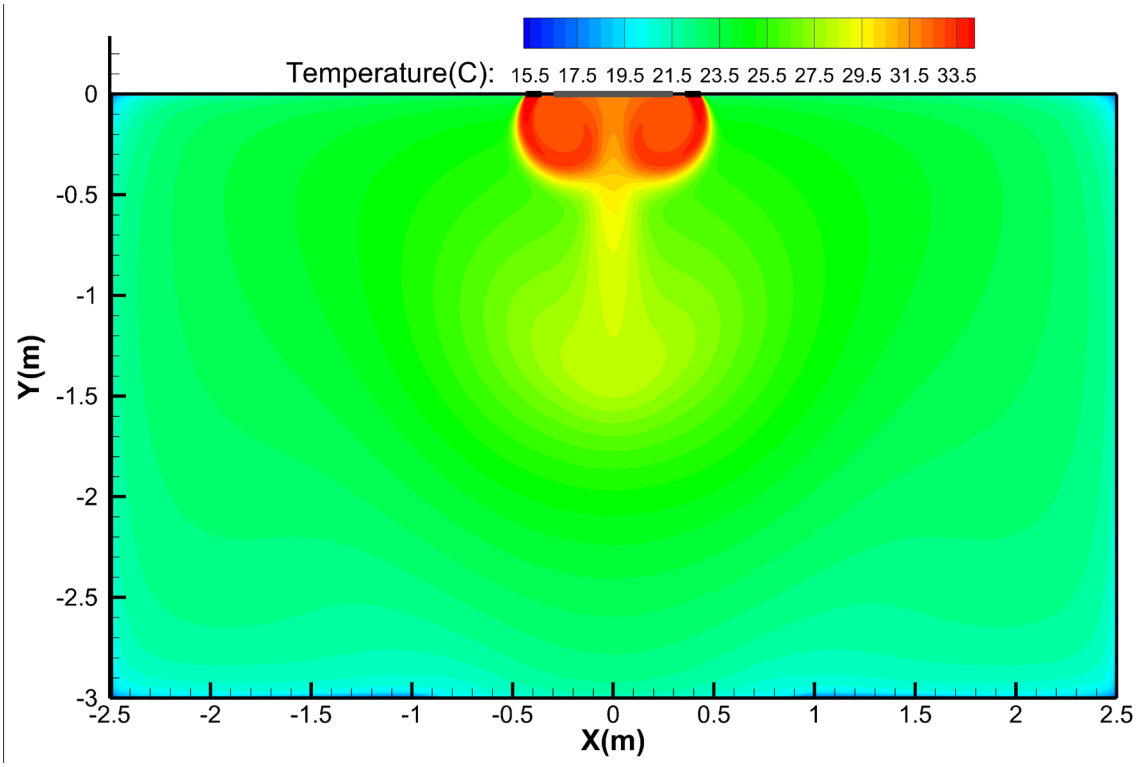


Compact Cassette type -7k, 9k &12k

Heating airflow velocity distributions



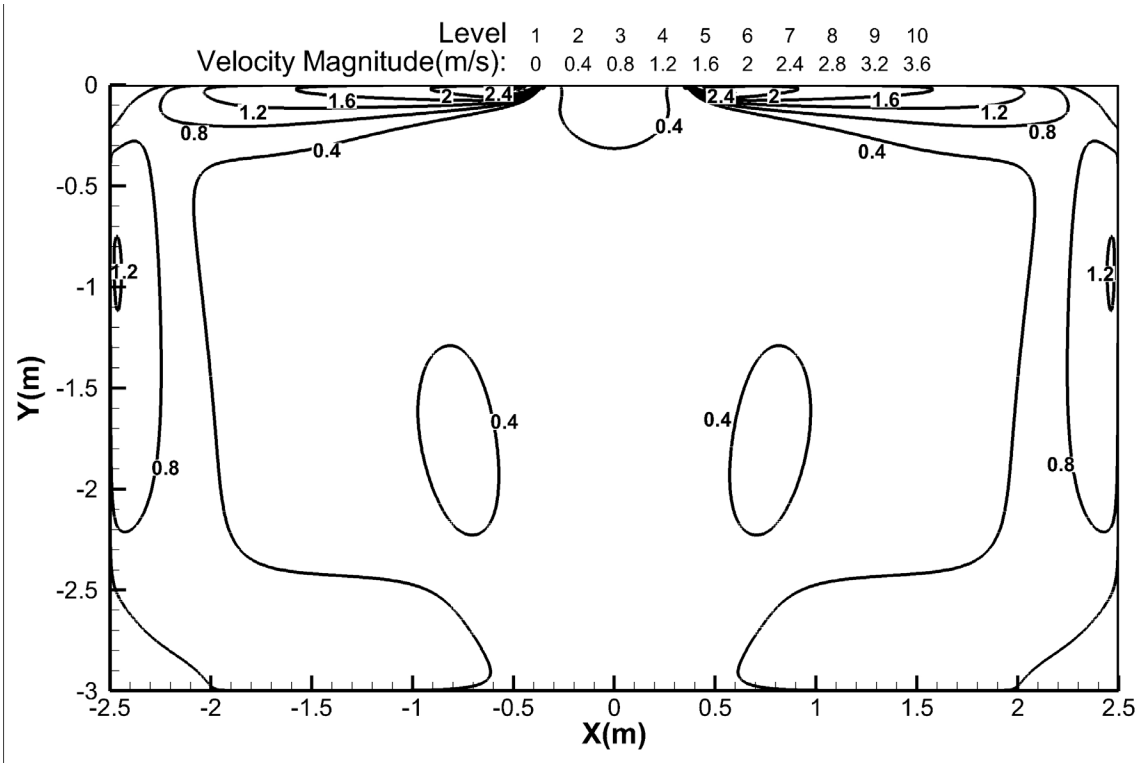
Heating temperature distributions



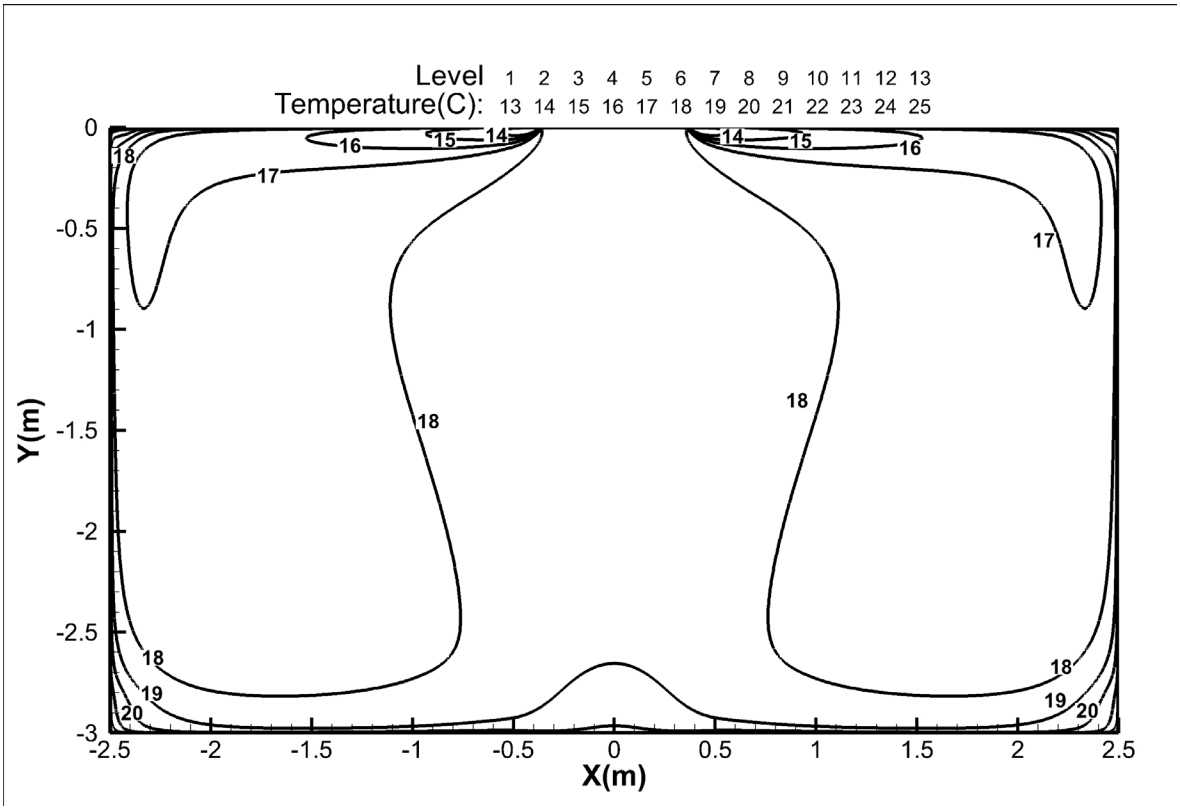
Compact Cassette type -18k

Discharge Angle 30°

Cooling airflow velocity distributions

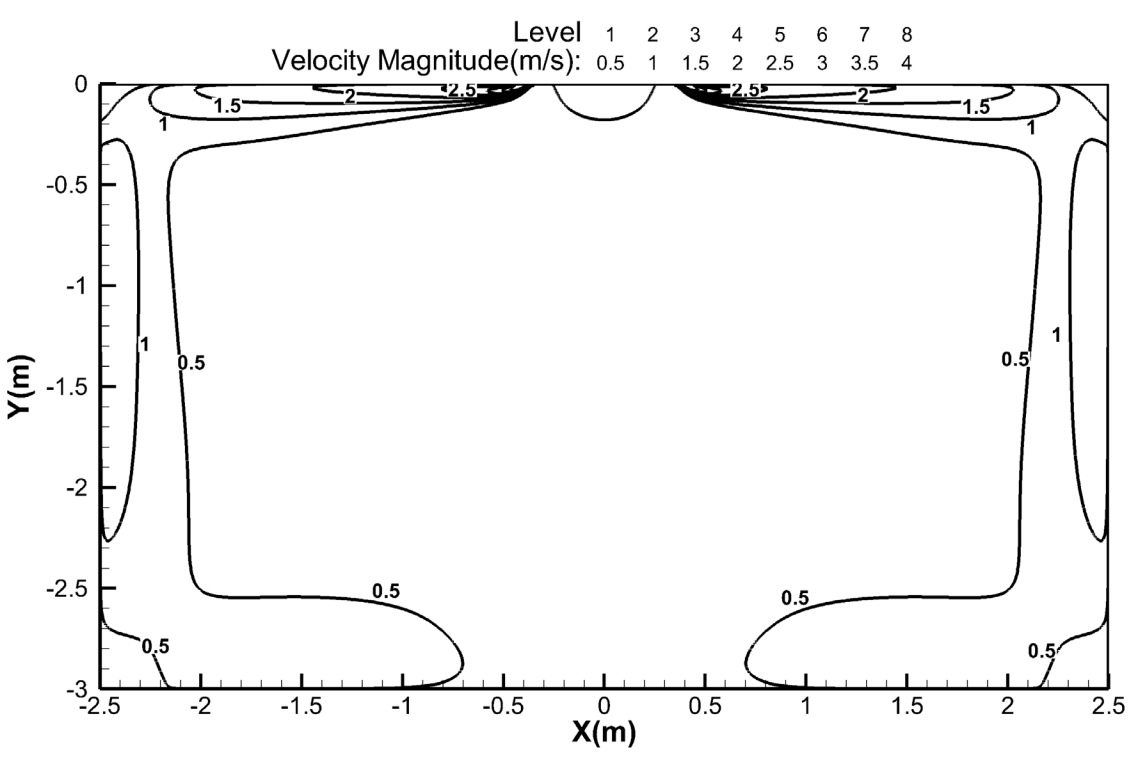


Cooling temperature distributions

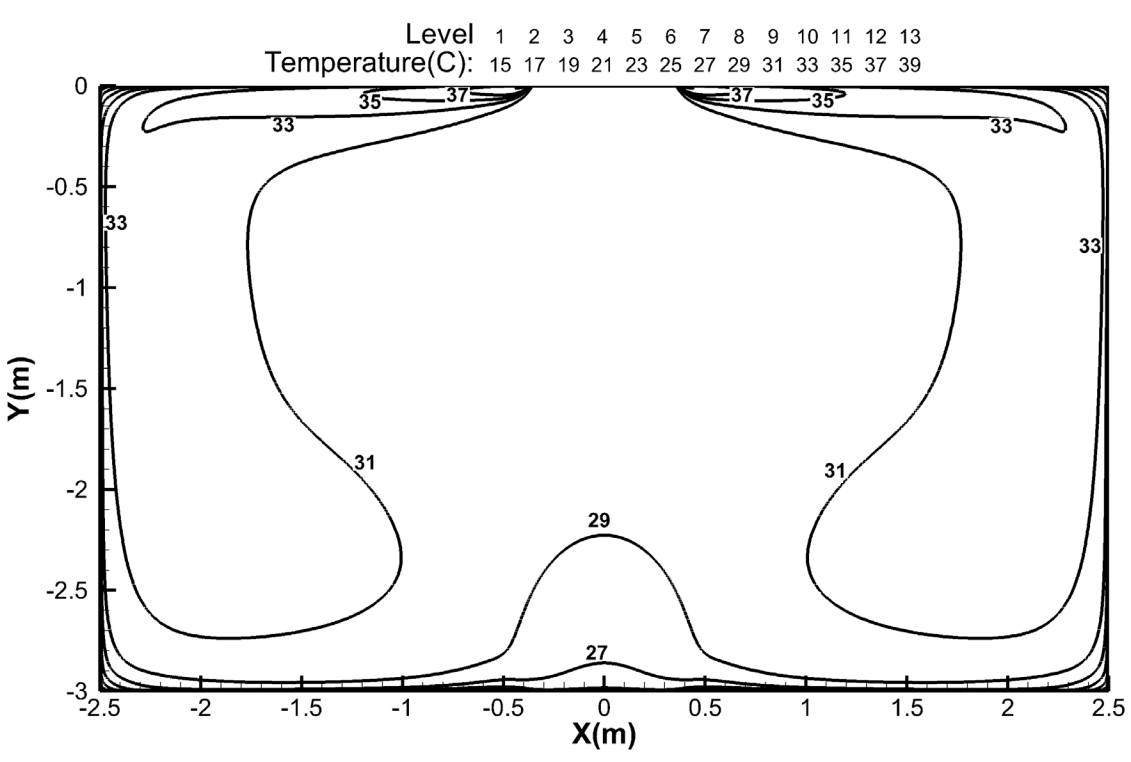


Compact Cassette type -18k

Heating airflow velocity distributions



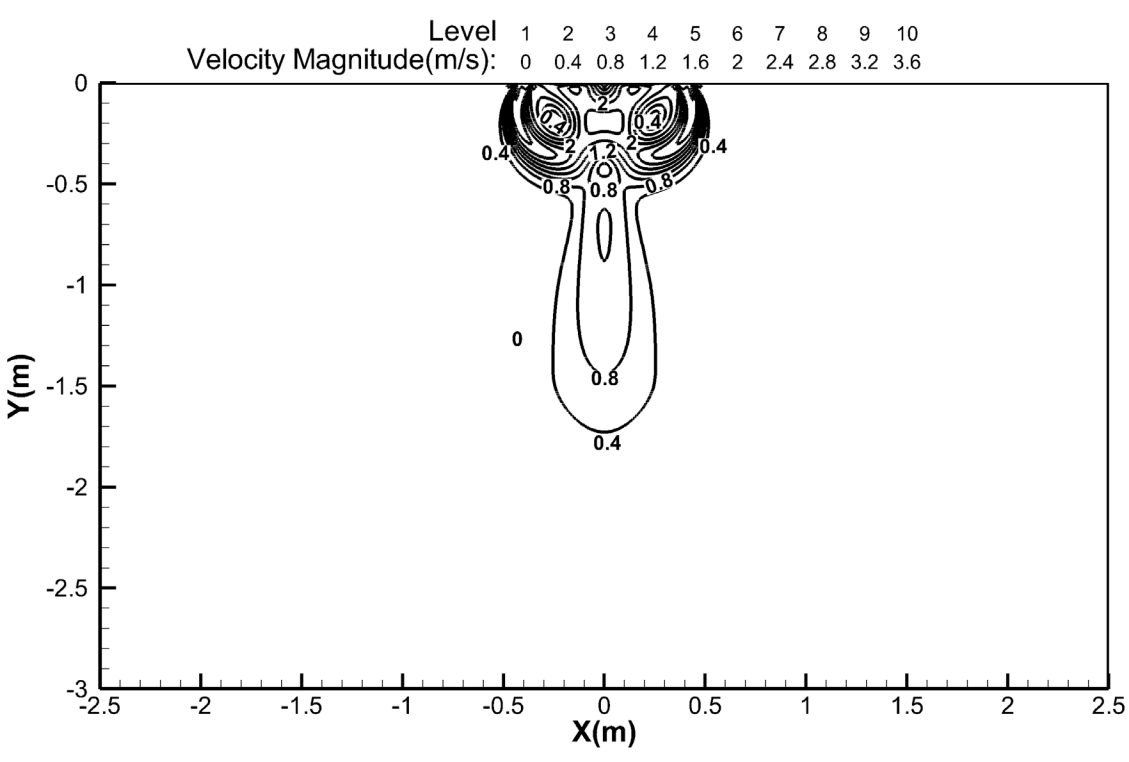
Heating temperature distributions



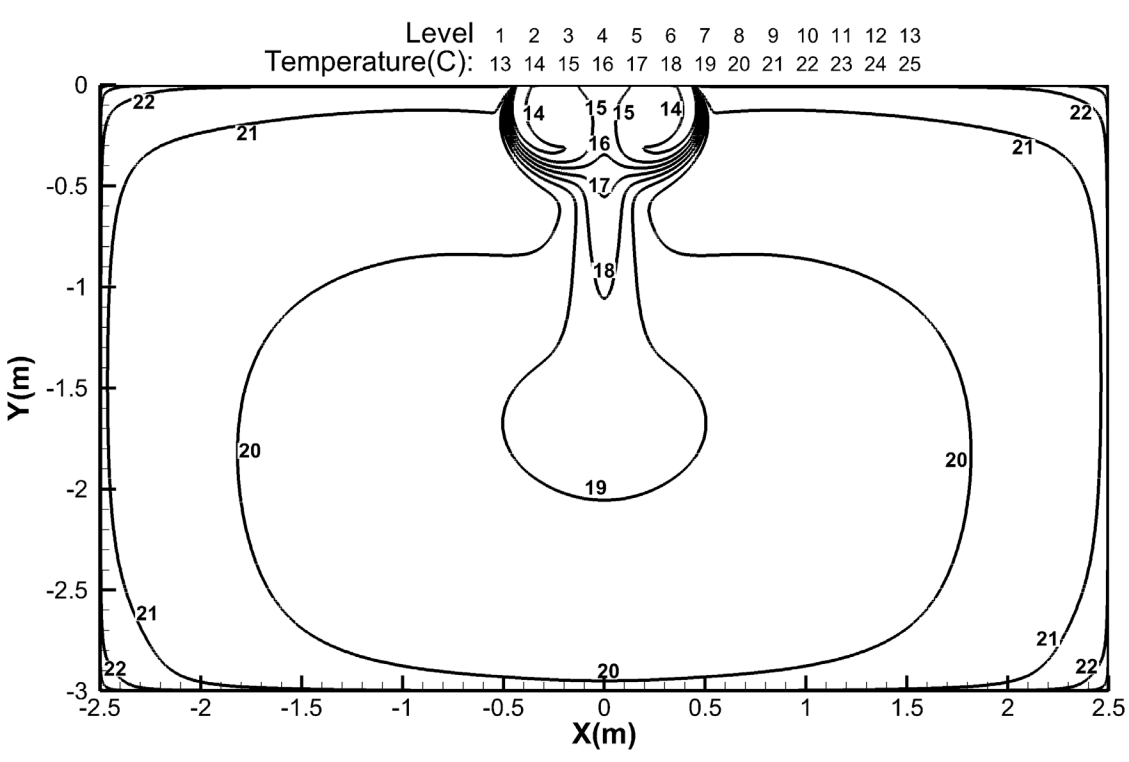
Compact Cassette type -18k

Discharge Angle 60°

Cooling airflow velocity distributions

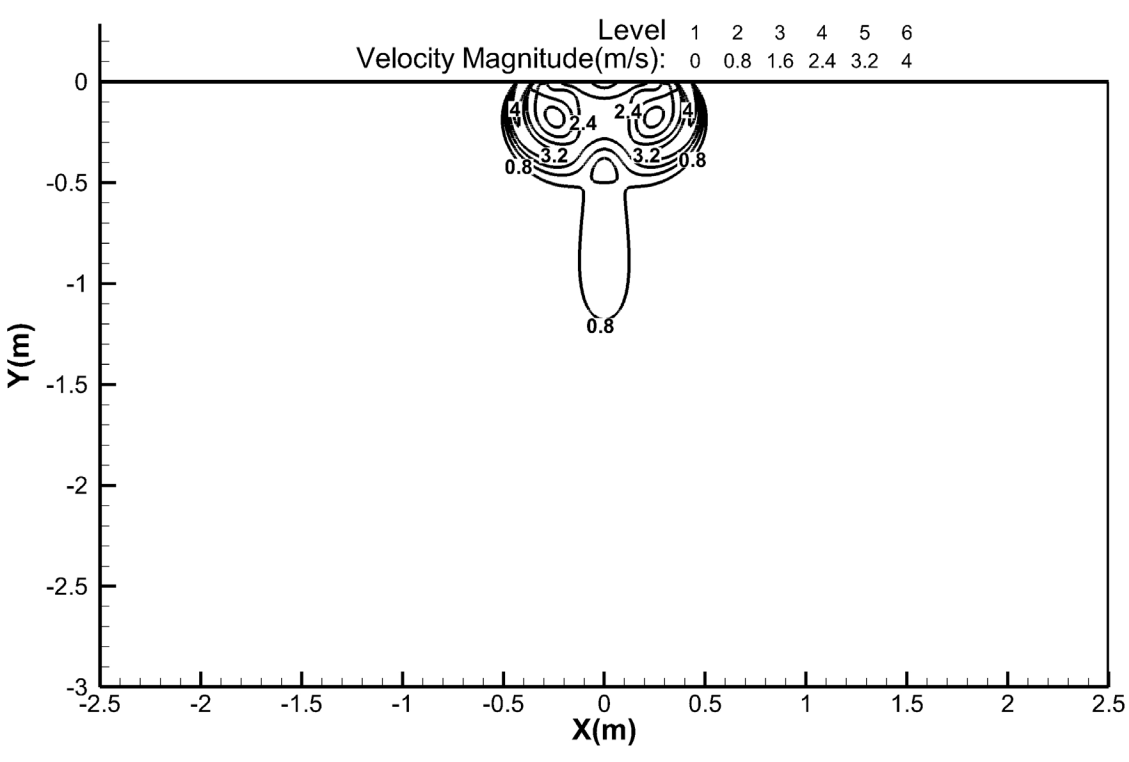


Cooling temperature distributions

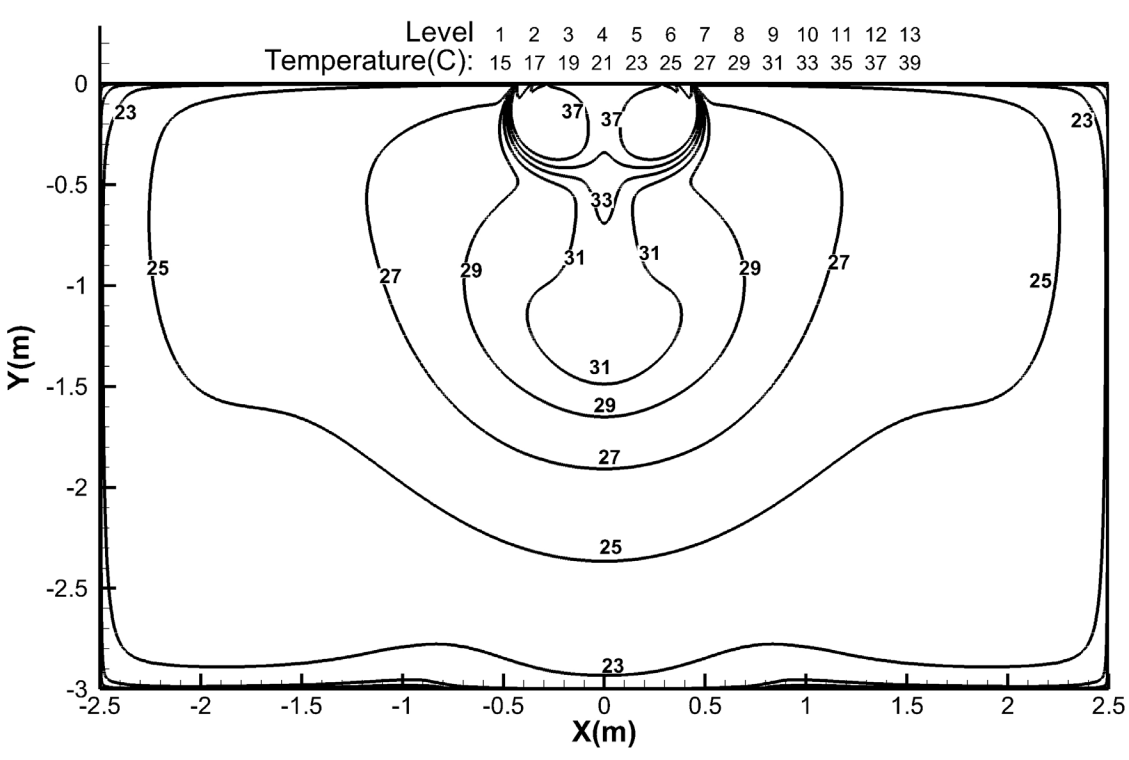


Compact Cassette type -18k

Heating airflow velocity distributions



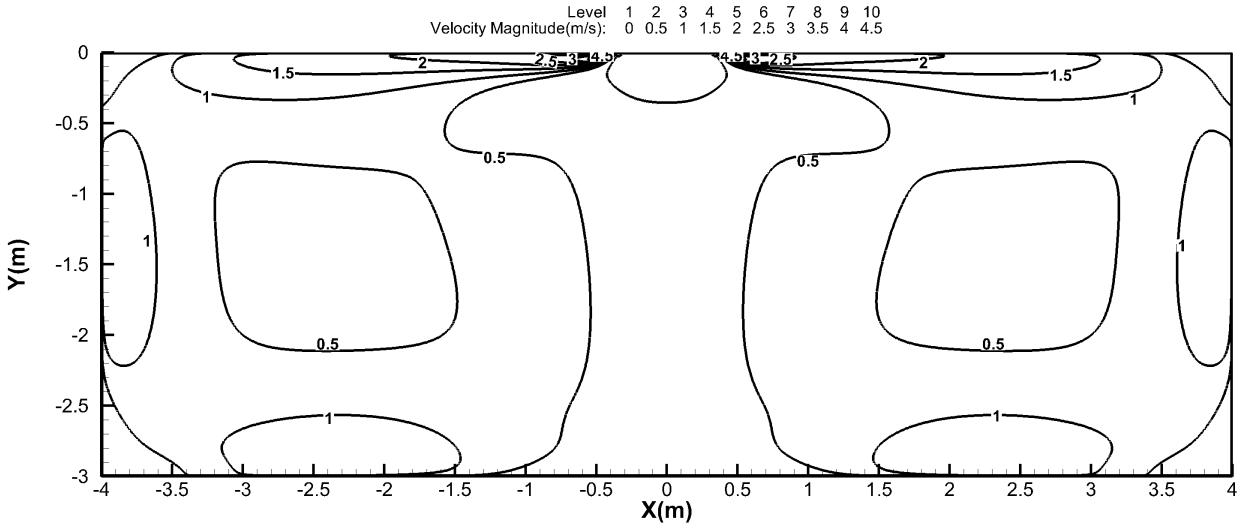
Heating temperature distributions



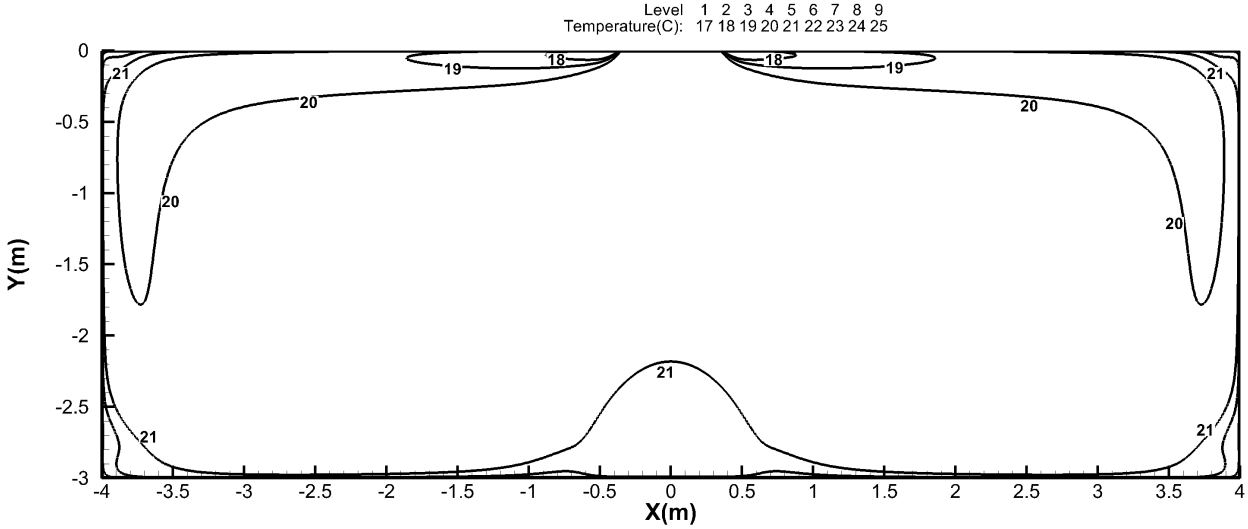
Slim Cassette type - 24k

Discharge Angle 30°

Cooling airflow velocity distributions



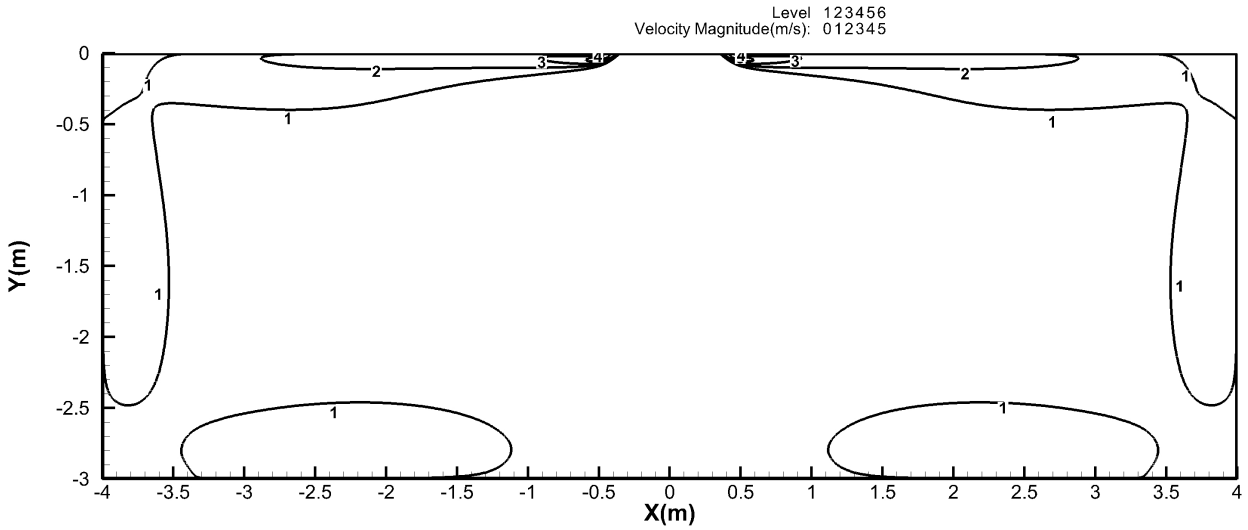
Cooling temperature distributions



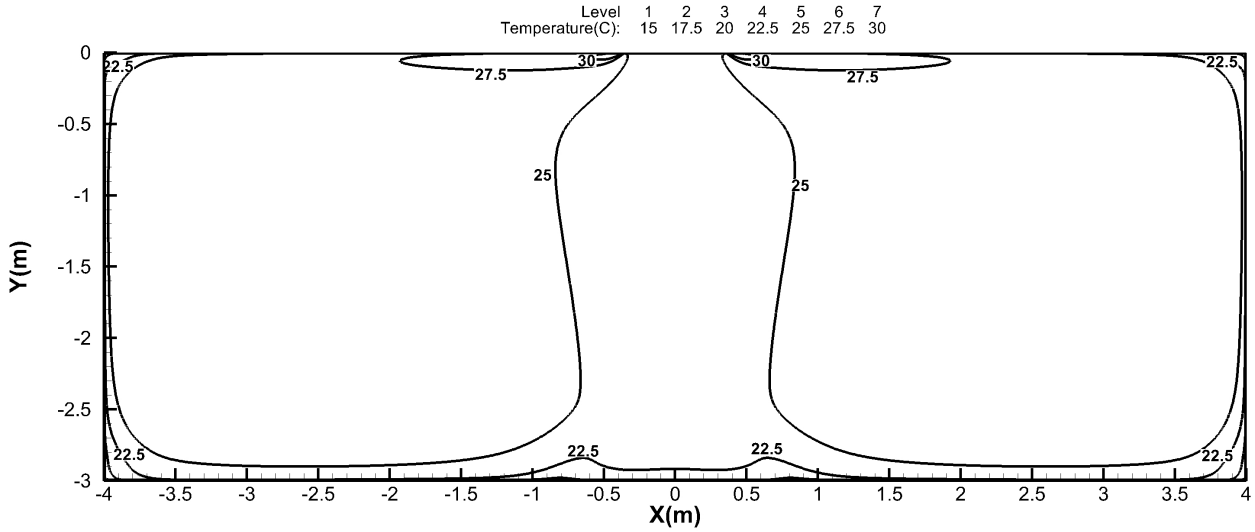
24K

Discharge Angle 30°

Heating airflow velocity distributions



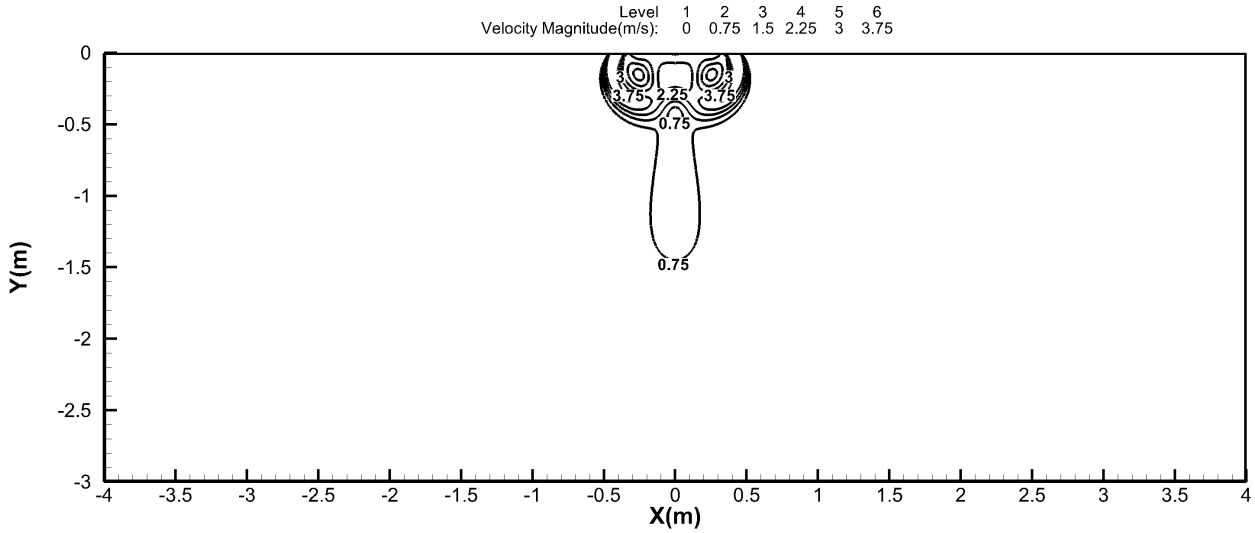
Heating temperature distributions



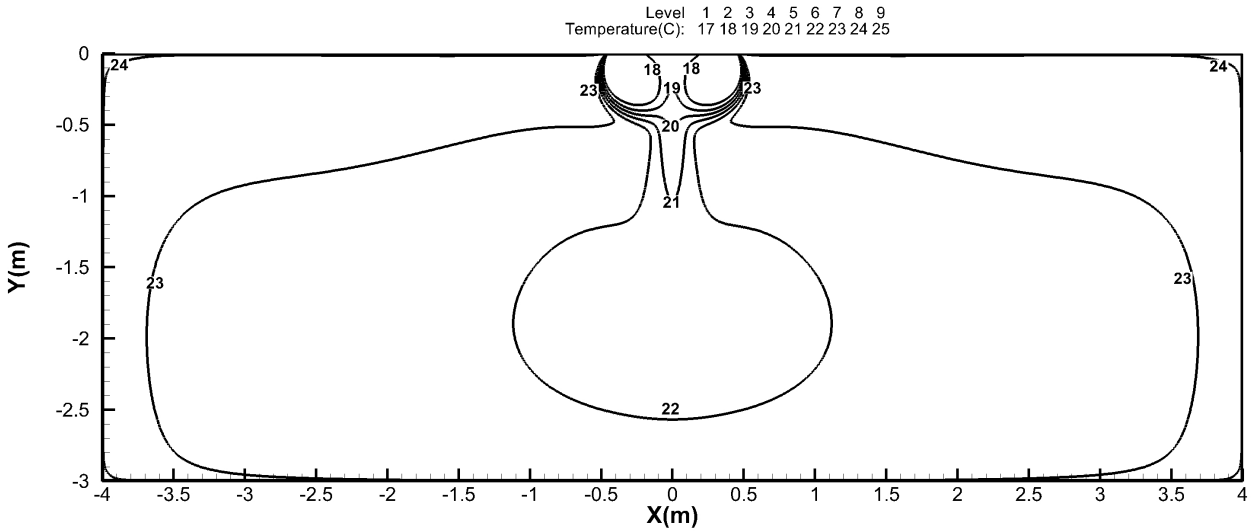
24K

Discharge Angle 60°

Cooling airflow velocity distributions



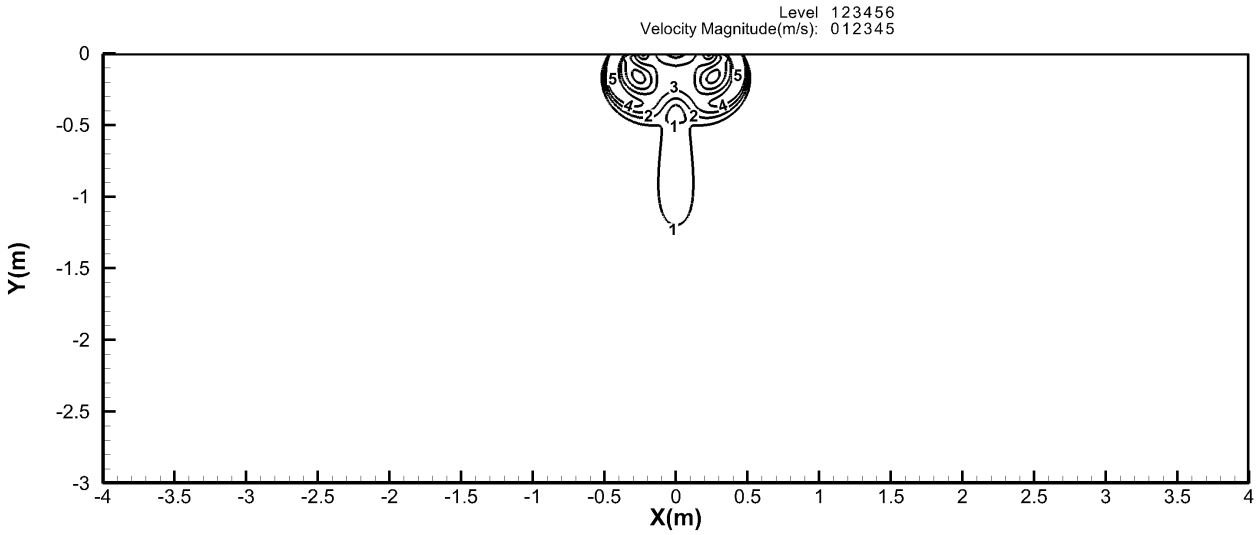
Cooling temperature distributions



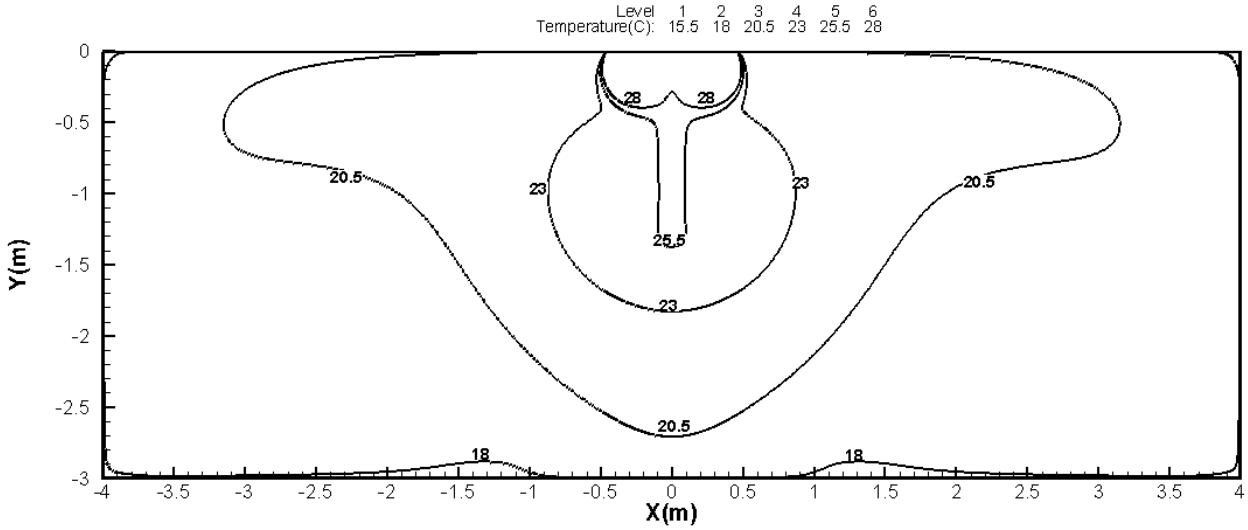
24K

Discharge Angle 60°

Heating airflow velocity distributions



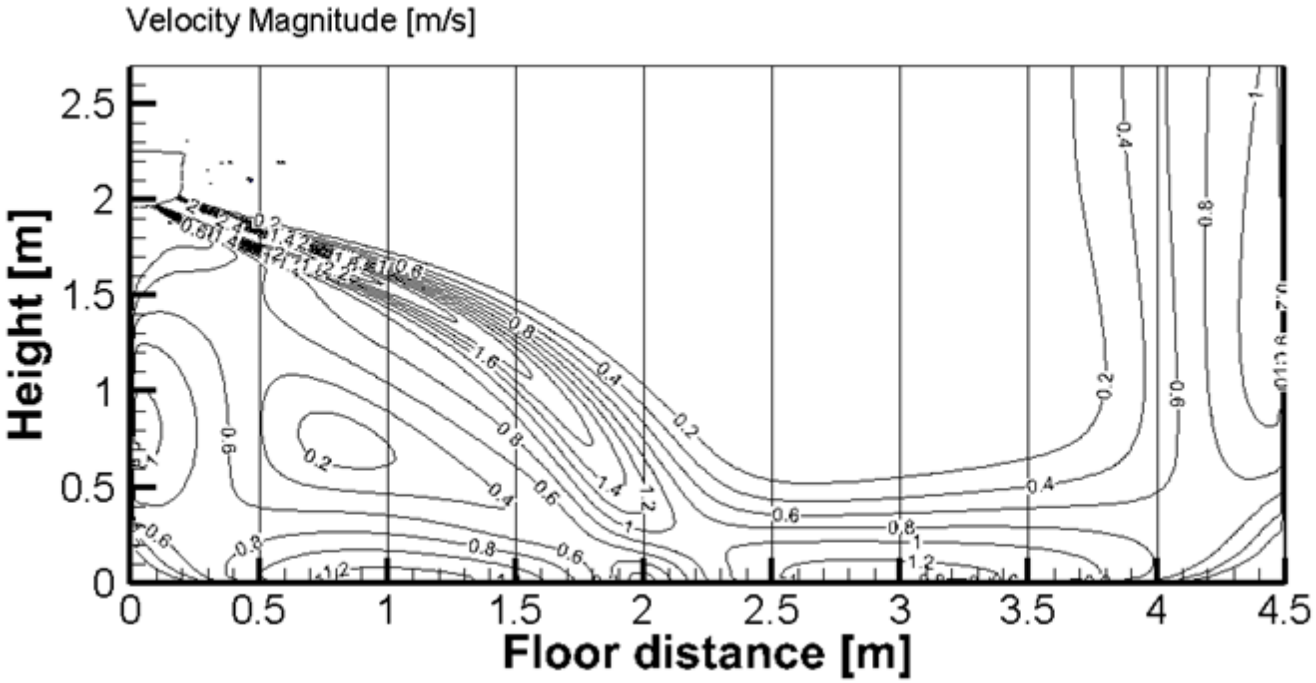
Heating temperature distributions



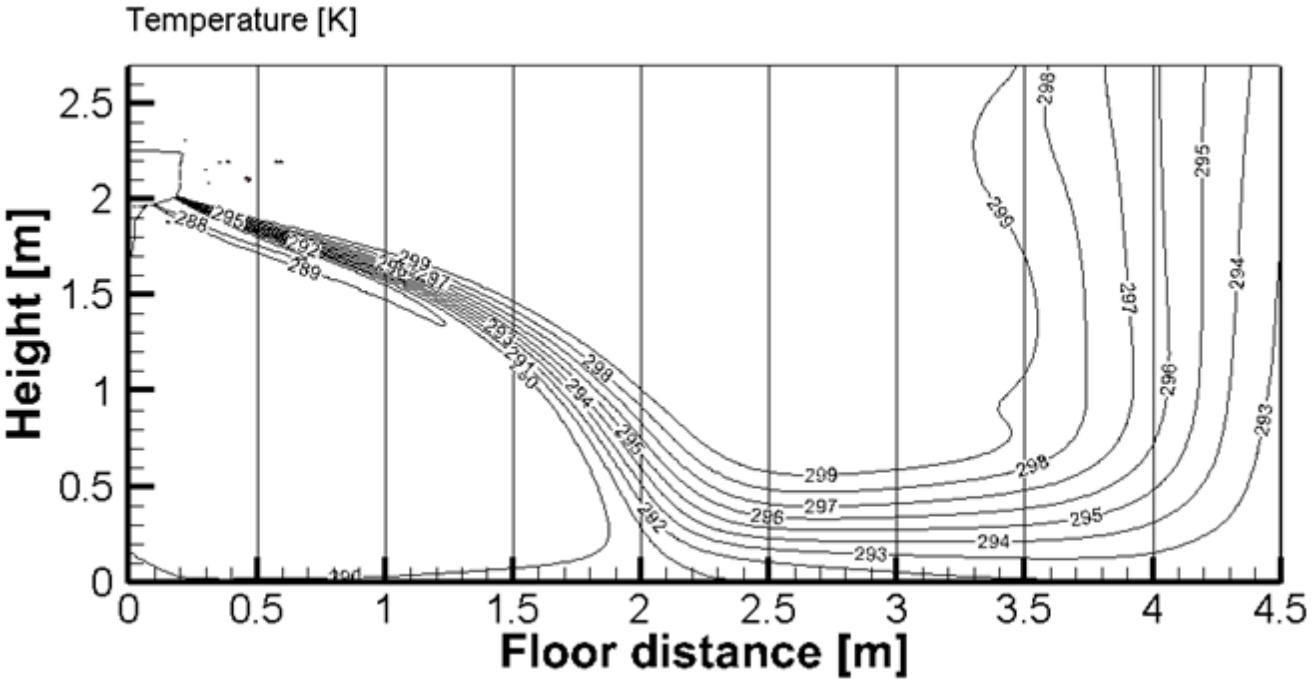
AG-7k/9k

Discharge Angle 58°

Cooling airflow velocity distributions



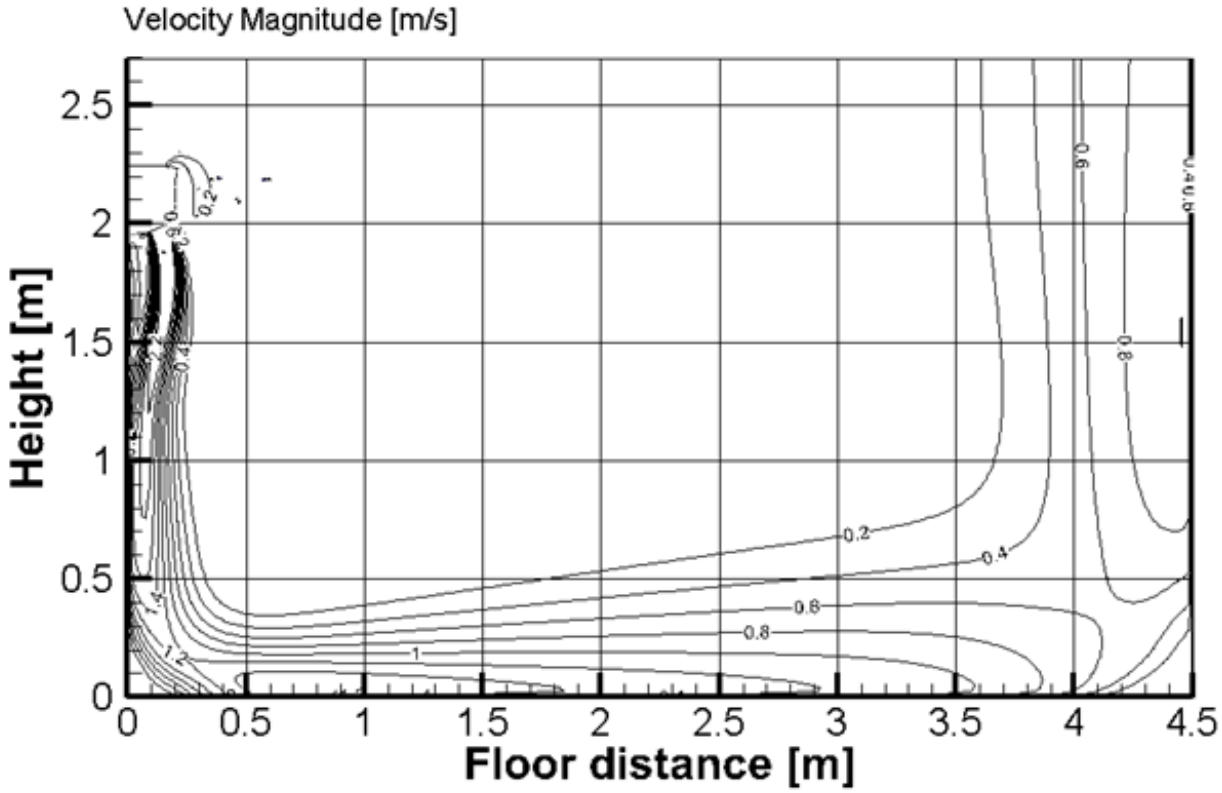
Cooling temperature distributions



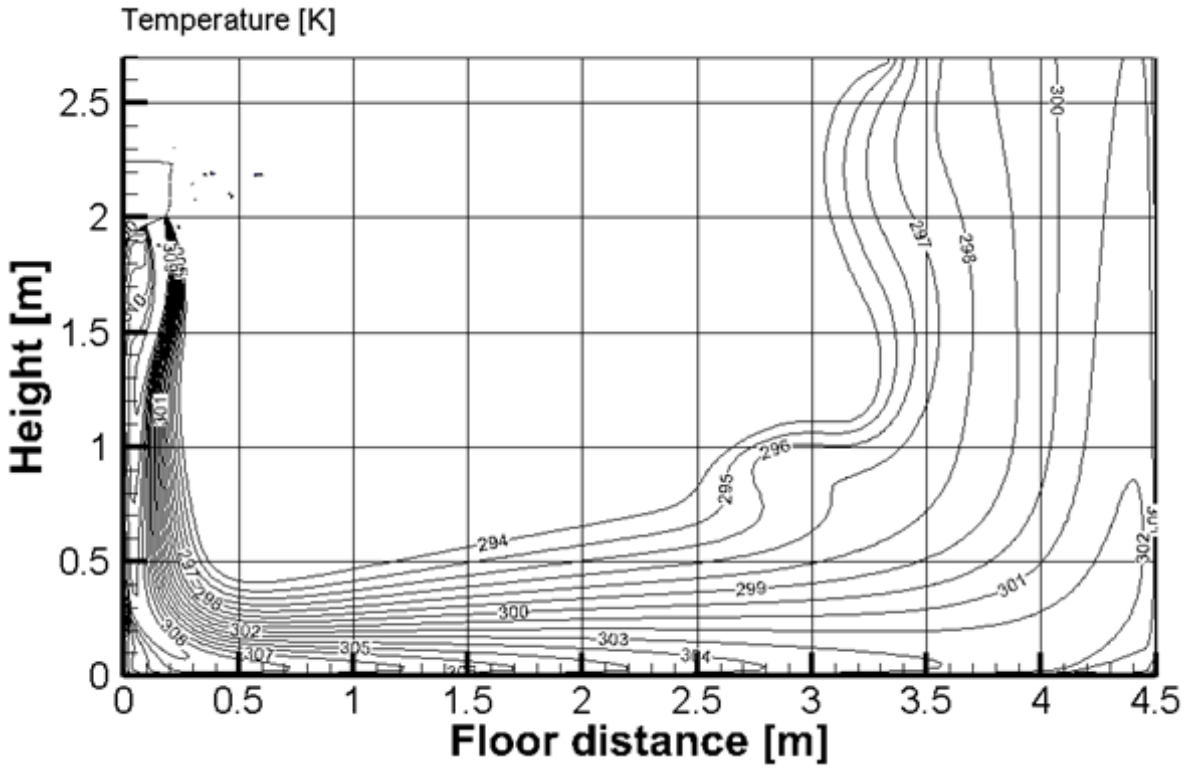
AG 7K/9k

Discharge Angle 90°

Heating airflow velocity distributions



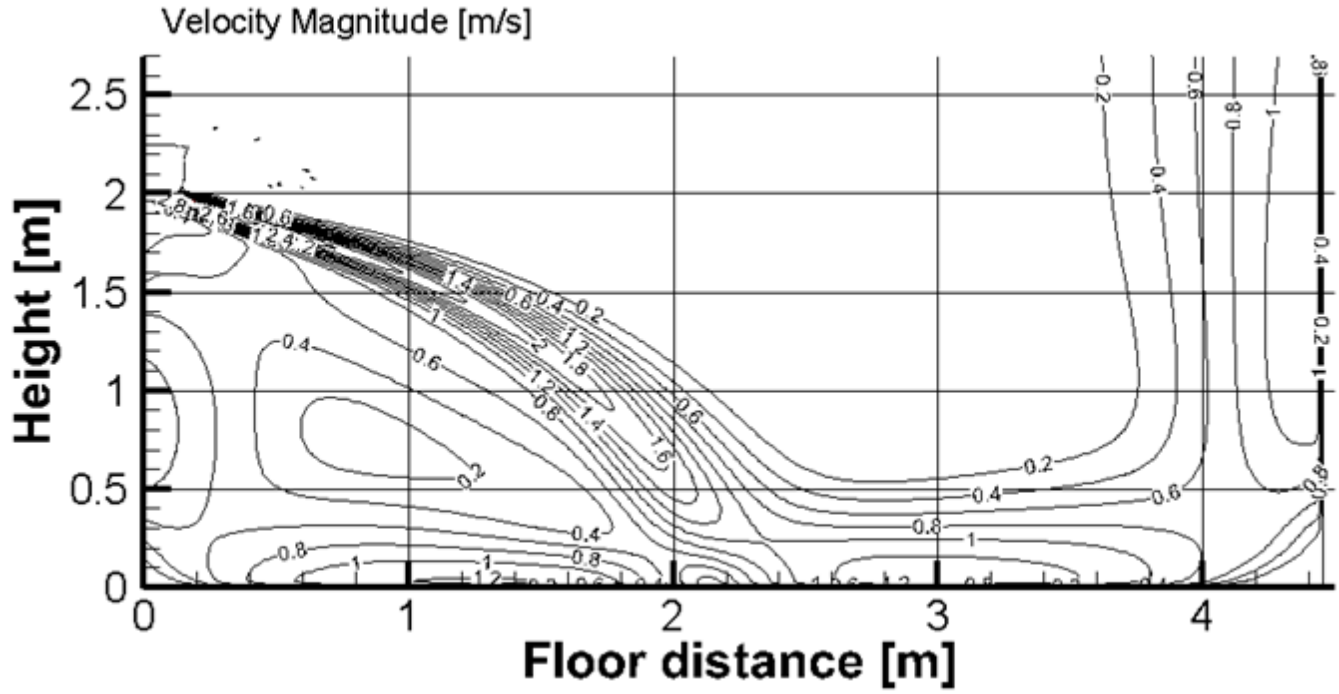
Heating temperature distributions



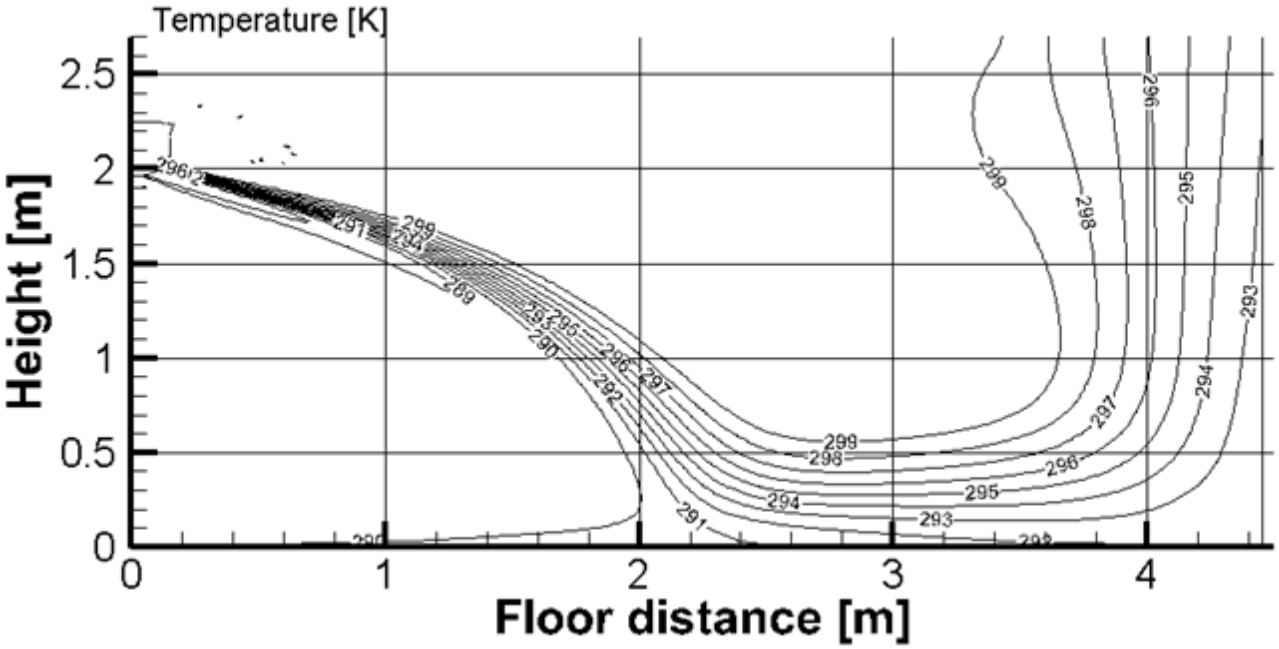
AG-12k

Discharge Angle 58°

Cooling airflow velocity distributions



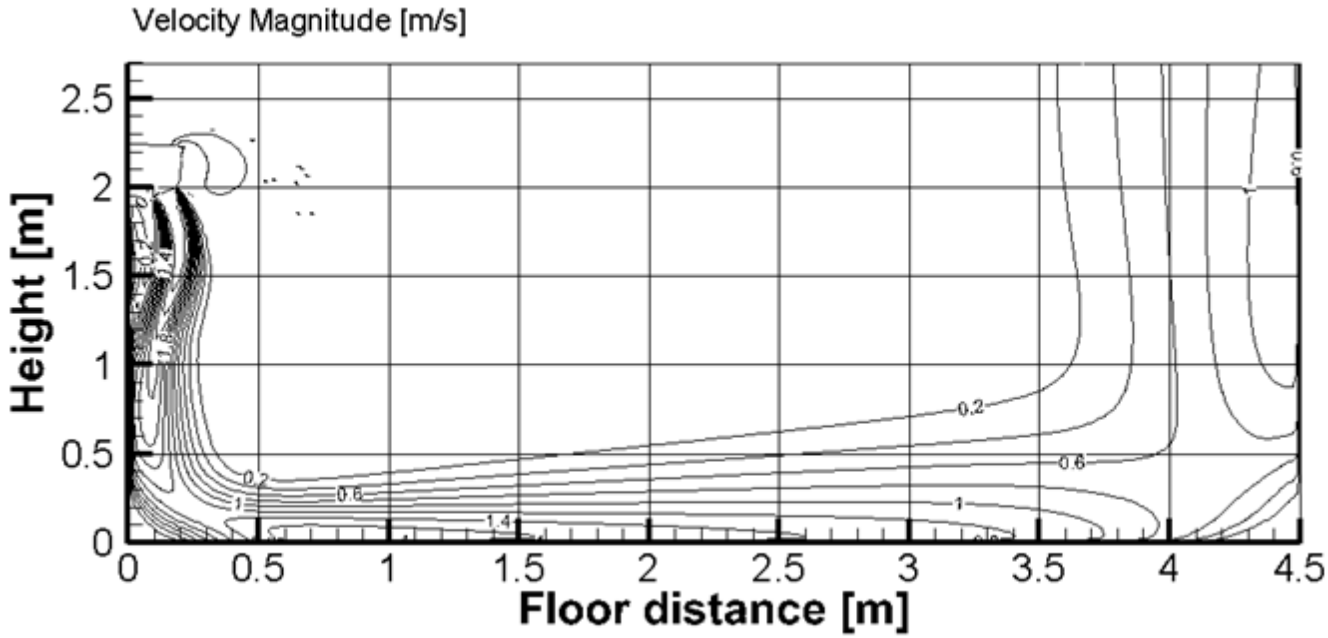
Cooling temperature distributions



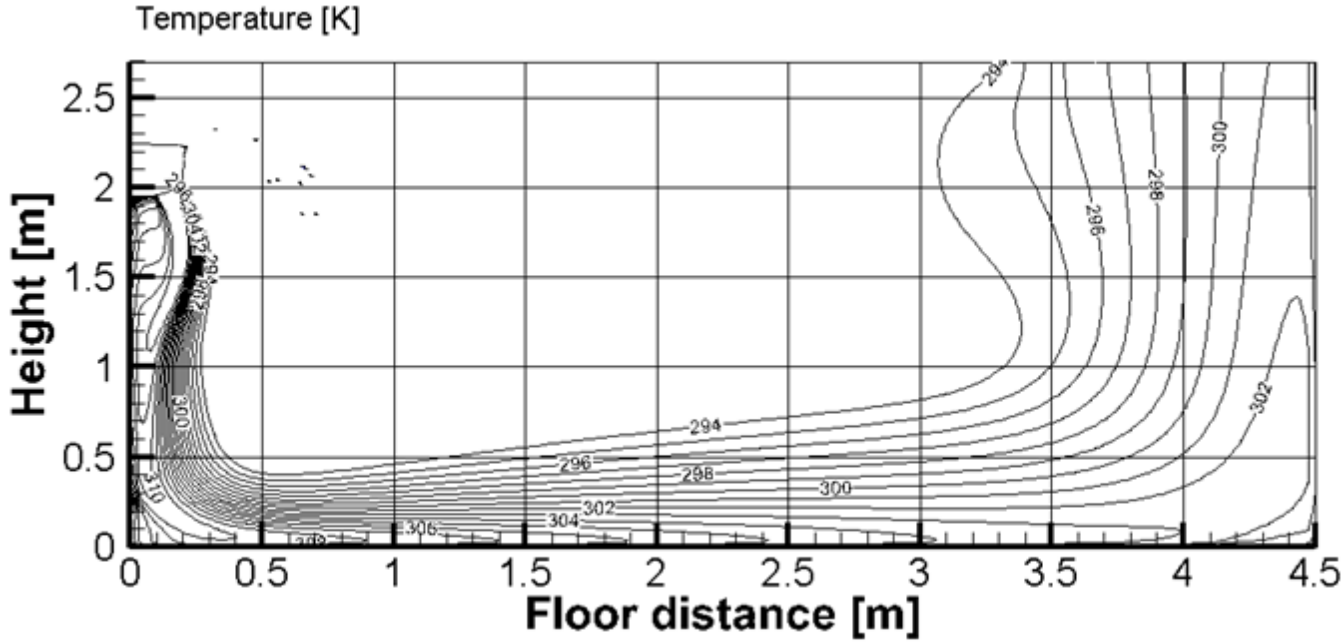
AG-12k

Heating airflow velocity distributions

Discharge Angle 90°



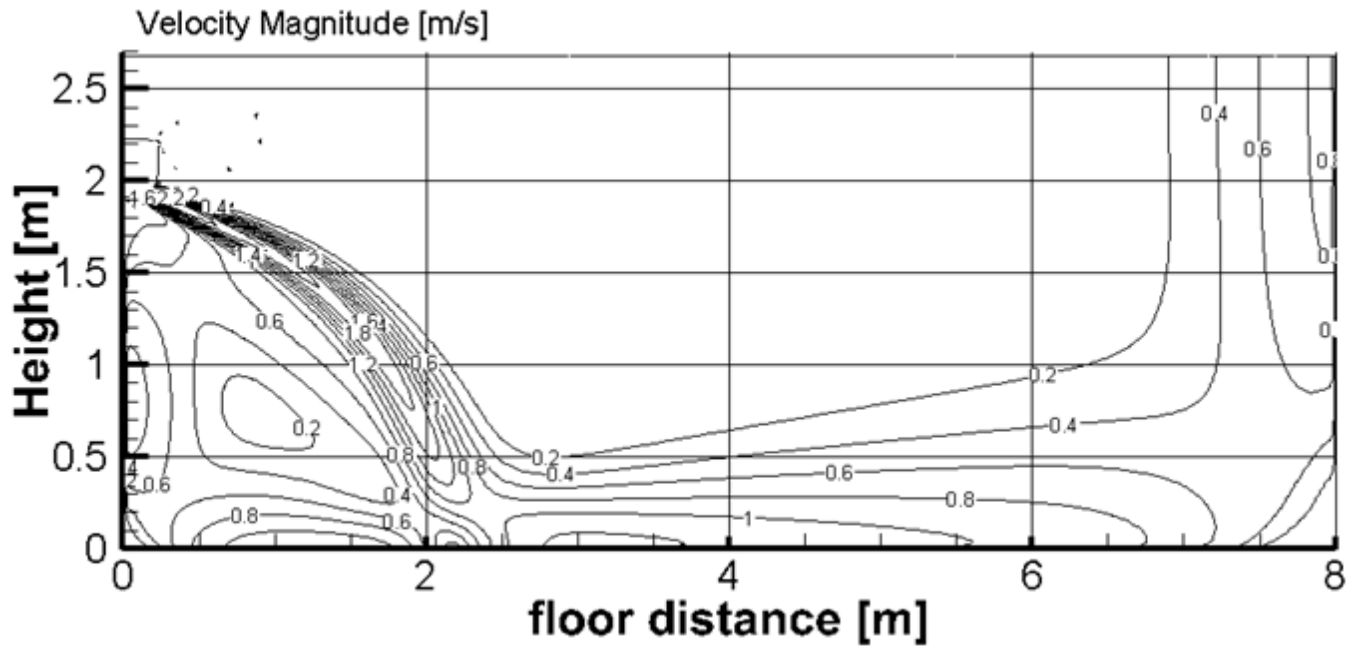
Heating temperature distributions



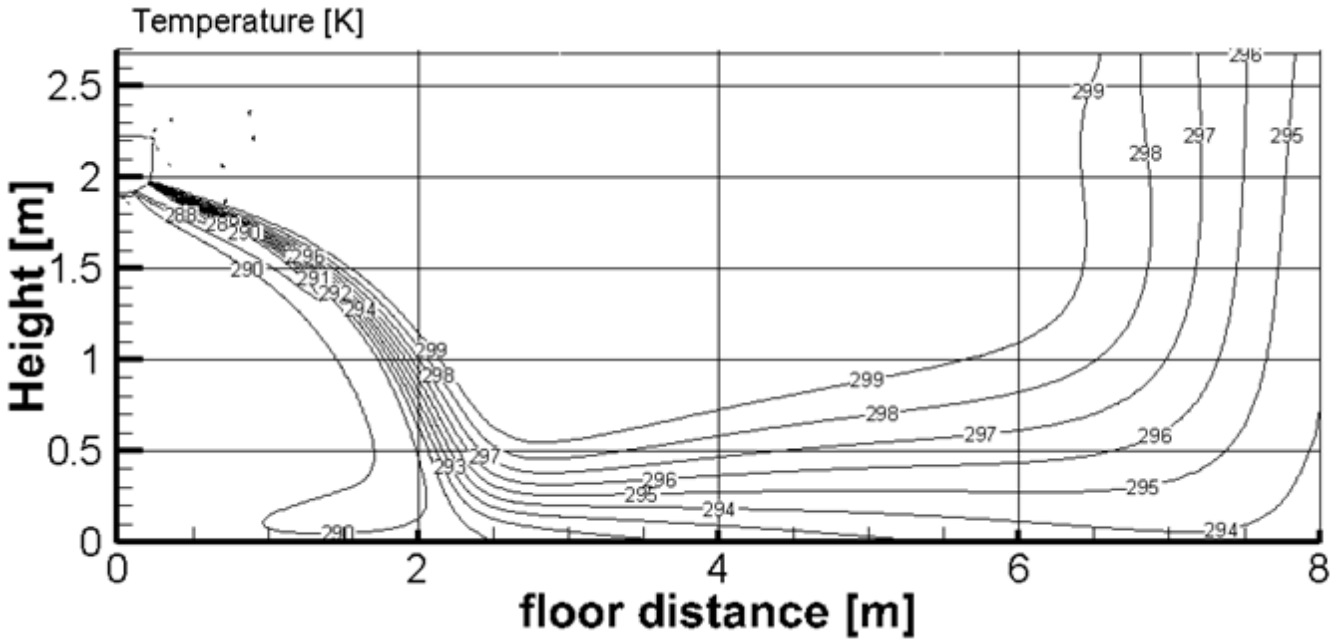
AG-18k

Discharge Angle 50°

Cooling airflow velocity distributions



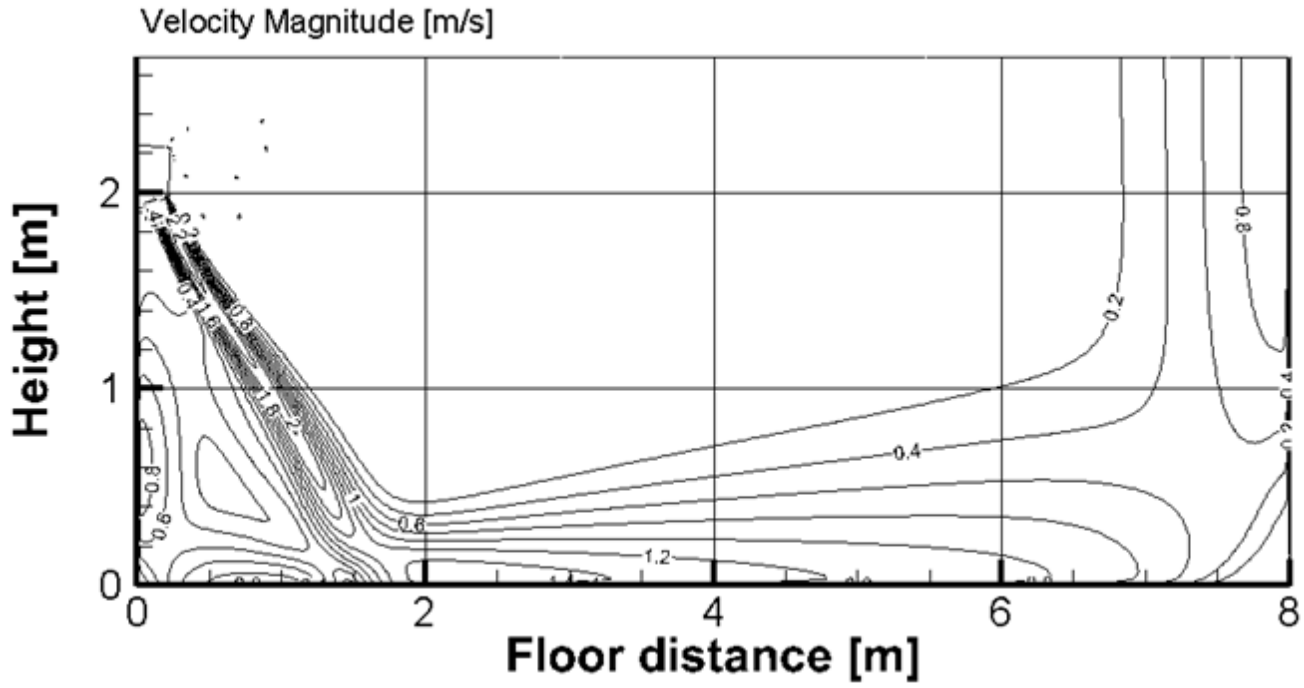
Cooling temperature distributions



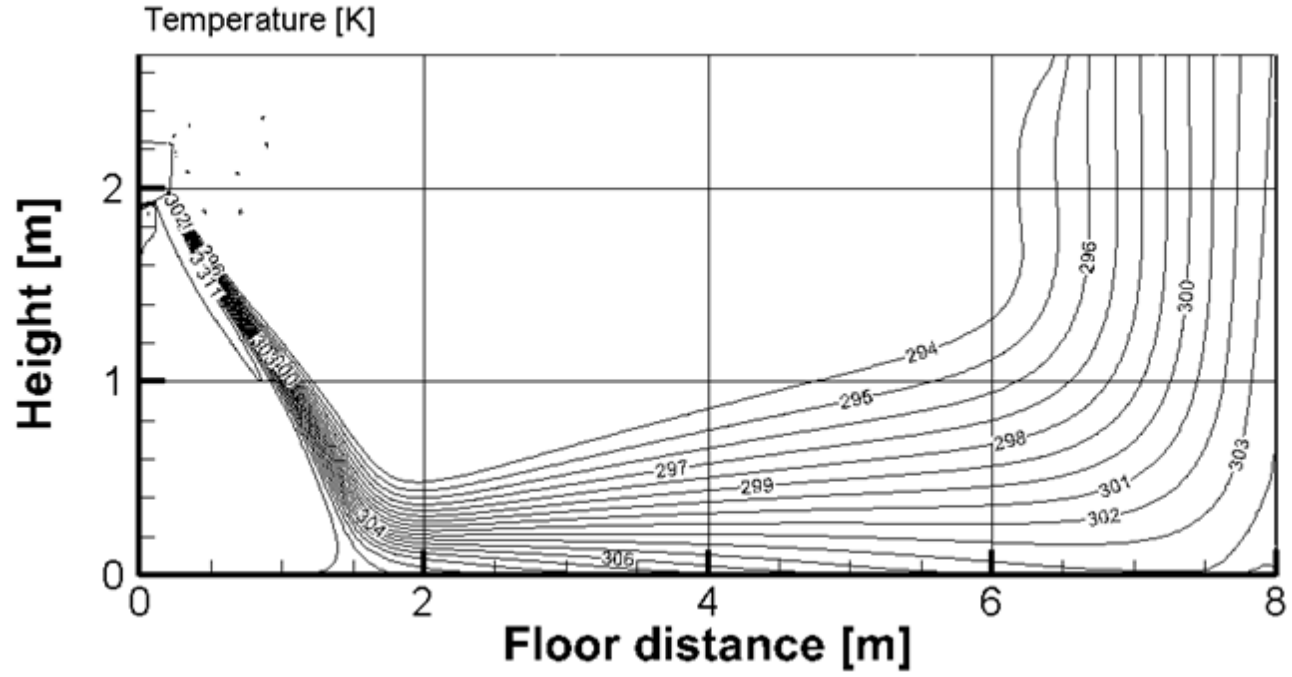
AG-18k

Discharge Angle 84°

Heating airflow velocity distributions



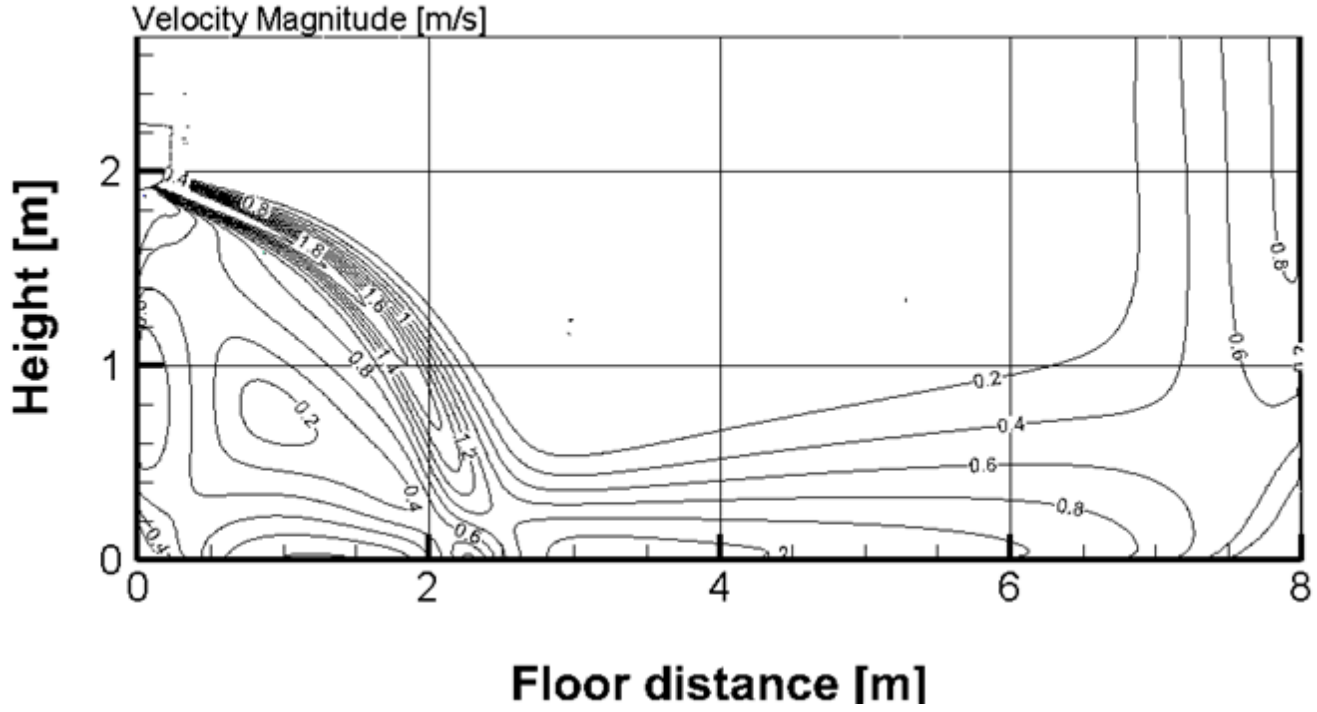
Heating temperature distributions



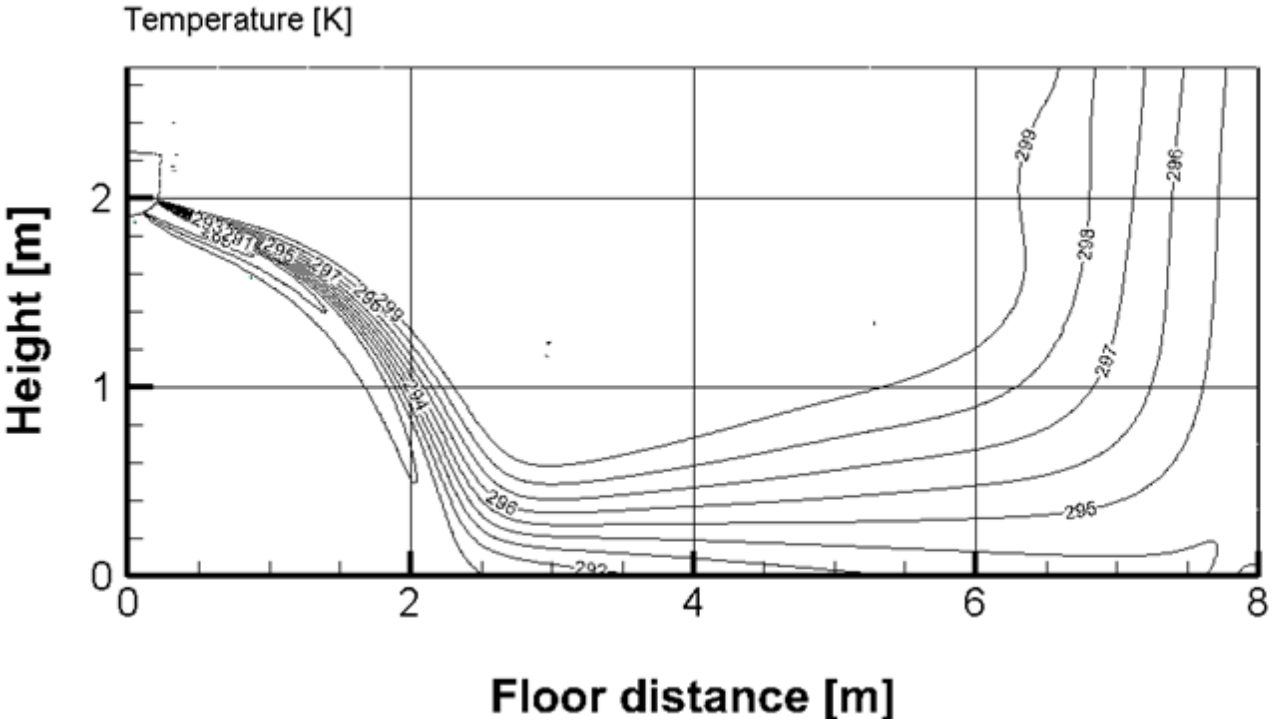
AG-24k

Discharge Angle 50°

Cooling airflow velocity distributions



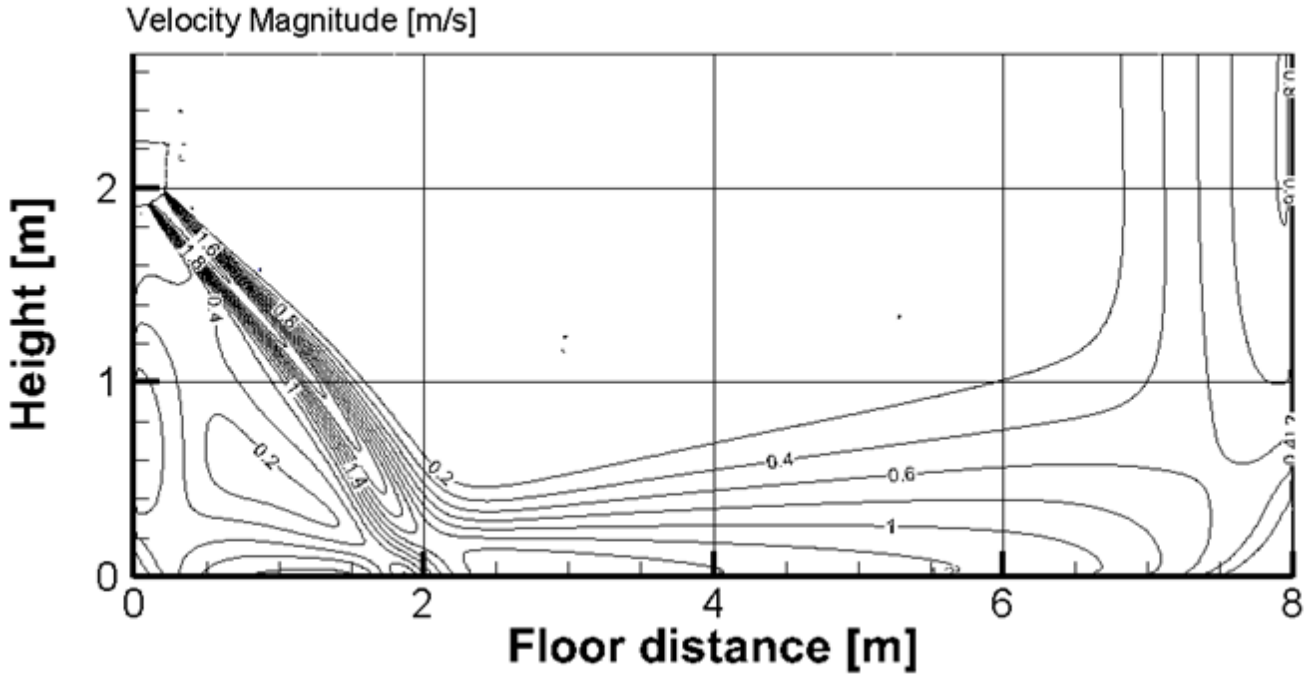
Cooling temperature distributions



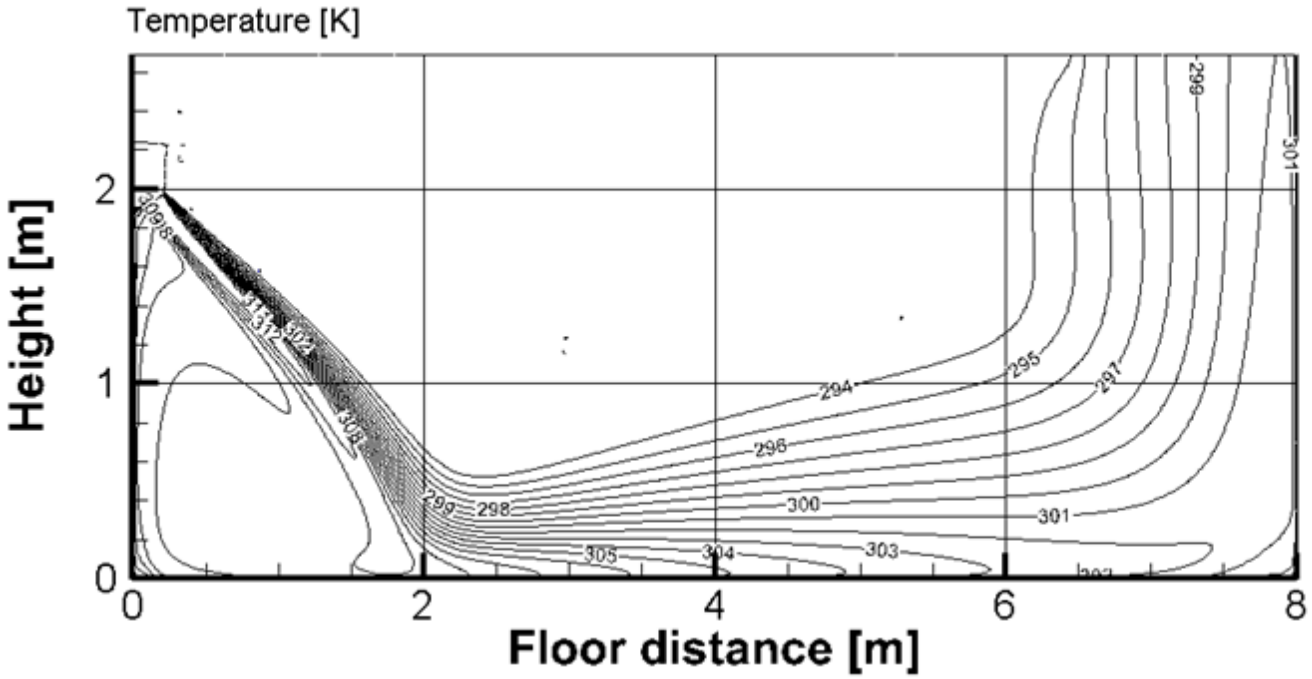
AG-24k

Discharge Angle 67°

Heating airflow velocity distributions



Heating temperature distributions

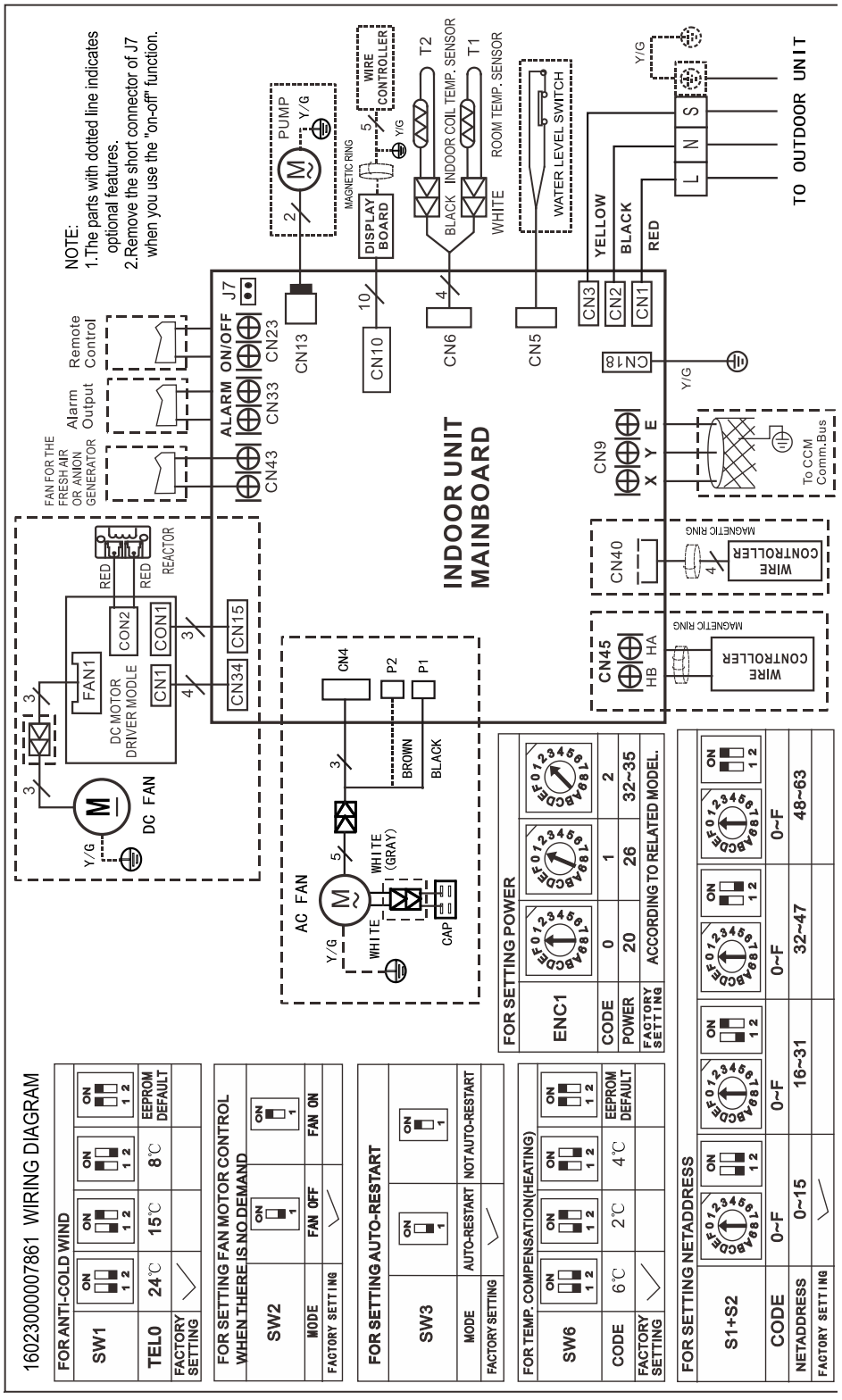


7. Electrical Wiring Diagrams

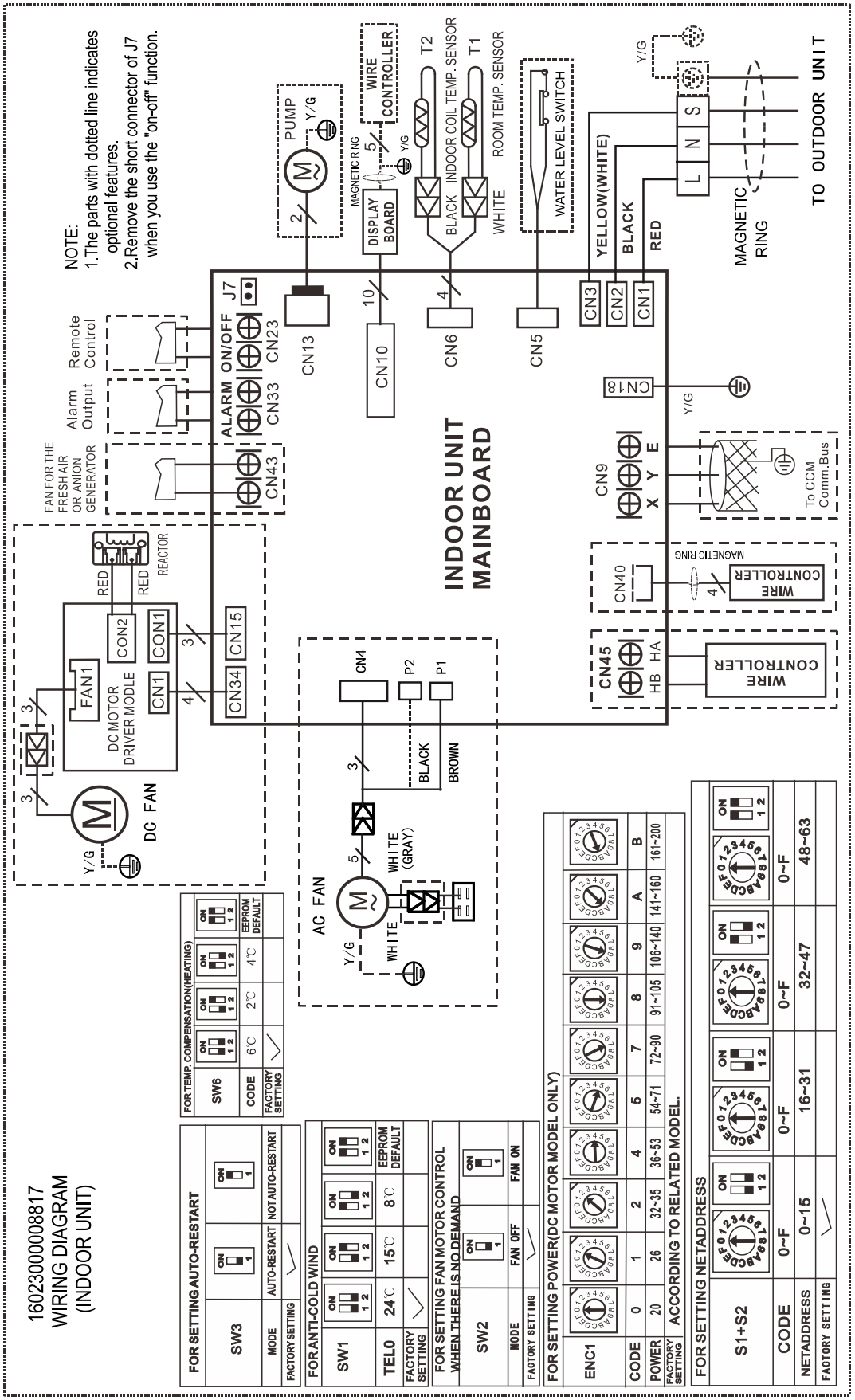
8.1 Indoor unit

A6 Duct type

7K/9K

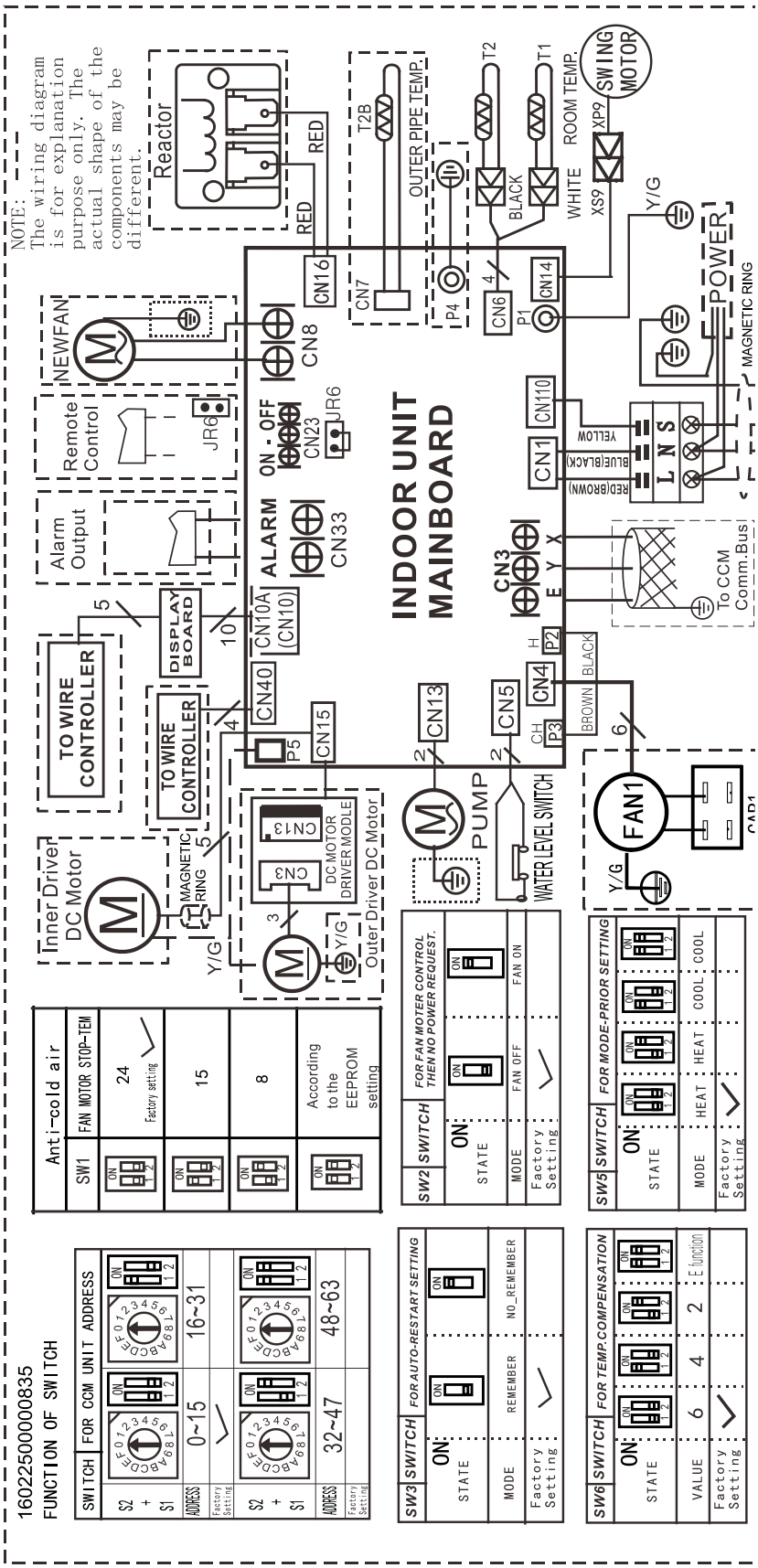


1602300000817
WIRING DIAGRAM
(INDOOR UNIT)

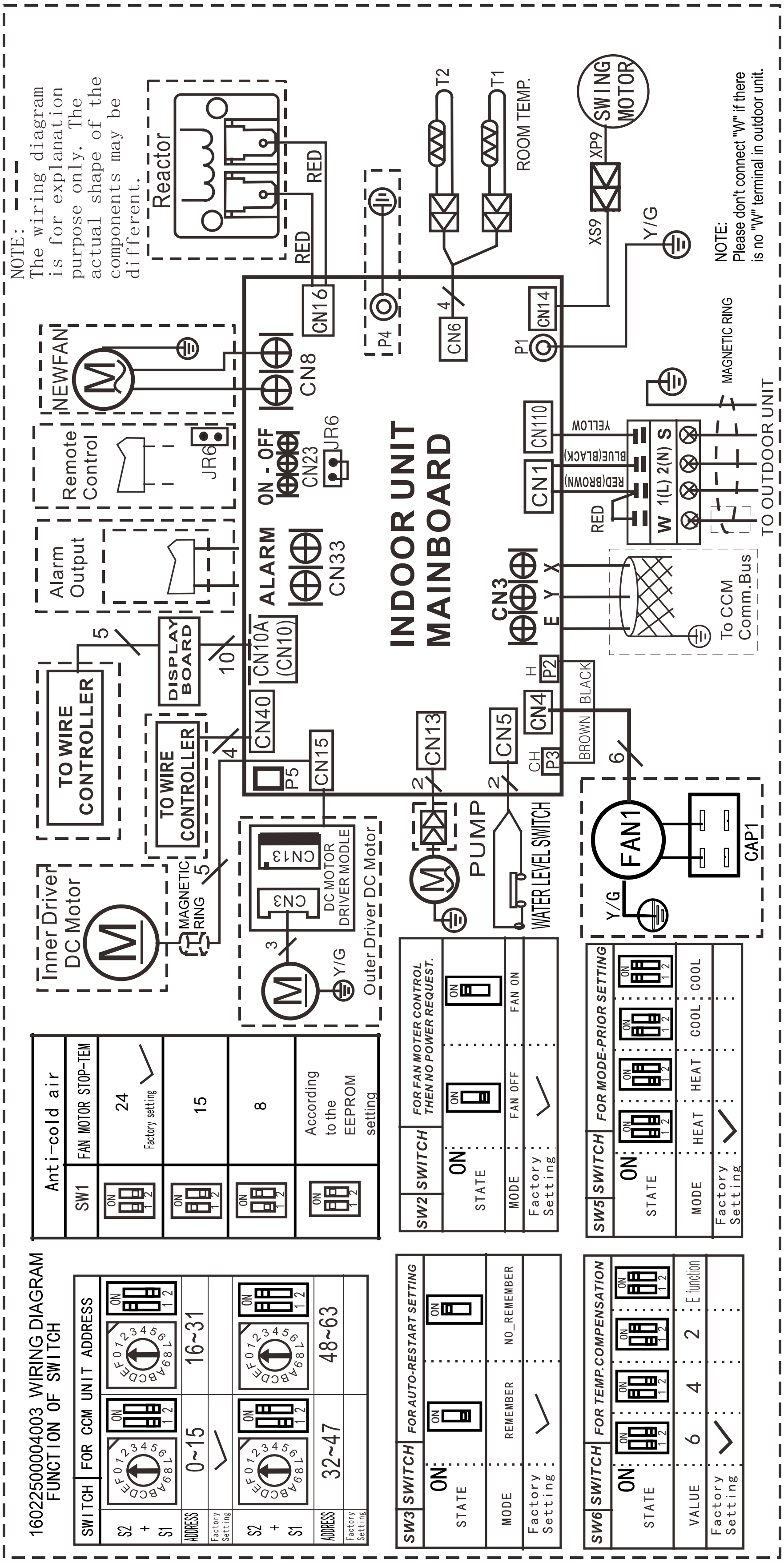


Compact Cassette type:

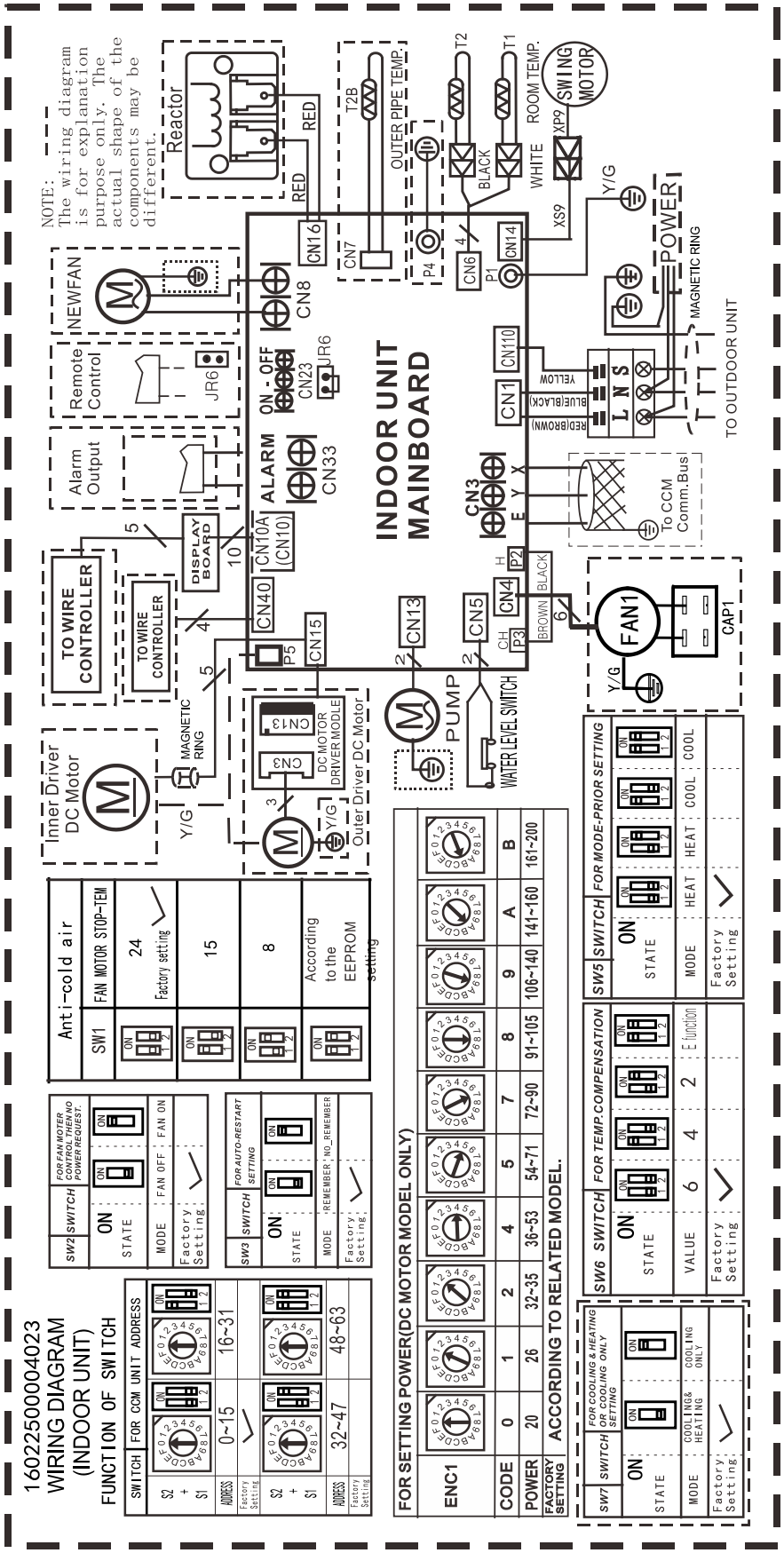
7K/9K



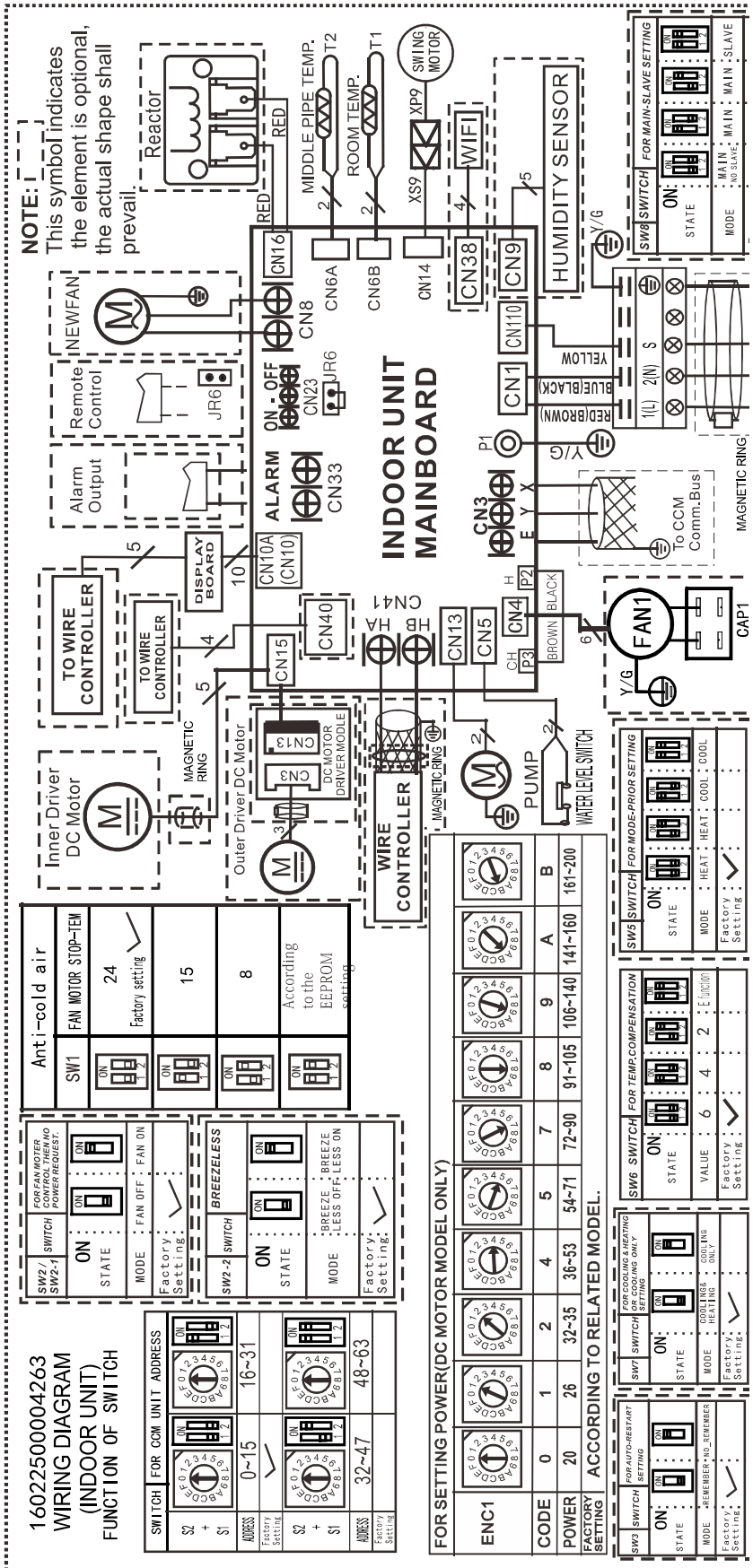
12K


16022500004003 WIRING DIAGRAM
FUNCTION OF SWITCH
SWITCH
FOR CCM UNIT ADDRESS
S2 + S1
ADDRESS
0~15
16~31
32~47
48~63
Factory Setting
Anti-cold air
SW1
FAN MOTOR STOP-TEM
24
Factory setting
15
8
According to the EEPROM setting
SW3 SWITCH
FOR AUTO-RESTART SETTING
ON
STATE
MODE
REMEMBER
NO_REMEMBER
Factory Setting
SW2 SWITCH
FOR FAN MOTER CONTROL THEN NO POWER REQUEST.
FAN OFF
FAN ON
SW6 SWITCH
FOR TEMP.COMPENSATION
VALUE
6
4
2
E function
SW5 SWITCH
FOR MODE-PRIOR SETTING
HEAT
COOL
NOTE:
The wiring diagram is for explanation purpose only. The actual shape of the components may be different.
Reactor
RED
NEWFAN
Remote Control
JR6
Alarm Output
TO WIRE CONTROLLER
DISPLAY BOARD
Inner Driver DC Motor
MAGNETIC RING
Y/G
DC MOTOR DRIVER MODLE
CN3
CN13
Outer Driver DC Motor
CN16
P4
CN8
ON - OFF
CN23
ALARM
CN33
CN10A
(CN10)
CN40
P5
CN15
INDOOR UNIT
MAINBOARD
CN3
E Y X
H
P2
CH
P3
CN13
CN5
CN4
PUMP
WATER LEVEL SWITCH
CN6
T2
T1
ROOM TEMP.
P1
CN14
XS9
XP9
SWING MOTOR
CN1
CN110
RED(BROWN)
BLUE(BLACK)
YELLOW
W 1(L) 2(N) S
MAGNETIC RING
TO OUTDOOR UNIT
To CCM Comm.Bus
BROWN
BLACK
FAN1
CAP1
NOTE:
Please don't connect "W" if there is no "W" terminal in outdoor unit.

18K

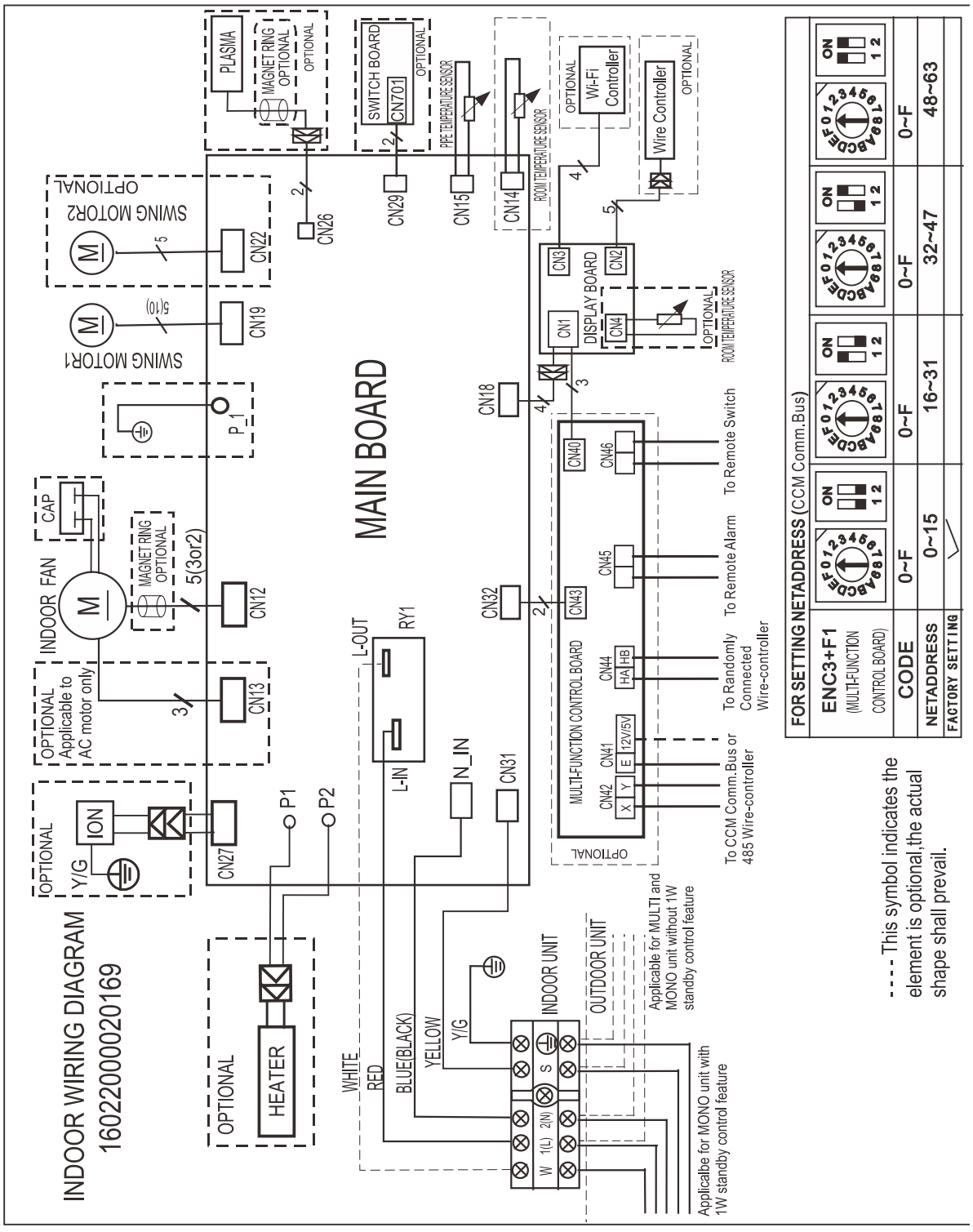

160225000040 23
WIRING DIAGRAM
(INDOOR UNIT)
FUNCTION OF SWITCH
INDOOR UNIT
MAINBOARD
NOTE:
The wiring diagram is for explanation purpose only. The actual shape of the components may be different.
Reactor
NEWFAN
Remote Control
Alarm Output
TO WIRE CONTROLLER
Inner Driver DC Motor
Outer Driver DC Motor
DC MOTOR DRIVER MODLE
MAGNETIC RING
DISPLAY BOARD
ALARM
ON - OFF
PUMP
WATER LEVEL SWITCH
FAN1
CAP1
POWER
TO OUTDOOR UNIT
To CCM Comm.Bus
OUTER PIPE TEMP.
ROOM TEMP.
SWING MOTOR
MAGNETIC RING
Anti-cold air
FAN MOTOR STOP-TEM
Factory setting
According to the EEPROM setting
FOR SETTING POWER(DC MOTOR MODEL ONLY)
ACCORDING TO RELATED MODEL.
FOR FAN MOTOR CONTROL THEN NO POWER REQUEST.
FOR AUTO-RESTART SETTING
FOR COOLING & HEATING OR COOLING ONLY SETTING
FOR TEMP.COMPENSATION
FOR MODE-PRIOR SETTING
FAN ON
FAN OFF
REMEMBER
NO_REMEMBER
COOLING&HEATING
COOLING ONLY
E function
Factory Setting
Specifications

24K

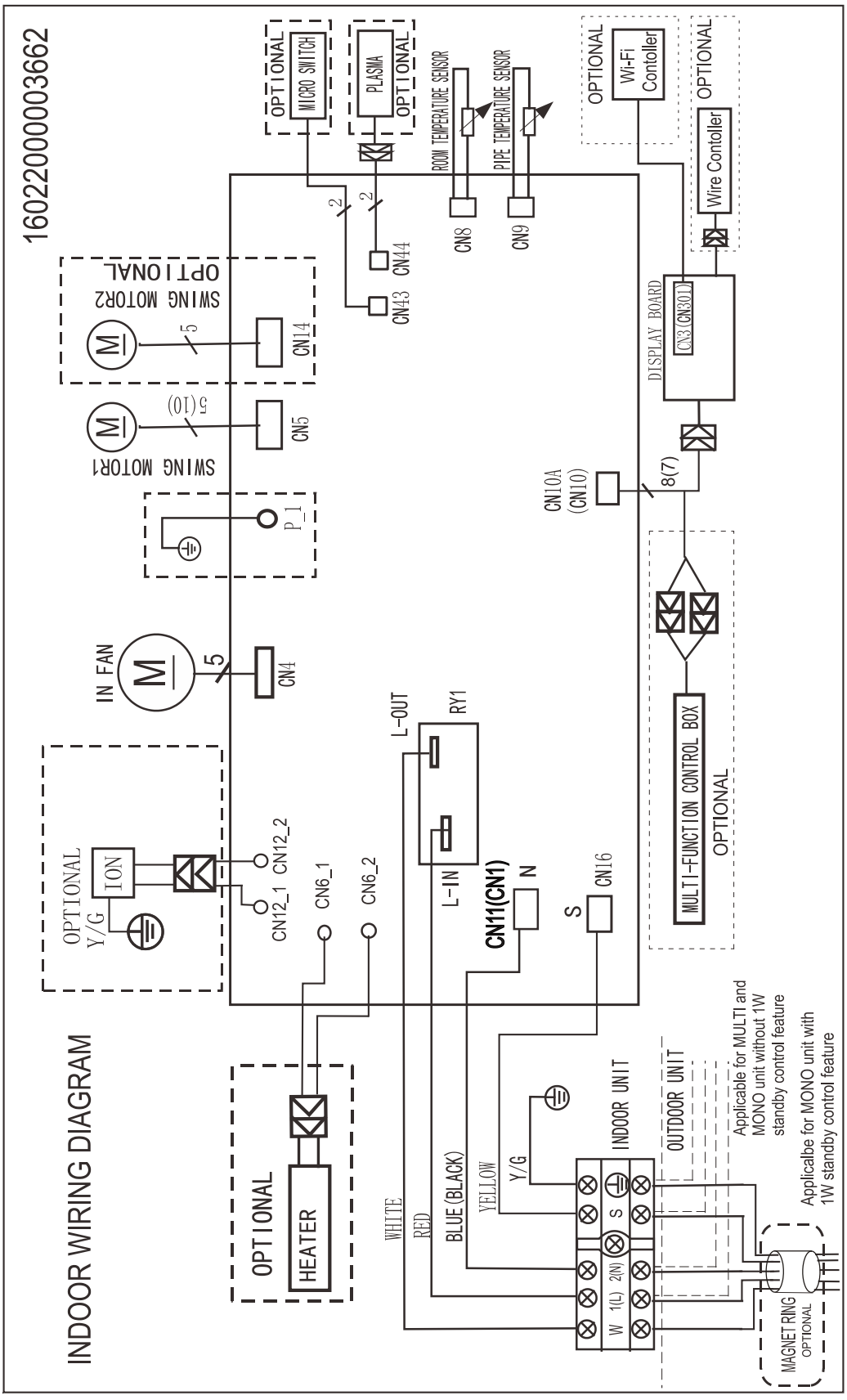

1602250004263
WIRING DIAGRAM
(INDOOR UNIT)
FUNCTION OF SWITCH
NOTE:
This symbol indicates the element is optional, the actual shape shall prevail.
INDOOR UNIT
MAINBOARD
WIRE CONTROLLER
TO WIRE CONTROLLER
Inner Driver DC Motor
Outer Driver DC Motor
DC MOTOR DRIVER MODULE
MAGNETIC RING
DISPLAY BOARD
Alarm Output
Remote Control
NEWFAN
Reactor
MIDDLE PIPE TEMP.
ROOM TEMP.
SWING MOTOR
WIFI
HUMIDITY SENSOR
ALARM
ON - OFF
PUMP
WATER LEVEL SWITCH
To CCM Comm.Bus
MAGNETIC RING
FAN1
CAP1
Anti-cold air
FAN MOTOR STOP-TEM
FOR FAN MOTER CONTROL THEN NO POWER REQUEST.
FAN ON
FAN OFF
BREEZELESS
BREEZE LESS ON
BREEZE LESS OFF
SWITCH FOR CCM UNIT ADDRESS
FOR SETTING POWER(DC MOTOR MODEL ONLY)
ACCORDING TO RELATED MODEL.
FOR AUTO-RESTART SETTING
FOR COOLING & HEATING OR COOLING ONLY SETTING
FOR TEMP.COMPENSATION
FOR MODE-PRIOR SETTING
FOR MAIN-SLAVE SETTING
According to the EEPROM setting

Wall mounted type

AG：7K/9K/12K/18K

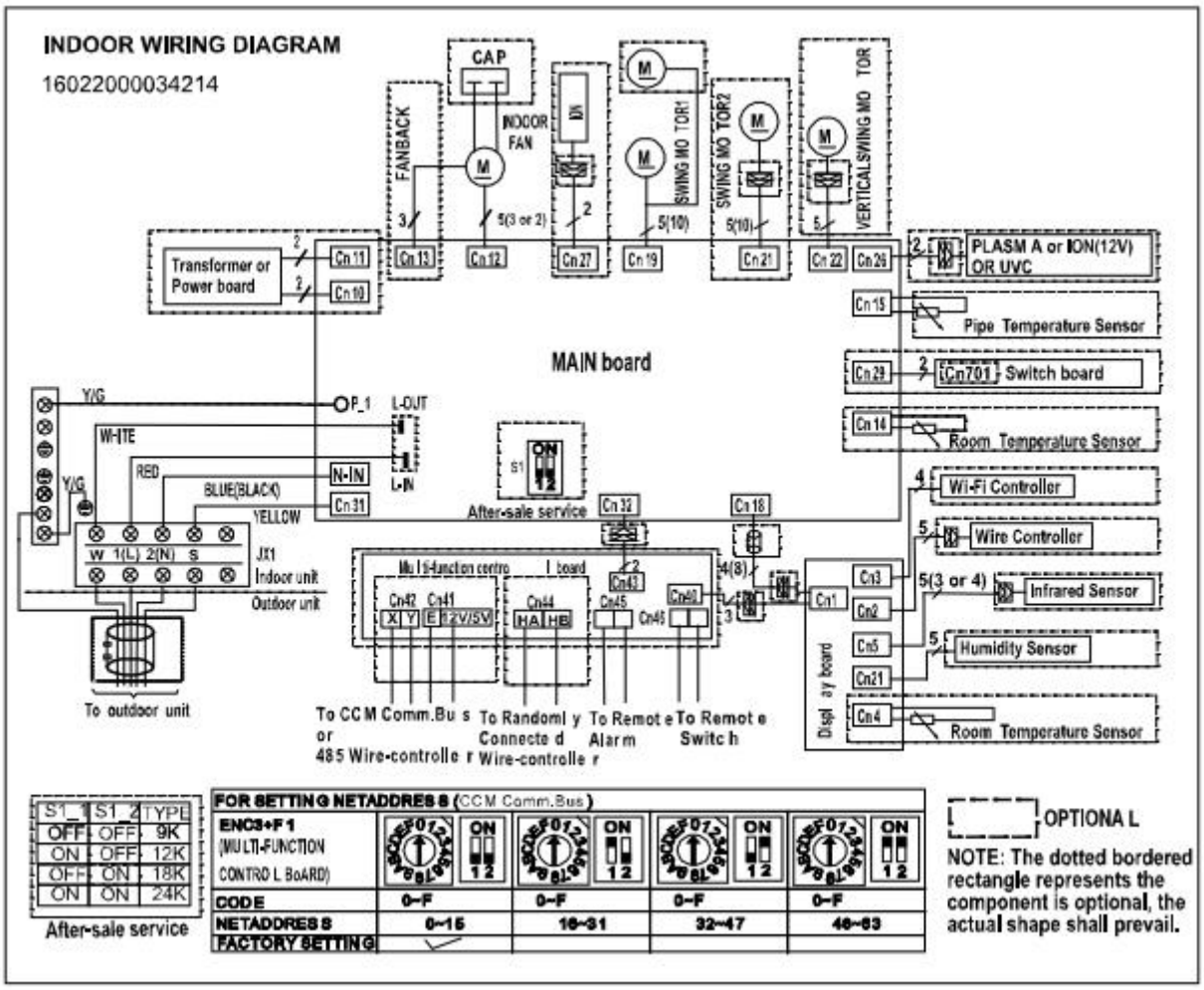


AG:24K



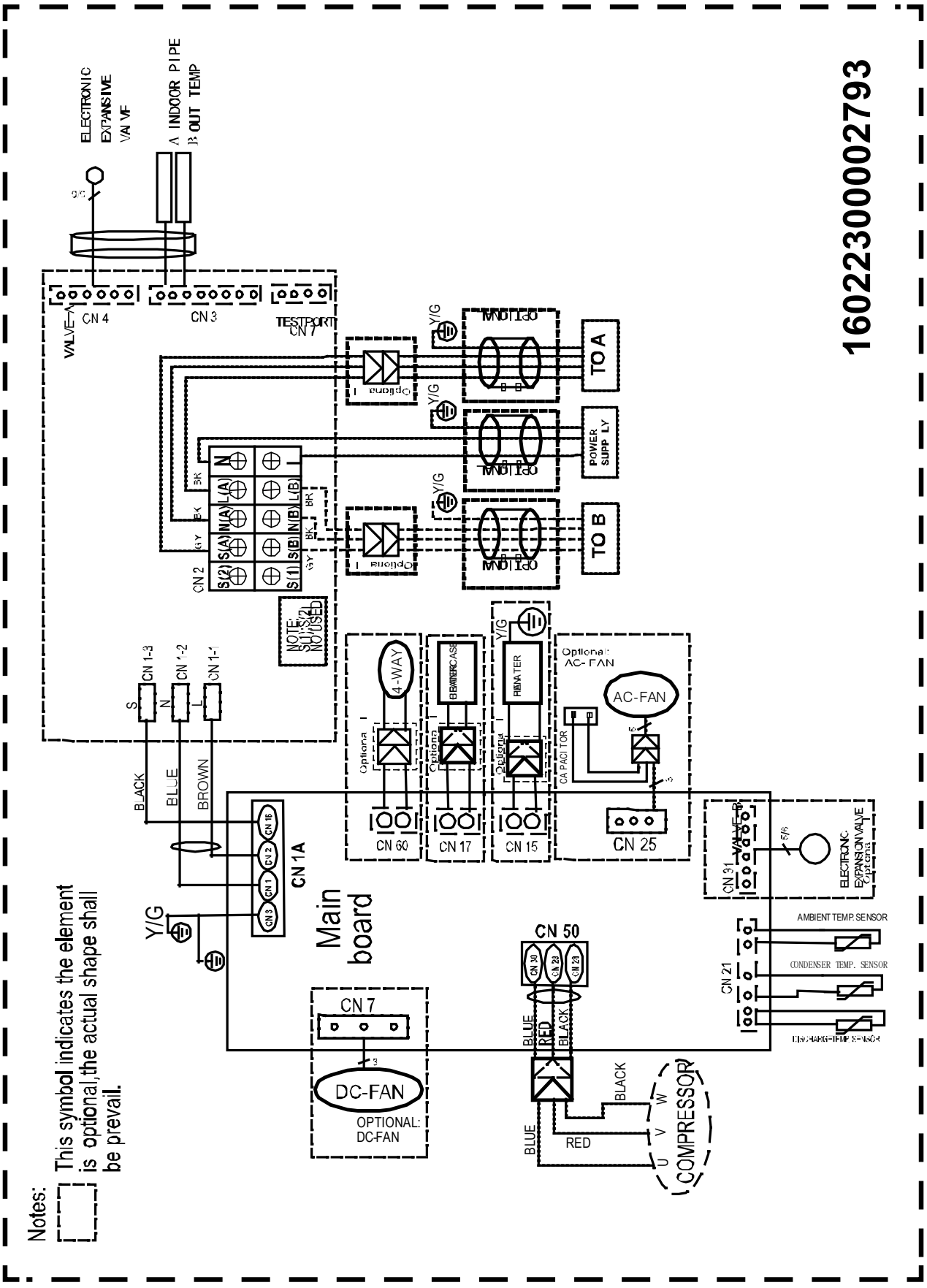
Specifications

Cool easy:7/9/12/18/24K

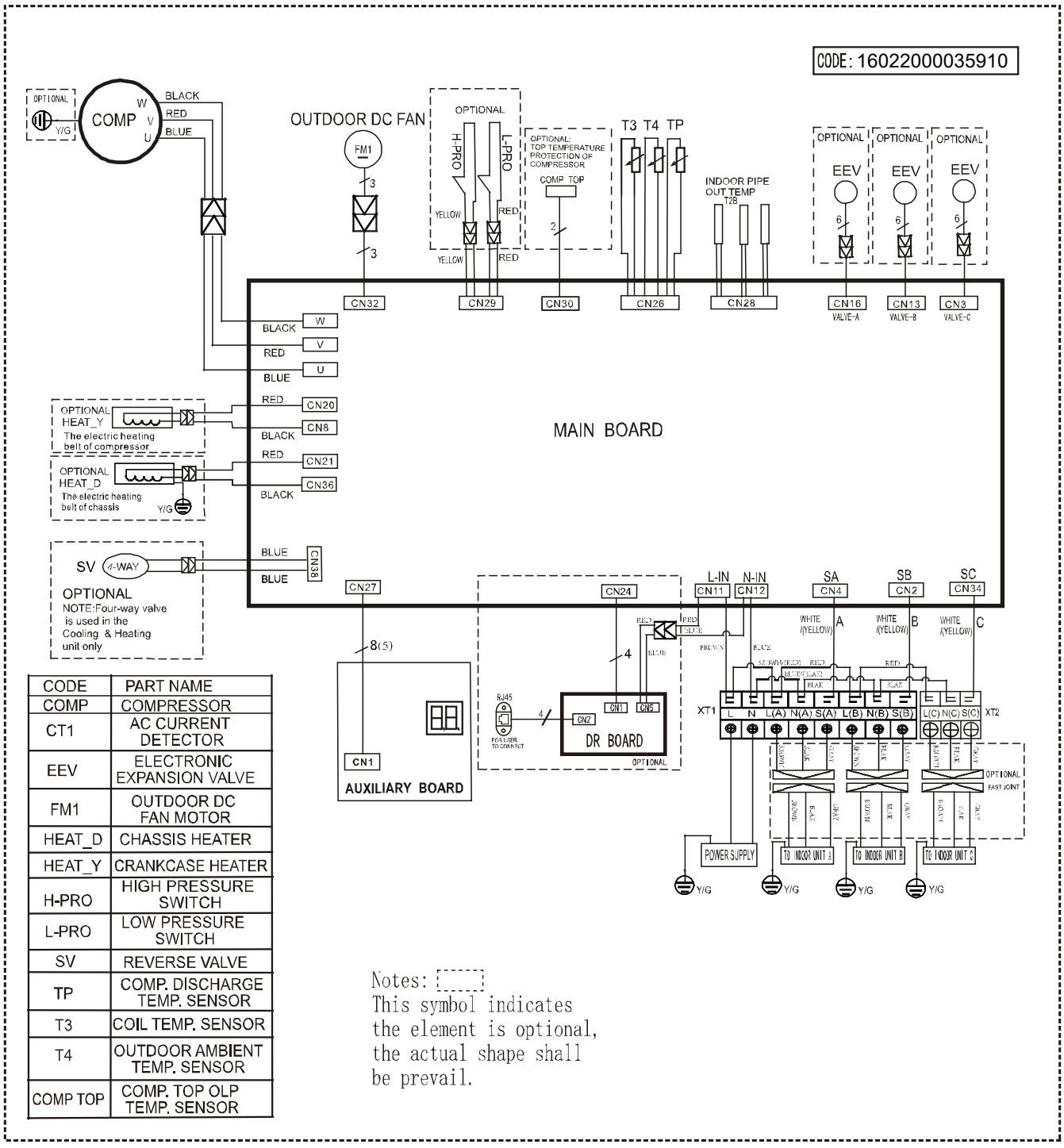


8.2 Outdoor Unit

14k/18k



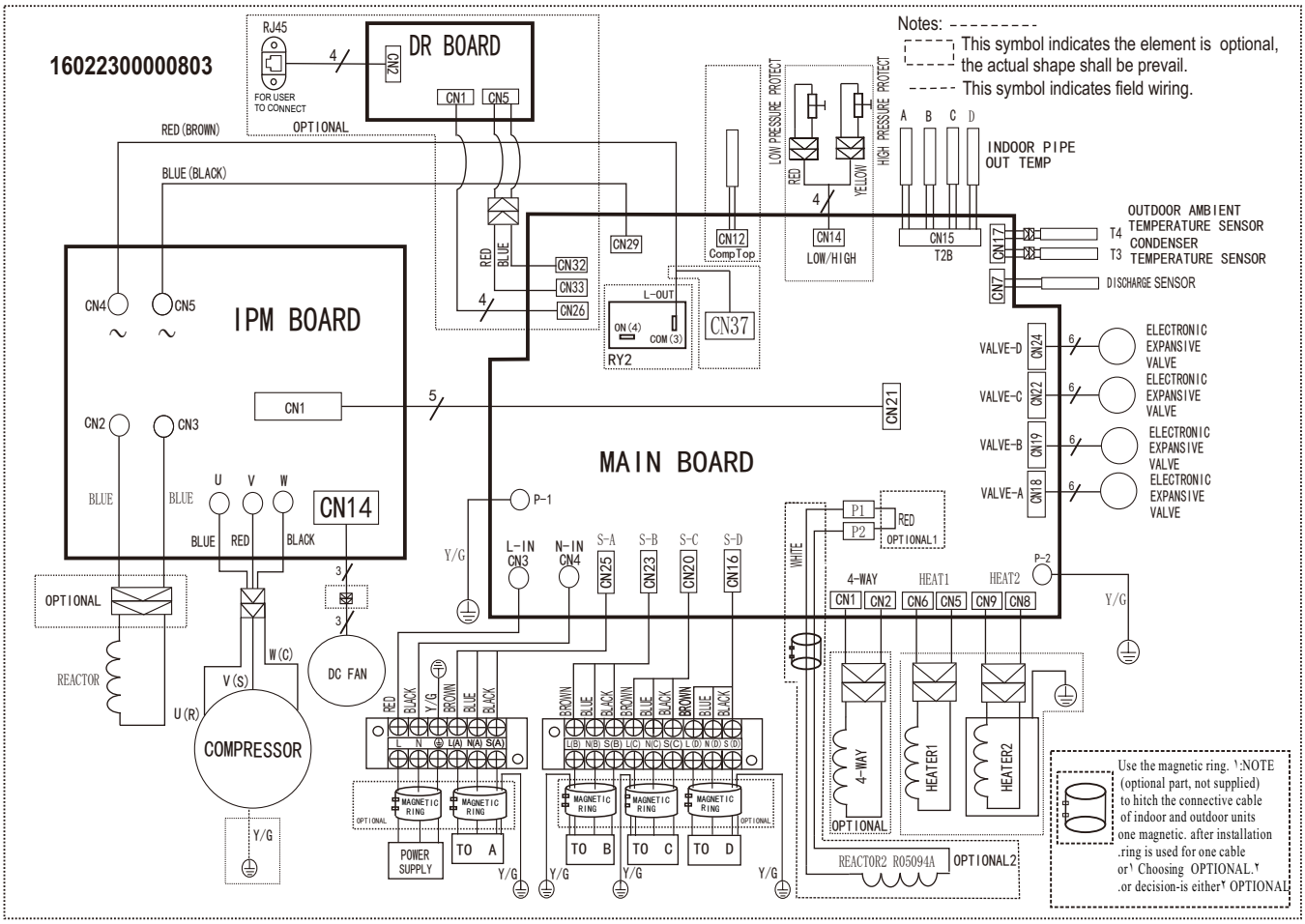
21k,27k



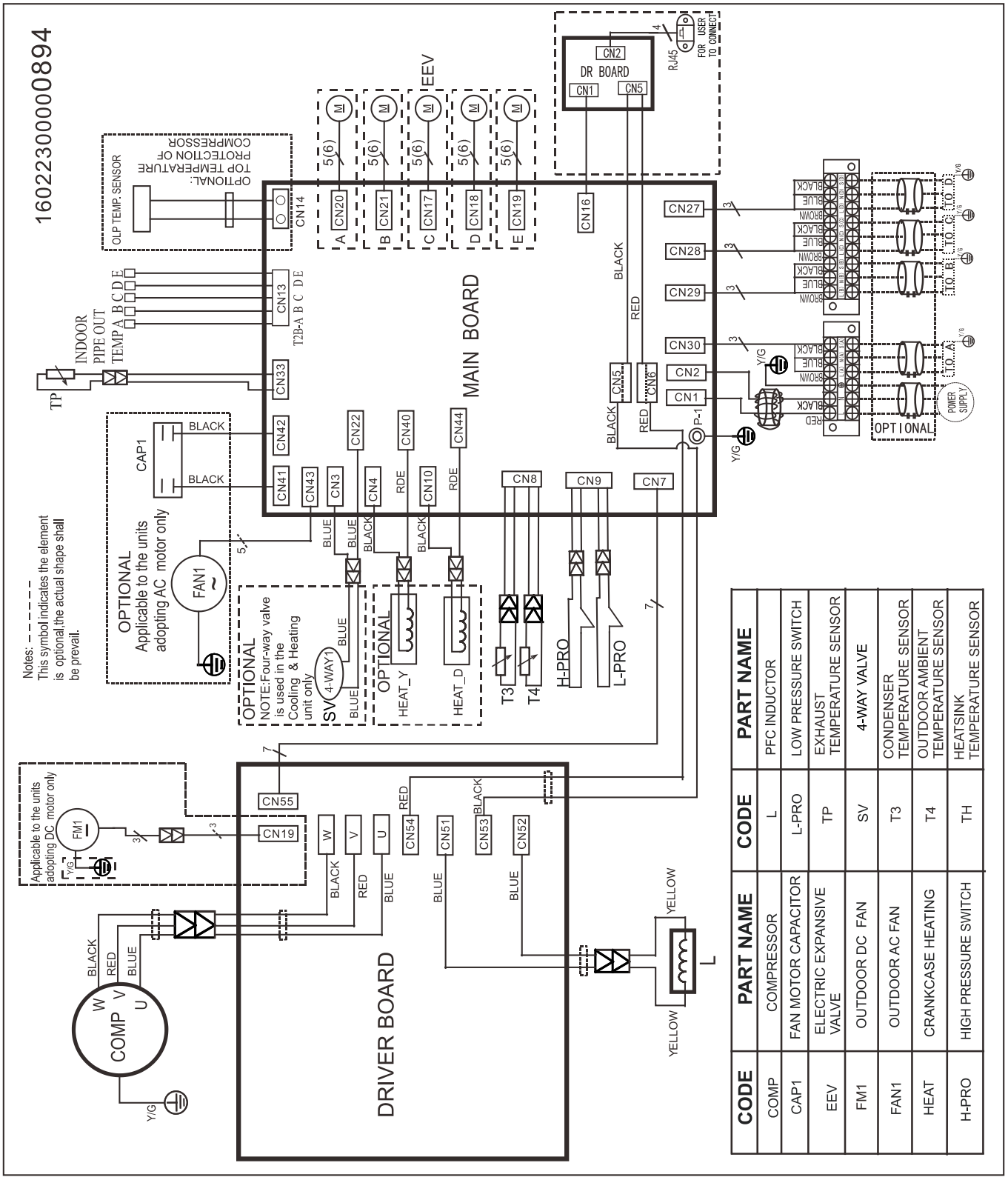
CODE	PART NAME
COMP	COMPRESSOR
CT1	AC CURRENT DETECTOR
EEV	ELECTRONIC EXPANSION VALVE
FM1	OUTDOOR DC FAN MOTOR
HEAT_D	CHASSIS HEATER
HEAT_Y	CRANKCASE HEATER
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	REVERSE VALVE
TP	COMP. DISCHARGE TEMP. SENSOR
T3	COIL TEMP. SENSOR
T4	OUTDOOR AMBIENT TEMP. SENSOR
COMP TOP	COMP. TOP OLP TEMP. SENSOR

Notes: [ ]
This symbol indicates the element is optional, the actual shape shall be prevail.

28K

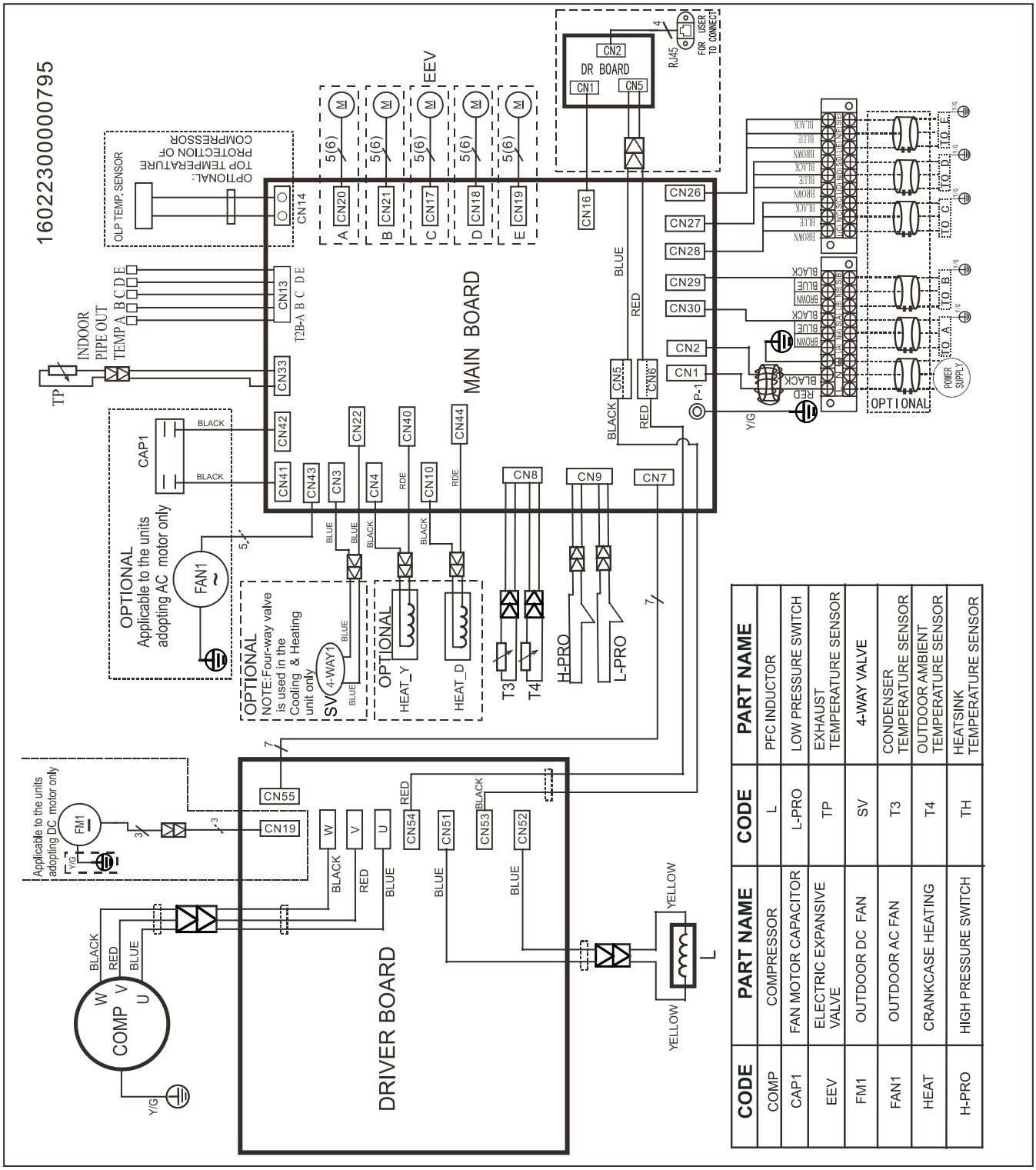

16022300000803
RJ45
FOR USER TO CONNECT
OPTIONAL
DR BOARD
CN2
CN1
CN5
RED (BROWN)
BLUE (BLACK)
IPM BOARD
CN4
CN5
CN2
CN3
CN1
CN14
MAIN BOARD
CN21
CN29
CN32
CN33
CN26
CN12
CompTop
CN37
L-OUT
ON (4)
COM (3)
RY2
LOW PRESSURE PROTECT
HIGH PRESSURE PROTECT
RED
YELLOW
CN14
LOW/HIGH
A B C D
INDOOR PIPE
OUT TEMP
CN15
T2B
CN17
T4 OUTDOOR AMBIENT TEMPERATURE SENSOR
T3 CONDENSER TEMPERATURE SENSOR
CN7
DISCHARGE SENSOR
VALVE-D
VALVE-C
VALVE-B
VALVE-A
CN24
CN22
CN19
CN18
ELECTRONIC EXPANSIVE VALVE
P-1
P1
P2
RED
OPTIONAL1
P-2
L-IN CN3
N-IN CN4
S-A
S-B
S-C
S-D
CN25
CN23
CN20
CN16
WHITE
4-WAY
HEAT1
HEAT2
CN1
CN2
CN6
CN5
CN9
CN8
Y/G
BLUE
RED
BLACK
U
V
W
OPTIONAL
REACTOR
W(C)
V(S)
U(R)
COMPRESSOR
DC FAN
BROWN
MAGNETIC RING
POWER SUPPLY
TO A
TO B
TO C
TO D
REACTOR2 R05094A
OPTIONAL2
HEATER1
HEATER2
Notes:
This symbol indicates the element is optional, the actual shape shall be prevail.
This symbol indicates field wiring.
Use the magnetic ring. 'NOTE (optional part, not supplied) to hitch the connective cable of indoor and outdoor units one magnetic. after installation .ring is used for one cable or' Choosing OPTIONAL.' .or decision-is either' OPTIONAL

36k



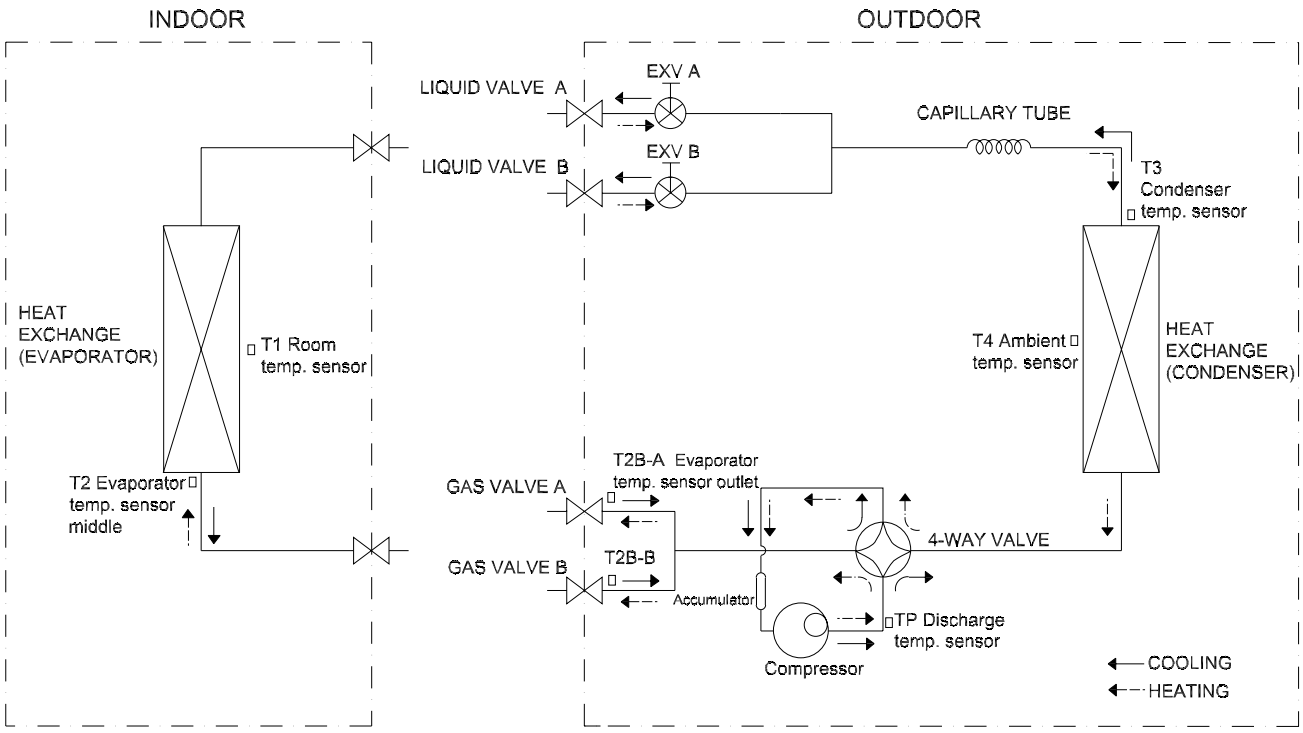
CODE	PART NAME	CODE	PART NAME
COMP	COMPRESSOR	L	PFC INDUCTOR
CAP1	FAN MOTOR CAPACITOR	L-PRO	LOW PRESSURE SWITCH
EEV	ELECTRIC EXPANSIVE VALVE	TP	EXHAUST TEMPERATURE SENSOR
FM1	OUTDOOR DC FAN	SV	4-WAY VALVE
FAN1	OUTDOOR AC FAN	T3	CONDENSER TEMPERATURE SENSOR
HEAT	CRANKCASE HEATING	T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
H-PRO	HIGH PRESSURE SWITCH	TH	HEATSINK TEMPERATURE SENSOR

42k

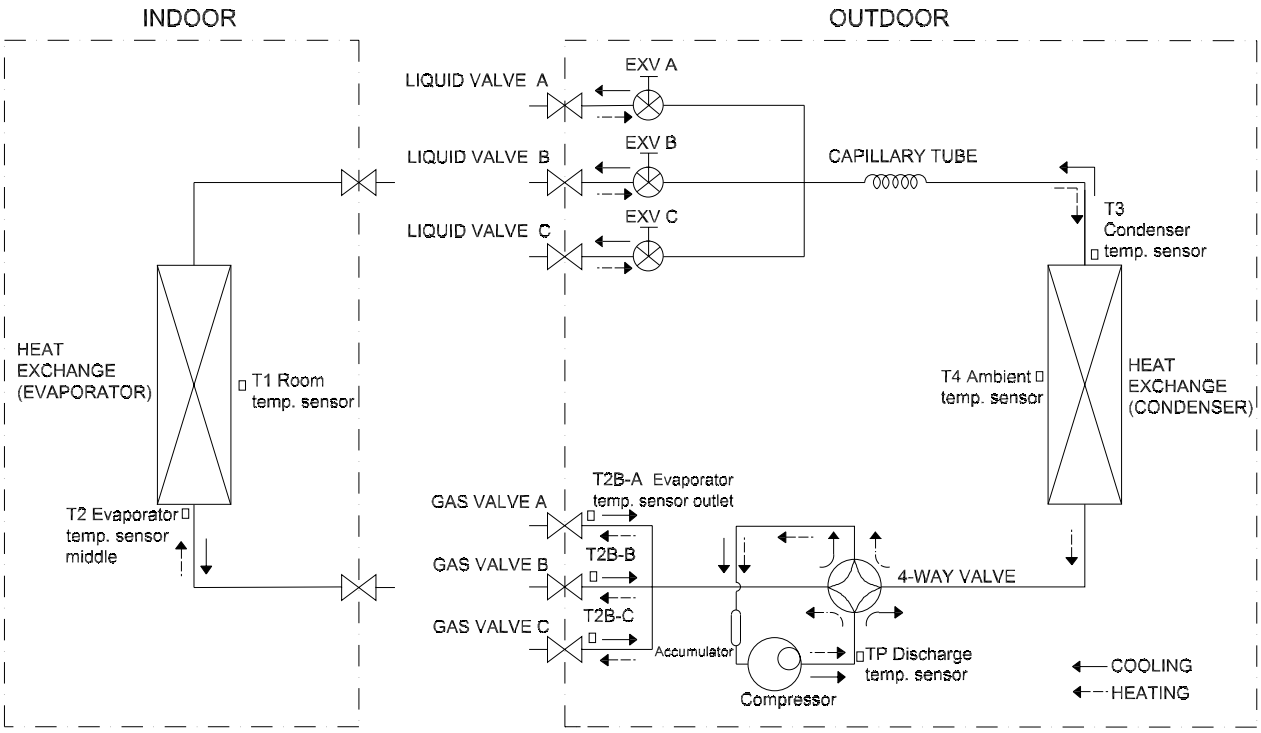


CODE	PART NAME	CODE	PART NAME
COMP	COMPRESSOR	L	PFC INDUCTOR
CAP1	FAN MOTOR CAPACITOR	L-PRO	LOW PRESSURE SWITCH
EEV	ELECTRIC EXPANSIVE VALVE	TP	EXHAUST TEMPERATURE SENSOR
FM1	OUTDOOR DC FAN	SV	4-WAY VALVE
FAN1	OUTDOOR AC FAN	T3	CONDENSER TEMPERATURE SENSOR
HEAT	CRANKCASE HEATING	T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
H-PRO	HIGH PRESSURE SWITCH	TH	HEATSINK TEMPERATURE SENSOR

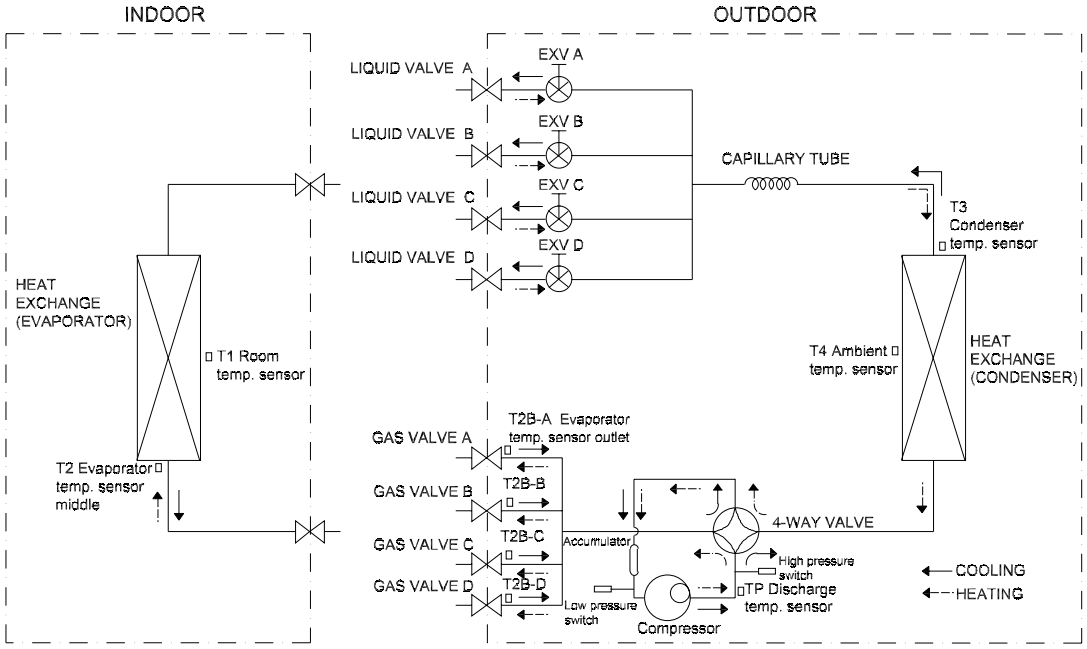
8. Refrigerant Cycle Diagrams



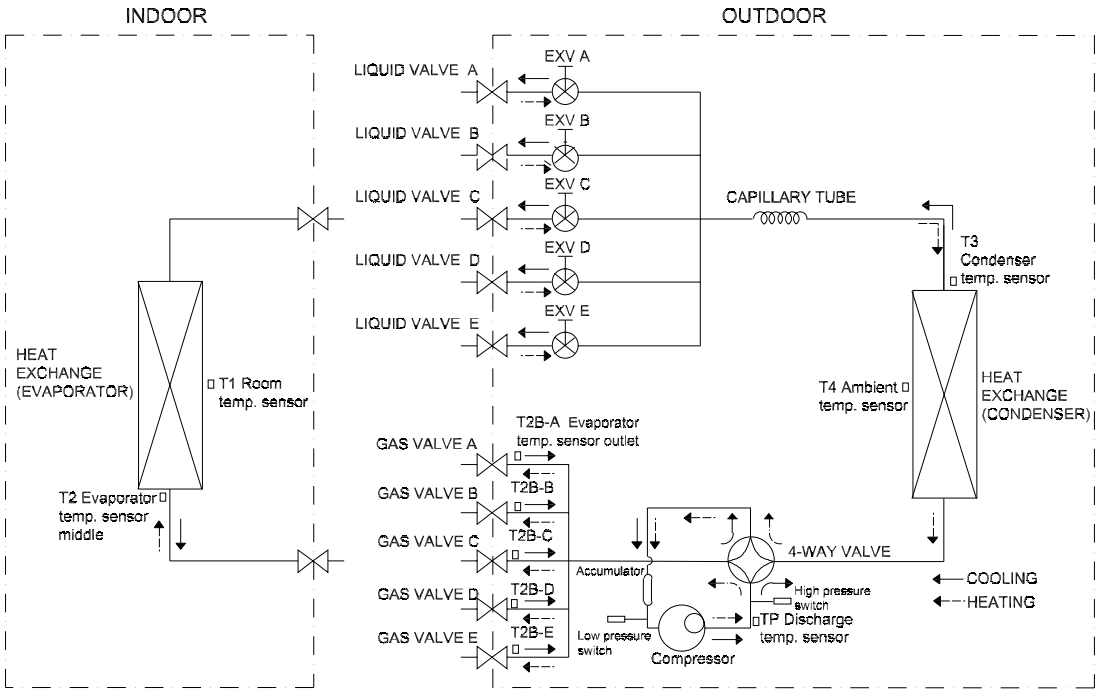
Model	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
14K	2x9.52	2x6.35	15	25	40	15	10	12g/m
18K								



Model	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
21K/27K	3x9.52	3x6.35	22.5	30	60	15	10	12g/m



Model	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
28K	3x9.52+1x12.7	4x6.35	30	35	80	15	10	12g/m
36K	3x9.52+1x12.7	4x6.35	30	35	80	15	10	12g/m

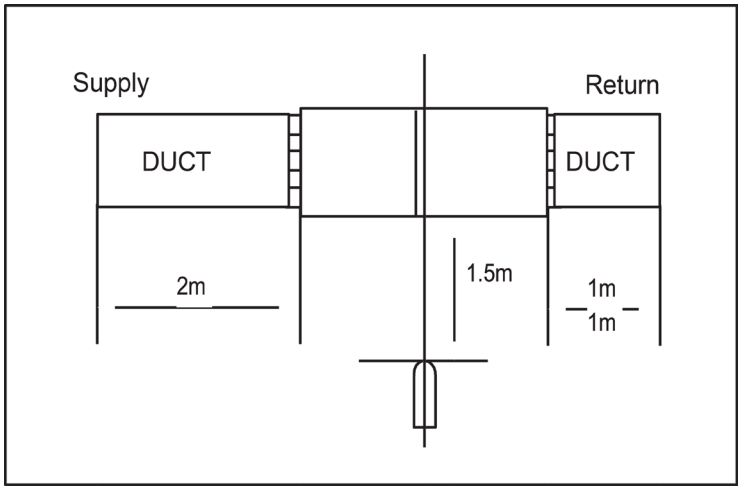


Model	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
42K	4x9.52+1x12.7	5x6.35	37.5	35	80	15	10	12g/m

9. Noise Criterion Curves

10.1 Indoor Unit

A6 Duct type



Notes:

-Sound measured at 1.5m away from the center of the unit.

-Data is valid at free field condition

-Data is valid at nominal operation condition

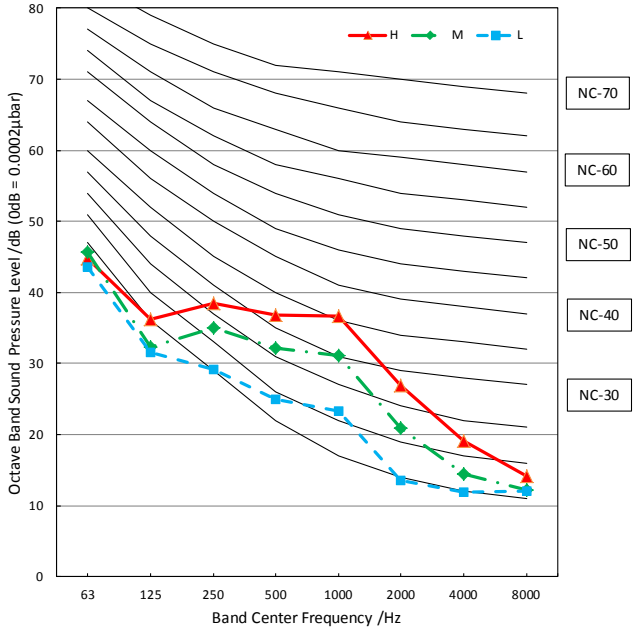
-Reference acoustic pressure OdB = 20μPa

-Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room in which the equipment is installed.

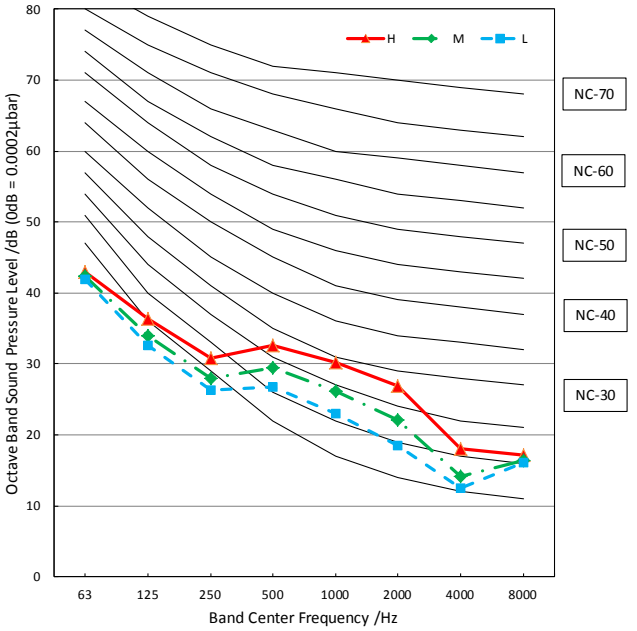
-The operating conditions are assumed to be standard.

7k

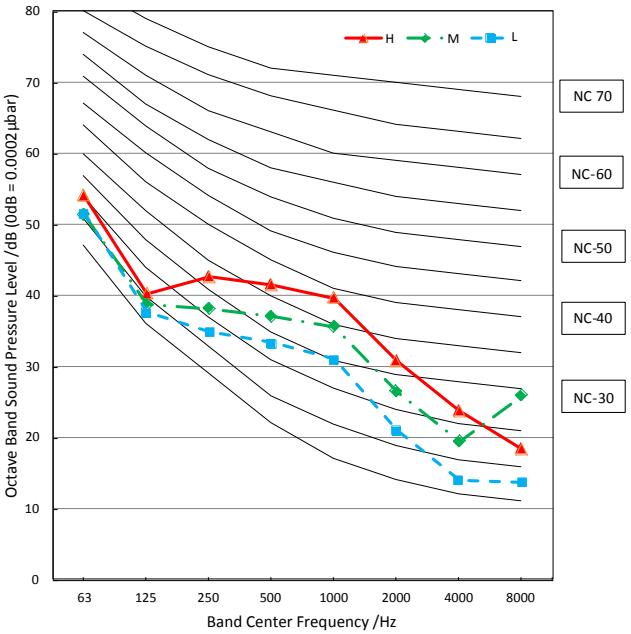
9k



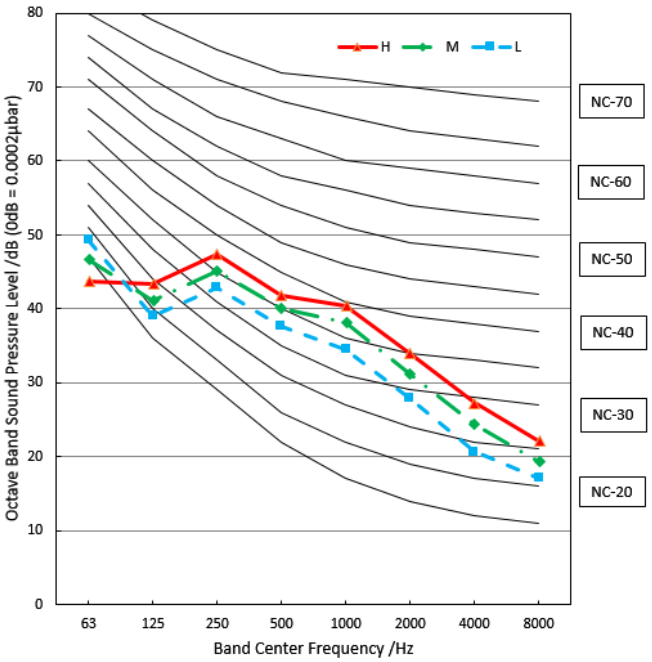
12k



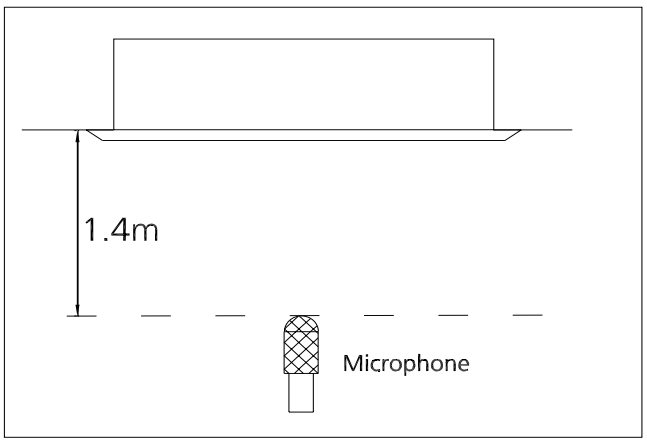
18k



24k



Cassette type



Notes:

-Sound measured at 1.4m away from the noisiest location of the unit.

-Data is valid at free field condition

-Data is valid at nominal operation condition

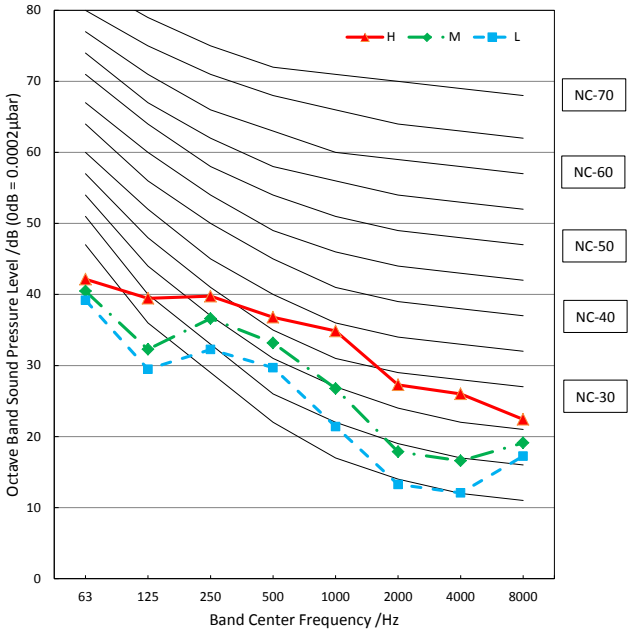
-Reference acoustic pressure OdB = 20μPa

-Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room in which the equipment is installed.

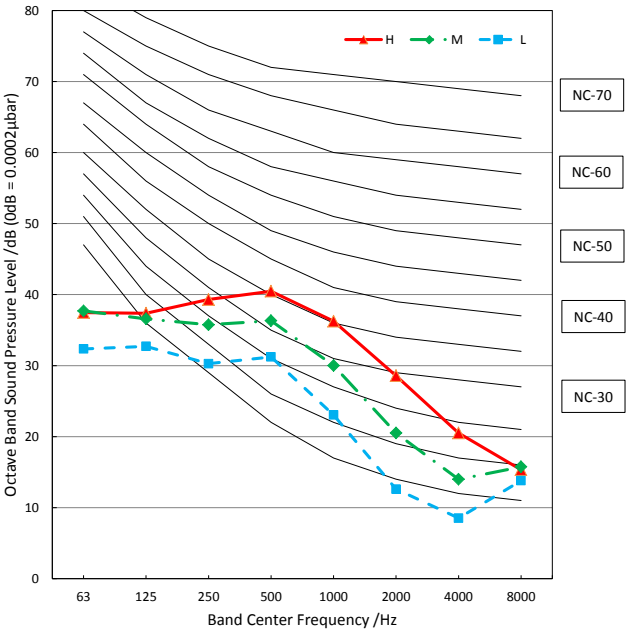
-The operating conditions are assumed to be standard.

7k

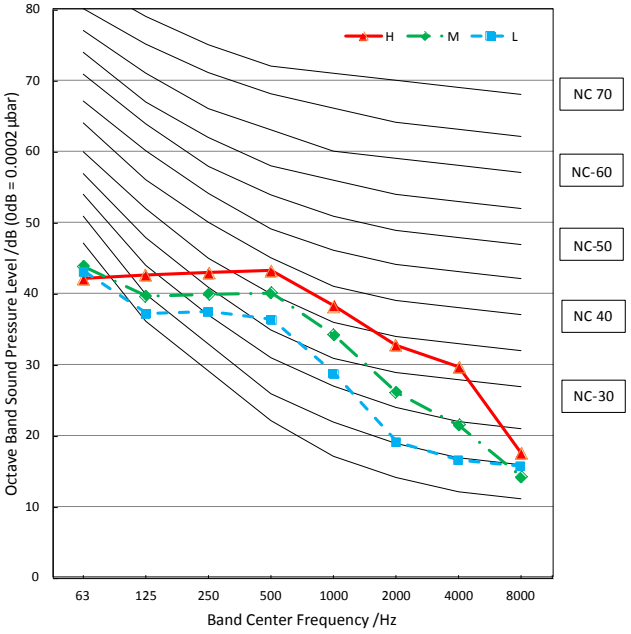
9k



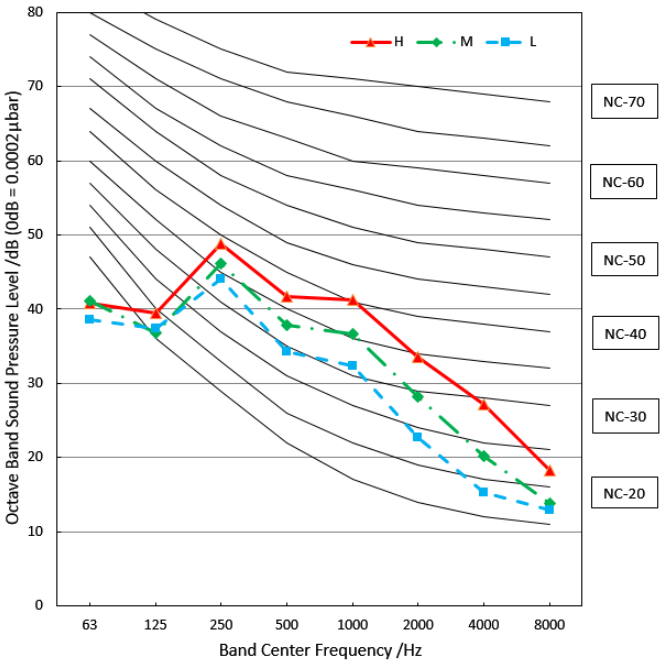
12k



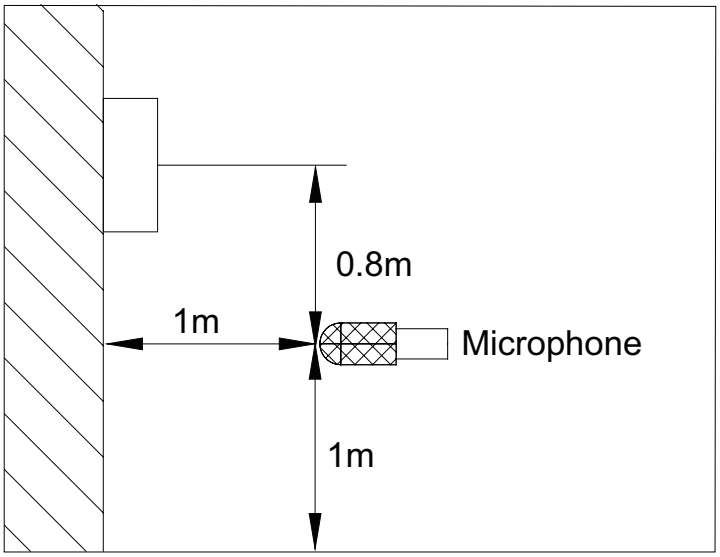
18k



24k



Wall mounted type



Notes:

-Sound measured at 1.0m away from the center of the unit.

-Data is valid at free field condition

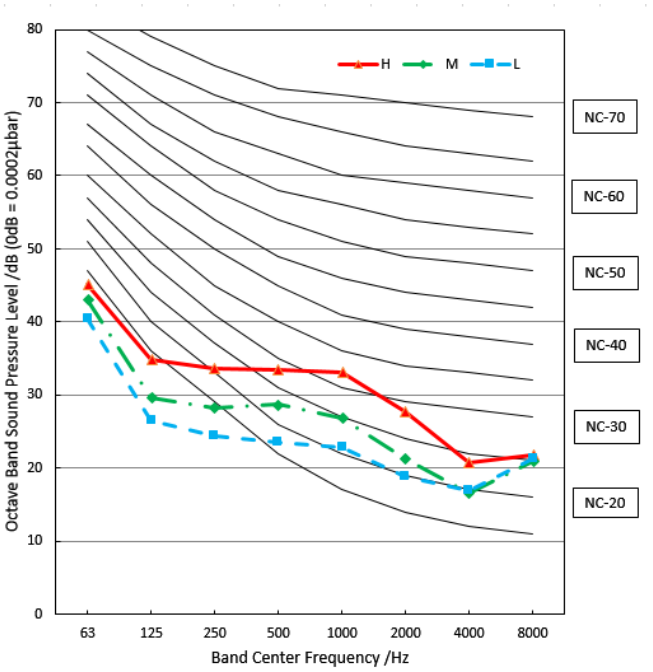
-Data is valid at nominal operation condition

-Reference acoustic pressure OdB = 20μPa

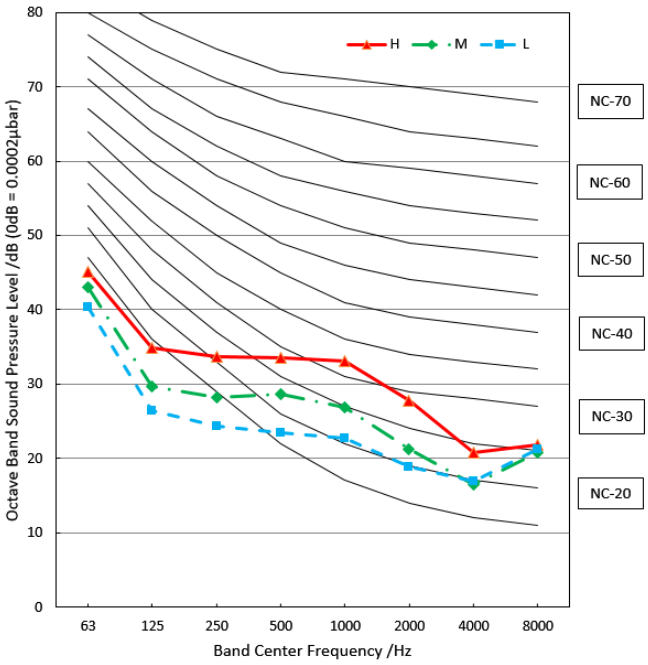
-Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room in which the equipment is installed.

-The operating conditions are assumed to be standard.

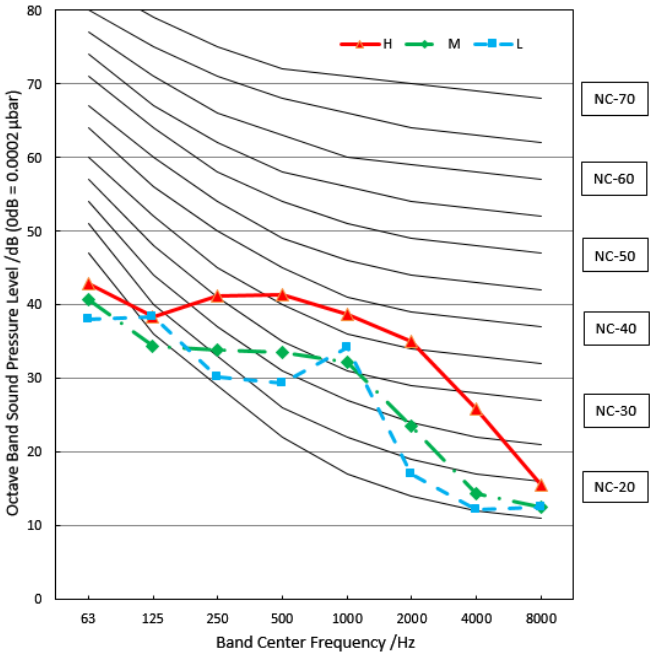
18C
7k/9k



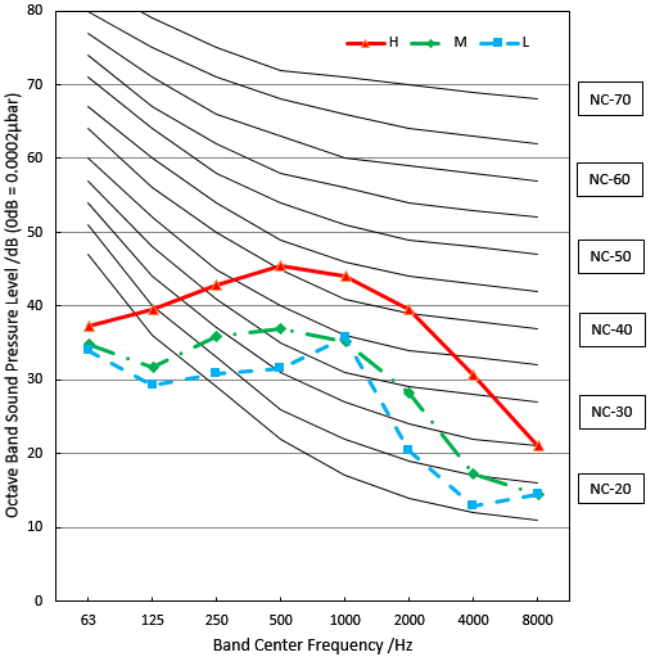
12K



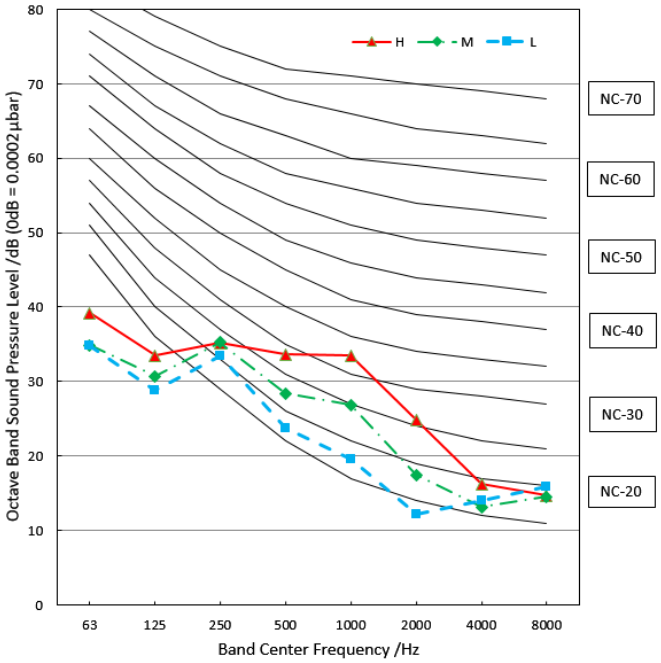
18K



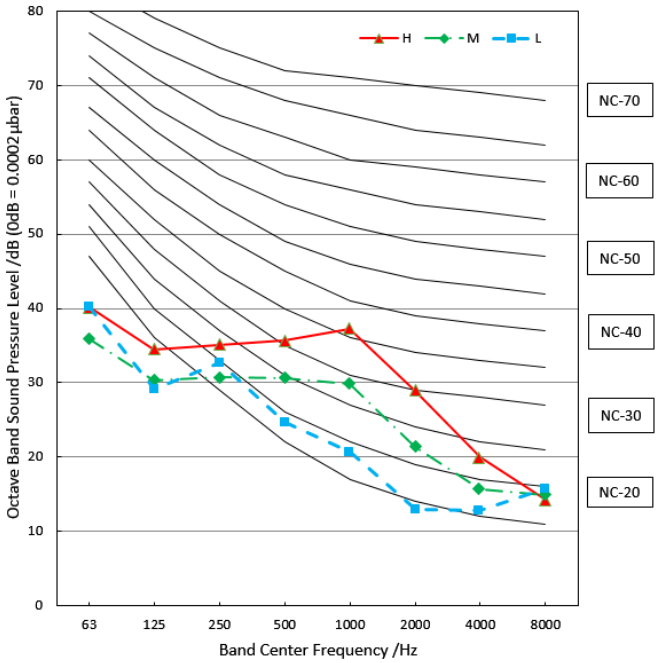
24K



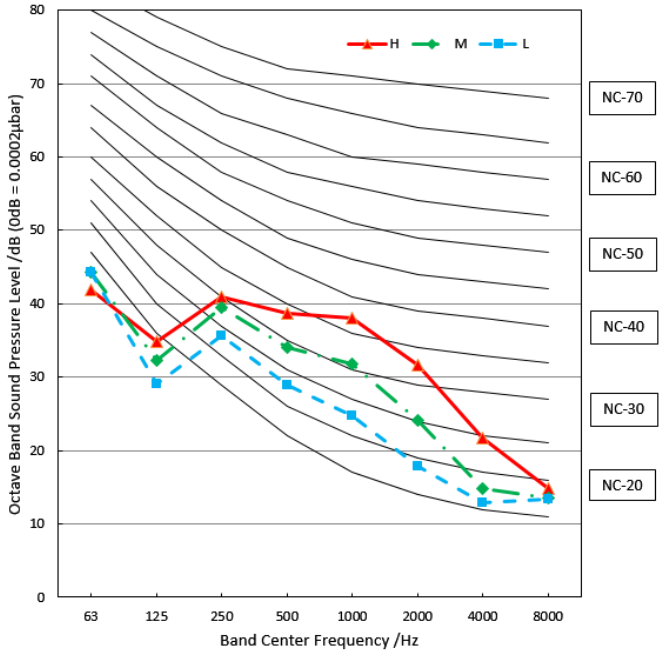
Cool easy
7k/9k



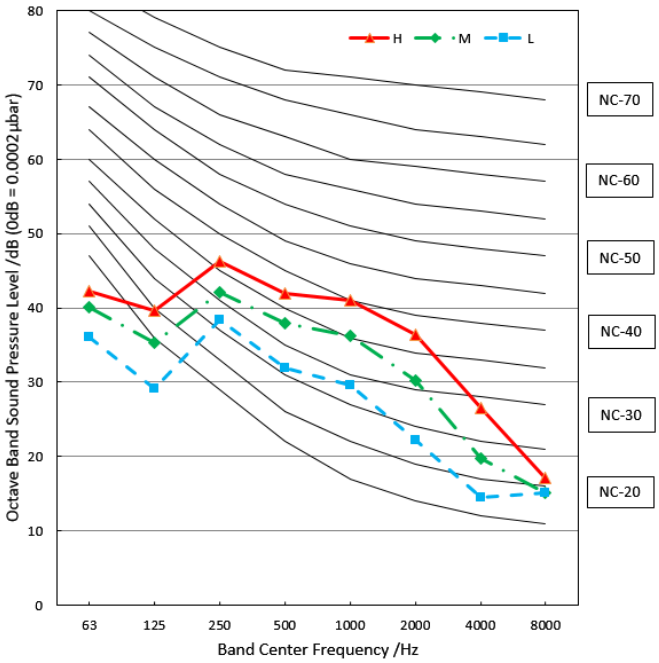
12K



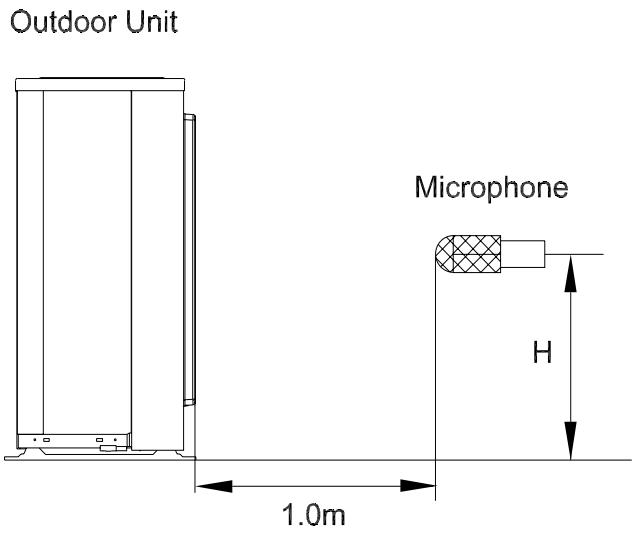
18K



24K



9.2 Outdoor Unit



Note: H= 0.5 × height of outdoor unit

Notes:

-Sound measured at 1.0m away from the center of the unit.

-Data is valid at free field condition

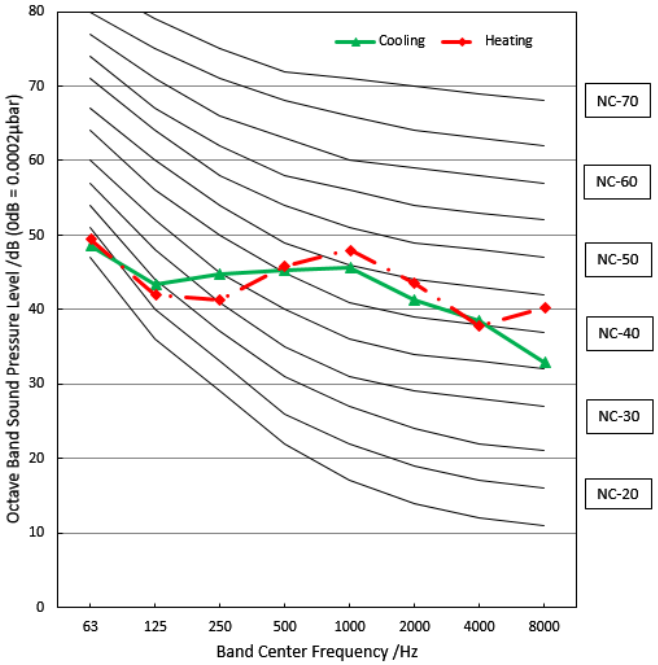
-Data is valid at nominal operation condition

-Reference acoustic pressure OdB=20μPa

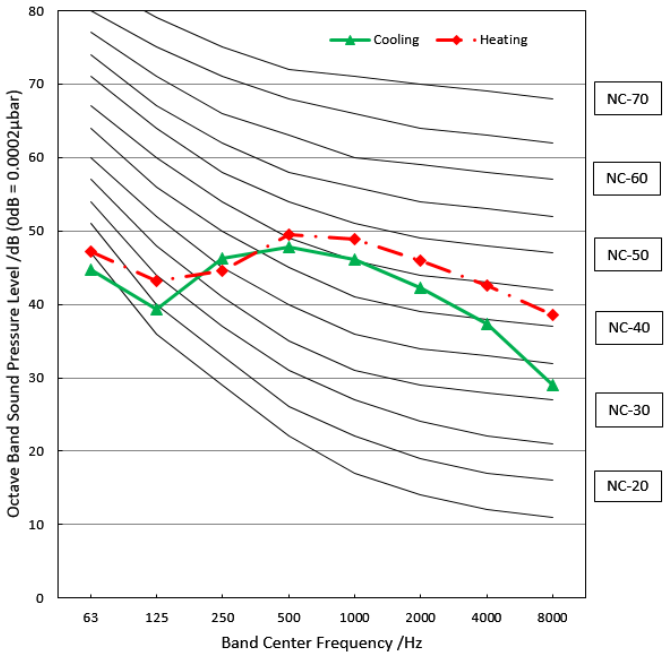
-Sound level will vary depending on arrange off actors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.

-The operating conditions are assumed to be standard.

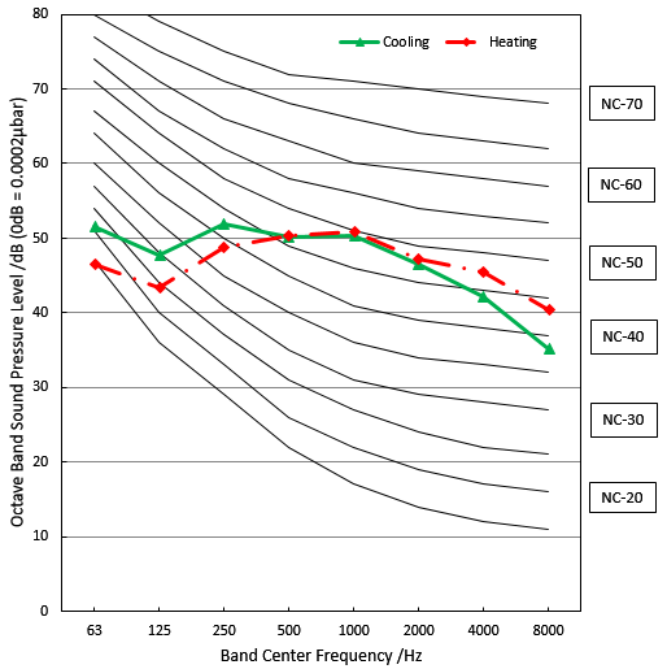
14K



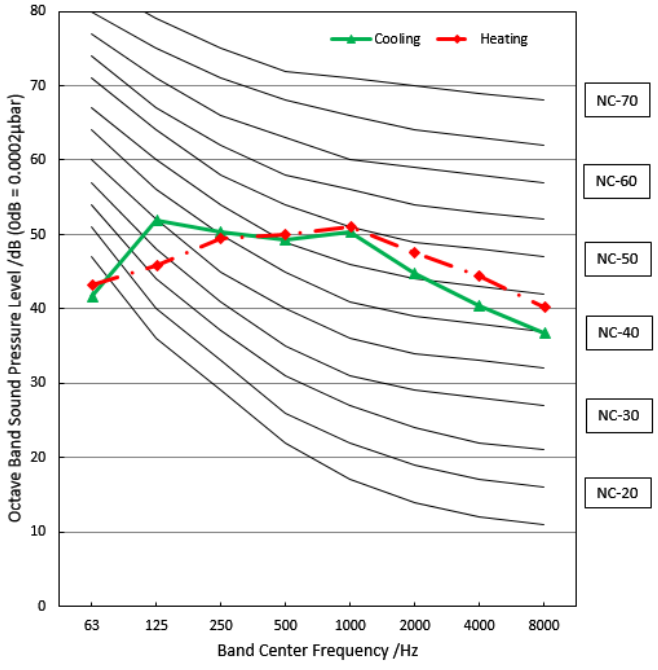
18K



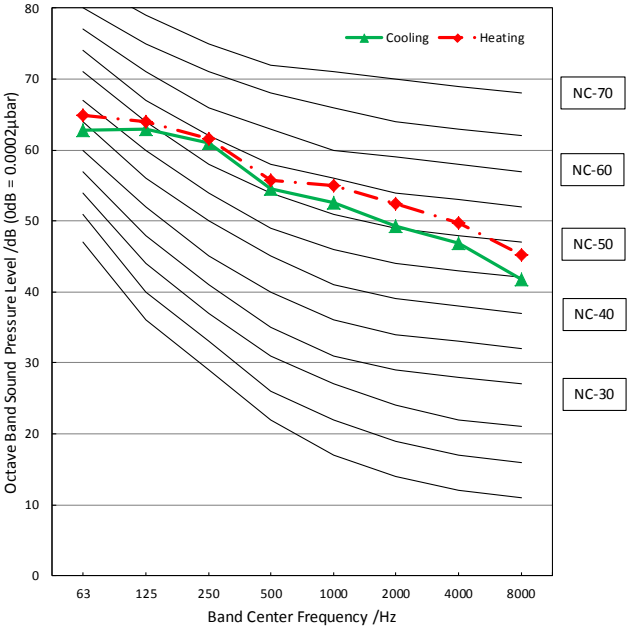
21K



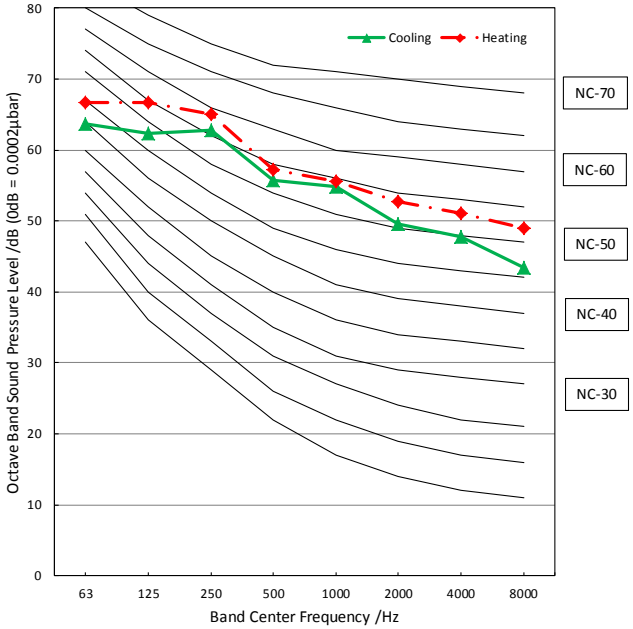
27K



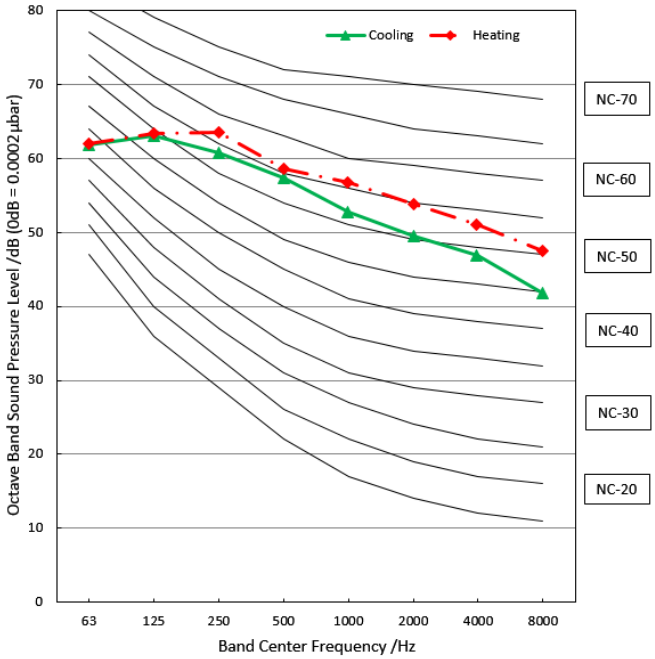
28K


Cooling
Heating
NC-70
NC-60
NC-50
NC-40
NC-30
Octave Band Sound Pressure Level /dB (0dB = 0.0002μbar)
Band Center Frequency /Hz
0
10
20
30
40
50
60
70
80
63
125
250
500
1000
2000
4000
8000

36K


Cooling
Heating
NC-70
NC-60
NC-50
NC-40
NC-30
Octave Band Sound Pressure Level /dB (0dB = 0.0002μbar)
Band Center Frequency /Hz
0
10
20
30
40
50
60
70
80
63
125
250
500
1000
2000
4000
8000

42K


Cooling
Heating
NC-70
NC-60
NC-50
NC-40
NC-30
NC-20
Octave Band Sound Pressure Level /dB (0dB = 0.0002 μbar)
Band Center Frequency /Hz
0
10
20
30
40
50
60
70
80
63
125
250
500
1000
2000
4000
8000

10. Electrical Characteristics

Model	Indoor Unit			IFM	
	Phase	Hz	Voltage	kW	FLA
7K/9K/12K DUCT	1	50	220-240	0.055	1.11
18K DUCT				0.16	1.65
24K DUCT				0.16	1.65
7K/9K CASSETTE				0.045	0.4
12K/18K CASSETTE				0.145	0.47
24K CASSETTE				0.12	0.39
18K/24K FLOOR CEILING				0.098	0.94
7K/9K 18C				0.02	0.16
12K 18C				0.013	0.047
18K 18C				0.03	0.275
24K 18C				0.058	0.4
Cool easy 7k/9k				0.02	0.16
Cool easy 12k				0.02	0.16
Cool easy 18k				0.03	0.11
Cool easy 24k				0.058	0.206

Model	Outdoor Unit			Power Supply		Compressor		OFM		
	Phase	Hz	Voltage	MCA	MFA	MSC	RLA	Qty	kW	FLA
14K	1	50	220-240	12	20	-	7.15	1	0.034	0.89
18K				13	20	-	7.15	1	0.034	0.89
21K				17	20	-	7.15	1	0.08	0.88
27K				18	30	-	9.45	1	0.08	0.88
28K				19	30	-	9.45	1	0.12	1.21
36K				21.5	30	-	5.38	1	0.12	1.39
42K				22	30	-	5.38	1	0.12	1.39

Notes:

MCA: Minimum Circuit Amperes (A)

MFA: Maximum Fuse Amperes (A)

MSC: Maximum Starting Current

RLA: Rated Load Amperes (A)

IFM: Indoor Fan Motor

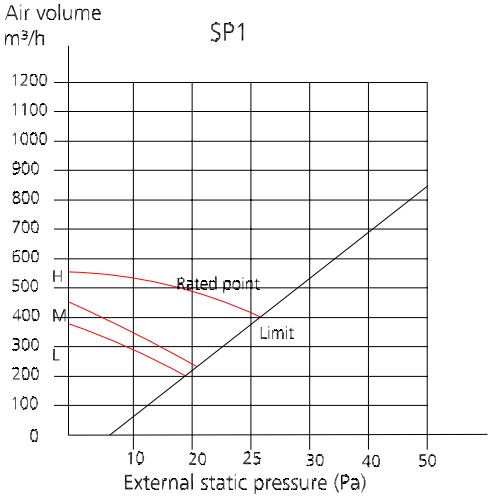
OFM: Outdoor Fan Motor

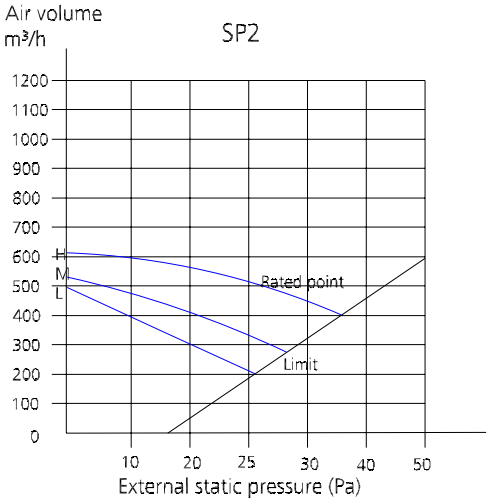
FLA: Full Load Amperes (A)

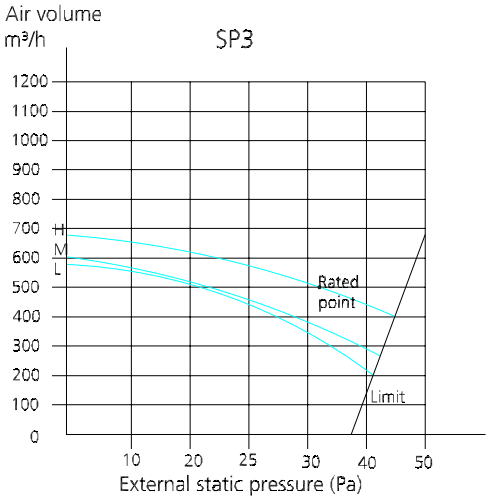
kW: Fan motor rated output(kW)

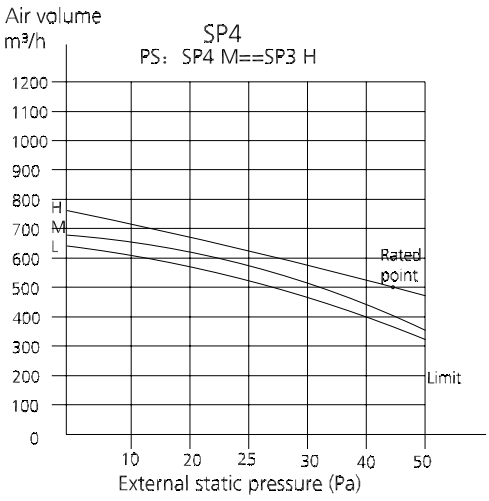
11. Static Pressure

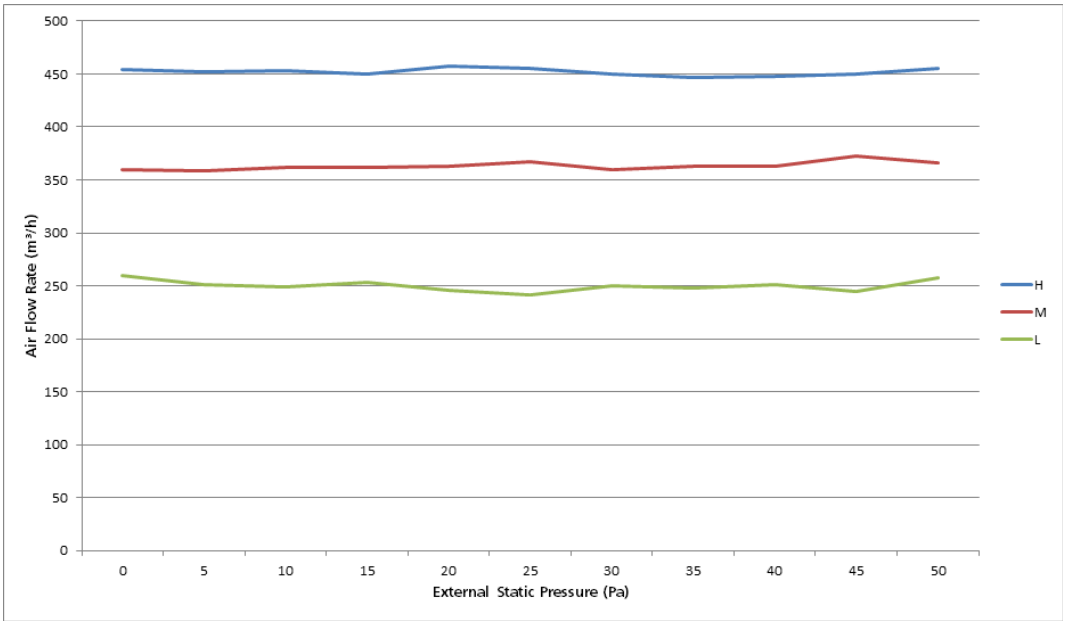
7K/9K



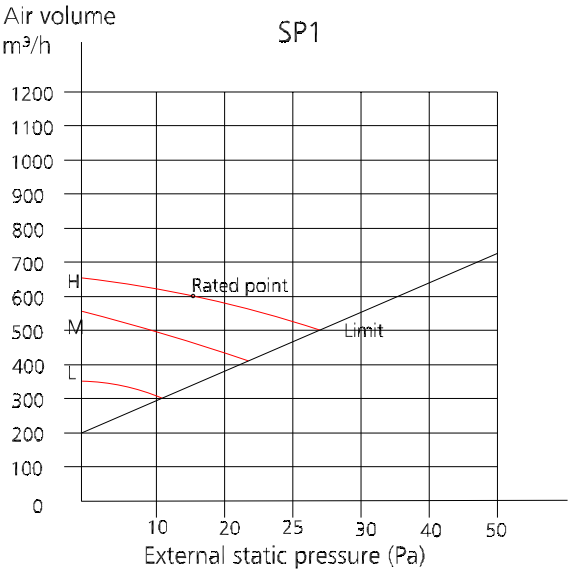


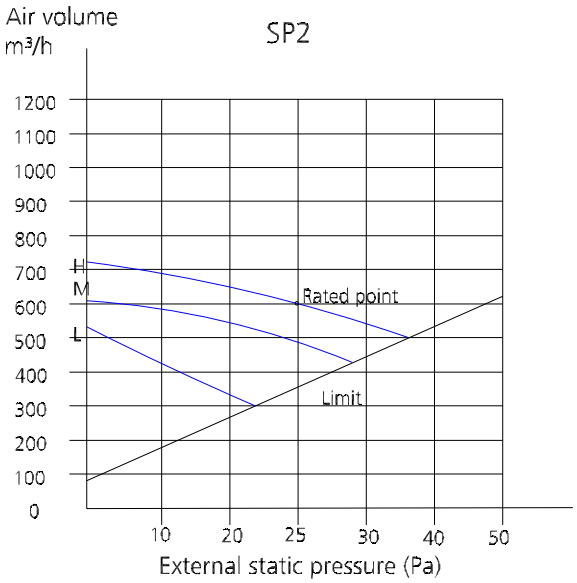


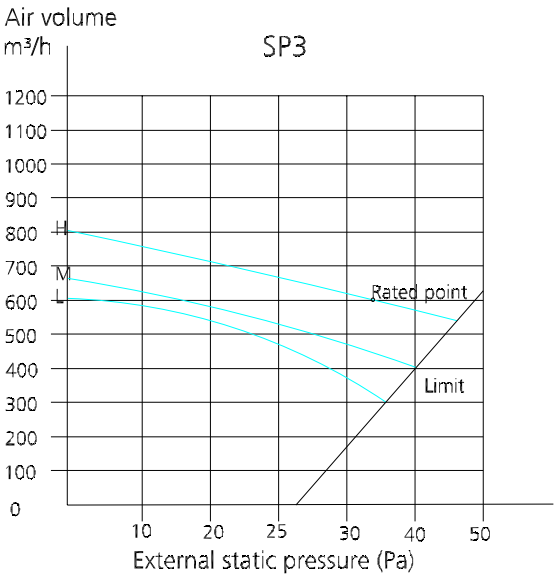


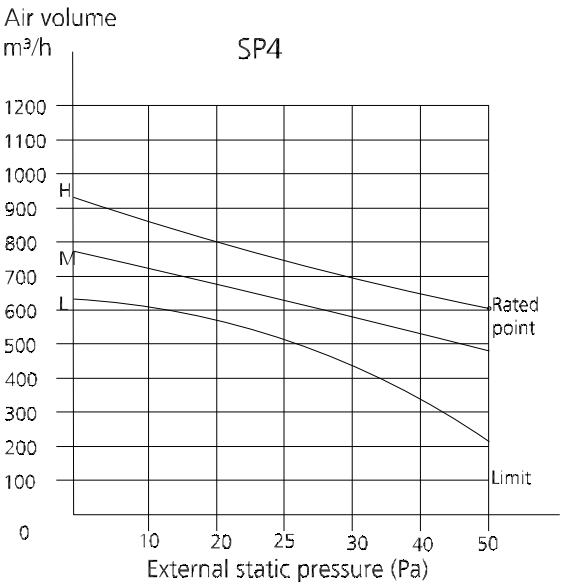


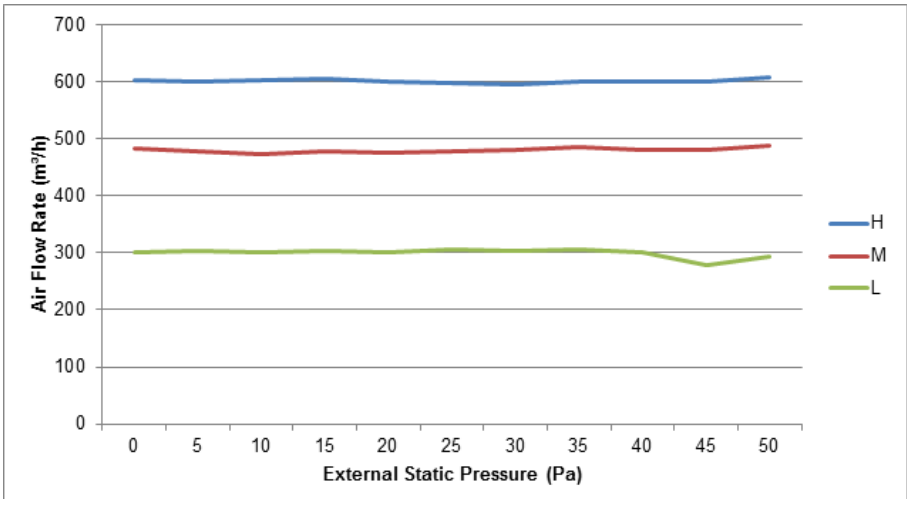
12K


Air volume
m³/h
SP1
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

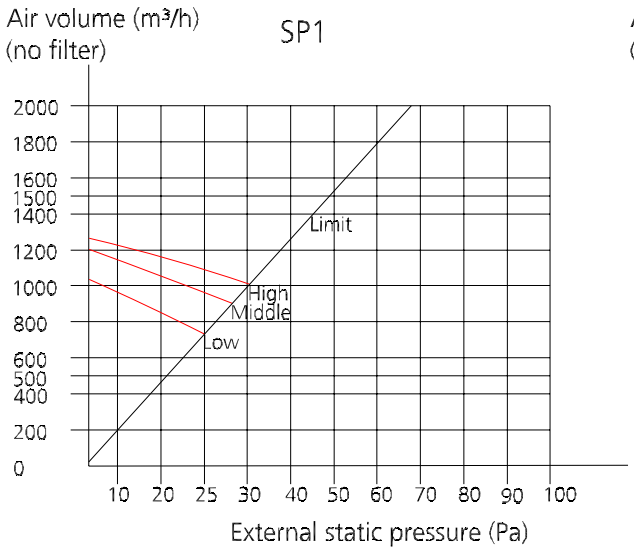

Air volume
m³/h
SP2
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

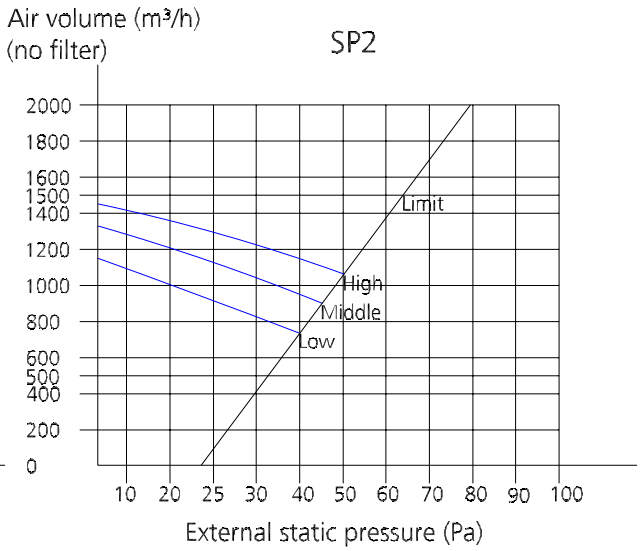

Air volume
m³/h
SP3
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

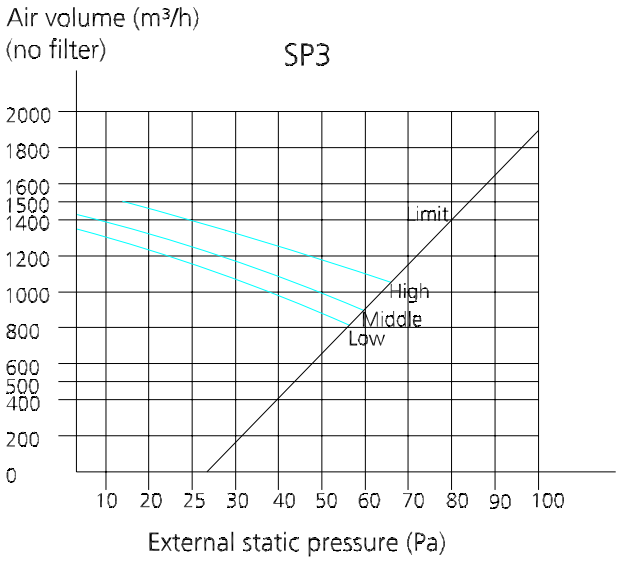

Air volume
m³/h
SP4
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

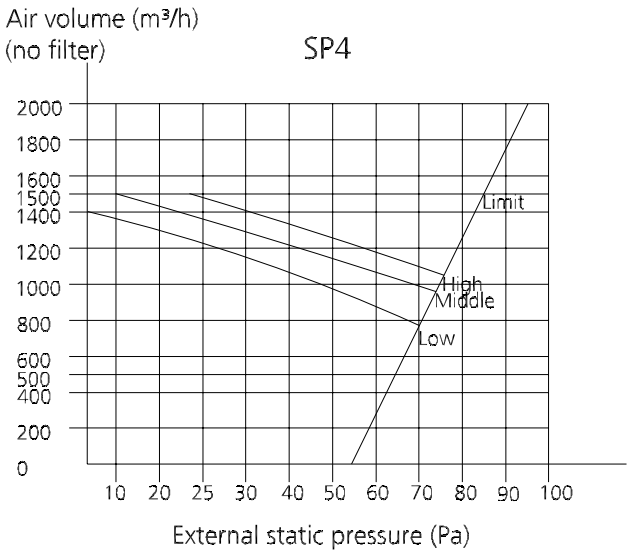

700
600
500
400
300
200
100
0
Air Flow Rate (m³/h)
0
5
10
15
20
25
30
35
40
45
50
External Static Pressure (Pa)
H
M
L

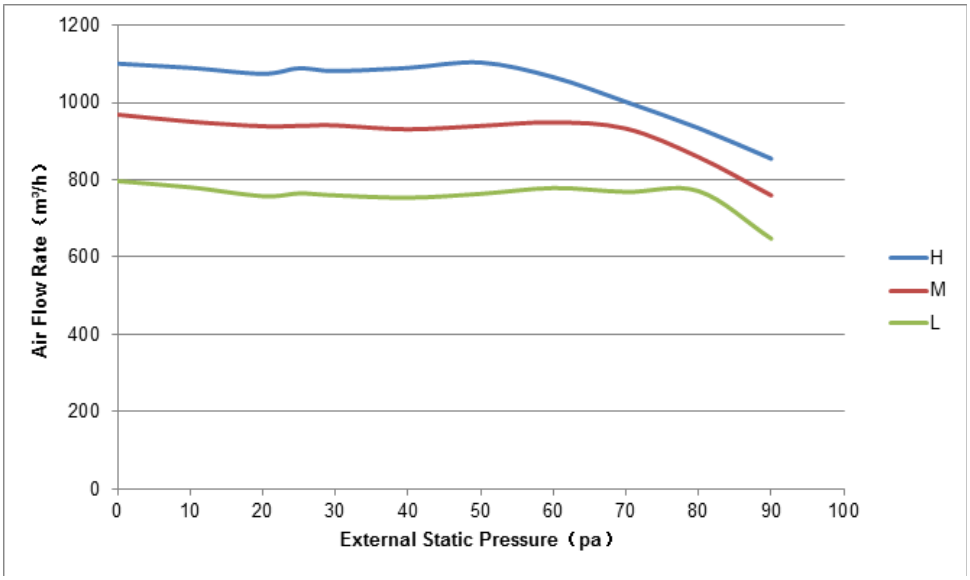
18K


Air volume (m³/h)
(no filter)
SP1
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)

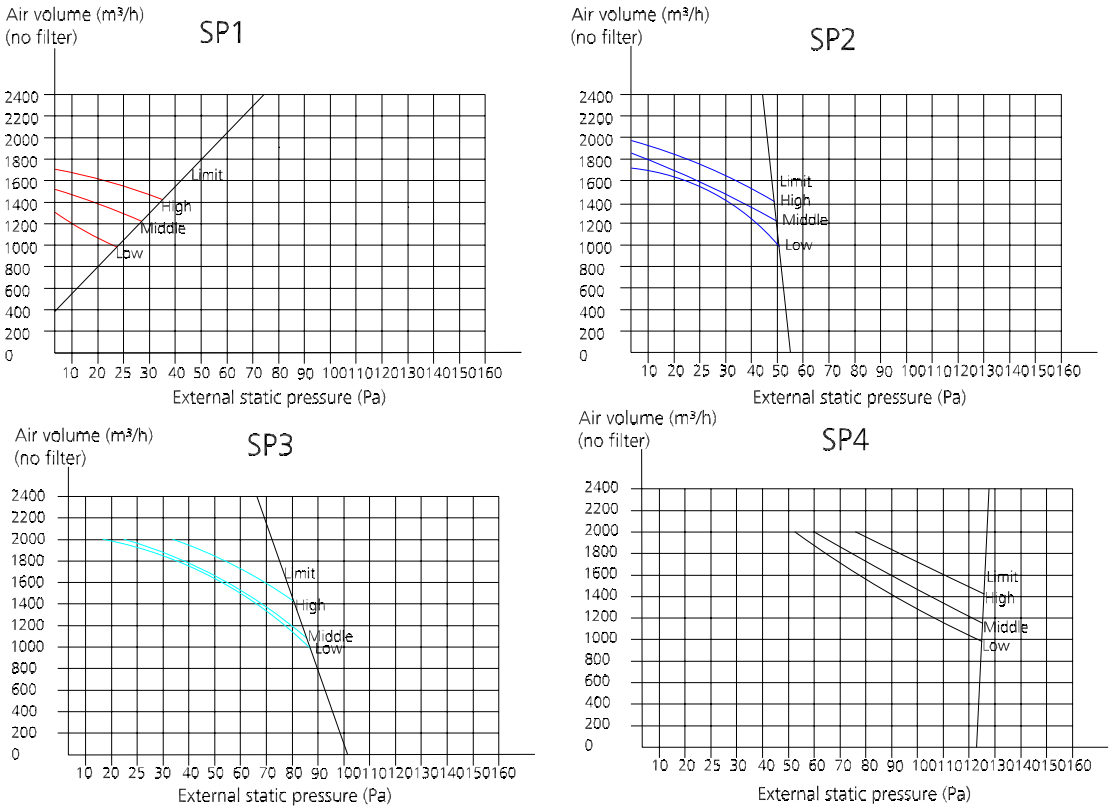

Air volume (m³/h)
(no filter)
SP2
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)

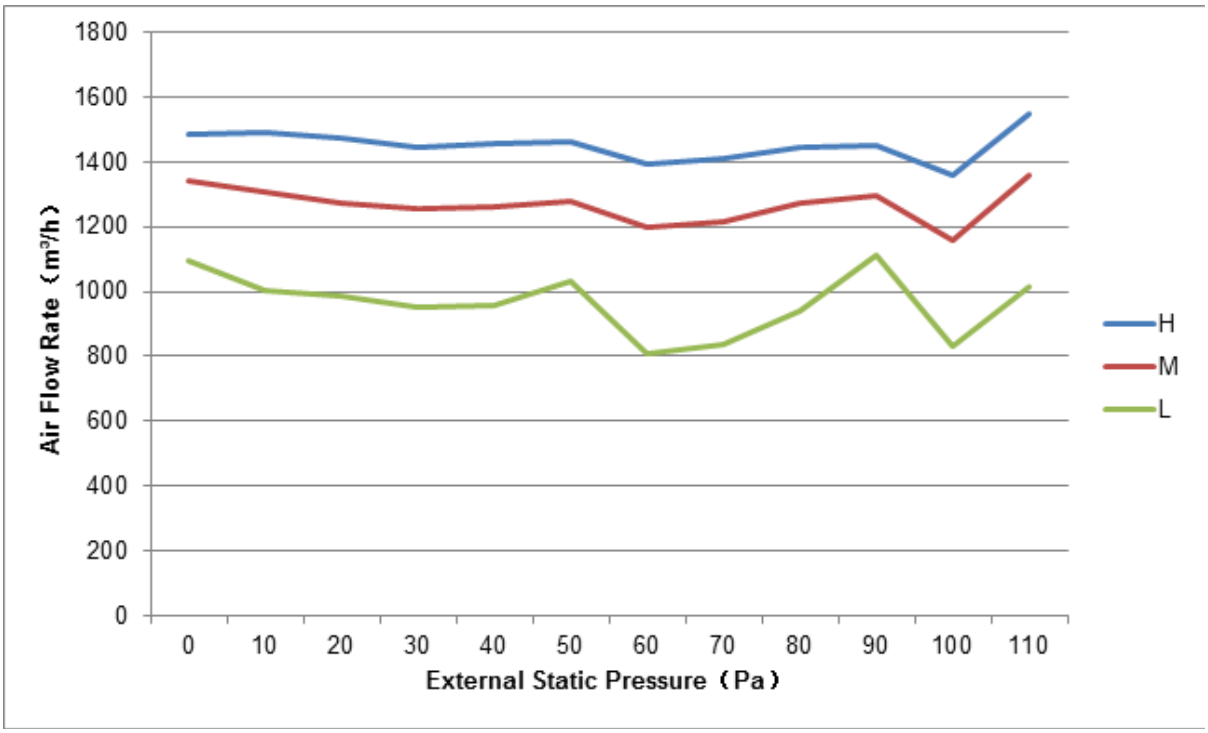

Air volume (m³/h)
(no filter)
SP3
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)


Air volume (m³/h)
(no filter)
SP4
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)


1200
1000
800
600
400
200
0
Air Flow Rate（m³/h）
0 10 20 30 40 50 60 70 80 90 100
External Static Pressure（pa）
H
M
L

24K


Air volume (m³/h)
(no filter)
SP1
Limit
High
Middle
Low
External static pressure (Pa)
SP2
SP3
SP4


Air Flow Rate（m³/h）
External Static Pressure（Pa）
H
M
L

Product Features

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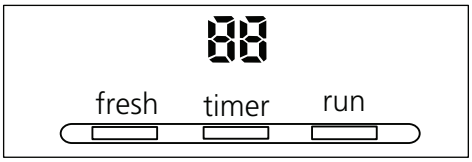
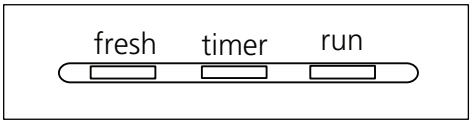
1. Display Function

Wall mounted type-Cool Easy:



Display A



Display B

Display		Function
fresh		When Fresh feature is activated(some units)
timer		When TIMER is set
run		When the unit is on
		WiFi control (available on select units only)
88	Set temperature value	Temperature
	Room temperature	Temperature (fan and Drying mode)
	 (3s)	Activation of Timer ON, Fresh, Swing, Turbo, or Silent
	 (3s)	Activation of Timer OFF or cancellation of Fresh, Swing, Turbo, or Silent
		Defrost(Heat pump units)
		Activation of anti-cold wind in heating mode
		Self-clean (available on select units only)
		Heating in room temperature under 8°C
	set temperature gradually illuminates to in one second interval	ECO function (available on select units only)

Note: Please select the display function according to your purchase product.

Wall mounted type-AG/18C

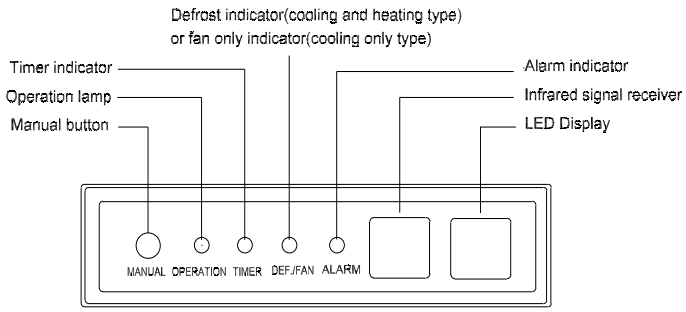
Display A

Display B

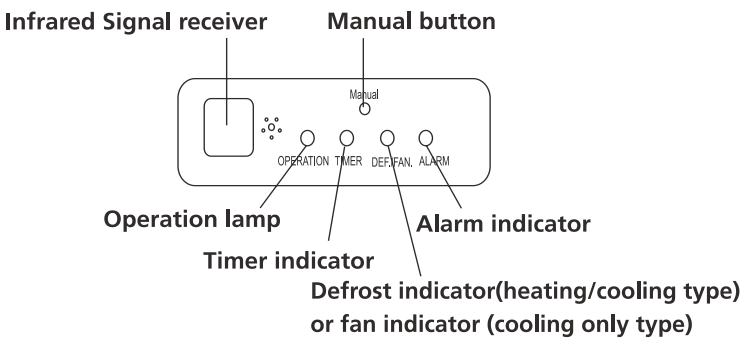
Display		Function
fresh		Fresh(available on select units only)
defrost		Defrost
run		When the unit is on
timer		When TIMER is on
		WiFi control (available on select units only)
	Temperature value	Temperature
	(3s)	Activation of Timer ON, Fresh, Swing, Turbo, or Silent
	 (3s)	Cancellation of Timer OFF, Fresh, Swing, Turbo, or Silent
		Defrost
		Active Clean(For Inverter split type) or self-cleaning(For Fixed-speed type)
		Heating in room temperature under 8°C

Note: Please select the display function according to your purchase product.

A6 Duct type:



Compact Cassette type:



2. Operation Modes and Functions

2.1 Abbreviation

Unit element abbreviations

Abbreviation	Element
T1	Indoor room temperature
T2	Coil temperature of evaporator middle
T2B	Coil temperature of evaporator outlet(It is located in outdoor unit)
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
T5	Compressor discharge temperature
TS	Setting temperature

2.2 Safety Features

Open Circuit/Disconnection Sensor Protection

Automatic shutoff based on fan speed

For A6 Duct type,

If a fault occurs on the air volume regulator or the regulator enters protection mode, it sends the error message CF and an instruction to reduce fan speed to the master. The message and the instruction can be inquired with the remote controller or the wired controller. (Fault and protection information are displayed for one minute). After a fault occurs, the master unit shows the error code E3 and the fault count for one minute.

If the fault occurs three times, then the fan is unable to resolve the problem independently. External shutdown by a remote controller, wired controller, or central controller must be used to clear the fan fault and fault count. The fan runs normally for 5 minutes while clearing fault count.

For other types,

If the indoor fan speed registers below 300RPM for an extended period of time, it shuts off and restarts in 30 seconds. If this happens 3 times, the unit ceases operation and the corresponding error code is displayed on the indoor unit.

If outdoor fan speed registers below 100RPM or higher than 2400RPM for an extended period of time, the unit ceases operation and the corresponding error code is displayed on the indoor unit and outdoor unit.

Indoor fan delayed operation

- When the unit starts, the louver is automatically activated and the indoor fan will operate after a period of 7 seconds.
- If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.

Zero crossing detection error protection(For Forest series)

If AC can not detect zero crossing signal for 4 minutes or the zero crossing signal time interval is not correct, the unit will stop and the LED will display the failure. The correct zero crossing signal time interval should be between 6-13ms.

Compressor three-minute delay at restart

Compressor functions are delayed for up to one minute upon the first startup of the unit, and are delayed for up to three minutes upon subsequent unit restarts.

Inverter module protection

The inverter module has an automatic shutoff mechanism based on the unit's current, voltage, and temperature. If automatic shutoff is initiated, the corresponding error code is displayed on the indoor unit and the unit ceases operation.

Automatic shutoff based on discharge temperature

If the compressor discharge temperature exceeds a certain level for a period of time, the compressor ceases operation.

Oil return

Running rules:

1. If the compressor frequency keeps lower than setting frequency for setting time, the AC will rise the frequency to setting frequency for setting time and then resume to former frequency.

2. The EXV will keep 300p while the indoor units will keep the current running mode.

If the outdoor ambient is higher than setting frequency during the oil return, the AC quit oil return.

2.3 Fan Mode

When fan mode is activated:

- The outdoor fan and compressor cease operation.
- Temperature control is disabled and no temperature setting is displayed.
- The indoor fan speed can be set to high, medium, low, or auto.
- The louver operations are identical to those in cooling mode.

2.4 Cooling Mode

2.4.1 Indoor Fan Control

- In cooling mode, the indoor fan operates continuously. The fan speed can be set to high, medium, low or auto.
- The auto fan acts according to the value of T1-TS.

2.4.2 Outdoor Fan Control

- The outdoor fan is controlled by T4.

2.4.3 Evaporator Temperature Protection

When T2<4°C for 250 seconds or T2<0°C, the compressor and outdoor fan cease operation and resume to normal when T2>8°C and the time of protection is no less than 3 minutes.

2.4.4 Condenser Temperature Protection

When condenser temperature is more than setting value, the compressor ceases operations.

2.5 Heating Mode(Heat pump models)

2.5.1 Indoor Fan Control

- When the compressor is on, the fan speed can be set to high, medium, low, or auto. And the anti-cold wind function has the priority.
- The auto fan acts according to the value of T1-Ts.

2.5.2 Outdoor Fan Control

- The outdoor fan is controlled by T4.

2.5.3 Defrosting mode

- The unit enters defrosting mode according to the value of temperature of T3 and the value range of temperature change of T3 and also the compressor running time.
- If any one of the following items is satisfied, the defrosting will finish and the machine will turn to normal heating mode.
  - T3 rises to be higher than TCDE1°C.
  - T3 keeps to be higher than TCDE2°C for 80 seconds.
  - The machine has run for 10 minutes in defrosting mode.

2.5.4 Evaporator Temperature Protection

When the evaporator temperature exceeds a preset protection value, the compressor and outdoor fan cease operations, the outdoor fan motor ceases operation 30 seconds later.

2.5.5 Prevent Over-Heating

In heating mode, when the indoor unit has no capacity requirement due to indoor room temperature increased, the Indoor fan will run in super breeze. (Anti-cold wind function has the priority)

2.6 Auto Mode

- This mode can be selected with the remote controller and the temperature setting can be adjusted between 17°C~30°C
- In auto mode, the machine selects cooling, heating, or fan-only mode on the basis of △T (△T =T1-Ts).

ΔT	Running mode
ΔT>2°C	Cooling
-2°C≤ΔT≤2°C	Fan-only
ΔT<-2°C	Heating*

Heating*: In auto mode, cooling only models run the fan.

- Indoor fans run at the auto fan speed of the relevant mode.
- The louver operates the same as in relevant mode.
- If the machine switches mode between heating and cooling, the compressor pauses for a certain period of time intermittently and then selects a mode based on T1-Ts.
- If the setting temperature is modified, the machine selects a new running function.

2.7 Drying Mode

- Indoor fan speed is fixed at low and cannot be changed.
- Low indoor room temperature protection
- In drying mode, if room temperature is lower than 10°C, the indoor fan will stop and not resume until room temperature exceeds 12°C.
- All protections are activated and operate the same as they do in cooling mode.
- The louver operates the same as in cooling mode.

2.8 Timer Function

- The timing range is 24 hours.
- Timer On. The machine turns on automatically at the preset time.
- Timer Off. The machine turns off automatically at the preset time.
- Timer On/Off. The machine turns on automatically at the preset On Time, and then turns off automatically at the preset Off Time.
- Timer Off/On. The machine turns on automatically at the preset Off Time and then turns off automatically at the preset On Time.
- The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately after the "timer off" function is set. When the setting time is reached, the timer LED switches off and the unit running mode remains unchanged.
- The timer uses relative time, not clock time

2.9 Sleep Function

- The sleep function is available in cooling, heating, or auto mode.
- The operational process for sleep mode is as follows:
- When cooling, the temperature rises 1°C (to not higher than 30°C) every hour. After 2 hours, the temperature stops rising and the indoor fan is fixed to auto speed.
- When heating, the temperature decreases 1°C (to not lower than 17°C) every hour. After 2 hours, the temperature stops decreasing and the indoor fan is fixed at auto speed. Anti-cold wind function takes priority.

2.10 Forced operation function

- Forced cooling mode:

The compressor and outdoor fan continue to run and the indoor fan runs at rated speed. After running for 30 minutes, the AC will switch to auto mode with a preset temperature of 24°C

- Forced auto mode:

Forced auto mode operates the same as normal auto mode with a preset temperature of 24°C.

  - When any one of indoor units runs in forced cooling, it is designated as the master forced cooling unit. Other indoor units act as the slave forced cooling units. The slave forced cooling units cannot exit forced cooling mode until the master forced cooling unit does so. They then switch to cooling mode in low fan with the temperature set at 24°C.
  - Forced defrosting mode:
    - In the forced cooling mode (single heat engine for forced auto mode), press and hold the forced key for 5 seconds after release, immediately enter the forced frosting mode.
    - When any one of indoor units runs in forced defrosting mode, the indoor fan is off and other indoor fans are off. The outdoor unit operates forced defrosting.

2.11 Auto-Restart

- The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings (not including sleep mode) and, in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.
- If the unit was in forced cooling mode, it will run in this mode for 30 minutes and turn to auto mode with temperature set to 24°C.
- If there is a power failure while the unit is running, the compressor starts 3 minutes after the unit restarts. If the unit was already off before the power failure, the compressor starts 1 minute after the unit restarts.

2.12 Follow Me

- If you press "Follow Me" on the remote, the indoor unit will beep. This indicates the follow me function is active.
- Once active, the remote control will send a signal every 3 minutes, with no beeps. The unit automatically sets the temperature according to the measurements from the remote control.
- The unit will only change modes if the information from the remote control makes it necessary, not from the unit's temperature setting.

2.13 Drain Pump Control (Optional)

- Use the water-level switch to control drain pump.
- The system checks the water level every 5 seconds.
  - When the A/C operates in cooling (including auto cooling) or forced cooling mode, the pump begins running immediately and continuously until cooling stops.
  - If the water level increases up to the control point, the LED displays an alarm code and the drain pump opens and continually monitors the water level. If the water level falls and LED alarm code is no longer

displayed (drain pump close delay is 1 minute), the unit goes back into its last mode. Otherwise, the entire system (including the pump) stops and the LED displays an alarm again after 3 minutes.

2.14 Mode Conflict

- The indoor units can not work cooling mode and heating at same time.
- Heating mode has a priority.

(1) Definition

	Cooling mode	Heating Mode	Fan	Off
Cooling mode	No	Yes	No	No
Heating Mode	Yes	No	Yes	No
Fan	No	Yes	No	No
Off	No	No	No	No

No: No mode conflict;

Yes: Mode conflict

(2) Unit action

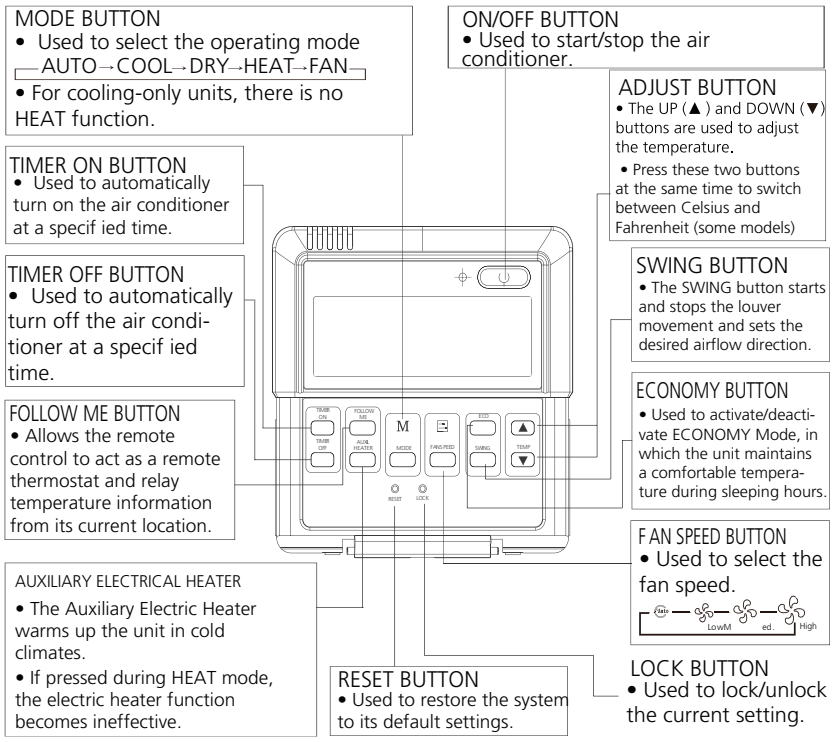
- In case of one Indoor unit working in cooling mode or fan mode, and another indoor unit is set to heating mode, the indoor unit working in cooling mode or fan mode will change to off. The outdoor unit will change to heating mode after compressor stop 3 minutes. .
- In case of one Indoor unit working in heating mode, and another indoor unit is set to cooling mode or fan mode, the indoor unit setting to cooling mode or fan mode will change to stand by. The outdoor unit will continue working in heating mode.
- If heating mode stops (not including the indoor unit in heating mode reaching the set temperature), 3 minutes after the outdoor unit restarts and works in cooling mode or fan-only mode.

3.1 LCD Wired Remote Controller

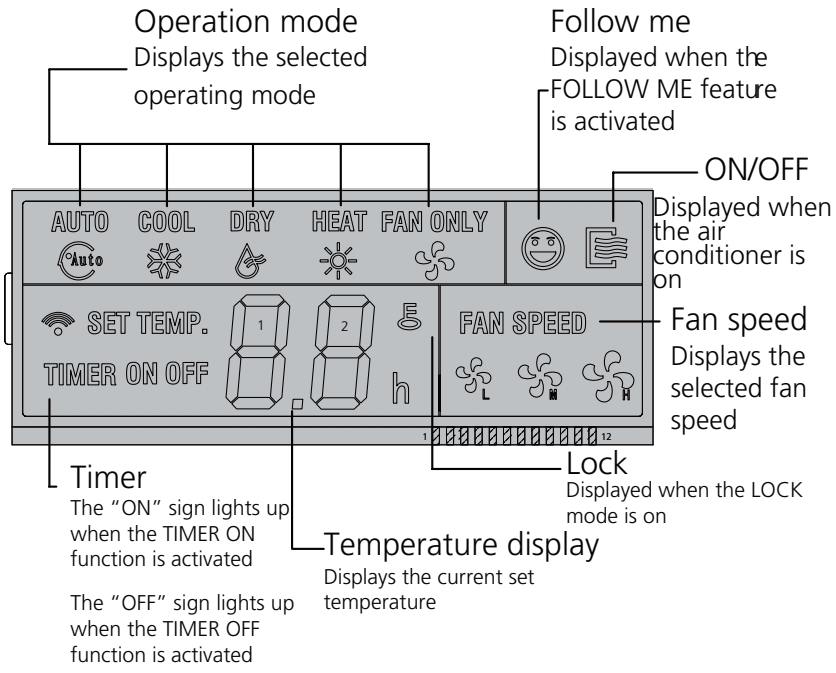
3.1.1 LCD Wired Remote Controller KJR-12B/DP(T) (Standard)

The KJR-12B/DP(T) wired remote controller is standard for Duct type.

i) Buttons and Functions

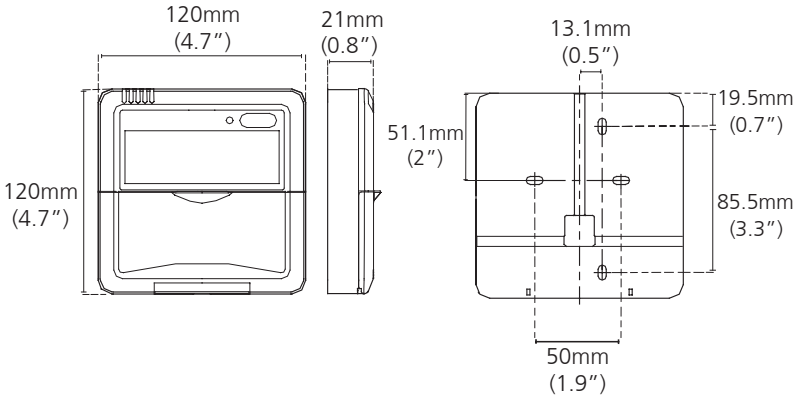


ii) LCD Screen



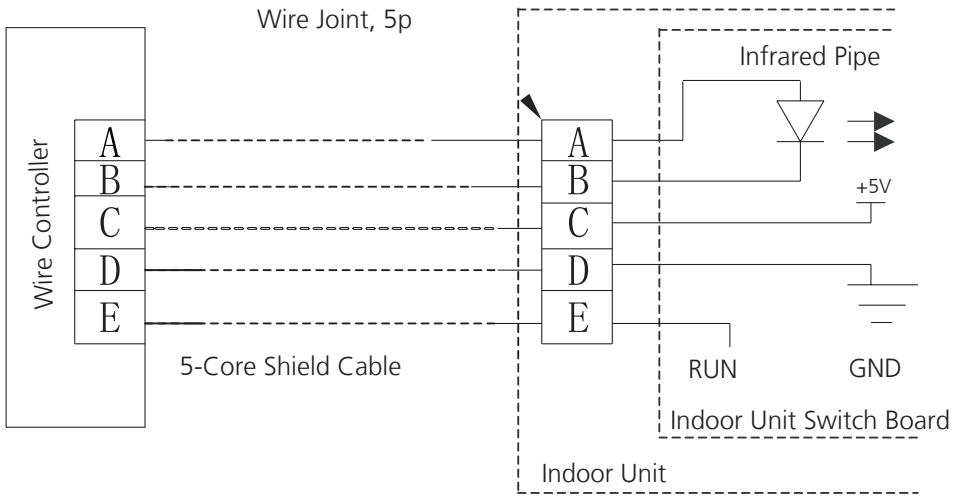
iii) Installation

- **Dimensions**



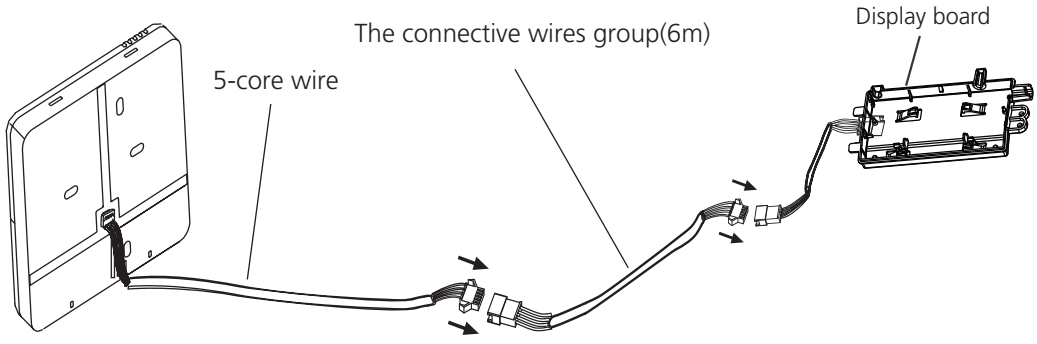
- **Wiring diagram**

Refer to the following diagram to wire the Wall mounted type remote control to the indoor unit.

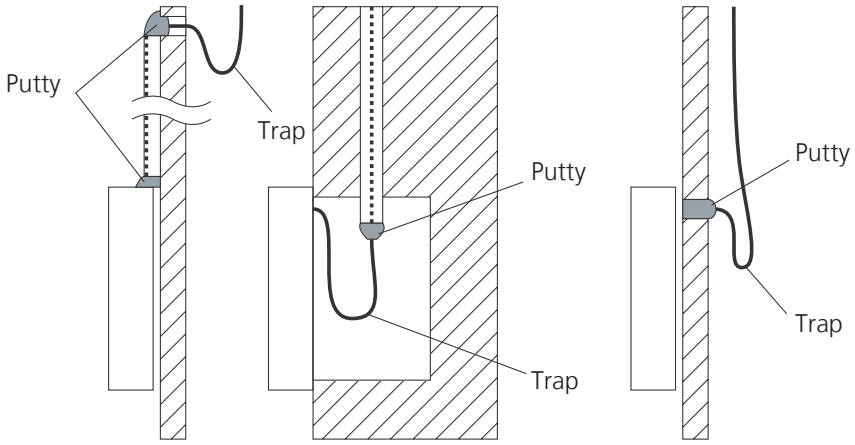


- **Installation Diagram**

Connect the wire from the display panel of the indoor unit to a connecting cable. Then connect the other side of the connecting cable to the remote control.

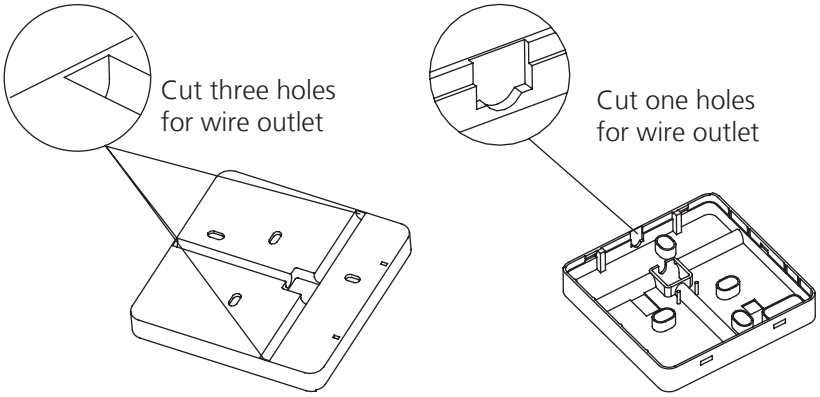


Note: Be sure to reserve a length of the connecting wire for periodic maintenance.

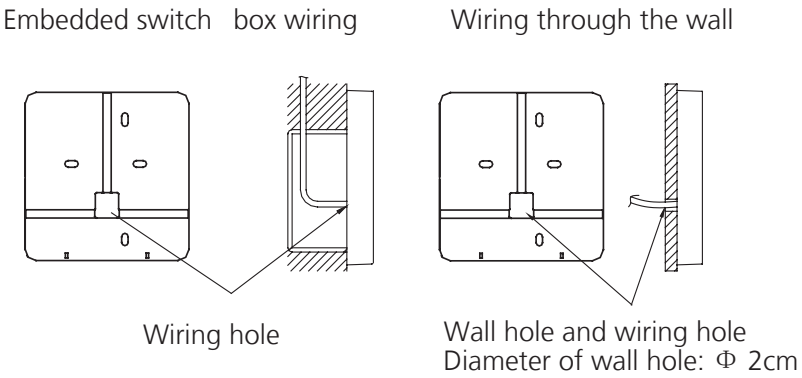


Note: DO NOT allow water to enter the remote control. Use the trap and putty to seal the wires.

- **For exposed mounting, cut holes on four of the sides according to the picture below.**



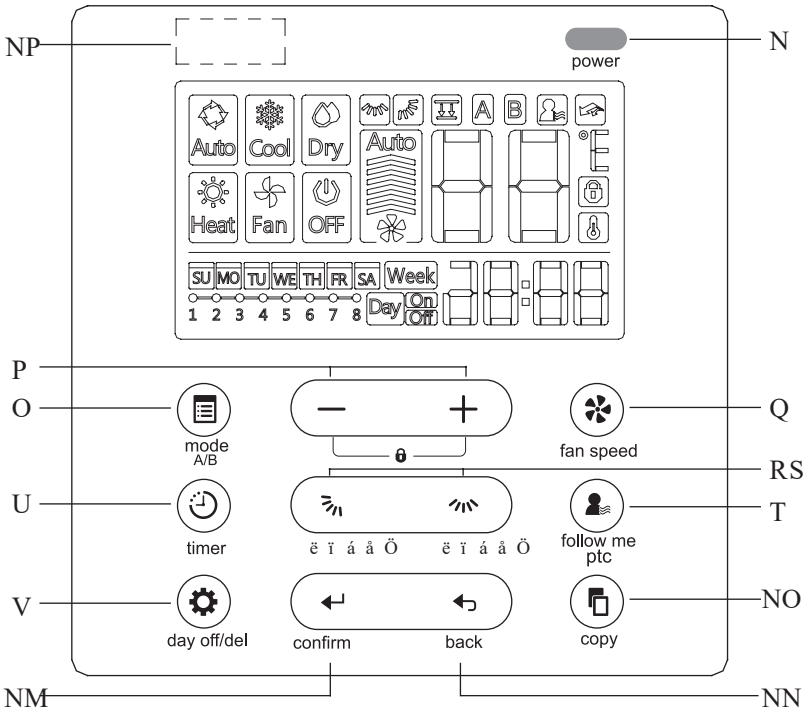
- **For shielded wiring, please refer to the picture below.**



3.1.2 LCD Wired Remote Controller KJR-120C/TF-E(Optional)

The KJR-120C/TF-E wired remote controller is optional for all types.

i) Buttons and Functions



1. POWER button

Turn on of turn off the unit.

2. MODE(A/B) button

Used to select the operation mode: Auto / Cooling / Drying / Heating / Fan;

Hold to active the operation of auto-lifting panel when off

3. Adjust button

To set temperature, time and timer; set up or down the auto-lifting panel

4. FAN SPEED button

Used to select the fan speed.

5. Up-down airflow direction and swing Button

Press for adjusting the angel of louver, hold for vertical swing; individual louver control for cassette panel

6. Left-righ airflow swing Button

Press for activing the horizontal swing

7. FOLLOW ME(PTC) button

Allows the remote control to act as a remote thermostat and send temperature information from its current location.

8. TIMER button

To set timer on and timer off time of one day

9. DELAY/DAY OFF button

To set 1 to 2 hours delay off for each day or a whole day off in a weekly timer schedule

10. CONFIRM button

To confirm an setting or call up the menu

11. BACK button

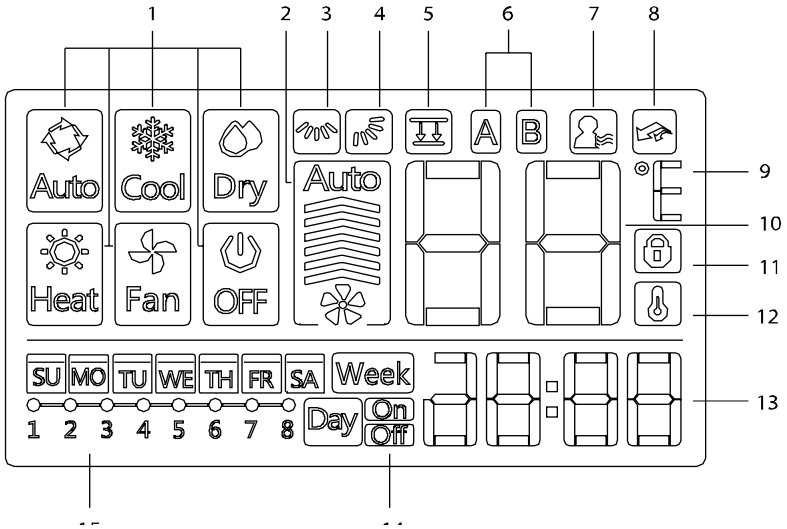
Back to previous operation or superior menu

12. COPY button

Copy timer setting of one day to another in weekly schedule setting

13 Infrared remote receiver (on some models)

ii) LCD Screen



1 Operation mode indication

2 Fan speed indication

3 Left-right swing indication

4 Up-down swing indication

5 Faceplate function indication

6 Main unit and secondary unit indication

7 Follow me function indication

8 PTC function indication

9 C° / F° indication

10 Temperature display

11 Lock indication

12 Room temperature indication

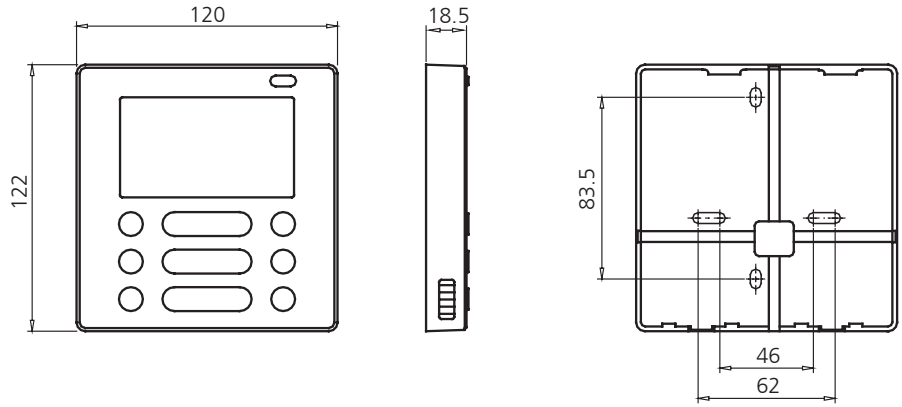
13 Clock display

14 On/Off timer

15 Timer display

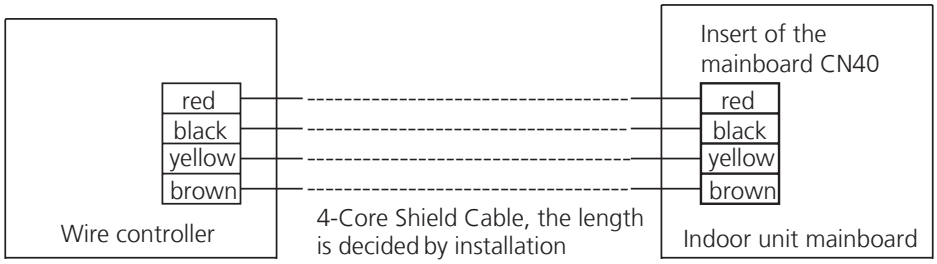
iii) Installation

- **Dimensions**



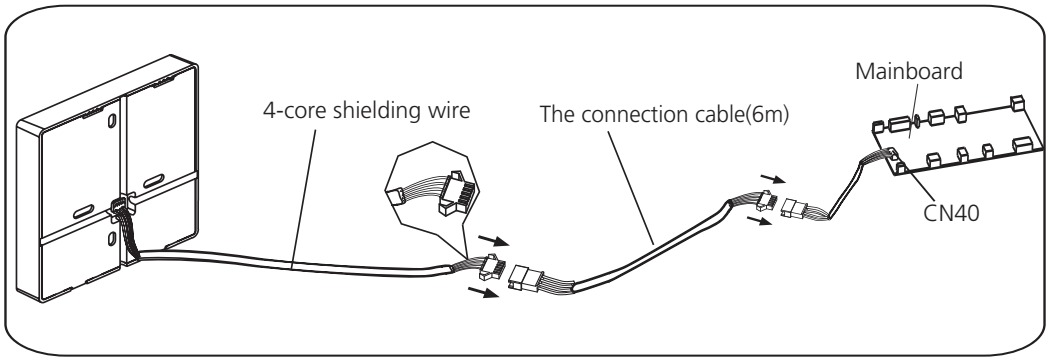
- **Wiring diagram**

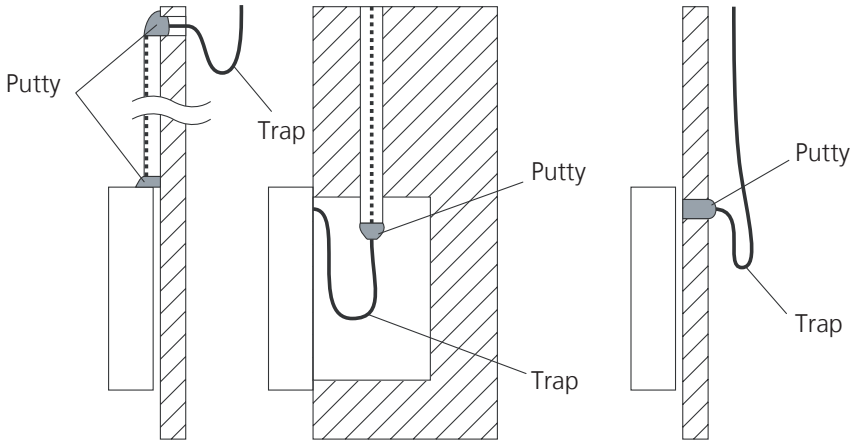
Refer to the following diagram to wire the Wall mounted type remote control to the indoor unit.



- **Installation Diagram**

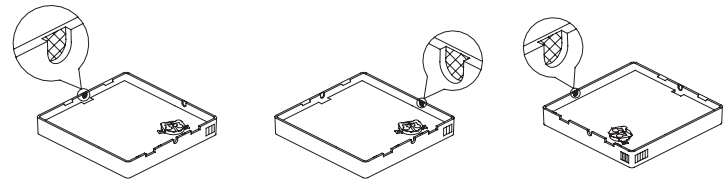
Connect the female joint of wires group from the mainboard with the male joint of connective wires group. Then connect the other side of connective wires group with the male joint of wires group leads from wire controller.





Note: DO NOT allow water to enter the remote control. Use the trap and putty to seal the wires.

- **For exposed mounting, four outletting positions. There are three need cutting.**

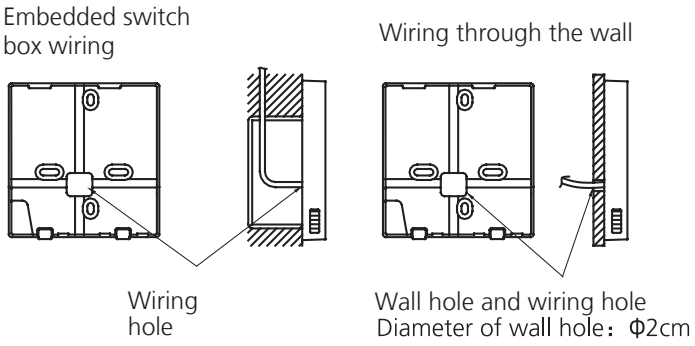


Cutting place of top side wire outlet

Cutting place of left side wire outlet

Cutting place of right side wire outlet

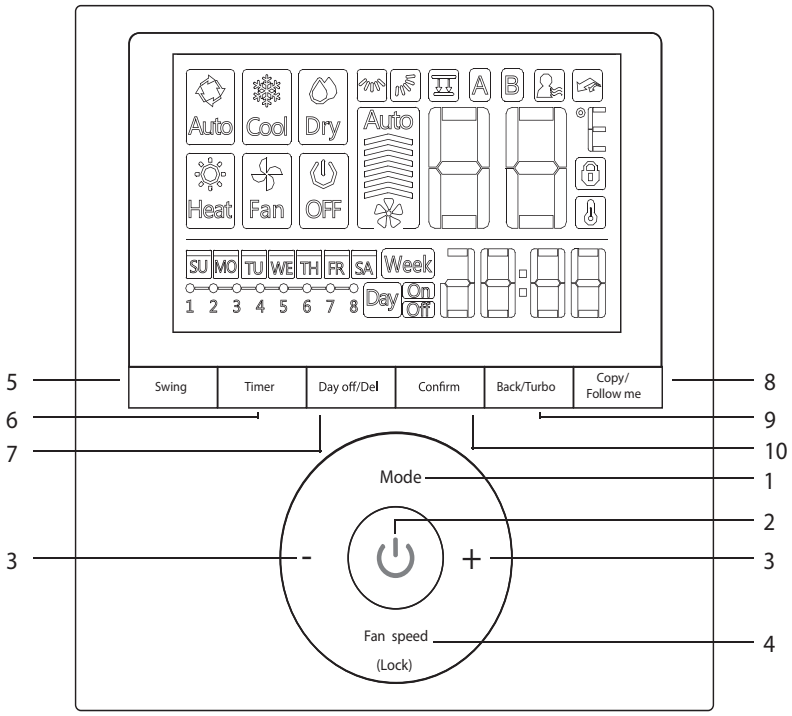
- **For shielded wiring, please refer to the picture below.**



3.1.3 LCD Wired Remote Controller KJR-120G/TF-E(Optional)

The KJR-120G/TF-E wired remote controller is optional for all types.

i) Buttons and Functions



1 MODE button

Used to select the operation mode: Auto / Cooling / Drying / Heating / Fan;

Hold to active the operation of auto-lifting panel when off

2. POWER button

Turn on of turn off the unit.

3. Adjust button

To set temperature, time and timer; set up or down the auto-lifting panel

4. FAN SPEED button

Used to select the fan speed.

5. Swing Button

Press to active vertical swing, hold for horizontal swing

6. TIMER button

To set timer on and timer off time of one day

7.DELAY/DAY OFF button

To set 1 to 2 hours delay off for each day or a whole day off in a weekly timer schedule

8. COPY/FOLLOW ME button

To copy timer setting of one day to another in weekly schedule setting;

To active the follow me function while in normal operation.

9. BACK/TURBO button

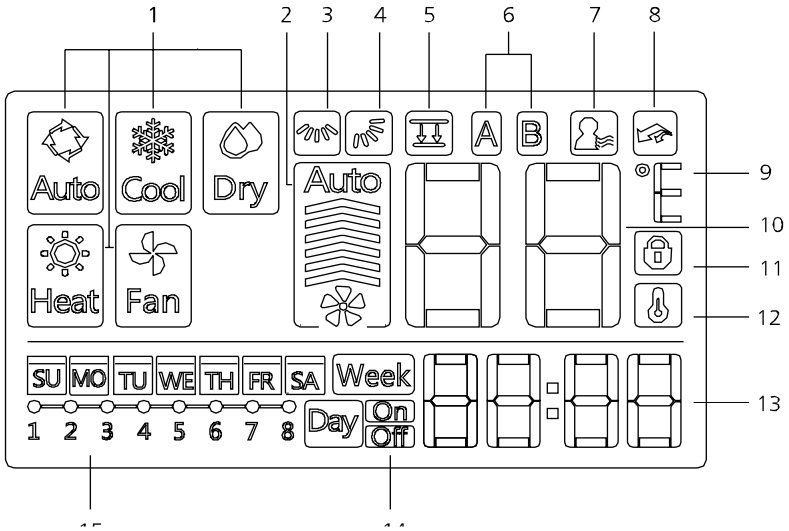
Back to previous operation or superior menu

To active turbo mode while in normal operation

10. CONFIRM button

To confirm an setting or call up the superior menu

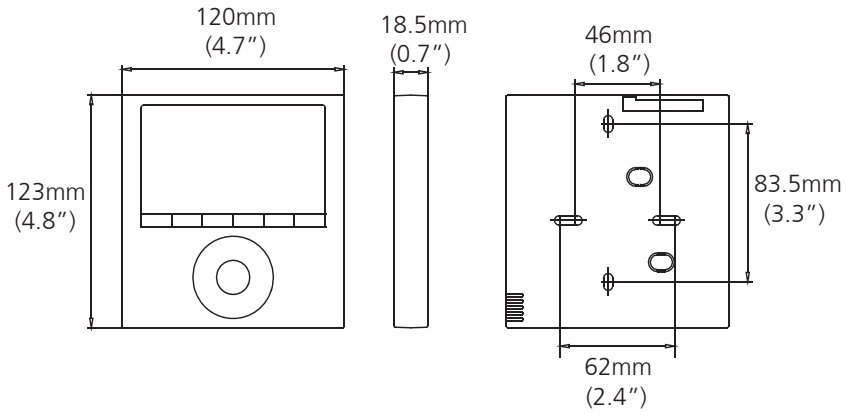
ii) LCD Screen



1 Operation mode indication
2 Fan speed indication
3 Left-right swing indication
4 Up-down swing indication
5 Faceplate function indication
6 Main unit and secondary unit indication
7 Follow me function indication
8 Turbo/PTC function indication
9 C° / F° indication
10 Temperature display
11 Lock indication
12 Room temperature indication
13 Clock display
14 On/Off timer
15 Timer display

iii) Installation

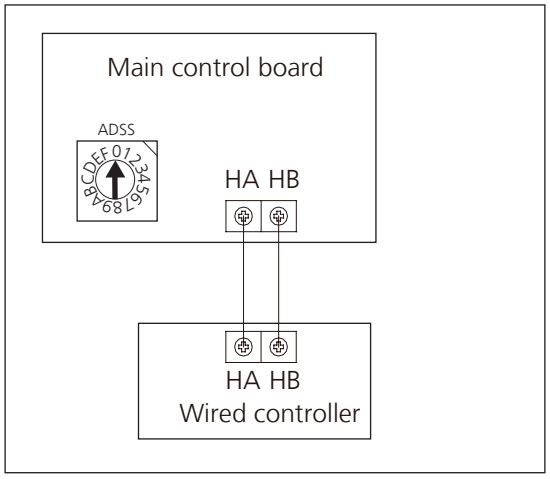
- **Dimensions**



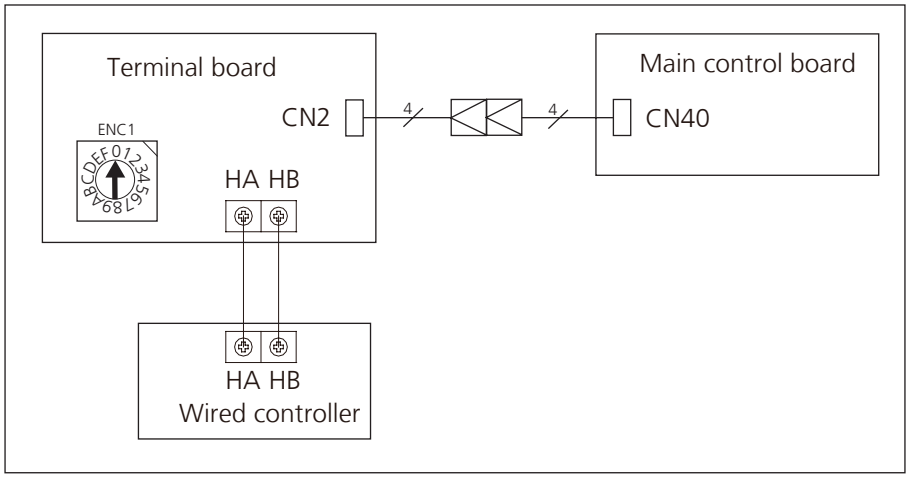
- **Wiring diagram**

1) Connection

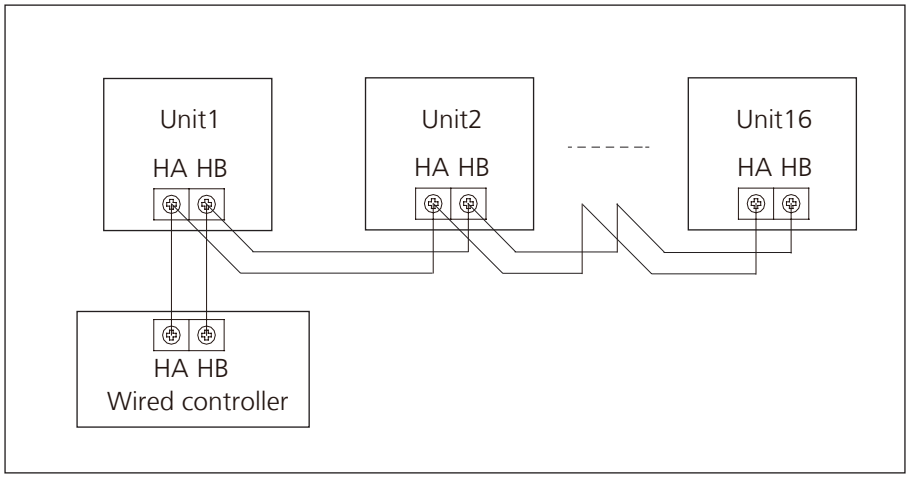
For Cassette type: The wired controller connects to main control board directly.



For Duct, Ceiling& floor: The wired controller connects to terminal board, terminal board connects to main control board.



2) Address setting

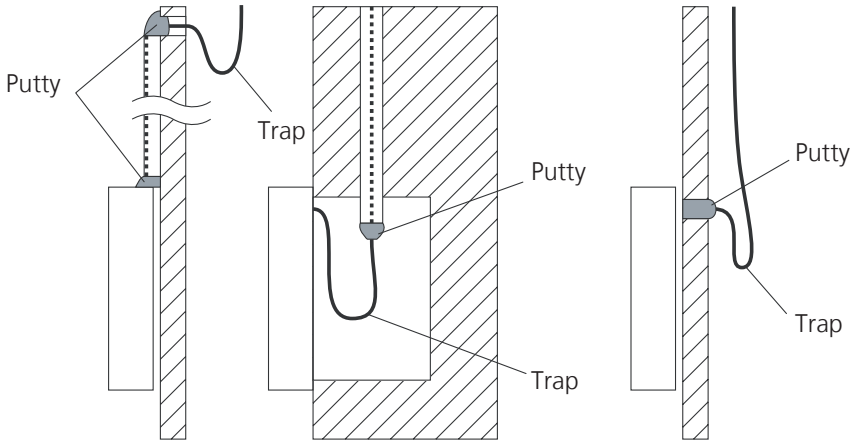


a. One non-polarity controller can control up to 16 indoor units.

b. When the non-polarity controller is connected to several units, every air-conditioner in network has only one network address to distinguish each other.

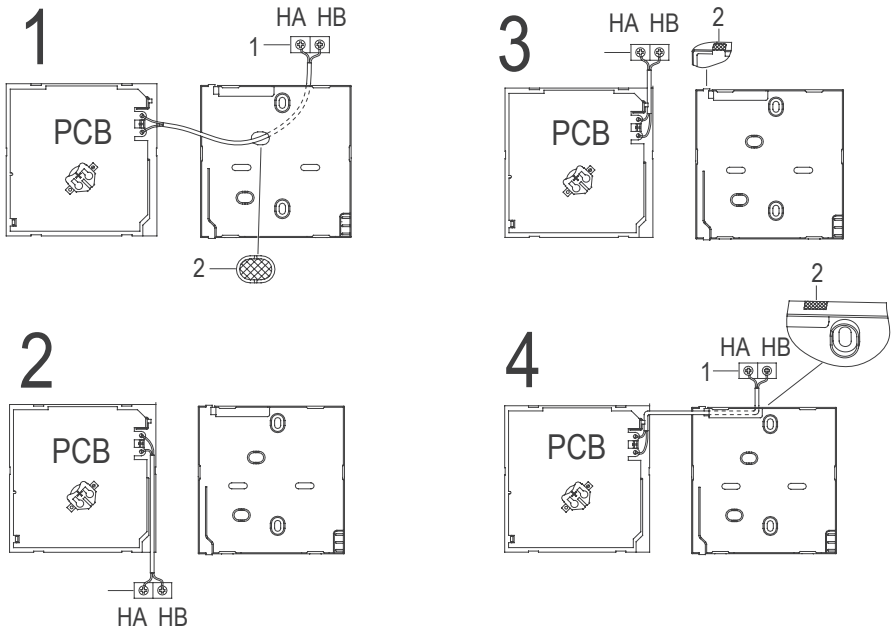
c. Address code of air-conditioner in LAN is set by code switch ENC1(Duct and Ceiling& Floor) or ADSS(Cassette) of the indoor unit, and the set range is 0-15.

d. Note: The indoor units are controlled at the same time, not independently. The purpose of setting network address is identify the unit when error occurs.



Note: DO NOT allow water to enter the remote control. Use the trap and putty to seal the wires.

- **For wiring the indoor unit, there are three methods:**
  - From the rear;
  - From the bottom;
  - From the top;
  - From the top center.

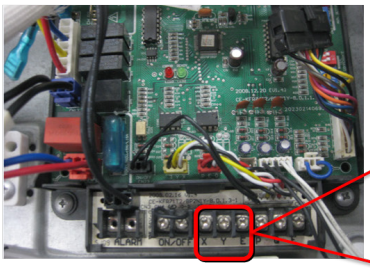


- 1: Indoor Unit.
- 2: Notch the part for the wiring to pass through with a nipper tool.
- Connect the terminals on the remote controller (HA ,HB), and the terminals of the indoor unit. (HA ,HB). (HA and HB do not have polarity.)

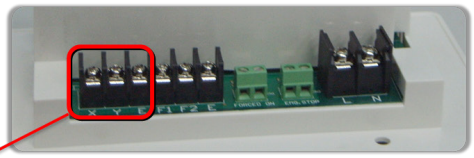
3.2 Centralized Controller

1) Connection

For Light commercial air conditioner with XYE port, it can be directly connected to Centralized Controller (CCM03, CCM09).



Indoor unit

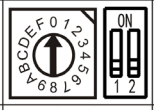
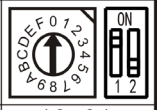
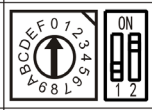


CCM03

CCM09

2) Address setting

When setting the address, please make sure the unit is powered off. The address can be set from 0 to 63 by the switch. Turn on the unit, then the address will be effective.

SWITCH	FOR CCM UNIT ADDRESS	
S2 + S1		
ADDRESS	0~15	16~31
Factory Setting	✓	
S2 + S1		
ADDRESS	32~47	48~63
Factory Setting		

Note: For light commercial aire conditioner with XYE port, it can be also connected to BMS (Building Management System).

If there is any CAC (central air conditioner) connecting with the central controller at the same time, please set the address from largest (63,62,61…), since the CAC units could obtain address automatically from the smallest (00,01,02…)

3.4 Using the wire controller to set external static pressure

- You can use the unit's automatic airflow adjustment function to set external static pressure.
- Automatic airflow adjustment is the volume of blow-off air that has been automatically adjusted to the quantity rated.

1. Make sure the test run is done with a dry coil. If the coil is not dry, run the unit for 2 hours in FAN ONLY mode to dry the coil.

2. Check that both power supply wiring and duct installation have been completed. Check that any closing dampers are open. Check that the air filter is properly attached to the air suction side passage of the unit.

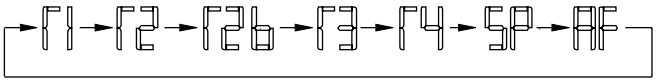
3. If there is more than one air inlet and outlet, adjust the dampers so that the airflow rate of each air inlet and outlet conforms with the designed airflow rate. Make sure the unit is in FAN ONLY mode. Press and set the airflow adjustment button on the remote control to change the airflow rate from H or L.

4. Set the parameters for automatic airflow adjustment. When the air conditioning unit is off, perform the following steps:

- When the unit is turned off, hold the MODE button and

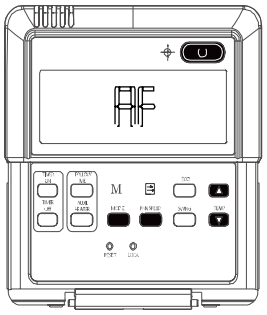
FAN button down together for three seconds. ("AF" indicator flashes for 3 times.)

- Press " △ " or " ▽ " to select the AF.



- Press "MODE". The air conditioning unit will then start the fan for airflow automatic adjustment.

After 3 to 6 minutes, the air conditioning unit stops operating once automatic airflow adjustment has finished.



Caution: DO NOT adjust the dampers when automatic airflow adjustment is active.

Caution:

• If there is no change after airflow adjustment in the ventilation paths, be sure to reset automatic airflow adjustment.

• If there is no change to ventilation paths after airflow adjustment,contact your dealer, especially if this occurs after testing the outdoor unit or if the unit has been moved to a different location.

• Do not use automatic airflow adjustment with remote control,if you are using booster fans, outdoor air processing unit, or a HRV via duct.

• If the ventilation paths have been changed, reset airflow automatic adjustment as described from step 3 onwards.

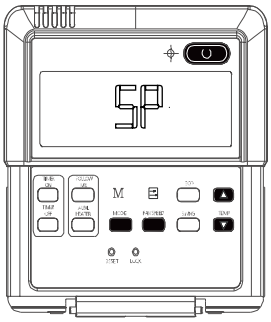
3.5 Using the wire controller to set airflow rate

When the air conditioning unit is off, perform the following steps:

1.Press"MODE" and "FAN" for three seconds.

2.Press " △ " or " ▽ " to select the SP.

3.Press "MODE" to set the airflow rate in the range of 0~4.



"0": No airflow change

"1"~"4":Airflow increase progressively

4. Press "ON/OFF" to finish the airflow setting.

Installation

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8. Additional Refrigerant Charge 162
9. Engineering of Insulation 162
10. Engineering of Electrical Wiring 163
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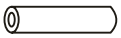
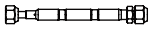
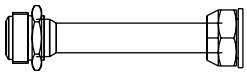
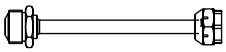
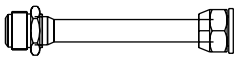
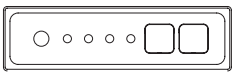
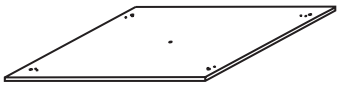
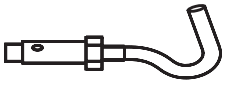
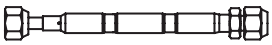
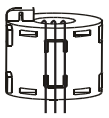
Accessories-A6 Duct type:

	Name	Shape	Quantity
Tubing & Fittings	Soundproof / insulation sheath		2
	Seal sponge (some models)		1
	Orifice (some models)		1
Drainpipe Fittings (for cooling & heating)	Drain joint (some models)		1
	Seal ring (some models)		1
EMC Magnetic Ring (some models)	Magnetic ring(Wrap the electric wires S1 & S2 (P & Q & E) around the magnetic ring twice)	 S1&S2(P&Q&E)	1
	Magnetic ring(Hitch on the connective cable between the indoor unit and outdoor unit after installation.)		1
Others	Manual	-	2~4
	Transfer connector(Φ12.7-Φ15.9)/(Φ0.5in-Φ0.63in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Transfer connector(Φ6.35-Φ9.52)/(Φ0.25in-Φ0.375in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Transfer connector(Φ9.52-Φ12.7)/(Φ0.375in-Φ0.5in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Connecting wire for display (2m)	-	1(on some models)
	Cord protection rubber ring		1(on some models)
	Display panel *Just for testing purposes only		1(on some models-KJR-120G,KJR-120H)

Optional accessories:

- There are two types of remote controls: wired and wireless.
- Select a remote controller based on customer preferences and requirements and install in an appropriate place.
- Refer to catalogues and technical literature for guidance on selecting a suitable remote controller.

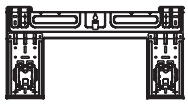
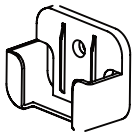
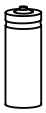
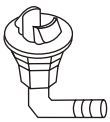
Accessories-Compact cassette type:

	Name	Shape	Quantity
Indoor unit installation	Installation paper template (some models)		1
Refrigeration Fittings	Soundproof/insulation sheath (some models)		1
Drainpipe Fittings	Outlet pipe sheath(some models)		1
	Outlet pipe clasp(some models)		1
	Drain joint (some models)		1
	Seal ring (some models)		1
Installation Accessory (some models)	Ceiling hook		4
	Copper nut(some units) Used to make the connective pipes between indoor and outdoor units.		
	Suspension bolt		4
	Orifice tube (some units)		1
	Anti-shock rubber		1
EMC Magnetic Ring (some models)	Magnetic ring (wrap the electric wires S1 & S2 (P & Q & E) around the magnetic ring twice)	 S1&S2(P&Q&E)	1
	Magnetic ring (Hitch it on the connective cable between indoor unit and outdoor unit after installation.)		1
Others	Manual	-	2~4

Optional accessories:

- There are two types of remote controls: wired and wireless.
- Select a remote controller based on customer preferences and requirements and install in an appropriate place.
- Refer to catalogues and technical literature for guidance on selecting a suitable remote controller.

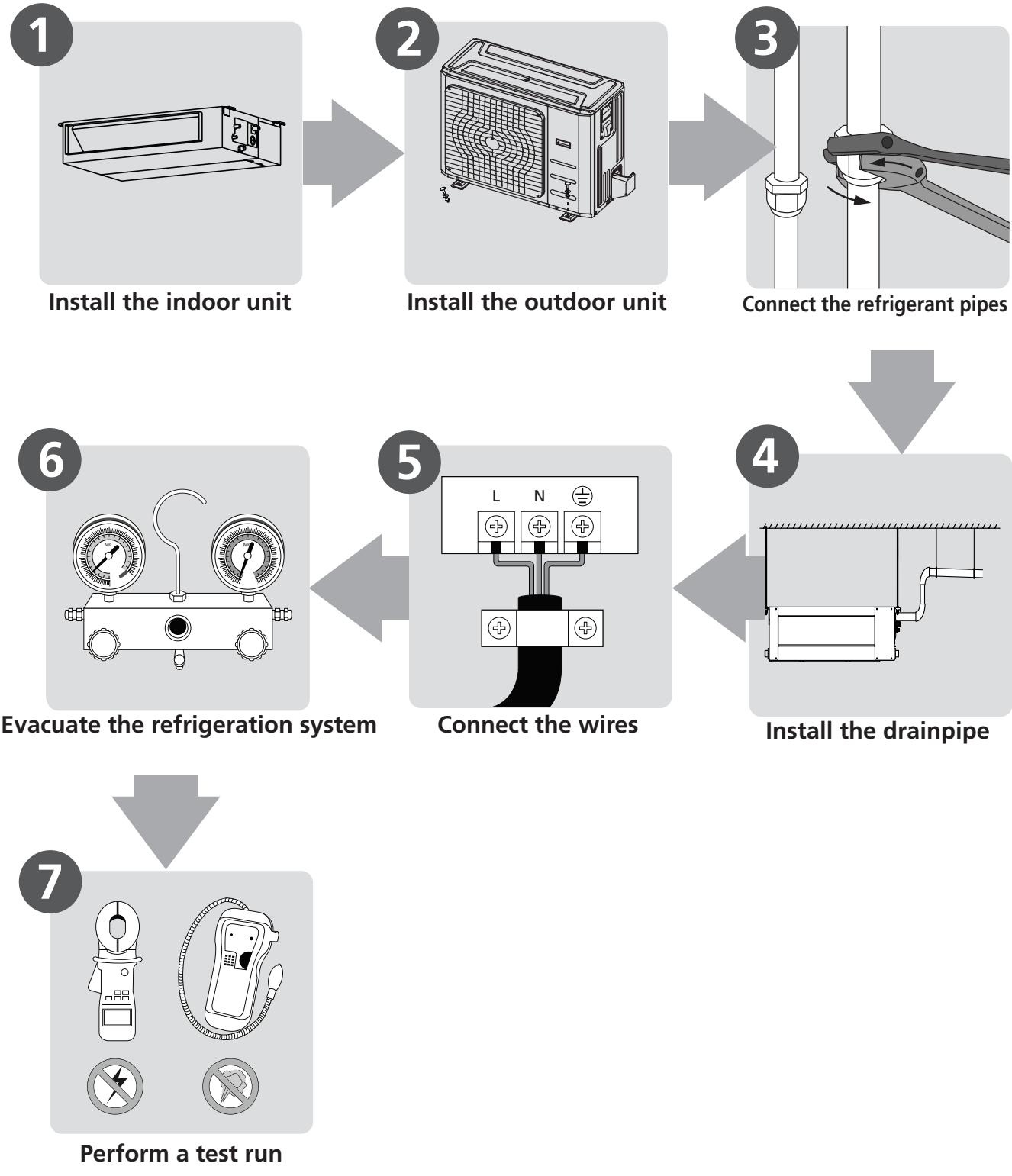
Accessories-wall-mounted type

Name	Shape	Quantity	
Mounting plate		1	
Clip anchor		5	
Mounting plate fixing screw ST3.9 X 25		5	
Remote controller		1	
Fixing screw for remote controller holder ST2.9 x 10		2	Optional Parts
Remote controller holder		1	
Dry battery AAA.LR03		2	
Seal		1(for cooling & heating models only)	
Drain joint			
Manual		2~3	

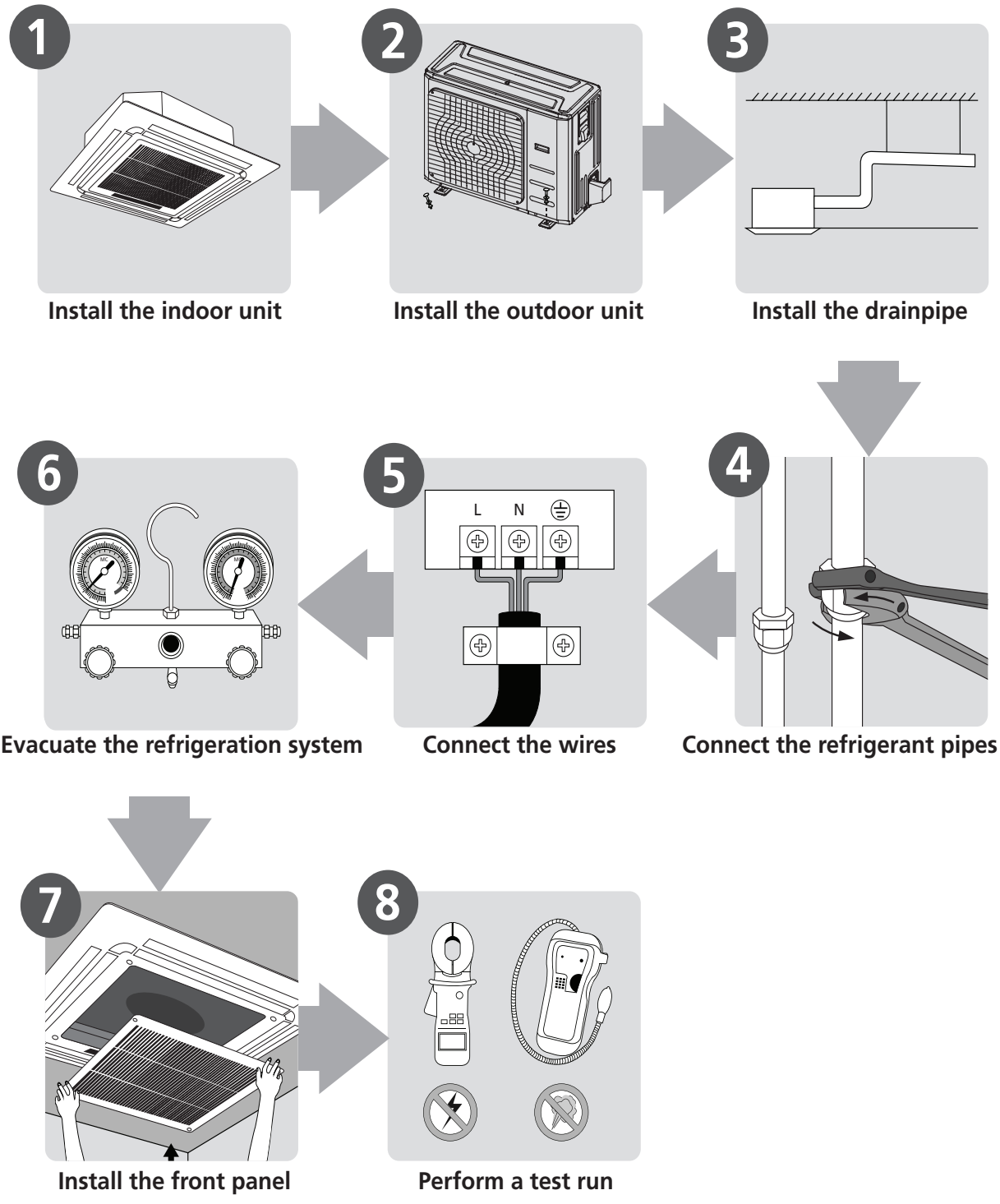
Connecting pipe assembly	Liquid side	Φ6.35 (1/4in)	Parts you must purchase. Consult the dealer about the pipe size.
		Φ9.52 (3/8in)	
	Gas side	Φ9.52 (3/8in)	
		Φ12.7 (1/2in)	
		Φ15.9 (5/8in)	

1. Installation Overview

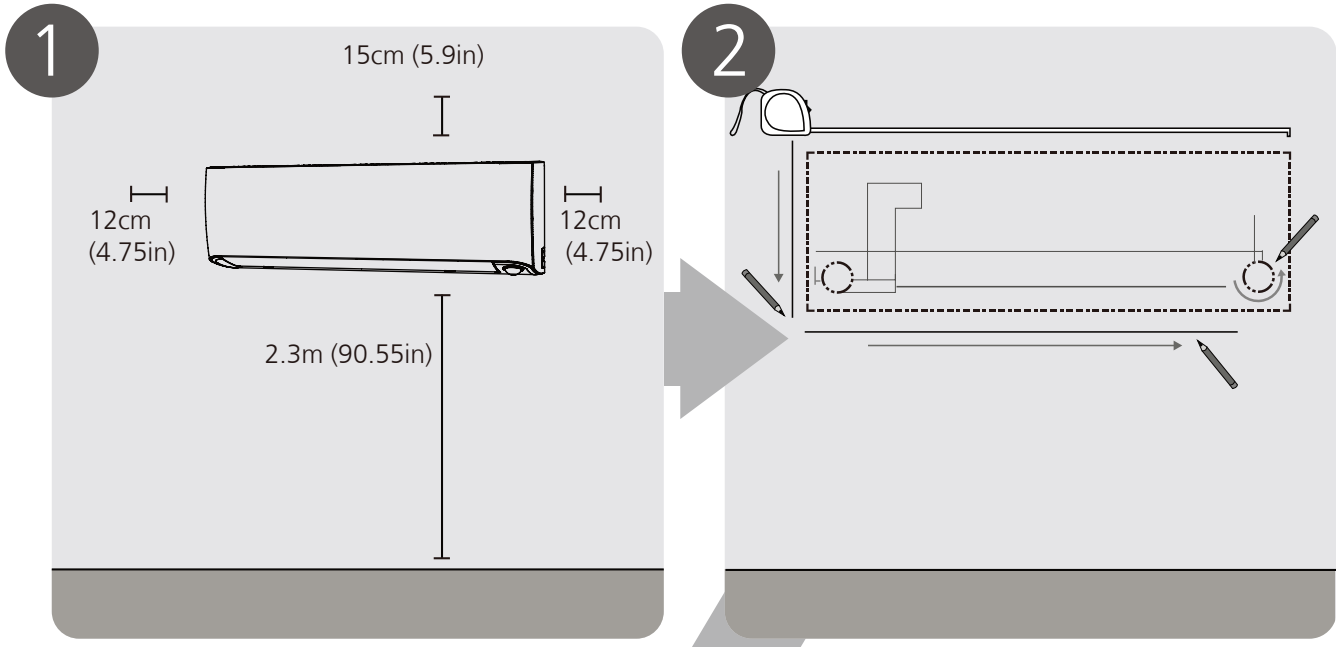
Installation Order-A6 Duct type



Installation Order-Compact cassette type

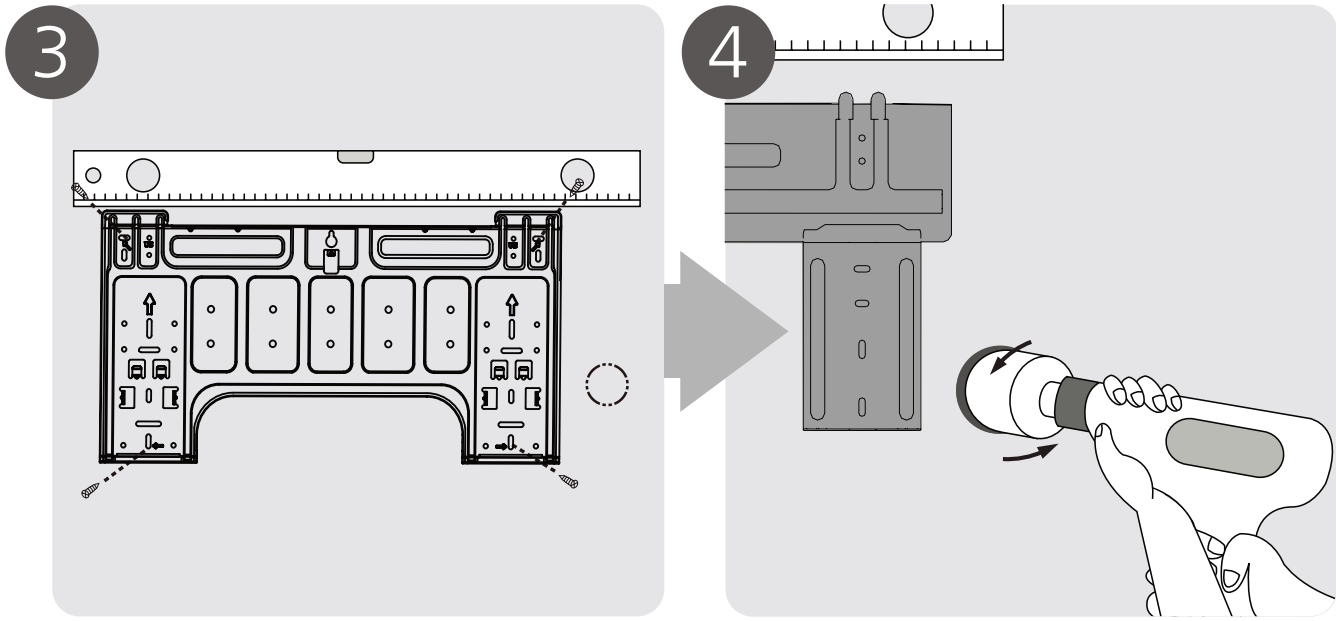


Installation Order-Wall mounted type



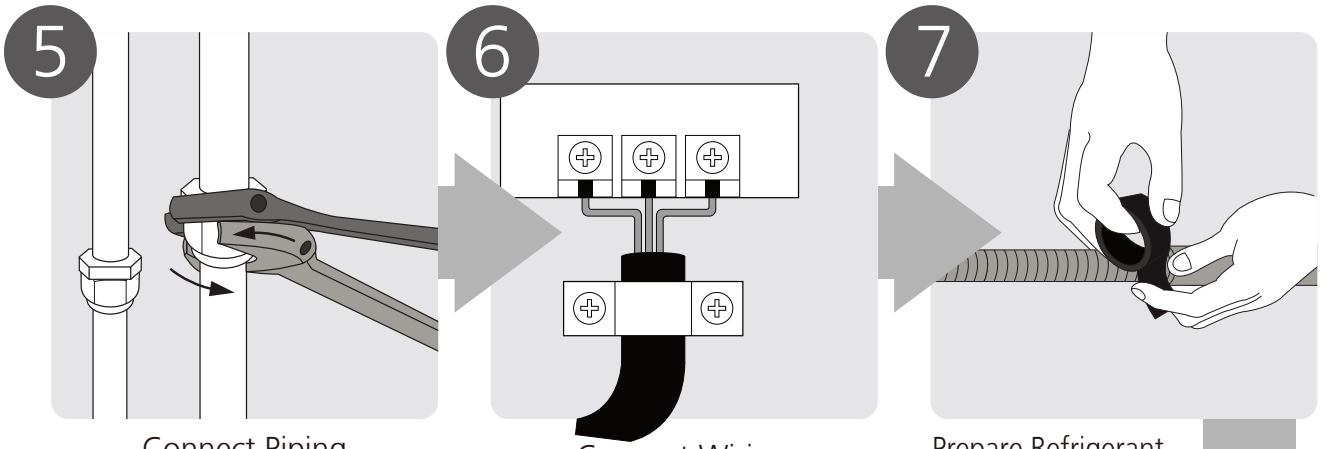
Select Installation Location

Determine Wall Hole Position



Attach Mounting Plate

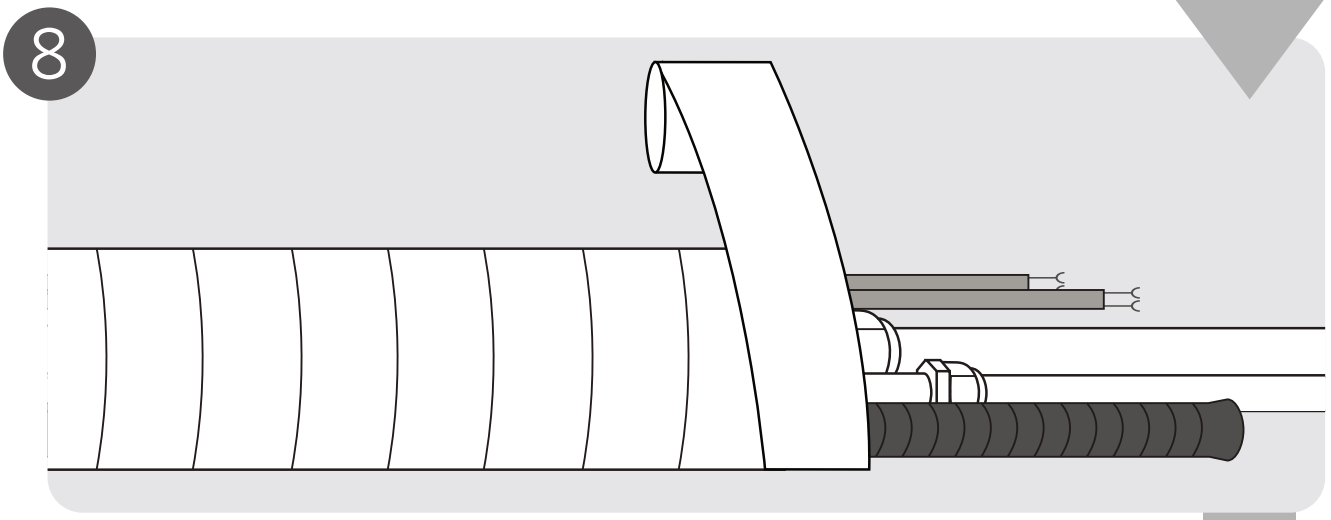
Drill Wall Hole



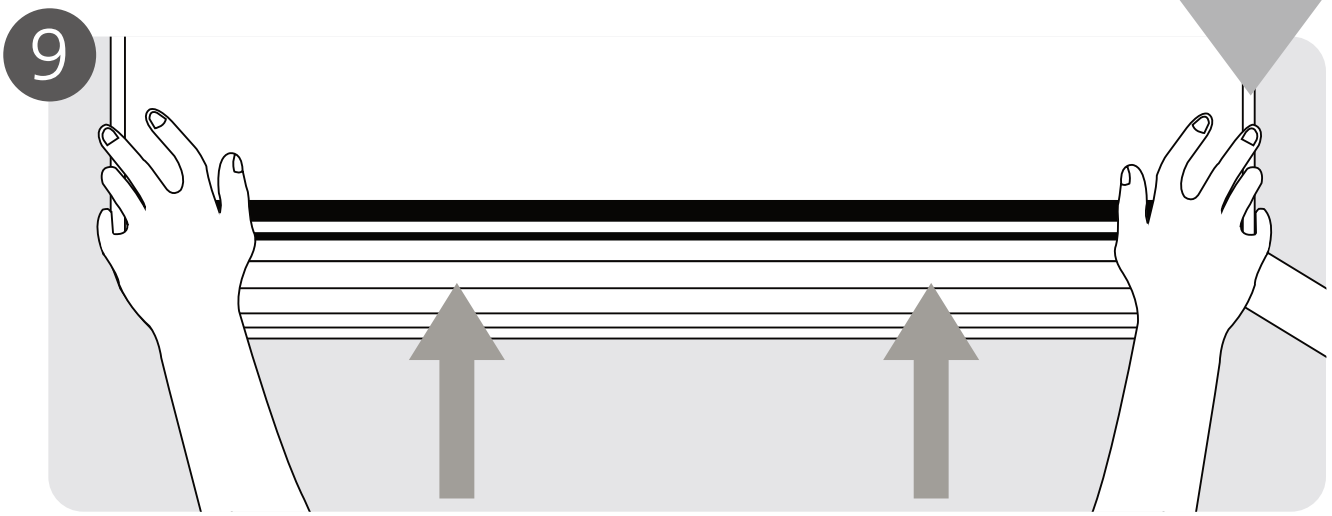
Connect Piping

Connect Wiring

Prepare Refrigerant piping



Wrap Piping and Cable
(not applicable for some locations in the US)



Mount Indoor Unit

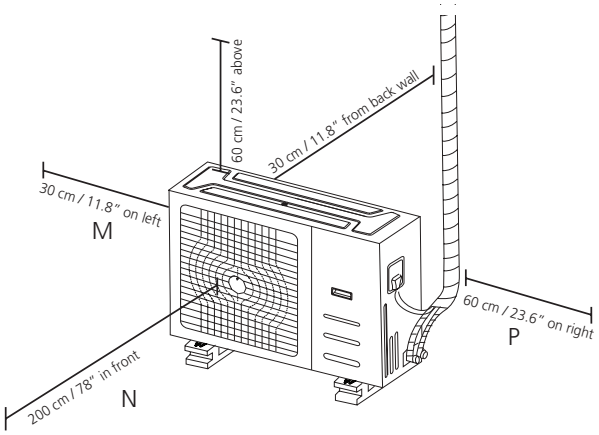
2. Location selection

2.1 Unit location selection can refer to installation manual.

2.2 DO NOT install the unit in the following locations:

- Where oil drilling or fracking is taking place.
- Coastal areas with high salt content in the air.
- Areas with caustic gases in the air, such as near hot springs.
- Areas with power fluctuations, such as factories.
- Enclosed spaces, such as cabinets.
- Areas with strong electromagnetic waves.
- Areas that store flammable materials or gas.
- Rooms with high humidity, such as bathrooms or laundry rooms.
- If possible, DO NOT install the unit where it is exposed to direct sunlight.

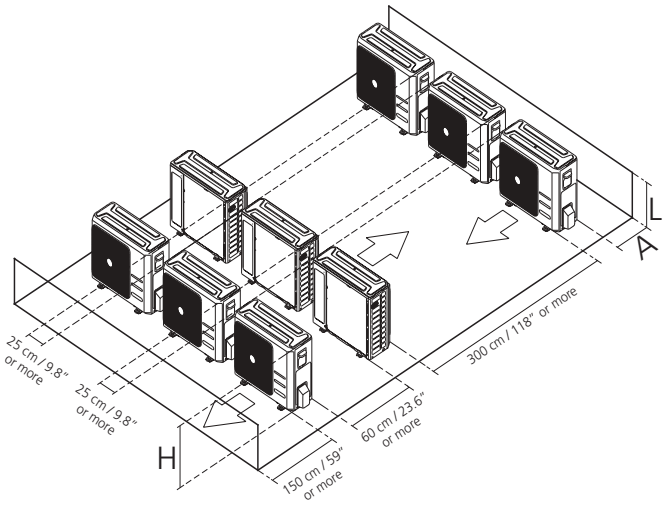
2.3 The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P)



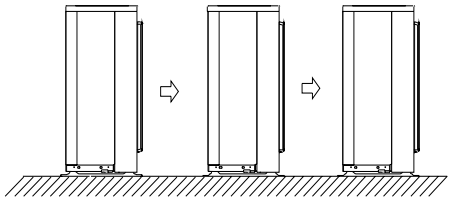
2.4 Rows of series installation

The relations between H, A and L are as follows.

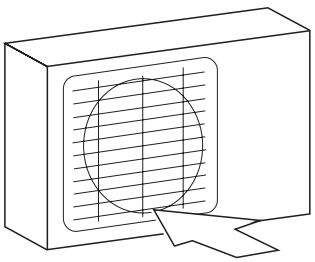
	L	A
L ≤ H	L ≤ 1/2H	25 cm / 9.8" or more
	1/2H < L ≤ H	30 cm / 11.8" or more
L > H	Can not be installed	



DO NOT install the rows of series like following figure.



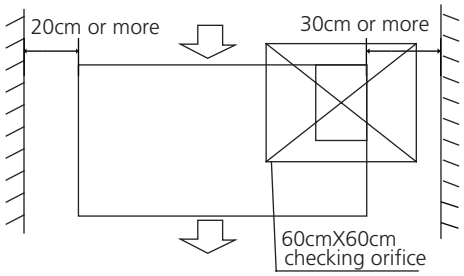
2.5 If the location is exposed to strong winds (for example: near a seaside), the unit must be placed against the wall to shelter it from the wind. If necessary, use an awning.



DO NOT Strong wind

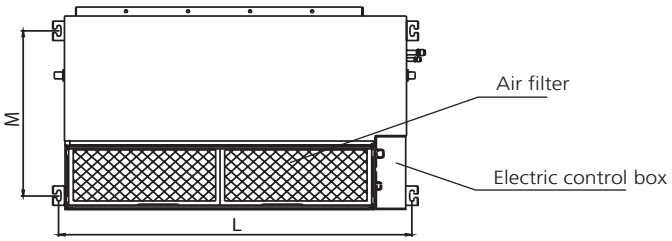
3. Indoor Unit Installation(A6 Duct type)

3.1 Service space for indoor unit



3.2 Hang Indoor Unit

1.Please refer to the following diagrams to locate the four positioning screw bolt hole on the ceiling. Be sure to mark the areas where ceiling hook holes will be drilled.



Capacity(Btu/h)	Size of mounted plug	
	L	M
7k/9k/12k	741	360
18k	920	508

2. Install and fit pipes and wires after you have finished installing the main body. When choosing where to start, determine the direction of the pipes to be drawn out.

Especially in cases where there is a ceiling involved, align the refrigerant pipes, drain pipes, and indoor and outdoor lines with their connection points before mounting the unit..

3. Install hanging screw bolts.

1) Cut off the roof beam.

2) Strengthen the point at which the cut was made. Consolidate the roof beam..

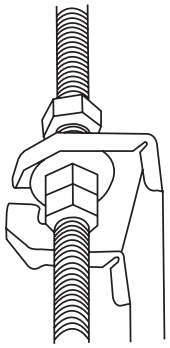
4. After you select an installation location,align the refrigerant pipes, drain pipes, as well as indoor and outdoor wires with their connection points before mounting the unit..

5. Drill 4 holes 10cm (4") deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.

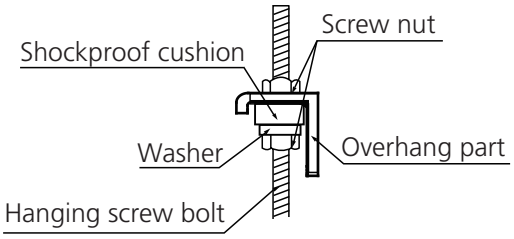
6. Secure the bolt using the included washers and nuts.

7. Install the four suspension bolts.

8. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the washers and nuts provided.



9. Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks.



Note: Confirm the minimum drain tilt is 1/100 or more.

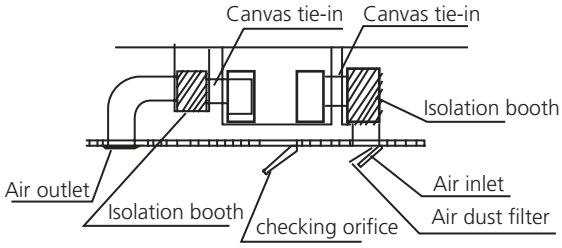
3.3 Duct and accessories installation

1. Install the filter(optional) according to air inlet size.

2. Install the canvas tie-in between the body and duct.

3. The air inlet and air outlet duct should be far enough apart enough to a avoid air passage short-circuit.

4. Connect the duct according to the following diagram.



5. Refer to the following static pressure guidelines when installing the indoor unit.

Capacity(Btu/h)	Static Pressure(Pa)
7k/9k	0-40
12k	0-60
18k	0-100

Change the fan motor static pressure according to external duct static pressure.

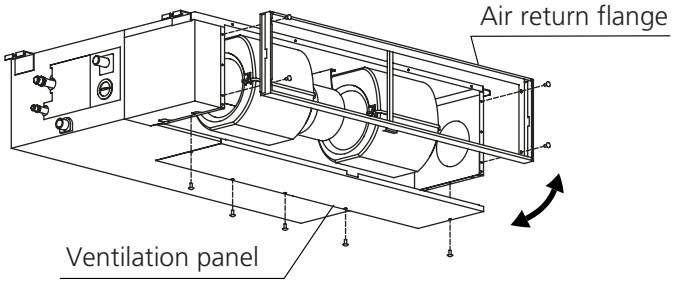
NOTE: 1. Do not put the connecting duct weight on the indoor unit.

2. When connecting duct, use inflammable canvas tie-in to prevent vibrating.

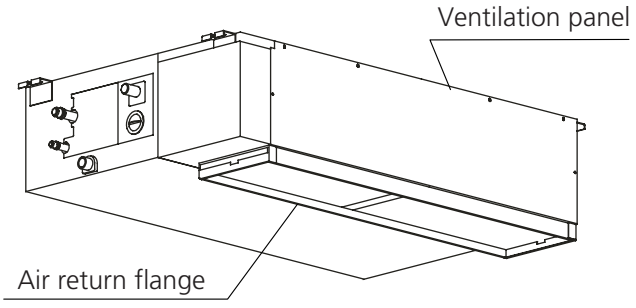
3. Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct underlayer can be added to reduce noise, if the end-user requires.

3.4 Adjust the air inlet direction(From rear side to under-side.)

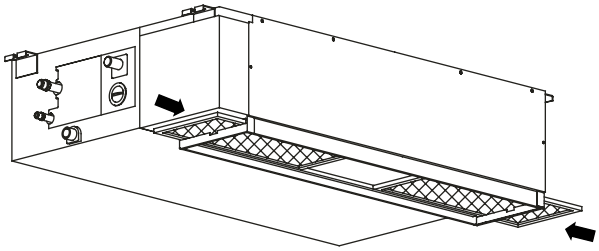
1. Take off ventilation panel and flange,



2. Change the mounting positions of ventilation panel and air return flange .



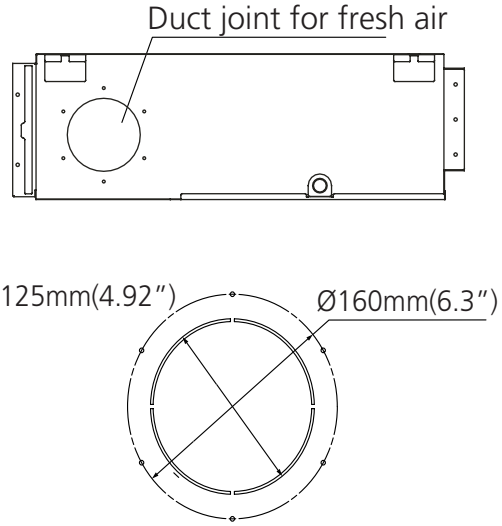
3. When installing the filter mesh, fit it into the flange as illustrated in the following figure.



NOTE: All the figures in this manual are for demonstration purposes only. The air conditioner you have purchased may be slightly different in design, though similar in shape.

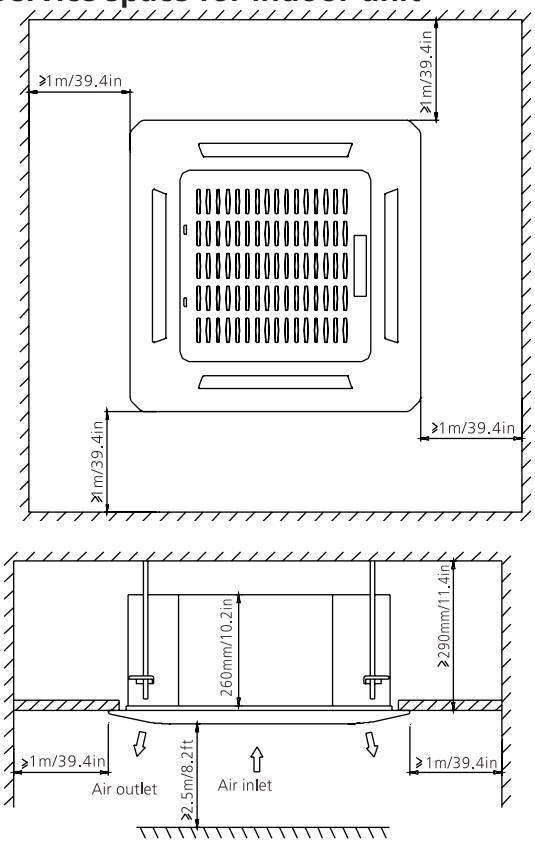
3.5 Fresh air duct installation

Dimension :



3. Indoor Unit Installation(Compact Cassette Type)

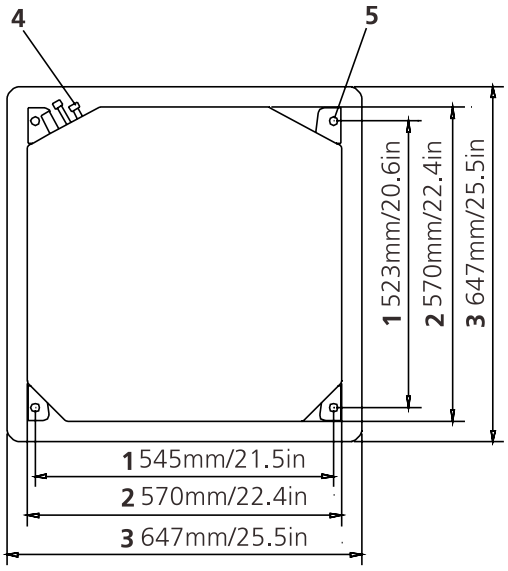
3.1 Service space for indoor unit

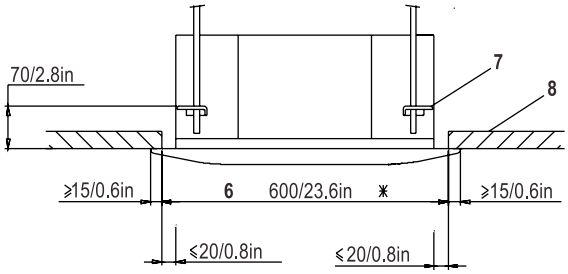


3.2 Hang Indoor Unit

1. Use the included paper template to cut a rectangular hole in the ceiling, leaving at least 1m (39.4") on all sides. The cut hole size should be 4cm(1.6") larger than the body size.

Be sure to mark the areas where ceiling hook holes will be drilled.

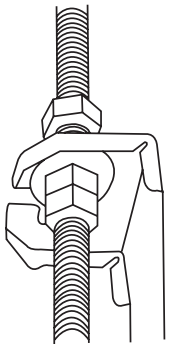




1 Suspension bolt pitch dimensions
2 Body dimensions
3 Decoration panel dimensions
4 Refrigerant piping
5 Suspension bolt (×4)
6 Ceiling opening dimensions
7 Hanger bracket
8 Ceiling board

2. Drill 4 holes 5cm (2") deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
3. Using a hammer, insert the ceiling hooks into the pre-drilled holes. Secure the bolt using the included washers and nuts.
4. Install the four suspension bolts

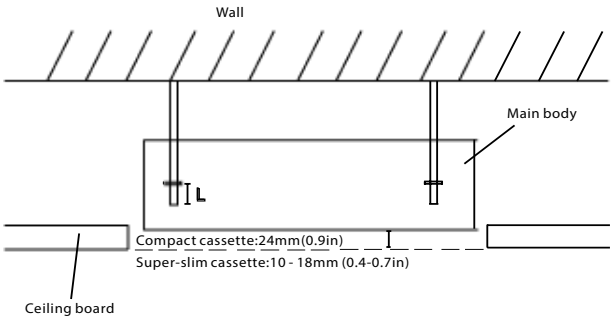
5. Mount the indoor unit. You will need two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the included washers and nuts



Adjust the position to ensure the gaps between the indoor

unit and the four sides of false ceiling are even. The bottom of the unit should be 24mm / 0.9in higher than ceiling board.

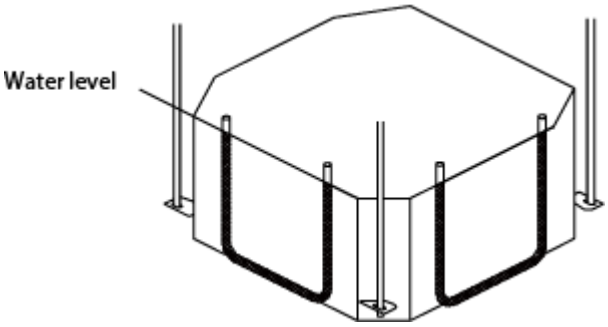
Generally, L should be half the length of the suspension bolt or long enough to prevent the nuts from coming off



CAUTION:

Ensure that the unit is completely level.

The unit is equipped with a built-in drain pump and float switch. If the unit is tilted against the direction of condensate flows (the drainpipe side is raised), the float switch may malfunction and cause water to leak.



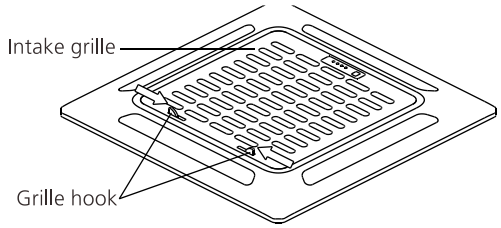
NOTE FOR NEW HOME INSTALLATION

When installing the unit in a new home, the ceiling hooks can be embedded in advance. Make sure that the hooks do not come loose due to concrete shrinkage. After installing the indoor unit, fasten the installation paper template onto the unit with bolts (M6X12) to determine in advance the dimension and position of the opening on the ceiling. Follow the instructions above for the remainder of the installation.

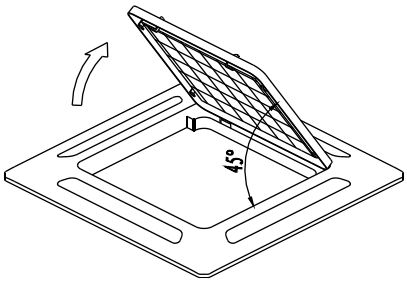
3.3 Compact Cassette Panel Installation

3.3.1 Remove the front grille

1. Slide the 2 grille hooks toward the middle of the decoration panel.



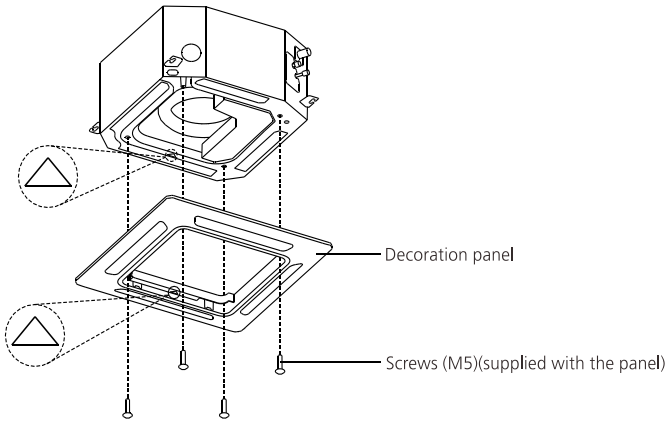
2. Hold the grille at a 45° angle, lift it up slightly and detach it from the main body.



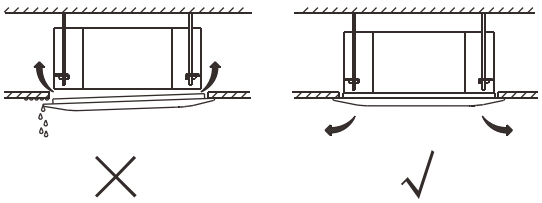
3.3.2 Install the panel

1. Align the indicate "△" on the decoration panel to the indicate "△" on the unit .

2. Attach the decoration panel to the unit with the supplied screws as shown in figure below.

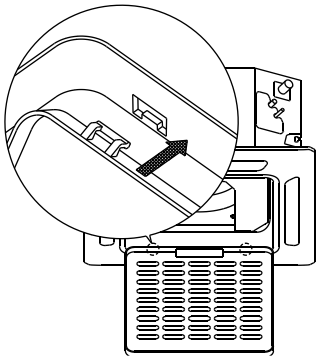


3. After installing the panel, ensure that there is no space between the unit body and decoration panel. Otherwise air may leak through the gap and cause dewdrop.

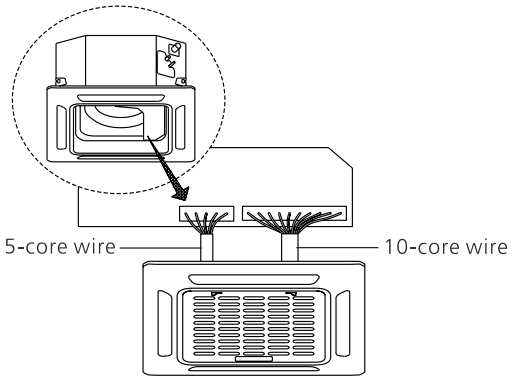


3.3.3 Mount the grille

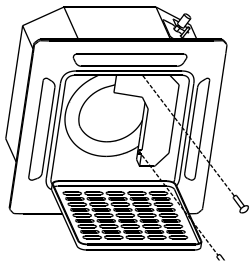
Ensure that the buckles at the back of the grille be properly seated in the groove of the panel.



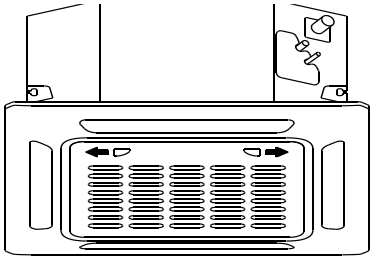
3.3.4 Connect the two wires of the panel to the main board of the unit.



3.3.5 Fasten the control box lid with two screws .

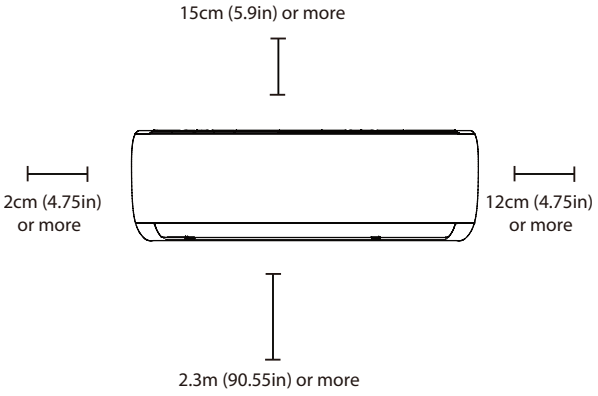


3.3.6 Close the front grille, and close the two grille hooks.



3. Indoor Unit Installation(wall mounted type)

3.1 Service space for indoor unit



3.2 Attach mounting plate to wall

- **The mounting plate is the device on which you will mount the indoor unit.**

1. Remove the screw that attaches the mounting plate to the back of the indoor unit.

2. Place the mounting plate against the wall in a location that meets the standards in the Select Installation Location step. (See Mounting Plate Dimensions for detailed information on mounting plate sizes.)

3. Drill holes for mounting screws in places that:

- have studs and can support the weight of the unit.
- correspond to screw holes in the mounting plate.

4. Secure the mounting plate to the wall with the screws provided.

5. Make sure that mounting plate is flat against the wall.

- **Mounting plate dimensions**

Different models have different mounting plates. In order to ensure that you have ample room to mount the indoor unit, the diagrams to the right show different types of mounting plates along with the following dimensions:

1. Width of mounting plate

2. Height of mounting plate

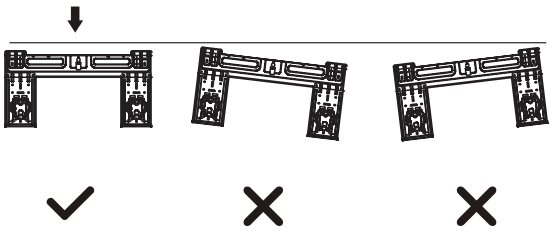
3. Width of indoor unit relative to plate

4. Height of indoor unit relative to plate

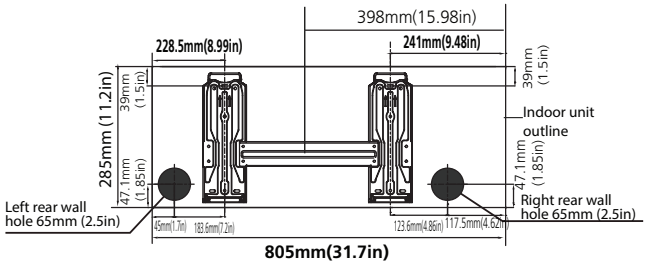
5. Recommended position of wall hole (both to the left and right of mounting plate)

6. Relative distances between screw holes

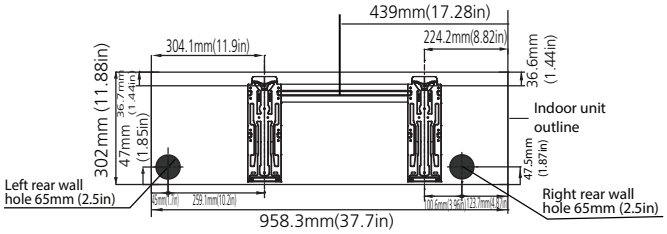
Correct orientation of Mounting Plate



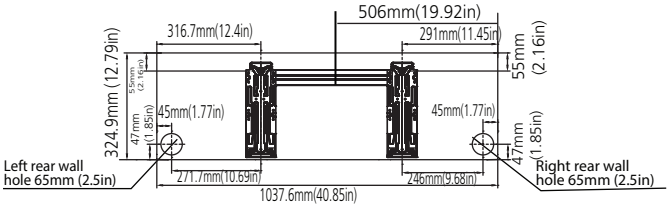
For Forest series:



7K/9K/12K Models

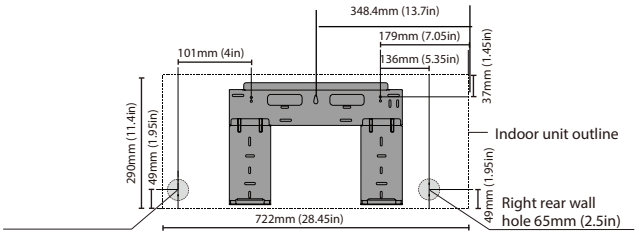


18K Model

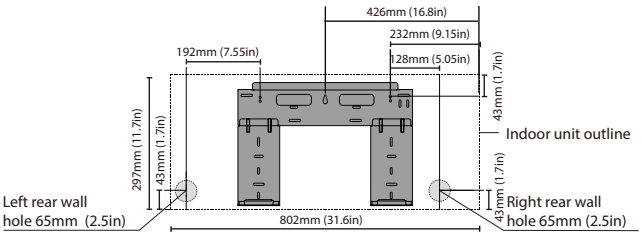


24K Model

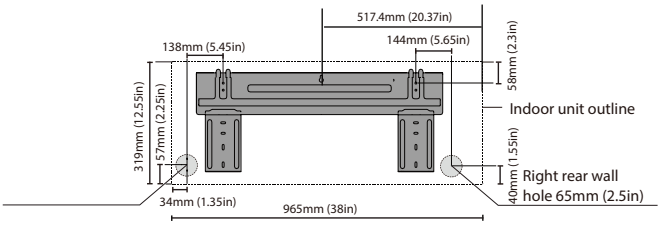
For Aurora series:



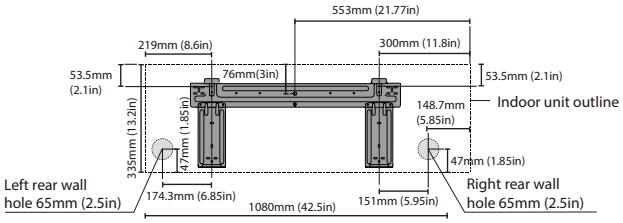
9K Model



12K Model

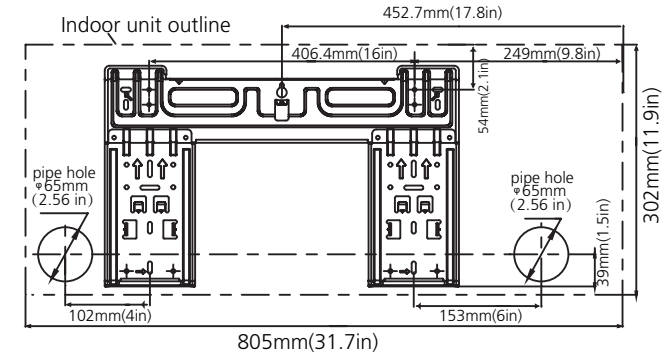


18K Model

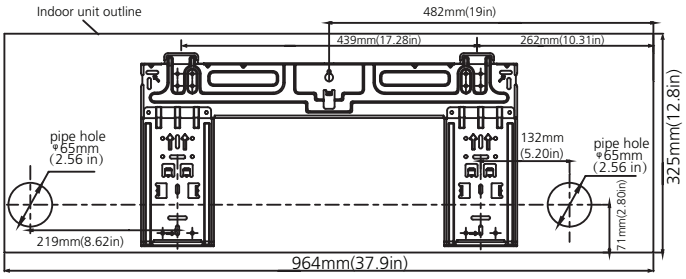


24K Model

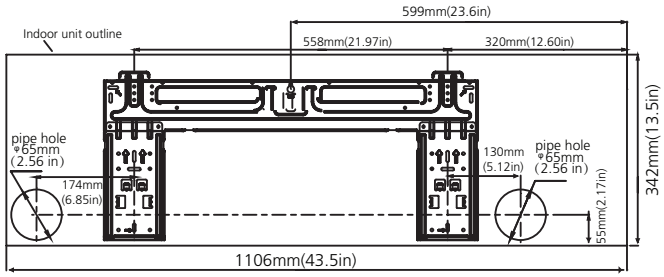
For All Easy series:



9K/12K Model

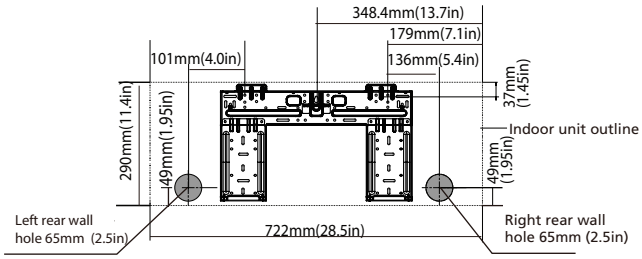


18K Model

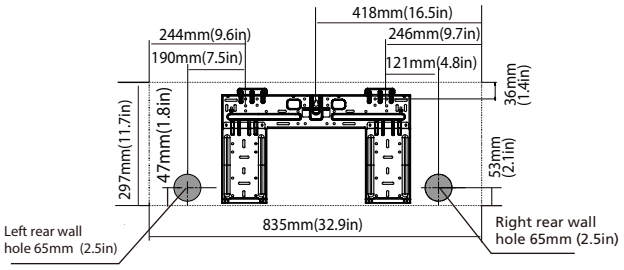


24K Model

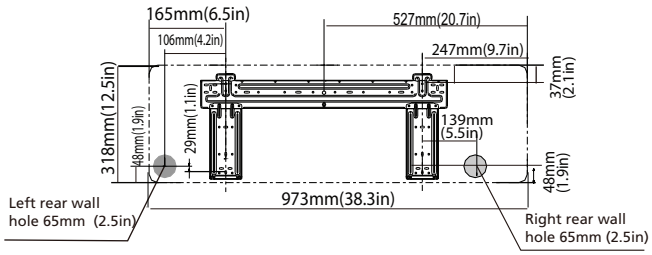
For XTREME series:



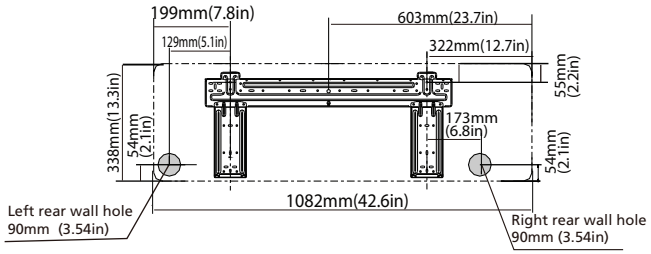
MSAGAU-09



MSAGBU-09&MSAGBU-12



18K Model



24K Model

- **Note for concrete or brick walls:**

If the wall is made of brick, concrete, or similar material, drill 5mm-diameter (0.2in-diameter) holes in the wall

and insert the sleeve anchors provided. Then secure the mounting plate to the wall by tightening the screws directly into the clip anchors.

3.3 Drill wall hole for connective piping

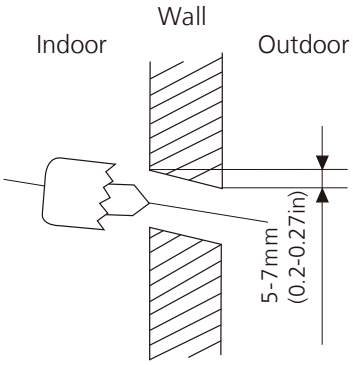
You must drill a hole in the wall for refrigerant piping, the drainage pipe, and the signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the position of the mounting plate. Refer to Mounting Plate Dimensions on the next page to help you determine the optimal position. The wall hole should have a 65mm (2.5in) diameter at least, and at a slightly lower angle to facilitate drainage.

2. Using a 65mm (2.5in) or 90mm(3.54in) (depending on models)core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 5mm to 7mm (0.2-0.27in). This will ensure proper water drainage.

3. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

NOTE: When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.



3.4 Prepare refrigerant piping

The refrigerant piping is inside an insulating sleeve attached to the back of the unit. You must prepare the piping before passing it through the hole in the wall. Refer to the Refrigerant Piping Connection section of this manual for detailed instructions on pipe flaring and flare torque requirements, technique, etc.

1. Based on the position of the wall hole relative to the mounting plate, choose the side from which the piping will exit the unit.

2. If the wall hole is behind the unit, keep the knock-out panel in place. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit. This will create a slot through which your piping can exit the unit. Use needle nose pliers if the plastic panel is too difficult to remove by hand.

3. Groove has been made in the knock-out panel in order to cut it conveniently. The size of the slot is determined by the diameter of piping.

4. Use scissors to cut down the length of the insulating sleeve to reveal about 15cm (6in) of the refrigerant piping. This serves two purposes:

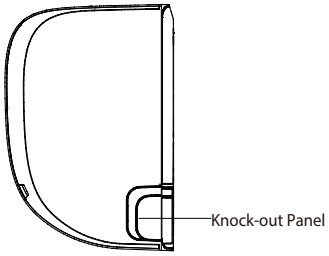
- To facilitate the Refrigerant Piping Connection process.
- To facilitate Gas Leak Checks and enable you to check for dents.

5. If existing connective piping is already embedded in the wall, proceed directly to the Connect Drain Hose step. If there is no embedded piping, connect the indoor unit's refrigerant piping to the connective piping that will join the indoor and outdoor units. Refer to the Refrigerant Piping Connection section of this manual for detailed instructions.

6. Based on the position of the wall hole relative to the mounting plate, determine the necessary angle of your piping.

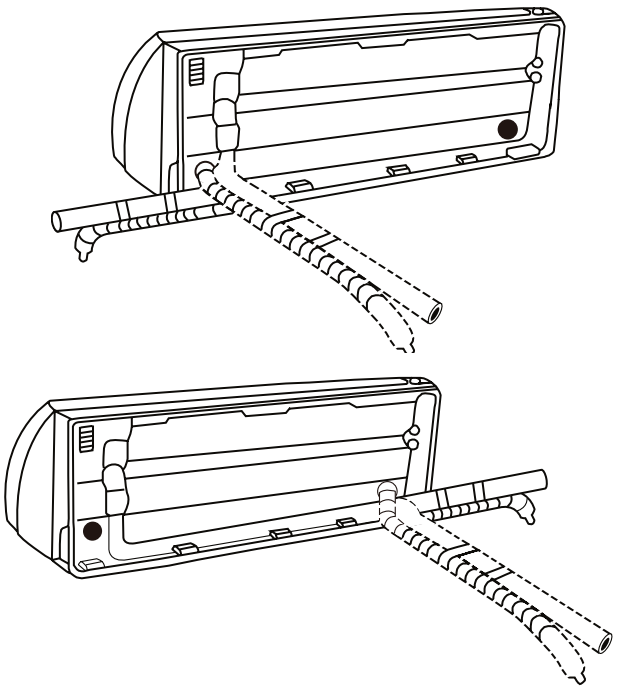
7. Grip the refrigerant piping at the base of the bend.

8. Slowly, with even pressure, bend the piping towards the hole. Do not dent or damage the piping during the process.



NOTE: Refrigerant piping can exit the indoor unit from four different angles:

- Left-hand side
- Left rear
- Right-hand side
- Right rear



Be extremely careful not to dent or damage the piping while bending them away from the unit. Any dents in the piping will affect the unit's performance.

3.5 Connect drain hose

By default, the drain hose is attached to the left hand side of unit (when you're facing the back of the unit). However, it can also be attached to the right-hand side.

1. To ensure proper drainage, attach the drain hose on the same side that your refrigerant piping exits the unit.

2. Attach drain hose extension (purchased separately) to the end of drain hose.

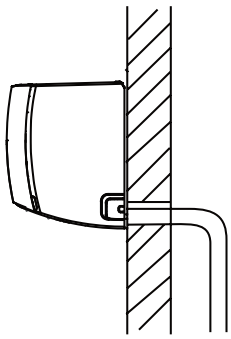
3. Wrap the connection point firmly with Teflon tape to ensure a good seal and to prevent leaks.

4. For the portion of the drain hose that will remain indoors, wrap it with foam pipe insulation to prevent condensation.

5. Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.

NOTE ON DRAIN HOSE PLACEMENT:

- DO NOT kink the drain hose.
- DO NOT create a water trap.
- DO NOT put the end of drain hose in water or a container that will collect water.



Make sure there are no kinks or dent in drain hose to ensure proper drainage.

3.6 Connect signal cable

3.6.1 Before performing electrical work, read these regulations

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.

2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.

3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.

4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.

5. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.

6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.

7. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.

8. Make sure to properly ground the air conditioner.

9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.

10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

11. If the unit has an auxiliary electric heater, it must be installed at least 1 meter (40in) away from any combustible

materials.

12. BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.

3.6.2 Connect signal cable

The signal cable enables communication between the indoor and outdoor units. You must first choose the right cable size before preparing it for connection.

Cable Types:

- Indoor Power Cable (if applicable): H05VV-F or H05V2V2-F
- Outdoor Power Cable: H07RN-F
- Signal Cable: H07RN-F

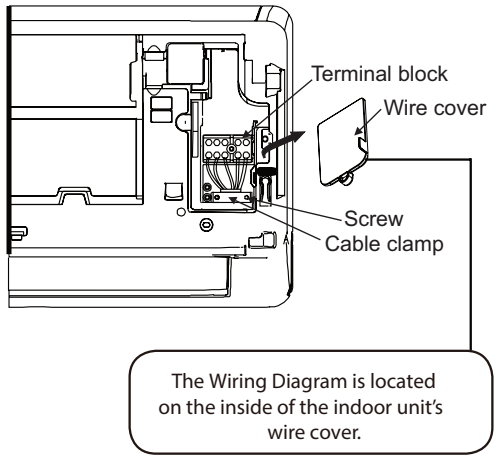
For Aurora series & Forest series:

1. Prepare the cable for connection:

- Using wire strippers, strip the rubber jacket from both ends of signal cable to reveal about 40mm (1.57in) of the wires inside.
- Strip the insulation from the ends of the wires.
- Using wire crimper, crimp u-type lugs on the ends of the wires.

2. Open front panel of the indoor unit.

3. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.



4. Unscrew the cable clamp below the terminal block and place it to the side.

5. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.

6. Feed the signal wire through this slot, from the back of the unit to the front.

7. Facing the front of the unit, match the wire colors with the labels on the terminal block, connect the u-lug and and firmly screw each wire to its corresponding terminal.

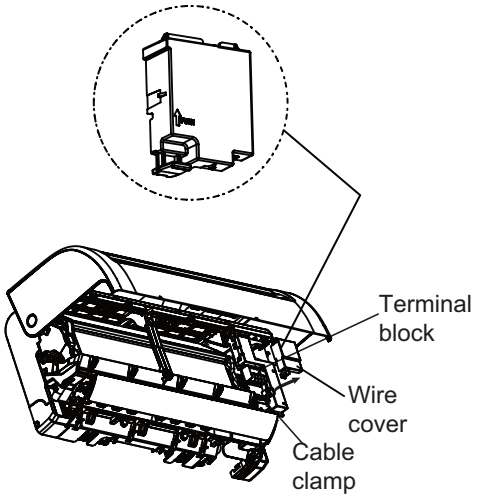
8. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.

9. Replace the wire cover on the front of the unit, and the plastic panel on the back.

For All Easy series:

1. Open front panel of the indoor unit by loosen the screws according to picture below, which provide big space for wiring connection.

2. Open the wire box cover to connect the cable.



3.Unscrew the cable clamp below the terminal block and place it to the side.

4.Facing the back of the unit, remove the plastic panel on the bottom left-hand side.

5. Feed the signal wire through this slot, from the back of the unit to the front.

6. Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wire to its corresponding terminal.

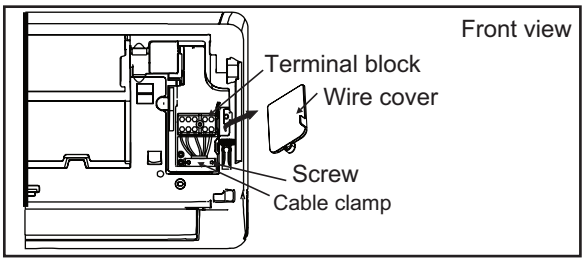
7. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.

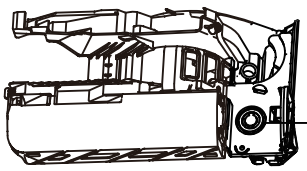
8. Replace the wire cover on the front of the unit, and the plastic panel on the back.

For XTREME series:

1. Open front panel of the indoor unit.

2.Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.





NOTE:

- For the units with conduit tube to connect the cable, remove the big plastic konck-out panel to create a slot through which the conduit tube can be installed.
- For the units with five-core cable, remove the middle small plactic knock-out panel to create a slot through which the cable can exit.
- Use needle nose pliers if the plastic panel is too difficult to remove by hand.

3.Unscrew the cable clamp below the terminal block and place it to the side.

4.Facing the back of the unit, remove the plastic panel on the bottom left-hand side.

5.Feed the signal wire through this slot, from the back of the unit to the front.

6.Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wireto its corresponding terminal.

7. After checking to make sure every connectionis secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.

8. Replace the wire cover on the front of the unit, and the plastic panel on the back.

NOTE:

- Choose the right cable size

The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

- Take note of fuse specifications

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board, such as: Indoor unit: T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC, etc.(The fuse is made of ceramic.)

- Pay attention to live wire

While crimping wires, make sure you clearly distinguish the Live ("L") Wire from other wires.

- All wiring must performed strictly in accordance with the wiring diagram located on the inside of the indoor unit's wire cover.
- Do not mix up live and null wires.

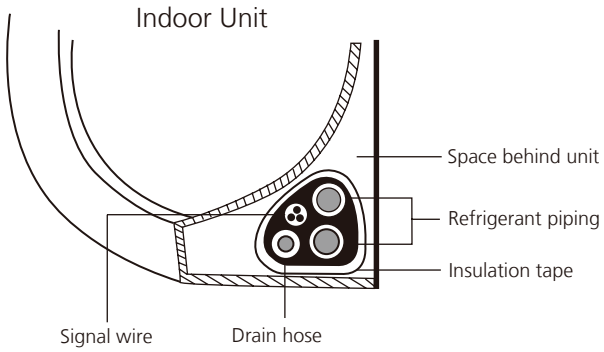
This is dangerous, and can cause the air conditioning unit to malfunction.

- The wiring connection process may differ slightly between units.

3.7 Wrap piping and cables

Before passing the piping, drain hose, and the signal cable through the wall hole, you must bundle them together to save space, protect them, and insulate them.

1. Bundle the drain hose, refrigerant pipes, and signal cable according to the picture below:



2. Using adhesive vinyl tape, attach the drain hose to the underside of the refrigerant pipes.

3. Using insulation tape, wrap the signal wire, refrigerant pipes, and drain hose tightly together. Double-check that all items are bundled in accordance with the picture above.

NOTE:

- Drain hose must be on bottom

Make sure that the drain hose is at the bottom of the bundle. Putting the drain hose at the top of the bundle can cause the drain pan to overflow, which can lead to fire or water damage.

- Do not intertwine signal cable with other wires

While bundling these items together, do not intertwine or cross the signal cable with any other wiring

- Do not wrap ends of piping

When wrapping the bundle, keep the ends of the piping

unwrapped. You need to access them to test for leaks at the end of the installation process.

3.8 Mount indoor unit

3.8.1 If you installed new connective piping to the outdoor unit, do the following:

1. If you have already passed the refrigerant piping through the hole in the wall, proceed to **step 4.**

2. Otherwise, double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign materials from entering the pipes.

3. Slowly pass the wrapped bundle of refrigerant pipes, drain hose, and signal wire through the hole in the wall.

4. Hook the top of the indoor unit on the upper hook of the mounting plate.

5. Check that unit is hooked firmly on mounting by applying slight pressure to the left and right-hand sides of the unit. The unit should not jiggle or shift.

6. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

7. Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.

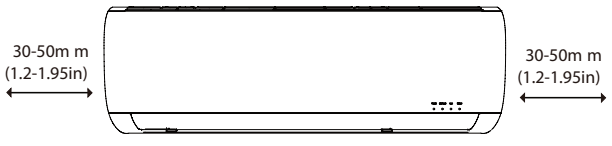
3.8.2 If refrigerant piping is already embedded in the wall, do the following:

For Aurora series, Forest series&XTREME series:

1. Hook the top of the indoor unit on the upper hook of the mounting plate.

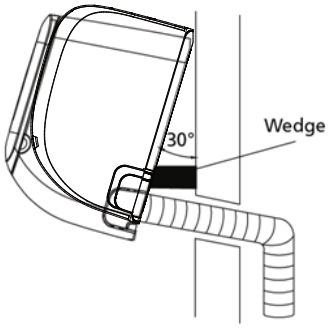
- Unit is adjustable

Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit. If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 30-50mm (1.25-1.95in), depending on the model.



Move to left or right

2. Use the holder in the mounting plate to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose.



3. Connect drain hose and refrigerant piping (refer to Refrigerant Piping Connection section of this manual for instructions).

4. Keep pipe connection point exposed to perform the leak test (refer to Electrical Checks and Leak Checks section of this manual).

5. After the leak test, wrap the connection point with insulation tape.

6. Remove the bracket or wedge that is propping up the unit.

7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

For All Easy series:

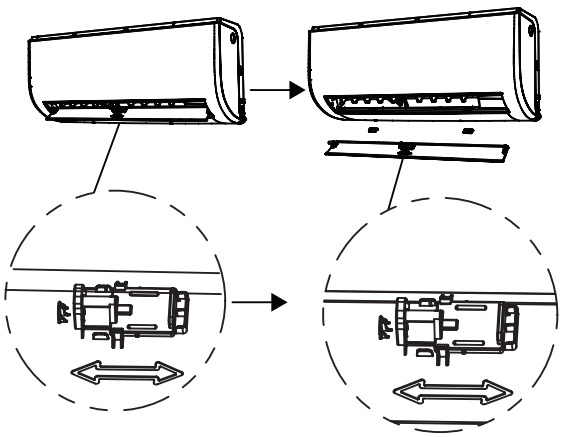
Step 1:Hook the indoor unit on the mounting plate:

1. Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit.If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 30-50mm (1.25-1.95in), depending on the model.

Move to left or right

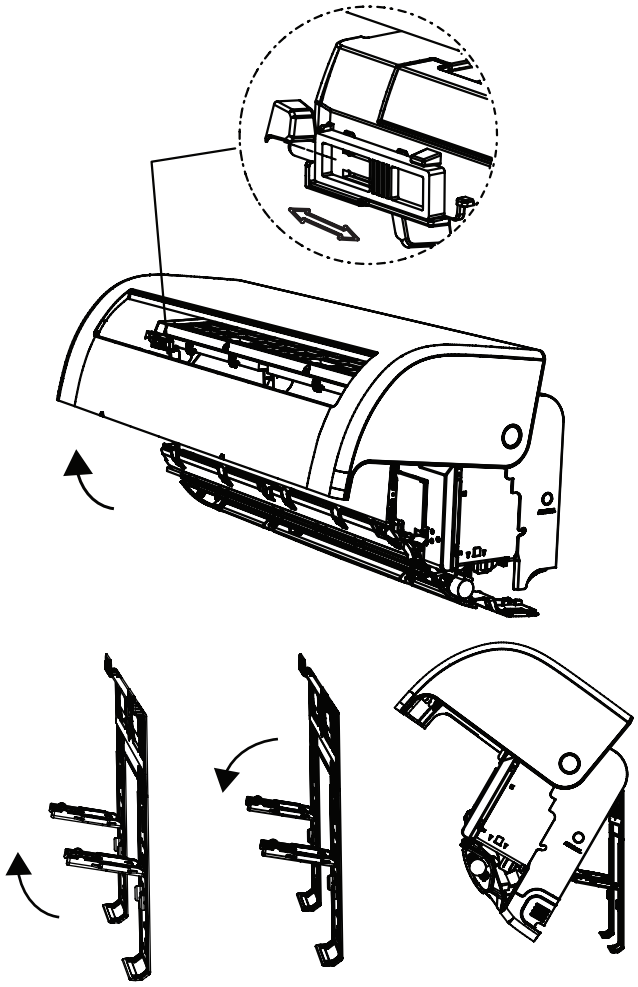
Step 2: Prepare refrigerant piping:

1. Disassemble the louver:



2. Open and fix the position of the panel

Firstly, unscrew the two screws showed in the picture below, then open the panel, and fix the position of the panel by the latch.



3. Use the holder in the mounting plate to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose.

Step 3. Connect drain hose and refrigerant piping (refer to Refrigerant Piping Connection section of this manual for instructions).

Step 4. Keep pipe connection point exposed to perform the leak test (refer to Electrical Checks and Leak Checks section of this manual).

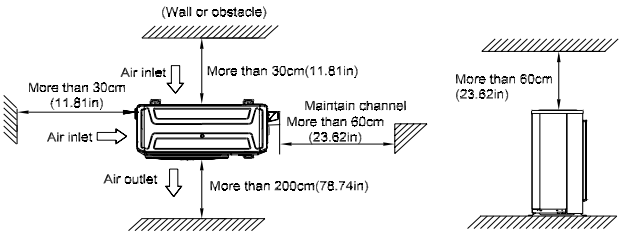
Step 5. After the leak test, wrap the connection point with insulation tape.

Step 6. Remove the bracket or wedge that is propping with insulation tape.

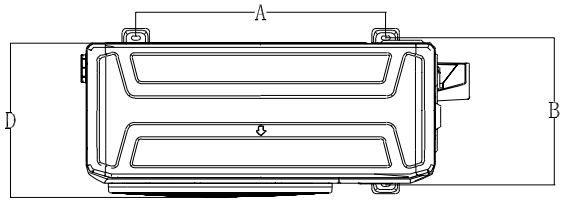
Step 7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

4. Outdoor unit installation

4.1 Service space for outdoor unit



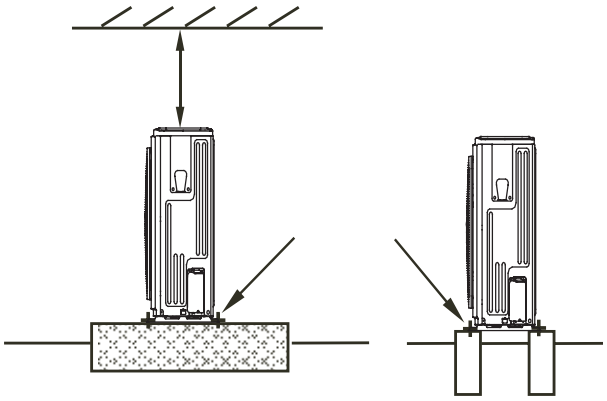
4.2 Bolt pitch



Model	A	B	D
M2OG-14HFN8-Q	514	340	333
M2OC-18HFN8-Q			
M2OD-18HFN8-Q			
M3OF-21HFN8-Q	540	350	363
M3OE-27HFN8-Q			
M3OF-27HFN8-Q			
M4OE-28HFN8-Q	673	403	410
M4OB-36HFN8-Q			
M5OD-42HFN8-Q			
M5OE-42HFN8-Q			
M2OH-14HFN8-Q	511	317	554
M2OE-18HFN8-Q			
M3OG-21HFN8-Q	663	354	673
M3OA-27HFN8-Q			

4.3 Install Outdoor Unit

Fix the outdoor unit with anchor bolts(M10)



Cation

Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.

Never hold the inlet of the outdoor unit to prevent it from deforming.

Do not touch the fan with hands or other objects.

Do not lean it more than 45, and do not lay it sidelong.

Make concrete foundation according to the specifications of the outdoor units.

Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.

5. Drainage Pipe Installation

Install the drainage pipe as shown below and take measures against condensation. Improperly installation could lead to leakage and eventually wet furniture and belongings.

5.1 Installation principle

- Ensure at least 1/100 slope of the drainage pipe
- Adopt suitable pipe diameter
- Adopt nearby condensate water discharge

5.2 Key points of drainage water pipe installation

1. Considering the pipeline route and elevation.
   - Before installing condensate water pipeline, determine its route and elevation to avoid intersection with other pipelines and ensure slope is straight.
2. Drainage pipe selection
   - The drainage pipe diameter shall not small than the drain hose of indoor unit
   - According to the water flowrate and drainage pipe slope to choose the suitable pipe, the water flowrate is decided by the capacity of indoor unit.

Relationship between water flowrate and capacity of indoor unit

Capacity (kBtu)	Water flowrate (l/h)
12	2.4
18	4
24	6
30	7
36	8
42	10
48	12
55	14

According to the above table to calculate the total water flowrate for the confluence pipe selection.

For horizontal drainage pipe (The following table is for reference)

PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flowrate (l/h)		Remark
		Slope 1/50	Slope 1/100	
PVC25	20	39	27	For branch pipe
PVC32	25	70	50	
PVC40	31	125	88	Could be used for confluence pipe
PVC50	40	247	175	
PVC63	51	473	334	

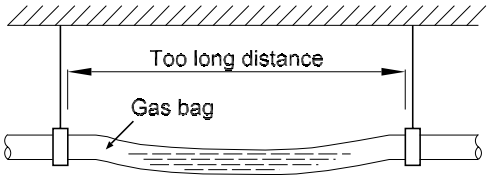
Attention: Adopt PVC40 or bigger pipe to be the main pipe.

For Vertical drainage pipe (The following table is for reference)

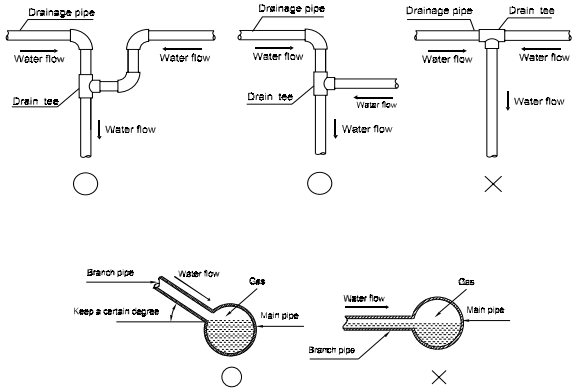
PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flowrate (l/h)	Remark
PVC25	20	220	For branch pipe
PVC32	25	410	
PVC40	31	730	Could be used for confluence pipe
PVC50	40	1440	
PVC63	51	2760	
PVC75	67	5710	
PVC90	77	8280	

Attention: Adopt PVC40 or bigger pipe to be the main pipe.

3. Individual design of drainage pipe system
   - The drainage pipe of air conditioner shall be installed separately with other sewage pipe, rainwater pipe and drainage pipe in building.
   - The drainage pipe of the indoor unit with water pump should be apart from the one without water pump.
4. Supporter gap of drainage pipe
   - In general, the supporter gap of the drainage pipe horizontal pipe and vertical pipe is respectively 1m~1.5m and 1.5m~2.0m.
   - Each vertical pipe shall be equipped with not less than two hangers.
   - Overlarge hanger gap for horizontal pipe shall create bending, thus leading to air block.



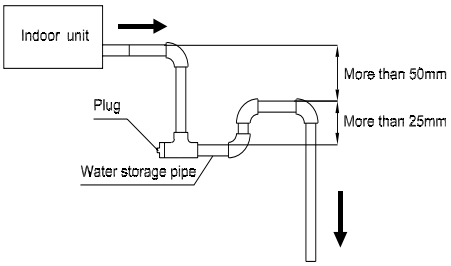
5. The horizontal pipe layout should avoid converse flow or bad flow



- The correct installation will not cause converse water flow and the slope of the branch pipes can be adjusted freely
- The false installation will cause converse water flow and the slope of the branch pipe can not be adjusted.

6. Water storage pipe setting

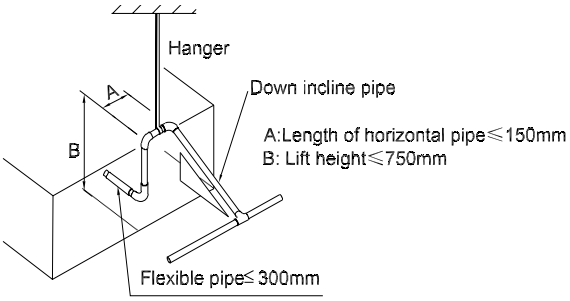
- If the indoor unit has high extra static pressure and without water pump to elevate the condensate water, such as high extra static pressure duct unit , the water storage pipe should be set to avoid converse flow or blow water phenomena.



7. Lifting pipe setting of indoor unit with water pump

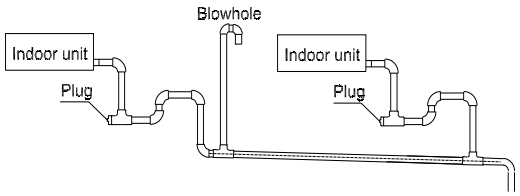
- The length of lifting pipe should not exceed 750mm.
- The drainage pipe should be set down inclined after the lifting pipe immediately to avoid wrong operation of water level switch.

- Refer the following picture for installation reference.



8. Blowhole setting

- For the concentrated drainage pipe system, there should design a blowhole at the highest point of main pipe to ensure the condensate water discharge smoothly.
- The air outlet shall face down to prevent dirt entering pipe.
- Each indoor unit of the system should be installed it.
- The installation should be considering the convenience for future cleaning.



9. The end of drainage pipe shall not contact with ground directly.

5.3 Drainage test

1. Water leakage test

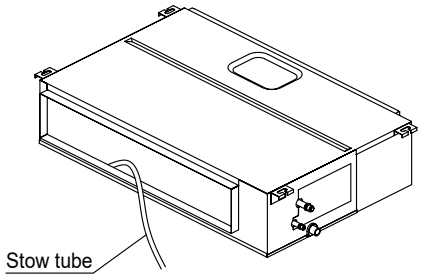
- After finishing the construction of drainage pipe system, fill the pipe with water and keep it for 24 hours to check whether there is leakage at joint section.

2. Water discharge test

Check that the drainpipe is unhindered.

This test should be performed on newly built houses before the ceiling is paved.

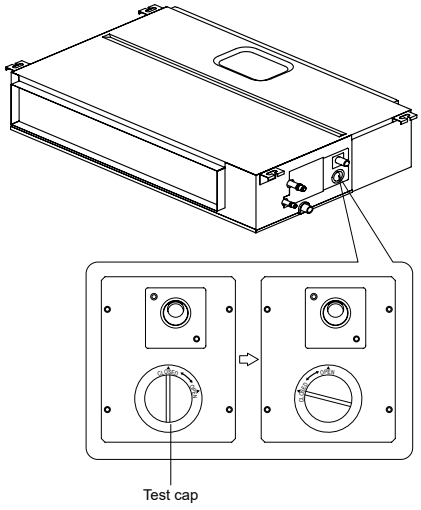
2.1 Units without a pump

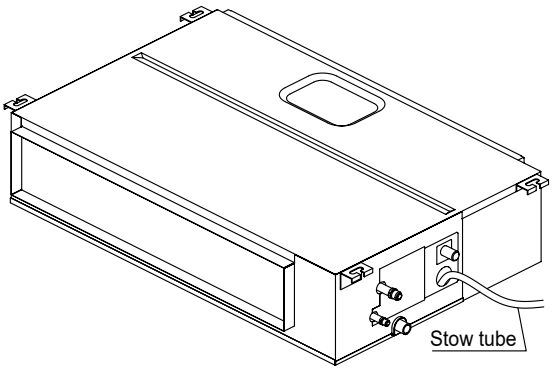


- Fill the water pan with 2 liters of water.
- Check that the drainpipe is unhindered

.2.2 Units with a pump

1. Remove the test cover.
- Fill the water pan with 2 liters of water.





2. Turn on the unit in COOLING mode. You will hear the drain pump.Check whether the water is discharged properly (a 1-minute lag is possible, depending on the length of the drain pipe), Check whether water leaks from the joints.

3. Turn off the air conditioner and put the cap back on.

- After turn off the air conditioner 3 minutes, check whether there is anything abnormal. If drainage pipes have not been distributed properly, over back-flow water shall cause the flashing of alarm indicator at remote-controlled receiving board and even water shall run over the water collector.
- Continuously infusing water until water level alarmed, check whether the drainage pump could discharge water at once. If water level does not decline under warning water level 3 minutes later, it shall cause shutdown of unit. When this situation happens, the normal startup only can be recovered by turning down power supply and eliminating accumulated water.

Note: Drain plug at the main water-containing plate is used for eliminating accumulated water in water-containing plate when maintaining air conditioner fault. During normal operation, the plug shall be filled in to prevent leakage.

5.4 Insulation work of drainage pipe

Refer the introduction to the insulation engineering parts.

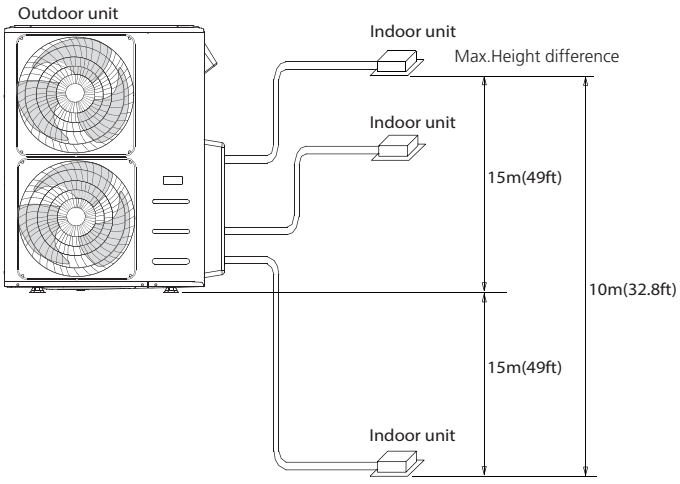
6. Refrigerant Pipe Installation

6.1 Maximum length and drop height

Ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meets the requirements shown in the following table.

	M2OG-14HFN8-Q M2OC-18HFN8-Q M2OD-18HFN8-Q M2OH-14HFN8-Q M2OE-18HFN8-Q	M3OE-27HFN8-Q M3OF-27HFN8-Q M3OF-21HFN8-Q M3OG-21HFN8-Q M3OA-27HFN8-Q	M4OB-36HFN8-Q M4OE-28HFN8-Q	M5OD-42HFN8-Q M5OE-42HFN8-Q
Max. length for all rooms	40	60	80	80
Max. length for one indoor unit	25	30	35	35
Max. height different between IDU and ODU	15	15	15	15
Max. height different between IDUs	10	10	10	10

- When installing multiple indoor units with a single outdoor unit, ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meet the requirements illustrated in the following diagram:



6.2 The procedure of connecting pipes

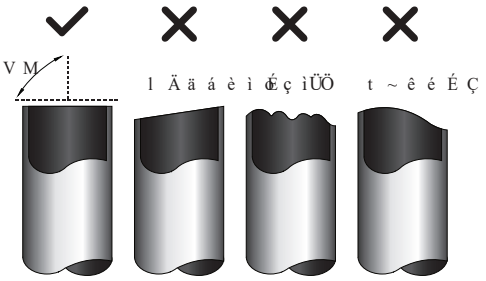
1.Choose the pipe size according to the specification table.

2.Confirm the cross way of the pipes.

3.Measure the necessary pipe length.

4.Cut the selected pipe with pipe cutter

- Make the section flat and smooth.

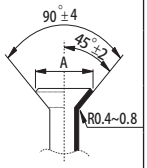


5. Insulate the copper pipe

- Before test operation, the joint parts should not be heat insulated.

6. Flare the pipe

- Insert a flare nut into the pipe before flaring the pipe
- According to the following table to flare the pipe.

Pipe diameter (inch(mm))	Flare dimension A (mm/inch)		Flare shape
	Min	Max	
1/4" (6.35)	8.4/0.33	8.7/0.34	
3/8" (9.52)	13.2/0.52	13.5/0.53	
1/2" (12.7)	16.2/0.64	16.5/0.65	
5/8" (15.9)	19.2/0.76	19.7/0.78	
3/4" (19)	23.2/0.91	23.7/0.93	
7/8" (22)	26.4/1.04	26.9/1.06	

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.

7. Drill holes if the pipes need to pass the wall.

8. According to the field condition to bend the pipes so that it can pass the wall smoothly.

9. Bind and wrap the wire together with the insulated pipe if necessary.

10. Set the wall conduit

11. Set the supporter for the pipe.

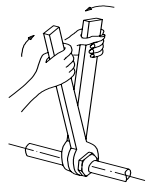
12. Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

13. Connect the pipe to indoor unit and outdoor unit by using two spanners.

- Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the

bellmouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

Pipe Diameter	Torque N.m(lb.ft)	Sketch map
1/4" (6.35)	15~16 (11~11.8)	
3/8" (9.52)	25~26 (18.4~19.18)	
1/2" (12.7)	35~36 (25.8~26.55)	
5/8" (15.9)	45~47 (33.19~34.67)	
3/4" (19)	65~67 (47.94~49.42)	
7/8" (22)	75-85 (55.3-62.7)	

7. Vacuum Drying and Leakage Checking

7.1 Purpose of vacuum drying

- Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation.

  Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

7.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

7.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

7.0.1 Ordinary vacuum drying

1. When conduct first vacuum drying, connect pressure gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1hour (vacuum degree of vacuum pump shall be reached -755mmHg).

2. If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is moisture or leakage in pipeline system and need to go on with drying for half an hour.

3. If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.

4 . Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

7.0.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

1. Finding moisture during flushing refrigerant pipe.

2. Conducting construction on rainy day, because rain water might penetrated into pipeline.

3. Construction period is long, and rain water might penetrated into pipeline.

4. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

1. Vacuum drying for 1 hour.

2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm2 .

Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.

3. Vacuum drying again for half an hour.

If the pressure reached -755mmHg, start to pressure leakage test. If it cannot reached the value, repeat vacuum damage and vacuum drying again for 1 hour.

4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

8. Additional Refrigerant Charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe between indoor and outdoor unit. Refer the following formula to calculate the charge volume.

Diameter of liquid pipe (mm)	Formula
6.35	V=12g/m×((Total pipe length - pre-charge pipe lengthxN))
9.52	V=24g/m×((Total pipe length - pre-charge pipe lengthxN))

The pre-charge pipe length is 7.5m.

Note:

- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

9. Engineering of Insulation

9.1 Insulation of refrigerant pipe

1. Operational procedure of refrigerant pipe insulation

Cut the suitable pipe → insulation (except joint section) → flare the pipe → piping layout and connection→ vacuum drying → insulate the joint parts

2. Purpose of refrigerant pipe insulation

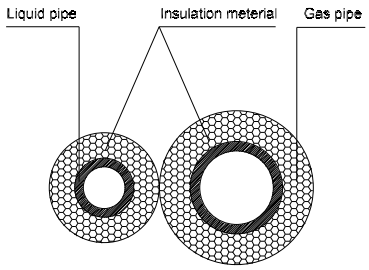
- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not enough, it shall form dew and cause leakage.
- Temperature of gas pipe is very high (generally 50-100° C) during heating. Insulation work must be carried out to prevent hurt by carelessness touching.

3. Insulation material selection for refrigerant pipe

- The burning performance should over 120° C
- According to the local law to choose insulation materials
- The thickness of insulation layer shall be above 10mm.If in hot or wet environment place, the layer of insulation should be thicker accordingly.

4. Installation highlights of insulation construction

- Gas pipe and liquid pipe shall be insulated separately, if the gas pipe and liquid pipe were insulated together; it will decrease the performance of air conditioner.



- The insulation material at the joint pipe shall be 5~10cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The insulation material at the joint pipe shall be banded to the gap pipe and liquid pipe tightly.
- The linking part should be use glue to paste together
- Be sure not bind the insulation material over-tight, it may extrude out the air in the material to cause bad

insulation and cause easy aging of the material.

9.2 Insulation of drainage pipe

1. Operational procedure of refrigerant pipe insulation

Select the suitable pipe → insulation (except joint section) → piping layout and connection→ drainage test→ insulate the joint parts

2. Purpose of drainage pipe insulation

The temperature of condensate drainage water is very low. If insulation is not enough, it shall form dew and cause leakage to damage the house decoration.

3. Insulation material selection for drainage pipe

- The insulation material should be flame retardant material, the flame retardancy of the material should be selected according to the local law.
- Thickness of insulation layer is usually above 10mm.
- Use specific glue to paste the seam of insulation material, and then bind with adhesive tape. The width of tape shall not be less than 5cm. Make sure it is firm and avoid dew.

4. Installation and highlights of insulation construction

- The single pipe should be insulated before connecting to another pipe, the joint part should be insulated after the drainage test.
- There should be no insulation gap between the insulation material.

10. Engineering of Electrical Wiring

10.1 Highlights of electrical wiring installation

- All field wiring construction should be finished by qualified electrician.
- Air conditioning equipment should be grounded according to the local electrical regulations.
- Current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of signal wire.
- When power wire is parallel with signal wire, put wires to their own wire tube and remain at least 300mm gap.
- According to table in indoor part named "the specification of the power" to choose the wiring, make sure the selected wiring not small than the date showing in the table.
- Select different colors for different wire according to relevant regulations.
- Do not use metal wire tube at the place with acid or alkali corrosion, adopt plastic wire tube to replace it.
- There must be not wire connect joint in the wire tube If joint is a must, set a connection box at the place.
- The wiring with different voltage should not be in one wire tube.
- Ensure that the color of the wires of outdoor and the terminal No. are same as those of indoor unit respectively.
- You must first choose the right cable size before preparing it for connection. Be sure to use H07RN-F cables.

Table: Minimum Cross-Sectional Area able of Power and Signal Cables

Rated Current of Appliance (A)	Nominal Cross-Sectional Area(mm^2)
≤ 6	0.75
6 - 10	1
10 - 16	1.5
16 - 25	2.5
25 - 32	4
32 - 45	6

11. Test Operation

11.1 The test operation must be carried out after the entire installation has been completed.

11.2 Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop values are both opened.
- The air conditioner is pre-heated by turning on the power.

11.3 Test operation

1. Open both the liquid and gas stop valves.

2. Turn on the main power switch and allow the unit to warm up.

3. Set the air conditioner to COOL mode, and check the following points.

Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Drainage Test

a. Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.

b. Remove the test cover. Add 2000ml of water to the tank through the attached tube.

c.Turn on the main power switch and run the air conditioner in COOL mode.

d. Listen to the sound of the drain pump to see if it makes any unusual noises.

e. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.

f. Make sure that there are no leaks in any of the piping.

g. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

If ambient temperature is below 17°C (63°F)

You can't use the remote controller to turn on the COOL function when the ambient temperature is below 17°C. In this instance, you can use the MANUAL CONTROL button to test the COOL function.

1. Lift the front panel of the indoor unit, and raise it until it clicks in place.

2. The MANUAL CONTROL button is located on the right-hand side of the display box. Press it two times to select the COOL function.

3. Perform Test Run as normal.

Static Pressure Design

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1. Introduction

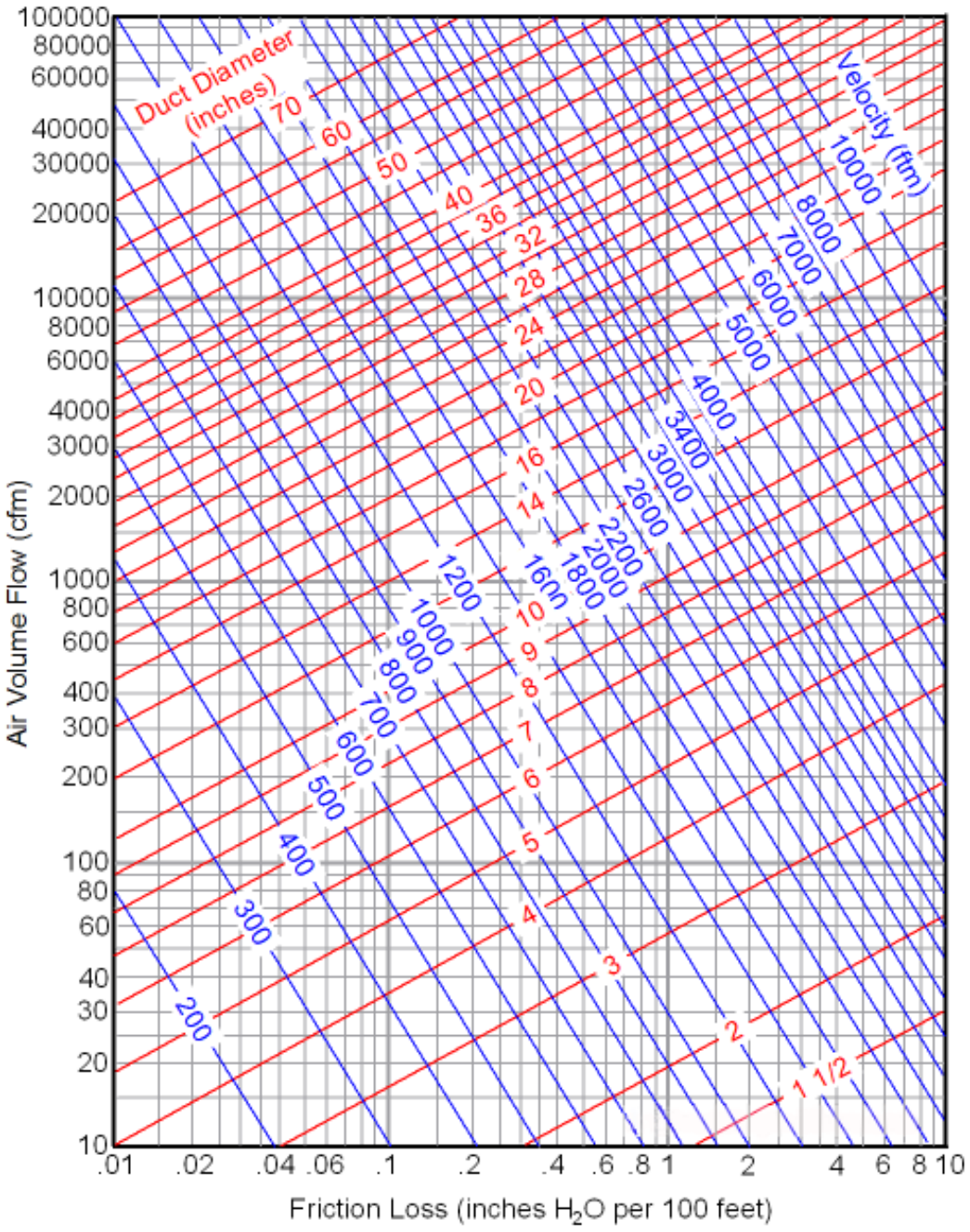
Duct system losses are the irreversible transformation of mechanical energy into heat. The two types of losses are (1) friction losses and (2) dynamic losses.

Friction losses are due to fluid viscosity and result from momentum exchange between molecules (in laminar flow) or between individual particles of adjacent fluid layers moving at different velocities (in turbulent flow). Friction losses occur along the entire duct length.

Dynamic losses result from flow disturbances caused by duct mounted equipment and fittings (e.g., entries, exits, elbows, transitions, and junctions) that change the airflow path's direction or area.

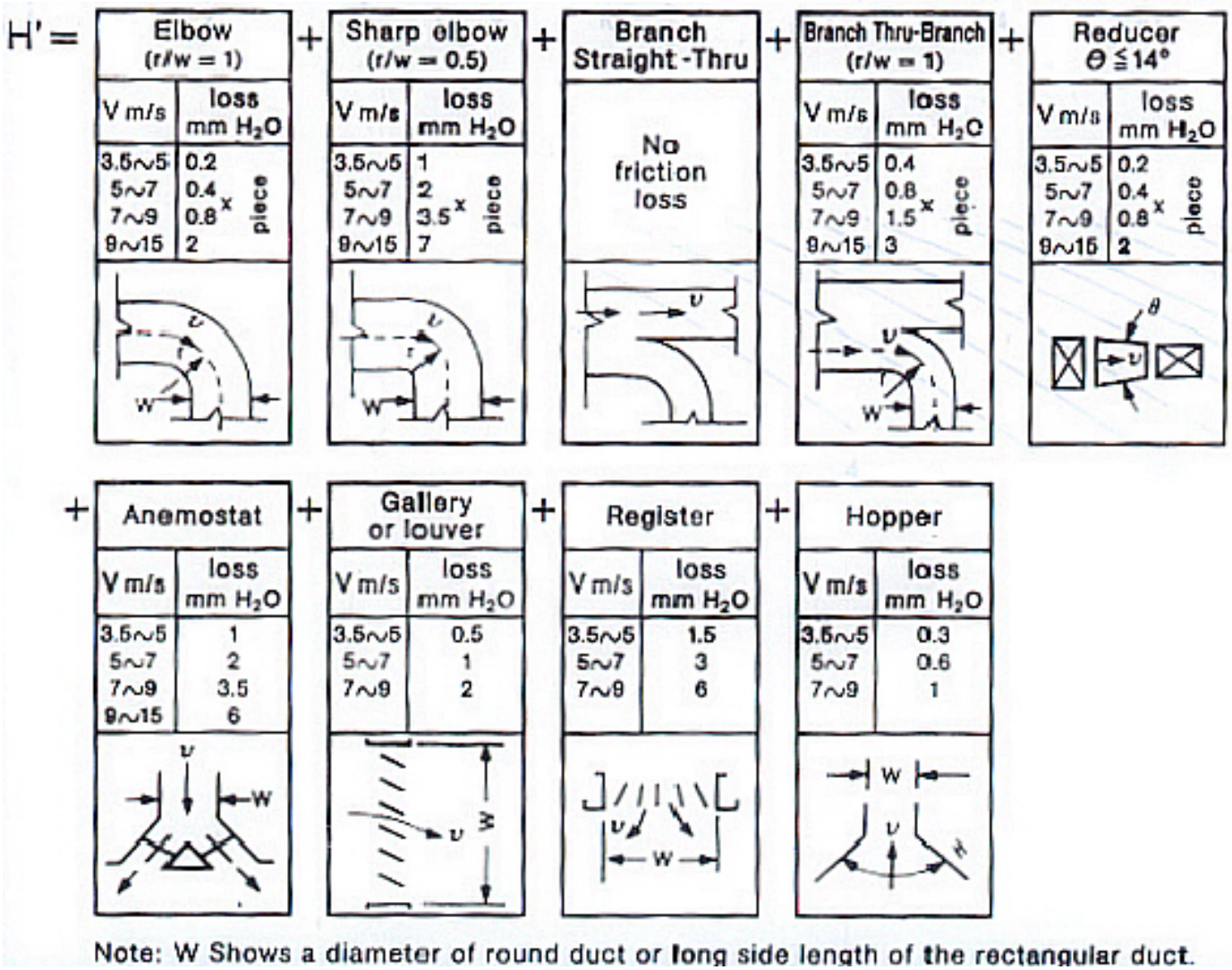
2. Charts For Friction Losses In Round Ducts

Fluid resistance caused by friction in round ducts can be determined by the friction chart. (based on galvanized sheet)



3. Dynamic Losses

For dynamic losses, please refer to below image.



Note: W Shows a diameter of round duct or long side length of the rectangular duct.

4. Corresponding Relation Between Rectangular Duct and Round Duct

Circular Duct Diameter, in.	Length of One Side of Rectangular Duct a, in.																			
	4	5	6	7	8	9	10	12	14	16	18	20	22	24	26	28	30	32	34	36
	Length Adjacent Side of Rectangular Duct b, in.																			
5	5																			
5.5	6	5																		
6	8	6																		
6.5	9	7	6																	
7	11	8	7																	
7.5	13	10	8	7																
8	15	11	9	8																
8.5	17	13	10	9																
9	20	15	12	10	8															
9.5	22	17	13	11	9															
10	25	19	15	12	10	9														
10.5	29	21	16	14	12	10														
11	32	23	18	15	13	11	10													
11.5		26	20	17	14	12	11													
12		29	22	18	15	13	12													
12.5		32	24	20	17	15	13													
13		35	27	22	18	16	14	12												
13.5		38	29	24	20	17	15	13												
14			32	26	22	19	17	14												
14.5			35	28	24	20	18	15												
15			38	30	25	22	19	16	14											
16			45	36	30	25	22	18	15											
17				41	34	29	25	20	17	16										
18				47	39	33	29	23	19	17										
19				54	44	38	33	26	22	19	18									
20					50	43	37	29	24	21	19									
21					57	48	41	33	27	23	20									
22					64	54	46	36	30	26	23	20								
23						60	51	40	33	28	25	22								
24						66	57	44	36	31	27	24	22							
25							63	49	40	34	29	26	24							
26							69	54	44	37	32	28	26	24						
27							76	59	48	40	35	31	28	25						
28								64	52	43	38	33	30	27	26					
29								70	56	47	41	36	32	29	27					
30								76	61	51	44	39	35	31	29	28				
31								82	66	55	47	41	37	34	31	29				
32								89	71	59	51	44	40	36	33	31				
33								96	76	64	54	48	42	38	35	33	30			
34									82	68	58	51	45	41	37	35	32			
35									88	73	62	54	48	44	40	37	34	32		
36									95	78	67	58	51	46	42	39	36	34		
37									101	83	71	62	55	49	45	41	38	36	34	
38									108	89	76	66	58	52	47	44	40	38	36	
39										95	80	70	62	55	50	46	43	40	37	36
40										101	85	74	65	58	53	49	45	42	39	37
41										107	91	78	69	62	56	51	47	44	41	39
42										114	96	83	73	65	59	54	50	46	44	41
43										120	102	88	77	69	62	57	53	49	46	43
44											107	93	81	73	66	60	55	51	48	45
45											113	98	86	76	69	63	58	54	50	47
46											120	103	90	80	72	66	61	56	53	49
47											126	108	95	84	76	69	64	59	55	52
48											133	114	100	89	80	73	67	62	58	54
49											140	120	105	93	84	76	70	65	60	56
50											147	126	110	98	88	80	73	68	63	59
51												132	115	102	92	83	76	71	66	61
52												139	121	107	96	87	80	74	69	64
53												145	127	112	100	91	83	77	71	67
54												152	133	117	105	95	87	80	74	70
55													139	123	110	99	91	84	78	72
56													145	128	114	104	95	87	81	75
57													151	134	119	108	98	91	84	78
58													158	139	124	112	102	94	87	81
59													165	145	130	117	107	98	91	85
60													172	151	135	122	111	102	94	88

5. Method For Duct Calculation (equal friction method)

1)Draw schematic view of the duct system.

1)Make notes for air volume and mark clearly the elbow, the branch parts, the air discharge outlet.

1)Select one main ducting route (where the maximum static pressure loss occurs).

1)Select the air velocity for the main duct in accordance with the desirable air velocity.

	Typical design velocity (m/s)		
Main duct	Residence	Public building	Factory
	3.5~6.0	5.0~8.0	6.0~11.0

1)Since the velocity and air volume are fixed for main duct, then use the Friction loss chart to find standard friction loss.

2)Use air volume and friction loss to find corresponding duct size and velocity for each part of main duct through Frictions loss chart.

3)Find the dynamic loss of main ducting route according to the velocity. and type of special fittings (elbows, junctions, regulating flaps, etc.)

4)Obtain the duct size and velocity of each branch duct based on the air volume and the same standard friction loss as for the main duct.

5)Find the dynamic loss of branch duct.

6)Calculate the total pressure loss.

6. Unit Conversion

- 1 inch water=248.8 N/m^2 (Pa)=0.0361 lb/in^2 (psi)=25.4 kg/cm^2=0.0739 in mercury
- 1 ft^3/min (cfm)=1.7 m^3/h
- 1 ft/min=5.08*10-3 m/s
- 1 inch=2.54 cm=0.0254m=0.08333ft

7. Recommended Outlet Velocity For Different Occasion

The permissible sound level and correspondingly maximum air velocity, is determined by the occasion.

Noise / dB(A)	Occasion	Maximum velocity / m/s
25	Studio, recording room	2
35	Cinema, hospital, library	3
40	Office, school, hotel	4
46	Bank, public hall	5
50	Store, post office	6
70	Factory	10

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