

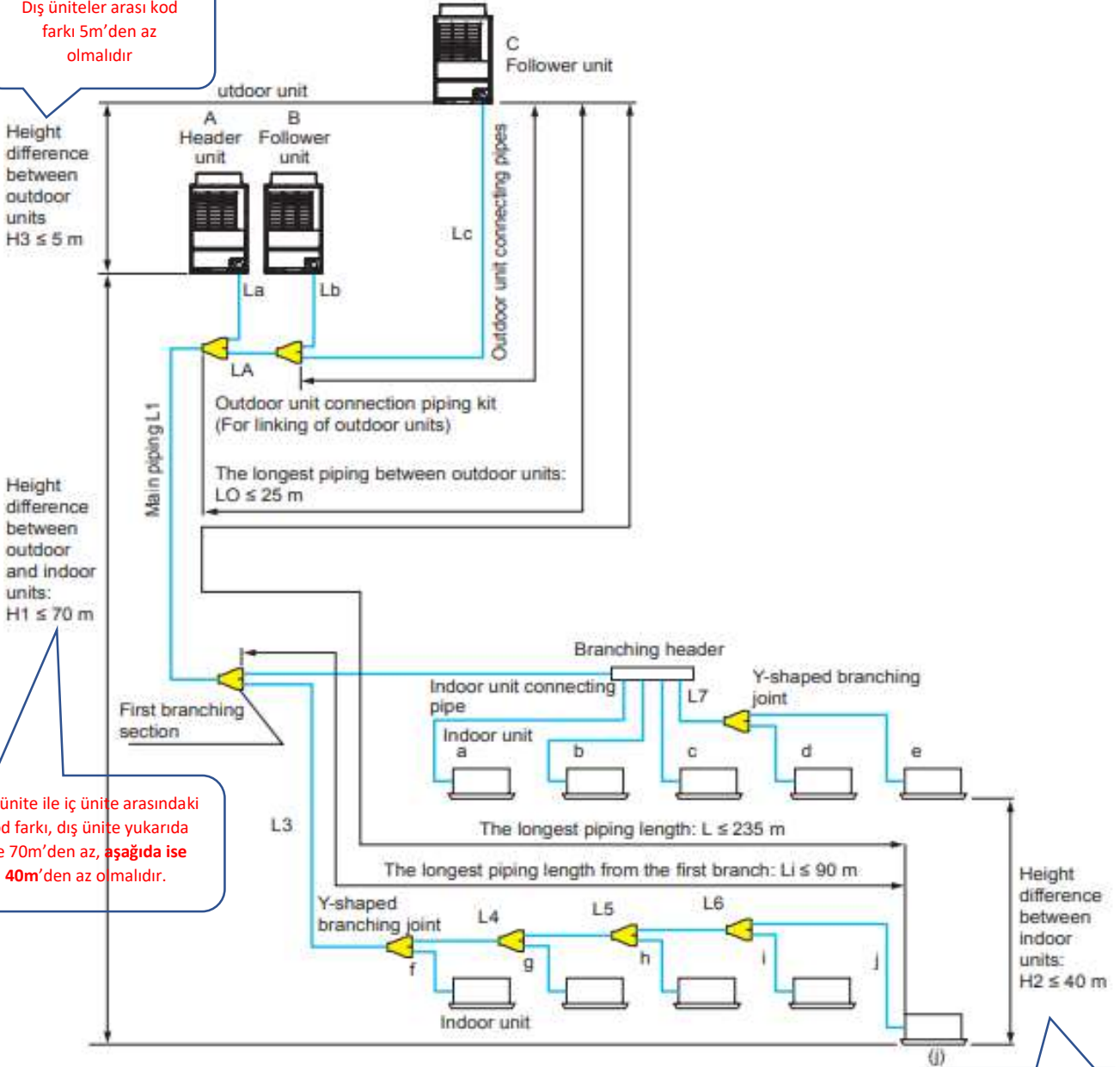
VRF SİSTEMİ KISITLAMALARI
(Toshiba Marka)

Refrigerant Piping <Cooling, Heat pump type>

For HT8P - E

Allowable length of refrigerant pipes and allowable height difference between unit

Dış üniteler arası kod farkı 5m'den az olmalıdır



Dış ünite ile iç ünite arasındaki kod farkı, dış ünite yukarıda ise 70m'den az, aşağıda ise 40m'den az olmalıdır.

İç üniteler arası kod farkı 40m'den az olmalıdır.

1-Sistem Sınırlamaları

Tablo 1.1-

Gruptaki maksimum ünite sayısı	4 ünite
Bir grupta bulunan ünitelerin maks. kapasitesi	48 HP
Bağlı iç ünite maks. sayısı	48 iç ünite

Not 1: Dış ünite grubunda: Ana ünite (1 unit) + İkincil ünite (0 ile 3 ünite). Ana ünite, iç üniteye en yakın ünitedir.

Not 2: Dış üniteler kapasitesine göre sıralanacak. (Ana ünite \geq Takip eden ünite 1 \geq Takip eden ünite 2 \geq Takip eden ünite 3)

Not 3: Dış ünitenin gaz borusu bağlantısında Y-şekilli joint elemanını kullanınız ve yatay olarak bağlayınız.

Tablo 1.2 - Dış ünitenin kapasitesine göre en uzak boru uzunluğu

	Standart model					Yüksek verimli model		
	5,6	8-16	18-32	34-44	46,48	16	24-44	46, 48
Kapasite (HP)	5,6	8-16	18-32	34-44	46,48	16	24-44	46, 48
Eş değer uzunluk (m)	175	210	220	235	185	210	235	185
Gerçek uzunluk (m)	150	170	180	190	155	180	190	155

Tablo 1.3 -

		Allowable value		Piping section	
Piping length	Total extension of pipe (Liquid pipe, real length)	Below 34HP	300m	LA + LB + La + Lb + Lc + Ld + L1 + L2 + L3 + L4 + L5 + L6 + L7 + a + b + c + d + e + f + g + h + i + j	
		34HP or more	500m		
	Farthest piping Length L (*1)	Equivalent length	235m		
		Real length	190m	LA + LB + Ld + L1 + L3 + L4 + L5 + L6 + j	
	Equivalent length of farthest piping from 1st branching Li (*1)		90m (*2)	L3 + L4 + L5 + L6 + j	
	Equivalent length of farthest piping between outdoor units LO (*1)		25m	LA + LB + Ld(LA + Lb, LA + LB + Ld)	
	Max. equivalent length of main piping	Equivalent length	120m (*3)	L1	
		Real length	100m (*3)		
	Max. equivalent length of outdoor unit connecting piping		10m	Ld(La, Lb, Lc)	
	Max. real length of indoor unit connecting piping		30m	a, b, c, d, e, f, g, h, i, j	
Max. equivalent length between branches		50m	L2, L3, L4, L5, L6, L7		
Difference in height	Height between indoor and outdoor units H1	Upper outdoor unit	70m (*4)	-	
		Lower outdoor unit	40m (*5)	-	
	Height between indoor units H2		40m (*6)	-	
	Height between outdoor units H3		5m	-	

(*1) : (D) is outdoor unit furthest from the 1st branch and (j) is the indoor unit furthest from the 1st branch.

(*2) : If the height difference (H1) between indoor and outdoor unit exceeds 3m, set 65m or less. In case of 5HP & 6HP, it is 65m or less regardless of H1.

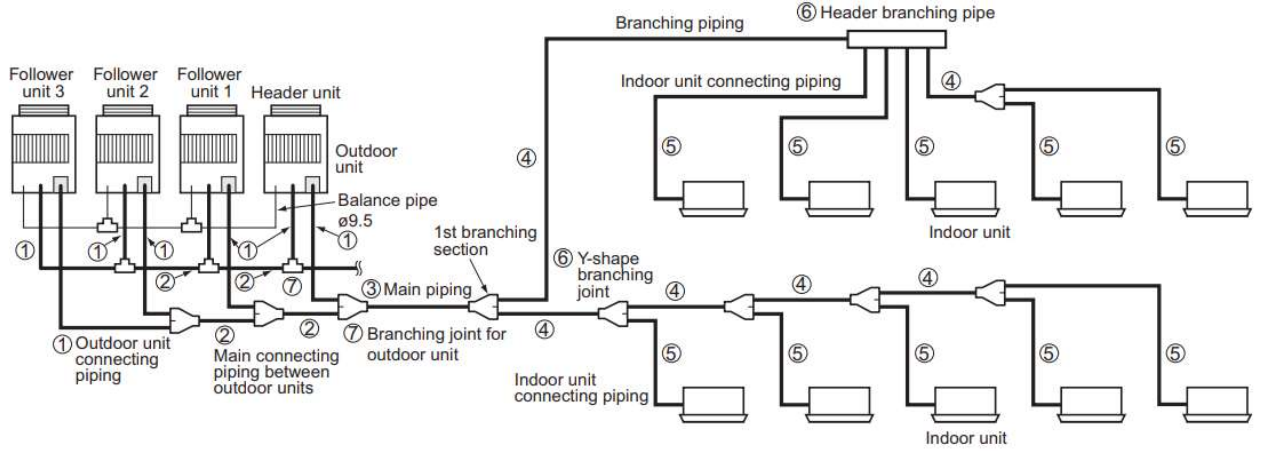
(*3) : If the max. combined outdoor unit capacity is 46HP or more, then max. equivalent length is 70m or less (real length is 50m or less). In case of 5HP & 6HP, the equivalent length is 85m or less when under 46HP, and 70m or less when 46HP or more.

(*4) : If the height difference (H2) between indoor units exceeds 3m, set 50m or less. In case of 5HP & 6HP, it is 50m or less regardless of H2

(*5) : If the height difference (H2) between indoor units exceeds 3m, set 30m or less.

(*6) : In case of 5HP & 6HP, it is 30m or less.

2- BORU SEÇİMİ



(1) nolu boru (Tablo 2.1)

Model name MMY-	Gas side	Liquid side
MAP0501*	ø15.9	ø9.5
MAP0601*	ø19.1	ø9.5
MAP0804*	ø22.2	ø12.7
MAP1004*	ø22.2	ø12.7
MAP1204*	ø28.6	ø12.7
MAP1404*	ø28.6	ø15.9
MAP1604*	ø28.6	ø15.9

(2) dış üniteler arası boru çapları (Tablo 2.2)

Total capacity code of outdoor units at downstream side *1	Gas side	Liquid side	Balance pipe
16 to below 22	ø28.6	ø15.9	ø9.5
22 to below 26	ø34.9	ø15.9	
26 to below 36	ø34.9	ø19.1	
36 or more	ø41.3	ø22.2	

(3) ana boru çapları (Tablo 2.3)

Total capacity code of all outdoor units *1	Gas side	Liquid side
Below 6	ø15.9	ø9.5
6 to below 8	ø19.1	ø9.5
8 to below 12	ø22.2	ø12.7
12 to below 14	ø28.6	ø12.7
14 to below 22	ø28.6	ø15.9
22 to below 36	ø34.9	ø19.1
36 to below 46	ø41.3	ø22.2
46 or more *7	ø41.3	ø22.2

Determine thickness of the main pipe according to capacity of the outdoor units.

(4) ayrımlar arası boru çapları (Tablo 2.4) (*5)

SMMS-i 8HP to 48HP		
Total capacity code of indoor units at downstream side *1	Gas side	Liquid side
2.4 or less	ø12.7	ø9.5
2.4 to below 6.4	ø15.9	ø9.5
6.4 to below 12.2	ø22.2	ø12.7
12.2 to below 20.2	ø28.6	ø15.9
20.2 to below 35.2	ø34.9	ø19.1
35.2 or more	ø41.3	ø22.2

SMMS 5HP & 6HP		
Total capacity code of indoor units at downstream side *1	Gas side	Liquid side
2.8 or less	ø12.7	ø9.5
2.8 to below 6.4	ø15.9	ø9.5
6.4 or more	ø22.2	ø12.7

If the total capacity code value of indoor units exceeds that of the outdoor units, apply the capacity code of outdoor units.

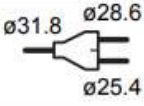
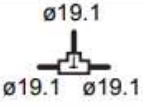
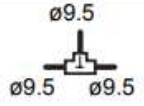
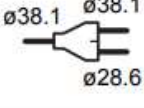
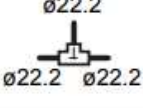
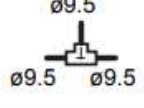
(5) iç ünitelerin boru çapları (Tablo 2.5)

Capacity rank		Gas side	Liquid side
007 type to 012 type	Actual length 15m or less	ø9.5	ø6.4
	Actual length exceeds 15m	ø12.7	ø6.4
015 type to 018 type		ø12.7	ø6.4
024 type to 056 type		ø15.9	ø9.5
072 type to 096 type		ø22.2	ø12.7

(6) branşman ayrımları (Tablo 2.6)

		Total capacity code of indoor unit *1	Model name
Y-shape branching joint *2 *3 *8	Below 6.4		RBM-BY55E
	6.4 to below 14.2		RBM-BY105E
	14.2 to below 25.2		RBM-BY205E
	25.2 or more		RBM-BY305E
Branching header *2 *3 *6 *8	For 4 branching	Below 14.2	RBM-HY1043E
		14.2 to below 25.2	RBM-HY2043E
	For 8 branching	Below 14.2	RBM-HY1083E
		14.2 to below 25.2	RBM-HY2083E

(7) Dış ünitelerin bağlanması (Tablo 2.7)

	Total capacity code of outdoor unit	Joints			Model name
		Gas (Y-shape)	Liquid (T-shape)	Balance (T-shape)	
Branching joint for outdoor unit	Below 26				RBM-BT14E
	26 or more				RBM-BT24E

*1 : Kod kapasite sırasına göre belirlenir.

*2 : Birinci kol için joint kullanılırken, dış ünitenin kapasite koduna göre seçin.

*3 : Ayrım sonrası bir hat için toplamda 6.0 kapasite koduna sahip iç üniteler bağlanabilir.

*4 : Boru çapı Ø19.0 veya daha fazlaysa, montaj kılavuzunda belirtildiği şekilde uygun bir malzeme kullanın.





*5 : Boru çapı ana borudan büyükse, ana boru çapı ile aynı seçin.















*6 : İlk joint dış ünite toplam kapasitesi 12 ile 26 ise iç ünitelerin kapasitesinden bağımsız RBM- HY2043E(4-branch) veya RBMHY2083E(8-branch) kullanın.

*7 : Ana borunun eş değer uzunluğu 70.0 m veya daha az olmalıdır.

*8 : İç ünitelerin kapasitesi, dış ünitelerin kapasitesini aştığında, dış ünitelerin kapasitesine göre seçin.

3-SEÇİMDE FAYDALINILAN KAPASİTE TABLOSU

Yüksek COP'li modeller				
	Model İsmi (MMY-)	Soğutma kapasitesi	Isıtma kapasitesi	Görünüm
5 HP	MAP0501HT7	14,0 kW	16,0 kW	
6 HP	MAP0601HT7	16,0 kW	18,0 kW	
8 HP	MAP0804HT8-E	22,4 kW	25,0 kW	
10 HP	MAP1004HT8-E	28,0 kW	31,5 kW	
12 HP	MAP1204HT8-E	33,5 kW	37,5 kW	
14 HP	MAP1404HT8-E	40,0 kW	45,0 kW	
16 HP	MAP1604HT8-E	45,0 kW	50,0 kW	
18 HP	AP1814HT8-E	50,4 kW	56,5 kW	
20 HP	AP2014HT8-E	56,0 kW	63,0 kW	
22 HP	AP2214HT8-E	61,5 kW	69,0 kW	
24 HP	AP2414HT8-E	68,0 kW	76,5 kW	
26 HP	AP2614HT8-E	73,0 kW	81,5 kW	
28 HP	AP2814HT8-E	78,5 kW	88,0 kW	
30 HP	AP3014HT8-E	85,0 kW	95,0 kW	
32 HP	AP3214HT8-E	90,0 kW	100,0 kW	
34 HP	AP3414HT8-E	96,0 kW	108,0 kW	
36 HP	AP3614HT8-E	101,0 kW	113,0 kW	
38 HP	AP3814HT8-E	106,5 kW	119,5 kW	
40 HP	AP4014HT8-E	112,0 kW	127 kW	
42 HP	AP4214HT8-E	118,0 kW	132,0 kW	
44 HP	AP4414HT8-E	123,5 kW	138,0 kW	
46 HP	AP4614HT8-E	130,0 kW	145,0 kW	
48 HP	AP4814HT8-E	135,0 kW	150,0 kW	


Çok Yüksek COP'li modeller				
	Model İsmi (MMY-)	Soğutma kapasitesi	Isıtma kapasitesi	Görünüm
16 HP	AP1624HT8-E	45,0 kW	50,0 kW	
24 HP	AP2404HT8-E	68,0 kW	76,5 kW	
26 HP	AP2624HT8-E	73,0 kW	81,5 kW	
28 HP	AP2824HT8-E	78,5 kW	88,0 kW	
30 HP	AP3024HT8-E	85,0 kW	95,0 kW	
32 HP	AP3224HT8-E	90,0 kW	100,0 kW	
34 HP	AP3424HT8-E	96,0 kW	108,0 kW	
36 HP	AP3624HT8-E	101,0 kW	113,0 kW	
38 HP	AP3824HT8-E	106,5 kW	119,5 kW	
40 HP	AP4024HT8-E	112,0 kW	127 kW	
42 HP	AP4224HT8-E	118,0 kW	132,0 kW	
44 HP	AP4424HT8-E	123,5 kW	138,0 kW	
46 HP	AP4624HT8-E	130,0 kW	145,0 kW	
48 HP	AP4824HT8-E	135,0 kW	150,0 kW	

İç ünite sayısı		
Yüksek COP'li modeller	Çok Yüksek COP'li modeller	Maksimum iç ünite sayısı
5 HP		8
6 HP		10
8 HP		13
10 HP		16
12 HP		20
14 HP		23
16 HP	16 HP=8+8	27
18 HP=10+8		30
20 HP=10+10		33
22 HP=12+10		37
24 HP=12+12	24 HP=8+8+8	40
26 HP=16+10	26 HP=10+8+8	43
28 HP=16+12	28 HP=10+10+8	47
30 HP=16+14	30 HP=10+10+10	48
32 HP=16+16	32 HP=8+8+8+8	48
34 HP=12+12+10	34 HP=10+8+8+8	48
36 HP=12+12+12	36 HP=10+10+8+8	48
38 HP=16+12+10	38 HP=10+10+10+8	48
40 HP=16+12+12	40 HP=10+10+10+10	48
42 HP=16+14+12	42 HP=12+10+10+10	48
44 HP=16+16+12	44 HP=12+12+10+10	48
46 HP=16+16+14	46 HP=12+12+12+10	48
48 HP=16+16+16	48 HP=12+12+12+12	48

4-SİSTEM ELEMANLARININ ÖZETİ

Outdoor units

* SMMS outdoor unit

Corresponding HP		Inverter unit							Appearance
		5HP*	6HP*	8HP	10HP	12HP	14HP	16HP	
Model name	Heat pump	MMY- MAP0501HT8	MAP0601HT8	MAP0804HT8	MAP1004HT8	MAP1204HT8	MAP1404HT8	MAP1604HT8	
	Cooling only	MMY- MAP0501T8	MAP0601T8	MAP0804T8	MAP1004T8	MAP1204T8	MAP1404T8	MAP1604T8	
Cooling capacity (kW)		14.0	16.0	22.4	28.0	33.5	40.0	45.0	
Heating capacity (kW)		16.0	18.0	25.0	31.5	37.5	45.0	50.0	
No. of connectable indoor units		8	10	13	16	20	23	27	

Combination of outdoor units

Standard model

Corresponding HP	18HP	20HP	22HP	24HP	26HP	28HP	30HP	32HP
Combined Model	MMY- AP1814HT8	AP2014HT8	AP2214HT8	AP2414HT8	AP2614HT8	AP2814HT8	AP3014HT8	AP3214HT8
Cooling capacity (kW)	50.4	56.0	61.5	68.0	73.0	78.5	85.0	90.0
Heating capacity (kW)	56.5	63.0	69.0	76.5	81.5	88.0	95.0	100.0
Combined outdoor units	10HP	10HP	12HP	12HP	16HP	16HP	16HP	16HP
	8HP	10HP	10HP	12HP	10HP	12HP	14HP	16HP
No. of connectable indoor units	30	33	37	40	43	47	48	48










Corresponding HP	34HP	36HP	38HP	40HP	42HP	44HP	46HP	48HP
Combined Model	MMY- AP3414HT8	AP3614HT8	AP3814HT8	AP4014HT8	AP4214HT8	AP4414HT8	AP4614HT8	AP4814HT8
Cooling capacity (kW)	96.0	101.0	106.5	112.0	118.0	123.5	130.0	135.0
Heating capacity (kW)	108.0	113.0	119.5	127.0	132.0	138.0	145.0	150.0
Combined outdoor units	12HP	12HP	16HP	16HP	16HP	16HP	16HP	16HP
	12HP	12HP	12HP	12HP	14HP	16HP	16HP	16HP
No. of connectable indoor units	48	48	48	48	48	48	48	48

High efficiency model

Corresponding HP	16HP	24HP	26HP	28HP	30HP	32HP	34HP	36HP
Combined Model	MMY- AP1624HT8	AP2424HT8	AP2624HT8	AP2824HT8	AP3024HT8	AP3224HT8	AP3424HT8	AP3624HT8
Cooling capacity (kW)	45.0	68.0	73.0	78.5	85.0	90.0	96.0	101.0
Heating capacity (kW)	50.0	76.5	81.5	88.0	95.0	100.0	108.0	113.0
Combined outdoor units	8HP	8HP	10HP	10HP	10HP	8HP	10HP	10HP
	8HP	8HP	8HP	10HP	10HP	8HP	8HP	10HP
No. of connectable indoor units	27	40	43	47	48	48	48	48

Corresponding HP	38HP	40HP	42HP	44HP	46HP	48HP
Combined Model	MMY- AP3824HT8	AP4024HT8	AP4224HT8	AP4424HT8	AP4624HT8	AP4824HT8
Cooling capacity (kW)	106.5	112.0	118.0	123.5	130.0	135.0
Heating capacity (kW)	119.5	127.0	132.0	138.0	145.0	150.0
Combined outdoor units	10HP	10HP	12HP	12HP	12HP	12HP
	10HP	10HP	10HP	10HP	12HP	12HP
No. of connectable indoor units	48	48	48	48	48	48

Branching joints and headers

	Model name	Usage (Classification according to capacity code (*1))			Appearance
Y-shape branching joint (*3)	RBM-BY55E	Indoor unit: Total below 6.4			
	RBM-BY105E	Indoor unit: Total 6.4 or more and below 14.2			
	RBM-BY205E	Indoor unit: Total 14.2 or more and below 25.2			
	RBM-BY305E	Indoor unit: Total 25.2 or more			
4-branching header (*3)(*4)(*5)	RBM-HY1043E	Indoor unit: Total below 14.2			Max.4 branches 
	RBM-HY2043E	Indoor unit: Total 14.2 or more and below 25.2			
8-branching header (*3)(*4)(*5)	RBM-HY1083E	Indoor unit: Total below 14.2			Max.8 branches 
	RBM-HY2083E	Indoor unit: Total 14.2 or more and below 25.2			
Branching joint for connection of outdoor units (1set of 1type of Y-shape joint pipe and 2types of T-joint pipes as described right.)	RBM-BT14E	Capacity code	Piping at gas side (Y-shape)	Piping at liquid side (T-shape)	Balance pipe (T-shape)
		Total below 26	ø31.8  ø28.6 ø25.4	ø19.1  ø19.1	ø9.5  ø9.5
RBM-BT24E	Total 26 or more	ø38.1  ø38.1 ø28.6	ø22.2  ø22.2	ø9.5  ø9.5	

*1 "Capacity code" can be obtained by the lists in chapter 4-3 and 4-4.(Capacity code is not actual capacity.)

*2 If total capacity code value of indoor unit exceeds that of outdoor unit, apply capacity code of outdoor unit.

*3 In 1st branching, select according to the capacity code of the outdoor unit.

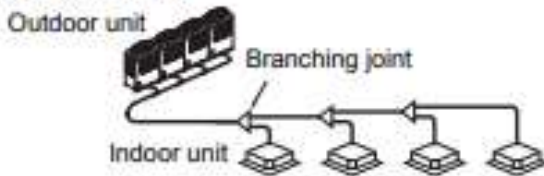
*4 Max capacity code of 6.0 in total is connectable to one line after branching header.

*5 When capacity code of outdoor units is 12 or more and using of 1st branching, use RBM-HY-2043E or RBM-HY-2083E. And if the code is 26 or more, it is not used for 1st branching.

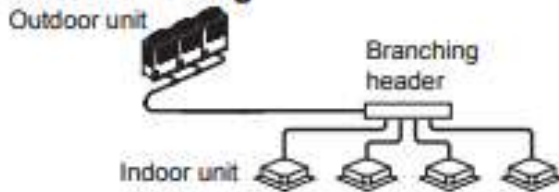
◆ Shortest route design by free branching

The Combination of line and header branching is highly flexible. Following the shortest design route possible, thereby saving on installation time and cost. Line/header branching after the header branching is only available with TOSHIBA SMMS-I.

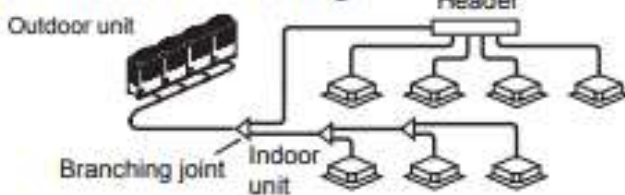
Line branching



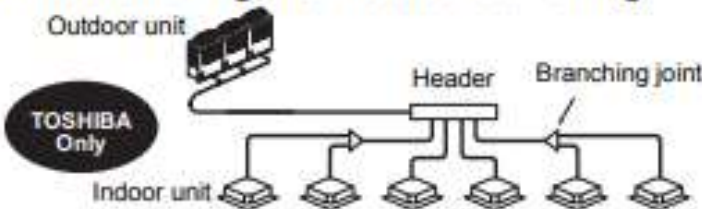
Header branching



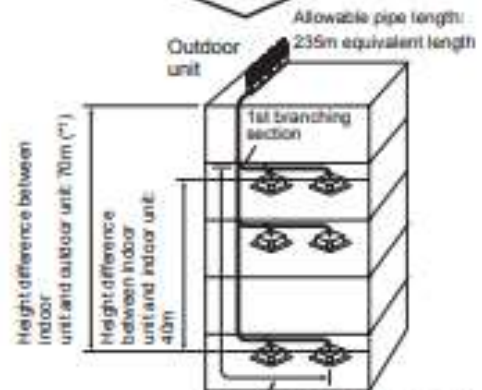
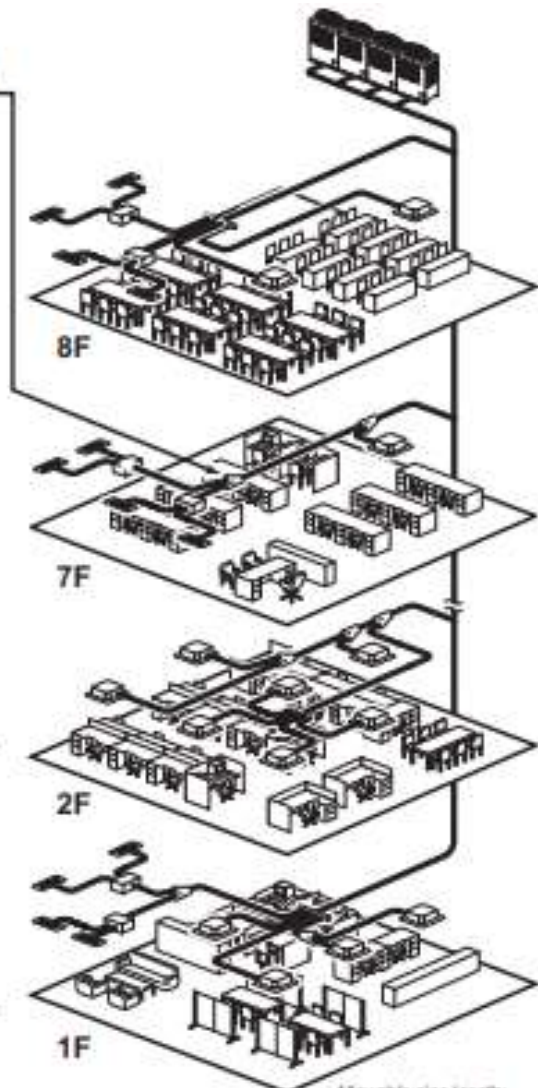
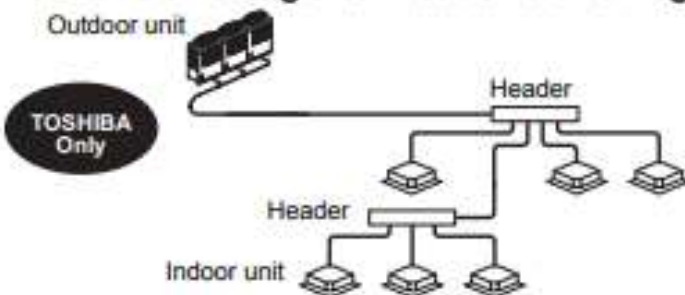
Line + Header branching



Line branching after header branching



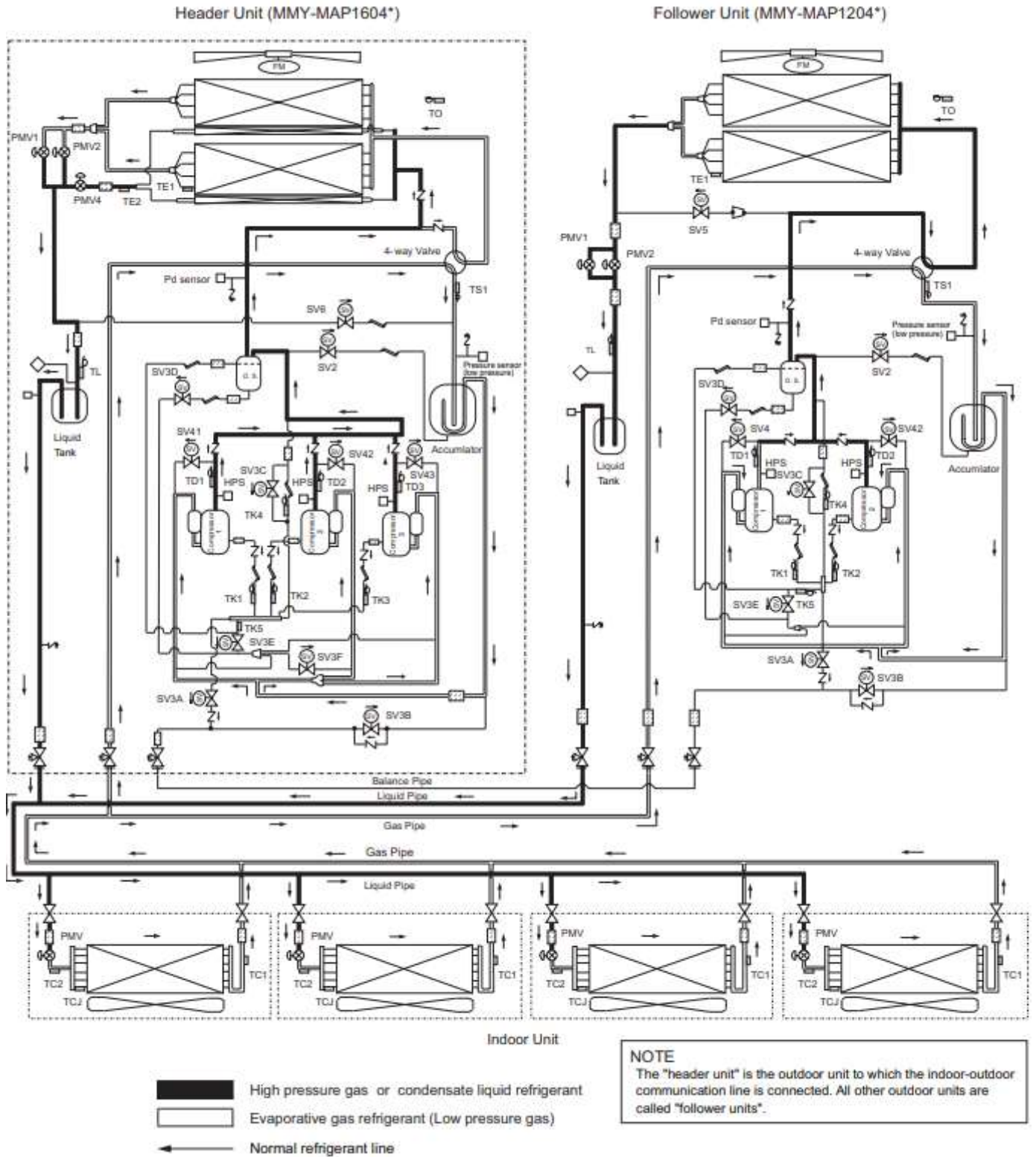
Header branching after header branching



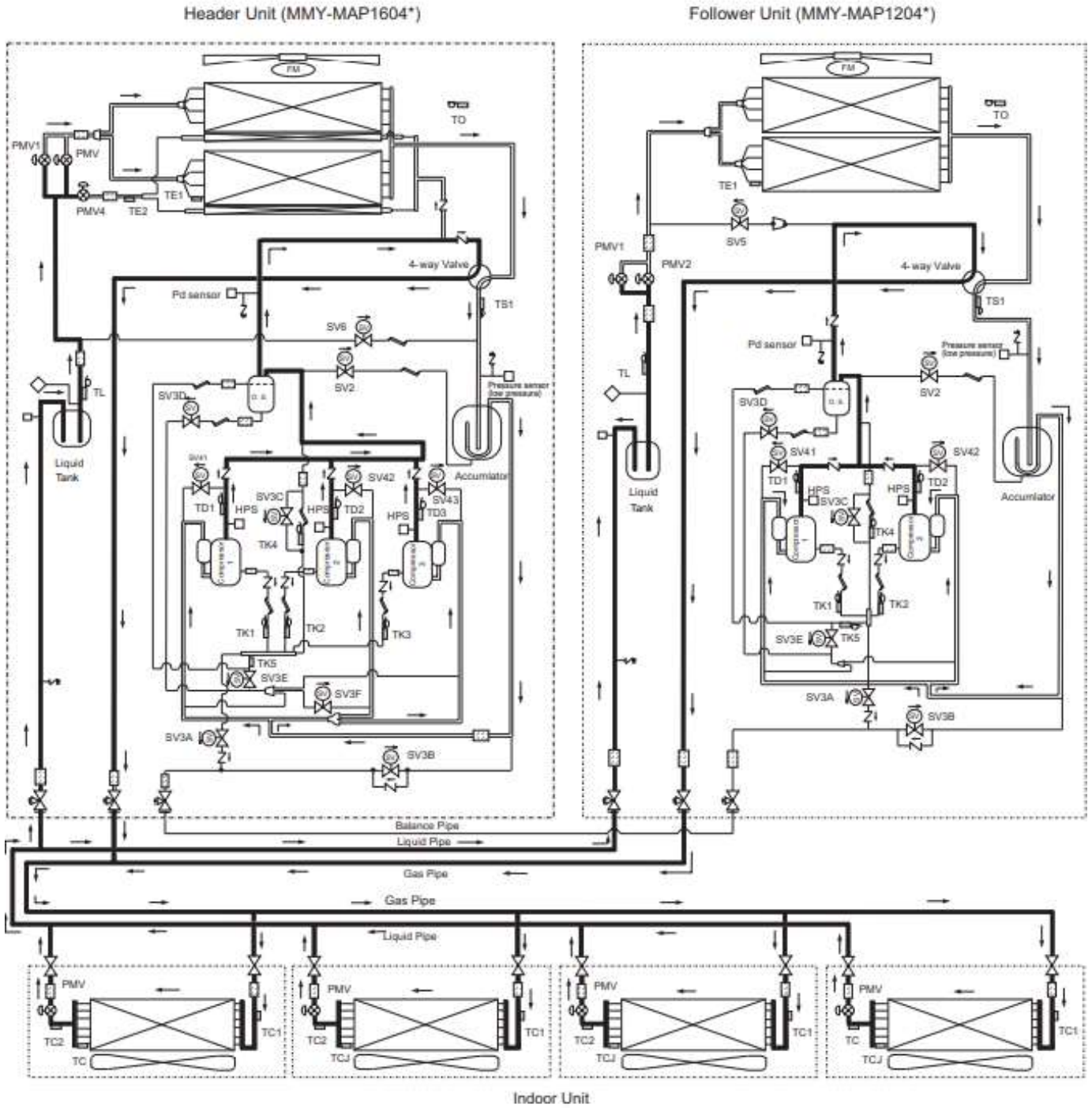
*1: If the height different between(H2) indoor units exceeds 3m, set below 50m.

*2: If the height different between(H1) indoor and outdoor units exceeds 3m, set below 65m.

6-SOĞUTMA MODUNDA – DIŞ ÜNİTE İLE İÇ ÜNİTE ARASI AKIM ŞEMASI ve ÇALIŞMASI
(Örnek : Ana Ünite 16 HP, İkincil Ünite : 12 HP)



7-ISITMA MODUNDA – DIŞ ÜNİTE İLE İÇ ÜNİTE ARASI AKIM ŞEMASI ve ÇALIŞMASI
(Örnek : Ana Ünite 16 HP, İkincil Ünite : 12 HP)



- High pressure gas or condensate liquid refrigerant
- Evaporative gas refrigerant (Low pressure gas)
- Normal refrigerant line

NOTE
 The "header unit" is the outdoor unit to which the indoor-outdoor communication line is connected. All other outdoor units are called "follower units".

(Example : 28HP system (16HP+12HP))