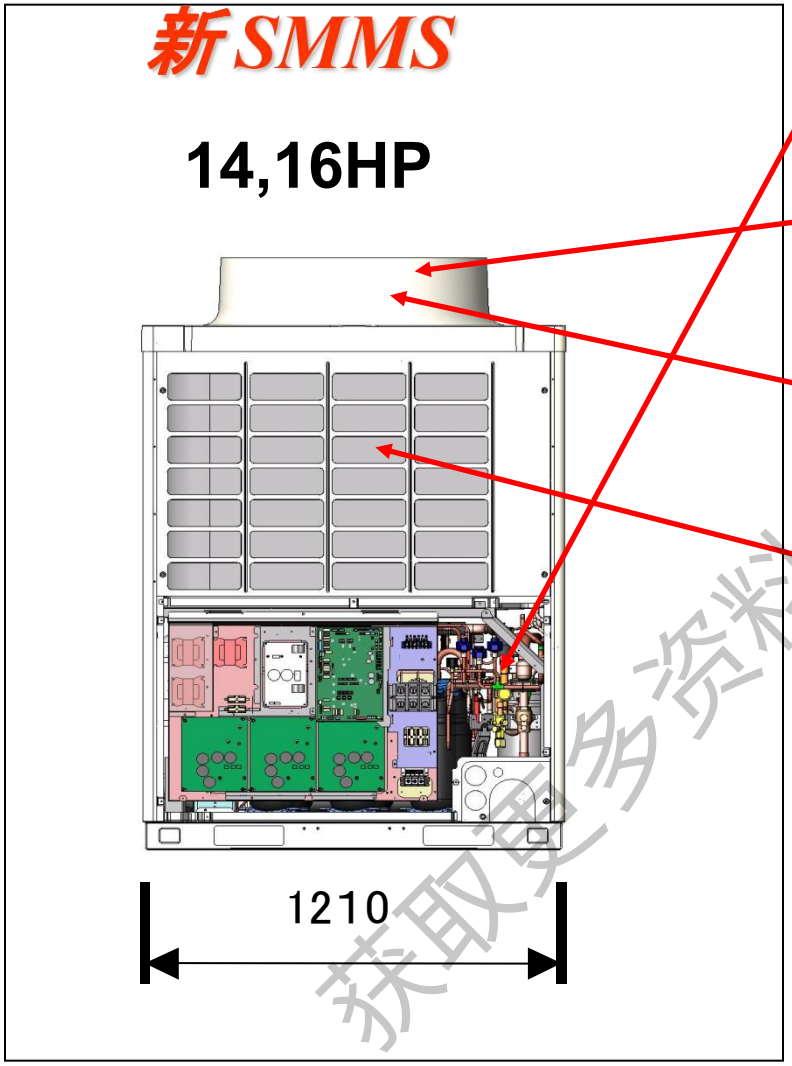
SMMS-i维修

SMMSi 和SMMS差异

新技术特性



1, 每级0.1HZ控制的高效率的三压缩i机和三变频器系统

压缩机的高速运转部分和变频器进行了改进

2, 大尺寸蝙蝠翼 风扇扇叶和高

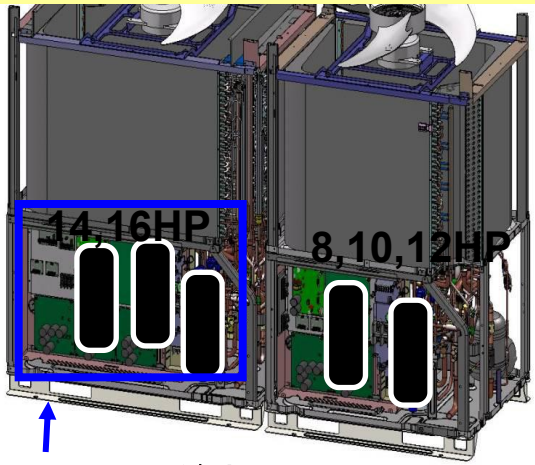
能贝尔口

（Φ710→φ740）

3, 高效率和高输出直流风扇电机

(600W => 1000W)

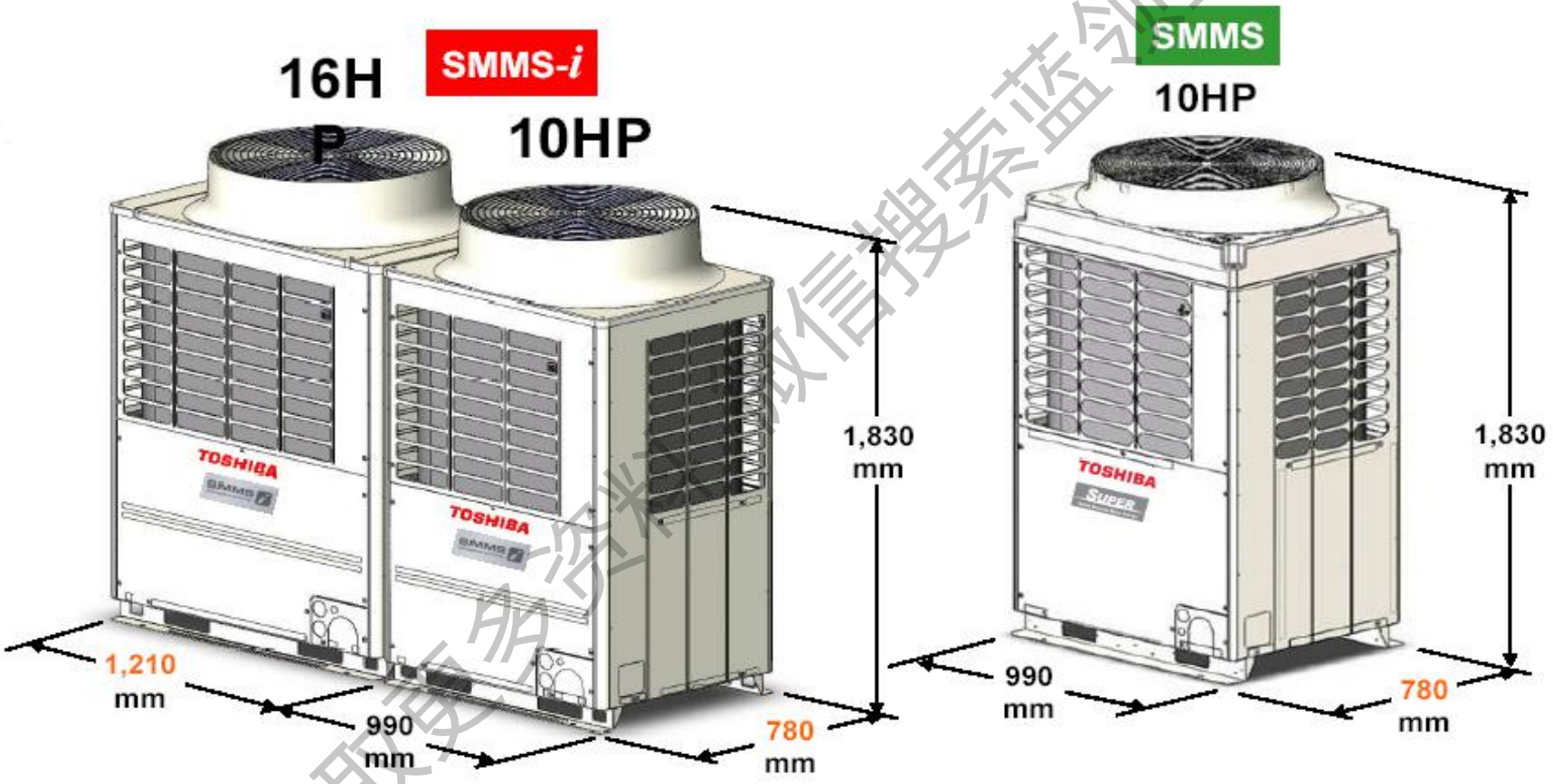
4, 新的高效率热交换器



3 个压缩机

尺寸

Comparison of dimension

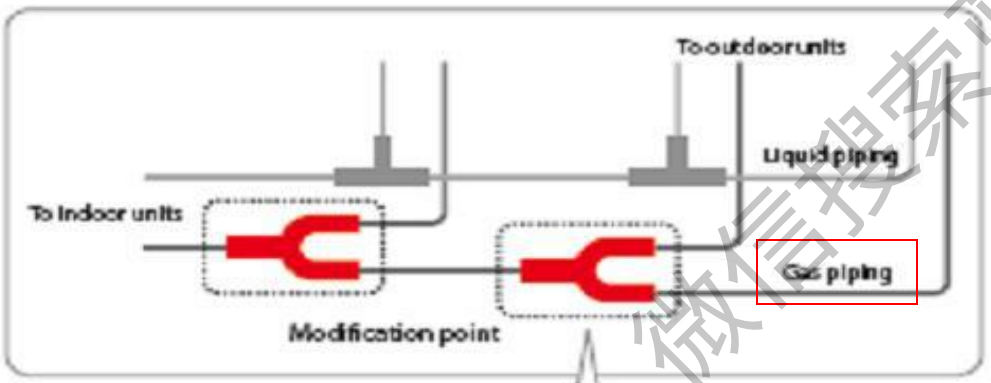


*不能在同一系统中同时使用“SMMSi” 和 “SMMS”.

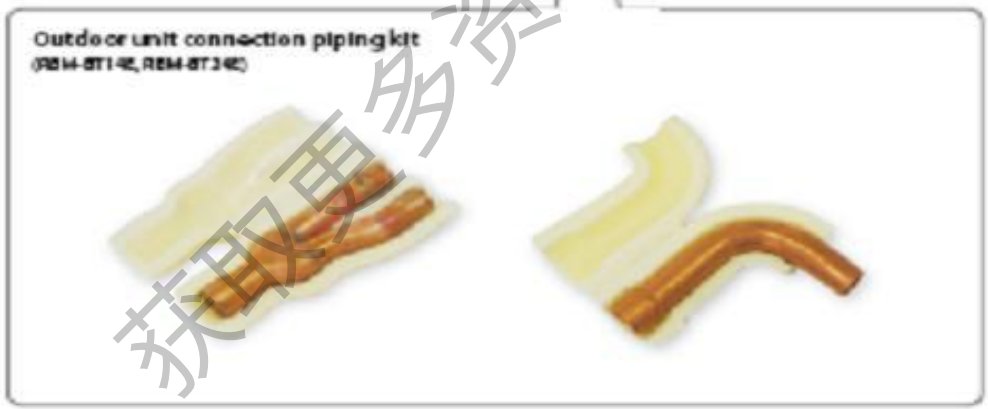
气侧配管(1)

Piping

A change from T-shape to Y-shape branching joints on the gas lines between SMMS-i outdoor units results in equalized flow to each branch that enables more reliable operation.



俯视图

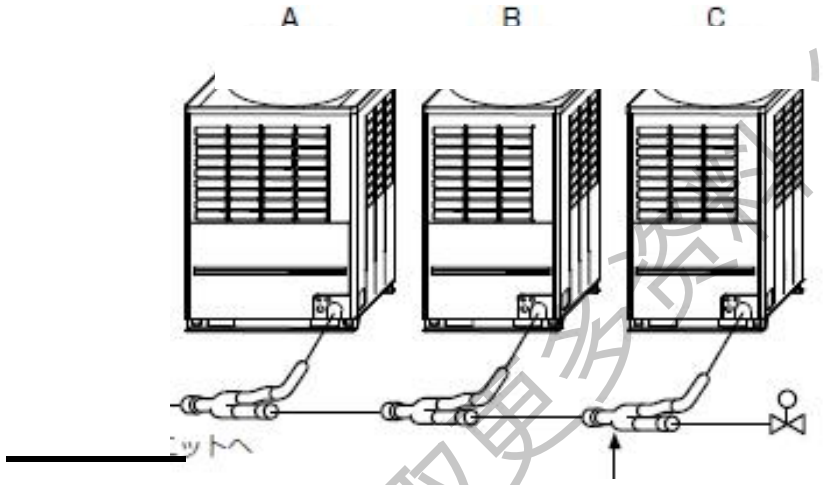


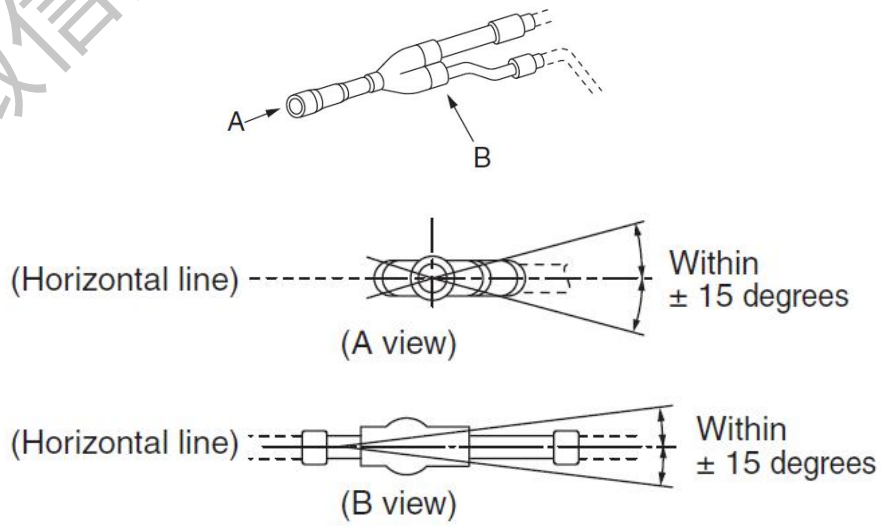
气侧配管(2)

2. 室外机的分支器

- ***气管侧的分支器必须使用Y型分支器***

Y型分支安装时，与水平方向的夹角必须在+/-15度以内

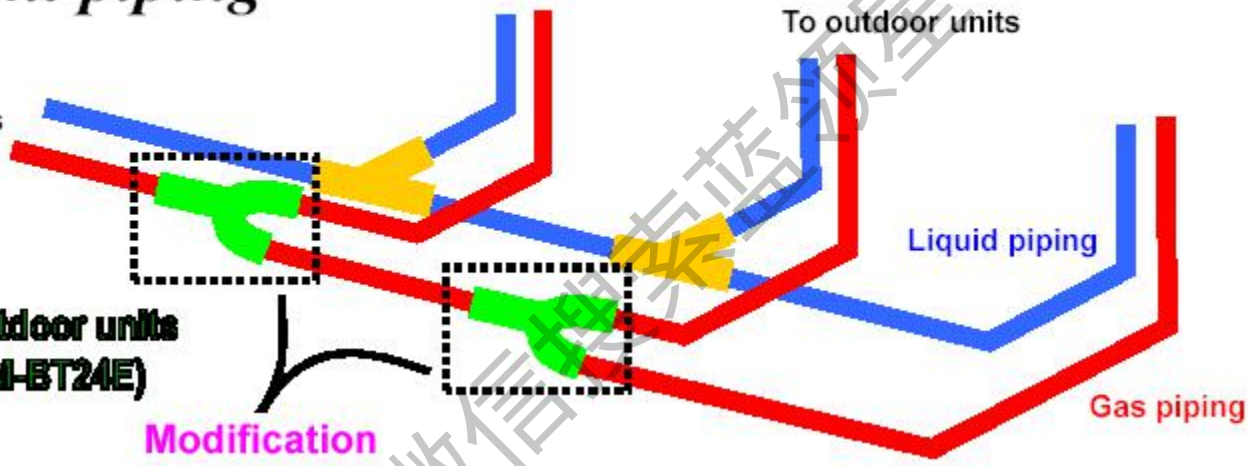




注: 液管侧仍可继续使用T型分支

气侧配管(3)

Refrigerant piping



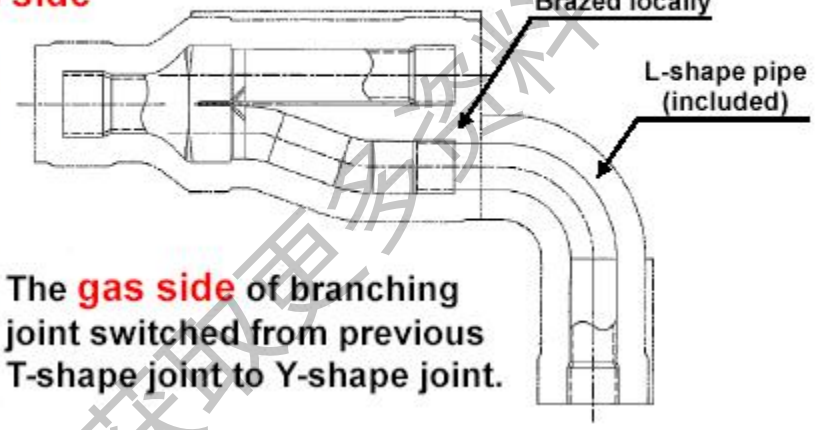
Y-shape joint for outdoor units (RBM-BT14E, RBM-BT24E)

Modification point

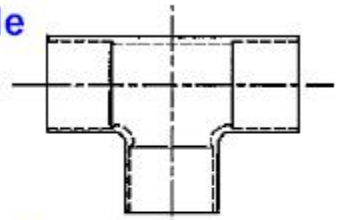
Y-shape joint

Gas side

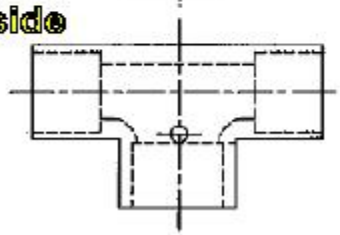
NEW



Liquid side



Balance side



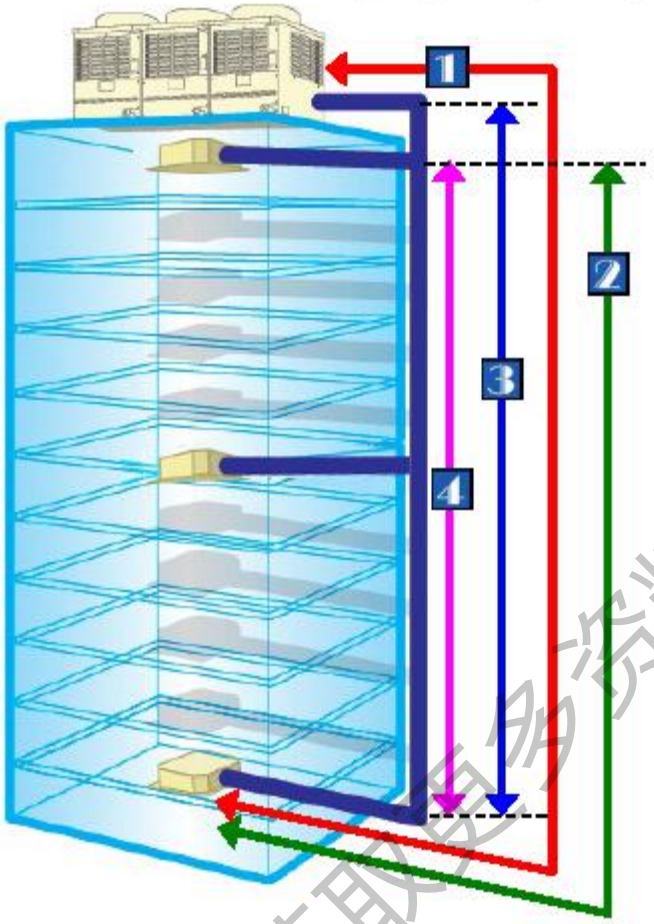
⚠ The gas side of branching joint switched from previous T-shape joint to Y-shape joint.

气侧配管(4)

	Y-shape branching joint				Branch headers				Outdoor unit connection piping kit	
Appearance										
Model name	RBM-BY55E	RBM-BY105E	RBM-BY205E	RBM-BY305E	RBM-HY1083E	RBM-HY1223E	RBM-HY1085E	RBM-HY2085E	RBM-BT14E	RBM-BT24E
Usage (Classification according to indoor unit capacity code)	Total below 6.4	Total 6.4 or more and below 14.2	Total 14.2 or more and below 25.2	Total 25.2 or more	Max. 4 branches		Max. 8 branches		Total below 26.0	Total 26.0 or more
					Total below 14.2	Total 14.2 or more and below 25.2	Total below 14.2	Total 14.2 or more and below 25.2		

配管长度(1)

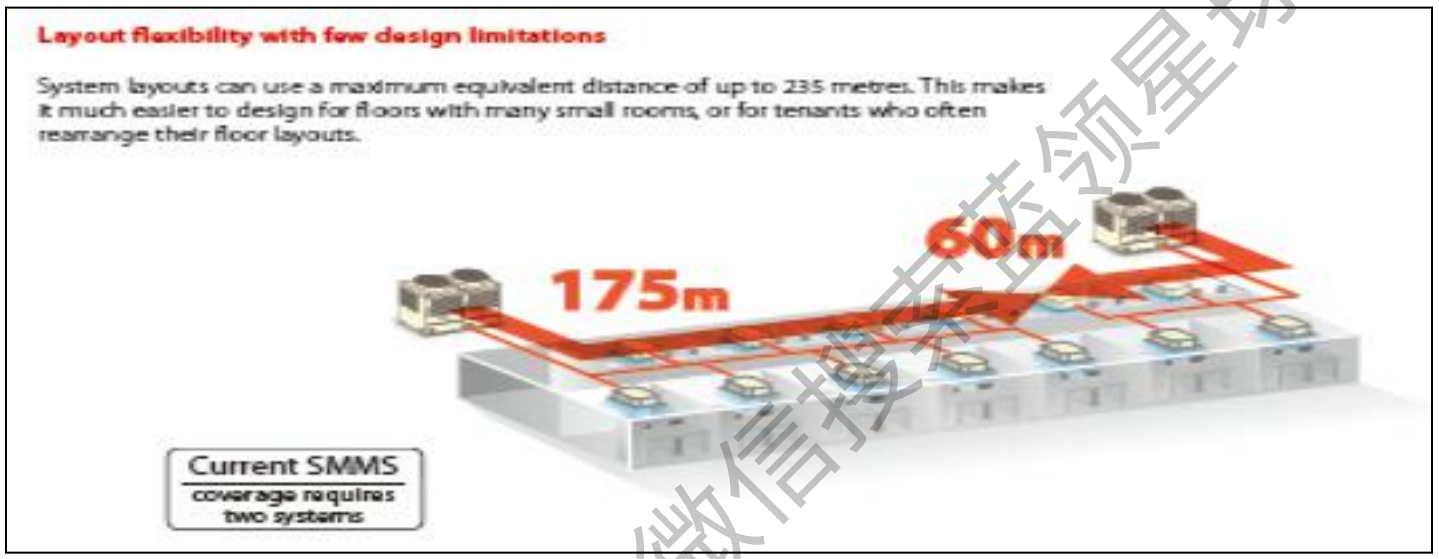
Extended piping capabilities

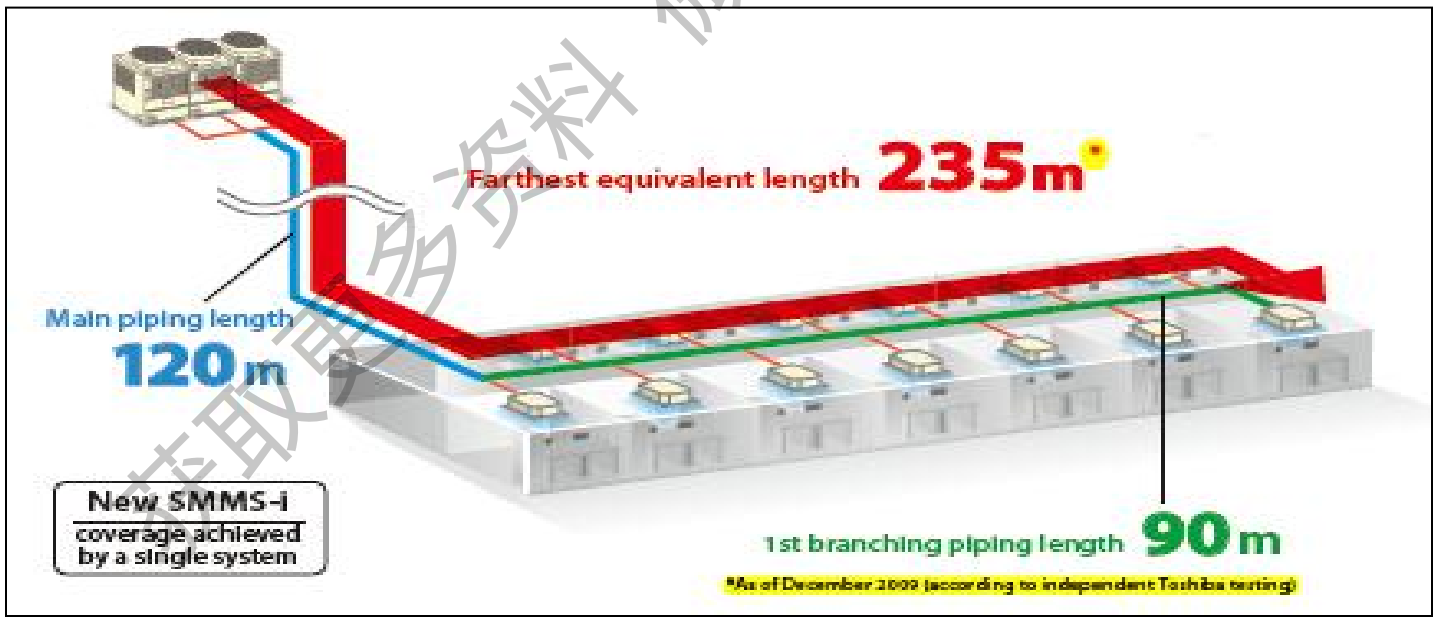


Series name	SMMS-*i*	SMMS
Total length	500m*	300m
1 Farthest equivalent length (Industry No.1)	235m	175m
2 Farthest pipe from 1st branch	90m**	65m
3 Height between CDU-FCU (outdoor unit above / below)	70m***/ 40m	50m / 40m
4 Height between FCU-FCU (Industry No.1)	40m	30m

* : Above 34HP combination
** : 65m if the height piping length between CDU and FCU is more than 3m
*** : 50m if piping length between FCU's is more than 3m

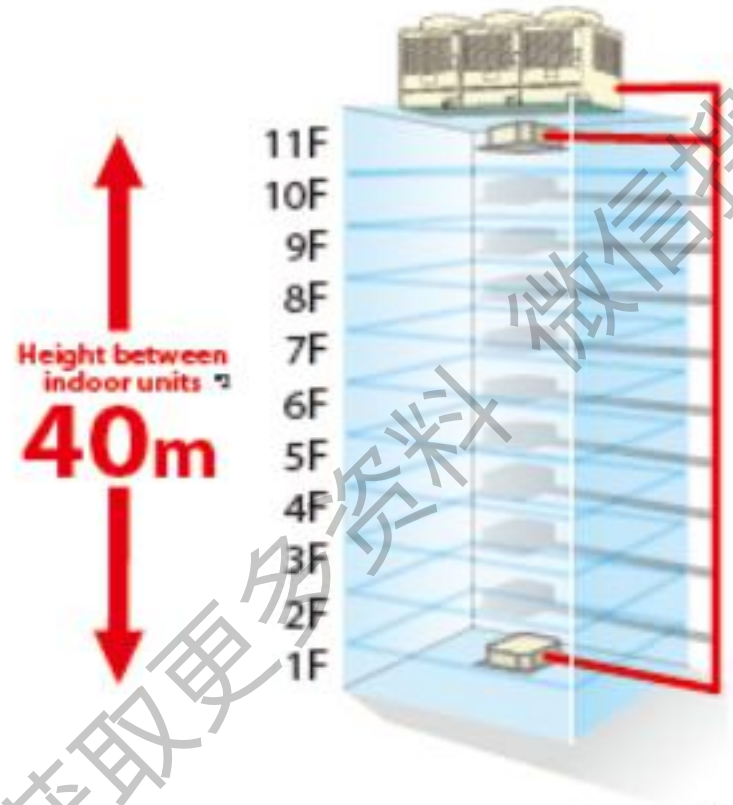
配管长度(2)





配管长度(3)

Toshiba SMMS-i leads the industry with support for height differences of up to 40 metres between indoor units on a single system. For instance, in an 11-story building, this is enough height to fully cover the entire floor as well as the elevator halls.

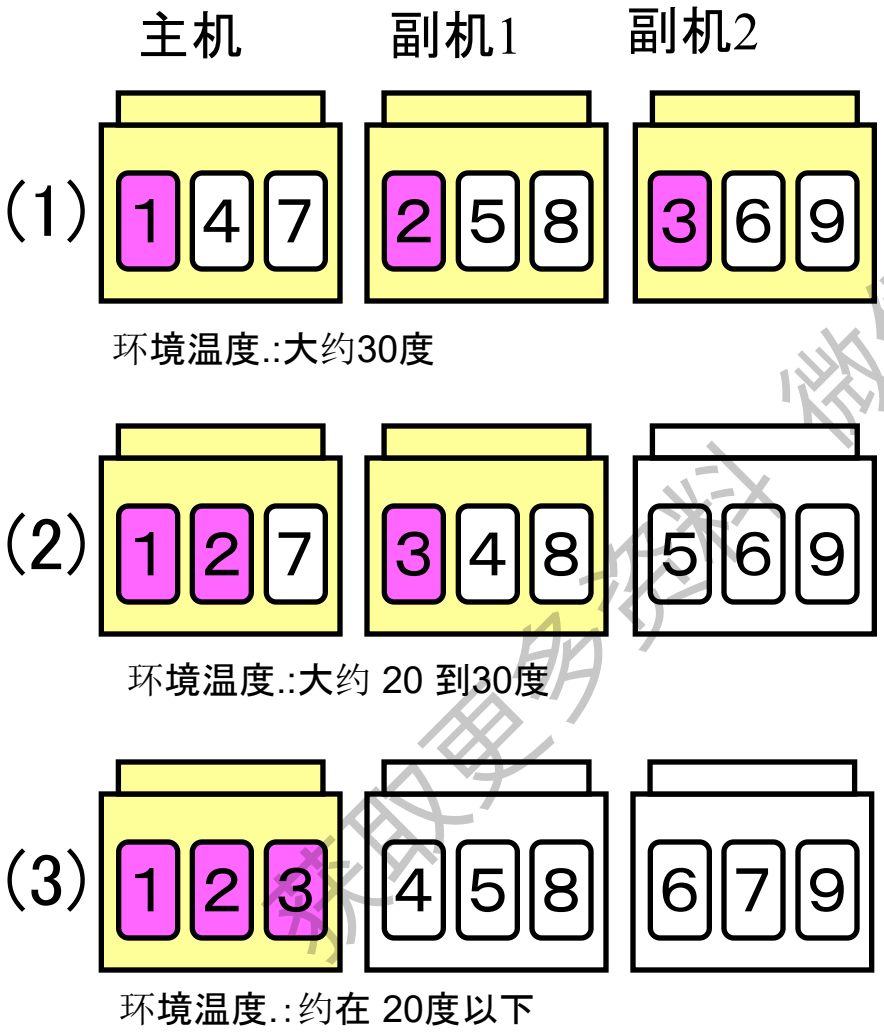


*1 As of December 2009 (according to independent Toshiba testing)

*2 Calculated at 3.5 metres per floor

压缩机的运行

示例:制冷模式下三个压缩机的运行



当环境温度偏高时，热交换器的换热效率更高

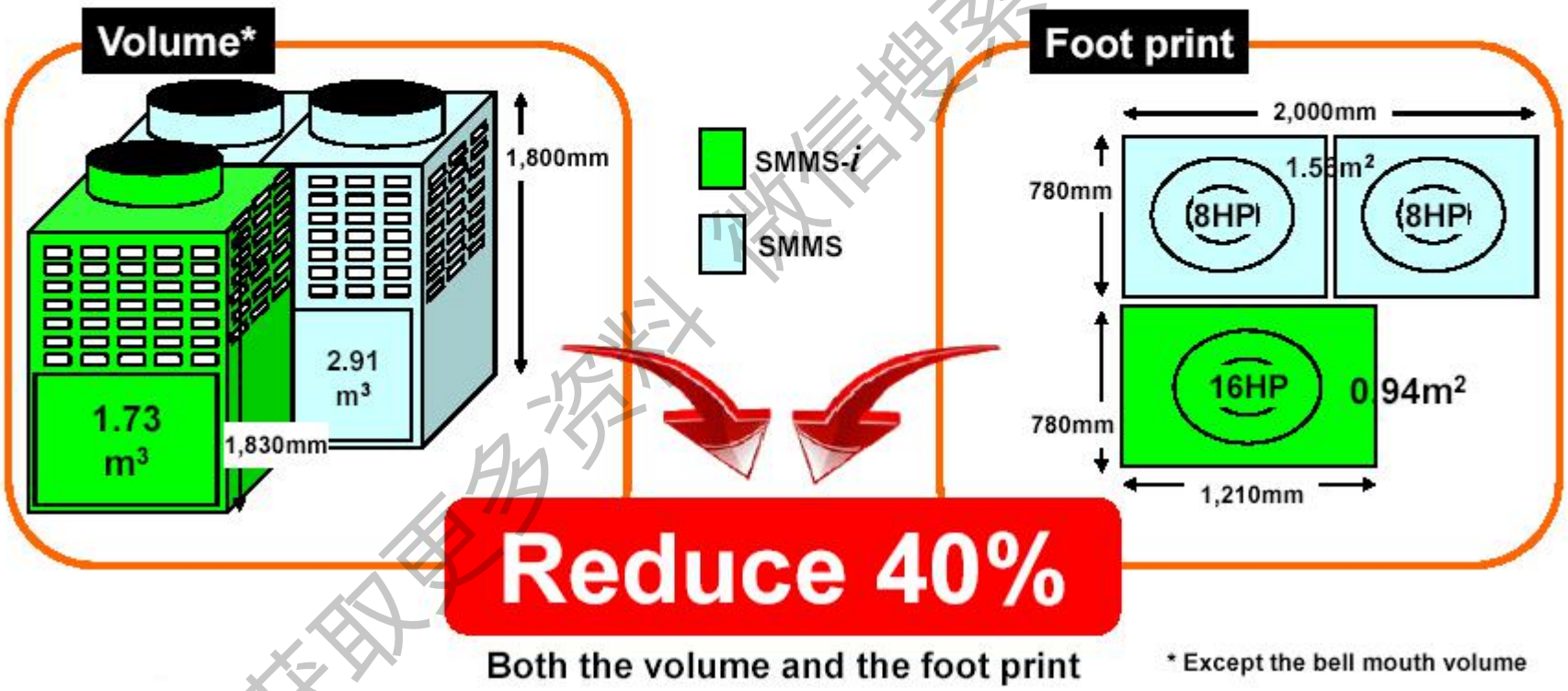
At low to med. ambient temperature conditions, the heat exchanger used to partially, to ensure reliability.

*To ensure proper refrigerant carries

安装空间(1)

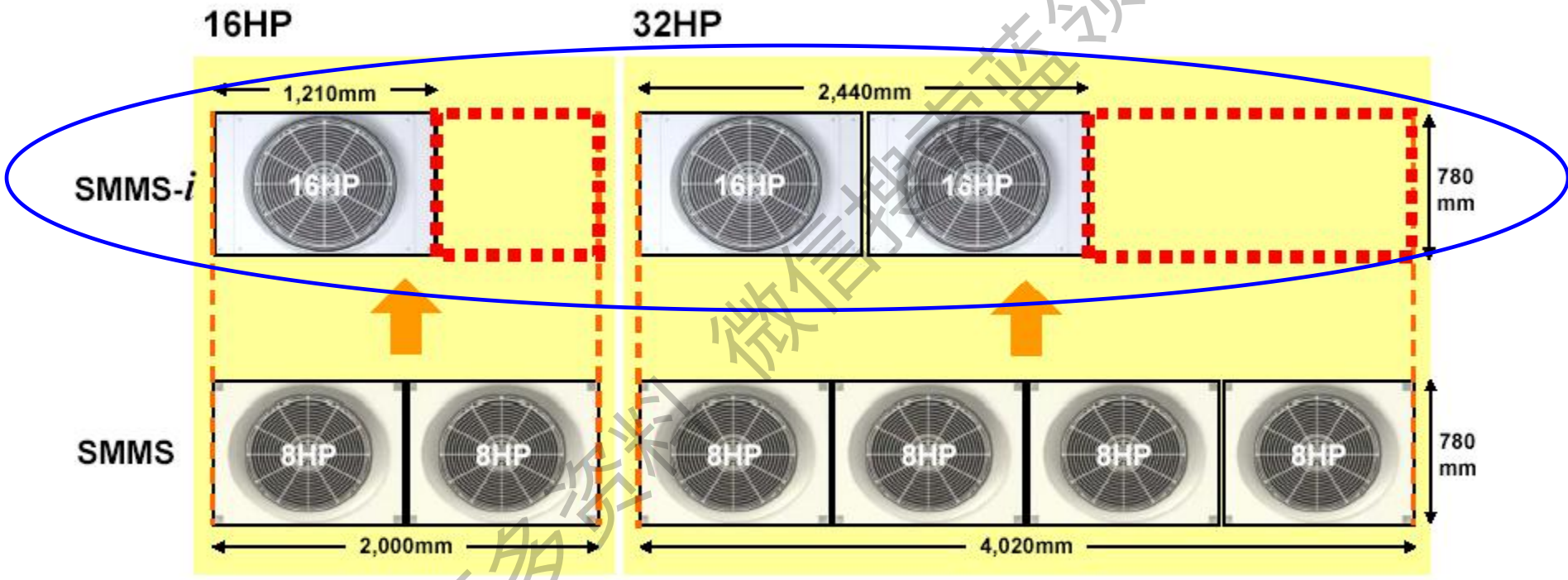
Reduce installation space

The compact unit not only saves the foot print,
But also reduces time of deliver and installation.



安装空间(2)

For example



A 16HP system installation now occupies only **2/3** the footprint and weight of two units previously required.

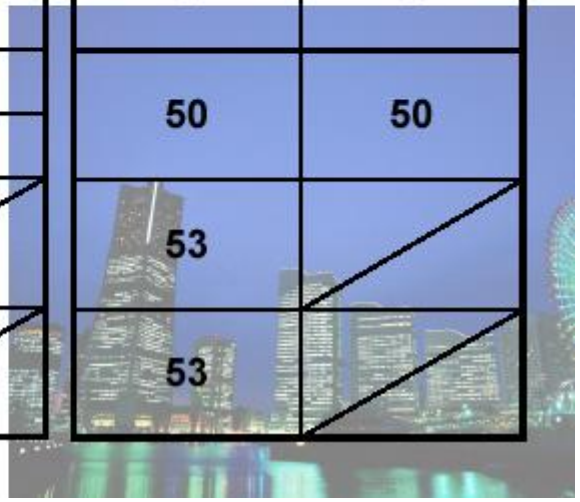
噪音水平(1)

Advancing the eco-evolution

Less noisy outdoor units

Rated sound				Sound reduction mode	
HP	Operation	SMMS-*i*	SMMS	SMMS-*i*	SMMS
8HP	Cooling	55	57	50	50
	Heating	56	58		
10HP	Cooling	57	58	50	50
	Heating	58	59		
12HP	Cooling	59	59	50	50
	Heating	61	60		
14HP	Cooling	60		53	
	Heating	62			
16HP	Cooling	62		53	
	Heating	64			

Unit : dB(A)

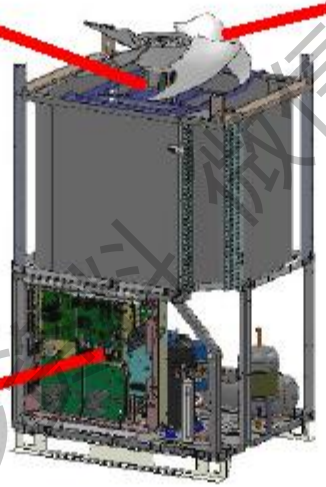


噪音水平(2)

New larger air volume blower

NEW

1kW high power motor



4 wings large-diameter propeller fan

NEW

NEW

High power motor drive inverter

Larger air volume is realized by three elements !

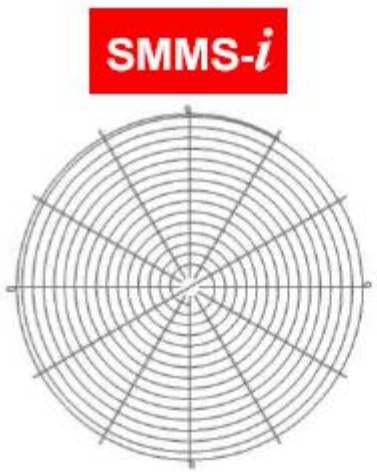
噪音水平(3)

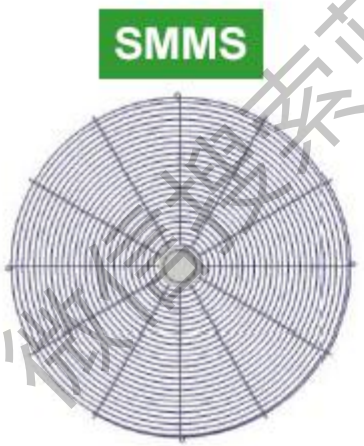
New large-diameter propeller fan

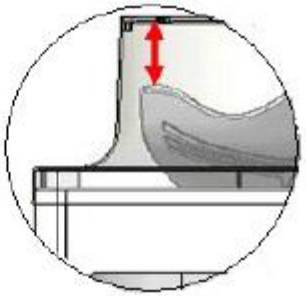
Model		SMMS-*i*	SMMS
Image photo			
Diameter		φ740mm	φ710mm
Number of wings		4	3
External static pressure	8 to 10HP	60Pa	35Pa
	12 HP	50Pa	
	14 to 16HP	40Pa	

噪音水平(4)

New fan-guard







	SMMS-*i*
Coil pitch	22mm
Between fan and fan-guard	123mm

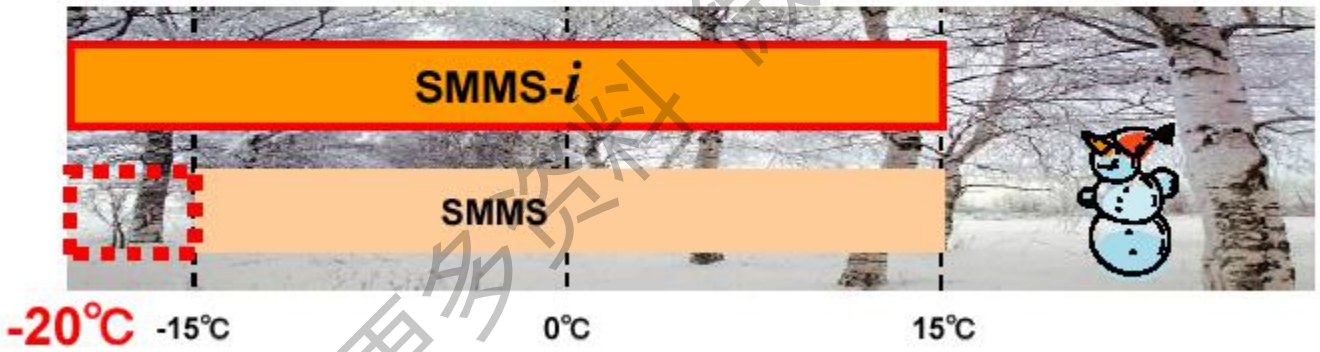
SMMS-*i* is more silent than SMMS !

运行温度范围

Operating temperature range

	SMMS-*i*	SMMS
Outdoor temperature range in cooling	-5℃ to 43℃	
Outdoor temperature range in heating	-20℃ to 15℃	-15℃ to 15℃

Heating operation range



SMMS-*i* is possible to operate in the cold region.

新的室内机

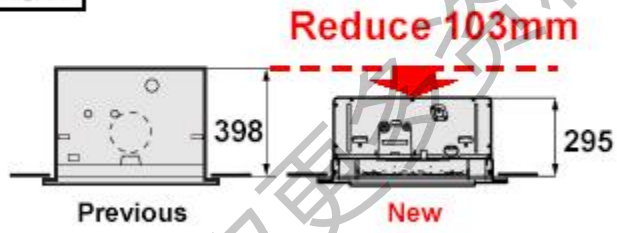
New 2-way air discharge cassette type

CONCEPT

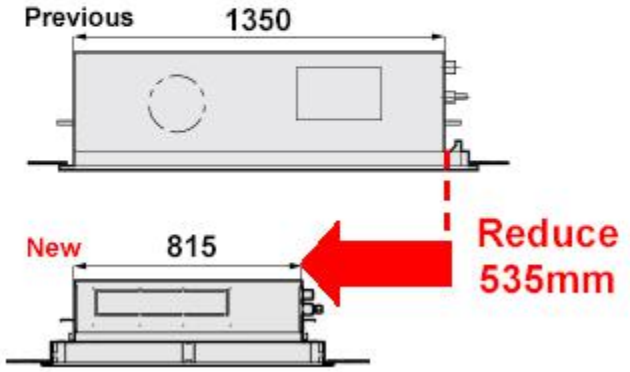
- Standardize the width of ceiling panels, 680mm.
- Condensate drain pump included.
- Available for ceilings up to 3.8 m in height.
  (in case of 0.8HP to 3.2HP)
- Easy to install by using "Adjust-Cover" of panel.
- "Adjust-Cover" function for fine adjustments after installation.

Comparison with previous model (in case of 1.7HP)

Height

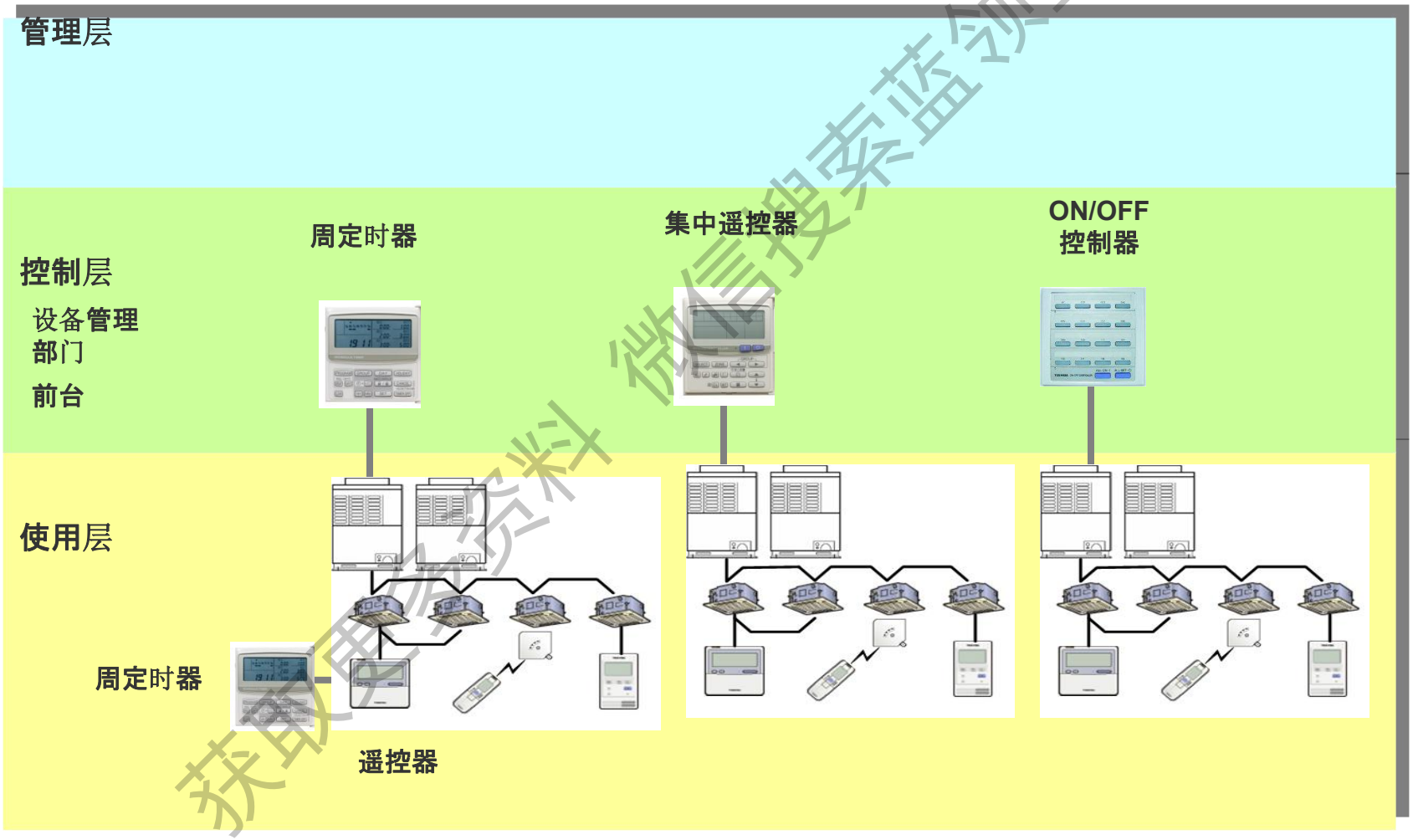


Width



控制系统(1)

为独立系统和小办公室项目提供了更灵活的控制解决方案



控制系统(2)

Dot remote controller

例）
ｾｯﾄ　：APAU8055S
室内：AIU-AP805H
室外：ROA-AP805HS
ﾊﾟﾈﾙ：RBC-U31PG
ﾘﾓｺﾝ：RBC-AMT32

例）
ｾｯﾄ　：APAU8055S
室内：AIU-AP805H
室外：ROA-AP805HS
ﾊﾟﾈﾙ：RBC-U31PG
ﾘﾓｺﾝ：RBC-AMS51

省ｴﾈﾒｲﾝﾘﾓｺﾝ
RBC-AMS51
¥40,000

組合せ廃止

ﾘﾓｺﾝ+ｽｹｼﾞｭｰﾙﾀｲﾏｰ
RBC-AMT32＋TCB-EXS21
¥63,000

※TCB-EXS21は
集中管理用に継続

（参考）全熱交・空調
兼用リモコン
ＮＲＣ－０１Ｈ
※換気扇　別売扱い

メインリモコン
RBC-AMT32
¥28,000

継続

ｻﾌﾞﾘﾓｺﾝ
RBC-AS21
¥23,000

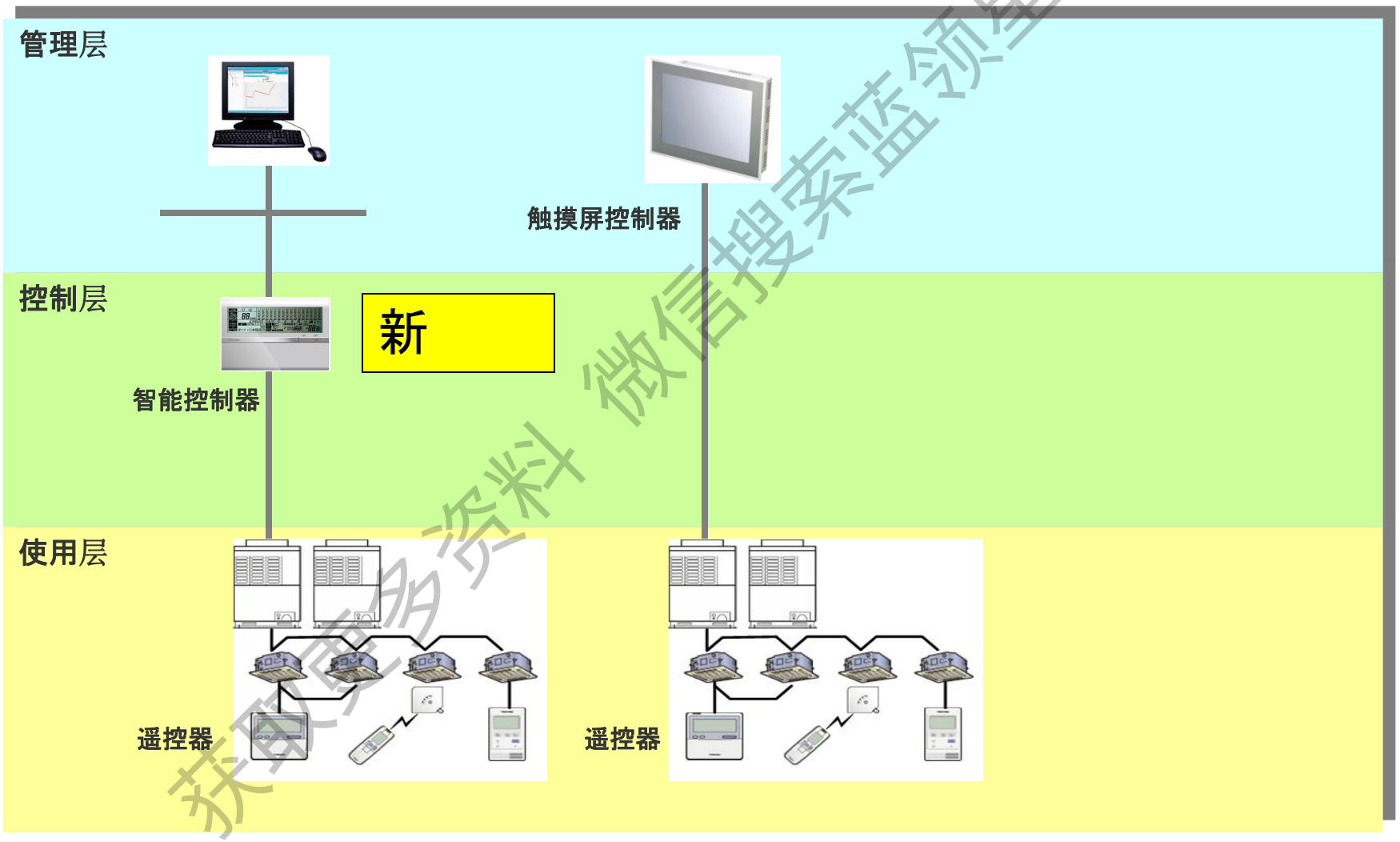
集中管理・低価格物件用にオプション扱いで継続
ＳＭＭＳ－ｉカタログはこちらがメイン

↑多　機能　少↓

←低　価格　高→

控制系统(3)

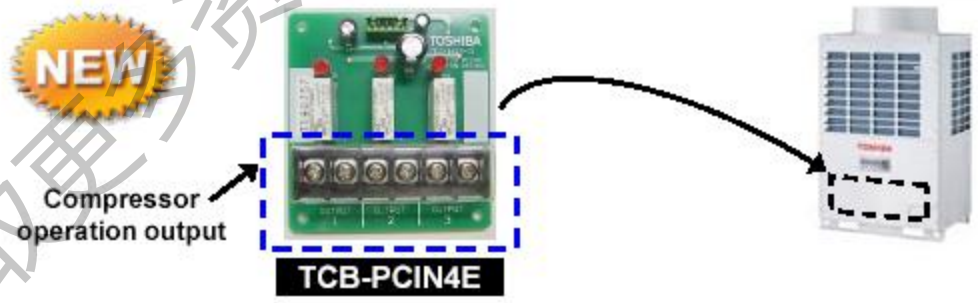
为稍大的办公区提供解决方案



控制系统(4)

Accessories

Function	Model name	Note	Current model
Output board	TCB-PCIN4E	This product have new function to take compressor operation output	TCB-PCIN2E
Power peak-cut control	TCB-PCDM4E		TCB-PCDM2E
External master ON/OFF control	TCB-PCMO4E		TCB-PCMO2E
Outdoor unit connection piping kit	RBM-BT14E	Connectable total capacity : Below 26HP	RBM-BT13E
	RBM-BT24E	Connectable total capacity : 26HP or more	



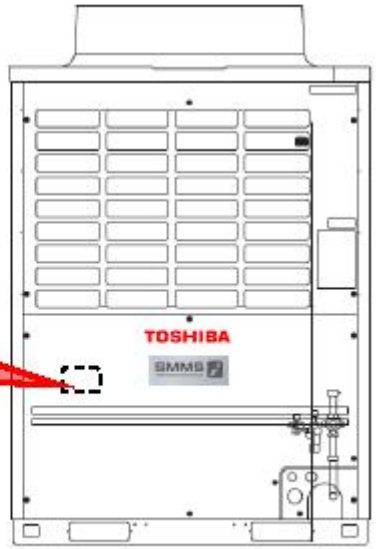
检查窗(1)

Inverter box (inspection window)

industry 1st !

We provided an inspection window, we called "Inverter box window", for PCB in inverter box.

(Except 5, 6HP)



Schematic elevation

检查窗(2)

Inverter box (inspection window)

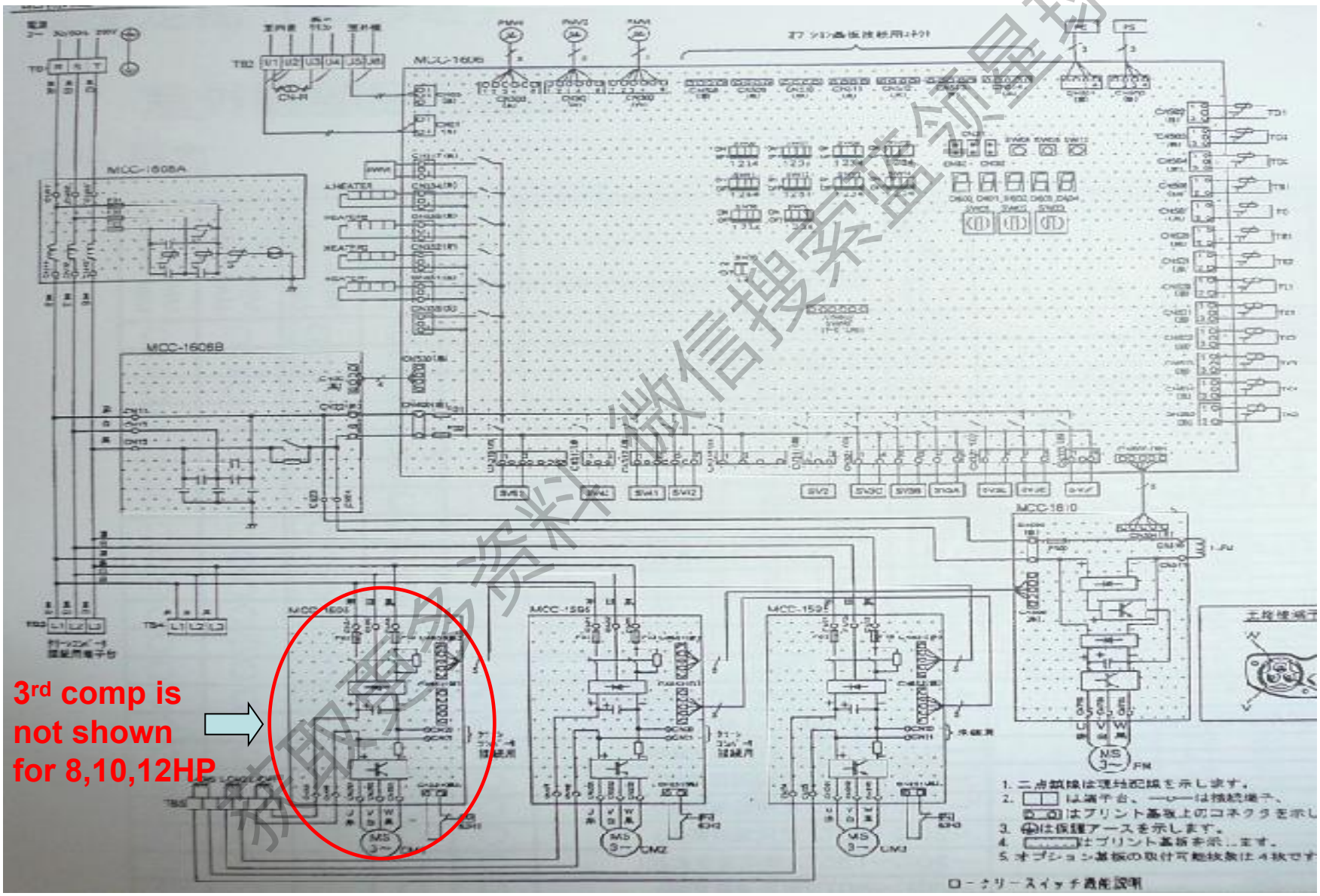
Inverter box window is very useful in many situations without taking off front panel.

- Test run
- Maintenance
- Fix
- Address setting

etc

SMMS-*i* is complied to the "New Machinery Directive" (2006/42/EC).

配线图(1)



制冷循环的主要零配件

	Part name 品名	Model name 形名	Rating 仕様	8HP MMY-MAP804H	10HP MMY-MAP1004H	12HP MMY-MAP1254H	14HP MMY-MAP1404H	16HP MMY-MAP1604H
1	圧縮機	DA421A3FB-28M	出力：2.3kW×2	○				
1	圧縮機	DA421A3FB-28M	出力：3.1kW×2		○			
1	圧縮機	DA421A3FB-28M	出力：4.2kW×2			○		
1	圧縮機	DA421A3FB-28M	出力：3.0kW×2				○	
1	圧縮機	DA421A3FB-28M	出力：3.6kW×2					○
2	四方弁コイル	STF	AC200V 50/60Hz用	○	○	○	○	○
3	電子膨張弁コイル	HAM-MD12TF-6	DC12V	○	○	○	○	○
4	二方弁コイル	VPV	AC200V 50/60Hz SV2,SV3A,SV3B,SV3C,SV3E	○	○	○		
			AC200V 50/60Hz SV2,SV3A,SV3C,SV3D,SV3E, SV3F,SV6				○	○
5	二方弁コイル	FQ-F592	AC200V 50/60Hz SV41,SV42,SV5	○	○	○		
			AC200V 50/60Hz SV41,SV42,SV43				○	○
6	二方弁	VPV-122DQ1	SV2,SV3A,SV3C,SV3D,SV3E	○	○	○		
			SV2,SV3A,SV3C,SV3D,SV6				○	○
7	二方弁	VPV-303DQ1	SV3E,SV3F				○	○
8	二方弁	FDF3A06	SV41,SV42,SV5	○	○	○		
			SV41,SV42,SV43				○	○
9	二方弁	VPV-603DQ2	SV3B	○	○	○	○	○
10	高圧スイッチ	ACB-4UB32W	OFF:3.73MPa ON:2.9MPa	○	○	○	○	○
11	高圧センサ	50XA4-H3	0.5~4.3V/0~3.73MPa	○	○	○	○	○
12	低圧センサ	50XA4-L1	0.5~3.5V/0~0.98MPa	○	○	○	○	○
13	ファンモータ	STF-340A1000-1	DC280V/1kW	○	○	○	○	○
14	圧縮機ケースヒータ		AC200V/26W	○	○	○	○	○
15	アキュームケースヒータ		AC200V/50W	○	○	○	○	○
16	可溶栓		72℃	○	○	○	○	○

Comp.

PMV

PMV coil

2 way valve coil1

2 way valve coil2

2 way valve1

2 way valve2

2 way valve3

2 way valve4

Hi Pressure SW

Hi Pressure Sensor

Lo Pressure Sensor

Fan motor

Case heater for comp.

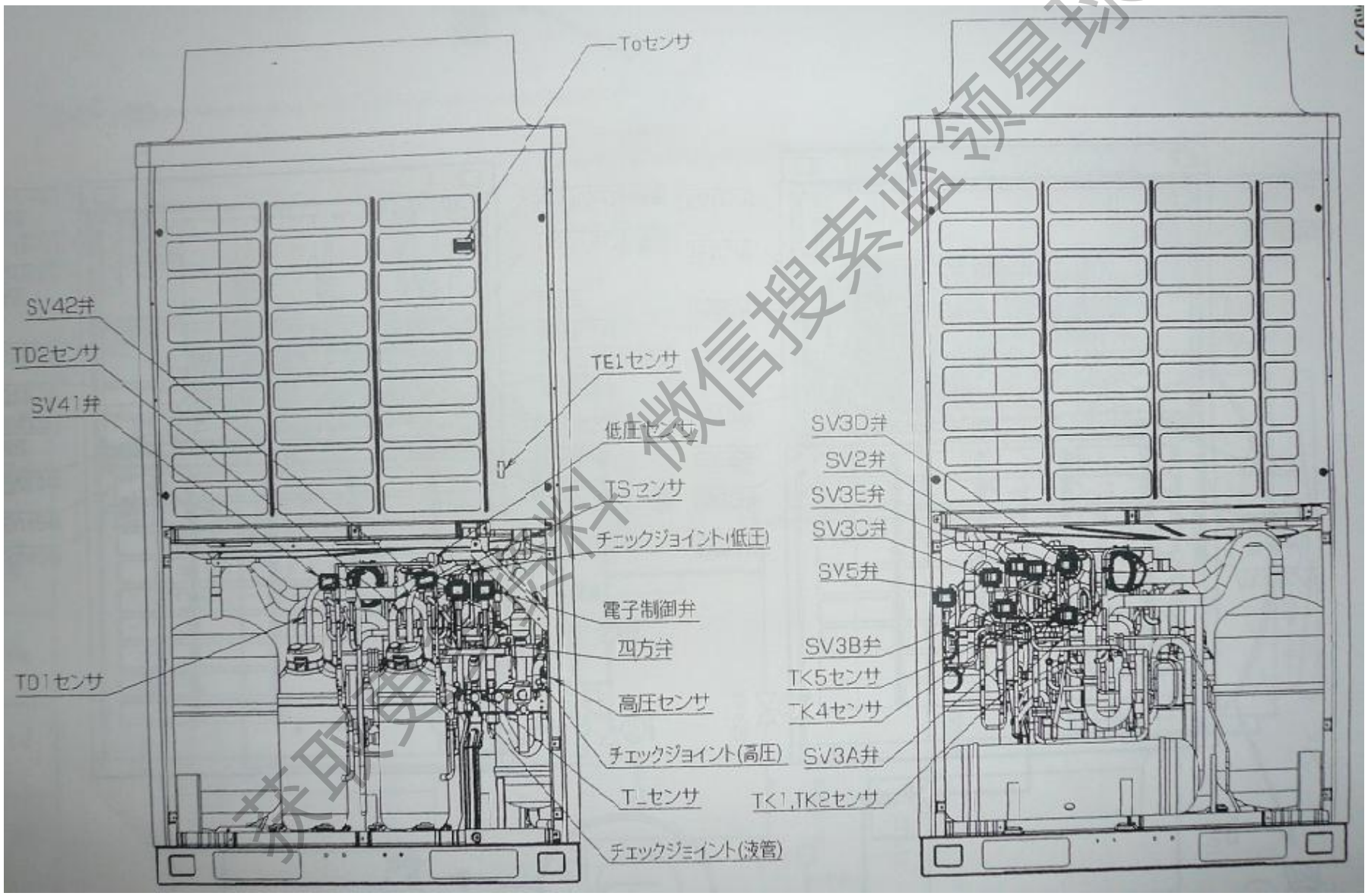
Case heater for acuum.

可溶栓

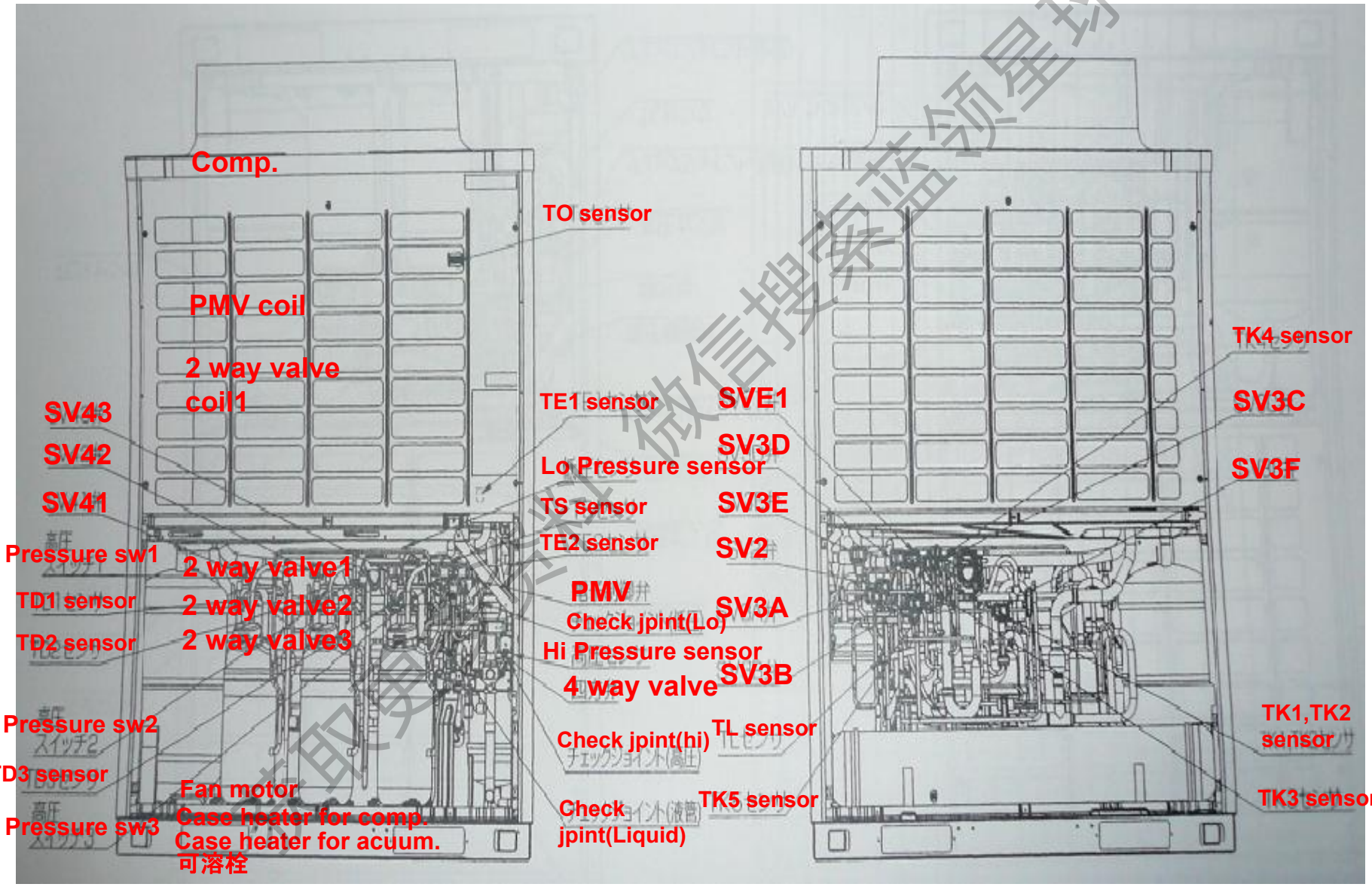
电器配件

	Part name 品名	Model name 形名	Rating 仕様	8HP MMY-MAP2240H	10HP MMY-MAP2800H	12HP MMY-MAP3350H	14HP MMY-MAP4000H	16HP MMY-MAP4500H
Wiring terminal		SHB-60-03	AC600V/60A,3P	○	○	○	○	○
Communication wiring terminal		JX0-82H	AC30V(またはDC42V)/1A,6P	○	○	○	○	○
Fuse	ヒューズ(電源)	———	AC250V30Aφ10	○	○	○	○	○
Fuse holder	ヒューズホルダ	———	AC250V30Aφ10用	○	○	○	○	○
Reactor	リアクタ	CH-44FK	1.45mH/25A	○	○	○	○	○
Capacitor	コンデンサ	400LRSN 1500M	1500uF/400V	○	○	○	○	○
Transformer	電源トランス	TT-04-03	AC200V-270mA	○	○	○	○	○
PCB (Noise filter)	ノイズフィルタ基板	———	MCC-1388	○	○	○	○	○
AC Line filter	ノイズフィルタ(AC)	FMA303T122	1mH/30A(MCC-1388基板)	○	○	○	○	○
PCB(Control)	制御基板	———	MCC-1429	○	○	○	○	○
PCB(Comp IPDU)	圧縮機用IPDU	IPDU-2T62DC3	6.2kW MCC-1405	○	○	○	○	○
PCB(Comp IPDU)	圧縮機用IPDU	IPDU-2T62D64	6.2kW MCC-1405	○	○	○	○	○
PCB(Fan IPDU)	ファン用IPDU	IPDU-2S04F41	400W MCC-1384	○	○	○	○	○
Power relay	パワーリレー	RPG-12-001	AC250V/20A(MCC-1405基板)	○	○	○	○	○
Power module	パワーモジュール	6MBR50UA060	50A/600V(MCC-1405基板)	○	○	○	○	○
TD sensor	温度センサ(TD)	———	−30℃~135℃(使用温度範囲)	○	○	○	○	○
TS sensor	温度センサ(TS)	———	−20℃~80℃(使用温度範囲)	○	○	○	○	○
TE sensor	温度センサ(TE)	———	−20℃~80℃(使用温度範囲)	○	○	○	○	○
TO sensor	温度センサ(TO)	———	−20℃~80℃(使用温度範囲)	○	○	○	○	○
TK sensor	センサ(TK)	———	−30℃~135℃(使用温度範囲)	○	○	○	○	○
TL sensor	センサ(TL)	———	−20℃~80℃(使用温度範囲)	○	○	○	○	○

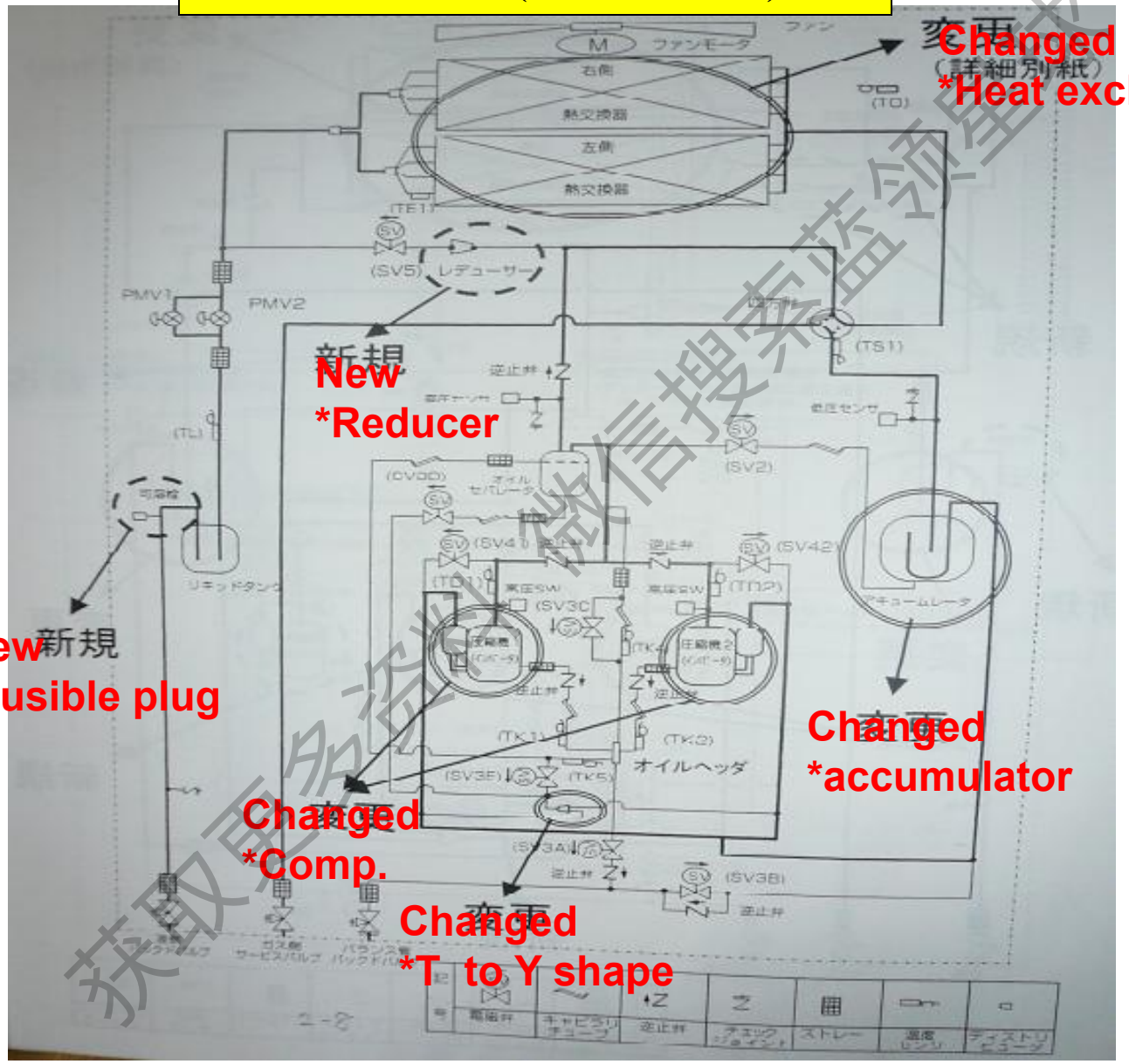
关键配件的布局(8,10,12HP)



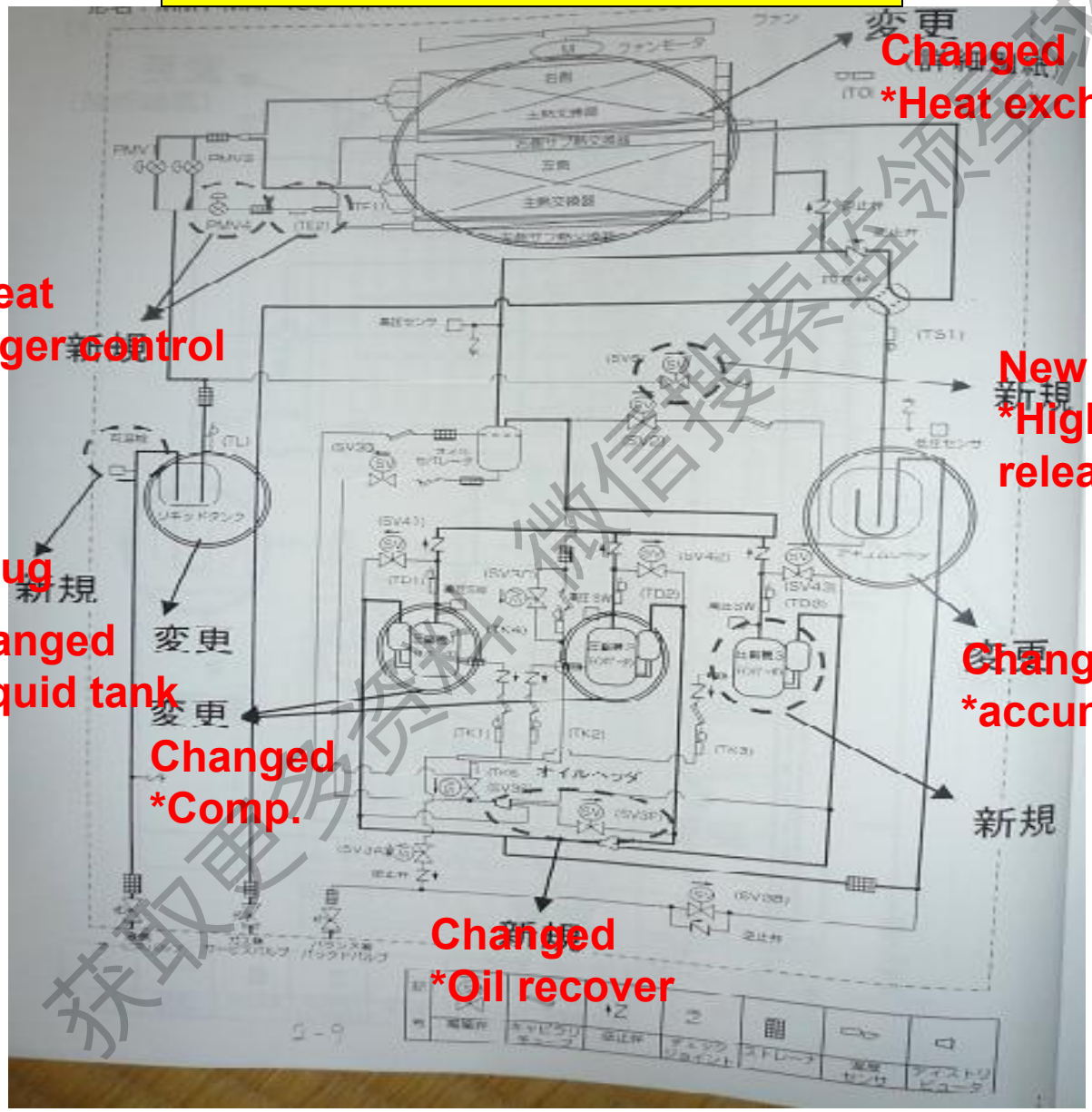
关键配件的布局(14,16HP)



系统循环(8,10,12HP)



系统循环图(14,16HP)



Changed
*Heat exchanger

New
*Sub Heat exchanger control

New
*High pressure release valve

New
*Fusible plug

Changed
*Liquid tank

Changed
*accumulator

Changed
*Comp.

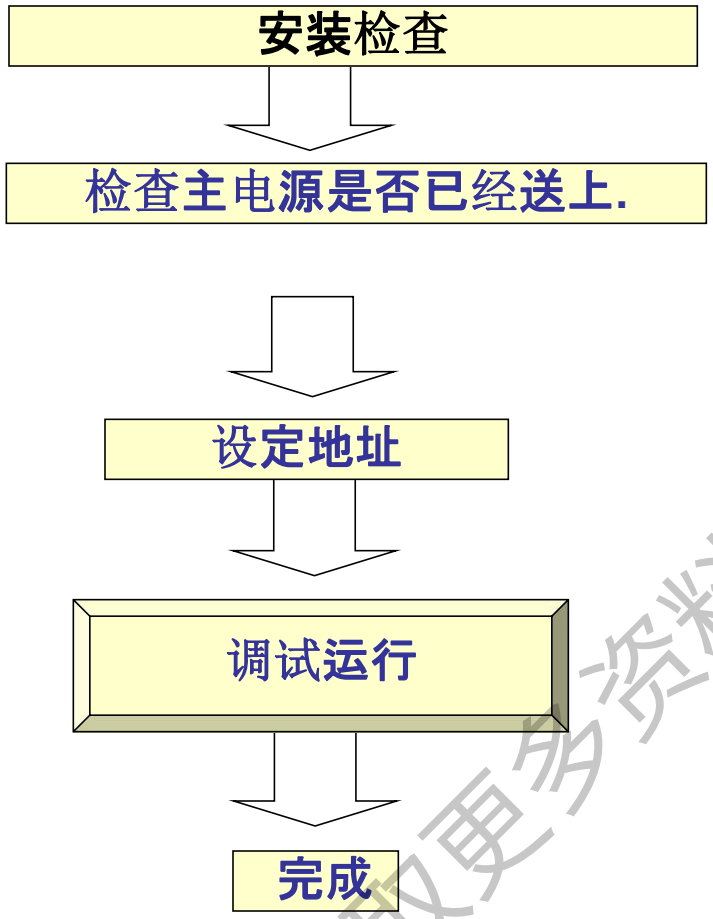
Changed
*Oil recover

1.试运行
2.系统外观
3:操作系统
4.调试运行
5 .故障举例
6.维修支持系统
7.其他

TOSHIBA
Leading Innovation

1. 试运行

试运行的流程



检查基础项目，主要的安装工作.
一定要把检查结果添加到检查目录中

这个检查是确认机器侧是否电源正常
检查冷媒管路系统是否正确连接和打开.

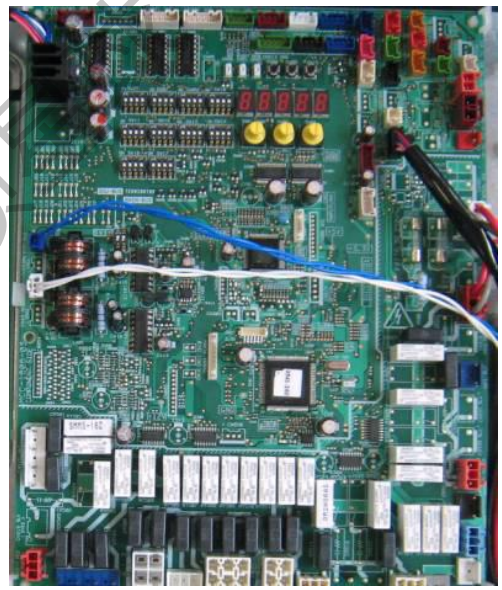
*不能简单的送电后就进行该操作.

检查气流循环和制冷/制热运行情况.

在调试过程中，如果发现故障，请消除该故障，或参看“故障排除”。

1. 试运行

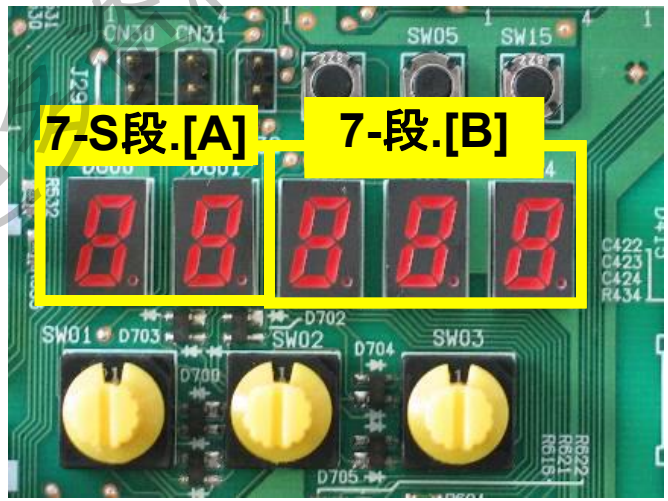
1-2-a.检查室外机侧的主电源



1. 确认室外机主机的SW01/02/03 均已旋到1

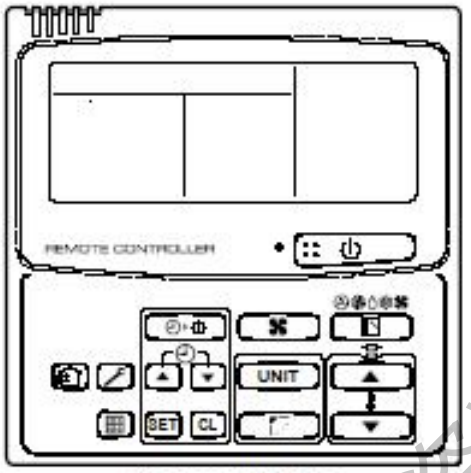
2. 如果在7段显示屏上有故障显示，请参考故障代码排除该故障。

3. 室外机主控板7段显示：U1：L08
[L08]：室内机地址未设定



1．试运行

1-2-b.检查室内机的主电源



Normal status
(Power-OFF status)

遥控器得电

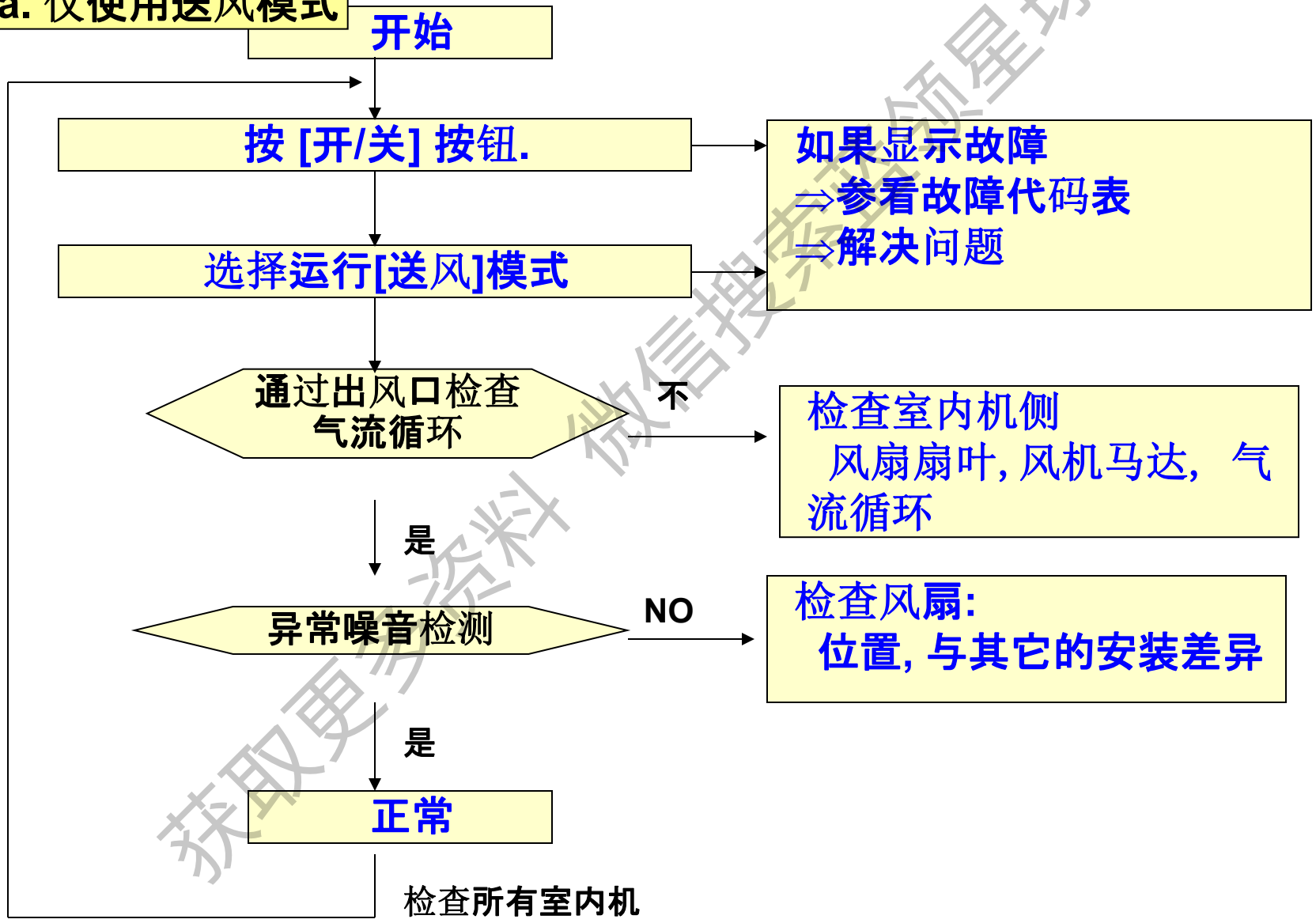
Abnormal status
(Power is not normally turned on.)

遥控器未得电

参看“故障排除”

1. 试运行

1-3-a. 仅使用送风模式



1．试运行

1-3-b.通过线控器进行制冷/制热运行

a): 长按  按钮4秒钟以上 .

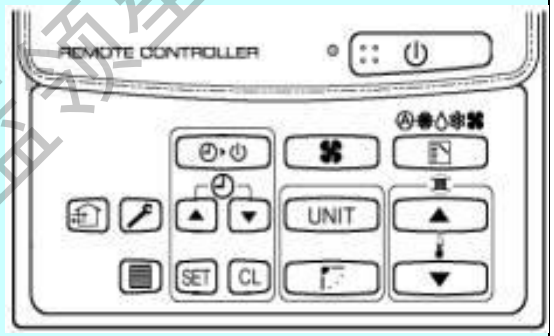
b): 直到屏幕上显示“ TEST ”.

c): 选择“制冷”或“制热”模式.

d): 按  按钮开启空调 .

e):试运行结束后, 再次按  直到“TEST”消失。

===> 转到正常停机



备注

不能进行温度控制／风速控制.

故障代码可以显示

试运行仅能用作测试运行,否则会引起设备的损坏.

60 分钟后, , 试运行模式会自动结束.

1. 试运行

1-3-c. 通过遥控器进行制冷／制热运行

(4面出风嵌入式)

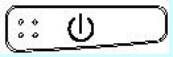
a. 关闭室内机电源 ,拆下无线信号接收器 .

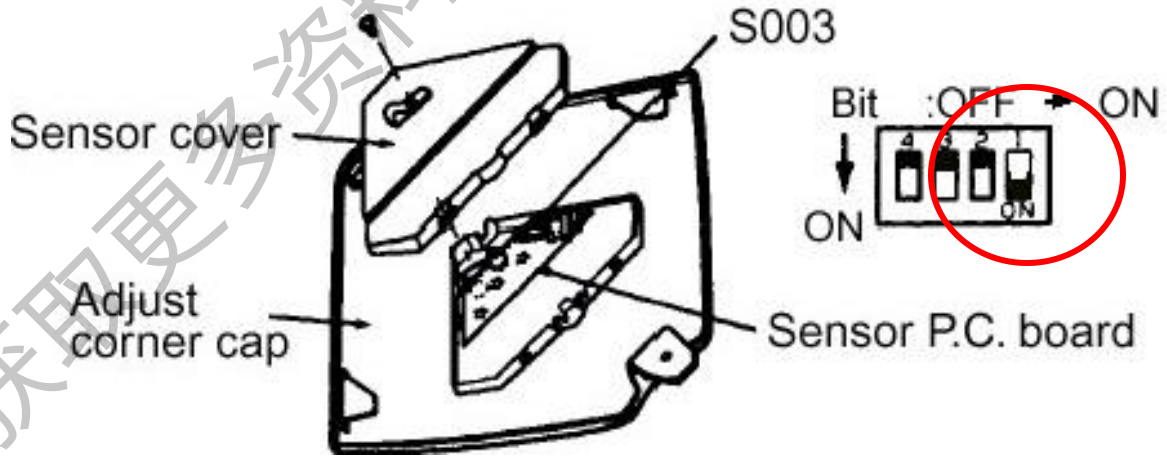
b. 设定“S003 _bit 1 ” 为ON.

c.重新装回无线信号接收器,并对室内机送电.

d.选择运行制冷/制热模式.

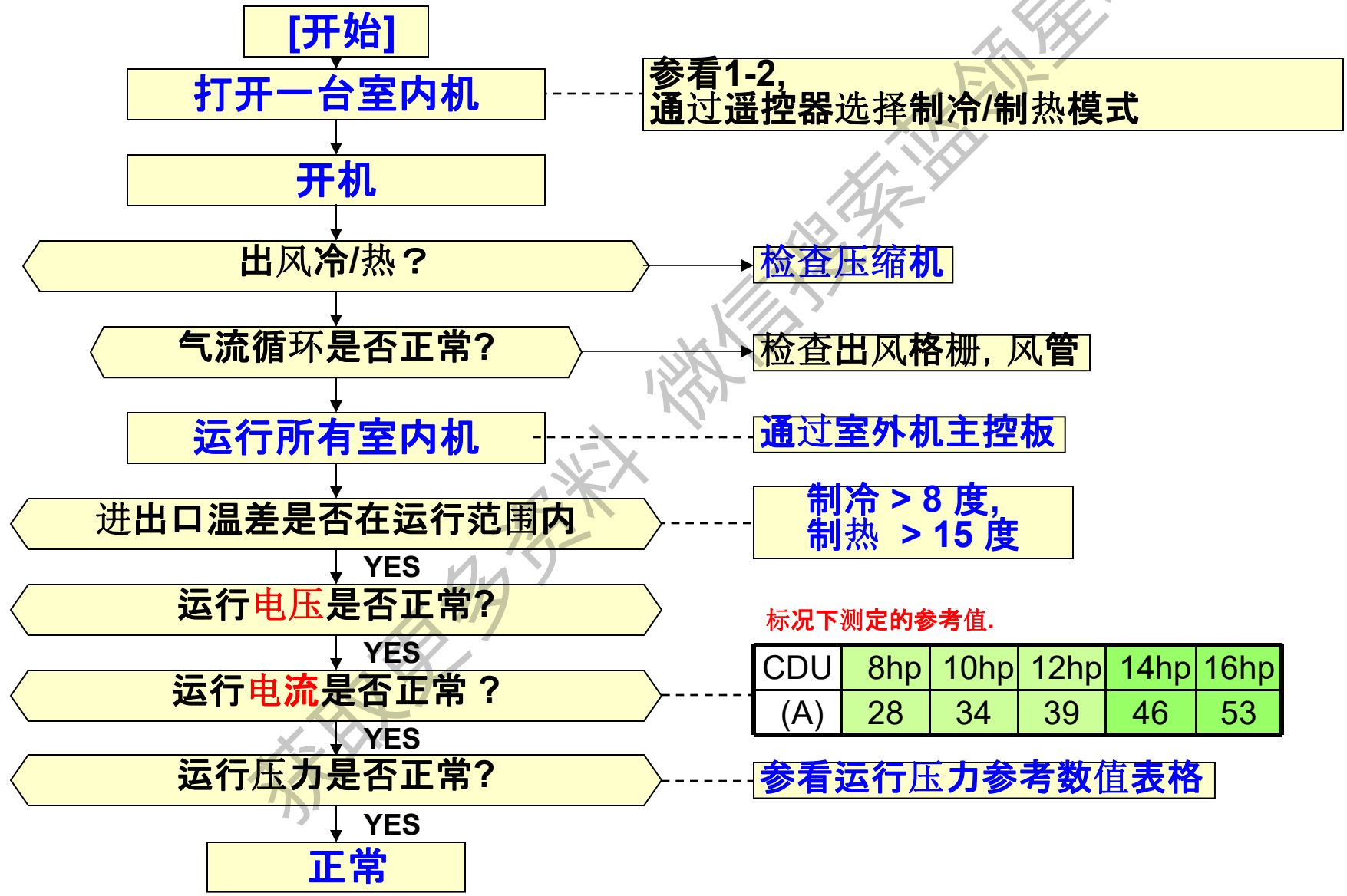
e. 按  按钮开机.

F试运行结束 后 , 按  关机, 恢复S003设置.



1. 试运行

1-3-d. 试运行过程中的检测内容



标况下测定的参考值.

CDU	8hp	10hp	12hp	14hp	16hp
(A)	28	34	39	46	53

1. 试运行

1-3-e. 系统运行压力参考表

室外ユニット MMY-MAP	運転モード	圧力 (MPa)		パイプ表面温度 (℃)					圧縮機運転回転数 (rps)※			室内ファン	空気温度条件 (DB/WB)(℃)	
		Pd	Ps	吐出 (TD)	吸込 (TS)	内熱交 (TC)	外熱交 (TE)	液温 (TL)	圧縮機 1	圧縮機 2	圧縮機 3		室内	室外
2244H	冷房	2.9	0.9	85	15	10	40	40	50	50	–	急	27/19	35/–
	暖房	3.0	0.7	85	5	35	3	30	50	50	–	急	20/–	7/6
2804H	冷房	3.0	0.8	85	15	8	40	40	65	65	–	急	27/19	35/–
	暖房	3.1	0.7	85	4	35	2	30	65	65	–	急	20/–	7/6
3354H	冷房	3.1	0.8	85	17	8	40	40	70	70	–	急	27/19	35/–
	暖房	3.1	0.7	90	2	35	2	30	75	75	–	急	20/–	7/6
4004H	冷房	3.0	0.8	85	15	10	40	40	60	60	60	急	27/19	35/–
	暖房	3.1	0.7	85	4	35	3	30	60	60	60	急	20/–	7/6
4504H1	冷房	3.1	0.8	90	15	10	40	40	65	65	65	急	27/19	35/–
	暖房	3.1	0.7	90	2	35	2	30	65	65	65	急	20/–	7/6

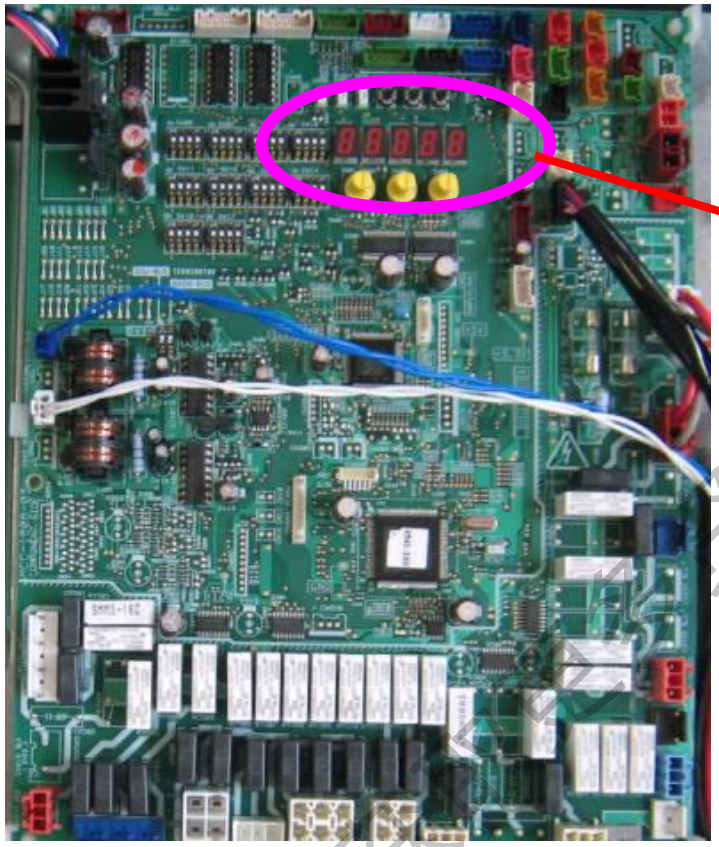
@ 压缩机以4极马达驱动，用钳型电流表测量的压缩机频率值(Hz)是压缩机转速(rps)的两倍

@ 室内热交换器TC的温度表明的是制冷时的TCJ传感器温度，和制热时TC2传感器温度

1. 试运行

1-4-a. 7段显示屏

主控板

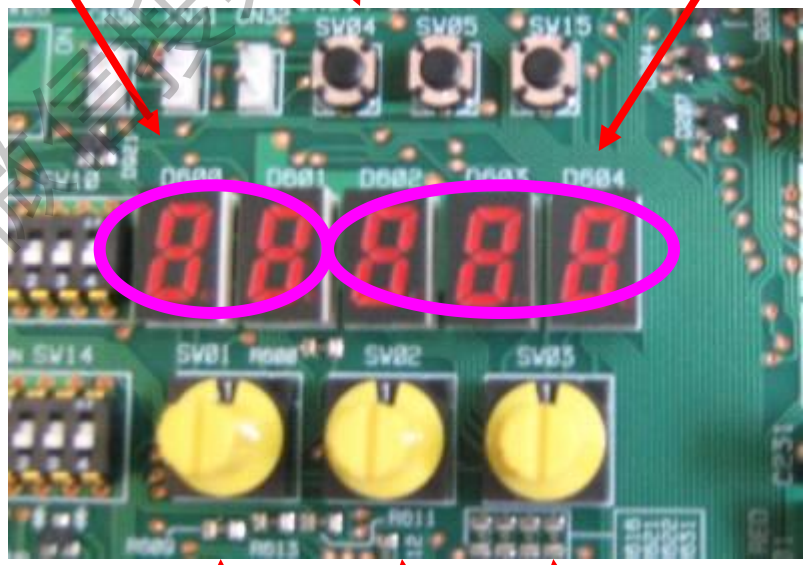


7-段显示A

7-段显示B

SW04

SW05



SW01, SW02, SW03
<旋钮开关>

1. 试运行

1-4-b. 制冷剂回路和控制通讯线检查

	SW			按SW		7-Seg.LED		
	01	02	03	04	05	A	B	
系统容量	1	2	3			#	HP	
室外机容量	1	3	3			#	C	#: 显示室外机容量
室内机容量	1	4	3			#	P	#: 显示室内机容量

	SW			按 SW		7-Seg.LED		
	01	02	03	04	05	A	B	
运行模式设定	2	1	1			JC		制冷
	2	2	1			JH		制热
运行启动				2 sec		C	CC	制冷
						H	HH	制热
约15分钟后 显示检查结果						C or H	## P	##: 未连接的室内机容量
					2 sec	C or H	##	##: 故障的室内机地址 如果有很多，交替显示
(同上)					2 sec	C or H	## P	##: 未连接得室内机容量
恢复到出长设置	1	1	1			U1		

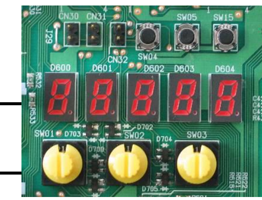
1. 试运行

1-4-c.通过室外机进行制冷/制热调试运行

a. 送电[先送室内机]

安装调试刚完成后3分钟内，优先显示制冷模式
(为了防止室外机压缩机回液)

	SW			按 SW		7 Seg.LED		
	01	02	03	04	05	A	B	
制冷 (所有室内机)	2	5	1			C		
				2 sec			- C	试运行开始
	1	1	1					停止
				or	2 sec			



	SW			push SW		7 Seg.LED		
	01	02	03	04	05	A	B	
制热 (所有室内机)	2	6	1			H		
				2 sec			- H	试运行开始
	1	1	1					停止
				or	2 sec			

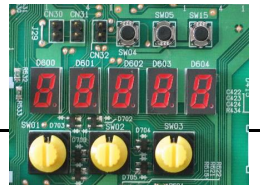
注

@ 于通过遥控器进行试运行相同
@ 系统运行60分钟后会自动退出

1. 试运行

1-4-d. 通过室外机成批启动

a. 送电[先送室内机]
b. 通过遥控器选择运行模式.（如果发现故障，参看故障分析）

	SW			按 SW		7 Seg.LED		
	01	02	03	04	05	A	B	
成批启动/停机	2	7	1			CH		
				2 sec				运行启动 ➔ 运行检查
					2 sec			停机
	1	1	1					结束

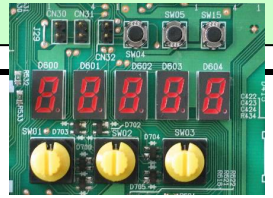
如果出风温度没有改变，检查通讯线的连接

注意 @如果运行优先级未确定，遥控器将显示  或 

1. 试运行

1-4-e. 通过室外机起动/停止个别室内机

a. 送电[先送室内机]
b. 通过遥控器选择运行模式.（如果发现故障，参看故障分析）



	SW			按SW		7 Seg.LED		
	01	02	03	04	05	A	B	
单独On / Off 或 单独试运行	16	1-16	1					地址 1 -16
			2					地址 17 – 32
			3					地址 33 – 48
			4					地址 49 – 64
				2 sec		##	1	运行开始 [B] 段开机5秒后显示ON
				10sec		##	FF	单独试运行
					2 sec	##	00	运行停止 [B] 段关机5秒后显示OFF
	1	1	1					完成

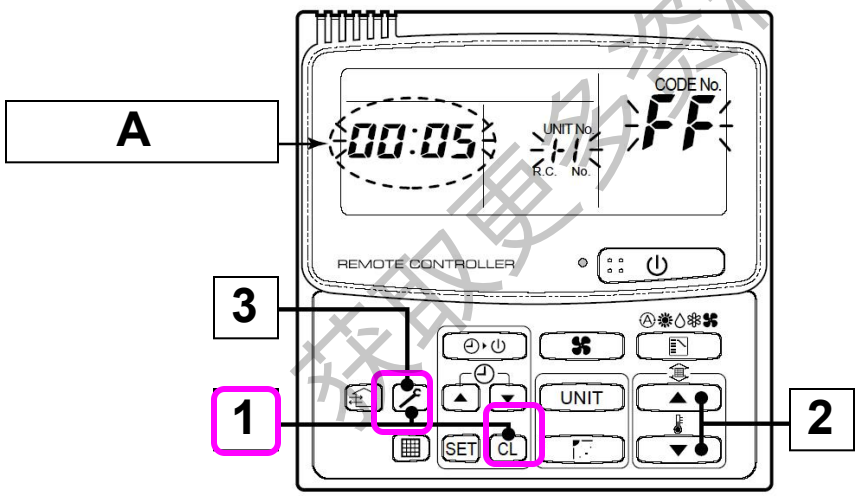
注意
@如果室内机有成组控制，副机无法在室外机B段显示
@ 试运行将会在60分钟后自动结束

1. 试运行

1-4-f. 清除错误

1) 通过遥控器清除室外机错误

1. 同时长按 CL + 按钮4秒钟以上.
   ➔ 进入运行数据查询模式.
2. 通过TEMP 按钮，设定 [项目代码] 为“FF”
   下图A处数字开始由0005 -- 4 --3--2--1 到0000.
   当变为[0000]，室内机错误清除
3. 按 按钮退出.



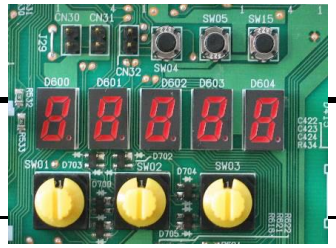
2) 通过遥控器清除室内机错误

1.按 按钮.
(只有连接 线控器的室内机错误可以被消除.)

1. 试运行

1-4-f. 清除错误

3) 通过室外机主控板消除室内机/室外机的错误

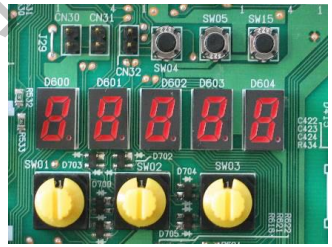


	SW			按SW		7 Seg.LED		
	01	02	03	04	05	A	B	
清除错误	2	16	1			Er		
				5 sec		Er	CL	error check re-start

4) 通过重新送电清除错误

a. 送电顺序. ------ 先送室内机再送室外机
如果先送室外机, 系统会出现故障[E19] .
@ 重新送电后, 系统需要3 – 10 min.时间进行通讯初始化

1. 试运行



5) 通过室外机检测所连接的遥控器

a. 送电. ------ 先送室内机再送室外机

	SW			按SW		7 Seg.LED		
	01	02	03	04	05	A	B	
遥控器连接确认	2	4	1			A1		
				2 sec		A1	FF	连接该系统的室内机遥控器闪烁.
					2 sec			End

1. 试运行

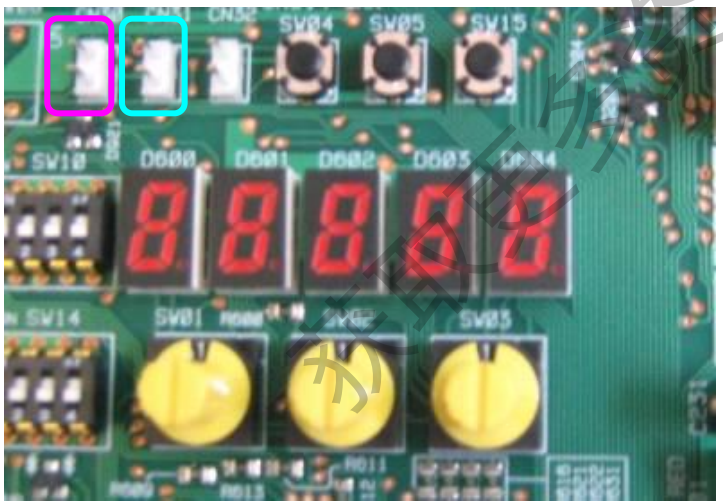
1-4-g. 通过室外机强制打开/关闭室内机电子膨胀阀

@此操作可以使所有室内机PMV全开 (2min.)/全关(1min.)
@对于关机后，全开所有室内机PMV很有用

	SW			按 SW		7 Seg.LED		下面时间以后，PMV自动恢复到原状态
	01	02	03	04	05	A	B	
全开	2	3	1	2 sec		P	FF	2 min.以后
全关	2	3	1		2 sec	P	00	1 min. 以后

1-4-h. 通过室外机强制全开/全关室外机PMV

CN30 CN31



全开	CN30: 短接	2分钟后，PMV自动恢复到正常开启状态. @应移出短接件.
全关	CN31: 短接	

1. 试运行

1-4-i. 通过室外机强制开启电磁阀

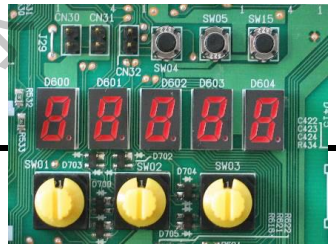
○:强制打开
--:有空调控制
●:强制关闭

	SW			按 SW		7 Seg.LED		
	01	02	03	04	05	A	B	
开	2	1	3			Hr		Valve open after [B] display.
				2 sec			2	by SW02, select valve
	1	1	1					End

SW02	7-segment display [B]	Operation pattern of solenoid valve												Case heater output relay
		SV2	SV5	SV41	SV42	SV43	SV3A	SV3B	SV3C	SV3D	SV3E	SV3F	SV61	
1	[2]	○	-	-	-	-	-	-	-	-	○	-	-	○
2	[5]	-	○	-	-	-	-	-	-	-	○	-	-	○
3	[41]	-	-	○	-	-	-	-	-	-	○	-	-	○
4	[42]	-	-	-	○	-	-	-	-	-	○	-	-	○
5	[43]	-	-	-	-	○	-	-	-	-	○	-	-	○
6	[3A]	-	-	-	-	-	○	-	-	-	○	-	-	○
7	[3b]	-	-	-	-	-	-	○	-	-	○	-	-	○
8	[3C]	-	-	-	-	-	-	-	○	×	○	○	-	○
9	[3d]	-	-	-	-	-	-	-	-	○	×	○	-	○
10	[3-]	-	-	-	-	-	○	○	○	×	○	×	-	○
11	[61]	-	-	-	-	-	-	-	-	-	○	-	○	○
12~15		-	-	-	-	-	-	-	-	-	○	-	-	○
16	ALL	○	○	○	○	○	○	○	○	○	○	○	○	○

1. 试运行

1-4-j. 通过风扇运行寻找故障室外机



	SW			push SW		7 Seg.LED		
	01	02	03	04	05	A	B	
故障室外机的寻找	1	1	1			U1	E 28	[B] 故障代码
				2 sec		E1		E1显示10秒钟后,故障室外机风机启动.
正常室外机的寻找	1	1	1			U1	E 28	
				2 sec (both SW)		E0		E0显示10秒钟后,正常的室外机风机启动.
复位					2 sec	U1		应该确认[U1]

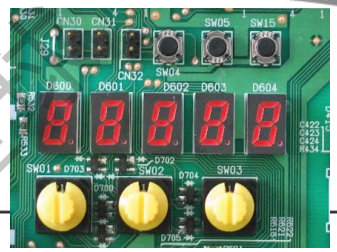
1-4-k. TO 热敏电阻的手动调节

仅作为应急使用	SW			push SW		7 Seg.LED		
	01	02	03	04	05	A	B	
调节	2	1-16	15			t o	##	[B] 显示温度值
				2 sec				

SW 02	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
℃	10	15	20	25	30	35	40	43	45	-15	-10	-5	0	2	5	7

1. 试运行

1-4-I. 维修支持功能列表



SW01	SW02	SW03	7-segment display [A]	Function contents
2	1	1	[J C]	Refrigerant circuit and control communication line check function (Cooling operation)
	2		[J H]	Refrigerant circuit and control communication line check function (Heating operation)
	3		[P]	Indoor PMV forced full open function
	4		[A 1]	Indoor remote controller discriminating function
	5		[C]	Cooling test operation function
	6		[H]	Heating test operation function
	7		[C H]	Indoor collective start/stop (ON/OFF) function
	11		[r d]	Outdoor refrigerant recovery operation function (Pump down function)
	16		[E r]	Error clear function

2	1 to 16	3	[H r]	Solenoid valve forced open/close function
2		4 to 5	[F d]	Fan forced operation function
2		15	[t o]	Outside temp sensor manual adjustment function

16	1 to 16	1	[0 1] to [1 6]	Indoor No. 1 to 16 unit
		2	[1 7] to [3 2]	Indoor No.17 to 32 unit
		3	[3 3] to [4 8]	Indoor No.33 to 48 unit
		4	[4 9] to [6 4]	Indoor No.49 to 64 unit

Indoor individual start/stop (ON/OFF) function

SW01	SW-2	SW03	7-segment display [A/B]	Function contents
1	1	1	[U 1] [E28]	Follower unit error / Corresponding unit fan operation function

1. 试运行

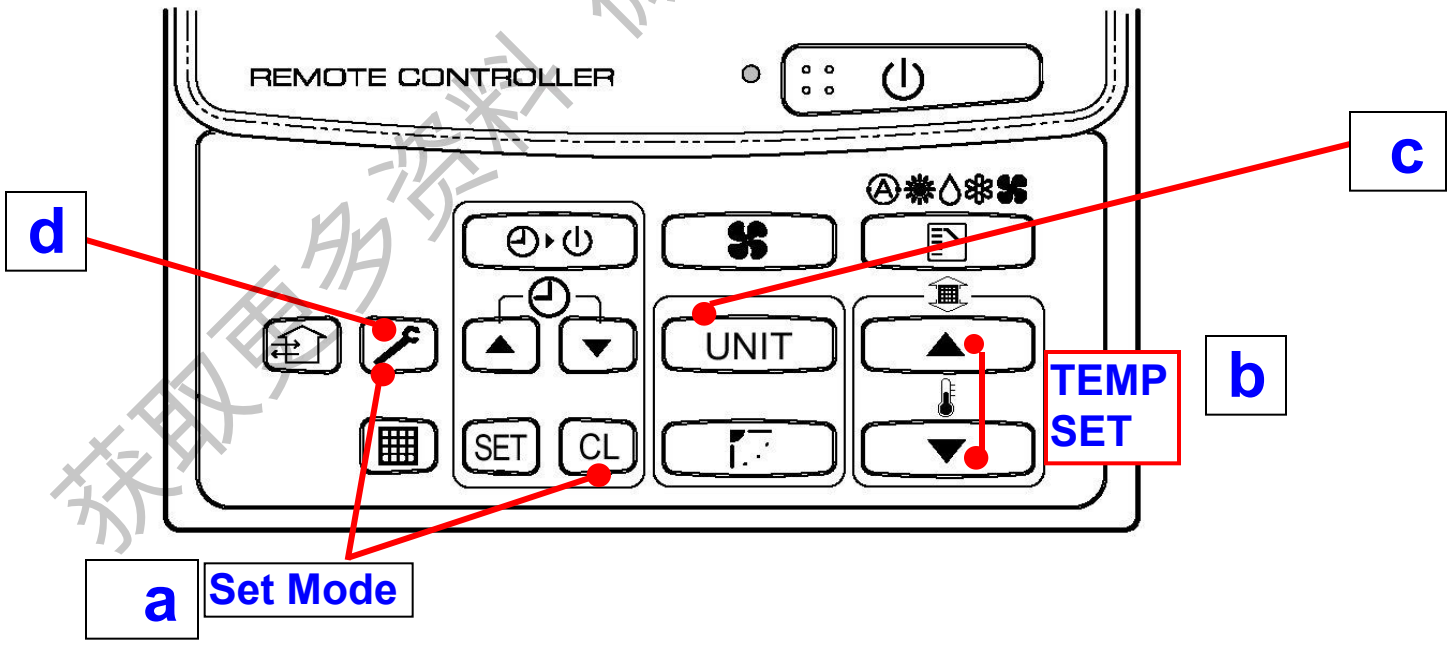
1-4-m. 通过线控器进行运行数据的查询

a. 同时长按 CL + 按钮4秒钟以上

b. 按 TEMP SET 按钮 选择查询项目

c. 当有成组控制时，按 UNIT 按钮选择室内机地址.

d.按 按钮退出.



1．试运行

1-4-n. 通过线控器查询系统运行数据(对照表)

	Item code	Data name	Display format	Unit	Remote controller display example
Indoor unit data *2	00	Room temperature (During control)	×1	°C	[0024]=24°C
	01	Room temperature (Remote controller)	×1	°C	
	02	Indoor suction temperature (TA)	×1	°C	
	03	Indoor coil temperature (TCJ)	×1	°C	
	04	Indoor coil temperature (TC2)	×1	°C	
	05	Indoor coil temperature (TC1)	×1	°C	
	06	Indoor discharge temperature (TF) *1	×1	°C	
	08	Indoor PMV opening	×1/10	pls	[0150]=1500pls
System data	0A	No. of connected indoor units	×1	unit	[0048]=48 units
	0B	Total horsepower of connected indoor units	×10	HP	[0415]=41.5HP
	0C	No. of connected outdoor units	×1	unit	[0004]=4 units
	0D	Total horsepower of outdoor units	×10	HP	[0420]=42HP

***1 只有一部分室内机组型号安装排气温度传感器。对其他型号，不显示温度。**
***2 如果室内机连接到群组中，仅显示主室内机组的数据。.**

1. 试运行

1-4-n. 通过线控器查询系统运行数据(对照表)

	Item code				Data name	Display format	Unit	Remote controller display example
	U1	U2	U3	U4				
Outdoor unit individual data 1 *3	10	20	30	40	High-pressure sensor detention pressure (Pd)	×100	MPa	[0123]=1.23MPa
	11	21	31	41	Low-pressure sensor detention pressure (Ps)	×100	MPa	
	12	22	32	42	Compressor 1 discharge temperature (Td1)	×1	°C	[0024]=24°C
	13	23	33	43	Compressor 2 discharge temperature (Td2)	×1	°C	
	14	24	34	-	Compressor 3 discharge temperature (Td3)	×1	°C	
	15	25	35	45	Suction temperature (TS)	×1	°C	
	16	26	36	46	Outdoor coil temperature 1 (TE1)	×1	°C	
	17	27	37	-	Outdoor coil temperature 2 (TE2)	×1	°C	
	18	28	38	48	Temperature at liquid side (TL)	×1	°C	
	19	29	39	49	Outside ambient temperature (TO)	×1	°C	
	1A	2A	3A	4A	PMV1 + 2 opening	×1/10	pls	[0050]=500pls
	1B	2B	3B	-	PMV4 opening	×1/10	pls	
	1C	2C	3C	4C	Compressor 1 current (I1)	×10	A	[0135]=13.5A
	1D	2D	3D	4D	Compressor 2 current (I2)	×10	A	
	1E	2E	3E	-	Compressor 3 current (I3)	×10	A	
	1F	2F	3F	4F	Outdoor fan current (IFan)	×10	A	

*3 项目代码的第一位数字代表室外机的序号

1. 试运行

1-4-n. 通过线控器查询系统运行数据(对照表)

	Item code				Data name	Display format	Unit	Remote controller display example
	U1	U2	U3	U4				
Outdoor unit individual data 2 *4	50	60	70	80	Compressor 1 revolutions	×10	rps	[0642]=64.2rps
	51	61	71	81	Compressor 2 revolutions	×10	rps	
	52	62	72	-	Compressor 3 revolutions	×10	rps	
	53	63	73	83	Outdoor fan mode	×1	mode	[0058]= 58 mode
	54	64	74	84	Compressor IPDU 1 heat sink temperature	×1	°C	[0024]=24°C
	55	65	75	85	Compressor IPDU 2 heat sink temperature	×1	°C	
	56	66	76	-	Compressor IPDU 3 heat sink temperature	×1	°C	
	57	67	77	87	Outdoor fan IPDU heat sink temperature	×1	°C	
	58	-	-	-	Heating/cooling recovery being controlled *5	0: Normal 1: Recovery being controlled		[0010]=Heating recovery being controlled [0001]=Cooling recovery being controlled
	59	-	-	-	Pressure release *5	0: Normal 1: Release being controlled		[0010]=Pressure release being controlled
	5A	-	-	-	Discharge temperature release *5			[0001]=Discharge temperature release being controlled
	5B	-	-	-	Follower unit release (U2/U2/U4 outdoor units) *5			[0100]=U2 outdoor unit release being controlled [0010]=U3 outdoor unit release being controlled [0001]=U4 outdoor unit release being controlled
	5F	6F	7F	8F	Outdoor unit horsepower	×1	HP	[0016]=16HP

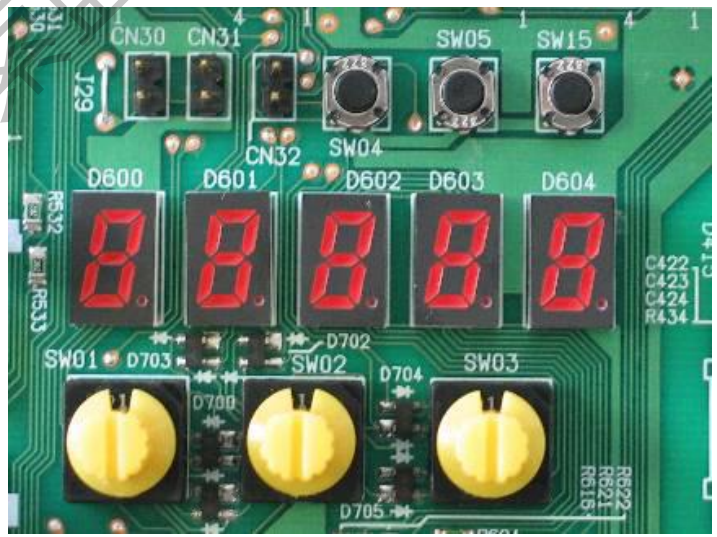
***4 字母U后面的最大数字表示的为室外机台数**
1*, 5* ... U1 室外机(主机)
2*, 6* ... U2 室外机 (副机1)
3*, 7* ... U3室外机 (副机2)
4*, 8* ... U4室外机 (副机3)
***5 仅有项目代码 5*、1 *显示的为主机U1的数据**

2. 系统概述

2-1. 初始设定

@ SMMS-i需要使用SW15进行地址设定

如果7段显示 [U.1][L08] , （ [U.1] 闪烁)
系统地址未设定
➔ 参看安装手册,系统地址设定.



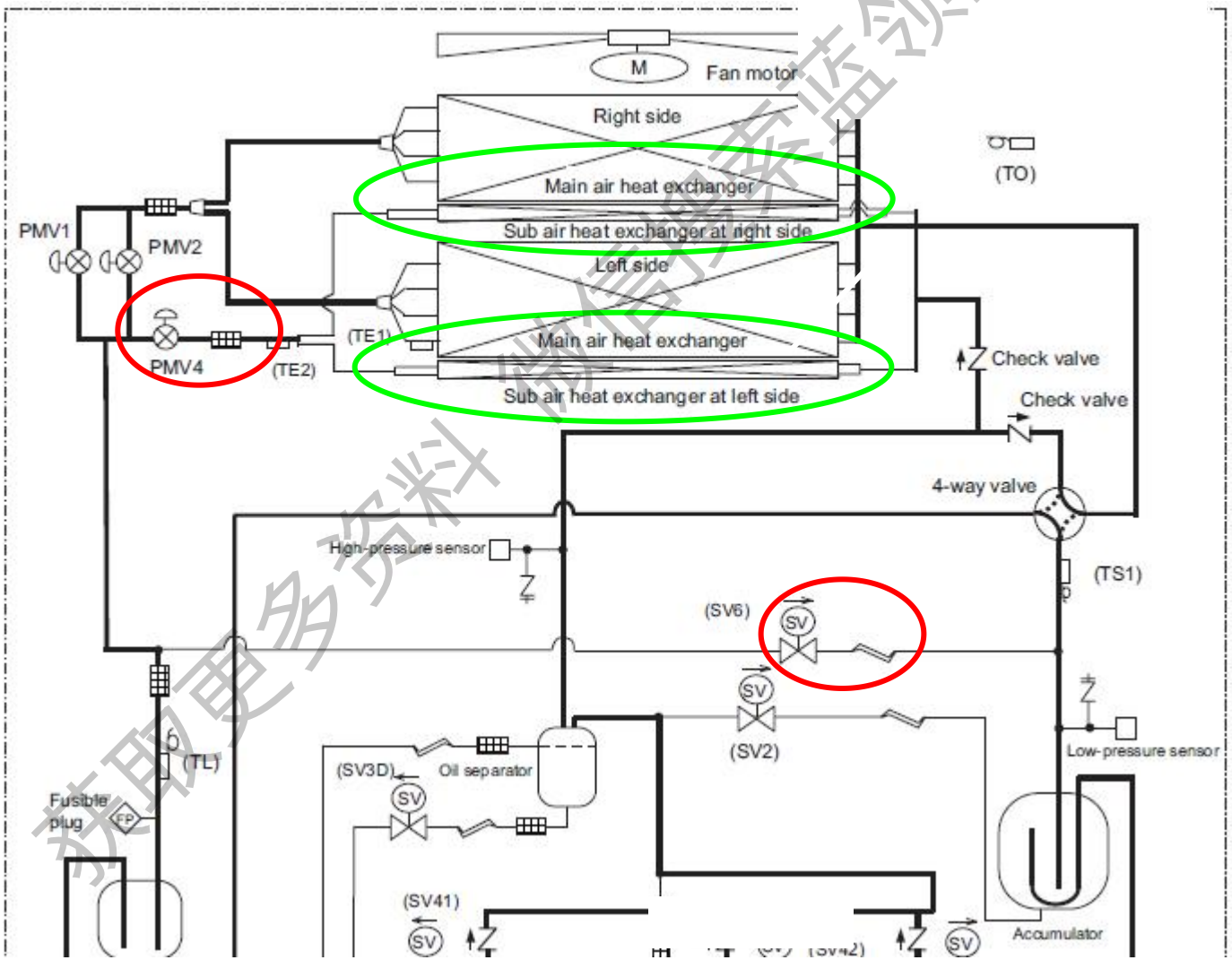
2-2. 中转端子和终端电阻的设定

@ 如果系统有集中控制, SMMS-i需要另外的设定
中转端子, [SW 30]

➔ 参看安装手册.

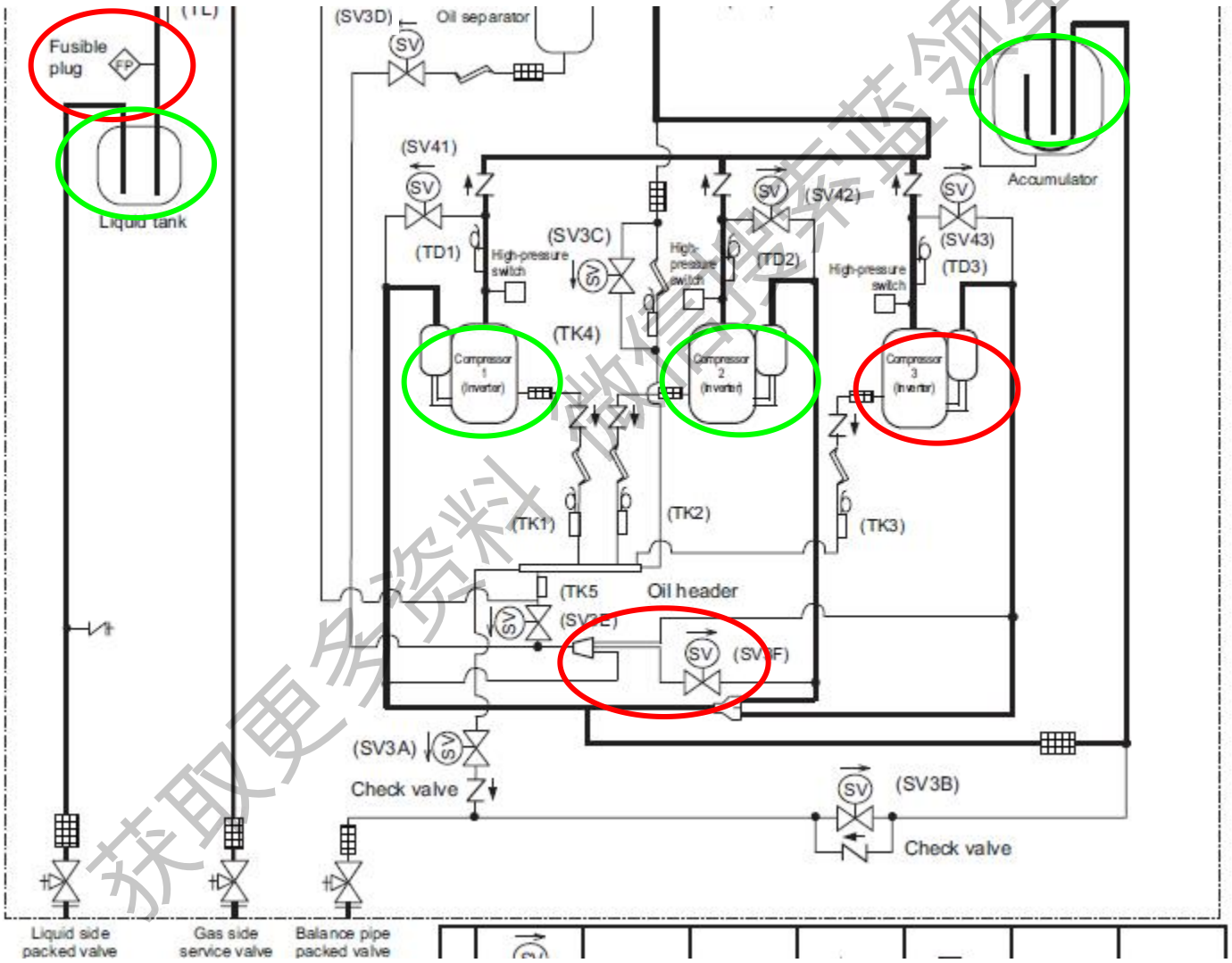
3. 操作系统

3-1. 系统部件、传感器



3. 操作系统

3-1. 系统部件、传感器



3. 操作系统

3-1. 系统部件、传感器

Functional part name		Functional outline
Solenoid valve	SV3A	(Connector CN321: White) 1) Supplies oil reserved in the oil header during ON time.
	SV3B	(Connector CN321: White) 1) Returns oil supplied in the balance pipe to the compressor.
	SV3C	(Connector CN321: White) 1) Pressurizes oil reserved in the oil header during ON time.
	SV3D	(Connector CN322: White) 1) Reserves oil in the oil separator during OFF time. 2) Returns oil reserved in the oil separator to the compressor during ON time.
	SV3E	(Connector CN322: White) 1) Turns on during operation and balances oil between compressors.
	SV3F	(Connector CN323: White) 1) Controls oil level balances between compressors.
	SV2	(Hot gas bypass) (Connector CN311: White) 1) Low pressure release function 2) High pressure release function 3) Gas balance function during stop time
	SV41 SV42 SV43	(Start compensation valve of compressor) (SV41 Connector CN312: Blue, SV42 Connector CN312: Blue, SV43 Connector CN313: Red) 1) For gas balance start 2) High pressure release function 3) Low pressure release function
	SV5	(Connector CN314: White) 1) Preventive function for high-pressure rising in heating operation
	SV6	(Connector CN315: White) 1) Liquid bypass function for discharge temperature release (cooling bypass function)
4-way valve		(Connector CN317:Blue) 1) Cooling/heating exchange 2) Reverse defrost

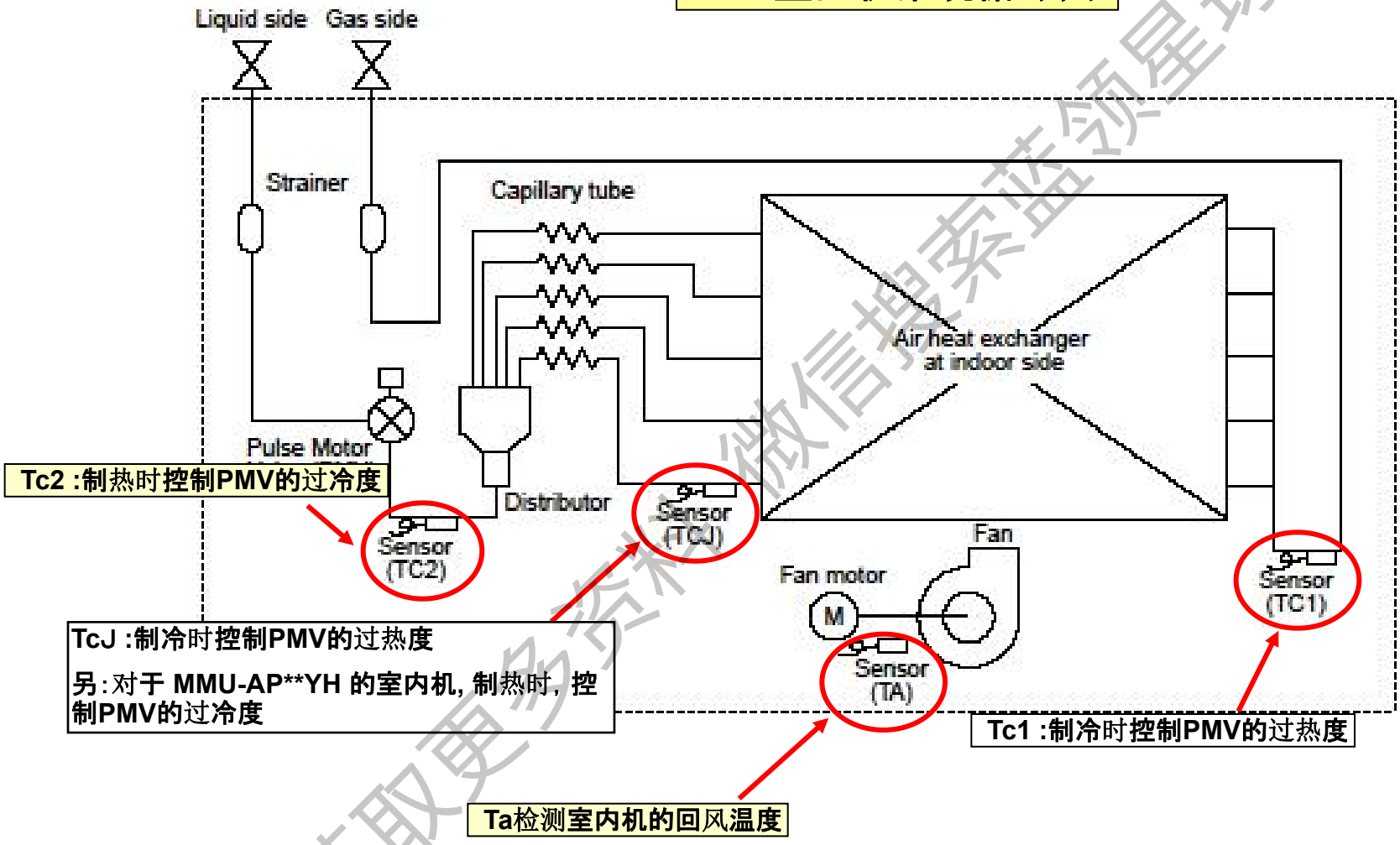
3. 操作系统

3-1. 系统部件、传感器

Pulse motor valve	PMV1, 2	(Connector CN300, 301: White) 1) Super heat control function in heating operation 2) Liquid line shut-down function while follower unit stops 3) Under cool adjustment function in cooling operation 4) Exchange function between main and sub exchangers in cooling operation
	PMV4	(Connector CN303: Red) 1) Exchange function between main and sub exchangers in cooling operation 2) Preventive function for high-pressure rising in heating operation
Oil separator		1) Prevention for rapid decreasing of oil (Decreases oil flowing to the cycle) 2) Reserve function of surplus oil
Temp. Sensor	TD1 TD2 TD3	(TD1 Connector CN502: White, TD2 Connector CN503: Pink, TD3 Connector CN504: Blue) 1) Protection of compressor discharge temp. 2) Used for discharge temperature release
	TS1	(Connector CN505: White) 1) Controls PMV super heat in heating operation
	TE1	(Connector CN520: Green) 1) Controls defrost in heating operation 2) Controls outdoor fan in heating operation
	TE2	(Connector CN521: Red) 1) Controls exchange function between main and sub exchangers
	TK1, TK2 TK3, TK4 TK5	(TK1 Connector CN531: Black, TK2 Connector CN532: Green, TK3 Connector CN533: Red, TK4 Connector CN534: Yellow, TK5 Connector CN535: Red) 1) Judges oil level of the compressor
	TL	(Connector CN523: White) 1) Detects under cool in cooling operation
	TO	(Connector CN507: Yellow) 1) Detects outside temperature
Pressure sensor	High pressure sensor	(Connector CN501: Red) 1) Detects high pressure and controls compressor capacity 2) Detects high pressure in cooling operation, and controls the fan in low ambient cooling operation 3) Detects under cool in indoor unit in heating operation
	Low pressure sensor	(Connector CN500: White) 1) Detects low pressure in cooling operation and controls compressor capacity 2) Detects low pressure in heating operation, and controls the super heat
Heater	Compressor case heater	(Compressor 1 Connector CN331: White, Compressor 2 Connector CN332: Blue, Compressor 3 Connector CN333: Black) 1) Prevents liquid accumulation to compressor
	Accumulator case heater	(Connector CN334: Red) 1) Prevents liquid accumulation to accumulator

3. 操作系统

3-1. 室内机系统循环图



注) MMU-AP0071YH 到 0121YH 的室内机不含TC2 传感器

3. 操作系统

3-1. 配件功能介绍

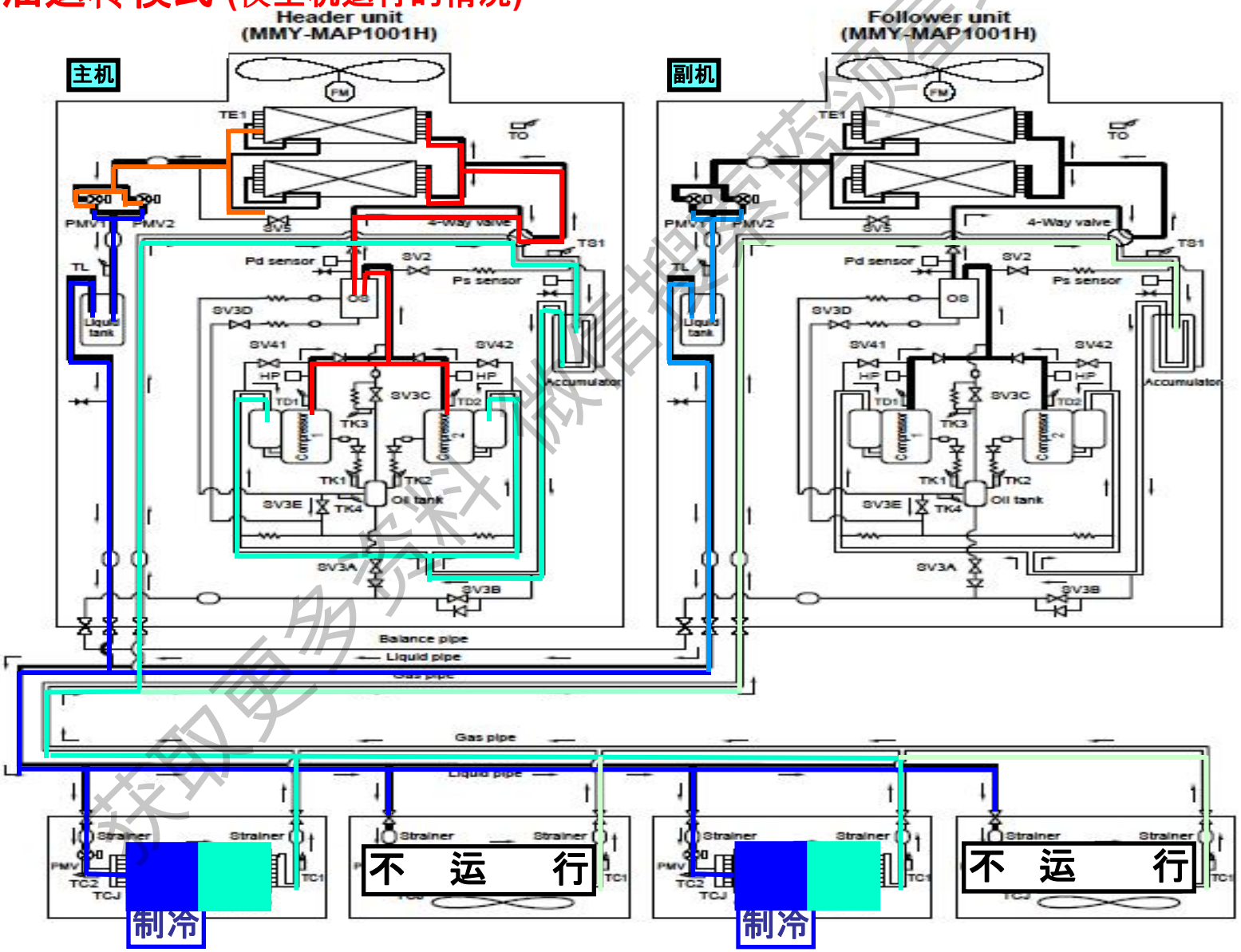
室内机

Functional part name		Functional outline
PMV (Pulse motor valve)		(Connector CN082 (6P): Blue) 1) Controls super heat in cooling operation 2) Controls under cool in heating operation 3) Recovers refrigerant oil in cooling operation 4) Recovers refrigerant oil in heating operation
Temp. sensor	1. TA	(Connector CN104 (2P): Yellow) 1) Detects indoor suction temperature
	2. TC1	(Connector CN100 (3P): Brown) 1) Controls PMV super heat in cooling operation
	3. TC2	(Connector CN101 (2P): Black) 1) Controls PMV under cool in heating operation
	4. TCJ	(Connector CN102 (2P): Red) 1) Controls PMV super heat in cooling operation 2) [MMU-AP0071 to AP0121YH only] Controls PMV under cool in heating operation

3. 操作系统

制冷/回油运转模式 (仅主机运行的情况)

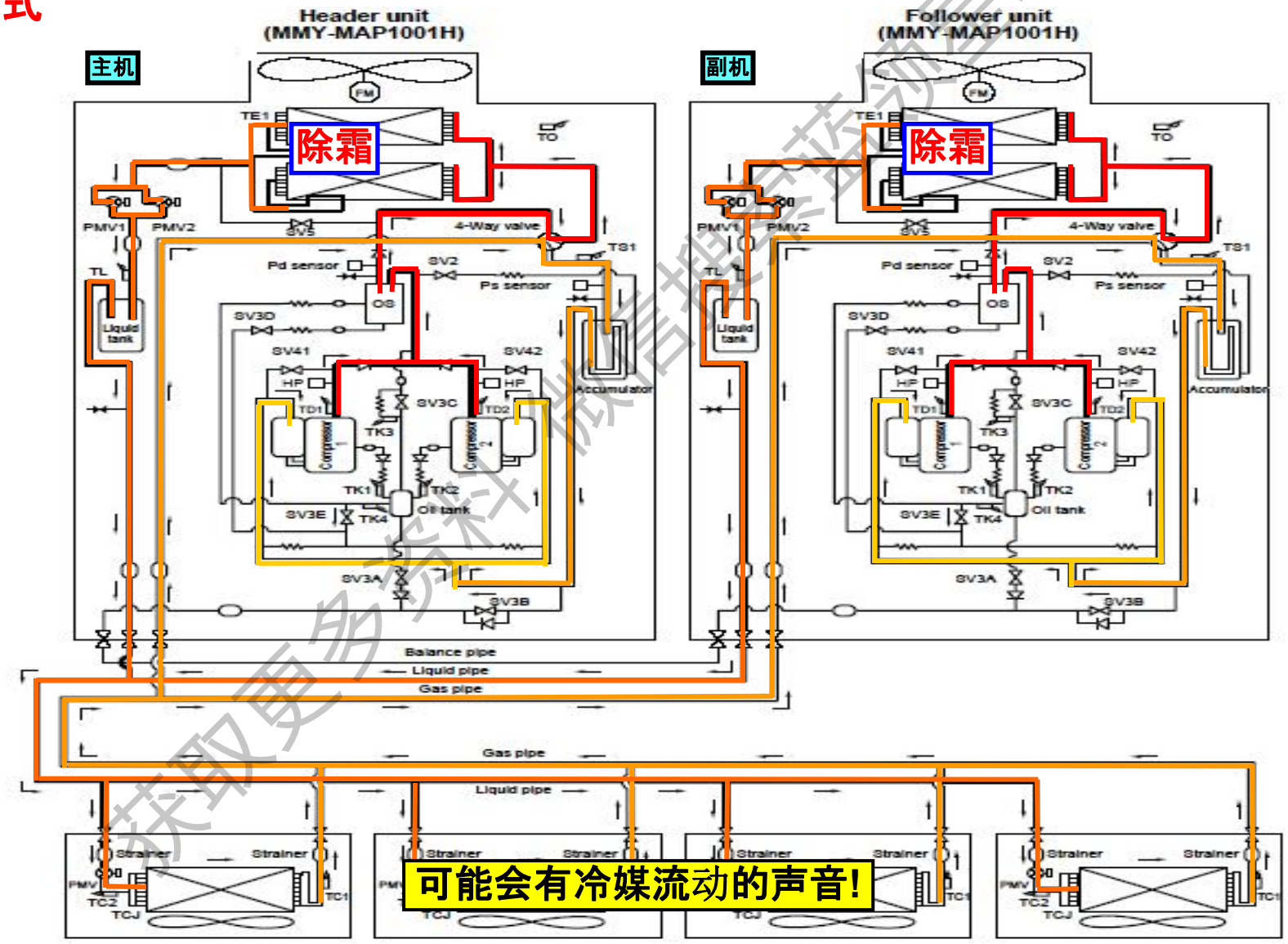
3-2系统循环图



3. 操作系统

除霜模式

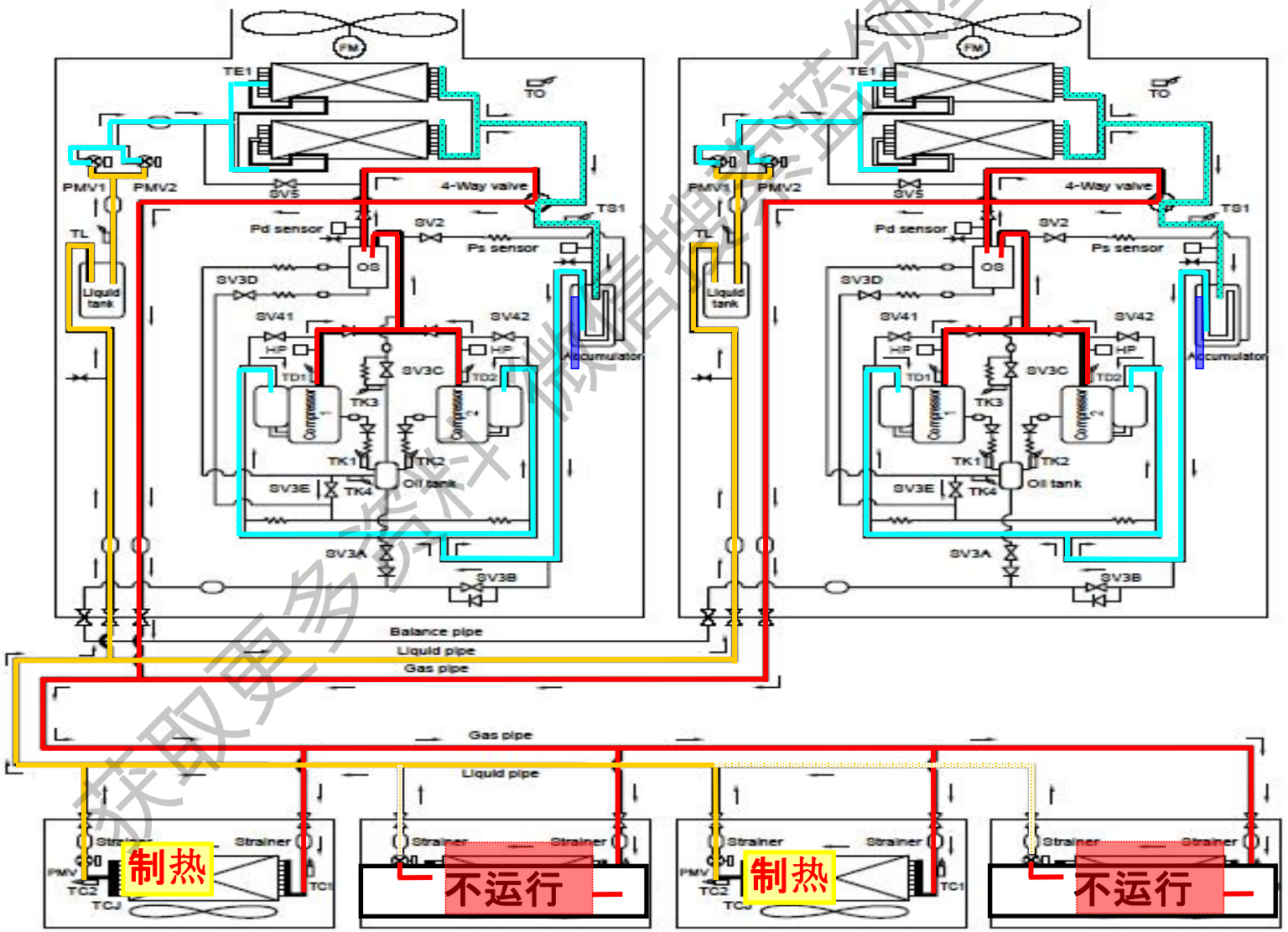
3-2. 系统循环图



3. 操作系统

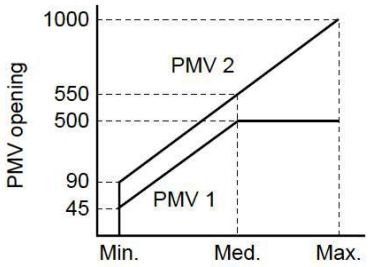
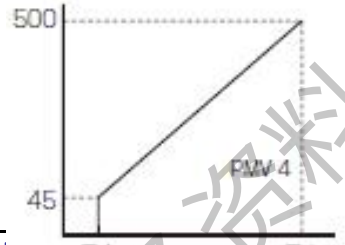
3-2. 系统循环图

制热/冷媒回收模式



3. 操作系统

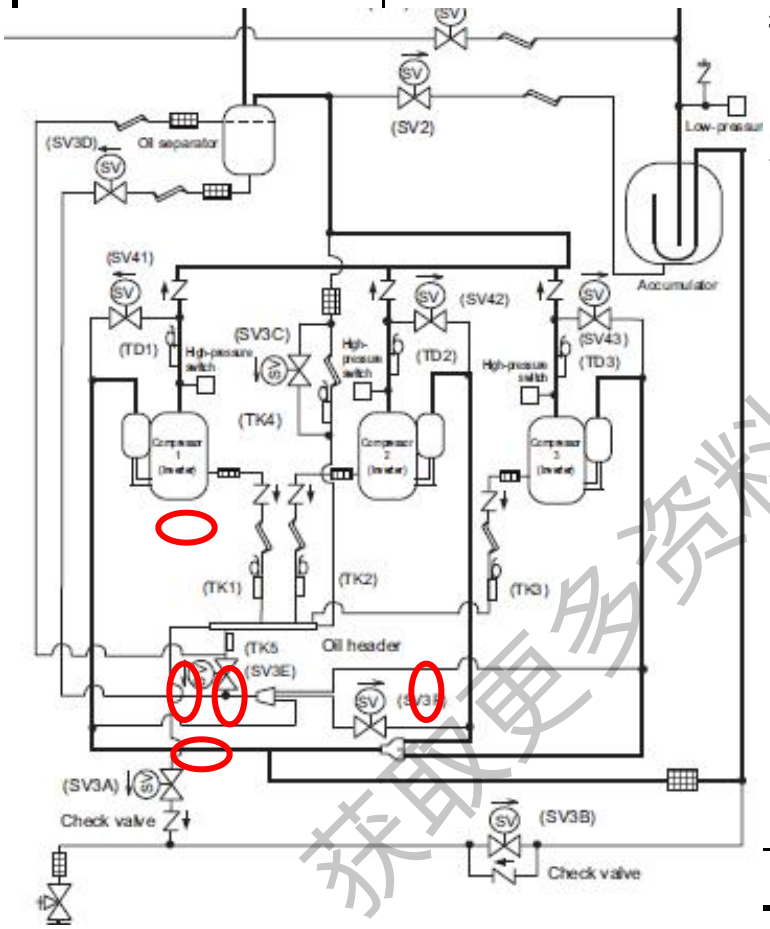
3-3-2. 室外机控制

项目	规范概要	备注
PMV 控制	 PMV1: 45- 500 脉冲 PMV2: 90-1000脉冲 制冷 :过冷度控制=Pd-TL 制热:过热度控制=Td-(Ts,Ps)  PMV4 (仅14,16HP) TO<18: 制冷模式 45-500 脉冲 *制热模式, 高压释放	*关闭:**容量需求停止或故障关闭**
室外机风扇控制	**制冷: 由Pd数值控制** **制热: 由TE 数值控制** *如果TE>25c 继续运行5分钟.➔停止(=容量需求停止) ***如果制冷剂短缺, 风扇将重复On/Off 运行** 副机不参与运行时:为防止制冷剂在此台机器中积存,风扇将低速运	风扇控制模式: 0(stop) -- 63 (max) (SMMS 0-31) 风扇运行的最大级数以系统的运行模式为依据

3. 操作系统

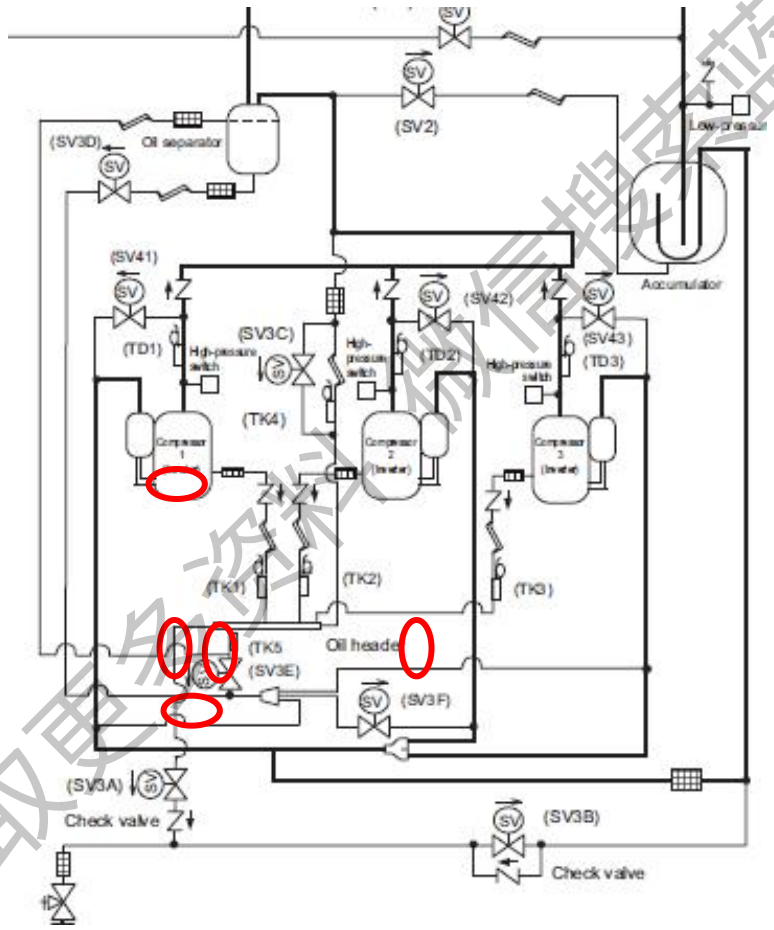
3-3-2. 室外机控制

项目	规范概要	备注
油位检测	每台室外机根据TK1-5的温度值来判断油位 如果检测到缺油 ➔ 转换到回油运转 通常在压缩机运行时进行控制	参考值 TK1-TK4>14 TK2-TK4>14 TK3-TK4>14



3. 操作系统

3-3-2. 室外机控制

项目	规范概要	备注
油平衡控制		**1)运行准备** 如果检测到油位下降 ➔SV3B 打开 SV3D on/ off *油通过油分补偿到压缩机 **2)油平衡** 油供应到油短缺的室外机 **3)缺油运行保护** 即使按照步骤 2)运行，仍然缺油30分钟 ➔**停机(2'30")- 重新启动** ➔**如果重复3次** **故障停机并显示[H07]**

3. 操作系统

3-3-2. 室外机控制

项目	规范概要	备注
制冷剂 & 油回收控制 **(通过主机控制)**	**制冷**:将室内机侧的气管或室内机中油回收到室外机。 以防止环境温度低的制冷运行时，制冷剂积存在室外机换热器中 *控制条件: 压缩机启动并运行125分钟以后 (SMMS:120分钟) **制热**:从停机的室内机中把液态制冷剂回收. 同时也用于解决制热超负荷运行时油回收至室外机热交换器中的问题 *控制条件 :制热容量需求启动, 除霜后制热启动且有容量需求运行**60 min**.	每隔约2小时进行一次 每次约运行2-3分钟 每隔1小时进行一次 每次约运行2-10分钟
除霜控制	除霜开始条件: **当 TE < –1.5 c时的累计运行时间** **(SMMS 2.0c)** 第一次 : 压缩机运行25分钟 第二次: 前一次除霜完成后55分钟. 除霜持续时间最少为2分钟.	➔ 4通阀关闭 风扇停止

3. 操作系统

3-3-2. 室外机控制

项目	规范概要	备注
高压释放	Pd > 3.45 MPa ➔ 停止一台压缩机 Pd > 3.5 Mpa ➔停止剩余的压缩机 2'30" 后，重新启动	
外壳加热器控制	2 个外壳加热器: 压缩机&气液分离器 打开: 压缩机停止& To < 25 C 关闭: To > 28 C	AC200V/26W 压缩机 AC200V/50W 储液器

4. 调试运行

4-1. 安装故障示例

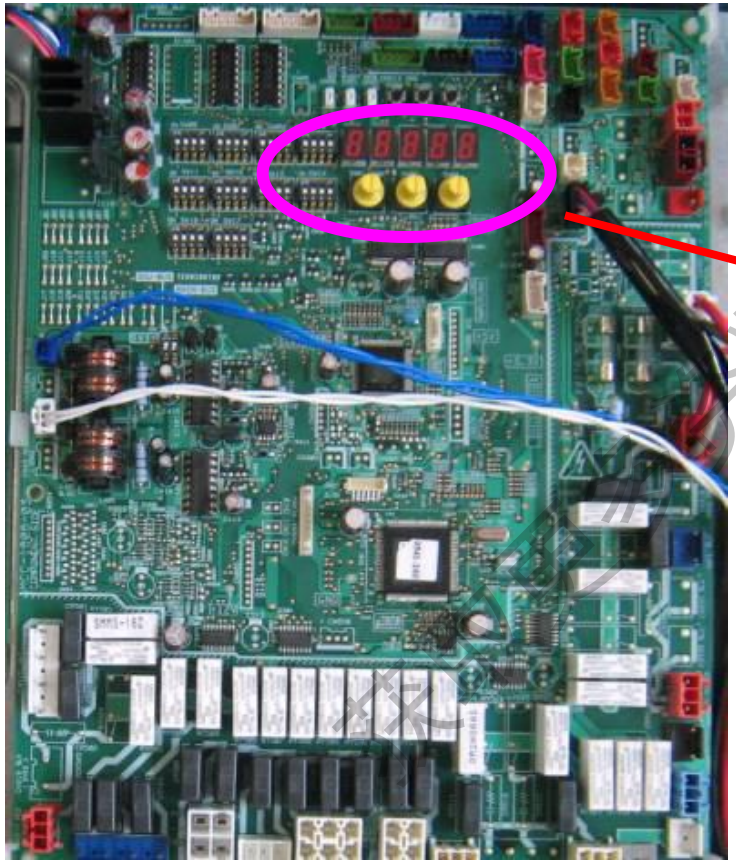
F06	F06	01: TE1 sensor error 02: TE2 sensor error	18	I/F	TE1/TE2 sensor error	Total system shutdown	Sensor resistance is infinity or zero (open/short circuit).	• Check connection of TE1/ TE2 sensor connectors. • Check resistance characteristics of TE1/TE2 sensors. • Check for defect in outdoor P.C. board (I/F).
F22	F22	–		I/F	TD3 sensor error	Total system shutdown	Sensor resistance is infinity or zero. (open/short circuit)	• Check connection of TD3 sensor connector. • Check resistance characteristics of TD3 sensor. • Check for defect in outdoor P.C. board (I/F).

L17:同一套室外机系统中，同时出现了SMMS-I 和SMMS

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

Interface PCB

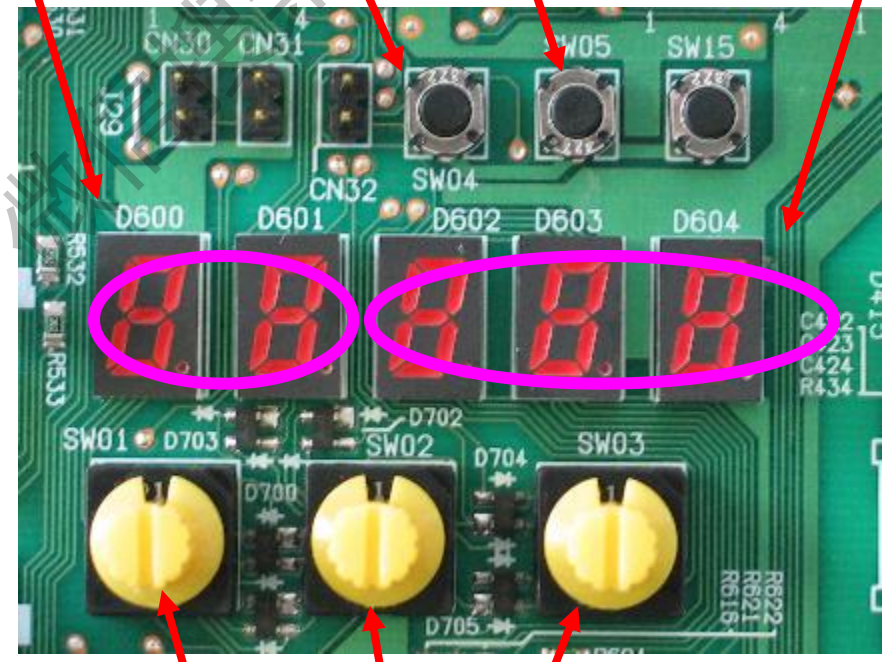


7 Segment display(A)

SW04

SW05

7 Segment display(B)



SW01, SW02, SW03
< 旋转开关>

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

SW01	SW02	SW03	Display contents		
1	1	1	Error data	A	Displays outdoor unit number: [U1] to [U4]
				B	Displays check code (Latest code only is displayed.) There is no check code: [– – –] There is sub-code: Check code [* * *] for 3 seconds, sub-code [– * *] for 1 second alternately
			<SW04> push function : Fan of unit with error only drives. 7-segment A: [E1] <SW04 + SW05> push function : Fan of normal unit only drives. 7-segment A: [E0] <SW05> push function : Interruption of fan operation function		
	2		—	A	—
				B	—
	3		Operation mode	A	Stop: [ ] Normal cooling: [C], Normal heating: [H], Normal defrost: [J]
				B	—
	4		Outdoor unit HP	A	5HP: [5], 6HP: [6], 8HP: [8], 10HP: [10], 12HP: [12]
				B	[HP]
	5		Compressor operation command	A	No.1 compressor operation command is displayed. Data display with Hexadecimal notation: [00 to FF]
				B	No.2 compressor operation command is displayed. Data display with Hexadecimal notation: [00 to FF]
			<SW04> push function : Inverter frequency is exchanged to decimal notation. 7-segment display (A/B) : [* *] [* * H] (Normal display by pushing <SW05>)		
	6		Outdoor fan step	A	[FP]
				B	Step 0 to 31: [0 to 31]
	7		Compressor backup	A	Displays No.1 compressor setup status Normal: [ ], Backup setup: [C1]
				B	Displays No.2 compressor setup status Normal: [ ], Backup setup: [C2]

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

1	9	1	Control valve output data	Displays control output status of solenoid valve	A	B
				4-way valve: ON	H. 1	··· ··· ···
				4-way valve: OFF	H. 0	··· ··· ···
	10			SV2: ON / SV5: OFF	2. 1	··· 5. 0
				SV2: OFF / SV5: ON	2. 0	··· 5. 1
	11			SV3A: ON / SV3B: OFF / SV3C: OFF /SV3D: OFF	3. 1	0 0 0
				SV3A: OFF / SV3B: ON / SV3C: OFF /SV3D: OFF	3. 0	1 0 0
				SV3A: OFF / SV3B: OFF / SV3C: ON /SV3D: OFF	3. 0	0 1 0
				SV3A: OFF / SV3B: OFF / SV3C: OFF /SV3D: ON	3. 0	0 0 1
	12			SV41: ON / SV42: OFF	4. ···	1 0 ···
				SV41: OFF / SV42: ON	4. ···	0 1 ···
	13			—	··· ···	··· ··· ···
				—	··· ···	··· ··· ···
	14		PMV1 /PMV2 opening	Displays opening data (Decimal) (Total opening)	＊＊	＊＊. P
	15		—	—	··· ＊	＊＊. P
	16		Oil level judgment status	A [oL] <SW05> push SW function: The following data is displayed for 2 seconds. * During oil shortage in compressor 1: [L ···], during oil shortage in compressor 2: [··· L]		
				B Initial display: [··· ··· ···], Oil level judgment result: [A. #. ＊] Judgment result of compressor 1 in [#], compressor 2 in [＊] (0: Normal, 1, 2: Shortage) is displayed.		

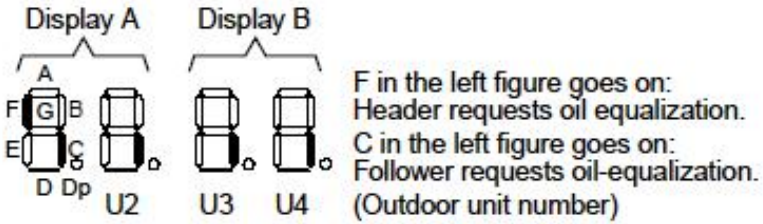
2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

SW01	SW02	SW03	Display contents			A	B
1	1	2	Pd pressure data	Pd pressure (MPaG) is displayed with decimal data. (MPaG: Approx. 1/10 value of kg/cm²G data)		A	B
						P d.	＊.＊＊
	2		Ps pressure data	Ps pressure (MPaG) is displayed with decimal data.		P S.	＊.＊＊
	3		PL pressure conversion data	Estimated pressure of liquid line (MPaG) is displayed with decimal data.		P L.	＊.＊＊
	4		TD1 sensor data	Temperature sensor data (°C) is displayed with decimal notation. • Symbol display for 1 sec. and data display for 3 sec. are alternately displayed. • Data is displayed in [＊]. • Negative data is displayed as [– ＊＊＊]. Symbol		t d	1
					Data	＊	＊＊.＊
	5		TD2 sensor data		Symbol	t d	2
					Data	＊	＊＊.＊
	6		TS sensor data		Symbol	t S	
					Data	＊	＊＊.＊
	7		TE sensor data		Symbol	t E	
					Data	＊	＊＊.＊
	8		—		Symbol	—	—
					Data	—	—
	9		TL sensor data		Symbol	t L	
					Data	＊	＊＊.＊
	10		TO sensor data		Symbol	t o	
					Data	＊	＊＊.＊
	11		TK1 sensor data		Symbol	F 1	
					Data	＊	＊＊.＊
	12		TK2 sensor data		Symbol	F 2	
					Data	＊	＊＊.＊
	13		TK3 sensor data		Symbol	F 3	
					Data	＊	＊＊.＊
	14		TK4 sensor data		Symbol	F 4	
					Data	＊	＊＊.＊

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

SW01	SW02	SW03	Display contents				
1	1	3	Refrigerant name	Displays refrigerant name.		A	B
				Model with refrigerant R410A		r4	10A
				Model with refrigerant R407C		r4	07C
	2		System capacity	A	[5] to [48] : 5 to 48HP		
				B	[HP]		
	3		No. of outdoor units	A	[1] to [4] : 1 to 4 units		
				B	[P]		
	4		No. of connected indoor units/ No. of units with cooling thermo ON	A	[0] to [48] : 0 to 48 units (No. of connected units)		
				B	[C0] to [C48] : 0 to 48 units (No. of units with cooling thermo ON)		
	5		No. of connected indoor units/ No. of units with heating thermo ON	A	[0] to [48] : 0 to 48 units (No. of connected units)		
				B	[H0] to [H48] : 0 to 48 units (No. of units with heating thermo ON)		
	6		Compressor command correction amount	A	Data is displayed with hexadecimal notation		
				B			
	7		Release control	A	Normal time : [r], During release control: [r1]		
				B	—		
	8		Oil-equalization control	A	Normal time : [oiL-0]		
				B	During oil equation : [oiL-1]		
	9		Oil-equalization request	A	Displays with segment LED lighting pattern		
				B			

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

1	10	3	Refrigerant/oil recovery operation	A	During sending of cooling refrigerant oil recovery signal : [C1]. Normal time : [C]		
				B	During sending of heating refrigerant oil recovery signal : [H1]. Normal time : [H]		
	11		Automatic address	A	[Ad]		
				B	Automatic addressing : [FF], Normal time : [ ]		
	12		Demand operation	A	[dU]		
				B	Normal time : [ ], In 50% to 90% : [50 to 90] When controlling by communication line input : [E50 to E90]		
	13		Optional control (P.C. board input)	Displays optioned control status		A	B
				Operation mode selection : In heating with priority (Normal)		h.*	*.*.*.
					Priority on cooling	c.*	*.*.*.
					Heating only	H.*	*.*.*.
					Cooling only	C.*	*.*.*.
					Priority on No. of operating indoor units	n.*	*.*.*.
					Priority on specific indoor unit	U.*	*.*.*.
				Batch start/stop : Normal		*.---.	*.*.*.
					Start input	*.1.	*.*.*.
					Stop input	*.0.	*.*.*.
				Night low-noise operation : Normal		*.*.	---.*.*.
					Operation input	*.*.	1.*.*.
				Snow fan operation : Normal		*.*.	*.---.*.
					Operation input	*.*.	*.1.*.
	14		Option control (BUS line input)	Same as above			

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

* This method is used when information of the follower unit is displayed on 7-segment display of the header unit.

SW01	SW02	SW03	Display contents		
3	1	1 to 3	Error data	A	[U. *] *: SW03 setup number + 1 number (Outdoor unit number U2 to U4)
				B	Check code is displayed. (Latest check code only) No check code: [– –]
	2		Installed compressor type	A	[U. *] *: SW03 setup number + 1 number (Outdoor unit number U2 to U4)
				B	
	3		Outdoor unit capacity	A	[U. *] *: SW03 setup number + 1 number (Outdoor unit number U2 to U4)
				B	8HP: [··· ··· 8]. 10HP: [··· 1 0], 5 to 12HP
	4		Compressor operation command	A	[U. *] *: SW03 setup number + 1 number (Outdoor unit number U2 to U4)
				B	No.1 compressor ON: [C10], No.2 compressor ON: [C01] For unconnected compressor, " – " is displayed.
	5		Fan operation mode	A	[U. *] *: SW03 setup number + 1 number (Outdoor unit number U2 to U4)
				B	Stop time: [F ··· 0], Mode 31: [F 3 1]
	6		Release signal	A	[U. *] *: SW03 setup number + 1 number (Outdoor unit number U2 to U4)
				B	Normal time: [r ··· ···], Release received: [r ··· 1]
	7		Oil level judgment	A	[U. *] *: SW03 setup number + 1 number (Outdoor unit number U2 to U4)
				B	Normal time: [··· ··· ···], Oil shortage: [··· ··· L]

NOTE) The follower unit is setup by changing SW03.

SW03	1	2	3
7-segment display A	U2	U3	U4

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

SW01	SW02	SW03	Display contents		
4	1 to 16	1 to 3	Receiving status of indoor BUS communication	B	Receiving time: [··· ··· 1], Not received: [– – ··· ···]
5			Indoor check code	B	No check code: [– – –]
6			Indoor capacity (HP) horse power	B	0. 2, 0. 5, 0. 8, ··· 1, 1. 2, 1. 7, ··· 2, 2. 5, ··· 3, 3. 2, ··· 4, ··· 5, ··· 6, ··· 8, 1 0, 1 6, 2 0
7			Indoor request command (S code)	B	Data is displayed with Hexadecimal notation [··· ··· 0 to ··· ··· F] : Heating
8			Indoor PMV opening data	B	Data is displayed with Hexadecimal notation
9			Indoor TA sensor data	B	Data is displayed with Hexadecimal notation
10			Indoor TF sensor data	B	Data is displayed with Hexadecimal notation
11			Indoor TCJ sensor data	B	Data is displayed with Hexadecimal notation
12			Indoor TC1 sensor data	B	Data is displayed with Hexadecimal notation
13			Indoor TC2 sensor data	B	Data is displayed with Hexadecimal notation

NOTE) Indoor address No. is chosen by changing SW02 and SW03.

SW03	SW02	Indoor address	7-segment display A
1	1 to 16	SW02 setup number	[01] to [16]
2	1 to 16	SW02 setup number + 16	[17] to [32]
3	1 to 16	SW02 setup number + 32	[33] to [48]

2. 维修功能

2-2. 通过室外机 主控板进行运行数据的查询

SW01	SW02	SW03	Display contents	7-segment display	
				A	B
1	1	16	The latest error code of the header unit 1 (U1)	E. r	1. – –
	2		The latest error code of the follower unit 1 (U2)	E. r	2. – –
	3		The latest error code of the follower unit 2 (U3)	E. r	3. – –
	4		The latest error code of the follower unit 3 (U4)	E. r	4. – –

5. 维修支持(备份)

5-1-1. 备份的方法

SVM-P189

故障内容	备份操作方法	设定程序
当室外机中有一个压缩机出现故障时 (注 1)	压缩机备份	➔ 5-1-2
当同一台室外机中的2台压缩机同时出现故障	室外机的备份 或制冷季节的室外机备份 (注2)	➔ 5-1-3
压缩机油出现问题 (比如检测到油位有问题)		
当制冷系统配件，或电气配件出现故障		
当温度传感器或压力传感器出现故障		

注

1. 如果压缩机线圈故障，机油严重变质，则不进行备份运行，否则，可能引起其他机组故障。

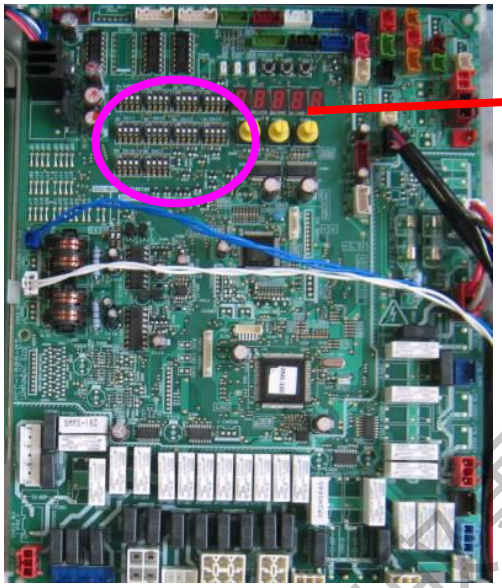
2. 进行备份运行的室外机数目，一套室外机系统不多于一台

5. 维修支持(备份)

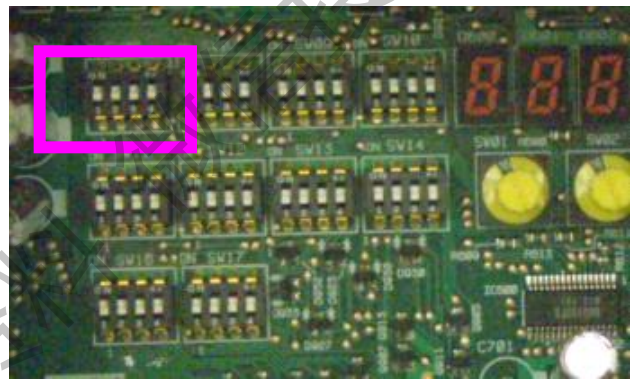
5-1-2. 压缩机备份功能设置

相对于压缩机备份，我们推荐对单台室外机进行备份

1)关闭该套系统的所有室外机电源
2) 设定SW06为ON



SW06



	SW06			
	Bit 1	Bit 2	Bit 3	Bit 4
出厂状态	OFF	OFF	OFF	OFF
No.1 压缩机 (左侧).	ON	OFF	OFF	OFF
No.2 压缩机 (中间)	OFF	ON	OFF	OFF
No.3 压缩机 (右侧)	OFF	OFF	ON	OFF

3) 对该套系统的所有室外机送电

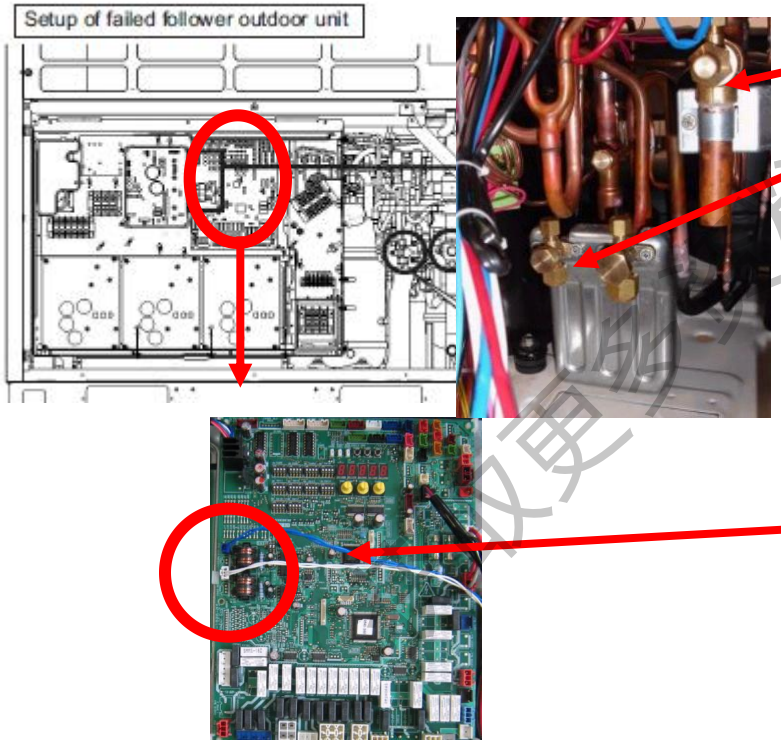
5. 维修支持(备份)

5-1-3-1. 副机故障的整机备份

警告! 考虑到可靠性的问题, 对于16HP+12HP 和16HP+10HP 等系统组合, 对12 或 10HP 单机进行整机备份是不允许的。

1) 关闭该套系统的所有室外机电源

故障室外机设定



2) 全关气侧截止阀.
3) 保持平衡法/液侧截止阀开启
(如果室外机PMV故障, 比如泄露或关不死, 全关液侧截止阀.)

4-1) 如是电气故障, 全关故障室外机的电源.

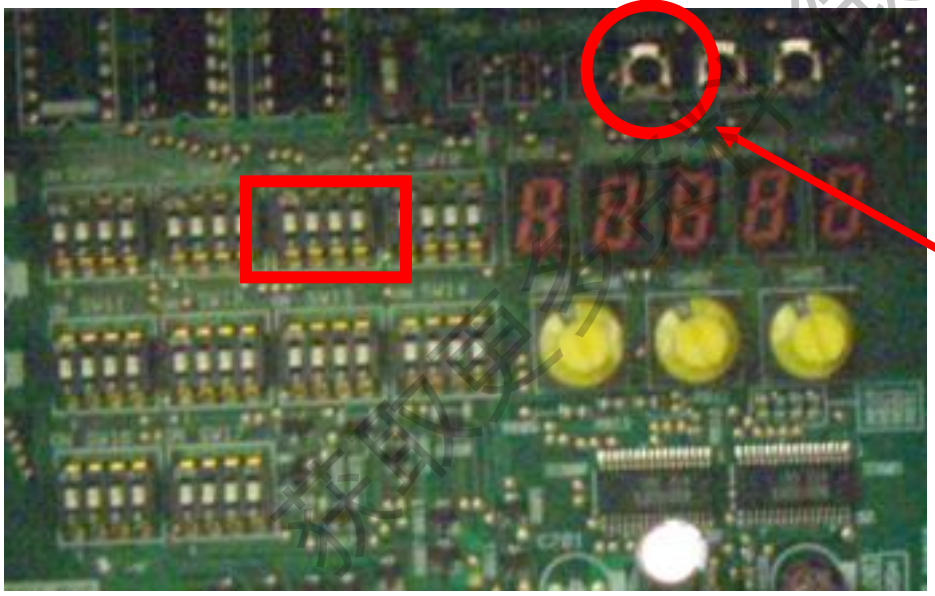
4-2) 如果是系统配件 (压力 /,温度传感器 , 系统循环配件 , 风扇)
将 主控板上[CN03]连接的接插件移出 .

5. 维修支持(备份)

5-1-3-1. 副机故障的整机备份

主机的设定

5) 设定[SW09] [Bit2] ON .
6) 除故障室外机外，对该系统的所有室外机送电
<故障室外机> (1)电气故障➔ 不送电.
(2)系统配件故障➔ 为保持可以开启制热模式，请送电
故障室外机将显示[E19]，不影响系统运行.



7) 故障清楚.

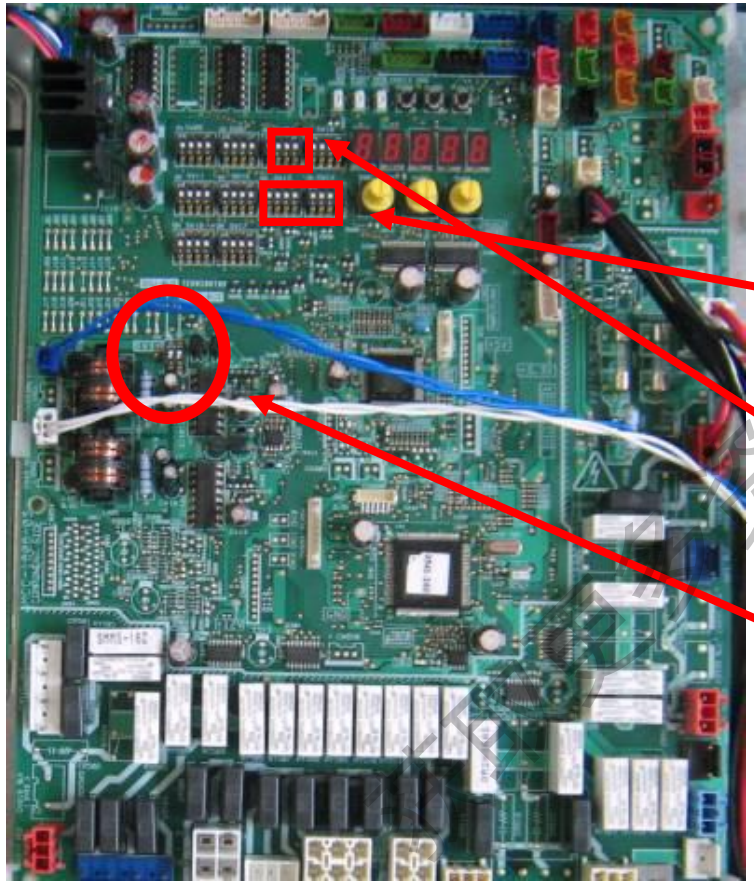
SW			Push SW		7 Seg.LED	
01	02	03	04	05	A	B
1	1	1			U1	E 26
2	16	1			Er	
			5 sec		Er	CL
1	1	1			U1	- - -

5. 维修支持(备份)

5-1-3-2. 主室外机的整机备份

1) ~ 4) 与副室外机的整机备份相同.

选择**新的主机/新的设定**



5) 从最近的室外机中重新选择一台室外机做为新的主机
需重新对新的主机进行设定
6) 通过[SW13],[SW14].设定新的主机的系统地址与原主机相同

7) 设定[SW09] bit2 为ON.

8) 设定 [SW30] bit1, bit2 与原主机相同.

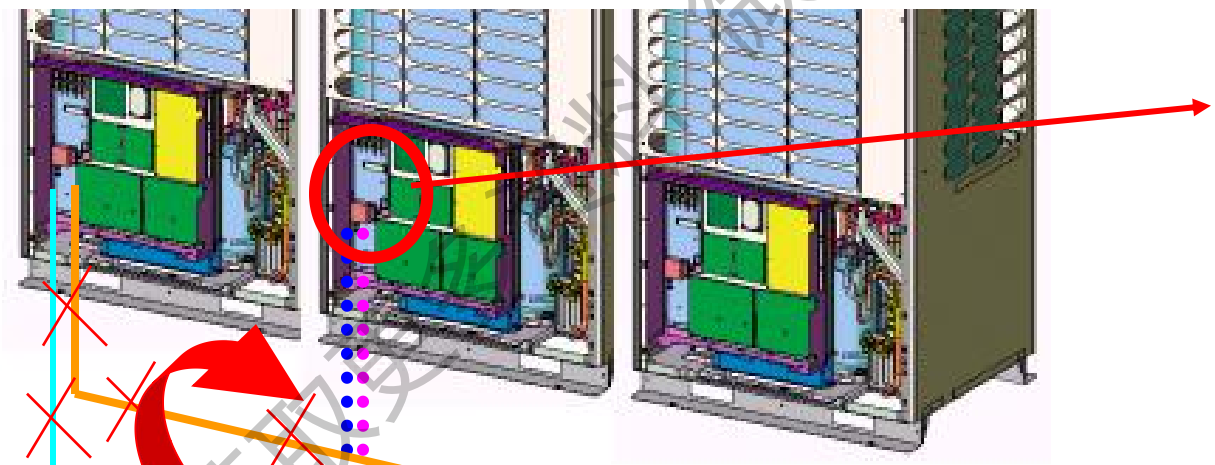
5. 维修支持(备份)

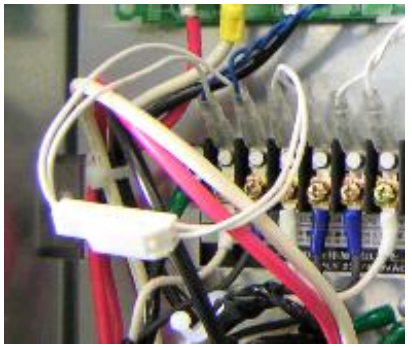
5-1-3-2. 主室外机的整机备份

通讯线的更改

9) 将 室内外机通讯线从原主机的[U1/U2] 侧连接到新的主机[U1/U2]上

10) 如果有集中控制连接,
[U3/U4] 同样需要进行相应设定





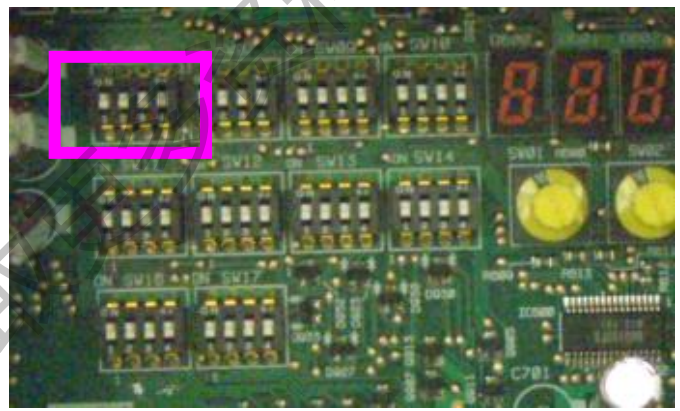
5. 维修支持(备份)

5-1-4.制冷季节的备份设定

@ 仅针对制冷季节，备份比较容易操作
主机和副机均可使用此方法.
制热季节，不可进行整机备份

1) 关掉该系统所有室外机的电源
故障室外机的设定 (参照主机/副机的备份设定)
2) 设定[SW06] bit1 & bit2 为ON.
3) 如果PMV有泄露或者关不死，全关液侧截止阀
4) 打开所有室外机电源. (如果有压缩机绝缘破坏的情况，需断开该台压缩机的电源)

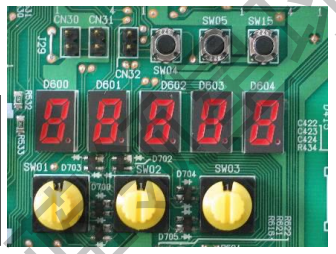
SW06



5. 维修支持

5-2. 油位检测

1) 开始运行.
2) 按如下表格设定 Dip SW 01 / 02 / 03



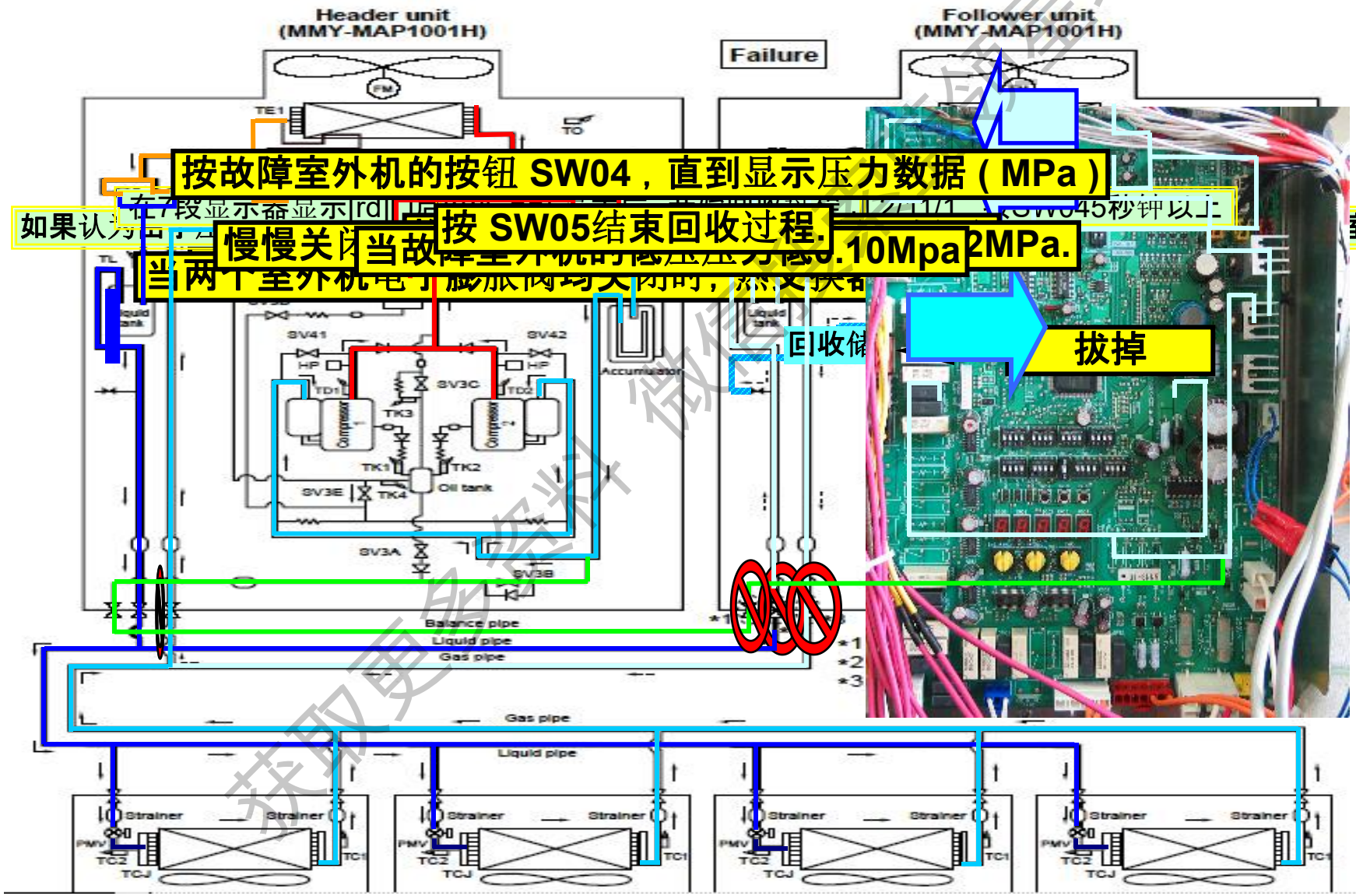
SW			按SW		7 Seg.LED		
01	02	03	04	05	A	B	
1	16	1			oL	A##	[B] comp1/comp2 油位检测结果 (左侧# =comp1, 右侧# =comp2)
1	1	1					End

例如: [oL][A20] ➔ Comp1 = 缺油, Comp2 = 油位正常

7-段显示	检测结果	内容
0	恰当	表明压缩机油位恰当
1 , 2	短缺	压缩机油位短缺 (A1和A2均短缺.)
A	TK1 回路错误	TK1 回路有错误
B	TK2回路错误	TK2回路有错误.
C	TK3回路错误	TK3回路有错误
D	TK4回路错误	TK4回路有错误
@) 如果 1 ~ D判断继续存在, 系统将保护性停机.		

5. 维修支持

5-3. 备份运行的冷媒回收（副室外机故障）



5. 维修支持

5-4-1. 冷媒回收注意要点

注

1) 在回收过程中，制冷剂的回收率随外界温度等因素的变化而改变
回收过程结束后，注意要用回收装置回收剩余气体，并测量回收的制冷剂量。
（回收过程中对室外机进行加热可以提高制冷剂的回收率）

2) 完成后，在故障的室外机未修理前，系统无法运行。
（由于是制冷剂过量充填，不能连续运行）

3) 当两个室外机电子膨胀阀均关闭时（不能打开该阀），热交换器中的制冷剂无法回收。如果在回收过程后要焊接，应在工作前回收该热交换器种的制冷剂。

5. 维修支持

5-4-2. 冷媒回收(无备份运行的情况)

故障室外机的设定

1)利用填充管，连接液管的检测点和低压检测点，然后排空软管中的空气
(以便回收热交换器和储液器中的冷媒)

2) 全关有故障的室外机液管的维修阀
(保持气管和平衡管的维修阀开启.)

3) 如果认为由于压缩机故障使机油已变质，拔下有故障的室外机组的SV3A阀接头，不使变质的机油流入其他室外机.

5. 维修支持

5-4-2. 冷媒回收(无备份运行的情况)

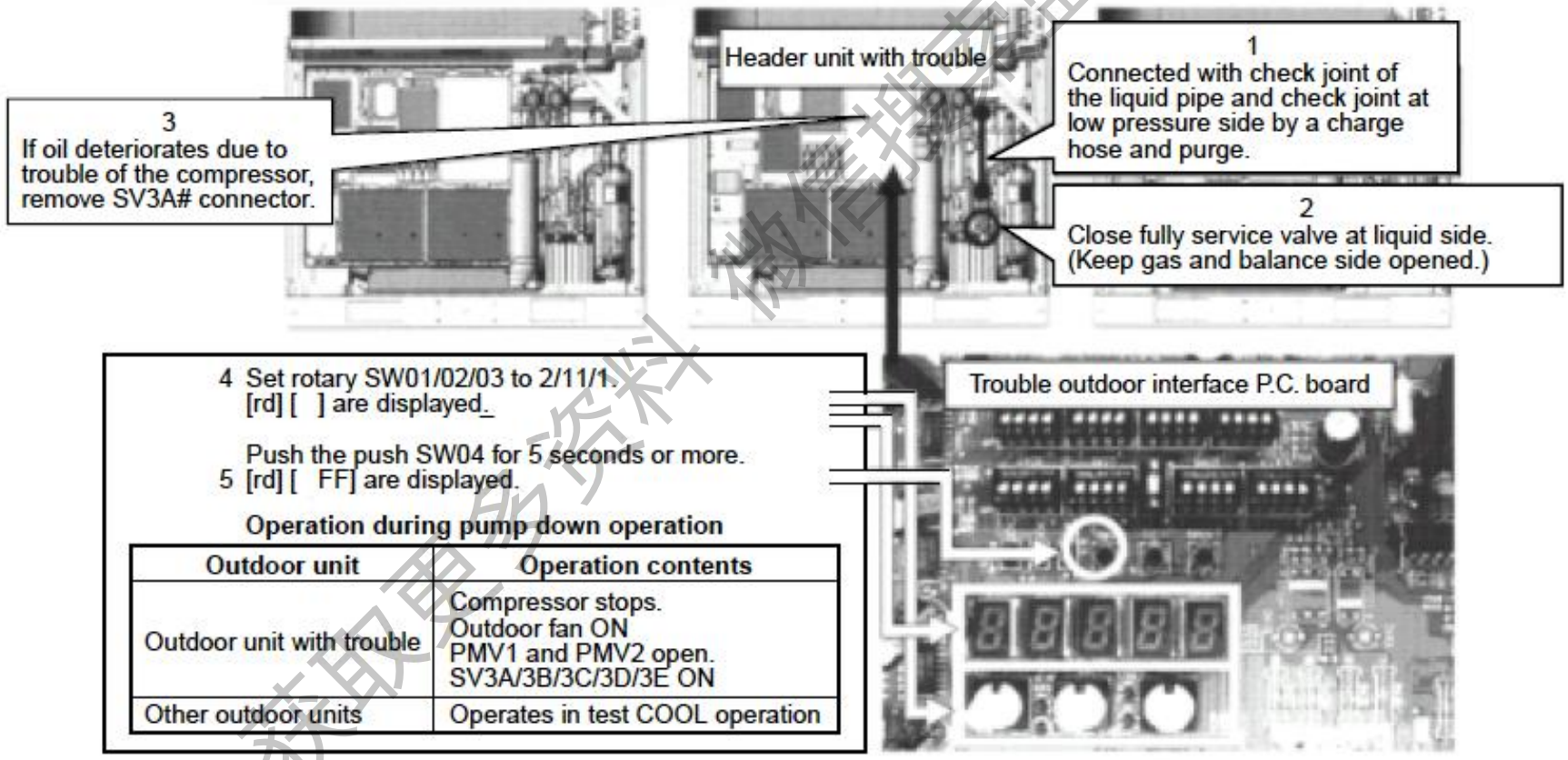
故障室外机的设定

4) 在故障室外机上，旋转SW01/02/03 到2/11/1，七段显示器显示[rd] [　　]，
长按 SW04 五秒钟以上

5) 七段显示器显示[rd] [　FF]后，开始回收过程

5. 维修支持

5-4-2. 冷媒回收(无备份运行的情况)



4 Set rotary SW01/02/03 to 2/11/1.
[rd] [ ] are displayed.

Push the push SW04 for 5 seconds or more.
5 [rd] [FF] are displayed.

Operation during pump down operation

Outdoor unit	Operation contents
Outdoor unit with trouble	Compressor stops. Outdoor fan ON PMV1 and PMV2 open. SV3A/3B/3C/3D/3E ON
Other outdoor units	Operates in test COOL operation

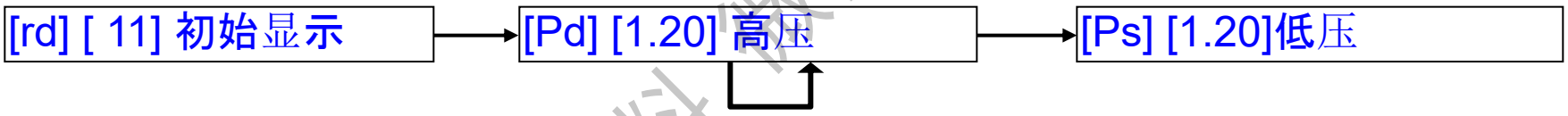
5. 维修支持

5-4-2. 冷媒回收(无备份运行的情况)

故障室外机的设定

6) 系统启动后约10分钟，全关有故障的室外机气管的维修阀.

7) 在故障室外机上长按SW04，直到显示压力数据(MPa).
(显示数据后，每按一次 SW04,显示数据相继改变一次)



选择室外机进行压力调整

8) 对于运行回收模式的室外机，具有最小编号的室外机被选为调整压力的室外机

5. 维修支持

5-4-2. 冷媒回收(无备份运行的情况)

选择除了调整压力和有故障室外机外的室外机

9) 仅保持调整压力机器和有故障机器的平衡管维修阀全开，全关其他室外机的平衡管的维修阀.

设定用于调整压力的室外机

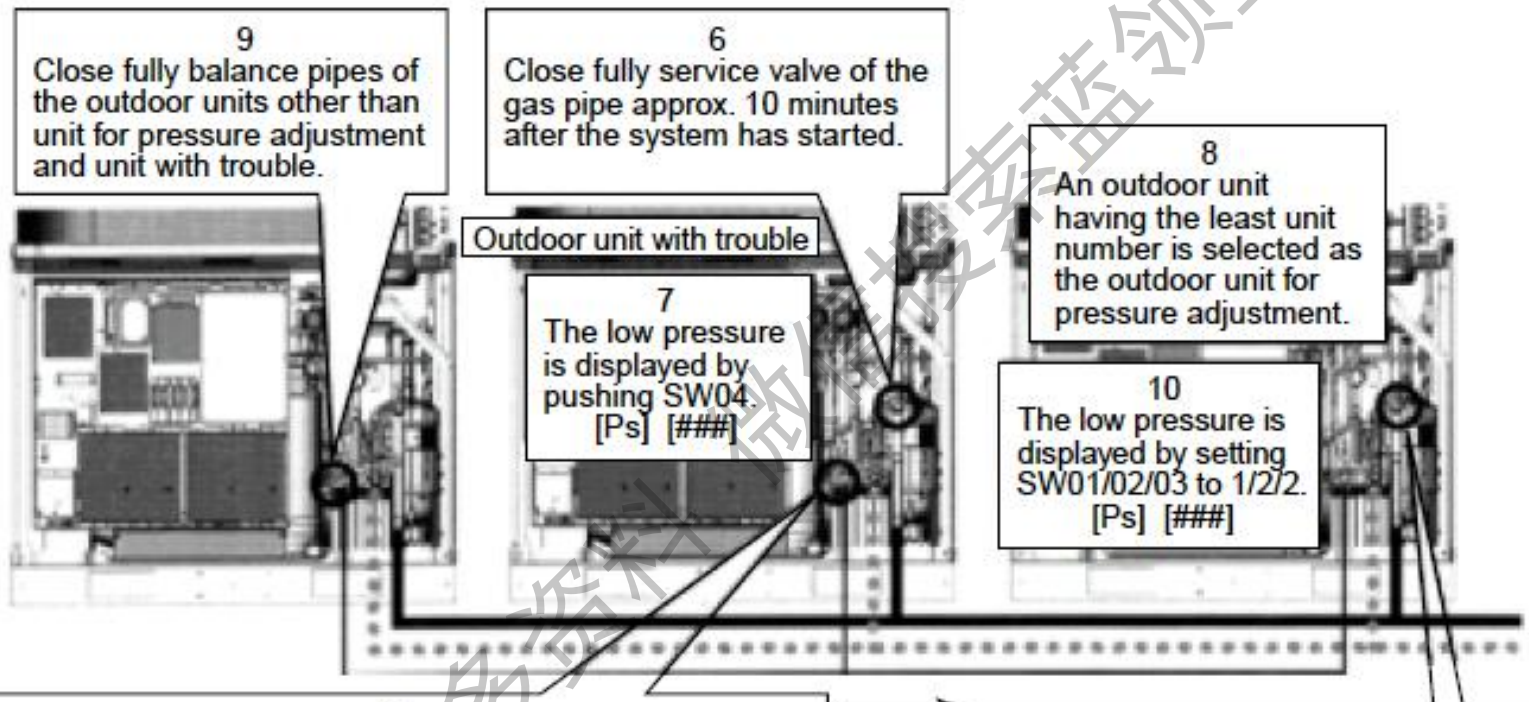
10) 旋转SW01/02/03 到1/2/2.
11) 在7段显示器上显示低压数据时，慢慢全关气管维修阀调整 低压压力到 0.12 Mpa.
12) 当故障室外机的低压与调解压力的室外机的 低压几乎相同时，再继续运行一会后，全关调节压力的室外机的气管维修阀。

设定有故障的室外机

13) 当有故障的室外机的低压低于Mpa时，长按 SW05➔结束回收过程
14) 关闭所有室外机电源，利用冷媒回收装置，回收已完成回收过程的室外机中剩余的制冷剂，并注意回收的制冷剂的量。(这是因为在维修后必须添加相应量的制冷剂

5. 维修支持

5-4-2. 冷媒回收(无备份运行的情况)



5. 维修支持

5-4-2. 冷媒回收(有备份运行的情况)

当故障室外机由于进行了备份而无法送电的时候，正确的冷媒回收程序是不同与前面讲过的程序的，请按以下流程完成冷媒回收.

另:当故障室外机处于“制冷季节的室外机备份状态”或则处于“故障室外机的备份”状态时，前述的“室外机备份设定”时的冷媒回收流程是不适用的。

如果故障室外机已经处于“副室外机备份”状态，请将室外机主控板上的接插件[CN03](主控板连接到U5/U6的接插件)恢复到初始状态，然后对室外机系统重新送电，然后再执行冷媒回收程序

5. 维修支持

5-4-2. 冷媒回收(有备份运行的情况)

注

如果故障室外机的电源无法打开，室外机的PMV也无法打开。因此，与通常的回收过程相比，冷媒的回收量会减少。

请利用冷媒回收装置，回收室外机中剩余的冷媒，并测量冷媒的回收量

5. 维修支持

5-4-2. 冷媒回收(有备份运行的情况)

故障室外机的设定

1) 将压力表软管连接到液管和低压侧的点检口，并排出软管中的空气
（用来回收热交换器和储液桶中的冷媒）

2) 全关故障室外机的液管截止阀.
(保持气管和平衡管的截止阀全开）

选择为主机的室外机的设定

3) 设定主机的 SW01/02/03 到2/5/1,当七段显示器显示 [C.] [ ] 后，长按SW04 五秒钟以上.

4) 7段显示器上显示 [C.] [– C]

5) 设定主机 SW01/02/03 到 1/2/2 显示低压数据(MPa)

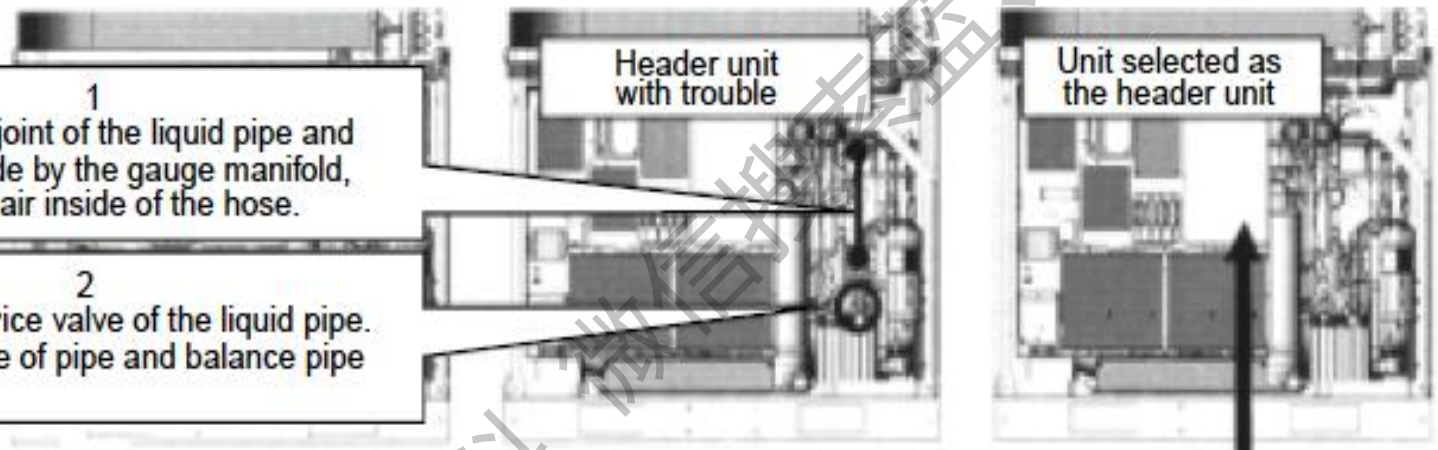
6) 系统起动后约10分钟，全关有故障的室外机的气管维修阀

5. 维修支持

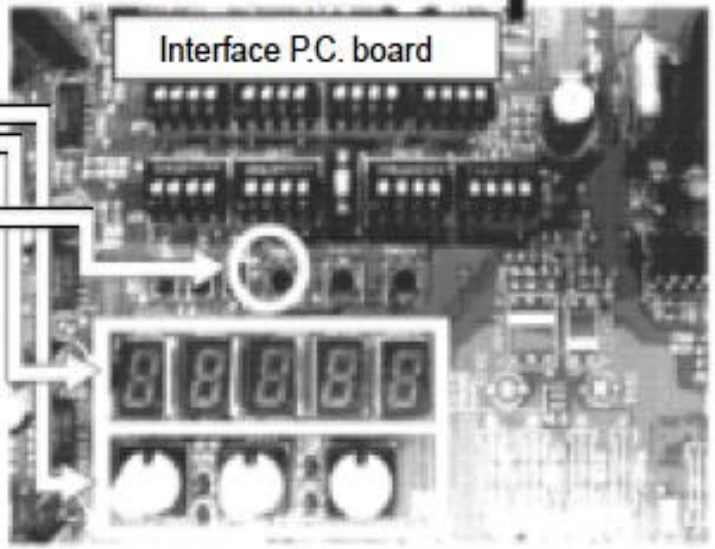
5-4-2. 冷媒回收(有备份运行的情况)

1
Connect check joint of the liquid pipe and low pressure side by the gauge manifold, and then purge air inside of the hose.

2
Close fully service valve of the liquid pipe. (Keep gas valve of pipe and balance pipe opened.)



4 Set rotary SW01/02/03 to 2/5/1.
[C.] [ ] are displayed.
↓
Push SW04 for 5 seconds or more.
4 [C.] [–C] are displayed (Test cooling operation starts.)
↓
5 Low pressure (MPa) is displayed by pushing the push SW04.
Pd → Ps → Td1 → Td2 → TS → TE → C — C



5. 维修支持

5-4-2. 冷媒回收(有备份运行的情况)

调整压力的室外机的设定

7) 设定主机作为调整压力的室外机

除主机和故障机以外的室外机的设定

8) 仅保持主机和故障机的平衡管道全开，全关其他室外机平衡管维修阀

主机的设定

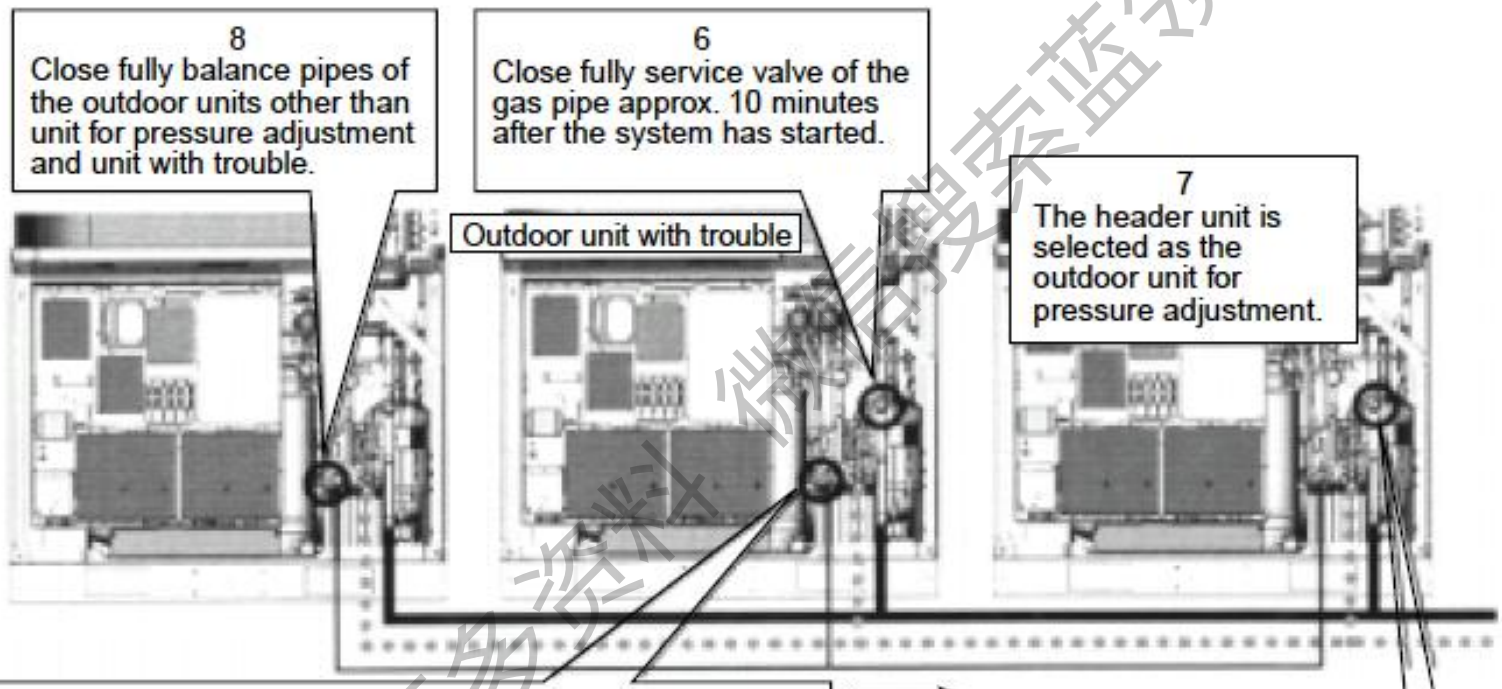
9) 在7段显示器显示低压数据时，慢慢全关气管维修阀，边确认数据，边调节压力，使之达到Mpa.
10) 当连接到故障机上的压力表显示的数据和主机显示的压力数据几乎相同时，再运行一会后，全关调节压力的室外机的气管截止阀

故障室外机的设定

11) 当压力低于0.10MPa, 按 SW05➔结束回收过程.
12)关闭所有室外机电源，用冷媒回收装置，回收已完成冷媒回收过程的室外机中的剩余冷媒并称重.➔重新充填至系统中.

5. 维修支持

5-4-2. 冷媒回收(有备份运行的情况)



5. 维修支持

5-4-3.维修故障室外机时的系统操作

<工作流程>

1. 参看“故障室外机的冷媒回收”

2. 然后，采用冷媒回收装置回收剩余的冷媒，冷媒回收的量，视故障室外机的容量而定。(见下页表格.)

3. 对于已经回收冷媒的室外机，按另外章节执行“室外机备份设定”全部工作完成

5. 维修支持

冷媒追加对照表

	組合せ馬力HP	室外機型名	組合せ室外機				C (補正冷媒量) kg
標準タイプ	8	MMY-MAP2244H	8HP				1.5
	10	MMY-MAP2804H	10HP				2.5
	12	MMY-MAP3354H	12HP				3.5
	14	MMY-MAP4004H	14HP				8.5
	16	MMY-AP4504H	8HP	8HP			0.0
	18	MMY-AP5044H	10HP	8HP			0.0
	20	MMY-AP5604H	10HP	10HP			3.0
	22	MMY-AP6154H	12HP	10HP			5.0
	24	MMY-AP6804H	8HP	8HP	8HP		−4.0
	26	MMY-AP7304H	10HP	8HP	8HP		−4.0
	28	MMY-AP7854H	10HP	10HP	8HP		−2.0
	30	MMY-AP8504H	10HP	10HP	10HP		0
	32	MMY-AP9004H	8HP	8HP	8HP	8HP	−6.0
	34	MMY-AP9604H	10HP	8HP	8HP	8HP	−6.0
	36	MMY-AP10104H	10HP	10HP	8HP	8HP	−6.0
	38	MMY-AP10654H	10HP	10HP	10HP	8HP	−6.0
	40	MMY-AP11204H	10HP	10HP	10HP	10HP	−5.0
	42	MMY-AP11804H	12HP	10HP	10HP	10HP	−4.0
	44	MMY-AP12354H	12HP	12HP	10HP	10HP	−2.0
	46	MMY-AP13004H	12HP	12HP	12HP	10HP	0.0
	48	MMY-AP13504H	12HP	12HP	12HP	12HP	2.0
省設置タイプ	16	MMY-MAP4504H1	16HP				10.5
	24	MMY-AP6804H1	12HP	12HP			7.5
	26	MMY-AP7304H1	16HP	10HP			8.5
	28	MMY-AP7854H1	16HP	12HP			9.5
	30	MMY-AP8504H1	16HP	14HP			11.5
	32	MMY-AP9004H1	16HP	16HP			12.5
	34	MMY-AP9604H1	12HP	12HP	10HP		3.0
	36	MMY-AP10104H1	12HP	12HP	12HP		4.0
	38	MMY-AP10654H1	16HP	12HP	10HP		6.0
	40	MMY-AP11204H1	16HP	12HP	12HP		7.0
	42	MMY-AP11804H1	16HP	14HP	12HP		8.0
	44	MMY-AP12354H1	16HP	16HP	12HP		10.0
	46	MMY-AP13004H1	16HP	16HP	14HP		12.0
	48	MMY-AP13504H1	16HP	16HP	16HP		14.0

标准配置

节省空间的配置

6. 其他

6-1. 修理后的工作

完成维修后，按下列程序对室外机抽真空

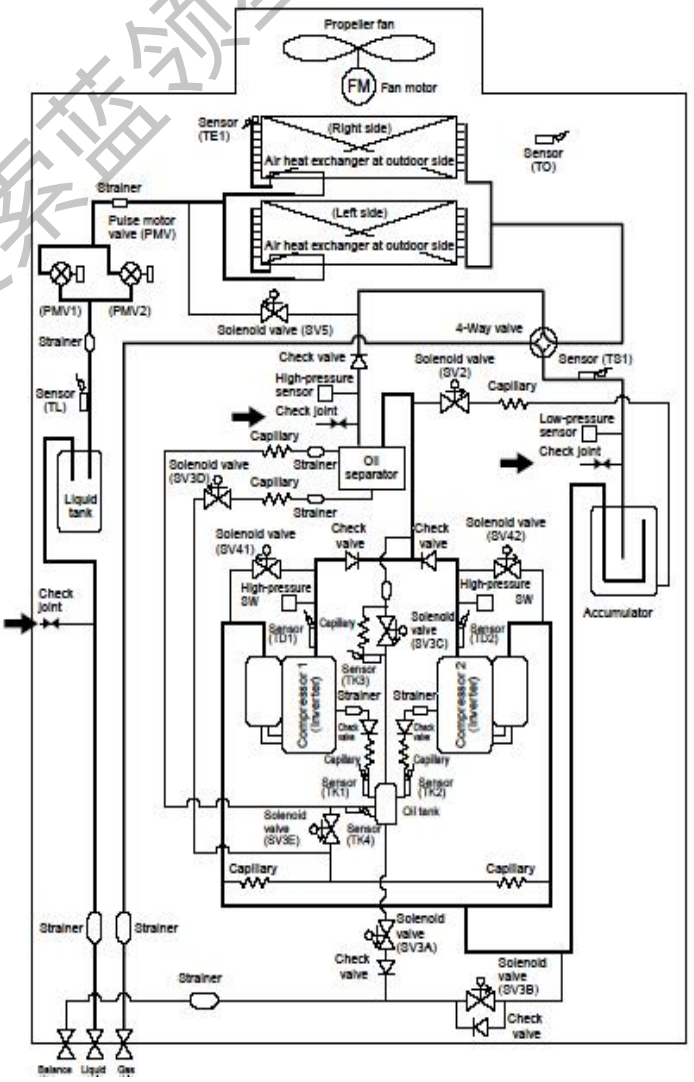
<工作程序>

1. 对完成维修的室外机，短接室外机主控板上CN30,全开PMV。

注)采用短接CN30的方法全开的PMV，2分钟后会自动回到全关状态。

如要保持全开状态，请在短接CN30后2分钟内，关闭室外机电源。

2注意通过下列三个检测点进行真空作业
(液管，排气管和回气管)



6. 其他

6-2. 油位控制<油堵塞故障>

Part name	Position with trouble (See next page.)	Unit issuing check code	Check code to be detected		Phenomena (Corresponding unit)
Outdoor PMV	A	Corresponding unit	High-pressure protective operation Low-pressure protective operation Discharge temp. error	P20 H06 P03 P17	High-pressure up Low-pressure down Discharge temp. up
Check valve of main discharge pipe collective section	B	Corresponding unit	High-pressure protective operation High-pressure SW system error	P20 P04-XX	Abnormal high-pressure up
Check valve of discharge pipe	C	Corresponding unit	High-pressure SW system error	P04-XX	Abnormal high-pressure up
Check valve of oil-equalization circuit Capillary Strainer	D	Corresponding unit	Oil level detective circuit error Oil level down error	H16-XX H07	Oil-equalization circuit error or oil-shortage judgment
SV3A valve	E	Other connected unit	Oil level down error	H07	Excessive oil amount
SV3B valve	F	Corresponding unit	Oil level down error	H07	Shortage of oil amount
SV3C valve	G	Other connected unit	Oil level down error	H07	Excessive oil amount
SV3D valve SV3D valve circuit capillary Strainer	H	Corresponding unit	Oil level down error	H07	Shortage of oil amount
SV3E valve	I	Corresponding unit	Oil level detective circuit error Oil level down error	H16-04 H07	Oil-equalization circuit error Judgment of shortage Shortage of oil amount
Oil return capillary	J	Corresponding unit	Oil level down error	H07	Shortage of oil amount
SV3C bypass capillary	K	Corresponding unit	Oil level detective circuit error	H16-03	Oil-equalization circuit error

6. 其他

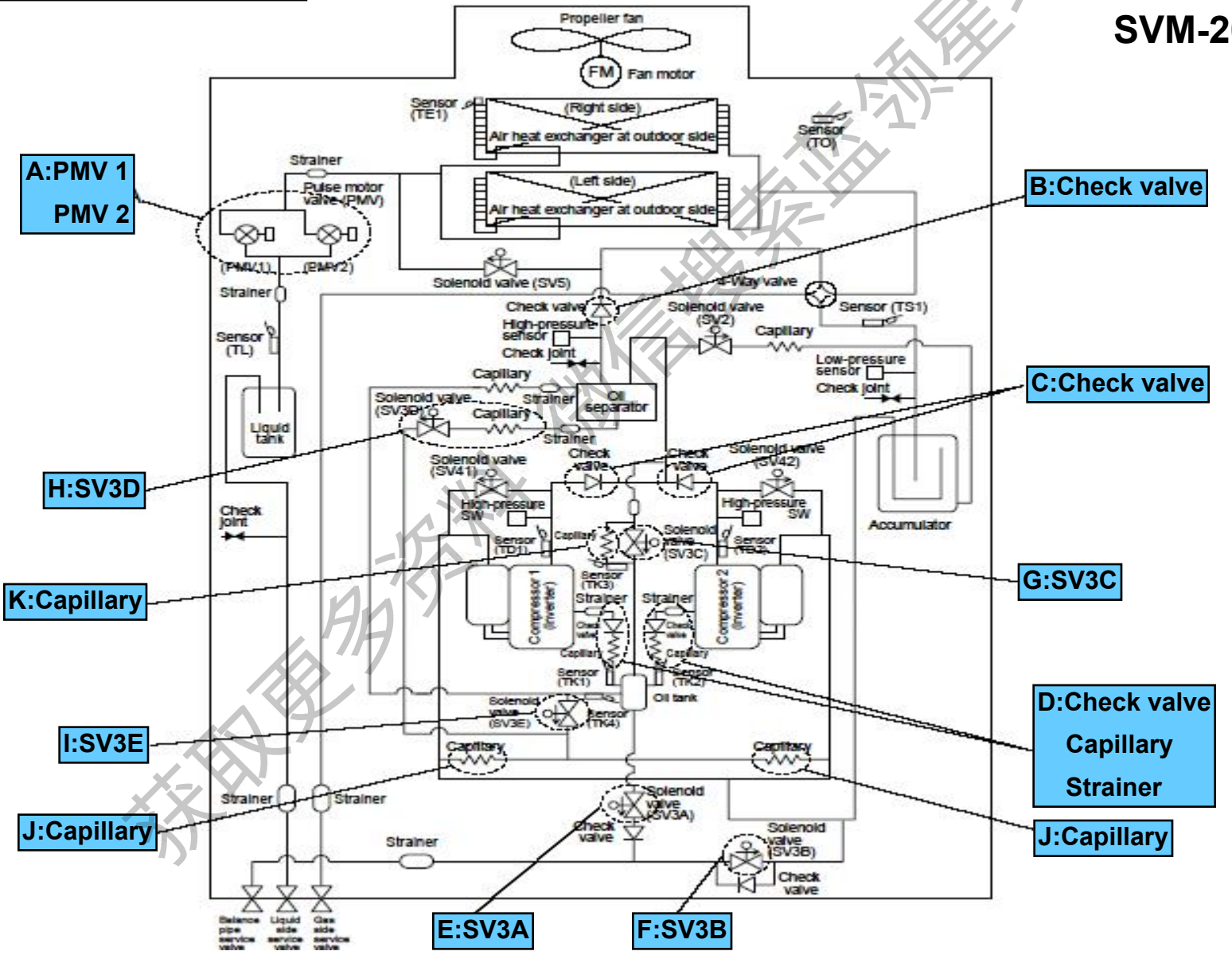
6-2. 油位控制<泄露>

Part name	Position with trouble (See next page.)	Unit issuing check code	Check code to be detected		Phenomena (Corresponding unit)
Outdoor PMV	A	Corresponding unit	Outdoor liquid back error Oil level down error	P13 H07	Refrigerant stagnation
Check valve of main discharge pipe collective section	B	Corresponding unit	Oil level down error Compressor breakdown Compressor error (Lock)	H07 H01-XX H02-XX	Refrigerant stagnation
Check valve of discharge pipe	C	Corresponding unit	Oil level down error Compressor breakdown Compressor error (Lock)	H07 H01-XX H02-XX	Refrigerant stagnation
Check valve of oil-equalization circuit	D	Corresponding unit	Oil level down error	H07	Excessive oil amount (Leaked side) Shortage of oil amount (Normal side)
SV3A valve	E	Corresponding unit	Oil level down error	H07	Shortage of oil amount
SV3C valve	G	Corresponding unit	Oil level down error	H07	Judgment of oil shortage

6. 其他

6-2. 油位控制<检查点>

SVM-202



6. 其他

6-3. 替换程序

START

Is the outdoor unit a single system?

YES

Open PMV of the troubled unit manually. (Short CN30 on I/F P.C. board, and turn off the power supply.), and recover refrigerant by refrigerant recovery device. (NOTE)

NO

Using refrigerant recovery method at replacing of compressor, recover the refrigerant.

Turn off power of the troubled outdoor unit.

Take off the troubled compressor.

Measure oil amount of the troubled compressor.

Check oil color of the troubled compressor.
ASTM: Is 4 or more?
Judge the oil status based on the oil color, and then decide to exchange the troubled compressor only or both compressors.

NO → Exchange the troubled compressor only.

YES

Replace both troubled compressor and normal compressor.

Measure oil amount of the normal compressor.

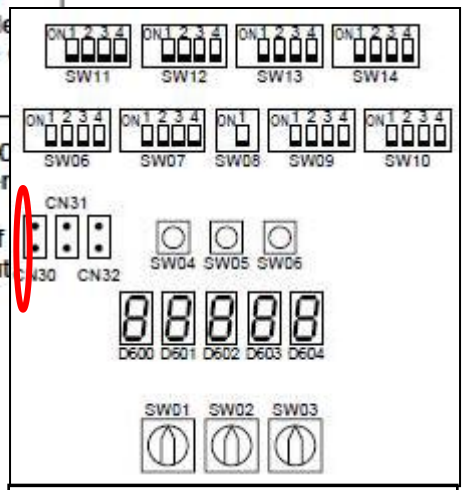
Adjust oil amount based upon the measured oil amount.

⚠ WARNING

Never recover the refrigerant into outdoor unit.

Be sure to use a refrigerant recovery device for refrigerant recovery in reinstallation or repair work. Recovery into outdoor unit is unavailable otherwise a serious accident such as rupture injury will be caused.

NOTE) Full opening operation of PMV by CN30 short-circuiting returns full closing when minutes passed.
To continue full-opening status, turn off power of the outdoor unit within 2 minut

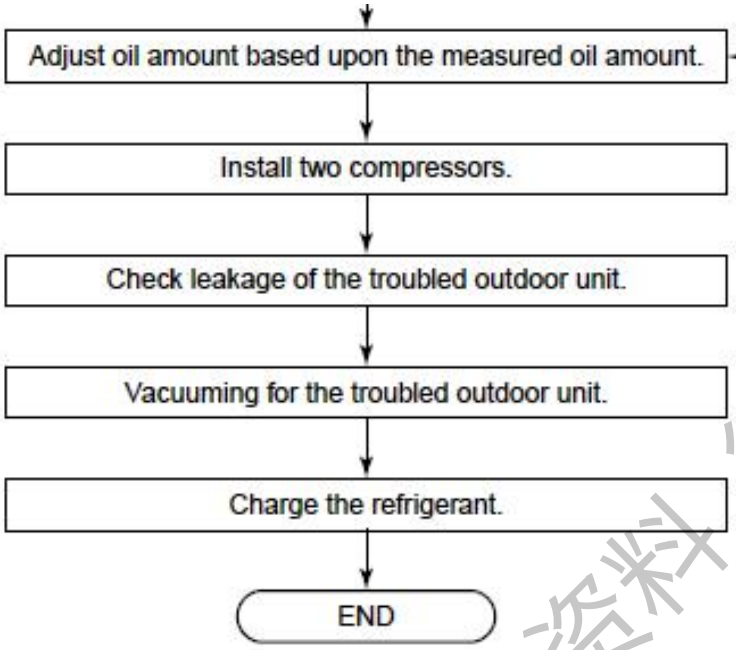


Outdoor interface PC board

ASTM Color “4”

6. 其他

6-3. 替换程序



* This flowchart is the standard one of compressor replacing.
Various cases are considered at each field
Replace the compressors based on the following conditions of judgment.

1. Oil of 1900cc is charged in a compressor for service.
2. Oil amount is 3800cc in an outdoor unit at shipment.
3. When a compressor is removed, it usually includes oil with 800 to 1400cc.
   Oil separator usually holds oil with 0 to 1000cc.

6. 其他

6-3. 故障压缩机的更换

<测量故障压缩机中的油量>

- 把故障压缩机放在秤上测量油量.

故障压缩机的油量:

A [cc]=(搬走的压缩机质量 (kg) –22.7) × 1042 (油的比重:1042 [cc/kg])

(注)

- 不包括油的压缩机质量为22.7 kg. (SMMS:23.5Kg)

[在仅更换故障压缩机的情况下]

<调整维修压缩机油量> (出厂时油量:1900cc)

- 调整故障压缩机油量: A [cc] ，根据以下内容确定

1. 如果故障压缩机油量: A [cc] 是0 < A < 1000
   1) 调整维修压缩机油量到1000cc.
      (横放 维修压缩机，从油平衡管抽出900 [cc].)

(注)

- 不要超过 900 [cc]，否则会造成故障.
- 如果故障压缩机的油量低于500cc, 可能油平衡管等有问题

根据“ 查找压缩机缺油原因检查程序”检查压缩机.

6. 其他

6-3. 压缩机的更换

2. 如果故障压缩机油量: A [cc] 是1000 < A < 1900

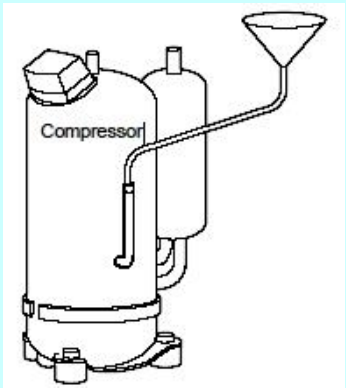
1) 调整压缩机油量到A cc.

(横放维修压缩机，从平衡管抽出 (1900 - A) [cc].)

3. 如果故障压缩机油量:A [cc] 是1900 < A

1) 调整压缩机油量到A cc.

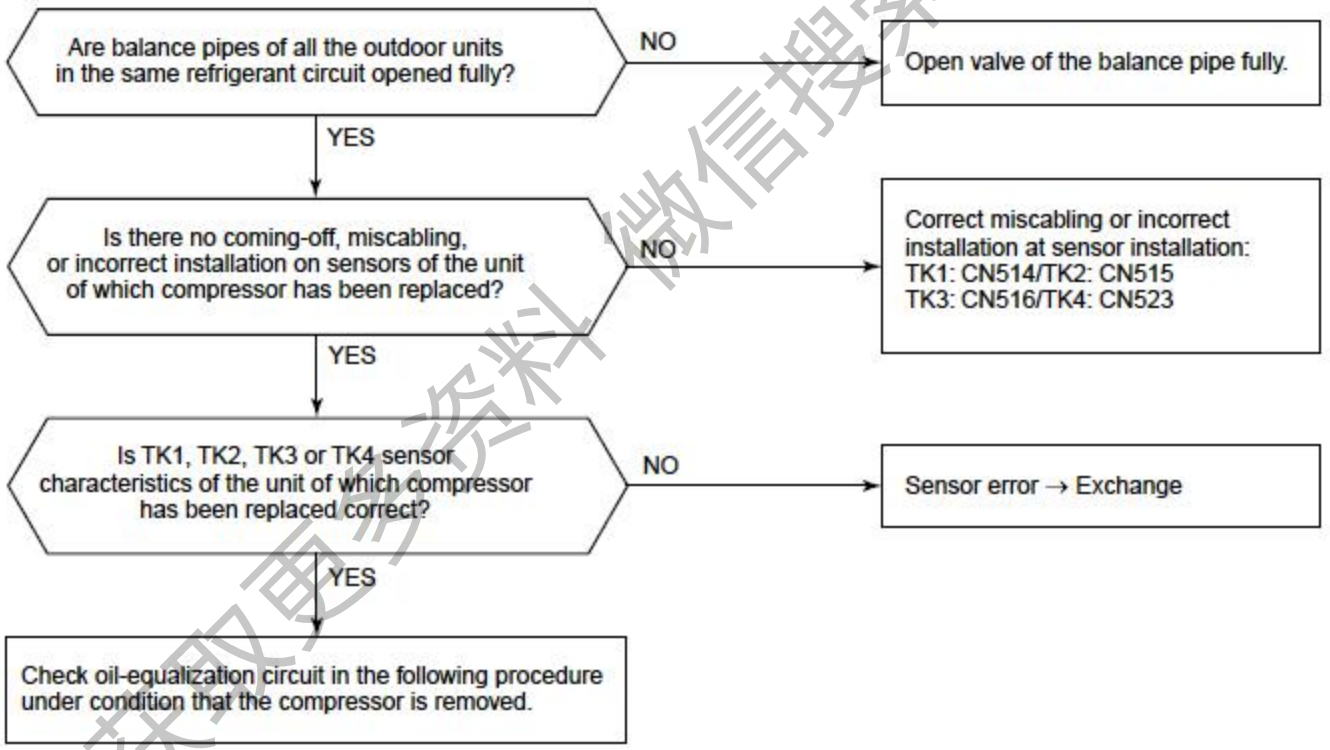
(在维修压缩机的排气管或油平衡管中插入软管，用漏斗加入 (A - 1900) [cc] .)



6. 其他

6-3. 压缩机的更换

<压缩机缺油原因检查程序>



6. 其他

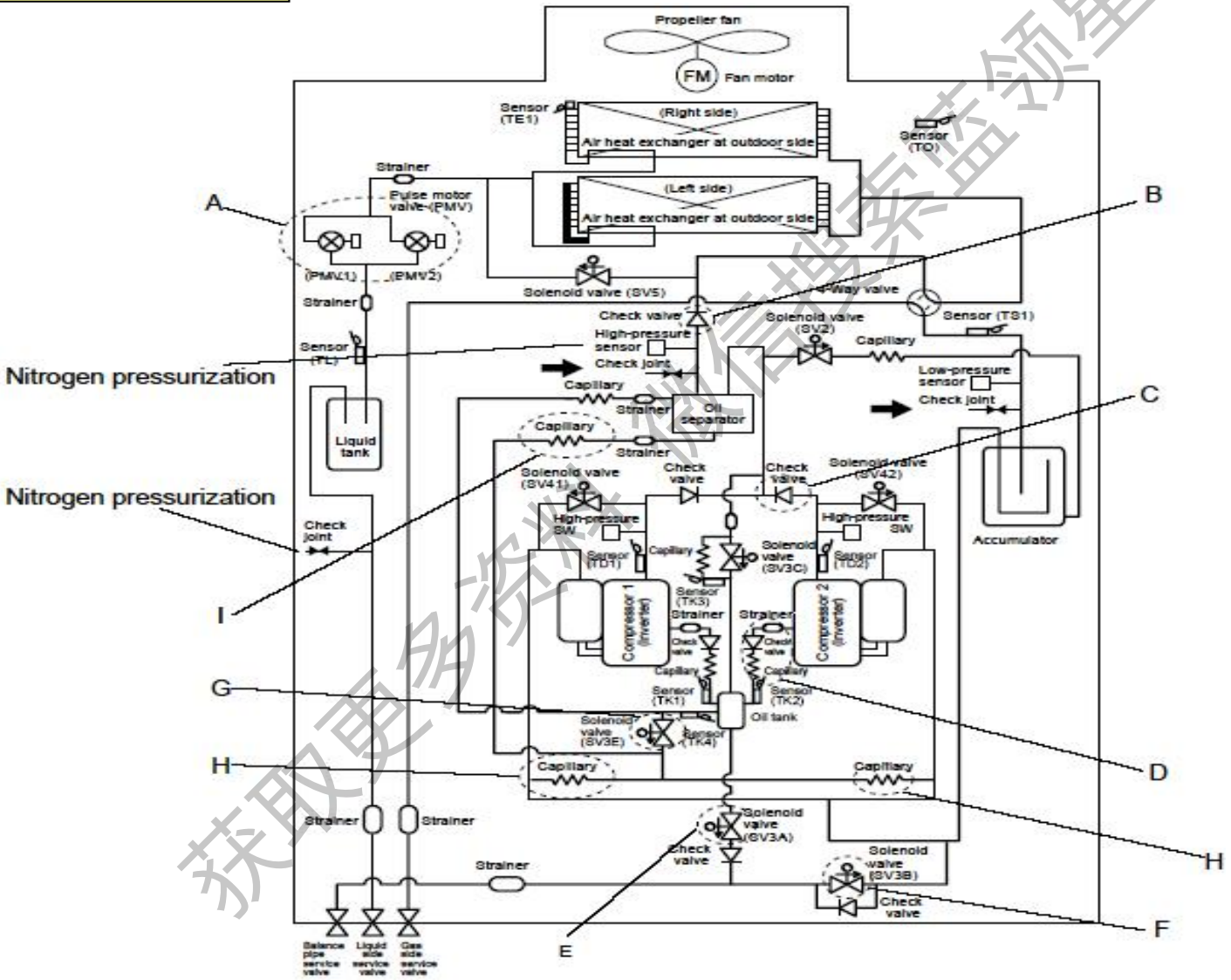
6-3. 压缩机的更换

<在移去压缩机的条件下检查油平衡回路的项目和程序>

	Check items	Position	Procedure
Check of refrigerant stagnation cause in compressor	Outdoor PMV leakage Check valve leakage of main discharge pipe	A B	1) Press nitrogen gas in from check joint of liquid pipe, and check pressure at check joint of discharge pipe. If pressure of check joint of discharge pipe becomes high, leakages from outdoor PMV and check valve of main discharge pipe are considered. Exchange the parts. 2) If the pressure up is not found, open outdoor PMV fully and recheck pressure. If pressure of check joint of discharge pipe becomes high, leakage from check valve of main discharge pie is considered. Exchange the parts.
	Check valve leakage of discharge pipe	C	3) When gas leaks from welded part of oil-equalization pipe where compressor has been removed under condition that nitrogen gas is pressed in from check joint of main discharge pipe, leakage from check valve of main discharge pipe is considered. Exchange the parts.
	Check valve leakage of oil-equalization circuit	D	4) When gas leaks from welded part of oil-equalization pipe where compressor has been removed under condition that nitrogen gas is pressed in from check joint of discharge pipe, leakage from check valve of oil-equalization circuit is considered. Exchange the parts.
Check of oil shortage cause in compressor	SV3A valve leakage SV3B valve clogging	E F	5) Open SV3B valve manually under condition that nitrogen gas is pressed in from check joint of discharge pipe. When gas leaks from welded part of suction pipe where compressor has been removed, SV3A valve leakage is considered. Exchange the parts. Next, open SV3A valve and SV3B valve manually. If gas leaks from welded part of suction pipe where compressor has been removed, SV3A valve leakage is considered. Exchange the parts.
	SV3E valve clogging. Clogging of oil-return capillary	G H	6) Open SV3E valve manually under condition that nitrogen gas is pressed in from check joint of discharge pipe. When gas does not output from welded part of suction pipe where compressor has been removed, there is clogging at SV3E valve or oil-return capillary. Exchange the parts.
	SV3D valve capillary clogging. Clogging of oil-return capillary	I H	7) Open SV3D valve manually under condition that nitrogen gas is pressed in from check joint of discharge pipe. When gas does not output from welded part of suction pipe where compressor has been removed, there is clogging at SV3D valve or oil-return capillary. Exchange the parts.

6. 其他

6-3. 压缩机的更换



6. 其他

6-3. 故障压缩机机示例

6. 其他

6-3. 故障压缩机示例

発行No.：	RB-6005
発行日 ：	2006/6/7
発行課：	（海サ）

Result of SMMS P.C.Board

承認	検印	担当
鮫島		渡邉

重要度 AA A **B** C D E

情報内容	機種名(外)		MMY-MAP1001HT8	件名：海外(インド)SMMS戻入基板調査依頼
	機種名(内)		MMC-AP0361H	・ インド西域でのSMMSの据付で運転立会いの前に不良発生 （エラーコードは室外はP26、室内はL08、製造は05年11月）
	発生年月		2006年4月	
	お客	住所	Ahemdabad Mumbai India	・ CALからはDOAだとして新IPDUを要求され送付済です。
		氏名	Gujrat Apollo	
	情報元	所属	CAL(キヤリアインド)	・ 現地からは左記機種の室外IPDU基板と室内基板が戻入されています。
		氏名	Sudhir Sharma	
		方法	e-mail	・ 調査結果によって工事等が原因なら有償とします。
	販売ルート	海外営業部： キヤリア販社(CAL)		＜先方の要求事項＞ ・ 故障原因の調査、推定をお願いします。

対応策

1.Indoor P.C.Board : Cause of trouble may be attached foreign material.

- Power IC shorted (Shorted between STR-L472 IC310 and VCC-G-S) Spark mark at reverse surface of P.C.Board
- F302(3.15A Fuse) was changed to 15A Fuse.
- Connector(CN67 Black) crashed (Case chiped and pin bended.)
- Edge of P.C.Board crashed

May be droped by P.C.Board only.
(At servicing work ?)

1.Indoor P.C.Board : Cause of trouble may be attached foreign material.

- Power IC shorted (Shorted between STR-L472 IC310 and VCC-G-S) Spark mark at reverse surface of P.C.Board
- F302(3.15A Fuse) was changed to 15A Fuse.
- Connector(CN67 Black) crashed (Case chiped and pin bended.)
- Edge of P.C.Board crashed

May be draped by P.C.Board only.
(At servicing work ?)

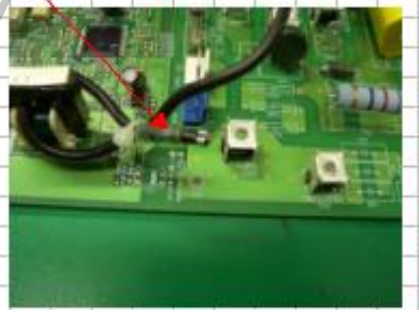
E square data
- No diagonal record
- No setting of indoor and system adress

May be troubled at just power ON

2. Outdoor P.C.Board (IPDU P.C.Board) : We can not presume cause by only P.C.Board

- Lead wire for T03 (Current transformer) was cutted at P01
(• Other part was no-damaged.)
- IGBT U phase shorted (Pellet burned out)
(Compressor ON time : 1 hour and 13 minutes)

While IGBT trouble lead wire was not open,
because we can find data of operating current



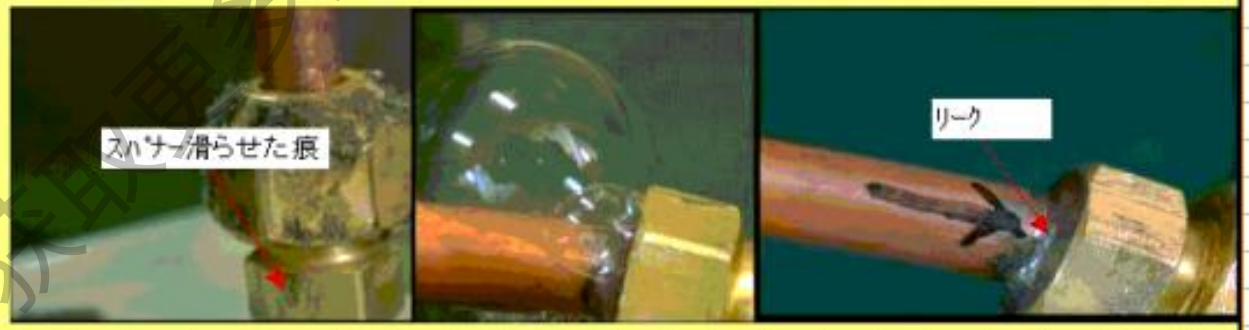
（R品）戻入担当に調査依頼しました。結果は以下の通りです。
ソケット形状は通常品（RoHs対応識別の面取は無し）です。

＜原因＞①現地接続作業時のダブルスパナ作業で滑らせた
②ソケット　ロー材銀含有0%（余裕度が少ない）
＜対応＞'05／10よりロー材変更（銀含有2%）に変更
＜その他＞①ソケット形状ですがRoHs対応識別のため面取したソケットが使用された時期あり
先月途中から面取品から通常品へ切り替えさせました。
（今回は関連しておりませんが・・・）
②一部機種については、ロー材変更時期の遅れあり（'06/2～）

3. 回収品の調査結果　（1件）

機種名	製造番号	戻入先	戻入状態	据付月	発生月日
MMUAP0301H-K	509G0137	海外	室内機		

戻入理由	ｶﾞｽﾘｰｸ
調査結果	再現。 3分側ﾌﾚｱｰﾛｰ付け部よりｶﾞｽﾘｰｸ、外観確認にて3分ﾎﾞﾙﾄ締め付け時にｽﾊﾟﾅｰを滑らせた痕あり、現地据付け時の作業ﾐｽと推定します。ﾏｲｺﾝ通電記録無し。



6. 其他

6-4. 可通过遥控器进行的设定功能

参看通过遥控器进行系统运行数据的查询

a. 同时长按 SET, CL + TEST 4 秒或以上

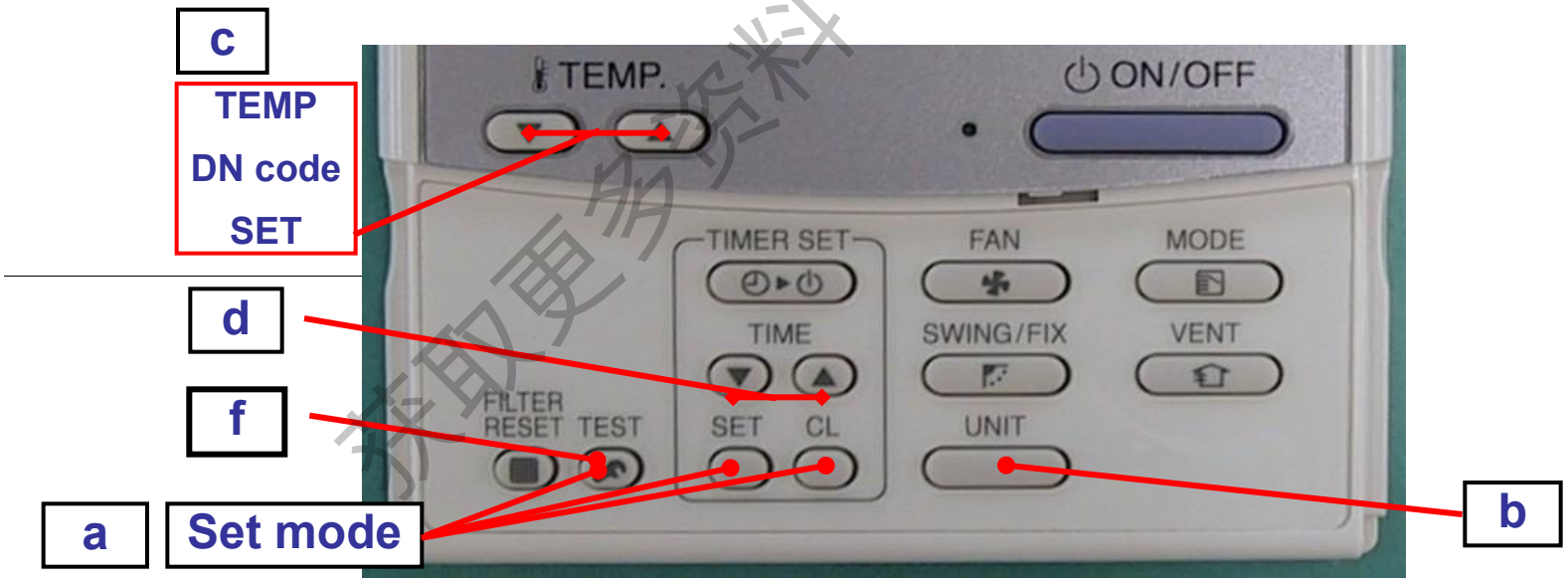
b. 在FAN模式下，按 UNIT按钮显示室内机地址

c. 按TEMP ▼/▲ 按钮选择DN代码

d. 通过TIME ▼/▲ 按钮选择设定代码

e. 按 SET 按钮

f. 按 TEST 按钮退出



6. 其他

6-4. 通过线控器进行DN 代码的设定

Table: Function selecting item numbers (DN code)
(Items necessary to perform the applied control at the local site are described)

DN	Item	Description	At shipment
01	Filter sign lighting time	0000 : None 0001 : 150H 0002 : 2500H 0003 : 5000H 0004 : 10000H	According to type
02	Dirty state of filter	0001 : Standard 0001 : High degree of dirt (Half of standard time)	0000 : Standard
03	central control address	0001 : No,1 unit to 0064 : No, 64 unit 0099 : Unfixed	0099 : Unfixed
04	Specific indoor unit Priority	0000 : No priority 0001 : Priority	0000 : No priority
06	Heating temp shift	0000 : No shift 0001 : + 1℃ 0002 : + 2℃ 0010 : + 10℃ (Up to +6 recommended)	0002 : + 2℃ (Floor type 0000 :0℃)
0d	Existence of automatic cool / heat mode	0000 : Provided 0001 : Not provided (Automatic selection from connected outdoor unit)	0001 : Not provided
0F	Cooling only	0000 : Heat pump 0001 : Cooling only (No display of [AUTO] [HEAT])	0000 : Heat pump
10	Type	0000 : (1-way air discharge cassette) 0001 : (4-way air discharge cassette) to 0037	According to model type

6. 其他

6-4. 通过线控器进行DN 代码的设定

DN	Item	Description	At shipment
11	Indoor unit capacity	0000 : Unfixed　　0001　to 0034	According to capacity type
12	Line address	0001 : No.1 unit　to　0030 : No.30 unit	0099 : Unfixed
13	Indoor unit address	0001 : No.1 unit　to　0064 : No.64 unit	0099 : Unfixed
14	Group address	0000 : Individual　　0001 : Header unit group 0002 : Follower unit of group	0099 : Unfixed
19	Flap type (Adjustment of air direction)	0000 : Not provided　　0001 : Swing only 0004 : [4-way Air Discharge Cassette type] and [Under Ceiling type]	According to type
1E	Temp difference of automatic cooling / heating mode selection COOL → HEAT HEAT → COOL	0000 : 0 deg　to　0010 : 10 deg (For setup temperature , reversal of COOL / HEAT by ±(Data value) / 2)	0003 : 3 deg (Ts± 1.5)
28	Automatic restart of power failure	0000 : None　　0001 : Reset	0000 : None
29	Operation condition of humidifier	0000 : Usual　　0001 : Condition ignored (Detection control for heat exchanger temperature)	0000 : Usual

6. 其他

6-4. 通过线控器进行DN 代码的设定

DN	Item	Description	At shipment
2A	Selection of option error input (CN70)	0000 : Filter input 0001 : Alarm input (Air washer, etc.) 0002 : Humidifier input	0002 : Humidifier
2E	HA terminal (CN61) select	0000 : usual 0001 : Leaving-ON prevention control	0000 : Usual (HA terminal)
30	Automatic elevating grille	0000 : Unavailable (Standard, Oil guard panel) 0001 : Available (Auto grille, Oil guard, Auto grille panel)	0000 : Unavailable
31	Ventilating fan control	0000 : Unavailable 0001 : Available	0000 : Unavailable
32	TA sensor selection	0000 : Body TA sensor 0001 : Remote controller sensor	0000 : Body TA sensor
33	Temperature unit select	0000 : ℃(at factory shipment) 0001 : °F	0000 : ℃
40	Control for humidifier (+ drain pump control)	0000 : None 0001 : Humidifier + Vaporizing system (Pump ON) 0002 : Humidifier + Ultrasonic system (Pump ON after specified time passed) (Unused) 0003 : Humidifier + Natural drain system (Pump OFF)	0003 : Humidifier ON, Pump OFF
5d	High ceiling selection (Air volume selection)	[4-way Air Discharge Cassette type] and [Under Ceiling type] 0000 : Standard filter 0001 : Super - long life [Concealed Duct Standard type] 0000 : Standard static pressure (40Pa) 0001 : High static pressure 1 (70Pa) to quiet sound 0003 : High static pressure 2 (100Pa) 0005 : Correspond 0006 : Low static pressure (20Pa)	0000 : Standard
60	Timer set (Wired remote controller)	0000 : Available (Operable) 0001 : Unavailable (Operation prohibited)	0000 : Available
62	Smudging interlock control clear	0000 : Clear	4-way Air Discharge Cassette type only
92	Outside interlock release condition	0000 : Operation stop 0001 : Operation stop	0000 : Operation stop

6. 其他

6-4. 通过线控器进行DN 代码的设定

Part type		Exchange contents						Initial setup at shipment
SW01	Rotary SW 4bit 16 step	Display / Operation switch (1)					For 7-segment display / service operation	[1]
SW02	Rotary SW 4bit 16 step	Display / Operation switch (2)					For 7-segment display / service operation	[1]
SW03	Rotary SW 4bit 16 step	Display / Operation switch (3)					For 7-segment display / service operation	[1]
SW04	Push SW	For service [Operation/Start]					[Operation/Start] by pushing	—
SW05	Push SW	For service [Stop/End]					[Stop/End] by pushing	—
SW06	SW 4bit	Bit 1	Backup setup				(Based on the following setup)	OFF
		Bit 2		Bit 4	Bit 3	Bit 2	Bit 1	OFF
		Bit 3		OFF	OFF	OFF	OFF	OFF
		Bit 4		—	—	OFF	ON	OFF
				—	—	ON	OFF	
				—	—	ON	ON	
SW07	SW 4bit	Bit 1	Demand control exchange				OFF: 0 – 100%, ON: Middle – 100%	OFF
		Bit 2	Extended control demand function				(For 4-steps exchange)	OFF
		Bit 3	For clean converter				OFF: Normal (unconnected), ON: Connected	OFF
		Bit 4					—	OFF
SW09	SW 4bit	■ Header unit						
		Bit 1	Outdoor address setup exchange				OFF: Auto setup (Normal), ON: Manual setup	OFF
		Bit 2	Judge indoor capacity over				OFF: YES (Normal), ON: NO	OFF
		Bit 3	Correction of installed pipe size				OFF: Normal, ON: Size UP (For outdoor expansion)	OFF
		Bit 4	Judge abnormal No. of connected indoor units				OFF: No error judgment, ON: Error	OFF
		■ Follower unit						
		Bit 1	—				—	OFF
		Bit 2	—				—	OFF
		Bit 3	—				—	OFF
		Bit 4	Display of start priority No.				OFF: Outdoor unit No. [U.#] (#: 2 to 4) ON : Outdoor start order No. [Y.#] (#: 2 to 4)	OFF
SW10	SW 4bit	Bit 1	—				—	OFF
		Bit 2	Outdoor fan high-static pressure operation				OFF : Normal, ON: High-static pressure operation	OFF
		Bit 3	For low-noise operation				OFF: Normal, ON : INV frequency upper limit restriction	OFF
		Bit 4					OFF: Normal, ON: Fan rpm upper limit restriction	OFF

6. 其他

6-5. 室外机主控板上的拨码开关的设定

SW11	SW 4bit	Bit 1	Set up priority of cool/heat			(Based on following setup)	OFF
		Bit 2		Bit 2	Bit 1		OFF
				OFF	OFF	Priority on heating	
				OFF	ON	Priority on cooling	
				ON	OFF	Priority on No. of operating units	
				ON	ON	Priority on specific indoor unit	
		Bit 3				—	OFF
		Bit 4	Operation when indoor overflow detected			OFF: System stop, ON : System operation continues	OFF
SW12	SW 4bit	Bit 1	—			—	OFF
		Bit 2	—			—	OFF
		Bit 3	—			—	OFF
		Bit 4	—			—	OFF
SW13	SW 4bit	Bit 1	—			—	OFF
		Bit 2	—			—	OFF
		Bit 3	—			—	OFF
		Bit 4	Line address setup				OFF
SW14	SW 4bit	Bit 1, 2, 3, 4	Line address setup			Refer to item "Address setup procedure"	OFF
SW30	SW 2bit	Bit 1	End terminal resistance of communication between outdoor units			OFF: No end terminal resistance, ON: Exists	ON
		Bit 2				OFF: No end terminal resistance, ON: Exists	ON
CN30	Check connector	Manual full opening setup of PMV				Opened: Normal, Short: Opened fully	Open
CN31	Check connector	Manual full closing setup of PMV				Opened: Normal, Short: Opened fully	Open
CN32	Check connector	Check for assembly line in factory.				Opened: Normal, Short: Check mode	Open

* The outdoor unit connected with indoor/outdoor communication line becomes automatically the header unit. The setup is unnecessary to be manually changed.

6. 其他

6-6. 温度传感器的特性

Td 传感器特性

温度.	-10℃	0℃	10℃	20℃	30℃
阻值	270KΩ	160KΩ	100KΩ	62KΩ	40KΩ

Ta 传感器和其他传感器的特性(Td 除外)

温度	-10℃	0℃	10℃	20℃	30℃
阻值	58KΩ	34KΩ	20KΩ	13KΩ	8KΩ

3. 系统操作

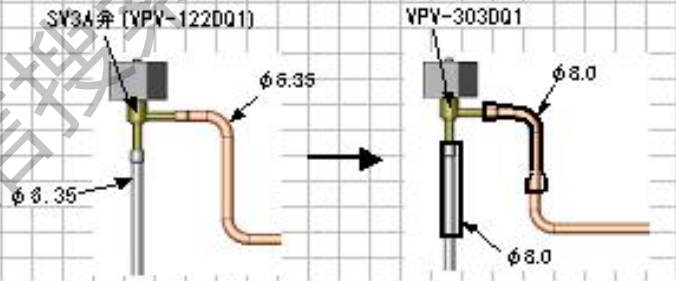
3-1. 新型号的一些变动

Parts name	Previouse model	New model
SV3A body ※No change of coil	VPV-303DQ1 Spare parts No.43148635	VPV-122DQ1 Spare parts No.43148595

Spec of Valve body

Valve body	Previouse		New	
型名	SV2		SV2	
VPV-122DQ1	SV3C	Total 4	SV3C	Total 5
	SV3D		SV3D	
43148595	SV3E		SV3E	
			SV3A	
	SV3A		SV41	
VPV-303DQ1	SV41		SV42	
	SV42	Total 4	SV5	Total 3
43148635	SV5			
	SV3B		SV3B	
VPV-803DQ2				
43148636				

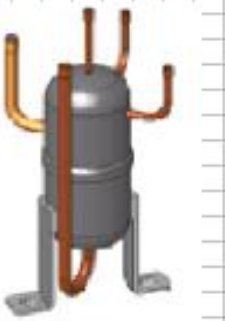
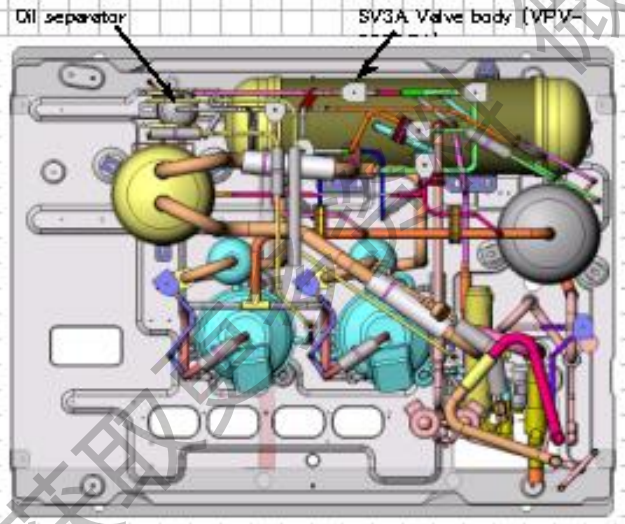
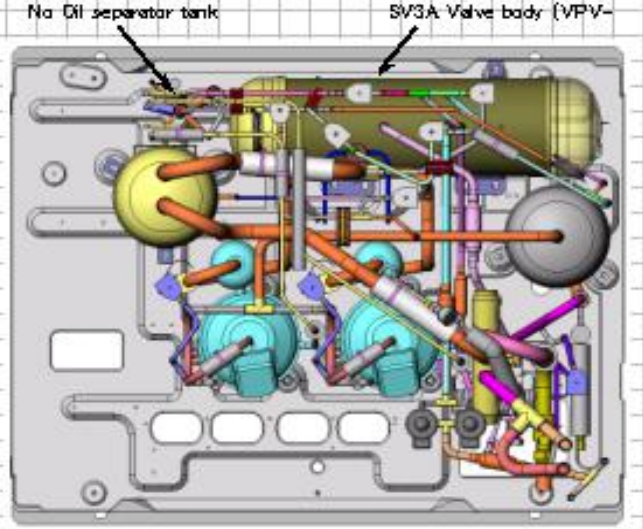
※SV3A valve body, After arrenge inlet and outlet pipes previouse VPV-303DQ1also possible to use



Oil Separator	Spare parts No.43148193	No Oil separator tank Just piping works

3. 系统操作

3-1. Some changing at new model

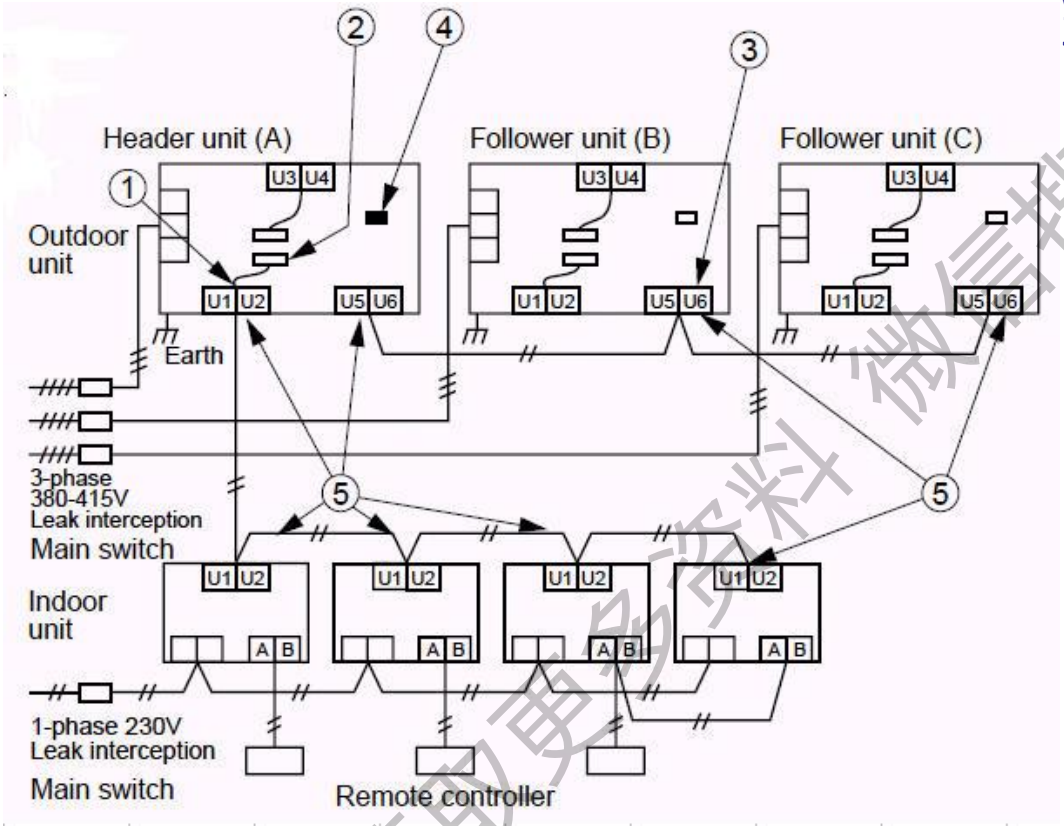
Oil Separator	Spare parts No.43148193 	No Oil separator tank Just piping works 
Parts layout		

附录

1．试运行

1-1-a.试运行前的确认

(无集中控制)



(1)室外机主机的室内外机间的通讯线是否正确连接？

(2)室外机U1/U2 和U3/U4之间的中转端子是否断开？
(将该中转端子恢复到出厂状态)

(3)室内外机之间的通讯线是否连接到U5/U6处了？

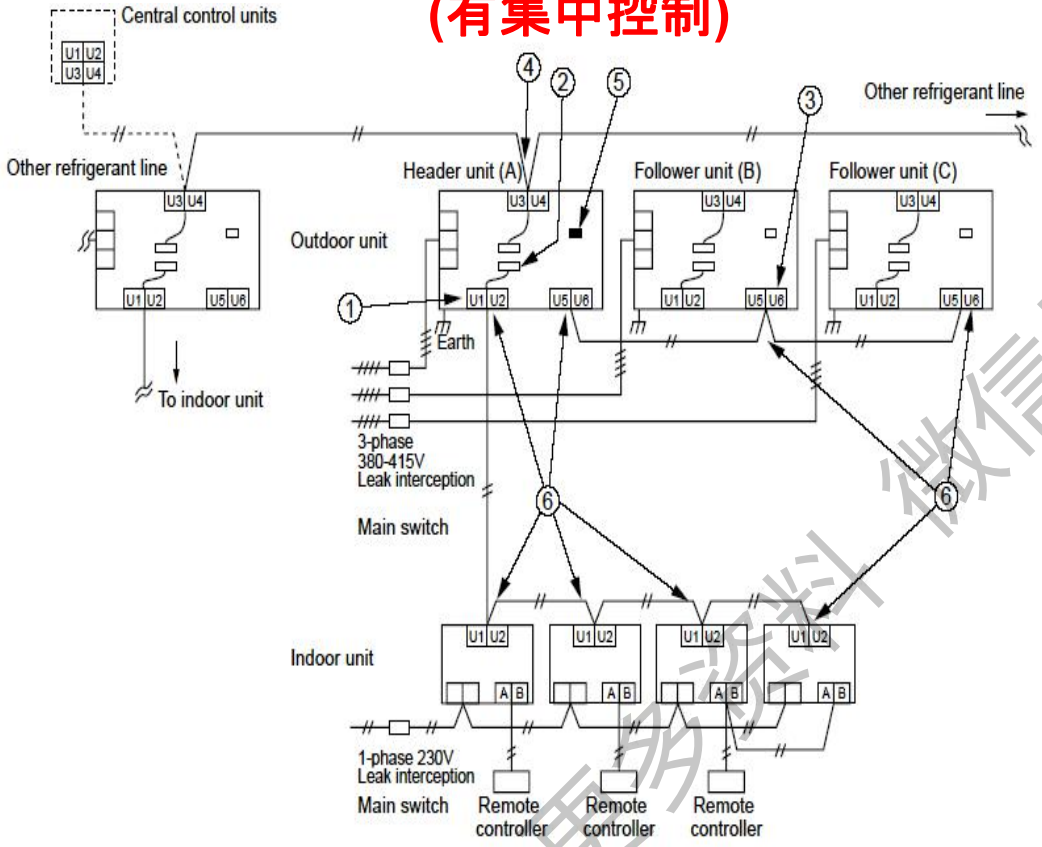
(4)(SW30-2) 是否打开了？
（将该SW30-2恢复到出厂状态)

(5)屏蔽线是否正确接地？

1．试运行

1-1-a.试运行前的确认

(有集中控制)



(2)室外机U1/U2 和U3/U4之间的中转端子是否断开？
(将该中转端子恢复到出厂状态)
(地址设定前，请断开该中转端子)

(4)通往集中控制的通讯线是否连正确连接到每台主机的U3/U4上？

(5))(SW30-2) 是否打开了？
(将该SW30-2恢复到出厂状态)
(地址设定完成后，设定除系统地址最小的主机外的主机SW30-2off.)

(6)屏蔽线是否正确接地？

(7)当该集中控制系统中有DI和SDI时：
→ TCC-LINK转接板是否正确连接?
→当 DI 或SDI采用成组控制时，转接板应连接到主室内机上。

1．试运行

1-1-c.试运行前的确认 （列表1)

<Check list 1>

- Using the "Check list 1", check there is no trouble in the installation work.

Is capacity of the leak breaker appropriate?	Outdoor total capacity ☐ A	Header unit (A) ☐ A Follower unit (B) ☐ A Follower unit (C) ☐ A Follower unit (D) ☐ A Indoor unit ☐ A
Is diameter of the power cable correct?		Header unit (A) ☐ mm² Follower unit (B) ☐ mm² Follower unit (C) ☐ mm² Follower unit (D) ☐ mm² Indoor unit ☐ mm²
Is control communication line correct?		Indoor –outdoor connection terminals (U1, U2) ☐ Outdoor–outdoor connection terminals (U5, U6) ☐ Central control system connection terminals (U3, U4) ☐
Is power of indoor units supplied collectively?		
Is earth grounded		
Is insulation good?		
Is the main power voltage good?		☐ V
Is diameter of connecting pipe correct?		
Is the branch kit correct?		
Is drain water of the indoor unit arranged so that it flows without accumulation?		
Is thermal insulation of pipes good? (Connecting pipes, Branch kit)		
Is not short-circuit of discharge air in indoor/outdoor units?		
After airtight test for pipes, are vacuuming and adding of refrigerant executed?		

Are valves of all the outdoor units fully opened?	Gas side	Liquid side	Balance side
Header unit (A)	☐	☐	☐
Follower unit (B)	☐	☐	☐
Follower unit (C)	☐	☐	☐
Follower unit (D)	☐	☐	☐

1. 试运行

1-1-d.试运行前的确人 (列表 2)

<Additional amount of refrigerant by pipe length>

Pipe dia at liquid side	Standard amount of refrigerant kg/m	Total pipe length at each liquid side	Additional amount of refrigerant pipe dia at each liquid side kg
Ø6.4	0.025 ×	=	kg
Ø9.5	0.055 ×	=	kg
Ø12.7	0.105 ×	=	kg
Ø15.9	0.160 ×	=	kg
Ø19.0	0.250 ×	=	kg
Ø22.2	0.3505 ×	=	kg
		Additional amount of refrigerant by pipe length (A)	kg

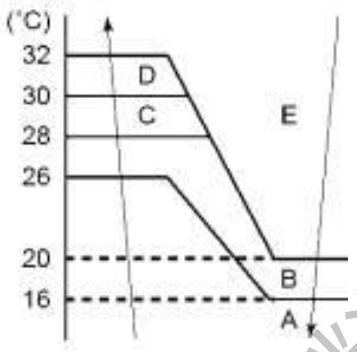
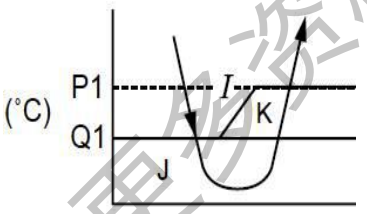
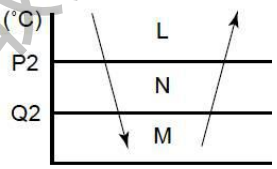
<Corrective amount of refrigerant by system capacity>

System horse power HP	Unit 1	Unit 2	Unit 3	Unit 4	Corrective amount of refrigerant (C) kg	System horse power HP	Normal type Unit 1	Unit 2	Unit 3	Unit 4	Corrective amount of refrigerant (C) kg
5	5				0	28	10	10	8		–2.0
6	6				0	30	10	10	10		0
8	8				1.5	32	8	8	8	8	–6.0
10	10				2.5	32	12	10	10		1.0
12	12				3.5	34	10	8	8	8	–6.0
14	8	6			0	34	12	12	10		3.0
16	8	8			0	36	10	10	8	8	–6.0
18	10	8			0	36	12	12	12		4.0
20	10	10			3.0	38	10	10	10	8	–6.0
22	8	8	6		0	40	10	10	10	10	–5.0
22	12	10			5.0	42	12	10	10	10	–4.0
24	8	8	8		–4.0	44	12	12	10	10	–2.0
24	12	12			7.0	46	12	12	12	10	0
26	10	8	8		–4.0	48	12	12	12	12	2.0

3. 控制说明

3-3-1. 室内机控制

SVM P64

项目	规范概要	备注
电源重新设定	1)当更该室内机设定 2)清除故障代码 ➔ **重新启动**	
回风温度设定	可以在制热时，对回风温度差进行设定 DN 代码 [06]	初始设定：[0002] 2度
防冷风运转 通过Tc2/ TCJ进行控制	 区域 E: Ultra High32≤Tc D: High 30≤Tc<32 C: Med 28≤Tc<30 B: Low 26≤Tc<28 A: OFF Tc<26	1）如果B区连续6分钟，则运行转换C区. 2）在除霜时，控制点设定为+6度up. **A,B 区域显示**
防冻结保护 重新设定条件: Tc1&Tc2&TCJ≥12 或停止后20分钟	 	**1)Tc1,Tc2,TCJ 控制** **Tc1 Tc2, TCJ** **P1 10℃ 10℃** **Q1 0℃ -14℃** **2)Tc2, TCJ 控制** **Tc2, TCJ** **P2 5℃** **Q2 - 2℃**	**J : if 5min.[S0] order fan Low** K：定时器计算停止，并保持数值. I ：定时器清零. **M : if 45min. [S0]order** N:定时器计算停止，并保持数值 L:定时器清零

3. 控制说明

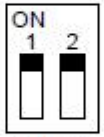
3-3-1. 室内机控制

项目	规范概要	备注
制冷时 制冷剂和机油的回收控制	停止运行/遥控器关闭/风扇模式的室内机，到收到室外机的制冷剂或机油回收信号时，按规定开启角度打开室内机PMV	通常每2 h进行一次.
制热时 制冷剂和机油的回收控制	如果室内机收到回油信号 ➔ 打开**PMV**，风**扇停止** ➔ **4W**：**回收控制后**，约**1分钟**，风**扇间歇性运转**	通常每1 h进行一次.
残余运转	**空调在制热模式下，遥控器正常关机后，室内机风扇将低风速继续运行30秒**	
叶片自动控制	叶片可以通过遥控器进行控制， 4面出风嵌入式: **停机/ 故障停止** ➔ 自动向下**(Mini close)** 制热待机，**回油.(heat)** ➔**向上**	
运行待机 亮起 	电源缺相将显示 [P05] 不能运行制冷/除湿，因为有其他室内机在运行制热 不能运行制热模式，因为设置了“制冷优先” 不能运行送风模式，因为在进行制热时的制冷剂和机油的回收运转	遥控器显示灯亮
制热待机 lamp on 	**制热容量需求停止** **防冷风运转**时段，低风速/ 停机 不能运行制热模式，因为设置了“**制冷优先**”	

4. 调试运行

4-1. 安装中的故障分析

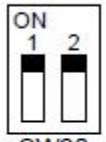
检查遥控器上显示的故障代码

Check code displayed on remote controller	Center unit 7-segment display	Cause	Countermeasures
E04	E19-00	Outdoor power is formerly turned on.	Turn on the power again. (In order of Indoor → Outdoor)
		There is none of outdoor terminal resistance, or there are two or more resistances. (After address setup)	Check SW30 bit 2 of the header unit. No connection between multiple refrigerant lines: SW30 bit 20N Connection between multiple refrigerant lines: SW30 bit 2 of the connected header unit is turned on only in one line.
		After address was decided, all the indoor units do not correctly response after power-ON in outdoor unit.  SW30	Check and modifies disconnection of indoor/outdoor communication line.(Communication line between center unit and the leading indoor unit) Check influence of communication noise.
	L08	Address setup error • Only line addresses of the connected indoor units are undefined. • The outdoor line address and the line addresses in all indoor units do not match. • The indoor addresses are duplicated. (Units except those displaying E04 are duplicated.) • A header unit is not set up in a group. (Except group displaying E04)	Set up address again.

4. 调试运行

4-1. 安装中的故障分析

检查遥控器上显示的故障代码

Check code displayed on remote controller	Center unit 7-segment display	Cause	Countermeasures
	E08-XX	Duplication of indoor addresses. (Address No in which sub-code of the check code are duplicated)	Set up address again.
	E07	There is none of outdoor terminal resistance, or there are two or more resistances. (After address setup, when terminal resistance setup is changed after power-ON.)  SW30	Check SW30 bit 2 of the header unit. No connection between multiple refrigerant lines: SW30 bit 20N Connection between multiple refrigerant lines: SW30 bit 2 of the connected header unit is turned on only in one line.
		Transmission circuit error at interface side (P.C. board failure)	Replace the interface P.C. board.
	E06	After address setup, communication from all the indoor units interrupted under condition that a normal operation can be performed.	Check and correct disconnection of indoor/outdoor communication line.(Communication line between header unit and the leading indoor unit) Check influence of communication noise.

4. 调试运行

4-1. 安装中的故障分析

检查遥控器上显示的故障代码

Check code displayed on remote controller	Center unit 7-segment display	Cause	Countermeasures
E16	E16-XX	Exceeded No of connected indoor units or exceeded capacity.	Adjust No of connected indoor units or capacity.
E25	E25	Duplication of outdoor addresses. (Only when outdoor address was manually set up)	Do not use a manual setup for outdoor address.
E26	E26-XX	No. of connected outdoor units decreased. • When setting outdoor backup • The power of follower unit is not turned on.	Correct of cause of error occurrence • If it occurred when setting backup, clear the error after setup finish. • If the power of follower unit is not turned on, turn on the power.
L04	L04	Duplication of outdoor line addresses • Line address setup error, occurred after connection between U_1, U_2 and U_3, U_4 connectors	Modify line address setup of the header unit between lines. (Set up SW 13 and 14 on the interface P.C. board.)
L05 (*)	L06	Duplicated of indoor units with priority	Set up priority to only one indoor unit.
L06		There are two or more indoor units set up with priority.	
L08	L08	Address setup error • Only indoor addresses of all the connected indoor units are undefined.	Set up address again.

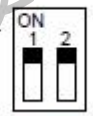
(*) [L05]: Displayed on the indoor unit set up with priority
[L06]: Displayed on the indoor unit except one set up with priority

4. 调试运行

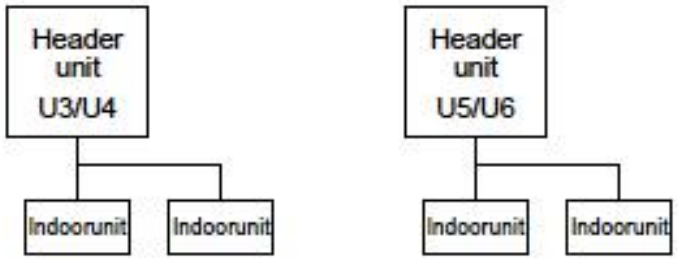
4-1. 安装中的故障分析

检查7段显示屏的显示

Remote controller status	7-segment display of center unit	Cause	Countermeasures
No response	L08	Line addresses and indoor addresses of all the connected indoor units are unset.	Set up addresses.
		There is no header unit of group control.	Set up group address.
	E19-00	Indoor unit power is not turned on.	Turn on the power again. (In order of indoor → outdoor)
		Indoor/outdoor communication line is not correctly connected to the header unit. (Fig. 1) (Indoor/outdoor cannot communicate before address setup.)	Correct cabling.
		There is none of outdoor terminal resistance, or there are two or more resistances. (Before address setup)	Check SW30 bit 2 of the header unit. No connection between multiple refrigerant lines: SW30 bit 2 0N Connection between multiple refrigerant lines: SW30 bit 2 of the connected header unit is turned on only in one line.



(Fig. 1)

Remote controller status	Header unit 7-segment display	Miswiring example
No response	E19-00	

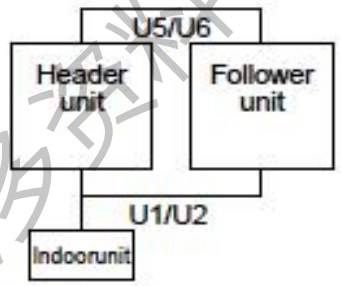
4. 调试运行

4-1. 安装中的故障分析

检查7段显示屏的显示

Remote controller status	7-segment display of center unit	Cause	Countermeasures
No response	E19-02	When connecting indoor/outdoor communication line between outdoor units under condition of connected communication line between outdoor units (Fig. 2)	Correct cabling.
		SW08 setup error	Turn all SW08 to OFF side.

(Fig. 2) **Incorrect wiring example**

Remote controller status	Header unit 7-segment display	Miswiring example
No response	E19-02	

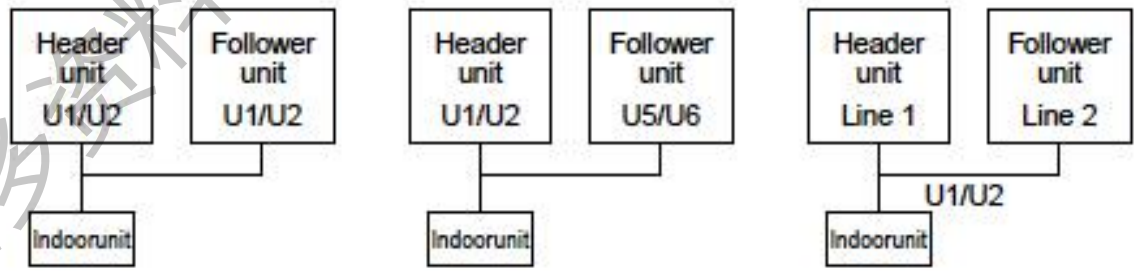
4. 调试运行

4-1. 安装中的故障分析

检查7段显示屏的显示

Remote controller status	7-segment display of center unit	Cause	Countermeasures
No response	E20-01	Address setup is performed with connecting indoor/outdoor communication line between outdoor units. (Fig. 3)	Correct cabling.
		Address setup is performed under condition of connecting between multiple refrigerant lines. (Fig. 3)	Correct cabling.

(Fig. 3) 错误配线示例

Remote controller status	Header unit 7-segment display	Miswiring example
No response	E20-01	

4. 调试运行

4-1. 安装中的故障分析

7段显示上无故障代码，遥控器无故障显示

Remote controller status	7-segment display of center unit	Cause	Countermeasures
No response	None	Communication line is not connected between indoor and outdoor.	Modify cabling.
		Line and indoor addresses are unset. (Unit which does not response to remote controller)	Set up address.
		The power of the header unit of the group is not turned on in indoor group control.(Unit which does not response to remote controller)	Turn on the power.
		Group address is set up to follower unit in the individual control. (Unit which does not response to remote controller)	Set [0] to group address in case of individual control.
No display on remote controller (No line is output.)	None	The power is not turned on. (Unit which is not displayed on remote controller)	Turn on the power.
		Remote controller is not connected with cable. (Unit which is not displayed on remote controller)	Correct cabling.
		Miscabling of remote controller (Unit which is not displayed on remote controller)	Correct cabling.
		Remote controller communication circuit error (Unit which is not displayed on remote controller) If 230V is incorrectly applied to the remote controller terminal, the remote controller communication circuit fails.	Remove FASTON terminal connected to remote controller terminals (A/B), and check the voltage. If voltage is not applied, replace P.C. board. (15 to 18V usually)

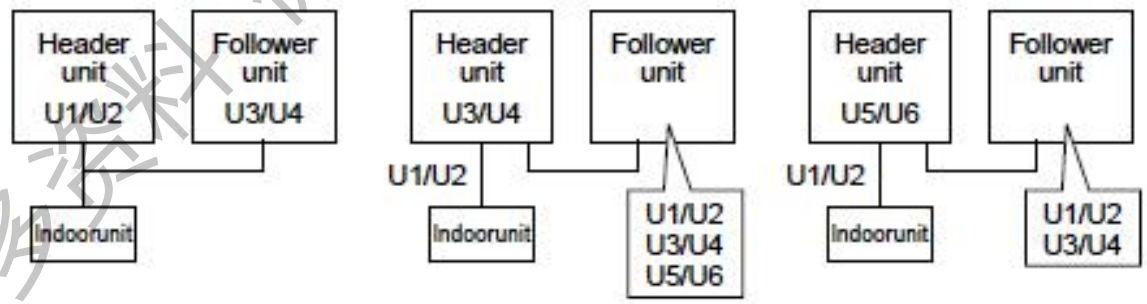
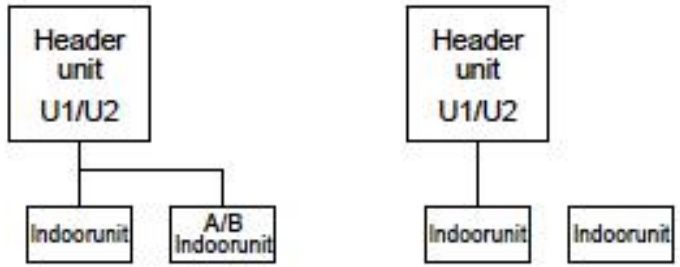
4. 调试运行

4-1. 安装中的故障分析

试运行过程中，室外机/室内机不运行

Status	Cause	Countermeasures
Number of connected outdoor units is short.	Miswiring of communication line between outdoor units or unconnected cable (Fig. 4) (Address setup operation has finished without recognition of miswired follower unit.)	After modification of wiring, set up address again and check No. of the connected outdoor units.
Number of connected indoor units is short.	Miswiring of communication line between indoor units or unconnected cable (Fig. 5) (Address setup operation has finished without recognition of miswired indoor unit.)	After modification of wiring, set up address again and check No. of the connected indoor units.

(Fig. 4・5) 错误配线示例

Status	Miswiring example
Number of connected outdoor units is short. (Fig. 4)	
Number of connected outdoor units is short. (Fig. 5)	

4. 调试运行

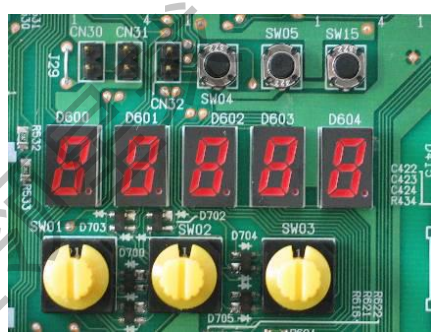
4-1. 安装中的故障分析

试运行过程中，室外机/室内机不运行

Status	Cause	Countermeasures
Number of outdoor units connected to group is short in group operation from remote controller.	Remote controller is not connected with cable. Miscabling of remote controller	Using the main remote controller connected to a group, start a test operation, specify the unit which does not operate (Unit unconnected to group), and then check cabling.
	Remote controller communication circuit error If 230V is incorrectly applied to the remote controller terminal, the remote controller communication circuit fails.	Using the main remote controller connected to a group, start a test operation, specify the unit which does not operate (Unit unconnected to group). Remove Fasten receptacle connected to remote controller terminals (A/B), and check the voltage. If voltage is not applied, replace P.C. board. (15 to18V in normal time)

4. 调试运行

4-2. 通过室外机强制运行



No.	Function	Outline	Setup/Release	7-segment display
1	Cooling test operation	Changes the mode of all the connected indoor units collectively to cooling test operation. Note) Control operation same as usual test operation from remote control is performed.	[Setup] Push SW04 for 2 seconds or more with SW01"2", SW02"5", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [C] Section B [–C]
2	Heating test operation	Changes the mode of all the connected indoor units collectively to heating test operation. Note) Control operation same as usual test operation from remote control is performed.	[Setup] Push SW04 for 2 seconds or more with SW01"2", SW02"6", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [H] Section B [–H]
3	Batch start	Starts all the connected indoor units collectively. Note) The contents follow to the setup of remote controller.	[Setup] Push SW04 for 2 seconds or more with SW01"2", SW02"7", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [CH] Section B [11] [11] is displayed on Section B for 5 seconds.
	Batch stop	Stops all the connected indoor units collectively.	[Setup] Push SW05 for 2 seconds or more with SW01"2", SW02"7", SW03"1". [Release] Return SW01, SW02, SW03 to "1".	Section A [CH] Section B [00] [00] is displayed on Section B for 5 seconds.

4. 调试运行

4-2. 通过室外机强制运行

No.	Function	Outline	Setup/Release	7-segment display
4	Individual start	Starts the specified indoor unit. Notes) • The contents follow to the setup of remote controller. • The other indoor units keep the status as they are.	[Setup] Push SW04 for 2 seconds or more set SW01 "16" and set SW02 and SW03 to address No. (1 to 64) to be started. [Release] Return SW01, SW02, SW03 to "1".	Section A [ ] Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [11] for 5 seconds from operation-ON.
	Individual stop	Stops the specified indoor unit. Note) The other indoor units keep the status as they are.	[Setup] Push SW05 for 2 seconds or more set SW01 "16" and set SW02 and SW03 to address No. (1 to 64) to be stopped. [Release] Return SW01, SW02, SW03 to "1".	Section A [ ] Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [00] for 5 seconds from operation-OFF.
	Individual test operation	Operates the specified indoor unit. Note) The other indoor units keep the status as they are.	[Setup] Push SW04 for 10 seconds or more set SW01 "16" and set SW02 and SW03 to address No. (1 to 64) to be operated. [Release] Return SW01, SW02, SW03 to "1".	Section A [ ] Section B [ ] Section A: Displays the corresponding indoor address. Section B: Displays [FF] for 5 seconds from test operation-ON.

注 1 .起动/停止功能仅把信号，如起动、停止、运行模式等从室外机发送到室内机，，并不反馈信号，即使室内机不响应所发送的信号

注2 . 在非正常停机时，上述控制不可用.

5. 故障解析

SVM-P117

5-1. 通过线控器/室外机7段显示屏显示故障代码

Check code				Wireless remote controller				Check code name	Judging device
Main remote controller display	Outdoor 7-segment display		AI-NET central control display	Sensor block display of receiving unit					
		Sub code		Operation	Timer	Ready	Flash		
E01	—	—	—	¤	●	●		Communication error between indoor and remote controller (Detected at remote controller side)	Remote controller
E02	—	—	—	¤	●	●		Sending error of remote controller	Remote controller
E03	—	—	97	¤	●	●		Communication error between indoor and remote controller (Detected at indoor side)	Indoor
E04	—	—	04	●	●	¤		Communication circuit error between indoor and outdoor (Detected at indoor side)	Indoor
E06	E06	No. of indoor units in which sensor has been normally received	04	●	●	¤		Decrease of No. of indoor units	I/F
—	E07	—	—	●	●	¤		Communication circuit error of indoor and outdoor (Detected at outdoor side)	I/F
E08	E08	Duplicated indoor addresses	96	¤	●	●		Duplicated indoor addresses	Indoor / I/F

集中遥控器

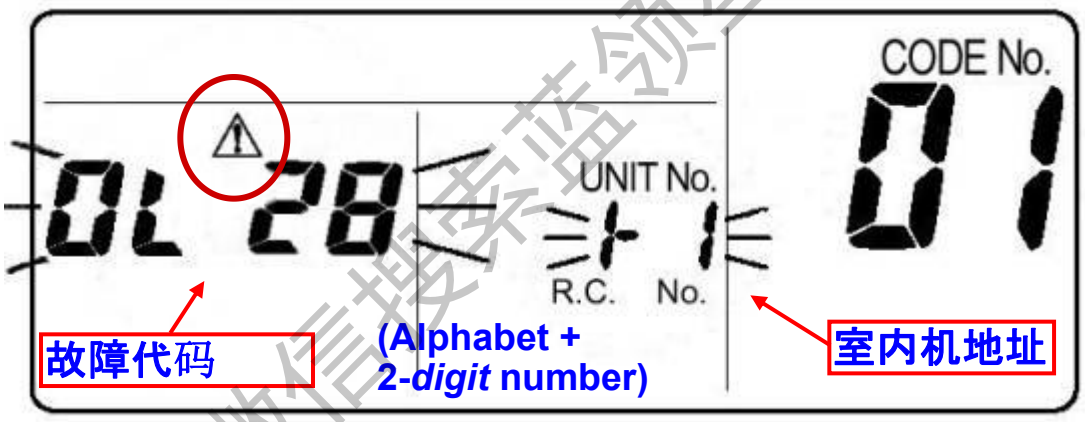
无线遥控器类型

5. 故障解析

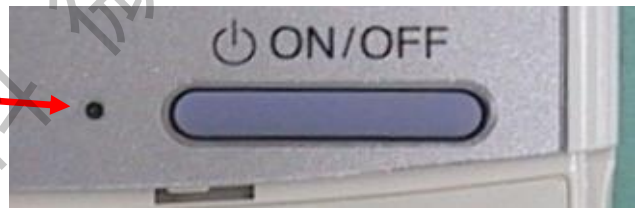
5-2. 通过遥控器检查的方法 (RBC-AMT31E)

故障产生

⚠, 室内机地址.
和故障代码
在遥控器上闪烁



运行灯
闪烁 (绿灯)



根据故障代码表, 对故障进行维修

====> 参看“维修手册”

注 简易遥控器 (RBC- AS21E2) 不能显示内机地址, 仅能显示故障代码

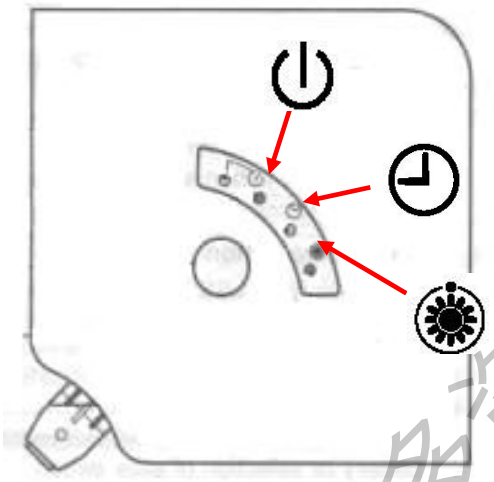
5. 故障解析

5-2.通过无线遥控器检查的方法 (4面出风嵌入式)

相似 (吊天花) (标准接收器)

故障产生

a.检查室内机运行灯 (接收器)



IPDU: Intelligent Power Drive Unit
○ : Lighting, ¤ : Flashing, ● : Goes off
ALT.: Flashing is alternately when there are two flashing LED.
SIM: Simultaneous flashing when there are two flashing LED

Wireless remote controller: Sensor block display of receiving unit: Operation	Timer	Ready	Flash	Check code name	Judging device
¤	●	●		Communication error between indoor and remote controller (Detected at remote controller side)	Remote controller
¤	●	●		Sending error of remote controller	Remote controller
¤	●	●		Communication error between indoor and remote controller (Detected at indoor side)	Indoor
●	●	¤		Communication circuit error between indoor and outdoor (Detected at indoor side)	Indoor
●	●	¤		Decrease of No. of indoor units	I/F

b. 根据运行灯的状态，判断故障代码
参看“维修手册”
c. 完成故障的维修

注 室内机运行灯仅能粗略的表达故障信息

5. 故障解析

5-3. 通过室外机主控板查询故障

通过风扇运行查找故障室外机

此功能是通过主室外机控制板上的旋转开关，强制故障室外机或正常的室外机的风扇满级运转，来查找故障室外机的。

(故障代码[E28])

	SW			按 SW		7 Seg.LED		
	01	02	03	04	05	[A]	[B]	
故障室外机	1	1	1			U1	E 28	[B]段显示故障
风扇运行				2 sec		E1		E1显示10秒钟后，故障室外机风扇开始运行
正常室外机	1	1	1			U1	E 28	
风扇运行				2 sec (both SW)		E0		E0显示10秒钟后，正常的室外机风扇开始运行
退出					2 sec	U1		显示[U1]

退出 :长按 SW05两秒钟以上 (主室外机控制板)

2. 维修支持功能

2-1. 通过有线遥控器进行维修数据的查询

(请在开机状态下使用此功能)

a. 同时按 CL +. 按钮4秒钟以上

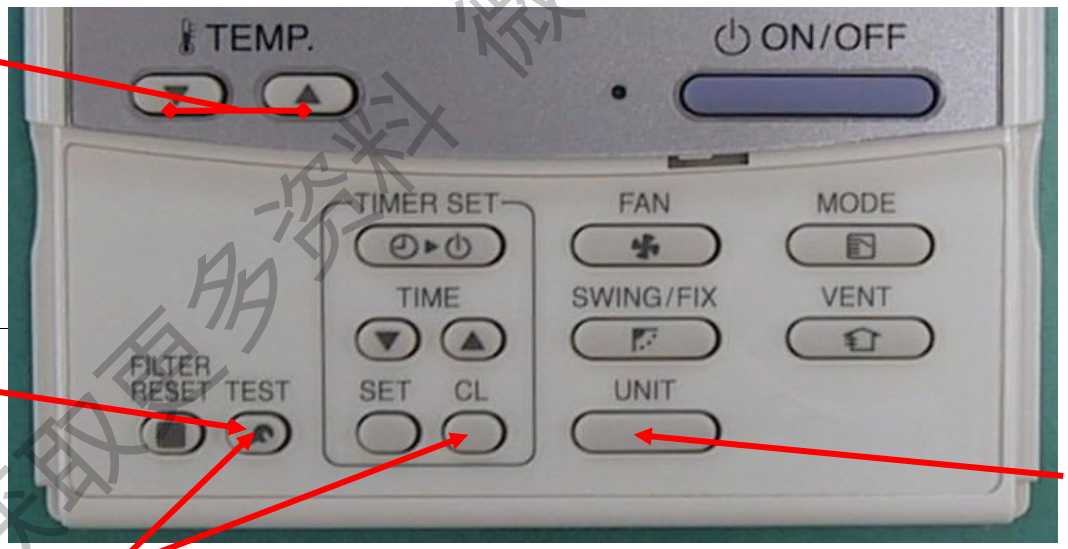
b. 按温度 ▼ / ▲ 钮选择查询项目

c. 当有成组控制时,按 UNIT 按钮选择组地址.

d. 按 按钮复位.

b:项目选择

d:复位



c:室内机选择

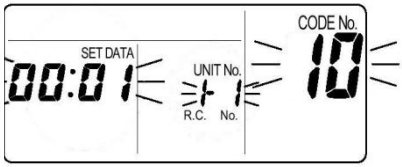
a:同时按下该2个按钮4秒以上.

2. 维修支持功能

2-1. 通过有线遥控器进行维修数据的查询

	Item code	Data name	Unit	Display format
Indoor unit data (NOTE 2)	00	Room temp (During control)	°C	
	01	Room temp (Remote controller)	°C	
	02	Indoor suction temp (TA)	°C	× 1
	03	Indoor coil temp (TCJ)	°C	× 1
	04	Indoor coil temp (TC2)	°C	× 1
	05	Indoor coil temp (TC1)	°C	× 1
	06	Indoor discharge temp (Tf) (NOTE 1)	°C	× 1
	08	Indoor PMV opening	pulse	× 1/10
System data	0A	No. of connected indoor units	unit	
	0b	Total HP of connected indoor units	HP	× 10
	0C	No. of connected outdoor units	unit	
	0d	Total HP of indoor units	HP	× 10

	Item code	Data name	Unit	Display format
Outdoor unit individual data (NOTE 4, 5)	10	Compressor 1 discharge temp (Td1)	°C	× 1
	11	Compressor 2 discharge temp (Td2)	°C	× 1
	12	High-pressure sensor detention pressure (Pd)	MPa	× 100
	13	Low-pressure sensor detention pressure (Ps)	MPa	× 100
	14	Suction temp (TS)	°C	× 1
	15	Outdoor heat exchanger temp (TE)	°C	× 1
	16	Temp at liquid side (TL)	°C	× 1
	17	Outside ambient temp (TO)	°C	× 1
	18	Low-pressure saturation temp (TU)	°C	× 1
	19	Compressor 1 current (I1)	A	× 10
	1A	Compressor 2 current (I2)	A	× 10
	1b	PMV1 + 2 opening	pulse	× 1/10
	1d	Compressor 1, 2 ON/OFF	—	(NOTE 3)
	1E	Outdoor fan mode	—	0 to 31
	1F	Outdoor unit HP	HP	× 1



(NOTE 1) Only a part of indoor unit types is installed with the discharge temperature sensor. This temperature is not displayed for other types.

(NOTE 2) When the units are connected to a group, data of the header indoor unit only can be displayed.

(NOTE 3) 01 : Compressor 1 only is ON.
10 : Compressor 2 only is ON.
11 : Both compressor 1 and 2 are ON.

(NOTE 4) For item code, an example of the header unit is described.

(NOTE 5) The upper digit of the item code indicates the outdoor unit No.
1 : Header unit (A)
2 : Follower unit (B)
3 : Follower unit (C)
4 : Follower unit (D)