



Committed to People, Committed to the Future.

PROJECT REFERENCE: _____

DATE OF INSTALLATION: _____

VRF Commissioning Sheet

METHOD STATEMENT A

Pressure Testing Method Statement

3 Stage Process.

Prior to applying pressure ensure that the service pack valves are FULLY Closed.

Apply pressure via the Service Ports of the Liquid, Suction, Discharge and Balance Line, packed valves.

Use ONLY Oxygen Free Nitrogen (OFN)

- 1) 0.3 Mpa - 3 BAR – 43 PSIG Duration Minimum 3 Minutes
- 2) 1.5 Mpa - 15 BAR – 217 PSIG Duration Minimum 3 Minutes
- 3) 3.73 Map - 38 BAR – 540 PSIG Duration Minimum 24 HOURS

For reference; ambient temperature effect on Oxygen free nitrogen,
Approx, 0.01 MPa, (0.1kg/cm² - 1.4 psig), per 1°C

METHOD STATEMENT B

Evacuation Method Statement.

Manifold gauges MUST NOT be used to measure vacuum, a Torr gauge MUST be used at all times.

- 1) Discharge the Pressure test.
- 2) Evacuate the system, via the service ports of the, Liquid, Suction, Discharge and Balance Line, packed valves.
- 3) Pull a vacuum for 2 to 4 hours, (depending on length of services).
- 4) Evacuate to a pressure of 2 Torr (750 micron, -755 mmHg) or better.
- 5) Isolate the vacuum pump from the refrigeration services, (Close manifold gauge valves), switch OFF the vacuum pump, leave Torr gauge connected to the system and allow to stand for 1 hour. (Rise test)

VRF Commissioning Sheet

Job Reference		Date of Start-Up		Installer	
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Site Address					

Distributor		Branch	
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The crankcase heater has been switched ON for a minimum of 12 hours prior to start-up. (Terminals U1-U2 between outdoor unit and indoor units being DISCONNECTED)					YES / NO
All pipes are separately insulated and supported throughout the installation					YES / NO
The installation has been strength tested to (Including the Oil Balance Line)		Psig / Bar	For a duration of		hours
The installation has been leak tested to (Including the Oil Balance Line)		Psig / Bar	For a duration of		hours
The installation has been evacuated to (Including the Oil Balance Line)		Torr / Mbar	For a duration of		hours
The evacuation has been maintained at (Including the Oil Balance Line)		Torr / Mbar	For a duration of		hours
The equipment has been clearly labelled at the time of start-up					YES / NO
As Installed Drawings available					YES / NO

Installation Comprises of;									
Outdoor Unit/s	Model		Serial No.		Reference				
	Model		Serial No.		Reference				
	Model		Serial No.		Reference				
	Model		Serial No.		Reference				
Indoor Units	Qty (Total)								
FS Box/s (SHRM)	RBM-Y1122	Qty		RBM-Y1802	Qty		RBMY-2802	Qty	
Controls	RBC-AMT31	Qty		RBC-EXW21	Qty		RBC-AS21	Qty	
	TCB-TC21	Qty		TCB-AX21U	Qty		TCB-AX21	Qty	
	TCB-AX21	Qty		TCB-SC642	Qty		TCB-PCNT20E	Qty	
BMS Options	MS- TP0640AC	Qty		BMS-TP5120ACE	Qty		MS-TP0640TWE	Qty	
	BMS-LSV2E	Qty		BMS-STCC01E	Qty		BMS-IFLSV1E	Qty	
	BMS-IFWH3E	Qty		BMS-IFDD01E	Qty				

OUTDOOR "DIP" SWITCH SETTINGS

Out-Door Unit 1	SW06		SW07		SW08		SW09		SW10		SW11	
	SW12		SW13				SW14		SW15		SW30	

Note: X = ON

Out-Door Unit 2	SW06		SW07		SW08		SW09		SW10		SW11	
	SW12		SW13				SW14		SW15		SW30	

Note: X = ON

Out-Door Unit 3	SW06		SW07		SW08		SW09		SW10		SW11	
	SW12		SW13				SW14		SW15		SW30	

Note: X = ON

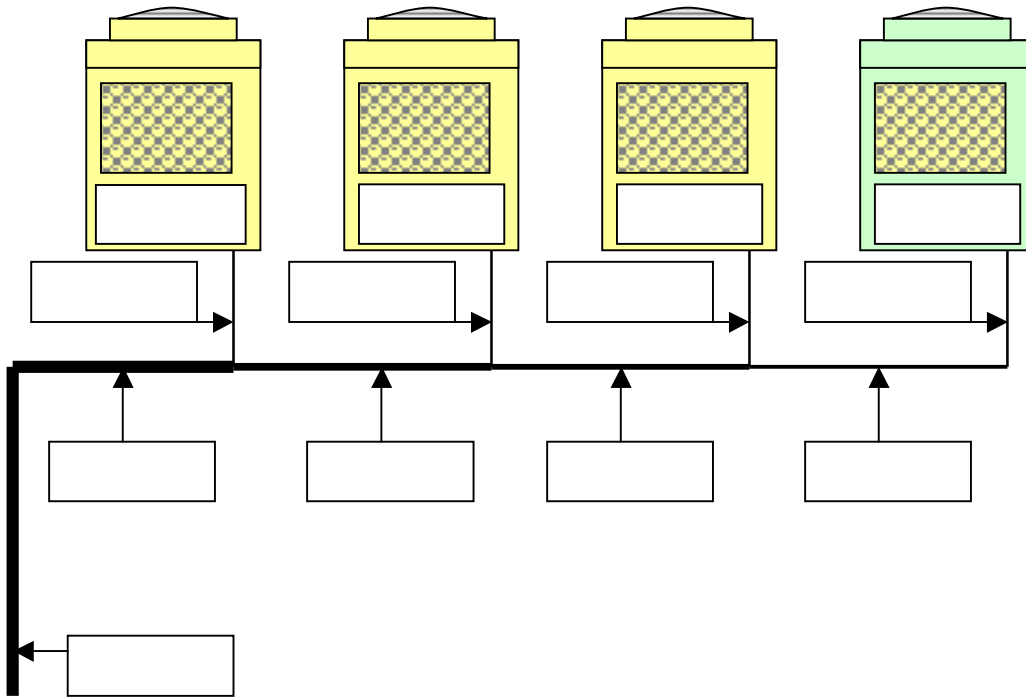
Out-Door Unit 4	SW06		SW07		SW08		SW09		SW10		SW11	
	SW12		SW13				SW14		SW15		SW30	

Note: X = ON

COMMENTS.

PIPE WORK DETAILS

Example;



Indoor Pipe Work Details

Due to the quantity of configurations available, it is not possible to "Graphically" represent each installation configuration, however each section Of pipe work installed should be identified and recorded, pipe size, length, quantity of bends, style of bend etc.

System Refrigerant Charge

Additional Refrigerant Charge		Additional Refrigerant		
		Pipe Dia. @ Liquid Side	SMMS Charge Rate (kg/m)	SHRM Charge Rate (kg/m)
Quantity of additional Refrigerant required being;	Kg	1/4	0.025kg	0.0325kg
		3/8	0.055kg	0.0715kg
		1/2	0.105kg	0.1365kg
		5/8	0.160kg	0.208kg
		3/4	0.250kg	0.325kg
		7/8	0.350kg	0.455kg

Trim Charge

SMMS

HP	1	2	3	4	Correctio	HP	1	2	3	4	Correctio
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

SHRM2

HP	1	2	3	Correctik
8	8			2
10	10			2.5
12	12			3
16	8	8		-1.5
18	10	8		0
20	10	10		2
24	8	8	8	-4.5
26	10	8	8	-3.0
28	10	10	8	-1.5
30	10	10	10	0

Electrical										
Main Fuse Size [1]	L1		Amps	L2		Amps		L3		Amps
Main Fuse	Type A		Type B		Type C		Isolator type			
Cable Size	Main		mm	Type						
Main Fuse Size [2]	L1		Amps	L2		Amps		L3		Amps
Main Fuse	Type A		Type B		Type C		Isolator type			
Cable Size	Main		mm	Type						
Main Fuse Size [3]	L1		Amps	L2		Amps		L3		Amps
Main Fuse	Type A		Type B		Type C		Isolator type			
Cable Size	Main		mm	Type						
Main Fuse Size [4]	L1		Amps	L2		Amps		L3		Amps
Main Fuse	Type A		Type B		Type C		Isolator type			
Cable Size	Main		mm	Type						
Interconnecting control cable (1&2, 5&6) size				mm	Type				(2 core screened) Min 1.5mm	
Sub circuits (Indoor power) Cable size			mm	Type				Fuse siz		Amps
Control Cable (A, B) size				mm	Type				(2 core)	

Electrical installation must be in accordance with all local and national regulations

IMPORTANT NOTE.

Prior to operating the system, the following sequence of applying power **MUST** be followed.
 Power must be applied to **INDOOR UNITS** first. Power should then be Applied to the outdoor units in sequence, i.e. "Master" unit first followed by each connected additional unit. Central controllers, BMS interfaces and "LAN networks" should be electrically connected **AFTER** the system has completed the automatic addressing procedure and have the power applied **LAST**.

Procedures for the operation of the "**TRAIL OPERATION FUNCTION**" can Be Found in the Outdoor Installation Instructions which accompanied the equipment

NOTE

Works commencing after 31st March 2006 will be required to comply with the harmonised cable Colours only, old coloured cables must not be used

Existing		Harmonised
Red	L1	Brown
Yellow	L2	Black
Blue	L3	Grey
Black	N	Blue

Red	L1	Brown
Yellow	L2	Brown
Blue	L3	Brown
Black	N	Blue

Outdoor Unit [1]			Voltage Readings		
L1 + N		Volts	L1 + L2		Volts
L2 + N		Volts	L2 + L3		Volts
L3 + N		Volts	L3 + L1		Volts
Outdoor Unit [2]			Voltage Readings		
L1 + N		Volts	L1 + L2		Volts
L2 + N		Volts	L2 + L3		Volts
L3 + N		Volts	L3 + L1		Volts
Outdoor Unit [3]			Voltage Readings		
L1 + N		Volts	L1 + L2		Volts
L2 + N		Volts	L2 + L3		Volts
L3 + N		Volts	L3 + L1		Volts
Outdoor Unit [4]			Voltage Readings		
L1 + N		Volts	L1 + N		Volts
L2 + N		Volts	L2 + N		Volts
L3 + N		Volts	L3 + N		Volts

Current Readings (Under Full Load Conditions)		
L1		Amps
L2		Amps
L3		Amps
Neutral		Amps
Current Readings (Under Full Load Conditions)		
L1		Amps
L2		Amps
L3		Amps
Neutral		Amps
Current Readings (Under Full Load Conditions)		
L1		Amps
L2		Amps
L3		Amps
Neutral		Amps
Current Readings (Under Full Load Conditions)		
L1		Amps
L2		Amps
L3		Amps
Neutral		Amps

Temperature Readings Indoor Units									
	Cooling Mode		Heating Mode			Cooling Mode		Heating Mode	
	Air On TA	Air Off TC/TC	Air On TA	Air Off TC/TC		Air On TA	Air Off TC/TC	Air On TA	Air Off TC/TC
1					25				
2					26				
3					27				
4					28				
5					29				
6					30				
7					31				
8					32				
9					33				
10					34				
11					35				
12					36				
13					37				
14					38				
15					39				
16					40				
17					41				
18					42				
19					43				
20					44				
21					45				
22					46				
23					47				
24					48				

Temperature Readings Outdoor Units									
1) Temp.					2) Temp.				
3) Temp.					4) Temp.				

Operating Pressures (At full load operation)									
Unit 1)	Suction		Psig / Bar	Liquid		Psig/Bar	Discharge		Psig/Bar
Unit 2)	Suction		Psig / Bar	Liquid		Psig/Bar	Discharge		Psig/Bar
Unit 3)	Suction		Psig / Bar	Liquid		Psig/Bar	Discharge		Psig/Bar
Unit 4)	Suction		Psig / Bar	Liquid		Psig/Bar	Discharge		Psig/Bar

System Checks									
All packing valves are fully Open			YES / NO	Heating & Cooling modes correct			YES / NO		
Access points covers applied			YES / NO	Condensate drainage correct			YES / NO		
All compressors operating normally			YES / NO	Remote controller fault code memory reset			YES / NO		
All Outdoor fans operate correctly			YES / NO	Group operation correct (where applicable)			YES / NO		
Additional refrigerant charge shown on label			YES / NO	Network operation correct (where applicable)			YES / NO		
Indoor fans operating correctly			YES / NO						
Priority operation set at	Heating		Cooling		Single Indoor Unit		Majority Indoor Units		Specific Indoor Unit
The customer has been shown how to operate the equipment.							YES / NO		
Operating instructions have been left with the equipment.							YES / NO		

Comments

Commissioning Engineers Signature	
Print Name	
Company	

Toshiba Carrier UK Ltd attendance on site does not imply acceptance of the design or the installation of this equipment