marstair



TECHNICAL MANUAL

WM: **REMOTE WIRED HIGH WALL SPLIT SYSTEMS**
WM L, WM E: **INFRARED HIGH WALL SPLIT SYSTEMS**

INDOOR UNIT: 556 series WM, WM L, or WM E
MATCHED WITH:

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TEV LIMITED - WM HIGH WALL SPLIT SYSTEMS

The **WM** range consists of WM high wall units using remote wired controllers and WM L and WM E high wall units using infrared controllers matched with 550 series condensing units, 551 series heat pump outdoor units, 542 series electronic ducted condensing units or 543 series ducted heat pumps.

By choosing appropriate combinations, the installer can provide:

AIR CONDITIONERS with a cooling range of 3.7-8.2 kW,
or **HEAT PUMPS** with a cooling range of 3.7-8.2 kW, and a heating range of 4.2 -9.1 kW (7°C outdoors)

PART NUMBERS

WM (L)(E) INDOOR UNITS

	Cool only		
WM	**WM 60**	**WM 80**	**WM 100**
	55600001	55600002	55600003
WM L	**WM L 60**	**WM L 80**	**WM L100**
	55600004	55600005	55600006
WM E	**WM E 60**	**WM E 80**	**WME 100**
	55600007	55600008	55600009

Cool and heat		
WM 60	**WM 80**	**WM 100**
Electric heaters available as an option		
WM L 60	**WM L 80**	**WM L100**
55600010	55600011	55600012
WM E 60	**WM E 80**	**WME 100**
55600013	55600014	55600015

UNPACKED DIMENSIONS AND WEIGHTS

Model	**WM (L) (E)**		
	60	**80**	**100**
HEIGHT mm	350	350	350
WIDTH mm	1200	1500	1800
DEPTH mm	223	223	223
WEIGHT kg	19	23	27

FEATURES/ACCESSORIES

INDOOR UNITS	**WM**	**WM L**	**WM E**
Top air discharge	**STD**	**STD**	**STD**
Adjustable air deflection	**STD**	**STD**	**STD**
Long life washable filter	**STD**	**STD**	**STD**
3 fan speeds	**STD**	**STD**	**STD**
De-ice thermostat	**STD**	**STD**	**STD**
Electric heating	*	*	*
Remote hard wired control	**STD**	**---**	*
Remote temperature sensor	*	**---**	**---**
Programmable timer	*	**---**	**---**
Remote infrared control	**---**	*	*
Gravity drain	**STD**	**STD**	**STD**
5m high condensate pump	*	*	*

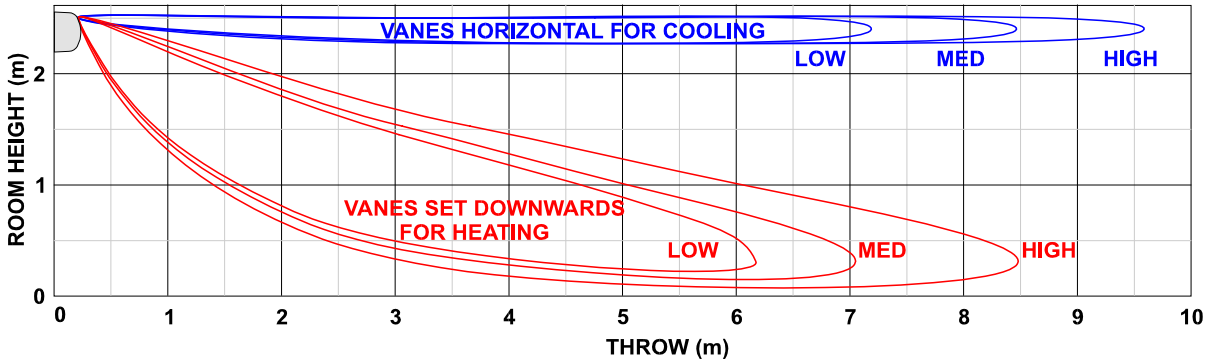
OPTIONAL ELECTRIC HEATING (kW)

WM (L) (E)	230V 50Hz	240V 50Hz
60	1.2	1.3
80	1.7	1.8
100	2.1	2.3

AIRFLOWS

WM (L) (E)	LOW SPEED	MEDIUM SPEED	HIGH SPEED
	m^3/s	m^3/s	m^3/s
60	0.17	0.19	0.28
80	0.23	0.31	0.37
100	0.23	0.34	0.43

AIR THROWS



SOUND POWER and SOUND PRESSURE LEVELS

556 SERIES WM (L) (E)

MODEL	SPEED	SOUND POWER LEVELS Frequency Hz							SOUND PRESSURE LEVELS	
		125	250	500	1K	2K	4K	dBA	dBA	NC
60	MIN	36.8	37	39.1	38.8	34.4	31.7	43	25	19
	MED	41	43.4	45.8	45.1	39.6	35.4	49	31	25
	MAX	46.7	48.6	50.6	50.4	46.6	39	54	37	31
80	MIN	39.1	44.3	47.2	46.8	41.6	40.8	51	33	27
	MED	43.8	49.1	51.3	51.3	46.7	39.5	55	37	32
	MAX	45.5	50.5	53.7	52.9	48.7	40.8	57	39	34
100	MIN	34.1	38	44	42.3	41	38	48	30	24
	MED	42.7	45.8	48.9	49.1	44.2	38.1	53	35	30
	MAX	46.4	51.6	54.2	54.2	49.9	42.9	57	40	35

Sound Power Levels obtained in conformance with BS 4196: Part 5: 1981. Values are shown in dB with a standard reference of 1 pW.
Sound Pressure Levels are dB relative to 2 x 10^{-5}N/m^2 and are calculated from results measured in anechoic conditions. Values relate to a position 3m away from the centre line of the unit, 1m down.

ELECTRICAL LOADS: Amps (230V 50Hz 1Ph) or A/Ph (400V 50Hz 3PhN)

WM (L) (E)	60	80	100
Fan Motor	0.4	0.4	0.5
Electric heater	5.2	7.2	9.2

TECHNICAL INFORMATION - R407C

	MODEL	AIR ON °C	HUMIDITY % RH	EVAPORATING TEMPERATURE °C											
				-2.5		0		2.5		5		7.5		10	
				TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS
LOW FAN SPEED	60	10	70	2.02	1.46	1.54	1.18	1.05	0.91	0.64	0.64	0.32	0.32	-	-
		12.7	70	2.60	1.72	2.12	1.46	1.63	1.19	1.10	0.94	0.67	0.67	0.35	0.35
		15	70	3.14	1.94	2.66	1.68	2.16	1.42	1.64	1.18	1.08	0.91	0.65	0.65
		18	60	3.53	2.27	3.06	2.02	2.56	1.78	2.04	1.53	1.47	1.28	1.02	1.02
		21	50	3.86	2.62	3.38	2.38	2.89	2.14	2.37	1.90	1.80	1.65	1.40	1.40
	80	10	70	2.89	2.08	2.20	1.69	1.50	1.31	0.92	0.92	0.47	0.47	-	-
		12.7	70	3.72	2.46	3.03	2.08	2.34	1.72	1.59	1.34	0.96	0.96	0.50	0.50
		15	70	4.49	2.77	3.80	2.41	3.10	2.04	2.35	1.68	1.55	1.31	0.93	0.93
		18	60	5.06	3.26	4.37	2.90	3.67	2.55	2.92	2.19	2.12	1.84	1.47	1.47
		21	50	5.53	3.77	4.84	3.42	4.14	3.07	3.38	2.72	2.58	2.36	2.01	2.01
	100	10	70	3.35	2.40	2.56	1.94	1.74	1.49	1.04	1.04	0.52	0.52	-	-
		12.7	70	4.32	2.84	3.53	2.39	2.71	1.96	1.85	1.52	1.08	1.08	0.57	0.57
		15	70	5.20	3.20	4.41	2.77	3.60	2.35	2.73	1.92	1.79	1.49	1.04	1.04
		18	60	5.86	3.76	5.07	3.33	4.26	2.92	3.38	2.49	2.46	2.07	1.66	1.66
		21	50	6.39	4.33	5.61	3.91	4.80	3.50	3.92	3.09	3.00	2.66	2.26	2.26
MEDIUM FAN SPEED	60	10	70	2.14	1.55	1.63	1.26	1.11	0.98	0.69	0.69	0.35	0.35	-	-
		12.7	70	2.77	1.83	2.26	1.55	1.74	1.28	1.18	1.01	0.72	0.72	0.38	0.38
		15	70	3.34	2.06	2.82	1.79	2.30	1.53	1.74	1.26	1.14	0.98	0.70	0.70
		18	60	3.76	2.43	3.25	2.17	2.73	1.91	2.17	1.65	1.57	1.38	1.11	1.11
		21	50	4.11	2.82	3.60	2.55	3.08	2.30	2.52	2.05	1.92	1.80	1.51	1.51
	80	10	70	3.39	2.48	2.58	2.03	1.76	1.59	1.12	1.12	0.57	0.57	-	-
		12.7	70	4.38	2.92	3.57	2.48	2.74	2.06	1.86	1.63	1.17	1.17	0.61	0.61
		15	70	5.28	3.27	4.47	2.86	3.64	2.45	2.75	2.03	1.81	1.61	1.13	1.13
		18	60	5.95	3.88	5.14	3.47	4.31	3.07	3.43	2.66	2.47	2.24	1.80	1.80
		21	50	6.50	4.51	5.70	4.11	4.87	3.71	3.98	3.32	3.00	3.00	2.47	2.47
	100	10	70	4.20	3.05	3.20	2.49	2.18	1.94	1.37	1.37	0.69	0.69	-	-
		12.7	70	5.42	3.60	4.42	3.05	3.39	2.52	2.30	1.99	1.42	1.42	0.75	0.75
		15	70	6.53	4.04	5.54	3.52	4.51	3.01	3.41	2.48	2.24	1.95	1.38	1.38
		18	60	7.37	4.77	6.37	4.26	5.35	4.03	4.25	3.25	3.07	2.73	2.19	2.19
		21	50	8.05	5.53	7.06	5.03	6.03	4.54	4.93	4.03	3.75	3.53	3.00	3.00
HIGH FAN SPEED	60	10	70	2.61	1.93	1.99	1.59	1.35	1.26	0.88	0.88	0.45	0.45	-	-
		12.7	70	3.38	2.26	2.74	1.94	2.11	1.62	1.43	1.29	0.93	0.93	0.49	0.49
		15	70	4.07	2.54	3.44	2.22	2.80	1.91	2.12	1.59	1.39	1.27	0.90	0.90
		18	60	4.59	3.02	3.96	2.71	3.32	2.41	2.63	2.10	1.90	1.78	1.42	1.42
		21	50	5.02	3.52	4.39	3.22	3.75	2.93	3.06	2.62	2.38	2.38	1.95	1.95
	80	10	70	3.70	2.73	2.81	2.24	1.91	1.78	1.25	1.25	0.63	0.63	-	-
		12.7	70	4.78	3.20	3.89	2.74	2.98	2.29	2.02	1.82	1.31	1.31	0.69	0.69
		15	70	5.76	3.59	4.87	3.15	3.97	2.70	3.00	2.25	1.96	1.79	1.27	1.27
		18	60	6.49	4.27	5.61	3.83	4.70	3.40	3.73	2.97	2.69	2.52	2.01	2.01
		21	50	7.11	4.97	6.22	4.55	5.31	4.13	4.34	3.71	3.36	3.36	2.76	2.76
	100	10	70	4.73	3.48	3.61	2.86	2.46	2.25	1.58	1.58	0.80	0.80	-	-
		12.7	70	6.11	4.09	4.99	3.49	3.83	2.91	2.59	2.30	1.66	1.66	0.87	0.87
		15	70	7.38	4.58	6.25	4.01	5.09	3.44	3.84	2.86	2.52	2.27	1.60	1.60
		18	60	8.32	5.44	7.18	4.88	6.02	4.33	4.78	3.76	3.46	3.19	2.56	2.56
		21	50	9.09	6.34	7.97	5.79	6.80	5.25	5.55	4.69	4.25	4.25	3.49	3.49

TECHNICAL INFORMATION - R134A

	MODEL	AIR ON °C	HUMIDITY % RH	EVAPORATING TEMPERATURE °C											
				-2.5		0		2.5		5		7.5		10	
				TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS
LOW FAN SPEED	60	10	70	2.03	1.46	1.55	1.18	1.06	0.92	0.64	0.64	0.32	0.32	-	-
		12.7	70	2.62	1.73	2.14	1.46	1.64	1.20	1.10	0.94	0.67	0.67	0.35	0.35
		15	70	3.17	1.95	2.68	1.69	2.18	1.43	1.65	1.18	1.08	0.92	0.65	0.65
		18	60	3.57	2.30	3.08	2.04	2.58	1.78	2.05	1.54	1.48	1.28	1.02	1.02
		21	50	3.90	2.65	3.41	2.39	2.90	2.15	2.38	1.90	1.81	1.65	1.40	1.40
	80	10	70	2.92	2.10	2.22	1.70	1.51	1.32	0.92	0.92	0.47	0.47	-	-
		12.7	70	3.77	2.48	3.06	2.10	2.35	1.73	1.59	1.34	0.96	0.96	0.50	0.50
		15	70	4.53	2.80	3.83	2.42	3.12	2.06	2.35	1.68	1.55	1.32	0.93	0.93
		18	60	5.11	3.29	4.41	2.92	3.70	2.56	2.93	2.20	2.12	1.84	1.47	1.47
		21	50	5.58	3.79	4.88	3.43	4.17	3.09	3.40	2.73	2.58	2.37	2.01	2.01
	100	10	70	3.38	2.41	2.57	1.94	1.76	1.49	1.04	1.04	0.52	0.52	-	-
		12.7	70	4.36	2.86	3.55	2.40	2.73	1.97	1.85	1.52	1.08	1.08	0.57	0.57
		15	70	5.25	3.23	4.44	2.79	3.62	2.36	2.74	1.93	1.80	1.49	1.04	1.04
		18	60	5.90	3.79	5.10	3.35	4.28	2.93	3.40	2.50	2.46	2.07	1.66	1.66
		21	50	6.44	4.36	5.64	3.92	4.82	3.51	3.94	3.09	3.01	2.66	2.26	2.26
MEDIUM FAN SPEED	60	10	70	2.17	1.57	1.65	1.27	1.12	0.99	0.70	0.70	0.35	0.35	-	-
		12.7	70	2.80	1.85	2.28	1.57	1.74	1.29	1.18	1.01	0.72	0.72	0.38	0.38
		15	70	3.38	2.08	2.86	1.81	2.32	1.54	1.75	1.44	1.14	0.99	0.70	0.70
		18	60	3.80	2.45	3.28	2.18	2.74	1.92	2.18	1.66	1.57	1.38	1.10	1.10
		21	50	4.15	2.83	3.63	2.57	3.10	2.31	2.53	2.05	1.92	1.78	1.51	1.51
	80	10	70	3.43	2.50	2.61	2.05	1.78	1.60	1.12	1.12	0.57	0.57	-	-
		12.7	70	4.43	2.94	3.60	2.50	2.76	2.07	1.87	1.63	1.17	1.17	0.61	0.61
		15	70	5.35	3.31	4.51	2.88	3.67	2.46	2.77	2.03	1.96	1.61	1.13	1.13
		18	60	6.03	3.91	5.19	3.49	3.83	2.67	3.44	2.67	2.48	2.24	1.80	1.80
		21	50	6.58	4.54	5.75	4.13	4.90	3.73	4.00	3.32	3.00	3.00	2.47	2.47
	100	10	70	4.25	3.08	3.23	2.50	2.20	1.95	1.37	1.37	0.69	0.69	-	-
		12.7	70	5.48	3.63	4.46	3.08	3.42	2.54	2.31	1.99	1.43	1.43	0.75	0.75
		15	70	6.61	4.08	5.59	3.55	4.55	3.02	3.43	2.48	2.25	1.95	1.38	1.38
		18	60	7.45	4.82	6.43	4.28	5.38	3.78	4.27	3.26	3.08	2.73	2.19	2.19
		21	50	8.14	5.57	7.12	5.06	6.08	4.55	4.95	4.04	3.76	3.53	2.97	2.99
HIGH FAN SPEED	60	10	70	2.65	1.95	2.01	1.60	1.37	1.26	0.89	0.89	0.45	0.45	-	-
		12.7	70	3.42	2.29	2.78	1.95	2.13	1.62	1.44	1.29	0.93	0.93	0.49	0.49
		15	70	4.12	2.56	3.48	2.24	2.82	1.92	2.13	1.60	1.39	1.27	0.90	0.90
		18	60	4.65	3.04	4.01	2.73	3.35	2.42	2.65	2.10	1.90	1.78	1.42	1.42
		21	50	5.08	3.55	4.44	3.24	3.78	2.94	3.08	2.63	2.38	2.38	1.95	1.95
	80	10	70	3.75	2.76	2.85	2.26	1.93	1.79	1.25	1.25	0.63	0.63	-	-
		12.7	70	4.84	3.24	3.94	2.76	3.01	2.30	2.03	1.83	1.31	1.31	0.69	0.69
		15	70	5.84	3.63	4.93	3.17	4.00	2.72	3.02	2.26	1.97	1.79	1.27	1.27
		18	60	6.58	4.31	5.68	3.86	4.74	3.43	3.75	2.98	2.70	2.52	2.01	2.01
		21	50	7.20	5.02	6.29	4.58	5.36	4.16	4.36	3.72	3.36	3.36	2.75	2.75
	100	10	70	4.80	3.52	3.65	2.88	2.48	2.26	1.59	1.59	0.80	0.80	-	-
		12.7	70	6.19	4.13	5.04	3.52	3.86	2.93	2.61	2.31	1.66	1.66	0.86	0.86
		15	70	7.47	4.64	6.31	4.04	5.13	3.47	3.86	2.87	2.53	2.28	1.60	1.60
		18	60	8.42	5.49	7.26	4.91	6.08	4.35	4.81	3.77	3.47	3.19	2.55	2.55
		21	50	9.21	6.39	8.05	5.82	6.86	5.27	5.59	4.71	4.26	4.26	3.49	3.49

TECHNICAL INFORMATION - R404A

	MODEL	AIR ON °C	HUMIDITY % RH	EVAPORATING TEMPERATURE °C											
				-2.5		0		2.5		5		7.5		10	
				TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS
LOW FAN SPEED	60	10	70	1.98	1.44	1.51	1.17	1.03	0.90	0.64	0.64	0.32	0.32	-	-
		12.7	70	2.56	1.70	2.09	1.43	1.61	1.18	1.09	0.93	0.66	0.66	0.34	0.34
		15	70	3.09	1.91	2.62	1.66	2.13	1.41	1.62	1.16	1.06	0.91	0.64	0.64
		18	60	3.48	2.25	3.01	2.00	2.53	1.76	2.01	1.52	1.46	1.27	1.02	1.02
		21	50	3.80	2.60	3.33	3.16	2.85	2.12	2.33	1.88	1.78	1.64	1.39	1.39
	80	10	70	2.85	2.06	2.17	1.67	1.48	1.30	0.91	0.91	0.46	0.46	-	-
		12.7	70	3.67	2.43	2.99	2.06	2.30	1.70	1.56	1.33	0.95	0.95	0.50	0.50
		15	70	4.43	2.74	3.75	2.37	3.05	2.02	2.31	1.67	1.52	1.30	0.92	0.92
		18	60	4.99	3.22	4.31	2.86	3.61	2.52	2.87	2.18	2.08	1.82	1.46	1.46
		21	50	5.19	3.72	4.77	3.38	4.08	3.04	3.34	2.69	2.54	2.35	2.00	2.00
	100	10	70	3.31	2.38	2.52	1.92	1.72	1.48	1.04	1.04	0.52	0.52	-	-
		12.7	70	4.27	2.81	3.48	2.37	2.67	1.94	1.82	1.51	1.08	1.08	0.56	0.56
		15	70	5.14	3.17	4.36	2.74	3.56	2.32	2.69	1.90	1.77	1.48	1.04	1.04
		18	60	5.79	3.73	5.00	3.30	4.20	2.89	3.34	2.48	2.42	2.06	1.65	1.65
		21	50	6.32	4.28	5.54	3.87	4.73	3.47	3.88	3.06	2.96	2.65	2.25	2.25
MEDIUM FAN SPEED	60	10	70	2.11	1.54	1.61	1.25	1.10	0.98	0.69	0.69	0.34	0.34	-	-
		12.7	70	2.73	1.81	2.22	1.54	1.70	1.27	1.16	1.00	0.72	0.72	0.38	0.38
		15	70	3.29	2.03	2.78	1.77	2.26	1.51	1.71	1.25	1.13	0.98	0.69	0.69
		18	60	3.70	2.40	3.20	2.14	2.69	1.89	2.14	1.63	1.54	1.37	1.10	1.10
		21	50	4.05	2.78	3.54	2.53	3.03	2.28	2.48	2.02	1.89	1.77	1.50	1.50
	80	10	70	3.33	2.45	2.54	2.01	1.73	1.57	1.11	1.11	0.56	0.56	-	-
		12.7	70	4.30	2.87	3.50	2.45	2.69	2.04	1.83	1.62	1.16	1.16	0.61	0.61
		15	70	5.19	3.22	4.39	2.81	3.58	2.41	2.70	2.01	1.78	1.59	1.12	1.12
		18	60	5.85	3.82	5.06	3.43	4.23	3.03	3.34	2.64	2.43	2.23	1.79	1.79
		21	50	6.39	4.45	5.60	4.05	4.78	3.67	3.91	3.28	2.98	2.98	2.45	2.45
	100	10	70	4.13	3.02	3.15	2.46	2.14	1.93	1.35	1.35	0.68	0.68	-	-
		12.7	70	5.34	3.55	4.35	3.02	3.34	2.49	2.27	1.97	1.41	1.41	0.74	0.74
		15	70	6.44	3.99	5.45	3.47	4.44	2.97	3.36	2.46	2.21	1.94	1.37	1.37
		18	60	7.25	4.71	6.26	4.20	5.26	3.72	4.18	3.21	3.02	2.71	2.17	2.17
		21	50	6.12	5.46	6.94	4.97	5.93	4.49	4.85	4.00	3.69	3.50	2.97	2.97
HIGH FAN SPEED	60	10	70	2.56	1.90	1.95	1.57	1.33	1.24	0.87	0.87	0.44	0.44	-	-
		12.7	70	3.30	2.23	2.70	1.91	2.06	1.59	1.40	1.27	0.91	0.91	0.48	0.48
		15	70	3.99	2.50	3.38	2.19	2.74	1.89	2.07	1.58	1.36	1.26	0.89	0.89
		18	60	4.50	2.97	3.89	2.67	3.26	2.38	2.58	2.07	1.86	1.77	1.42	1.42
		21	50	6.02	3.13	5.41	2.86	4.77	2.58	4.08	2.30	3.35	2.02	2.58	1.72
	80	10	70	3.63	2.69	2.76	2.22	1.88	1.75	1.23	1.23	0.62	0.62	-	-
		12.7	70	4.68	3.15	3.82	2.70	2.92	2.25	1.98	1.80	1.29	1.29	0.68	0.68
		15	70	5.65	3.53	4.78	3.09	3.88	2.67	2.94	2.23	1.93	1.78	1.25	1.25
		18	60	6.38	4.20	5.50	3.77	4.61	3.36	3.66	2.93	2.64	2.49	2.00	2.00
		21	50	6.97	4.90	6.09	4.50	5.20	4.09	4.25	3.66	3.32	3.32	2.73	2.73
	100	10	70	4.65	3.43	3.54	2.83	2.40	2.22	1.57	1.57	0.79	0.79	-	-
		12.7	70	6.00	4.03	4.89	3.45	3.75	2.87	2.55	2.29	1.64	1.64	0.86	0.86
		15	70	7.24	4.51	6.13	3.95	4.99	3.39	3.77	2.83	2.48	2.25	1.58	1.58
		18	60	8.16	5.36	7.07	4.82	5.91	4.28	4.69	3.72	3.38	3.16	2.53	2.53
		21	50	8.93	6.25	7.81	5.72	6.67	5.18	5.45	4.64	4.20	4.20	3.47	3.47

TECHNICAL INFORMATION - R410A

	MODEL	AIR ON °C	HUMIDITY % RH	EVAPORATING TEMPERATURE °C											
				-2.5		0		2.5		5		7.5		10	
				TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS	TOTAL	SENS
LOW FAN SPEED	60	10	70	2.21	1.57	1.69	1.26	1.15	0.97	0.67	0.67	0.34	0.34	-	-
		12.7	70	2.80	1.84	2.27	1.54	1.74	1.26	1.17	0.97	0.67	0.67	0.34	0.34
		15	70	3.41	2.10	2.90	1.81	2.38	1.53	1.80	1.25	1.18	0.97	0.67	0.67
		18	60	3.86	2.46	3.34	2.18	2.81	1.90	2.24	1.62	1.62	1.34	1.07	1.07
		21	50	4.21	2.82	3.70	2.54	3.17	2.27	2.59	2.00	1.98	1.73	1.46	1.46
	80	10	70	3.16	2.24	2.41	1.81	1.65	1.39	0.96	0.96	0.48	0.48	-	-
		12.7	70	4.08	2.66	3.33	2.09	2.57	1.84	1.74	1.42	1.00	1.00	0.53	0.53
		15	70	4.91	3.01	4.17	2.59	3.40	2.19	2.58	1.79	1.70	1.39	0.96	0.96
		18	60	5.53	3.52	4.79	3.12	4.03	2.73	3.20	2.33	2.33	1.93	1.53	1.53
		21	50	6.04	4.05	5.30	3.65	4.54	3.26	3.72	2.87	2.85	2.48	2.10	2.10
	100	10	70	3.62	2.53	2.76	2.05	1.88	1.57	1.08	1.08	0.54	0.54	-	-
		12.7	70	4.65	3.04	3.81	2.55	2.93	2.07	2.00	1.59	1.13	1.13	0.59	0.59
		15	70	5.61	3.44	4.76	2.96	3.89	2.49	2.95	2.03	1.94	1.56	1.08	1.08
		18	60	6.31	4.01	5.46	3.55	4.59	3.09	3.66	2.63	2.66	2.16	1.71	1.71
		21	50	6.88	4.60	5.14	4.14	5.18	3.69	4.25	3.23	3.25	2.77	2.34	2.34
MEDIUM FAN SPEED	60	10	70	2.37	1.69	1.81	1.36	1.23	1.05	0.73	0.73	0.37	0.37	-	-
		12.7	70	3.06	1.99	2.50	1.68	1.92	1.38	1.30	1.07	0.76	0.76	0.39	0.39
		15	70	3.68	2.25	3.12	1.94	2.54	1.65	1.94	1.35	1.27	1.05	0.73	0.73
		18	60	4.14	2.64	3.58	2.34	3.02	2.85	2.40	1.75	1.74	1.46	1.16	1.16
		21	50	4.52	3.03	3.97	2.74	3.40	2.46	2.78	2.17	2.13	1.87	1.58	1.58
	80	10	70	3.80	2.71	2.90	2.20	1.97	1.70	1.19	1.19	0.60	0.60	-	-
		12.7	70	4.90	3.20	4.00	2.71	3.08	2.23	2.09	1.74	1.24	1.24	0.65	0.65
		15	70	5.91	3.60	5.01	3.13	4.08	2.66	3.09	2.18	2.04	1.71	1.20	1.20
		18	60	6.66	4.24	5.75	3.77	4.84	3.32	3.85	2.86	2.79	2.38	1.90	1.90
		21	50	7.27	4.89	6.38	4.44	5.45	3.99	4.47	3.53	3.41	3.07	2.60	2.60
	100	10	70	4.66	3.32	3.56	2.68	2.42	2.07	1.44	1.44	0.73	0.73	-	-
		12.7	70	6.00	3.92	4.91	3.31	3.77	2.72	2.57	2.12	1.50	1.50	0.78	0.78
		15	70	7.24	4.42	6.14	3.83	5.01	3.25	3.80	2.66	2.50	2.06	1.45	1.45
		18	60	8.15	5.19	7.06	4.61	5.93	4.04	4.73	3.47	3.43	2.88	2.30	2.30
		21	50	8.90	5.98	7.81	5.40	6.69	4.85	5.48	4.28	4.19	3.71	3.14	3.14
HIGH FAN SPEED	60	10	70	2.97	2.13	2.26	1.74	1.54	1.35	0.95	0.95	0.48	0.48	-	-
		12.7	70	3.82	2.51	3.12	2.13	2.40	1.76	1.63	1.38	0.99	0.99	0.52	0.52
		15	70	4.62	2.82	3.91	2.46	3.18	2.10	2.42	1.73	1.59	1.36	0.95	0.95
		18	60	5.20	3.32	4.50	2.97	3.78	2.62	3.00	2.26	2.18	1.90	1.52	1.52
		21	50	5.68	3.85	4.98	3.50	4.26	3.16	3.49	2.81	2.66	2.45	2.08	2.08
	80	10	70	4.19	3.01	3.20	2.46	2.18	1.91	1.34	1.34	0.67	0.67	-	-
		12.7	70	5.41	3.54	4.41	3.01	3.39	2.49	2.30	1.96	1.40	1.40	0.73	0.73
		15	70	6.53	3.99	5.53	3.47	4.51	2.97	3.42	2.45	2.24	1.92	1.35	1.35
		18	60	7.35	4.70	6.36	4.20	5.34	3.70	4.25	3.20	3.08	2.68	2.15	2.15
		21	50	8.03	5.44	7.05	4.95	6.03	4.46	4.94	3.97	3.77	3.46	2.94	2.94
	100	10	70	5.34	3.83	4.07	3.11	2.77	2.41	1.69	1.69	0.86	0.86	-	-
		12.7	70	6.89	4.52	5.63	3.83	4.33	3.16	2.93	2.48	1.76	1.76	0.93	0.93
		15	70	8.31	5.08	7.04	4.41	5.74	3.76	4.36	3.10	2.86	2.42	1.70	1.70
		18	60	9.36	5.98	8.10	5.33	6.80	4.69	5.41	4.04	3.92	3.38	2.71	2.71
		21	50	10.23	6.90	8.97	6.27	7.68	5.65	6.28	5.01	4.80	4.37	3.71	3.71

FUSE RATING IF MATCHED WITH MARSTAIR OURDOOR UNIT
FUSES / DISJONCTEURS / SICHERUNGEN (EN60269) - MCBs (EN60898)

1Ø - 230 V R407C

FUSE RATING (A) / TAILLE DES DISJONCTEURS (A) / EMPFOHLENE SICHERUNG (A) (HRC Type)

MCU MCU+ MCUP	WM (L) (E)					
	60		80		100	
	S	H	S	H	S	H
50	16	16	-	-	-	-
60	20	20	-	-	-	-
80	-	-	25	25	-	-
90	-	-	32	32	32	32

DCUE	WM (L) (E)					
	60		80		100	
	S	H	S	H	S	H
50	25	25	-	-	-	-
60	25	25	-	-	-	-
80	-	-	32	32	-	-

MHPUL MHPUE	WM L (E)					
	60		80		100	
	S	H	S	H	S	H
50	16	25	-	-	-	-
80	-	-	25	32	-	-
90	-	-	-	-	32	50 (40)*

DHPUE	WM E					
	60		80		100	
	S	H	S	H	S	H
50	25	32	-	-	-	-

* R407C

S = No Electric Heating / Sans Batterie Electrique / Ohne Elektroheizung
H = + Electric Heaters / + Batterie Electrique / Mit Elektroheizung
H= 1.2 kW {WM 60 (L) (E)}, H = 1.7 kW {WM 80 (L) (E)}, H = 2.1 kW {WM100 (L) (E)}, @ 230V

3Ø - 400 V R407C

FUSE RATING (A/Ø) / TAILLE DES DISJONCTEURS (A/Ph) / EMPFOHLENE SICHERUNG (A/Ph) (HRC Type)

MCU MCU+ MCUP	WM (L) (E)					
	60		80		100	
	S	H	S	H	S	H
50	16	16	-	-	-	-
60	16	16	-	-	-	-
80	-	-	16	16	-	-
90	-	-	16	16	16	16
100	-	-	-	-	16	16

DCUE	WM (L) (E)					
	60		80		100	
	S	H	S	H	S	H
50	10	10	-	-	-	-
60	16	16	-	-	-	-
80	-	-	20	20	-	-

MHPUL MHPUE	WM L (E)					
	60		80		100	
	S	H	S	H	S	H
50	16	16	-	-	-	-
80	-	-	16	20	-	-
90	-	-	-	-	16	25

DHPUE	WM E					
	60		80		100	
	S	H	S	H	S	H
50	16	16	-	-	-	-

S = No Electric Heating / Sans Batterie Electrique / Ohne Elektroheizung
H = + Electric Heaters / + Batterie Electrique / Mit Elektroheizung
H= 1.2 kW {WM 60 (L) (E)}, H = 1.7 kW {WM 80 (L) (E)}, H = 2.1 kW {WM100 (L) (E)}, @ 230V

DCUE / MHPUE / DHPUE - WITH SEPARATE SUPPLIES
- AVEC ALIMENTATION SÉPARÉE
- MIT GETRENNTEN STROMVERSORGUNGEN

FUSE RATING / TAILLE DES DISJONCTEURS / EMPFOHLENE SICHERUNG (A, A/Ph)

INDOOR UNITS / INTÉRIEUR / INNERGERÄTE

WM E	S	H
60 E	5	10
80 E	5	10
100 E	5	16

OUTDOOR UNITS / EXTÉRIEUR / AUSENGERÄTE

Unit size			50	60	80	90
DCUE	1Ph	A	25	25	32	-
MHPUE	1Ph	A	16	-	25	32
DHPUE	1Ph	A	25	-	-	-
DCUE	3Ph	A/Ph	10	16	16	-
MHPUE	3Ph	A/Ph	10	-	16	16
DHPUE	3Ph	A/Ph	10	-	-	-

S = No Electric Heating / Sans Batterie Electrique / Ohne Elektroheizung
H = + Electric Heaters / + Batterie Electrique / Mit Elektroheizung
H= 1.2 kW (WM 60E), H = 1.7 kW (WM 80E), H = 2.1 kW (WM100 E), @ 230V

ELECTRICAL DATA ~ R407C (maximum indoor unit fan speed)
IF MATCHED WITH MARSTAIR OUTDOOR UNITS

a) R407C: WM + MCU / MCU+ /MCUP

COOLING 27°C/19°C, 35°/24°C		1Ph 230V 50Hz			3Ph 400V 50Hz		
		INPUT	FULL LOAD CURRENT	SYSTEM MAX. STARTING CURRENT	INPUT	FULL LOAD AMPS	SYSTEM MAX. STARTING CURRENT
WM	MCU(+)	kW	AMPS	AMPS	kW	A/PH	A/PH
60	50	2	9.3	59	2	4.5	27
60	60	2.4	11.2	62	2.4	4.6	33
80	80	3	11.9	77	3	5.3	41
80	90	3.6	16.4	97	3.5	7.2	46
100	90	3.6	16.5	97	3.5	7.3	46
100	100	-	-	-	3.7	8.4	52

HEATING (230V 50Hz)
20°C/12°C, 7°C/6°C

WM	MCU MCU+ MCUP	kW	AMPS
60	ALL	1.2	5.2
80	ALL	1.7	7.2
100	ALL	2.1	9.2

b) R407C: WM (L) (E) + DCUE

COOLING 27°C/19°C, 35°/24°C		1Ph 230V 50Hz			3Ph 400V 50Hz		
		INPUT	FULL LOAD CURRENT	SYSTEM MAX. STARTING CURRENT	INPUT	FULL LOAD AMPS	SYSTEM MAX. STARTING CURRENT
WM (L) (E)	DCUE	kW	AMPS	AMPS	kW	A/PH	A/PH
60	50	2.5	13.8	60	2.5	7.4	24
60	60	2.9	15.1	70	2.9	7.6	24
80	80	3.3	18.1	79	3.3	8.1	27

HEATING (230V 50Hz)
20°C/12°C, 7°C/6°C

WM (L) (E)	DCUE	kW	AMPS
60	ALL	1.2	5.2
80	ALL	1.7	7.2
100	ALL	2.1	9.2

c) R407C: WM (L) (E) + MHPUL / MHPUE

COOLING 27°C/19°C, 35°/24°C		1Ph 230V 50Hz			3Ph 400V 50Hz		
		INPUT	FULL LOAD AMPS	SYSTEM MAX. STARTING CURRENT	INPUT	FULL LOAD AMPS	SYSTEM MAX. STARTING CURRENT
WM (L) (E)	MHPUL (E)	kW	AMPS	AMPS	kW	A/PH	A/PH
60	50	2	9.3	59	2	4.5	27
80	80	3	12.3	77	2.9	5.7	41
100	90	3.6	16.5	97	3.5	7.3	46

HEATING (230V 50Hz) 20°C/12°C, 7°C/6°C		1Ph 230V 50Hz					3Ph 400V 50Hz				
		INPUT		FULL LOAD AMPS		SYSTEM MAX. STARTING CURRENT	INPUT		FULL LOAD AMPS		SYSTEM MAX. STARTING CURRENT
		kW		AMPS		AMPS	kW		A/PH		A/PH
WM (L) (E)	MHPUL (E)	S	H	S	H		S	H	S	H	
60	50	2.2	3.4	9.3	14.5	64	2.2	3.4	4.5	9.7	32
80	80	2.9	4.6	12.3	19.5	84	2.9	4.6	5.7	12.9	48
100	90	2.8	4.9	16.5	25.7	106	2.8	4.9	7.3	16.5	54

S = standard unit (no heaters) H = + Electric heaters

d) R407C: WM (L) (E) + DHPUE

COOLING 27°C/19°C, 35°/24°C		1Ph 230V 50Hz			3Ph 400V 50Hz		
		INPUT	FULL LOAD CURRENT	SYSTEM MAX. STARTING CURRENT	INPUT	FULL LOAD AMPS	SYSTEM MAX. STARTING CURRENT
WM (L) (E)	DHPUE	kW	AMPS	AMPS	kW	A/PH	A/PH
60	50	2.5	13.8	60	2.5	8.1	24

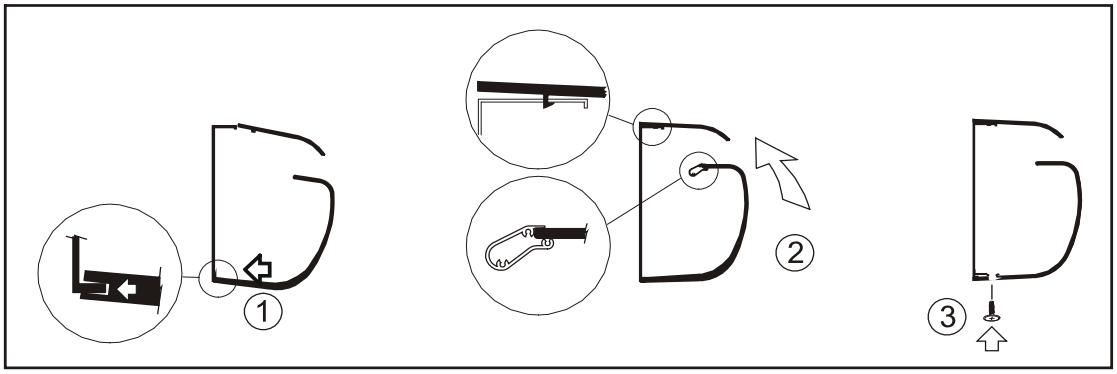
HEATING (230V 50Hz) 20°C/12°C, 7°C/6°C		1Ph 230V 50Hz					3Ph 400V 50Hz				
		INPUT		FULL LOAD AMPS		SYSTEM MAX. STARTING CURRENT	INPUT		FULL LOAD AMPS		SYSTEM MAX. STARTING CURRENT
		kW		AMPS		AMPS	kW		A/PH		A/PH
WM (L) (E)	DHPUE	S	H	S	H		S	H	S	H	
60	50	2.5	3.7	13.8	19	66	2.5	3.7	8.1	13.3	30

S = standard unit (no heaters) H = + Electric heaters

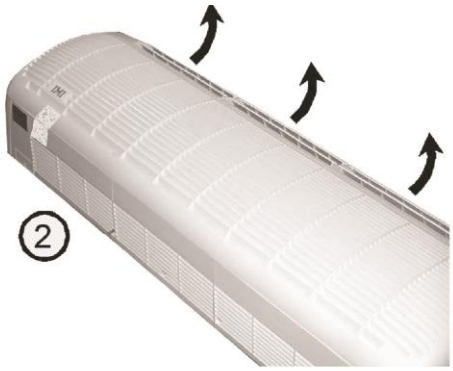
INSTALLATION



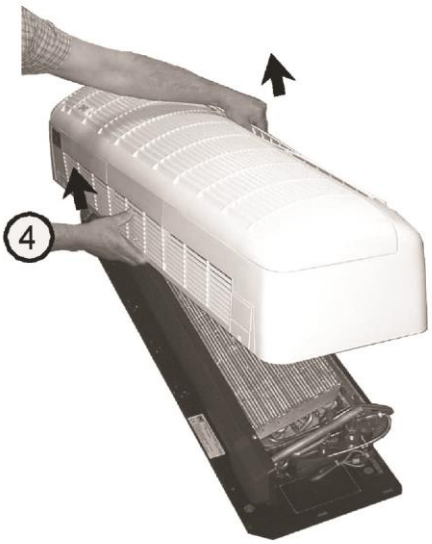
CASE REMOVAL AND FILTER CHANGE

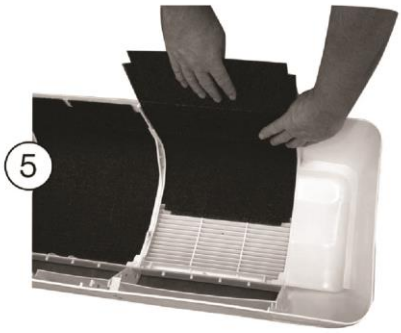


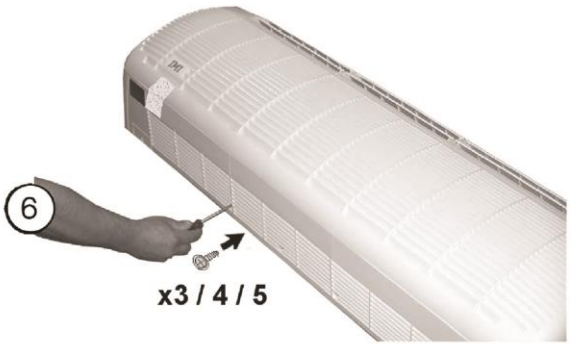

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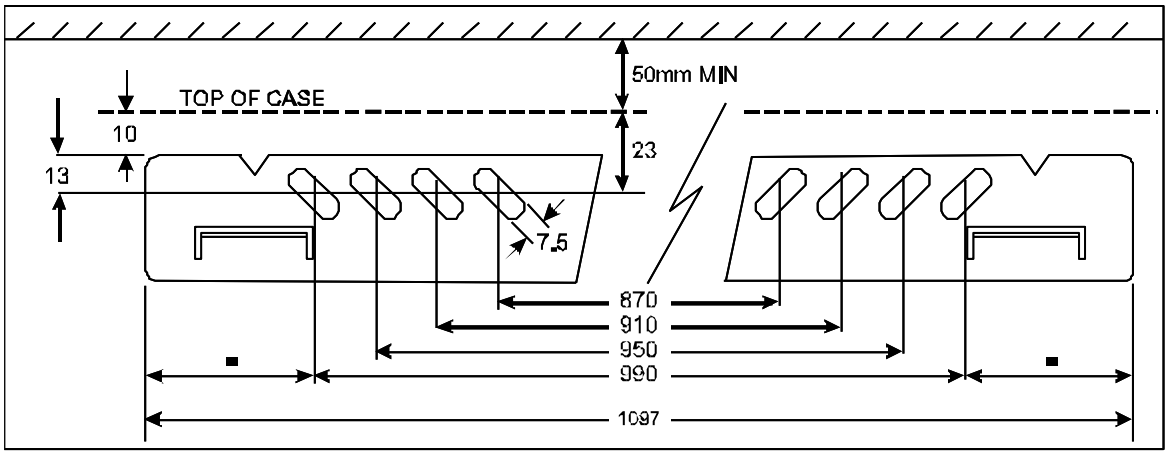

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4

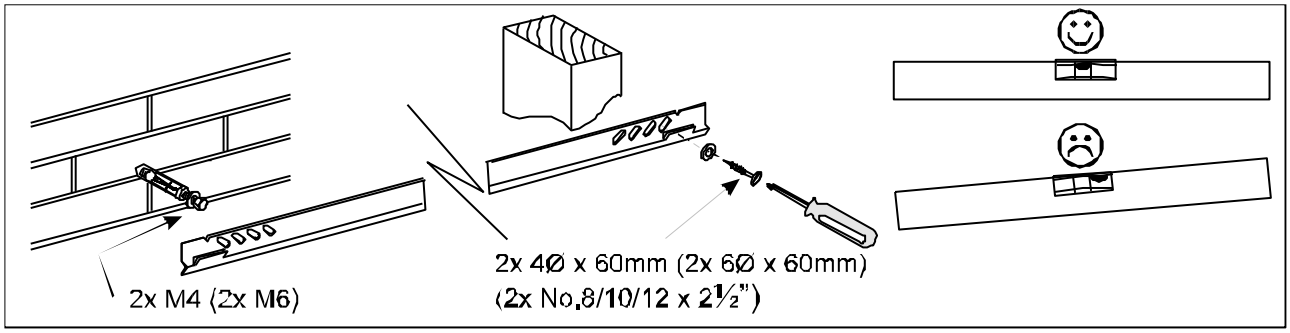

5


6
x3 / 4 / 5

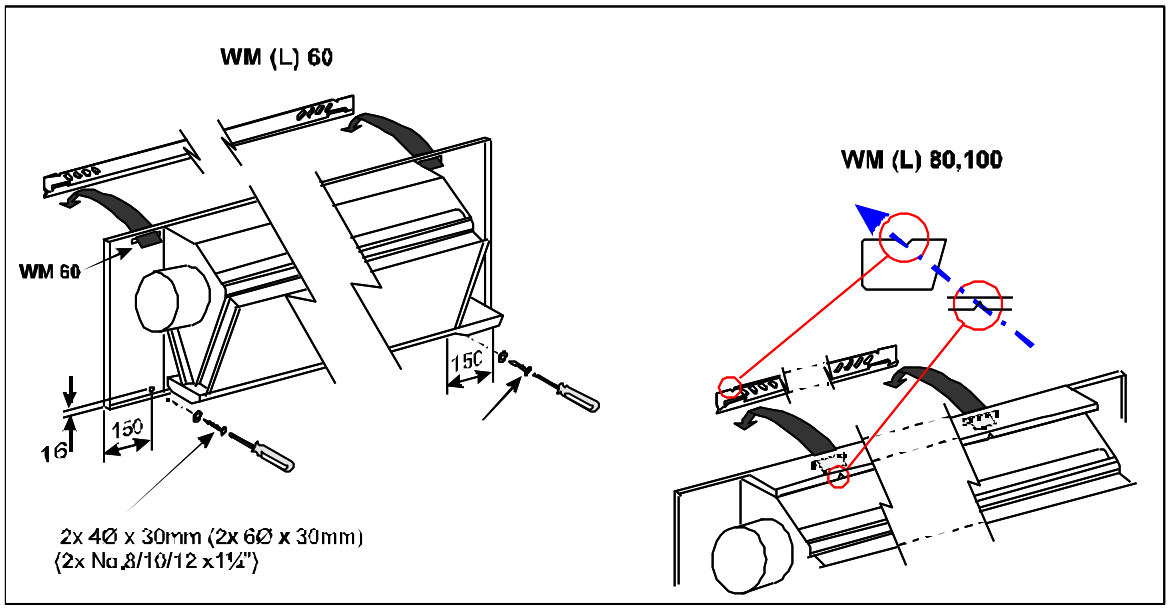
HANGING RAIL

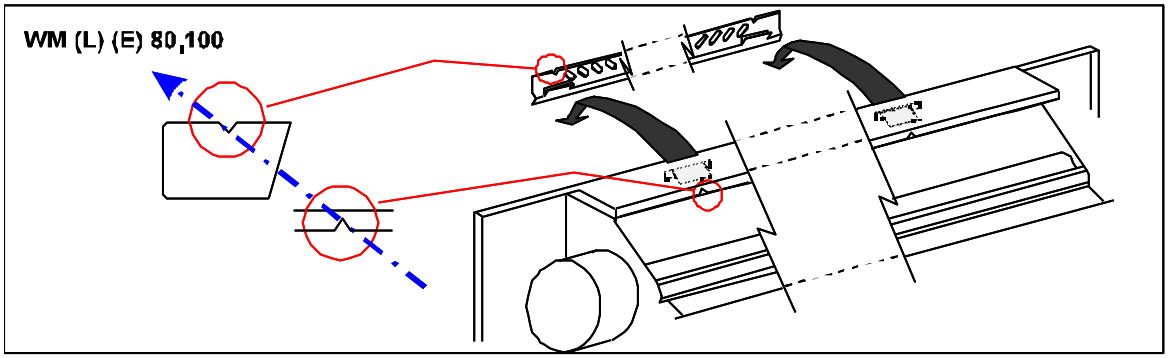


FIXING THE HANGING RAIL



HANGING THE CHASSIS



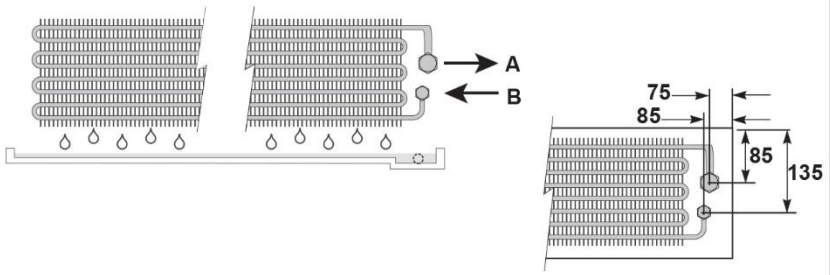


REFRIGERATION PIPEWORK / TUYAUTERIES / ROHRLEITUNGEN

	WM (E) (L)	60	80	100
A	Suction ODF	5/8”	5/8”	5/8”
B	Expansion ODF	3/8”	1/2”	1/2”

	WM (E) (L)	60	80	100
A	Aspiration ODF	5/8”	5/8”	5/8”
B	Expansion ODF	3/8”	1/2”	1/2”

	WM (E) (L)	60	80	100
A	Saug ODF	5/8”	5/8”	5/8”
B	Expansion ODF	3/8”	1/2”	1/2”



RESTRICTORS

Marstair outdoor units (cool only & heat pumps) are supplied with expansion assemblies and cooling restrictors fitted.

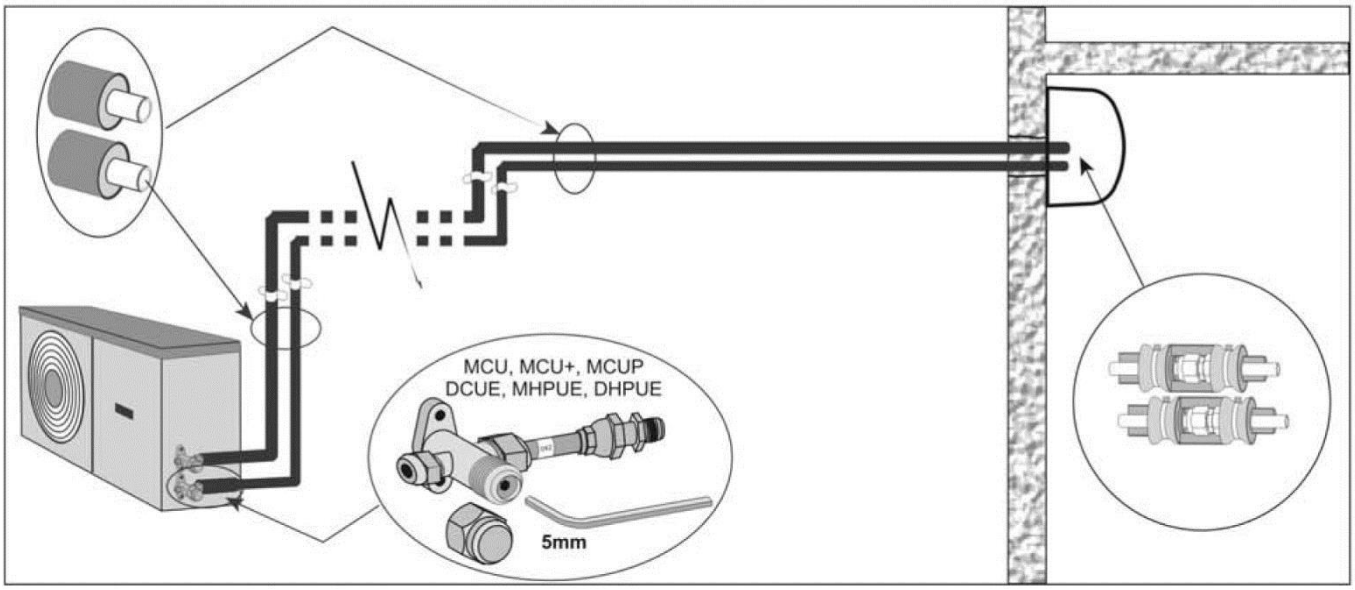
MCU+	15	20	30	40	45	50	60	80	90	100	130	150	165	180	200
Restrictor	0.033	0.033	0.040	0.044	0.046	0.050	0.052	0.057	0.063	0.068	0.071	0.080	0.082	N/A	

HEAT PUMP HEATING

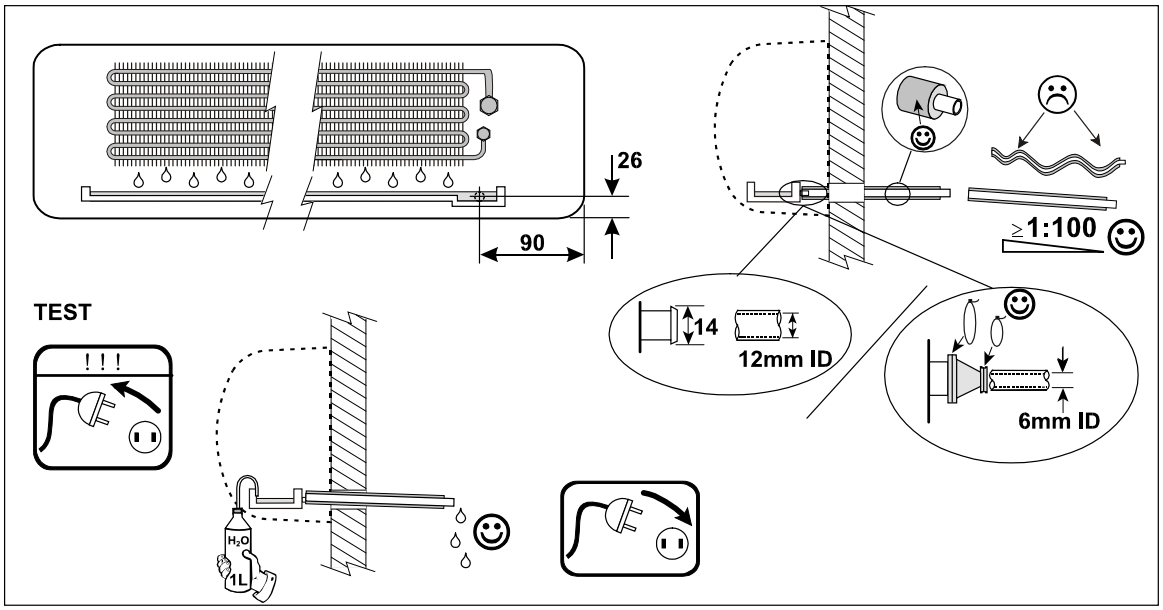
All heat pump units have an additional expansion assembly supplied loose inside the unit. This is to be fitted to some indoor units for heating. Fit the assembly within 10m of the indoor unit in the expansion line.
Note: the refrigerant flow is from indoor to outdoor, opposite to cooling assembly. Placing it directly at the indoor coil may cause increased noise during the heating cycle. No separate check valve is needed. The expansion assembly and line must be fully insulated.

Note: The indoor units below are fitted with heating capillarys.
WM60(L)(E), WM80(L)(E), WM100(L)(E) cool & heat.
The additional heating expansion assembly (supplied loose in the heat pump unit) is not required.
Retain as a spare.

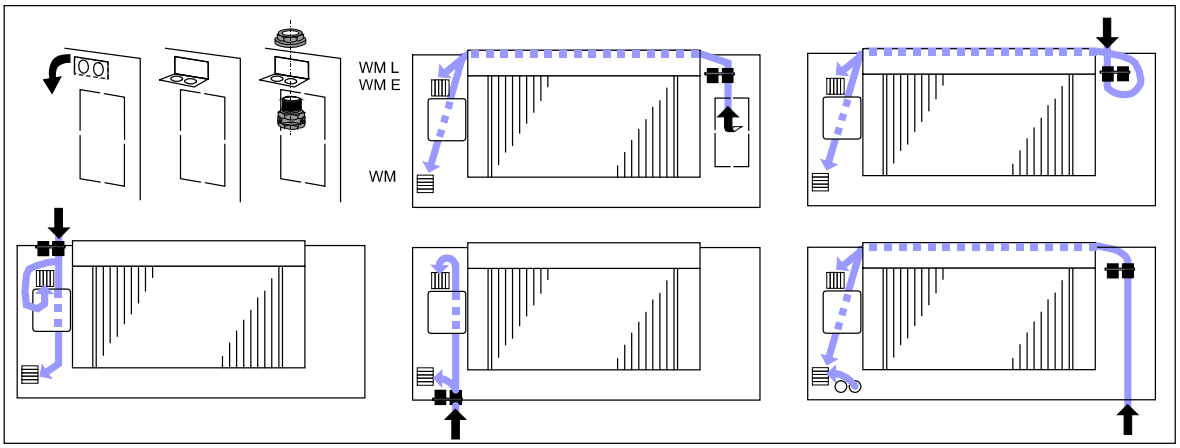
PIPEWORK CONNECTION / RACCORDEMENT DES TUYAUTERIES / ROHRLEITUNGEN



GRAVITY DRAIN



CABLE ROUTING



PIPE SIZING

1. To maximise performance, pipe runs should be kept as short as possible, avoiding sharp bends. However, individual pipe runs to a maximum of 80m, including 20m lift, are permissible provided good refrigeration practice is followed.

Published performance duties are based on 7.5m pipe runs. Correctly sized pipes for each installation, and fitting the correct expansion orifice (restrictor) will result in no significant loss of capacity on extended pipe runs.

a) Pipe sizes are based on:-
Minimum of 3.8 m/s (750 fpm) suction gas velocity for horizontal or downflow.
Minimum of 7.6 m/s (1500 fpm) suction gas velocity for upflow.
Maximum of 15.2 m/s (3000 fpm) suction gas.

Where vertical risers exceed 3m, oil traps must be formed in the pipe. This will help ensure that oil returns to the compressor. Typically fit an oil trap every 3m with a trap at the bottom of the riser.

2. Add polyolester oil as tabled on page 27; preferably by slowly pumping into the suction side with the unit running, after charging the system.

3. The maximum pipe lengths to be used for each pipe size and outdoor unit are shown on page 16. Use of these sizes and lengths is recommended in order to achieve optimum system performance. Smaller sizes may be used, but at the risk of loss of performance.

4. In calculating equivalent lengths of pipe runs, the effect of bends and fittings must be taken into account. The table below covers the fittings most likely to be encountered in this type of installation. The equivalent lengths of all the fittings in a particular pipe run must be added together and the total added to the actual length of pipe in the run, in order to calculate the total equivalent length.

5. Use the shortest possible route, avoiding sharp bends.

6. Fully insulate **both** the suction and expansion lines, including the expansion device, since both lines may sweat.

Fitting	Pipe Size (outside diameter in inches)					
	3/8	1/2	5/8	3/4	7/8	1-1/8
45° Bend	0.12	0.15	0.18	0.21	0.24	0.3
90° Bend R/d = 1	0.37	0.43	0.49	0.55	0.61	0.79
90° Bend R/d = 1.5	0.24	0.27	0.30	0.37	0.43	0.52
180° Bend C/d = 1.5	0.73	0.91	1.10	1.28	1.46	1.83
180° Bend C/d = 2.5	0.46	0.55	0.64	0.76	0.85	1.07
90° Elbow	0.67	0.85	1.04	1.25	1.46	1.89
R = Radius of bend		**d = Diameter of tube**			**C = Centres of bend**	

FITTING LOSSES, in equivalent straight lengths of pipe (m)

PIPE CONNECTIONS

Pipework is terminated with flare nut connectors, adjacent to the access panel.

Units are supplied with the following male flare connections (sizes in inches):-

Model Size	WM (L) (E)		
	60	80	100
Suction	5/8	5/8	5/8
Expansion	3/8	1/2	1/2

Indoor units have a low pressure holding charge of nitrogen, which may be released into the atmosphere without damage to the environment. This should be done prior to making pipework connections.

ELECTRICAL SUPPLY

1. Mains, control and interconnecting cables must be supplied and fitted by the installer. Follow local and national wiring regulations.
2. Cables must be size compatible with the recommended system fuse size.
3. Position an isolator switch within easy reach of the indoor unit.
4. Ensure the equipment is earthed.

INTERCONNECTING WIRING

Interconnecting wiring diagrams are shown on pages 38 to 40.

WM E SYSTEMS: An EMC gland kit (part number 55200301) MUST be used if the system is:-

- Hard wired to a handset (1 data cable)
- Fitted with a remote temperature sensor (1 data cable)
- A heat pump (1 data cable)
- BMS controlled (2 data cables)
- Networked (2 data cables)

One termination gland can be used for up to 3 cables. Each cable is four core screened cable, available from TEV in 100m rolls, part number 00526077.

Details of the kit are on page 46.

WM E MATCHED WITH EITHER MHPUE, OR DCUE

It is recommended that these systems should have a supply taken to the outdoor / ducted unit **AND** a separate supply taken to the indoor unit, which in many cases can be from a domestic 13/16 Amp socket (see fuse tables page 10). Communication cables should be screened 2 core (max. 0.75mm^2) non polarised, grounded at both ends using the clamps provided.
DO NOT use coaxial or mineral insulated cables.

ALL OTHER SYSTEMS:

Cables should be run to the outdoor unit with interconnecting cables run back to the indoor unit.

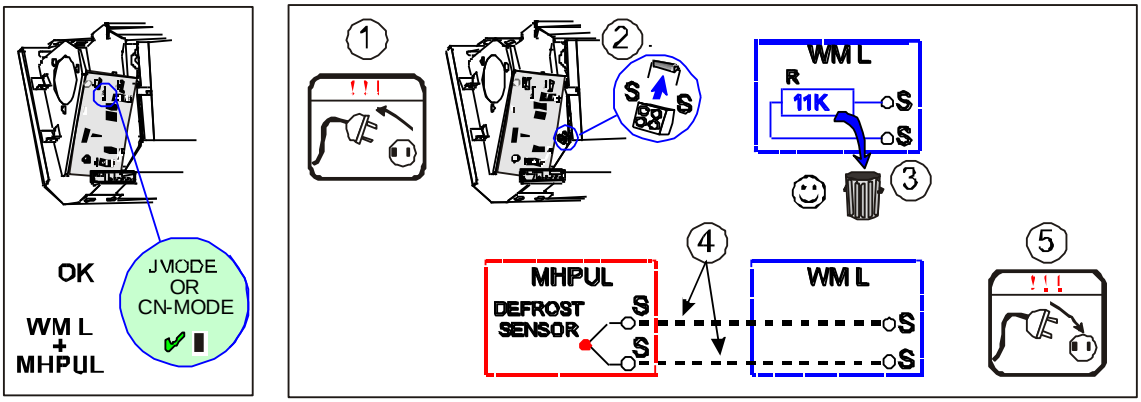
FIRE LINK

Electromechanical models: In order to automatically switch off the fan in the event of a fire, fit an external switch (240V, 3A, closed to run, volt free contact) between terminal block terminal 2 and the TEV remote control terminal L. This switch should be operated by the building's fire alarm or BMS system - see wiring diagram page 29.

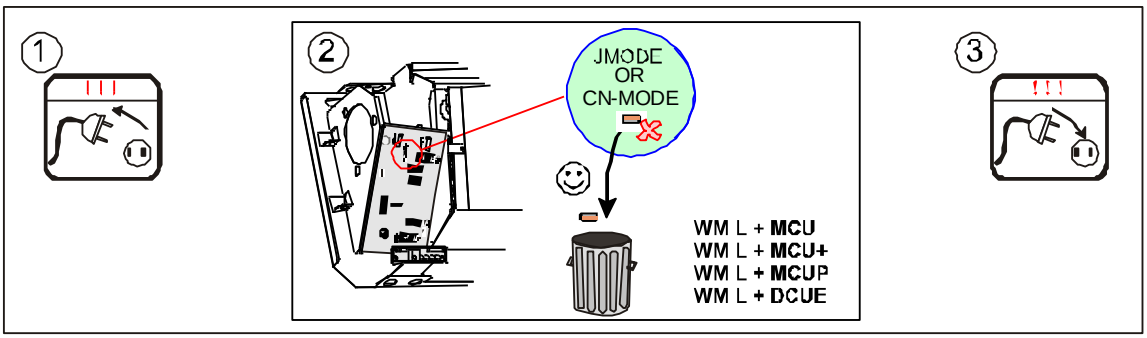
Electronic models: 'L' units: see wiring diagram page 30; 'E' units: see wiring diagram page 31.
Remove the black wire from the bottom terminal of the fuse (between fuse and motor) and place in series an external switch (240V, 3A, closed to run, volt-free contact). This switch should be operated by the fire alarm or BMS.

WM L PCB - PROGRAMMING

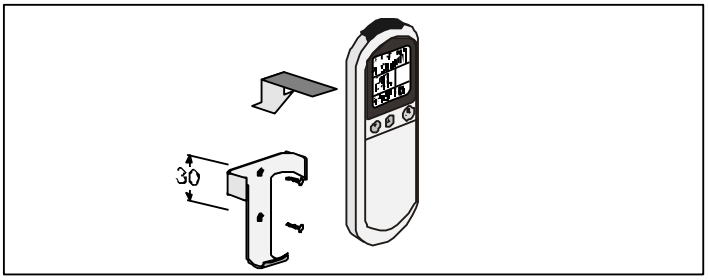
WM L + MHPUL



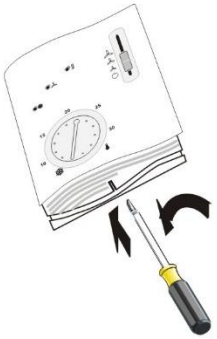
WM L + MCU WM L + MCU+ WM L + MCUP WM L + DCUE

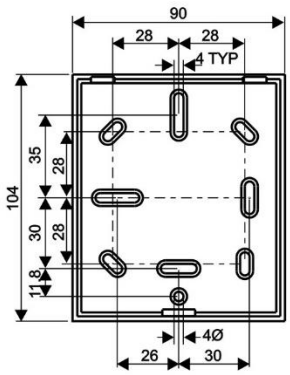


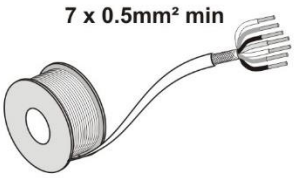
CONTROLLER / TÉLÉCOMMANDE / FERNBEDIENUNG



RCC30

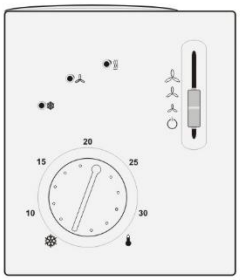




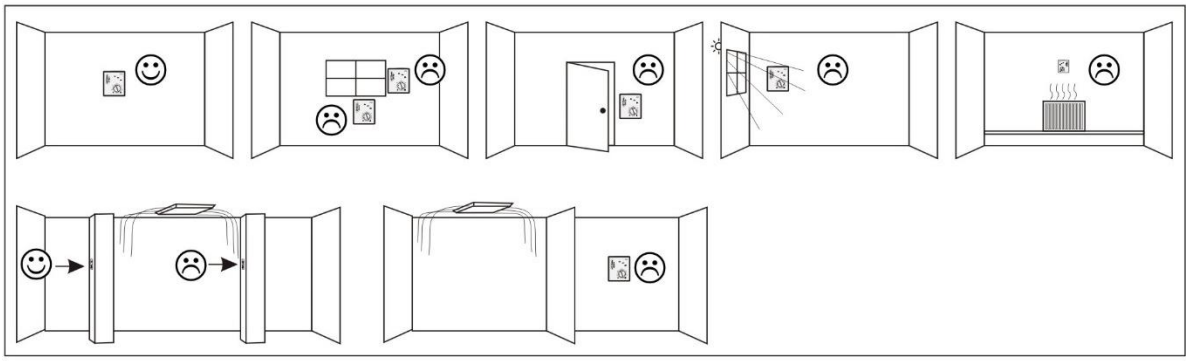


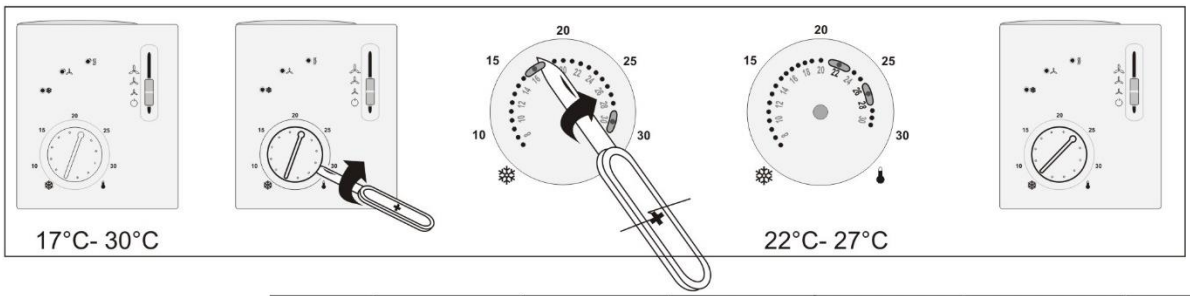
Neon lit in heating
Neon lit when fan runs
Neon lit in cooling

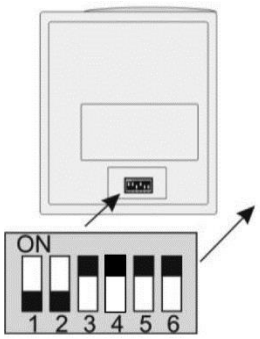
Adjustable thermostat (normally 17°C- 30°C)



Max fan speed
Med fan speed
Min fan speed
Off (standby)



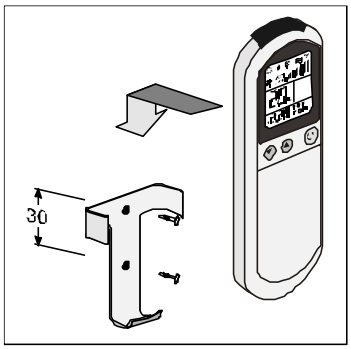




ON	Fan control is temperature dependent in all operating modes	Changeover between normal operation and energy saving mode	**Changeover activated when contact of switch is closed (NO)**	**Frost protection disabled**	**1K in heating mode, 0.5K in cooling mode**	**2K**
OFF	**Fan control in normal operation is temperature independent**	**Changeover between normal operation and standby**	Changeover activated when contact of switch is opened (NC)	Frost protection enabled	4K in heating mode, 2K in cooling mode	5K
Function	Fan control	Operating mode changeover via external switch	Action of switch for externally operated mode changeover	Standby	Switching differential	Dead zone in normal operation
Switch	**1**	**2**	**3**	**4**	**5**	**6**

■ =Factory setting

WM L REMOTE CONTROLLER.



WM L indoor units are supplied with a remote controller, wall mounting bracket and two batteries.
The controller operates remotely by infrared signals and the bracket may be used to park the controller for convenience.

Slide open the front cover: press down on the top at the marked area and push off the cover. Insert the batteries ensuring correct polarity. The display will blank and reset. Replace the cover by sliding into position.
Operating instructions are on page 16.

WM E REMOTE CONTROLLER.

WM E indoor units are supplied with a remote controller, wall mounting bracket, PP3 (9 volt) battery, screws and wall plugs.

The controller operates either remotely by infrared signals, when the wall mounting bracket may be used to park the controller for convenience, or may be hard wired to the unit (via the wall mounting bracket) in applications where infrared is inappropriate, e.g., high lighting level, no direct line of sight etc..

1. Infrared operation
Open the battery cover at the bottom rear of the controller by sliding out and hinging up, push the polarised connector onto the battery, slot into the controller and close the cover. The controller is now ready for operation as shown on page 50.

For convenience, the wall mounting bracket may be secured to a wall and used to park the controller.

2. Hard wired
Use four core screened cable (available from TEV in 100m drums, part number 00526077). The screen should be clamped to ground in the WM E unit but **NOT** connected at the wall bracket end.

NOTE: Great care should be taken to ensure that the wiring is correct, refer to the diagram and table below.

The cable should be connected prior to mounting the bracket, taking great care to ensure that the 4 contact blades remain free to exert spring pressure on the handset terminals.

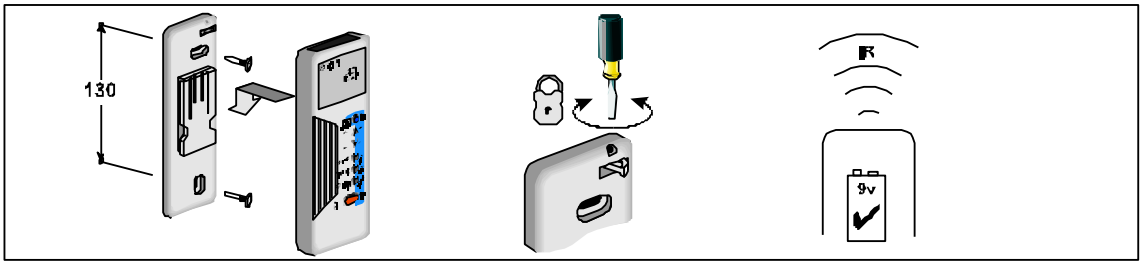
Secure the bracket to the wall by drilling two 6mm diameter holes in the positions shown, inserting the wall plugs and securing with the two screws provided.

Attach the controller to the bracket ensuring that it is pushed down firmly.

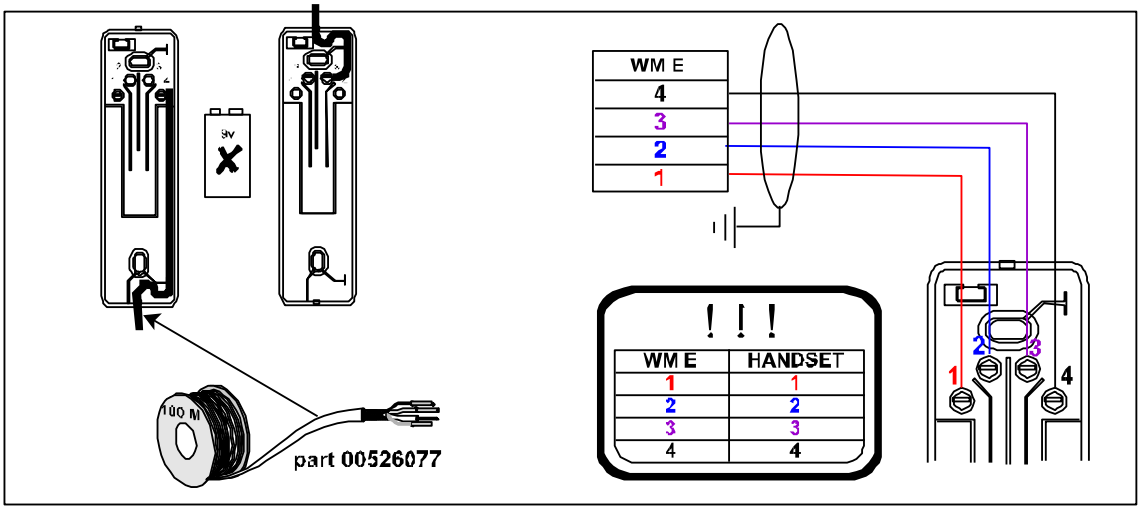
If required, the controller may be locked into position by rotating the cam at the top of the bracket with a small screwdriver. The controller is now ready for operating as stated in the user handbook.

The controller does not require a battery when this method is used.

INFRARED REMOTE CONTROL / TÉLÉCOMMANDE INFRAROUGE / INFRAROT FERNBEDIENUNG



HARD WIRED CONTROL / CÂBLAGE DE SON SUPPORT MURAL / KABELVERBINDUNG



+R407C ? / + POE ? (g)

Add extra refrigerant and polyolester (POE) oil to systems as shown below . Figures assume pipe sizes as shown on page 16.
Ajouter du réfrigérant et de l'huile polyolester (POE) selon le tableau ci-dessous. Les tableaux sont basés sur le respect des diamètres de tuyauteries montrés page 16.
Zustätzliches Kältemittel und Öl Polyolester (POE) wie unten angegeben dem System zufügen. Die Abbildungen nehmen Leitungsgrößen wie auf Seite 16 gezeigt an.

>8m	Expansion Ø	3/8"	1/2"	5/8"	3/4"
	+R22 / +R407C (g/m)	16	30	48	68

+R407C UK

		LENGTH OF EXPANSION LINE (m) / LONGUEUR DE LA LIGNE EXPANSION (m) / LÄNGE DER EXPANSIONSLEITUNG (m)														
WM (L) (E)	MCU, MCU+	< = 8	15	20	25	30	35	40	45	50	55	60	65	70	75	80
	MCUP, DCUE	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C
60	50	175	375	525	675	825	975	1125	1275	1425	1550	2625	2850	3100	3325	3550
60	60	0	225	375	525	675	800	950	1750	2000	2250	2450	2700	2925	3150	3400
80	80	125	350	500	625	775	1400	1650	1875	2100	2350	2575	2825	3050	3275	3525
80	90	325	525	675	1125	1375	1600	1850	2075	2300	2550	2775	3000	4575	4925	5250
100	90	150	350	500	950	1200	1425	1675	1900	2125	2375	2600	2825	4400	4750	5075
100	100	0	225	575	825	1050	1300	1525	1750	2000	3250	3575	3925	4275	4600	4950
WM L (E)	MHPUL (E)	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C
60	50	250	450	600	750	900	1050	1200	1350	1500	1650	2700	2925	3175	3400	3625
80	80	525	750	900	1025	1175	1800	2050	2275	2500	2750	2975	3225	3450	3675	3925
100	90	0	225	375	825	1050	1300	1525	1750	2000	2225	2450	2700	4275	4600	4950

+R407C

		LENGTH OF EXPANSION LINE (m) / LONGUEUR DE LA LIGNE EXPANSION (m) / LÄNGE DER EXPANSIONSLEITUNG (m)														
WM (L) (E)	MCU, MCU+	< = 8	15	20	25	30	35	40	45	50	55	60	65	70	75	80
	MCUP, DCUE	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C
60	50	175	375	525	675	825	975	1125	1275	1425	1550	2625	2850	3100	3325	3550
60	60	0	225	375	525	675	800	950	1750	2000	2250	2450	2700	2925	3150	3400
80	80	125	350	500	625	775	1400	1650	1875	2100	2350	2575	2825	3050	3275	3525
80	90	325	525	675	1125	1375	1600	1850	2075	2300	2550	2775	3000	4575	4925	5250
100	90	150	350	500	950	1200	1425	1675	1900	2125	2375	2600	2825	4400	4750	5075
100	100	0	225	575	825	1050	1300	1525	1750	2000	3250	3575	3925	4275	4600	4950
WM L (E)	MHPUL (E)	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C	R407C
60	50	350	550	700	850	1000	1150	1300	1450	1600	1750	2800	3025	3275	3500	3725
80	80	700	925	1025	1200	1350	1975	2225	2450	2675	2925	3150	3400	3625	3850	4100
100	90	0	225	375	825	1050	1300	1525	1750	2000	2225	2450	2700	4275	4600	4950

+POE OIL

		LENGTH OF EXPANSION LINE (m) / LONGUEUR DE LA LIGNE EXPANSION (m) / LÄNGE DER EXPANSIONSLEITUNG (m)														
WM (L) (E)	MCU, MCU+	< = 8	15	20	25	30	35	40	45	50	55	60	65	70	75	80
	MCUP, DCUE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE
60	50	0	25	50	50	50	75	75	100	100	100	175	200	225	225	250
60	60	0	25	25	25	50	50	75	125	150	150	175	200	200	225	250
80	80	0	25	25	50	50	100	125	125	150	175	175	200	225	225	250
80	90	25	50	50	75	100	125	125	150	175	175	200	225	325	350	375
100	90	0	25	25	75	75	100	125	125	150	175	175	200	325	350	375
100	100	0	25	50	50	75	100	100	125	150	225	250	275	300	325	350
WM L (E)	MHPUL (E)	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE	POE
60	50	25	50	50	50	75	75	100	100	125	125	200	225	225	250	275
80	80	50	75	75	75	100	150	150	175	200	200	225	250	250	275	300
100	90	0	25	25	50	75	100	100	125	150	150	175	200	300	325	350

	WM (L) (E) INSTALLATION CHECK LIST	Page	Checked
1	Is the unit square and level with the ceiling?	15	
2	Is the correct restrictor(s) fitted?	16	
3	Are refrigerant pipes the correct diameters for the pipe run? (also see outdoor unit)	16	
4	Is the pipework correctly supported throughout its length?	16	
5	Is the expansion and suction pipework insulated right up to the unit?	16	
6	Have all pipework joints been carefully checked for leaks?	-	
7	Is the refrigerant charge / oil addition correct?	27	
8	If applicable, has the blue wire on HPC 55000487 been returned to terminal 4?	26	
9	If the outdoor unit is a DCUE has link JP6 been removed?	26	
10	WM L: if the outdoor unit is an MCU, MCU+ or DCUE, has link JMODE been removed (WM L pcb)?	23	
11	Is the fuse size correct?	13	
12	Is the interconnecting wiring correct?	38-40	
13	Does the system respond correctly to commands from the controller?	48-53	
14	Is the condensate drain correctly sized, connected, supported and insulated?	17	
15	Has the effectiveness of condensate removal system been tested and there are no leaks?	-	
16	Is the air distribution as required?	-	

	CHECK LIST DE L'INSTALLATION DE WM (L) (E)	Page	Vérifié
1	L'unité est-elle fixée de niveau?	15	
2	Avez-vous monté les bons numéros de buse pour le système?	16	
3	Avez-vous passé les bons diamètres de tuyauteries?	16	
4	Les tuyauteries sont-elles correctement fixées?	16	
5	Avez-vous isolé les tuyauteries jusqu'au châssis de l'unité?	16	
6	Avez-vous effectué une recherche de fuites?	-	
7	La charge de réfrigérant et d'huile est-elle correcte?	27	
8	Si approprié, le fil bleu doit revenir a la borne 4 sur la carte HPC 55000487?	26	
9	Si l'unité extérieure est un DCUE, avez-vous retiré le schunt JP6?	26	
10	WM L: si l'unité extérieure est un MCU, MCU+ ou DCUE, avez-vous retiré le schunt JMODE (WM L	23	
11	La taille du disjoncteur est-elle correcte?	13	
12	Les câblages d'interconnexions sont-ills corrects?	38-40	
13	Le système répond-t-il correctement à la télécommande?	48-53	
14	L'evacuation des condensats est-ell correctement raccordée, supportée et isolée?	17	
15	Avez-vous vérifié le bon fonctionnement de l'évacuation des condensats et qu'il n'y a pas de fuites?	-	
16	La distribution d'air est-elle correcte?	-	

	WM (L) (E) MONTAGE PRÜFLISTE	Seite	Geprüft
1	Ist das Gerät waagerrecht und eben eingebaut?	15	
2	Ist die richtige Düse für das System eingebaut?	16	
3	Sind die richtigen Rohrleitungsgrößen verlegt worden? (siehe auch Aussengerät)	16	
4	Sind alle Rohrleitungen über deren gesamte Länge richtig befestigt?	16	
5	Sind beide Leitungen bis zum Gerätegehäuse isoliert worden?	16	
6	Sind alle Rohrleitungen und Verbindungen auf Leckagen untersucht worden?	-	
7	Ist die Kältemittel und Ölfüllung richtig?	27	
8	Falls das Aussengerät der Typ MCUP ist, ist der blaue Draht zurück an Klemme 4 angeschlossen worden?	26	
9	Falls das Aussengerät ein DCUE ist, ist die Brücke JP6 entfernt worden ?	26	
10	WM L pcb: Falls das Aussengerät ein MCUP oder MHPUL ist, sind die Brücke JMODE entfernt worden?	23	
11	Ist die Sicherungsgröße richtig?	13	
12	Ist die Verbindungsverdrahtung richtig?	38-40	
13	Nimmt das System die Befehle des Reglers an?	48-53	
14	Ist die Tauwasserleitung richtig angeschlossen, aufgehängt und isoliert?	17	
15	Prüfen Sie nach, ob daß Kondenswasser richtig abfliessen kann und keine	-	
16	Ist die Luftverteilung wie gewünscht?	-	

WM (L) (E) USER MAINTENANCE

ISOLATE THE UNIT ELECTRICALLY BEFORE COMMENCING ANY MAINTENANCE WORK

In order to maintain maximum efficiency of this unit, it is important that the filters behind the return air grilles are cleaned regularly.

To remove filters: **To replace filters:**

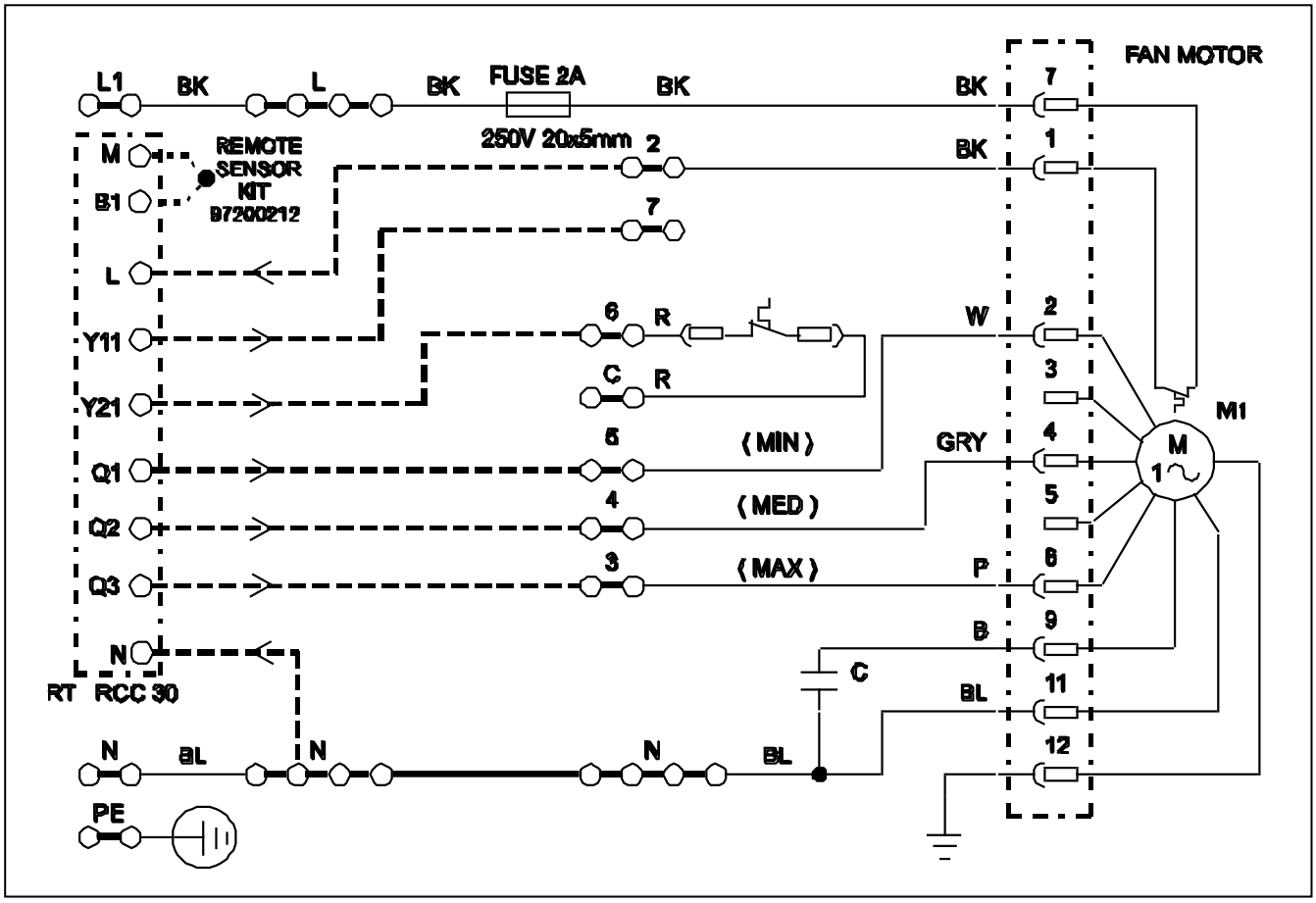
Clean the filters by washing in tepid water, vacuuming or by tapping gently outside the building.

The unit should always be used with a filter.
Failure to do so will cause a decline in unit performance and may result in malfunction

We recommend that, in order to prolong the life and maintain performance of WM (L) (E) units, they are regularly serviced by a TEV Ltd installer/dealer.

For diagrams see page 12.

WM WIRING DIAGRAM



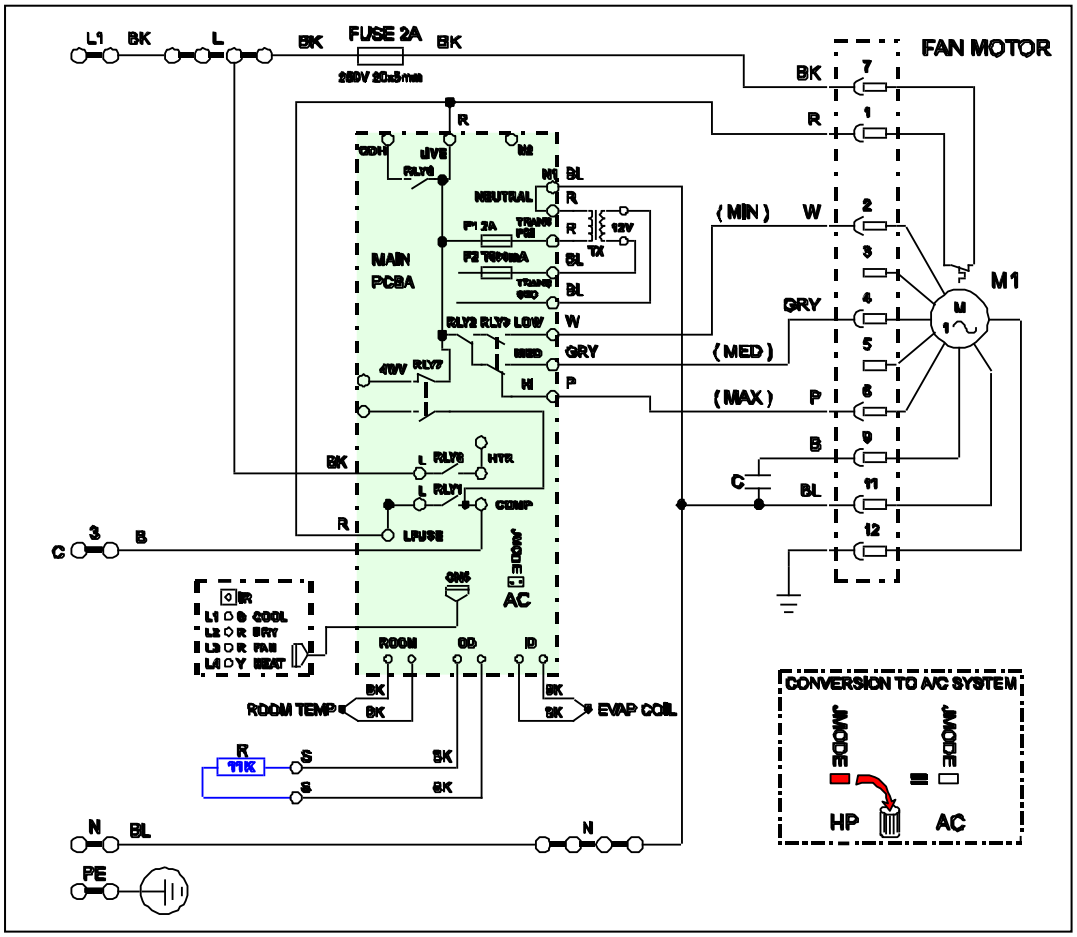
(See page 31 for accessories)

B	BROWN
BK	BLACK
BL	BLUE
G	GREEN
GRY	GREY
O	ORANGE
P	PINK
R	RED
T	TURQUOISE
V	VIOLET
W	WHITE
Y	YELLOW
AC	AIR CONDITIONER
C	CAPACITOR
CC	CONTROL CIRCUIT
EH	ELECTRIC HEATER
-->--	INSTALLER SUPPLIED
IRHW	INFRA RED (WIRED)
REC	INFRA RED (RECEIVER)
F	FUSE
H	HEAT/HEATER
HP	HEAT PUMP
JP	JUMPER / PLUG
L	LIVE
M1	FAN MOTOR
M2	PUMP
N	NEUTRAL
PCB1	CONDENSATE CONTROL
PE	PROTECTIVE EARTH
RL	RELAY
RT	REMOTE THERMOSTAT
RV	REVERSING VALVE
S1	CONDENSATE SENSOR

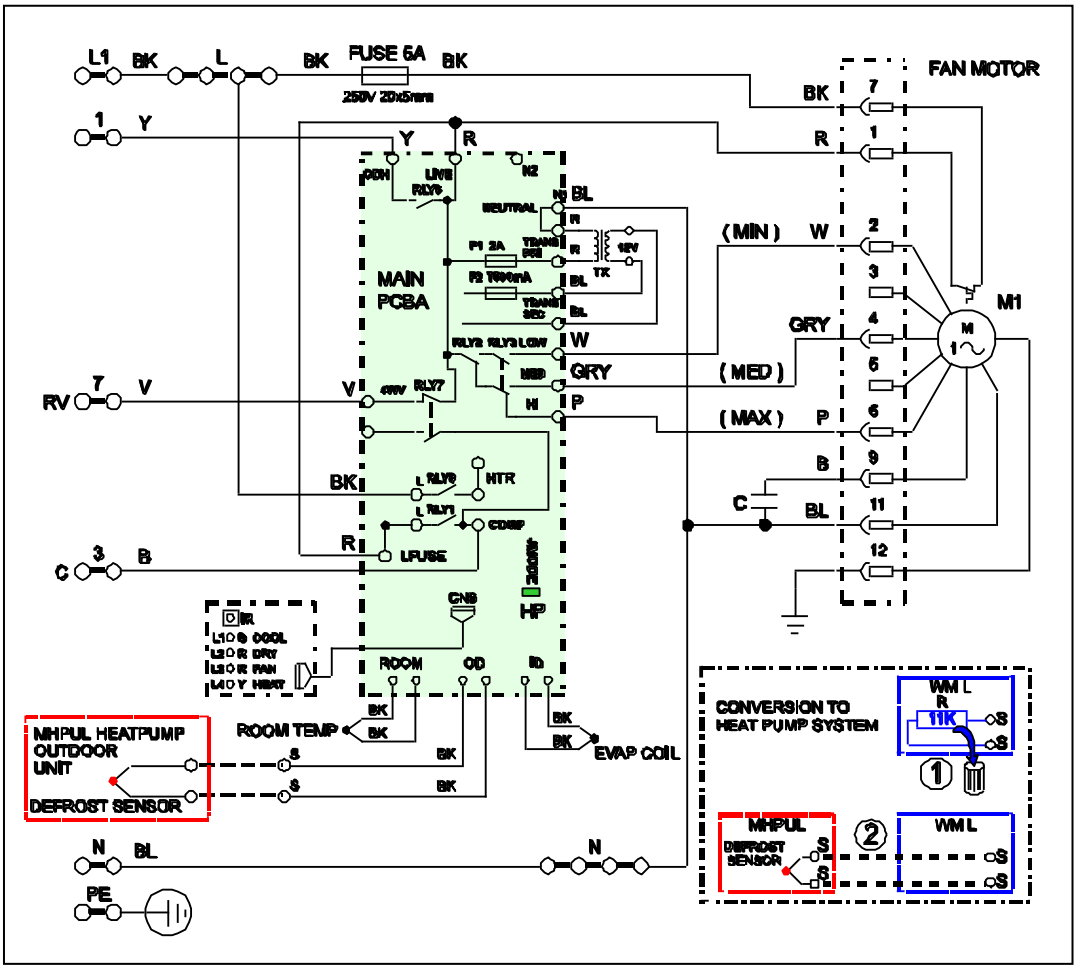
B	MARRON
BK	NOIR
BL	BLEU
G	VERT
GRY	GRIS
O	ORANGE
P	ROSE
R	ROUGE
T	TURQUOISE
V	VIOLET
W	BLANC
Y	JAUNE
AC	CLIMATISEUR
C	CAPACITÉ
CC	CIRCUIT DE COMMANDE
EH	CHAUFAGE ELECTRIQUE
-->--	NON FOURNI
IRHW	INFRAROUGE (CABLE)
REC	INFRAROUGE (RECEVEUR)
F	FUSIBLE
H	CHAUD / CHAUFFAGE
HP	POMPE A CHALEUR
JP	PLUG
L	PHASE
M1	MOTEUR DE VENTILATEUR
M2	POMPE
N	NEUTRE
PCB1	COMMANDE DES CONDENSATS
PE	MISE À LA TERRE
RL	RELAIS
RT	THERMOSTAT A DISTANCE
RV	VANNE DE REVERSION
S1	SONDE DES CONDENSATS

B	BRAUN
BK	SCHWARZ
BL	BLAU
G	GRUN
GRY	GRAU
O	ORANGE
P	ROSA
R	ROT
T	TUERKIS
V	VIOLET
W	WEIS
Y	GELB
AC	KLIMA ANLAGE
C	KONDENSATOR
CC	REGEL KREIS
EH	ELEKTROHEIZUNG
-->--	BAUSEITS
IRHW	INFRAROT (VEHRDRAHET)
REC	INFRAROT (EMPFANGER)
F	SICHERUNG
H	HEIZUNG
HP	WARMEPUMPENAVLAGE
JP	KURTZSCHLUßBRÜCKE
L	PHASE
M1	LUFTER MOTOR
M2	PUMPEN
N	NEUTRALLEITER
PCB1	KONDENSAT PUMPREGLER
PE	SCHUTZLEITER
RL	RELAIS
RT	FERNBEDIENUNG
RV	UMKEHRVENTL
S1	KONDENSATFÜHLER

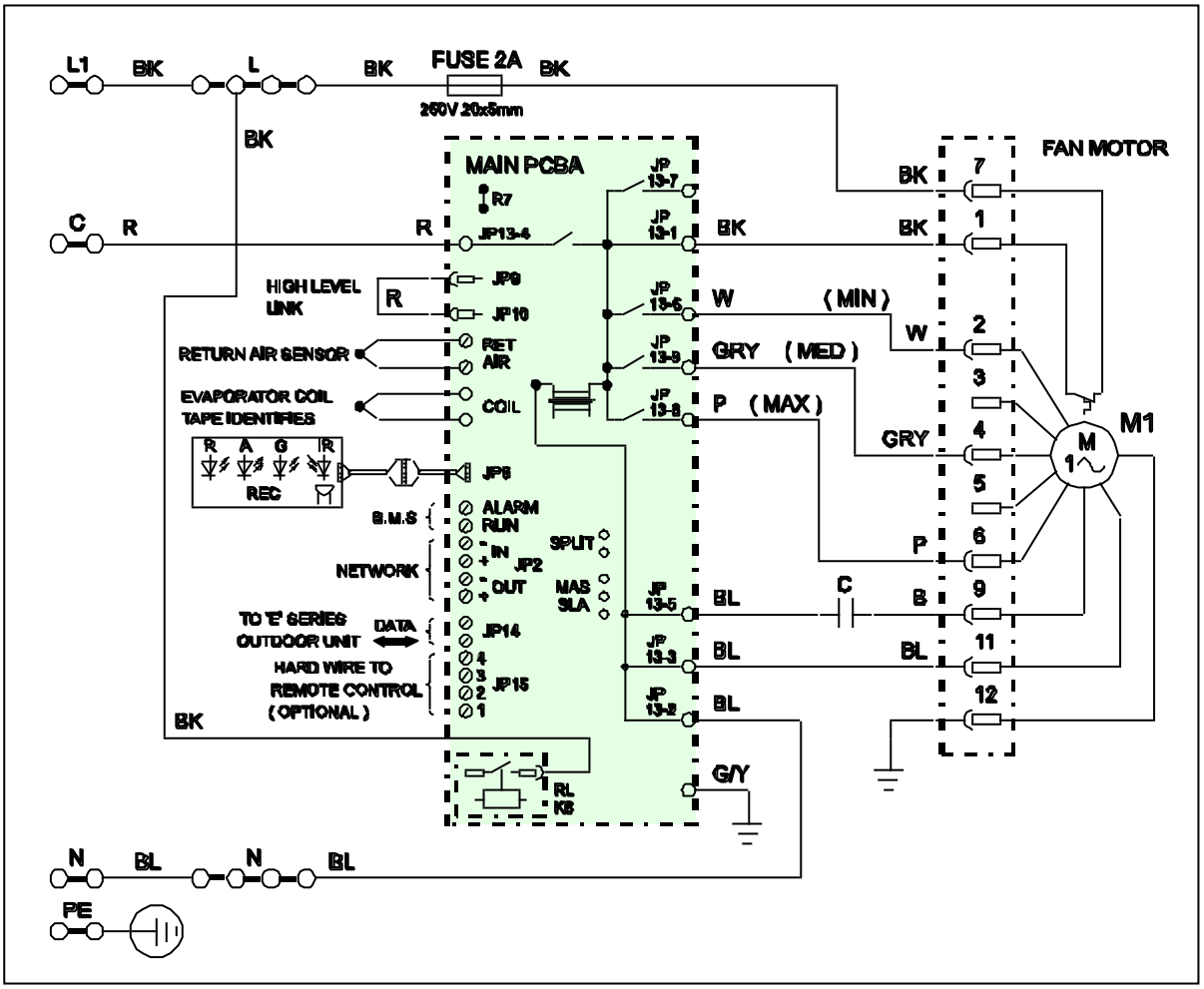
WM L AIR CONDITIONER WIRING DIAGRAM



WM L HEAT PUMP WIRING DIAGRAM

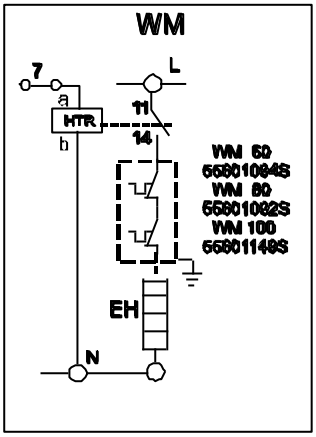


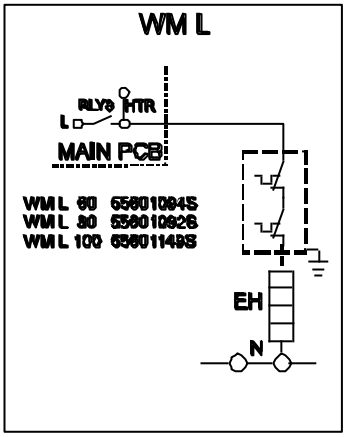
WM E WIRING DIAGRAM

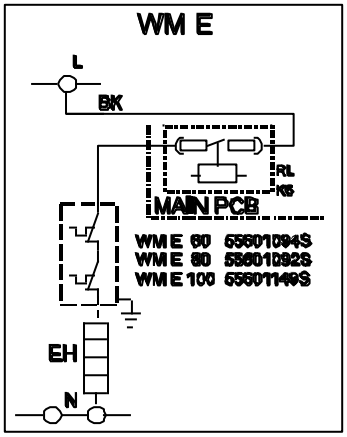


OPTIONAL KITS

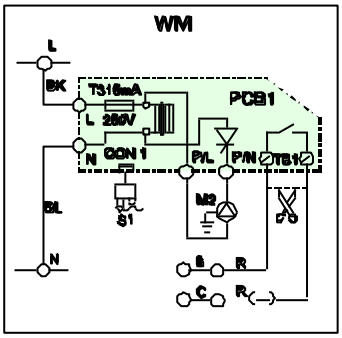
HEATER KITS

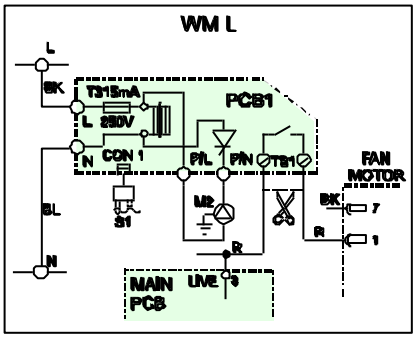


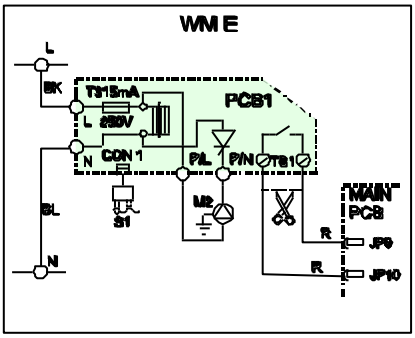




5m CONDENSATE PUMP KITS

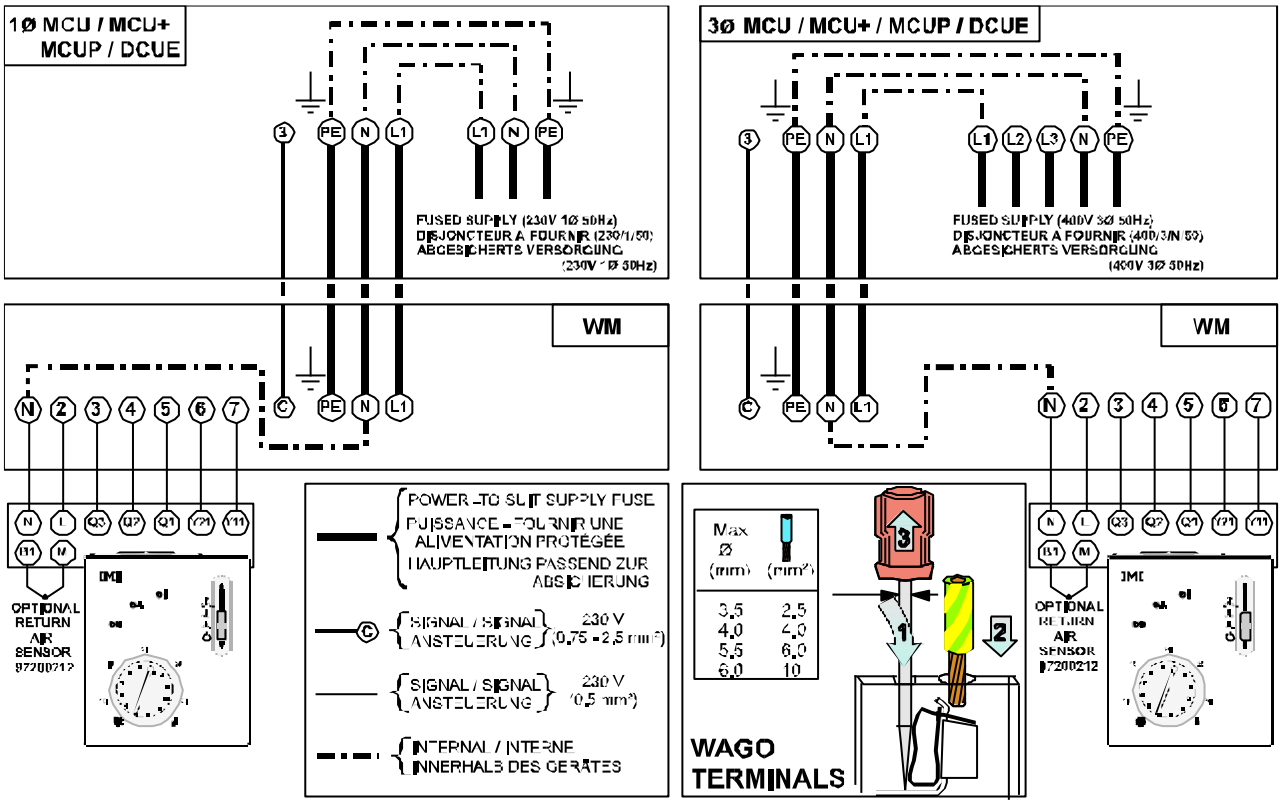




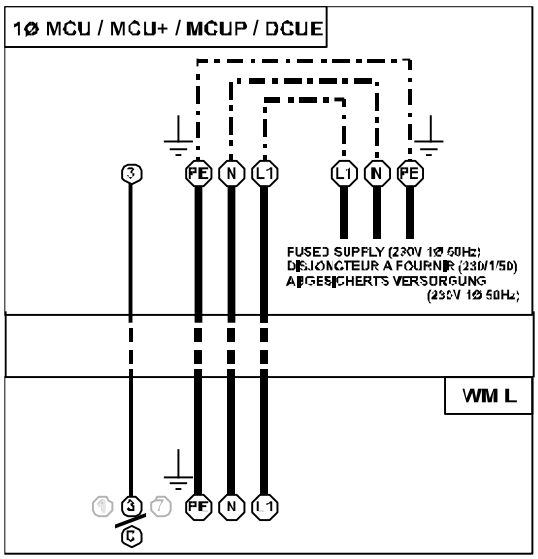


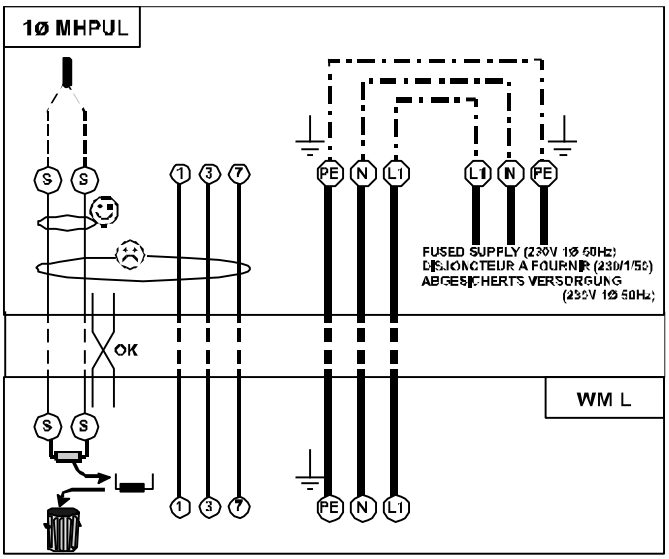
INTERCONNECTING WIRING / INTERCONNEXIONS /VERBINDUNGSVERDRAHTUNG

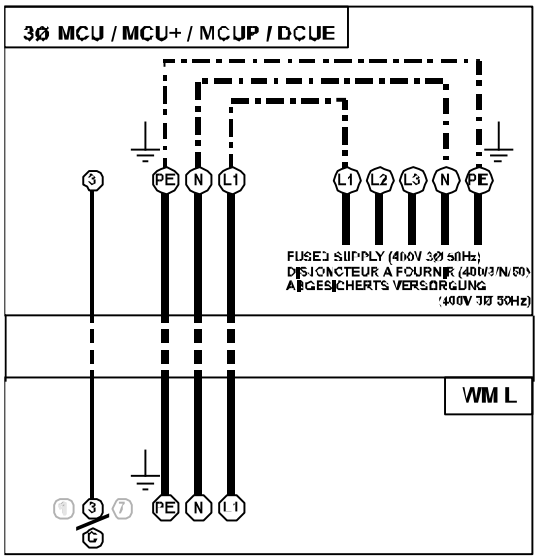
WM

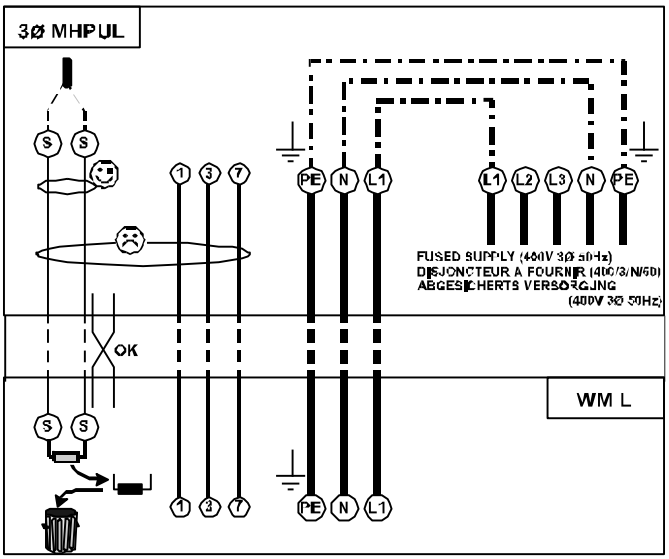


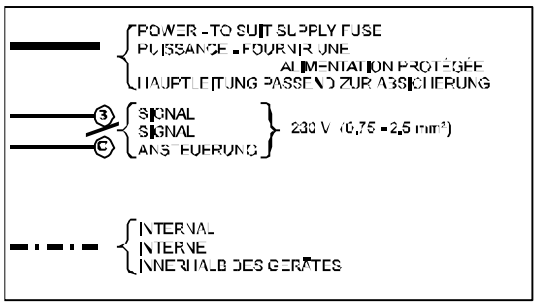
INTERCONNECTING WIRING / INTERCONNEXIONS /VERBINDUNGSVERDRAHTUNG

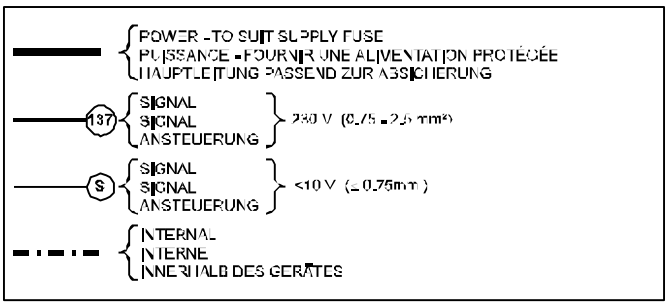




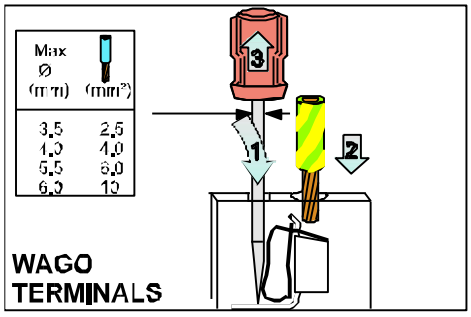


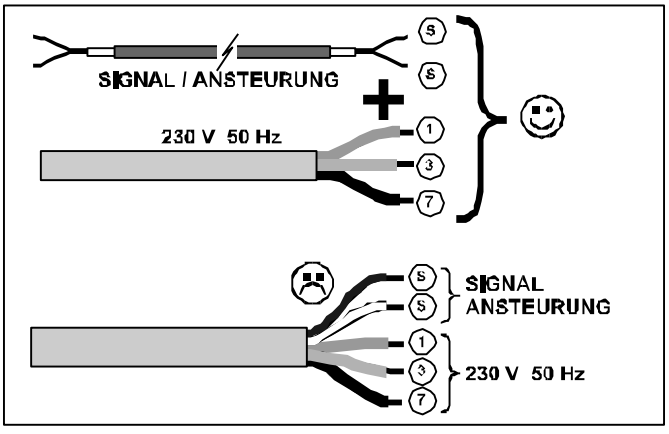


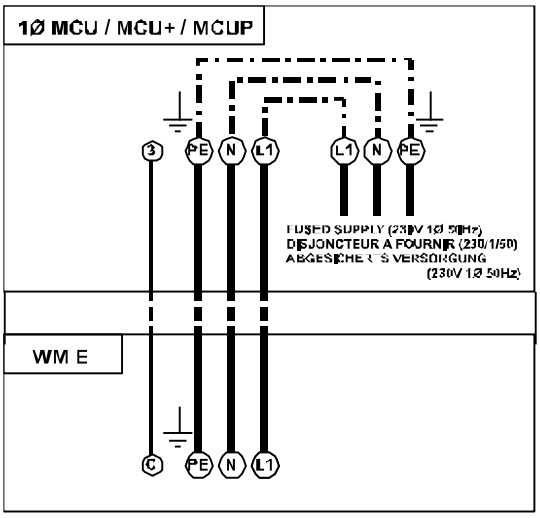


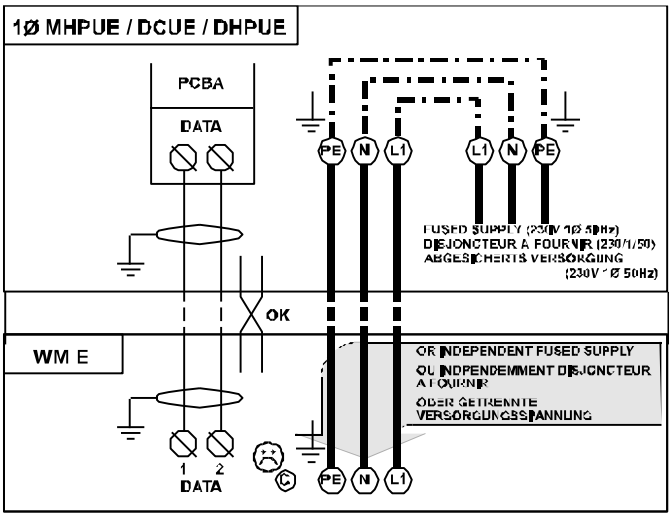


WM L

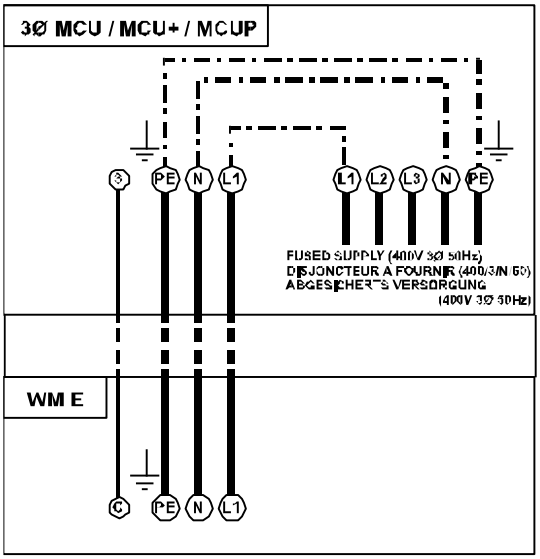


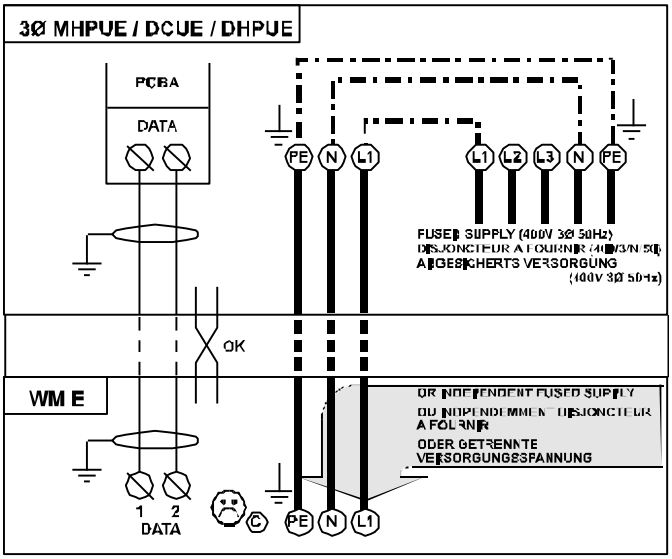


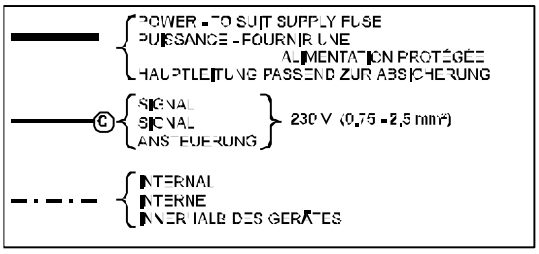


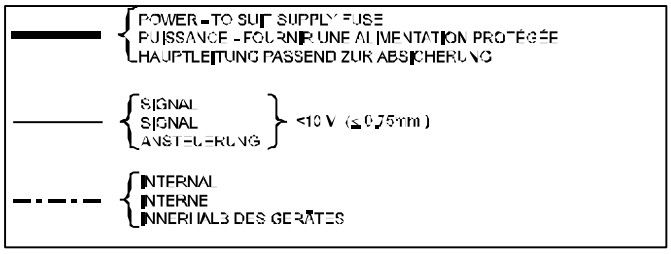


INTERCONNECTING WIRING /

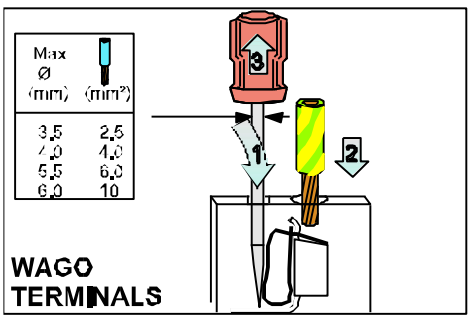




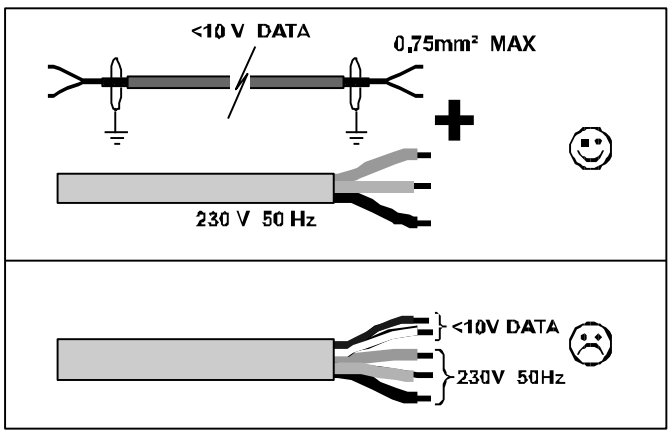




INTERCONNEXIONS /VERBINDUNGSVERDRAHTUNG



WM E

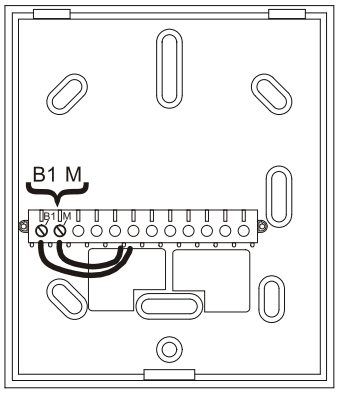


RETURN AIR SENSOR 97200212 (FOR RCC 30 REMOTE CONTROLLER 97200211)

The sensor can be fitted to the return air inlet to an air conditioning unit to improve operation eg. if the wall thermostat is placed outside the space being conditioned, or if there is considerable stratification in a room with a high ceiling, where the wall thermostat would not measure a representative temperature.

ITEM	QTY	DESCRIPTION
1	1	Sensor (2.4m lead)
2	2	Tie wrap

ISOLATE THE SYSTEM ELECTRICALLY PRIOR TO INSTALLATION OF THE SENSOR



1. Cut off the faston terminals on the cables and strip back.

2. Connect the sensor to terminals B1 and M , as shown (polarity is unimportant). Changeover to the remote sensor is automatic on power up of the controller.

3. Tie wrap the sensor to a suitable place in the return airflow, where it will soak in a representative temperature.

4. After installation, adjust the thermostat to confirm satisfactory operation.

5. Sensor input B1-M carries mains potential.
If the sensor cable needs to be extended, the cables used must be suitable for mains voltage.

PROGRAMMABLE TIMER KIT 52500151

This kit can be used to give **ON/OFF** switching of the mains voltage control circuits of WM units **where the total current does not exceed 3 Amps.**

ELECTRIC HEATER CURRENTS CANNOT BE SWITCHED DIRECTLY.
It is not required for WM L units which have built in timers.

ITEM	QTY	DESCRIPTION
1	1	7 Day Programmable Timer
2	1	In Line Fuse Carrier
3	1	5 Amp Fuse, 1" x 1/4"
4	1	Terminal

PROGRAMMER SPECIFICATION:

Type: Digital electronic 230V, 50Hz
Programme: 7 day
Setting Resolution: 1 minute
Max. Switched Current: 3 A (fan load)

Selection Switch
"OFF",
"TMD " (TIMED)
"CON " (CONSTANT ON)
"ADV " (ADVANCE)

The timer will accommodate 0.75mm^2 to 2.5mm^2 wires.
Three core cable is required between the timer and the air conditioning unit.
The timer motor must be connected to an uninterrupted supply source.

TIMER MOUNTING

1. Carefully unpack and identify the components.
2. If the unit is to be surface wired, remove the appropriate knockouts in the backplate. Screw the backplate to the wall with No. 8 wood screws through the fixing holes.
3. If the backplate is to be fixed to a BS4662 single gang plaster depth box, use 3.5mm machine screws.

WIRING FOR ON/OFF SWITCHING

1. a) Wire timer terminal 'L' to unit terminal 2.
   b) Use the terminal provided to connect terminal 4 to live (terminal L, remote controller RCC 30 [97200211]).
   c) Wire timer terminal 'N' to unit terminal N

2. Discard the in-line fuse carrier.
3. Plug in the unit and secure the screws.
4. Program as described in the separate timer instructions.

If, as a result of fitting this kit, more than one supply is taken into a unit, that unit must be marked:-

**"Two, (or more if applicable), supplies are taken into this equipment.
Isolate both, (all), before undertaking any maintenance work."**

ELECTRIC HEATER KIT

WM	kW	Part No.
60	1.3	55600401
80	1.8	55600402
100	2.3	55600403

WM L & WM E	kW	Part No.
60	1.3	55600411
80	1.8	55600412
100	2.3	55600413

ITEM	QTY	DESCRIPTION
1	1	Coil/element/fuse assy
2	3	No.8 screws
3	4	Cable clamps
4	2	Cable ties

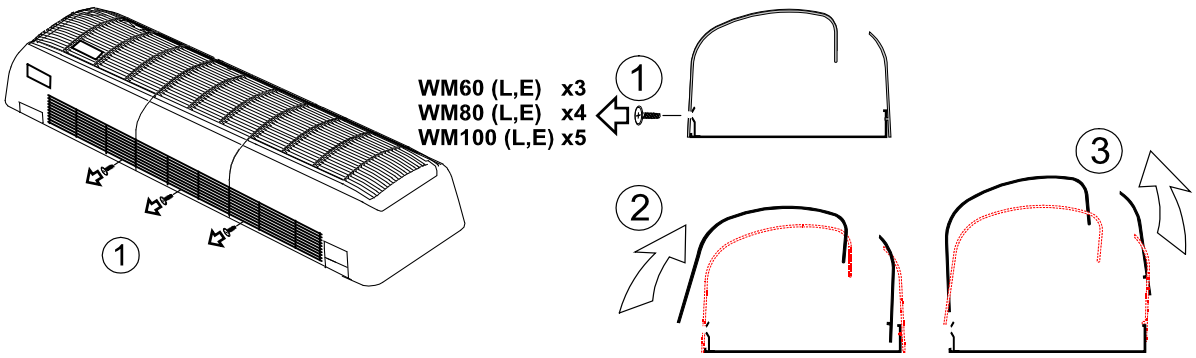
ITEM	QTY	DESCRIPTION	SUPPLIED IN KITS
5	2	Coil clip	55600402/403/412/413
6	1	Relay assy	55600401/402/403
7	2	No.6 screws	55600401/402/403
8	1	Terminal	55600411/412/413
9	1	Jumper bar	55600411/412/413

These kits are for use on WM (L) (E) wall mounted units.

It is easier to fit the kit prior to installing the unit.

ISOLATE THE SYSTEM PRIOR TO FITTING THE KIT IF THE UNIT HAS BEEN INSTALLED

1. CABINET REMOVAL

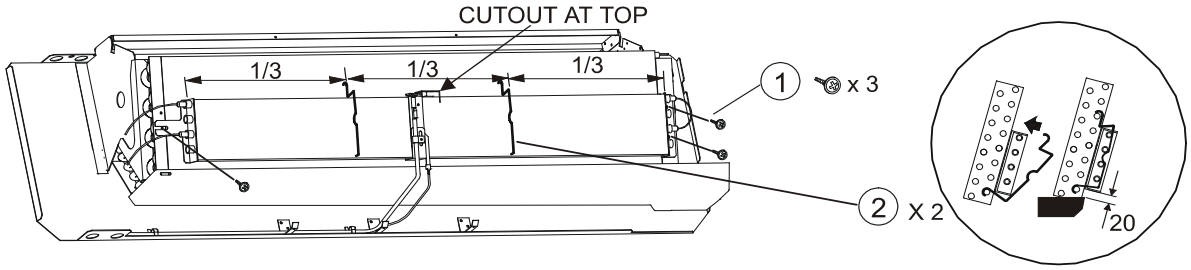


2. FITTING THE COIL/ELEMENT/FUSE ASSEMBLY (numbers refer to diagrams)

a) Secure the assembly to the front of the coil, with the thermal cutout at the top (3xNo.8 screws). ①

b) Ensure there is a space of 20mm between the top of the drain tray and the bottom of the heater coil.

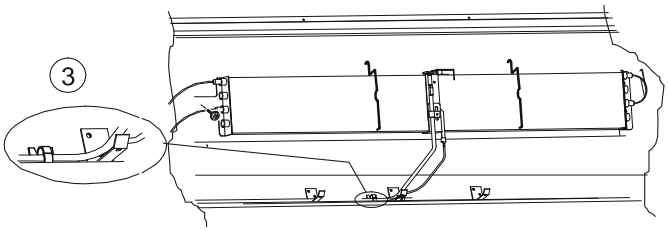
c) On WM (L) (E) 80 / 100 position the coil clips ②



3. WIRING WM L, and WM E

a) Route the harness from the fuse along the back panel using the cable clamps, ensuring the harness is above the

cabinet fixing brackets ③

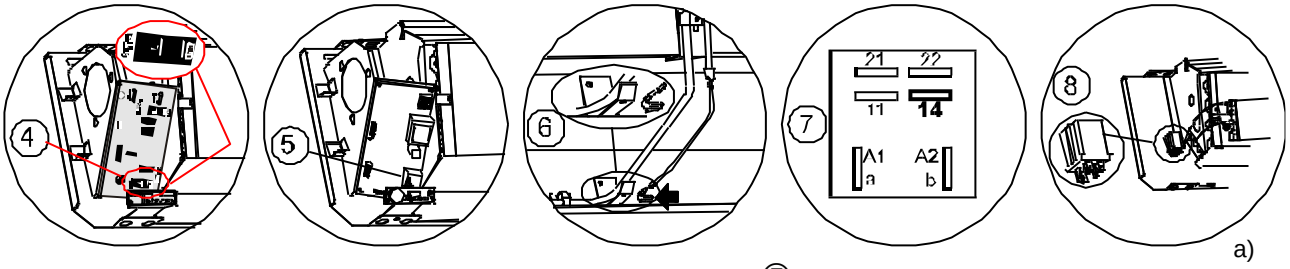


b) Connect the black wire from the fuse assembly to the PCB relay: ④ to 'HTR' for L models, ⑤ for E models.

Route the blue wire alongside the existing harness and connect to terminal N on the terminal rail.
Use the cable ties provided to tidy the wires.

c) Connect the earth wire to the nearest cabinet fixing bracket ⑥.
d) Use the cable ties provided to tidy the wires.

4. WIRING WM



a)

Connect a black wire from the fuse assembly to No.14 on the kit relay ⑦.

b) Fit the relay to the back panel using the 2x No.6 screws ⑧.

c) Route the harness from the fuse along the back panel using the cable clamps, ensuring the harness is above the cabinet fixing brackets ③.

If there is no free space in the existing "N" neutral terminal, insert the terminal provided and fit the jumper bar between the existing &"new" terminal.

e) Connect the blue relay wire to terminal N on the terminal rail.

f) Connect the black relay wire to terminal L1 on the terminal rail.

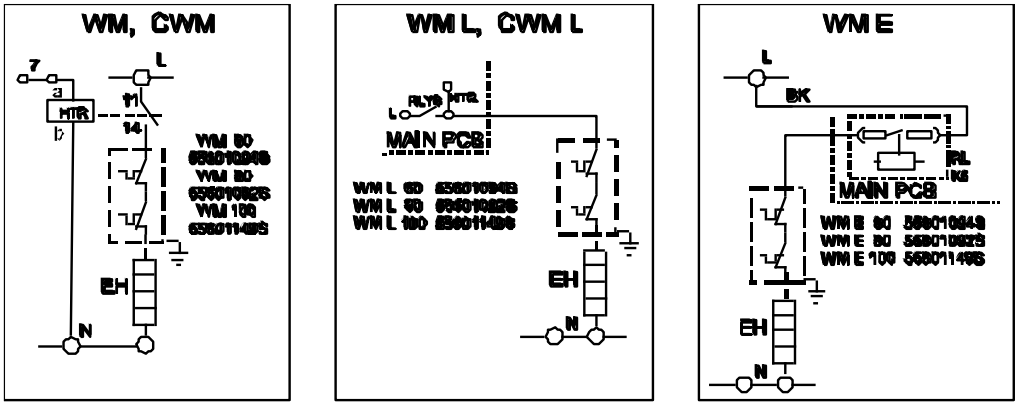
g) Connect the orange relay wire to terminal 7 on the terminal rail.

h) Connect the second black wire from the fuse assembly to the black wire from the element, via the connector.

I) Connect the blue wire from the element to terminal N on the terminal rail.

j) Connect the earth wire clip to the nearest bracket as shown ⑥.

k) Use the cable ties provided to tidy the wires.



5m HIGH CONDENSATE PUMP KIT FOR WM UNITS 55600420

ITEM	QTY	DESCRIPTION
1	1	Pump assembly

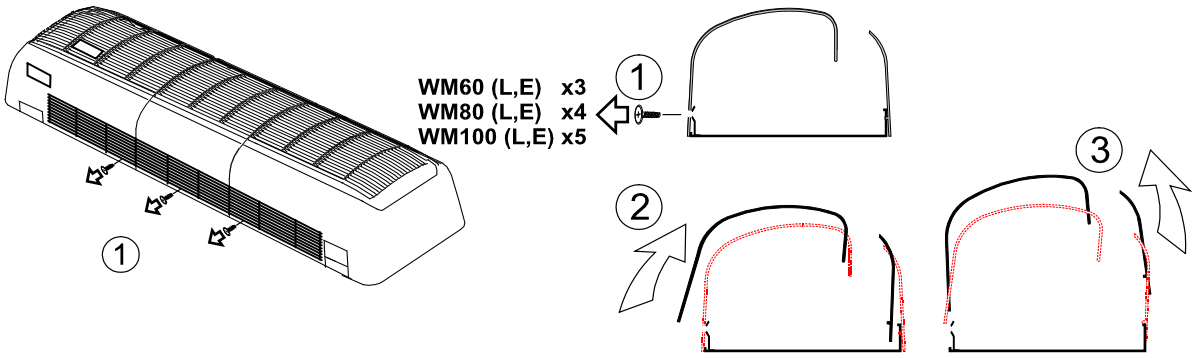
This kit is for use on all versions of WM (L) (E) units and is for condensate removal where a lift of up to 5m is required.

The pump runs on demand.
A high level alarm will switch off the cooling signal until condensate has dropped below a pre-set level.

It is easier to fit this kit before installing the unit.

IF THE UNIT HAS BEEN INSTALLED, ISOLATE THE SYSTEM BEFORE FITTING THE KIT.

1. CABINET REMOVAL



2. FITTING THE KIT

a) Fit the pump assembly into its temporary position (Fig.1) by sliding the hooks on the pump assembly bracket into the cut-outs on the back panel side flange.

Note: This is not the final position, but it makes installation easy.

b) Fit the sensor/filter inside the drain tray (Fig.2). Do not over tighten the screw.

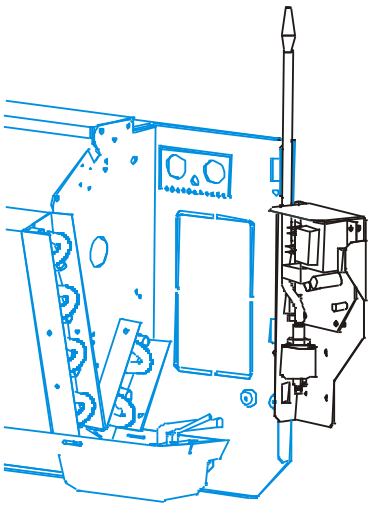


Fig.1

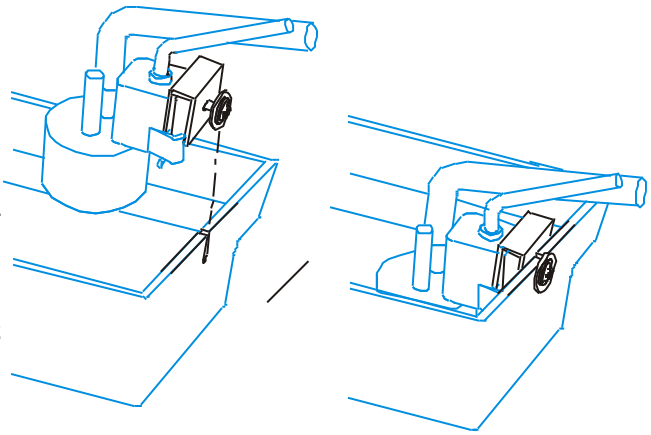


Fig.2

3. WIRING

a) Locate the black, blue and red wires in the unit near the pump and remove the cover from the black and blue wires.

b) Connect: (i) Black wire to terminal L on the pcb
(ii) Blue wire to terminal N on the pcb
The plastic cover over the pcb can be removed for convenience: retain the cable tie.

c) Cut the centre loop of the red wire and strip back both ends by 5mm. Connect the bared ends to the black de-mountable plug TB1 (non-polarized) on the pcb.

d) Fit the spare earth wire (clip fitted) to the back panel side flange.
If the plastic cover was removed, secure in its original position with the original cable tie.
Unhook the pump assembly and fit in its final position (Fig. 3).
Connect a drain hose to the white connector when installed.

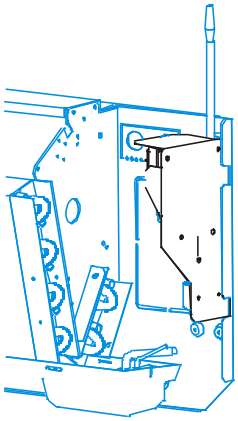


Fig.3

4. TESTING THE PUMP AND CONTROL

a) Connect a suitably fused supply to the unit (refer to the unit installation instructions). Allow approximately one minute for the controls and sensor to stabilize.

b) Slowly add water to the condensate tray sump until the pump runs. Initially the pump will be noisy until the air in the hose has been expelled. It is possible that, on this first cycle, the pump will run dry for a short period (indicated by noise).

c) Add more water to the sump and the pump will cycle in the normal manner.

d) With the system in cooling mode, continue adding water to the sump until it reaches the higher of the sensor probes. The cooling cycle will shut down, and the pump will continue to run until the water has dropped below the level of this probe.

e) Replace the cabinet.

Note: Whenever the electrical supply to a unit fitted with a condensate pump and controls is interrupted, a delay of up to 1 minute will occur before the compressor or the pump will start when the supply is reinstated.

5. TROUBLE SHOOTING

Unit will not cool No mains supply to the control board

Pump does not run Fuse on control board blown (T315mA x 20mm)
Sensor disconnected from control board

Cooling is interrupted Restriction in pump flow allowing level to rise and trip overflow circuit
Check for blockage or kink in hoses
Condensate at high level - tripping overflow circuit
Filter blocked - Remove and clean

Excessive pump noise Air leak in hoses and/or joints
Pumping without water in sump - control board fault
Loose connection between sensor and control board
Loose fuse, intermittent mains supply to control board
Water syphoning due to lack of air break

6. APPLICATION NOTES

1. The pump will work against a 5m head. Flow rate is highest with minimum head.

2. Long lengths of drain pipe should not be exposed to the outdoor ambient, otherwise freezing of condensate may occur during winter operation.

3. It is not advisable to have the outlet of the drain well below the position of the pump, otherwise a syphon effect may open the pump valves and cause noise by admitting air.

4. For normal applications, i.e. where the drain is level or above the pump or within 3 feet below it, no extra check valves are needed; the pump has its own internal check valves.

5. Ensure that no hose is kinked, as this could seriously affect the pump performance.

6. Clean the filter at regular intervals.

EMC TERMINATION KIT 55200301

This termination gland is required on all WM E units wherever low voltage signal cables are used (see table below), to maintain compliance with the EMC Directive. One termination gland can be used for up to 3 cables.

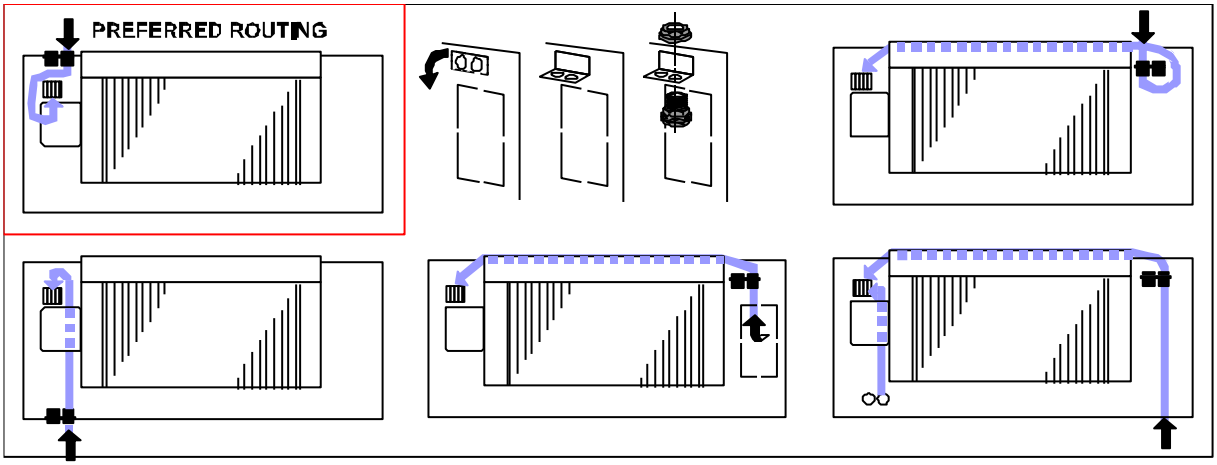
CONTENTS

ITEM	QTY	DESCRIPTION
1	1	Gland assembly
2	1	Screening sock
3	2	Cable tie

Type of connection	No. of cables required
Wall mounted handset	1
Remote temp. sensor	1
Data to MHPUE/DHPUE	1
BMS control (with alarm)	1 (2)
Networking	2

One termination gland can be used for up to 3 cables. Each cable is four core screened cable, available from TEV in 100m rolls, part number 00526077.

ISOLATE THE SYSTEM ELECTRICALLY PRIOR TO INSTALLATION OF THIS KIT



Method of installation for individual screened or collectively taped screened cable:

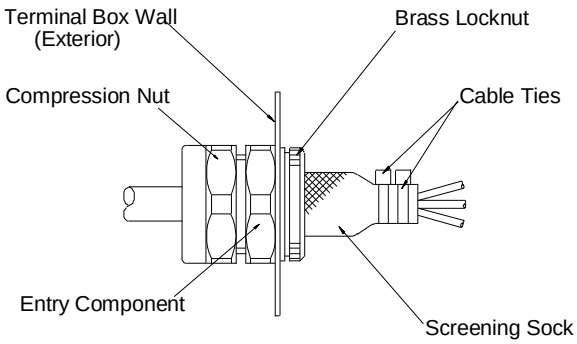
1. The cable routing inside the unit should be chosen to minimise both the route length and the stripped length in order to minimise the risk of interference. Cable routes and gland brackets are shown below:-

2. Prepare the cable(s) by stripping back the outer sheath and the screenings to expose the cores to a length suitable for the chosen route to the terminals..

3. Further strip back the outer sheath(s) to expose the individual or collective screening to a length of 25mm. Remove the first (blue) layer and wrap the now exposed earth wire around the shiny foil layer.

4. Position the assembled termination with the seal in its relaxed state onto the cable(s) such that the end of the thread is in line with the outer sheath.

5. Tighten the compression nut onto the entry component to effect the IP66 neoprene seal. Remove the brass locknut. Cut the screening sock in half and fit half of the screening sock over and around the individual/collective core screens such that the end of the sock is in line with the end of the screening. Tie in position with the cable ties to effect a joint.



6. Thread the individual wires and screening sock through the hole in the gland plate and fit the locknut over the sock.

7. Fit the lock nut over the sock and slightly screw on to the thread.

8. Ensure that the cables can reach their terminals: tighten the lock nut such that the screening sock is secured and anchored and is in direct contact with the internal wall of the gland plate.

9. Bend the sock such that it cannot short circuit to any electrical connection.

BMS ALARM INTERFACE KIT 53800423 *(for WM E)*

By fitting a BMS alarm interface kit, a simple common alarm signal is available for volt free input to a BMS network.

Power failure, or any other notifiable alarm state, causes the output relay to de-energise.
Condition OK = system running without fault
Condition Alarm = system mains power loss or notifiable alarm state.

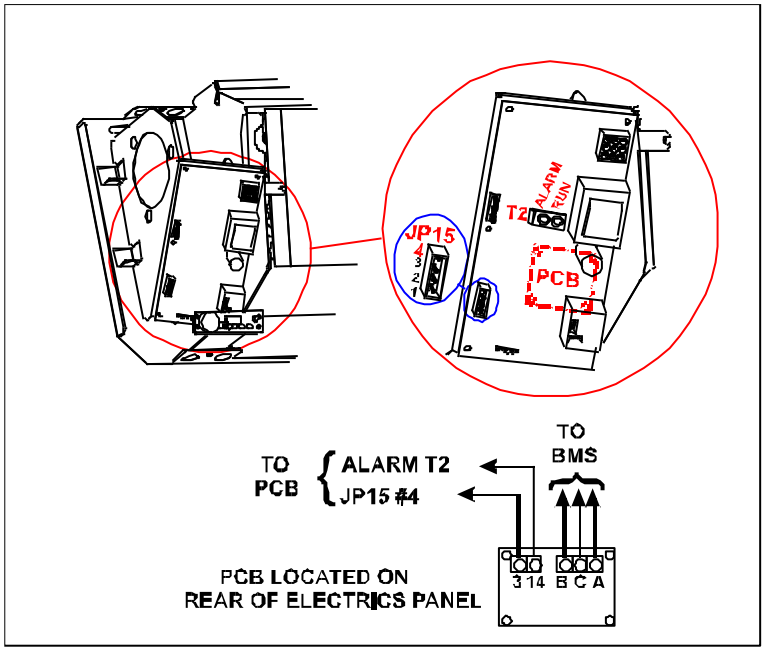
ITEM	No	DESCRIPTION
1	1	BMS alarm interface board
2	4	Mounting foot *(self adhesive for IMPACT-E)*
3	4	Mounting foot *(hook type for IMAGE-E, WM E)*

ITEM	No	DESCRIPTION
4	4	Mounting foot (*long: 4 for 600 E, 3 for *75E)*
5	1	Orange wire
6	1	Yellow wire

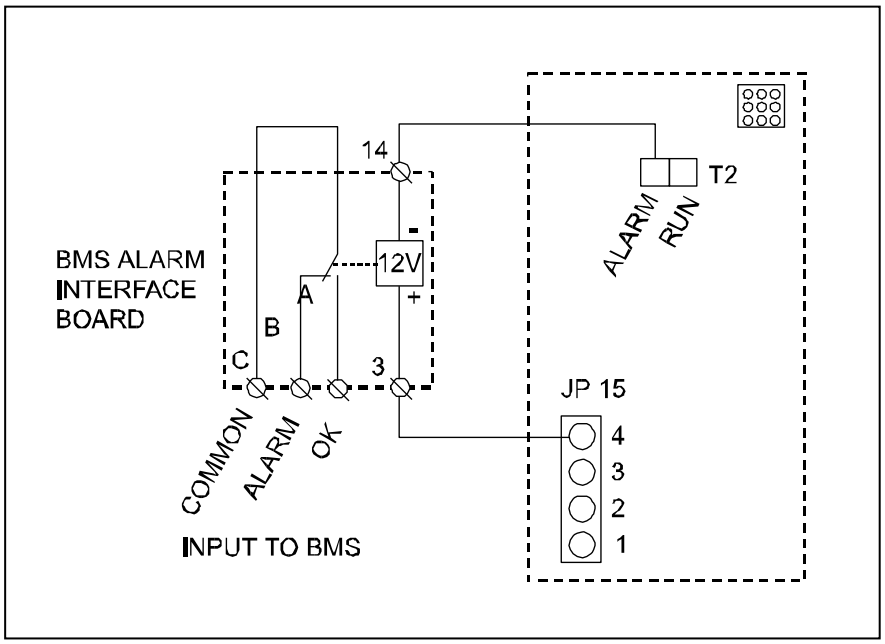
ISOLATE THE SYSTEM ELECTRICALLY BEFORE INSTALLING THIS KIT

MOUNTING

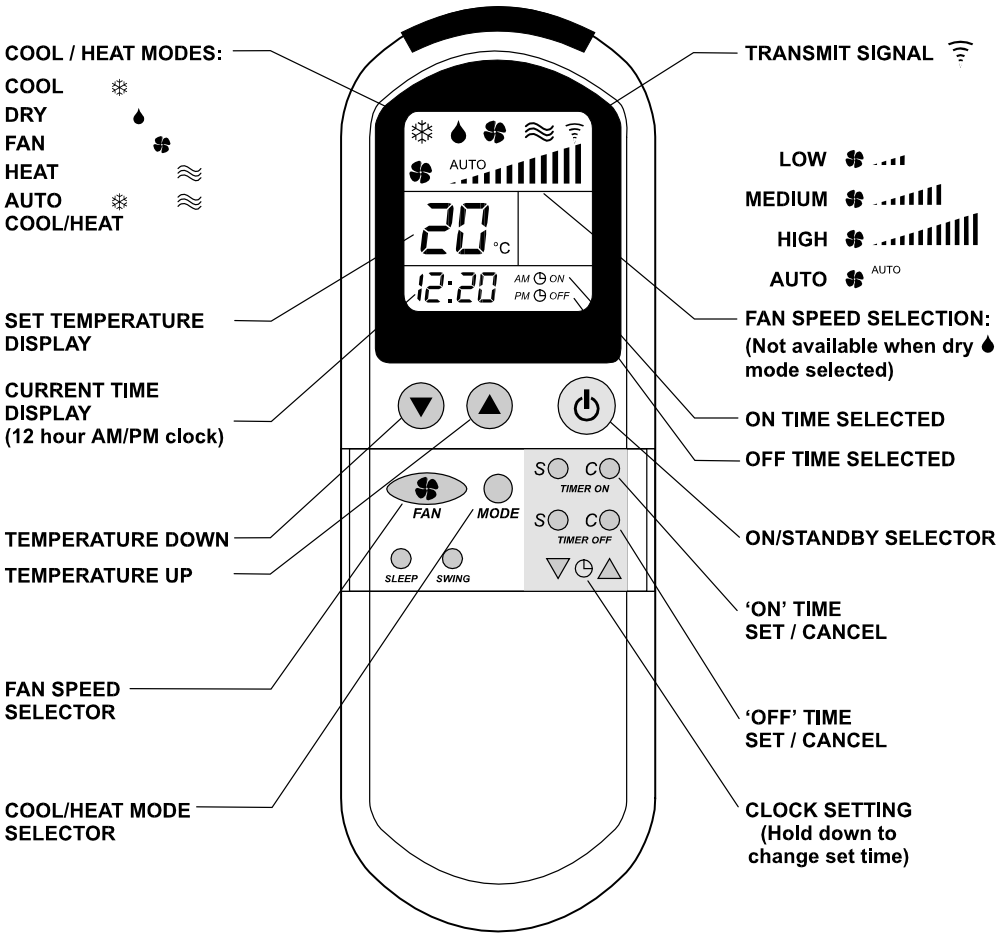
1. After gaining access to the electrics panel, fit the appropriate hook type (4 off) mounting feet to the pcb and mount on the back of the electrics box.



2. Connect the wires as shown.



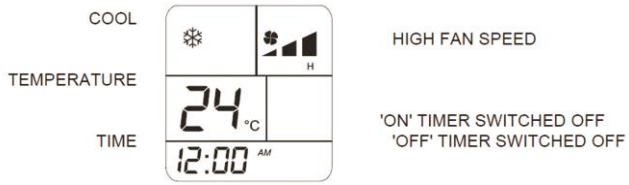
'L' INFRARED REMOTE CONTROL (NOTE: FOR L OPERATING INSTRUCTIONS PLEASE SEE 55508048 INSTRUCTIONS)



- The handset should be pointed towards the unit.
- Two seconds after the last button press, the whole displayed programme is automatically transmitted.
- The unit responds with 1 beep.
- The transmit symbol A flashes whilst transmission is taking place.
- Displayed values may be re-sent at any time by pressing the pink H button twice.

1. **Remote Controller Power Up**

Remove the battery cover and insert two “AAA” size 1.5V batteries.The initial display will show:



2. **Setting Cool / Heat / Dry Modes**

❄	COOL	- Unit cools when required but cannot heat
💧	DRY	- Unit removes moisture by cycling cooling at low speed, humidity is reduced, but room temperature is not changed.
	FAN ONLY	- No cooling or heating - fan only
≋	HEAT	- If heating is available, unit heats when required but cannot cool. AUTO
❄≋	COOL/HEAT	- Unit cools or heats when required (if heating is available)

3. **Setting the Fan Speeds**

Repeated pressing of the ‘fan speed selection’ button selects low, medium, high and auto speeds. In ‘auto’ selection, the fan runs at high speed when there is a difference of more than 2°C between the room temperature and the set (required) temperature, and low speed when less than 2°C.

4. **Setting the Temperature**

Press the ‘up’ or ‘down’ ‘set temperature’ button to alter the display between 16°C and 30°C. By holding both buttons down, the display is changed between °C and °F.

5. **Setting the Clock (Current time)**

The ‘up’ and ‘down’ buttons must be held down for 3 seconds before they operate. Continue to hold the button down for rapid change.

6. **Programming the Timer**
The 24 hour timer can have one ON command or one OFF command or one ON/OFF cycle in a 24 hour period. Blank ON and OFF timer windows indicate that the timer is not programmed.

7. **Setting the ON Time**
Press the TIMER ON button and step to the required ON time using timer up/down buttons, Hold the button down for repeated stepping.
Press the TIMER ON button then the cancel button to cancel the ON time.

8. **Setting the OFF Time**
Press the TIMER OFF button and step to the required OFF time using the timer up/down buttons, Hold the button down for repeated stepping. Press the TIMER OFF button then the cancel button to cancel the OFF time.

9. **Only ON Time Selected**
Unit will turn ON at the selected time and stay ON.

10. **Only OFF Time Selected**
Unit will turn OFF at the selected time and stay OFF.

11. **Use of the Pink H ON/STANDBY button when time programmes are selected**
At any time, pressing the Pink button will either start the unit or return it to standby mode. The unit will remain at this condition unless an appropriate ON or OFF time has been programmed.

12. **Cold Start**
In Cool or Heat mode, not Auto, after more than 3 days without power, or after 2 hours of non- operation, the set temperature is automatically raised (in heating mode) or lowered (in cooling mode) by 2°C until this temperature is reached or the unit has run for 20 minutes after which the unit operates with the displayed temperature. This decreases the time taken to reach set point.

13. **Fan Speed (heat pump systems only)**
In heat pump systems, the indoor fan may be off, or at low speed in heating mode, and changes to the selected speed when the indoor coil is warm, returning to low speed when not calling for heating.

14. **Off cycle delay**
To prevent operational problems, cooling restart is delayed for 3 minutes following power up, or from the time the unit was last cooling or heating, (if heat pump). Cooling or heating, (if heat pump) will operate for a minimum of 2 - 3 minutes.

15. **Displays -** See page 41

16. **Heat Pump Only**
If the outdoor coil temperature reaches 68°C, the compressor and outdoor fan will stop until the coil cools to 50°C.

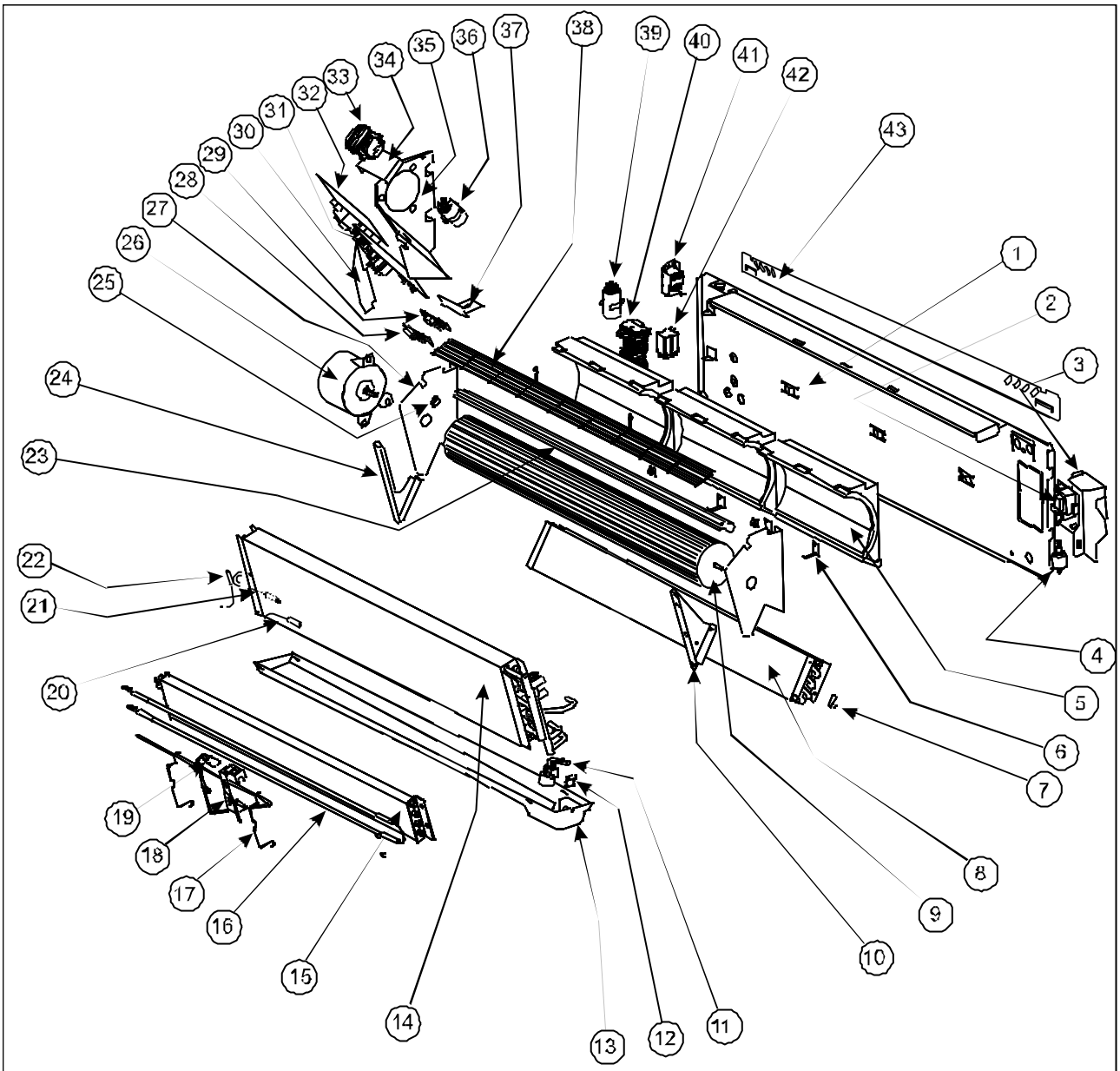
17. **Commands Refused**
a. Attempts to set temperatures outside the display range are not transmitted.
b. If heating commands are refused, the installer’s programming is incorrect - call the engineer.

18. **Battery Replacement**
It is advisable to replace the batteries as soon as the display begins to fade. Correct transmission cannot be guaranteed if the battery is failing.

19. **Power Cuts**
The unit permanently memorises its settings.

20. **User Maintenance**
Isolate the unit at the mains supply before commencing any maintenance work.
The unit should always be used with a filter. In order to maintain efficiency it is important that the filter behind the air intake grille is cleaned regularly:
- Remove the filter(s) from behind the air intake grille.
- Wash the filter (in tepid water only) and shake dry before use.
- Alternatively tap the filter gently to remove dust or vacuum clean.
- To clean the unit use soap or a non-scratch liquid cleaner.

EXPLODED VIEW OF WM (L) (E) with COMPONENT IDENTIFICATION

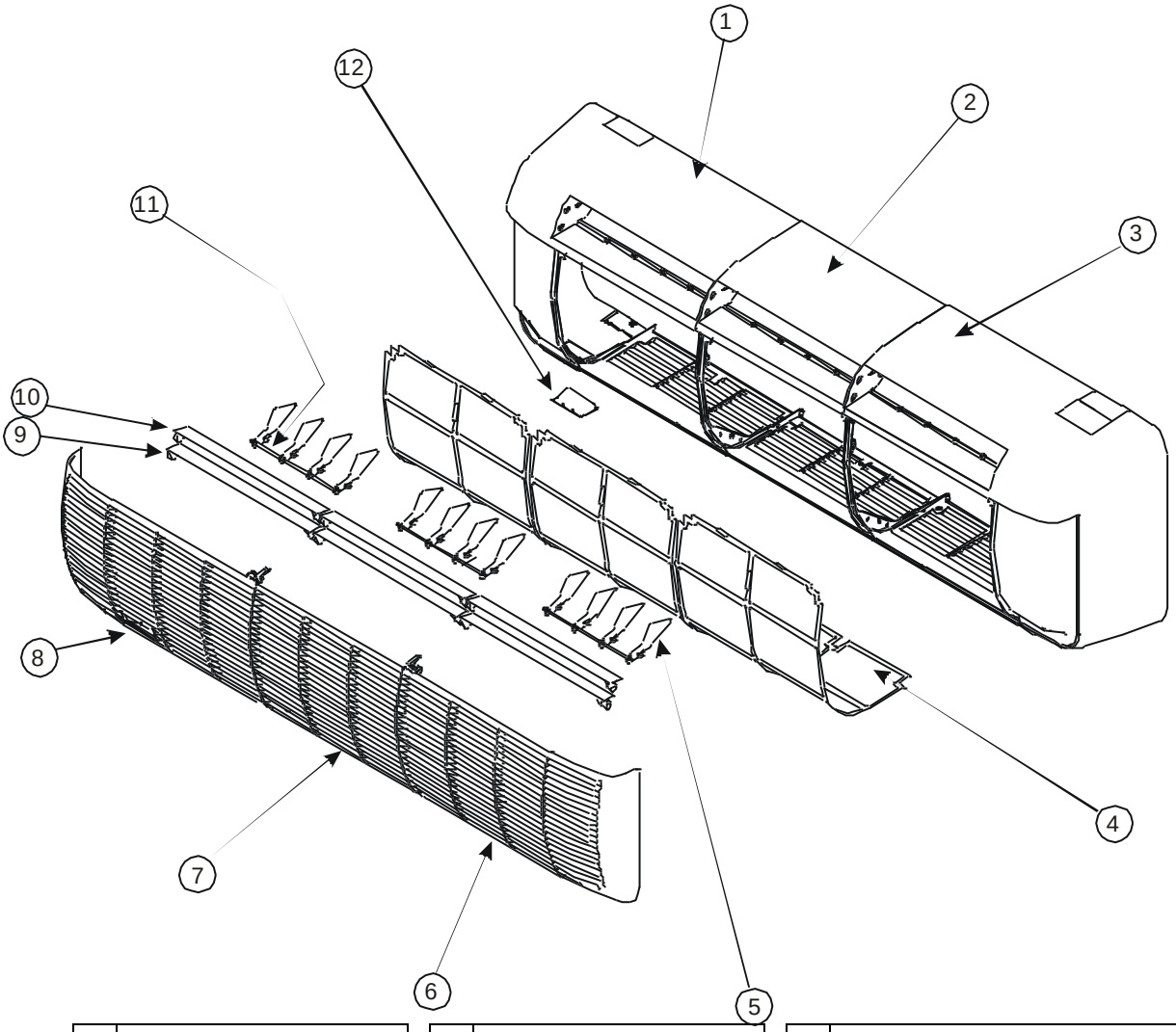


1	Back panel
2	Condensate pump PCB
3	Condensate pump bracket
4	Condensate pump
5	Scroll
6	Case fixing bracket
7	Drain tray clip
8	Coil (rear)
9	Fan
10	R/H coil support bracket
11	Condensate pump sensor/filter
12	Sensor bracket
13	Drain tray
14	Coil (front)
15	Heater coil

16	Heater elements
17	Heater coil retaining clip
18	Heater cutout bracket
19	Heater cutout
20	Return air sensor (WM L, E)
21	Coil sensor (WM E)
22	Coil sensor (WM L)
23	Air flow cut-off
24	L/H coil support bracket
25	Resistor
26	Motor
27	Fan support bracket
28	IR receiver PCB (WM E)
29	IR receiver PCB (WM L)
30	Blanking plate (WM L, E)

31	Main PCB (WM L)
32	Main PCB (WM E)
33	Terminals (WM L, E)
34	Terminal mounting bracket
35	Electrics panel
36	Capacitor (WM L, E)
37	IR PCB mounting bracket
38	Fan guard
39	Capacitor (WM)
40	Terminals (WM)
41	De-ice thermostat (WM)
42	Heater relay (WM)
43	Wall mounting bracket

EXPLODED VIEW OF CASE



1	Cover (L/H)
2	Cover (centre)
3	Cover (R/H)
4	Filter

5	Vertical air deflection vane
6	Grille (R/H)
7	Grille (centre)
8	Grille (L/H)

9	Horizontal air deflector vane (lower)
10	Horizontal air deflector vane (upper)
11	Connecting rod
12	Blank (WM): IR lens (WM L, WM E)

GENERAL FAULT FINDING (ALL SYSTEMS)

	CONDITION	POSSIBLE CAUSE	ACTION
A	**Indoor fan motor will not run**	No electric supply at socket or switched fuse box	Check fuse rating and replace if necessary. Check for loose electrical connections
		Unit wiring fault	Check wiring and connections
		Fan motor capacitor defective	Replace if faulty
		Fan motor defective	Replace if faulty
		Internal fuse blown	Clear fault and replace fuse
B	**Inadequate cooling or heating**	Dirty evaporator fins/filter	Clean if blocked
		Evaporator motor not running	As in section A
		Refrigerant shortage or excess	Check for leaks. Repair, evacuate and recharge or check for high head pressure and recover refrigerant if necessary
		Faulty or incorrectly set thermostat	Replace if faulty
		Dirty condenser	Clean if necessary
		Faulty compressor	Replace
		LP cutout circuit open (if LP fitted)	Check as refrigerant shortage or excess
C	**Compressor and outdoor fan motor will not run**	LP cutout circuit open (if LP fitted)	Check as above
		No electric supply at socket or switch fuse box	Check fuse rating and replace if necessary. Check for loose electrical connection.
		Unit wiring fault	Check wiring and connections
		Capacitor, thermostat, relay or overload defective	Replace if faulty
		Compressor failure	Replace if faulty
		Controls not set properly	Check and rectify
		Off cycle delay operating	If applicable, wait 3 minutes
		High condensate level detected	See G
	Compressor runs, outdoor fan doesn't	Pressure at sensor <200psig	Normal: or short of gas
D	**System runs for long periods and will not cycle**	Unit underrated for conditioned area	Check heat load against capacity
		Thermostat not operating correctly	Check wiring, position of phial and operation
		Refrigerant shortage	Check for leaks. Recover, repair, evacuate and recharge
	Indoor coil dry or partly sweating	Dirty condenser	Clean fins if necessary
E	**Indoor coil frosting**	Refrigerant shortage	Check for leaks. Recover, repair, evacuate and recharge
		Dirty evaporator fins/filter	Clean if blocked
		Running in cool ambient without a head pressure controller	Fit head pressure controller
	If room temperature is also low	Thermostat set too low or cooling permanently	Reset or replace
F	**Noisy unit**	Fan fouling cowl (outdoor unit)	Realign fan
		Worn motor bearing	Replace motor
		Casing or piping vibration	Check cause and rectify
		Loose parts or mounting	Find and tighten
		Bent fan blade	Replace fan
G	**Water leaking from unit**	Blocked drain or filter	Clear obstruction
	Units with lift pump or condensate pump	No supply to pump or loose connection	Secure the supply
		Pumping slowly	Check drain pipes; if clear, replace pump
		Pump windings shorted	Replace pump
		Fouled sensor (5m condensate pump only)	Clean sensor
H	**Pump always runs**	Faulty sensor or pcb	Replace sensor or pcb
I	**No heating**	Controls not set for heating	Reset
		Unit wiring fault	Check wiring and connections
		Dirty evaporator fins/filter	Clean
		Faulty thermostat	Check for signal; replace if faulty
		Faulty heater element	Replace
		Faulty heater cutout	Replace, (check for short circuiting)
		Reversing valve jammed	A light tap may free it; preferably replace
J	**Overload tripped on three phase units**	High voltage supply	Max rated voltage 254v -- check supply
		Compressor failure	Replace
		Fuses blown	Replace fuses and investigate reason for fuses blowing
K	**Outdoor unit does not operate**	No mains supply	Check fuse rating and replace. Check for loose electrical connections
		Supply below 187V	Check supply
		Isolator switched off	Turn isolator on
		Internal fuse blown	Check fuse and replace
		Data wires disconnected	Reconnect data wires
		No command signal	Check indoor unit
		Off cycle delay operating	Wait in cooling for 3 minutes

SPECIFIC FAULT DIAGNOSIS FOR WM L UNITS

	CONDITION	POSSIBLE CAUSE	ACTION
Check for alarms			
i	LEDs flashing - see table below		
ii	If NO external connections are made to alarm terminal 5, the presence of an alarm condition can be tested for by checking for mains voltage at terminal 5; full mains voltage = Alarm; less than mains voltage = Clear.		
The outdoor unit can be caused to operate for test purposes by temporarily linking live directly to terminal 3 (up to 20 seconds delay)			
L	Outdoor unit runs continually at high speed	Charge link still fitted	Remove charge link
		MHPUL in heating	Normal
		Minimum speed adjustment set too high	Reset minimum speed
If all external devices test O.K. the outdoor unit pcb must be replaced			
M	No LED's lit or flashing	Unit commanded to be OFF	Transmit 'ON'
		No mains supply or internal fuse blown. (Fuse F2 on internal control board blown during configuring)	Check electrical supply and fuses
		Fan motor plug disconnected	Reconnect fan motor plug
		Motor internal thermal protector operated	Check motor and rectify
		Cables to fascia not connected	Reconnect
		Circuit board fault	Check circuit board and replace
		High water level	Check pump circuit (if fitted)
N	All LED's lit, one flashing	Temperature sensor problem	See table below
		Resistor problem (non MHPUL)	Check resistor connected
		Outdoor sensor problem (MHPUL)	Replace outdoor unit sensor/check interconnecting wiring
P	Indoor unit continues after stop/off command	Overrun of 30 seconds in heating	Normal
Q	Unit will not respond to infrared commands. No audible answer signal	Battery discharged	Replace battery
		Handset corrupted	Reset
R	Unit does not switch on/off at intended times	Power cut has occurred	Send any command from the handset to synchronise the timer
S	Unit not running in intended mode/temperature	Power has been shut off for three or more days, unit is exercising default programme	Use handset retransmit button
T	Fan does not run at the intended speed	Heat Pumps Only	Fan runs at low speed until indoor coil is warm, then changes to intended speed
U	Short cycles between cool and heat	System oversized for room	Use cool or heat programmes NOT 'Auto'
V	First operation, room is overcooled or overheated by 2°C	Set point temperature reverts to normal after deadband is reached or 20 minutes of operation	Normal
W	Handset will not transmit	Heating commands	Incorrectly configured - see page 23
		Any commands	Battery flat
X	Compressor runs on	Automatic minimum run time of 1.5 minutes	Normal
HANDSET If the handset fails to respond to button operations, disconnect and then reconnect the battery. The previous programme state is retained in the memory for a few seconds provided none of the user buttons are pressed.			

LED STATUS AND ALARM INDICATIONS

Status Displays

Cool ❄ Green	Dry Red	Fan Red	Heat ☀ Amber	DIAGNOSTICS
OFF	OFF	OFF	OFF	No power, manual OFF, timed OFF, condensate high level, fault in condensate control
ON	OFF	ON	OFF	Cooling mode selected
ON	OFF	ON	**BLINKS**	AUTO - predominantly cooling
OFF	OFF	ON	**ON**	Heating mode selected
BLINKS	OFF	ON	**ON**	AUTO - predominantly heating
OFF	OFF	**ON**	OFF	Fan mode selected
OFF	**ON**	ON	OFF	Dry mode selected
OFF	OFF	OFF	**BLINKS**	Outdoor unit defrosting

Diagnostics

OFF	OFF	BLINKS x 4	OFF	Room sensor missing
OFF	OFF	BLINKS x 4	OFF	Indoor coil sensor missing
OFF	**BLINKS**	BLINKS x 4	OFF	Heat pump only, outdoor coil sensor missing
BLINKS	OFF	BLINKS x 1	OFF	Compressor overload

SPECIFIC FAULT DIAGNOSIS FOR WM E UNITS

A fully electronic system comprising WM E with MHPUE or DCUE communicates between the units by digital codes. Signals are transmitted every 10 seconds, therefore a delay of up to 10 seconds could occur before the system responds to a command. Similarly if the communication link is broken, the outdoor unit will shut down within 15 seconds. To reset: Switch the mains off to both indoor and outdoor units to reset the microprocessor; the current programme is retained in the indoor pcb memory.

Check for alarms i.e.	
i	Audible alarm or LEDs flashing - see below
ii	If NO external connections are made to alarm terminal 5, the presence of an alarm condition can be checked for by testing continuity between L and 5; Alarm = 220ohms, Clear = open circuit. WARNING: All parts of the circuit are at high voltage, if any external connections are made to terminal 5, the continuity meter will be damaged
The outdoor unit can be forced to operate for test purposes by temporarily linking live directly to terminal 3 (up to 20 seconds delay)	

L	**Outdoor unit runs continually at high speed**	Charge link JP6 still fitted	Remove JP6 charge link
		MHPUE in heating	Normal
		Minimum speed adjustment set too high	Reset minimum speed
If all external devices appear O.K. the pcb may need to be replaced			
M	**No LED's lit or flashing**	No mains supply or internal fuse blown	Check electrical supply and fuses
		Fan motor plug disconnected	Reconnect fan motor plug
		Motor internal thermal protector operated	Check motor and rectify
		Ribbon cable to fascia not connected	Reconnect
		Receiver pcb fault	Check circuit board and replace
N	**Regular audible pulsed signal - all LED's lit**	Indoor temperature sensor problem	Disconnect data link to identify which unit, if fault clears it is outdoor unit
		Outdoor sensor problem	Replace outdoor unit sensor
O	**Indoor unit continues after stop/off command**	Overrun of 30 seconds in heating	NORMAL
P	**Unit will not respond to infrared commands. No audible answer signal**	Handset not plugged into wall bracket (if appropriate). Fault in connections between wall bracket and indoor unit	Plug in correctly and check connections
		Battery discharged	Replace battery
		Operating in charge mode	Remove charge link from outdoor unit
Q	**Unit answers infrared commands with double audible signal**	Communications not yet established. Wait 2 minutes from power up	If electric heater is known to be fitted, double signal indicates open circuit element or thermal protector
		Demanded mode not available	Double signal in response to on/off command indicates under time control
R	**Sounder beeps and LED(s) flash 0.5s ON, 0.5s OFF**	Warning of alarm status	Details below
S	**All LED's lit and continuous audible signal**	Microprocessor fault	Replace indoor unit pcb assembly
T	**Short cycles between cool and heat**	System oversized for room	Use cool or heat programmes NOT 'Auto' and set to lower speed
HANDSET	If the handset fails to respond to button operations, disconnect and then reconnect the battery. The previous programme state is retained in the memory.		

LED			Flash Rate ON/OF	Sounder	Condition	Status
Red	Amber	Green				
⏻			ON	OFF	In Operation	Normal
	☀		ON	OFF	Heating Demand	Normal
		❄	ON	OFF	Cooling Demand	Normal
⏻			0.5 / 5.0	OFF	Standby	Normal
⏻			0.5 / 15	OFF	Clock Controlled Standby	Normal
⏻			2 x 0.5 / 15	OFF	Setback	Normal
⏻			0.5 / 0.5	OFF	Filter Clean Advisable	Normal
	☀		0.5 / 0.5	BEEPS	Network Warning	Call Engineer
		❄	0.5 / 0.5	BEEPS	High Condensate Level	Call Engineer
⏻	☀		0.5 / 0.5	BEEPS	Low Pressure Warning	Call Engineer
⏻		❄	0.5 / 0.5	BEEPS	High Pressure Warning	Call Engineer
⏻	☀	❄	0.5 / 0.5	BEEPS	Contactor Overload Operated	Call Engineer
	☀	❄	0.5 / 0.5	BEEPS	Outdoor Fan Fail	Call Engineer
⏻	☀	❄	ON	BEEPS	Sensor Fault	Call Engineer