



MARSHAL®

# ROOFTOP PACKAGE UNIT

AIR CONDITIONERS

Capacity 30-90TR

3RTH - 50Hz

R407C





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# INTRODUCTION

Roof top package units have been developed & produced by to provide not only the ultimate indoor comfort, but also to guarantee long & trouble free operations.

Herein lies the reason for the Choice of only the highest quality components and design strategies to meet the most important objectives such as,

**Efficiency**

**Reliability**

**Flexibility**

**Easy Install ability**

**Serviceability**

**Affordability**

**30 TO 90 TONS CAPACITY  
ROOF TOP PACKAGE UNITS**

# SALIENT FEATURES

- The units are horizontal air flow type and are suitable for mounting on the roof or on the ground. All units are factory assembled, piped, internally wired and fully charged with R-407C. These units are tested in accordance with ARI standards.
- The units are available in the following voltages  
380-415 V/3PH/50 HZ
- All components are mounted in a weather resistant steel cabinet. The cabinet & access panels are powder coated for lasting protection and durability. Indoor air section compartments are completely insulated with 1" Fire retardant fiberglass insulation for 30TR & 35TR & with 2" Fire retardant fiberglass insulation for 40TR to 90TR. Knockouts provided for utility and control connections. Units from 40TR to 90TR are made in profile construction.
- Air filter is a synthetic filter of 50 mm thickness
- Compressors are fully hermetic type designed for high efficiency provided with standard control and safety devices like HP & LP controls and crank case heater for scroll and reciprocating compressors.
- Evaporator and condenser coils are made of seamless Inner grooved copper tubes mechanically bonded to aluminum fins, leak tested and pressure tested to 550 psig.
- Evaporator blowers are Belt driven centrifugal type, forward curve blade design, sized to meet system air flow and static. Backward curved blowers can be given as an option
- Condenser fans are propeller type, direct drive, draw through vertical discharge with fan guard mounted to the panel.
- Thermostatic expansion valve / metering device provides precision control for maximized cooling.
- The units are completely factory wired with single point power input.
- Easy accessible control box, compressor, controls and blower compartment.
- Primary control circuit is designed to operate at 24 volts.
- All the units are provided with compressor lockout either by locking relays or by high pressure control trip with manual reset switch.
- All the units are provided with 2.5 -3 min time delay for compressor start
- Phase Loss Protection is standard for all models

# OPTIONAL FEATURES

Electric Heaters

Heresite Coated Fins For Condenser Coils

Hydrophilic Coated Fins For Evaporator Coils

Copper Fins For Condenser And Evaporator Coils

Thermostat: Provides Cooling, Staged Heating And Fan Control

Antifreeze Thermostats

Hour Meter

Voltage Monitor

Fan Speed Controller

Micro Processor Control

Fan Cycling Switch

Compressor Alternating Switch

Compressor Interlock With Blower

Pump Down System

Over Load Thermal Protection For Condenser Motors

Volt Free Contacts For Bms

Dual And Adjustable Pressure Switches

Stainless Steel Drain Pan

Fine / Bag Filter

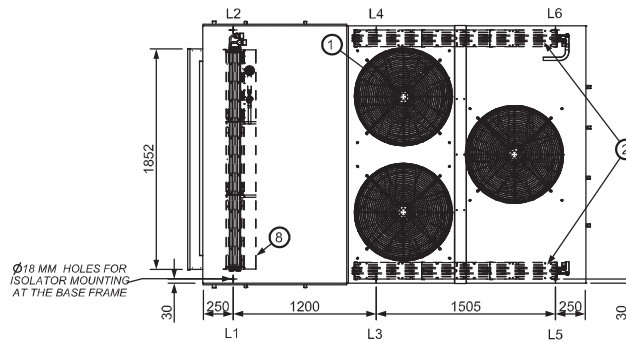
PCB

Backward Curved Blower

# GENERAL ARRANGEMENT DRAWINGS

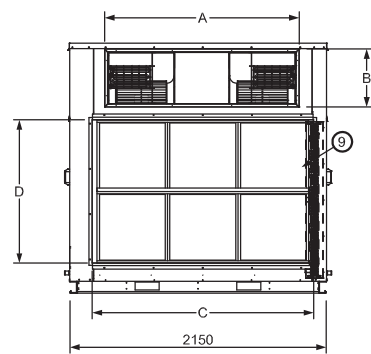
## GENERAL ARRANGEMENT & LOAD DISTRIBUTION DRAWING - 30TR / 35TR

S.NO	LEGENDS
1	COND FAN MOTOR & GRILL
2	CONDENSOR COIL
3	COMPRESSOR
4	SUPPLY AIR OPENING
5	CONTROL PANEL ACCESS
6	COMPRESSOR ACCESS
7	SUPPLY AIR BLOWER MOTOR
8	EVAPORATOR COIL
9	PRE FILTER
10	BLOWER ACCESS
11	COIL ACCESS
12	FILTER ACCESS

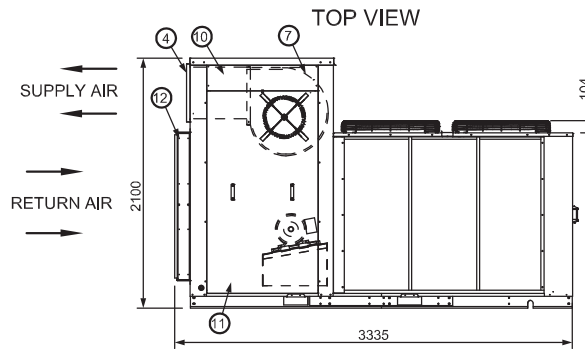


LOAD DISTRIBUTION (KG)		
S.NO	30TR	35TR
L1	405	420
L2	375	390
L3	380	385
L4	380	385
L5	320	330
L6	350	360

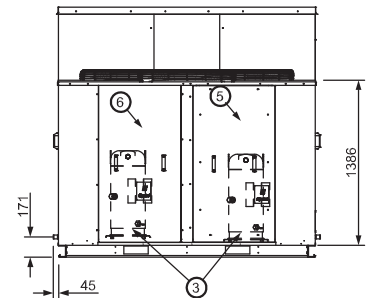
SUPPLY AND RETURN AIR OPENING SIZE		
A	SA OPENING WIDTH	1630 MM
B	SA OPENING HEIGHT	487 MM
C	RA OPENING WIDTH	1858 MM
D	RA OPENING HEIGHT	1204 MM



LHS VIEW



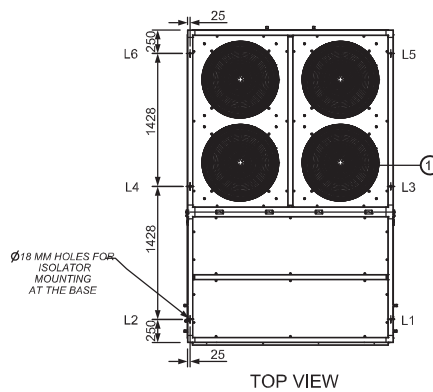
FRONT VIEW



RHS VIEW

## GENERAL ARRANGEMENT & LOAD DISTRIBUTION DRAWING - 40TR / 45TR / 50TR

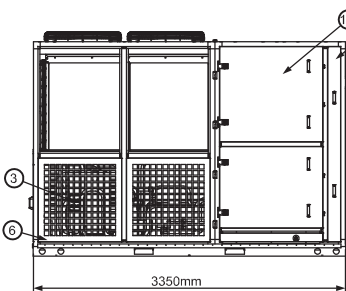
S.NO	LEGENDS
1	COND FAN & GRILL
2	CONDENSOR COIL
3	COMPRESSOR
4	SUPPLY AIR OPENING
5	CONTROL PANEL ACCESS
6	COMPRESSOR ACCESS
7	SUPPLY AIR BLOWER
8	EVAPORATOR COIL
9	PRE FILTER
10	BLOWER MOTOR
11	BLOWER & COIL ACCESS
12	FILTER ACCESS



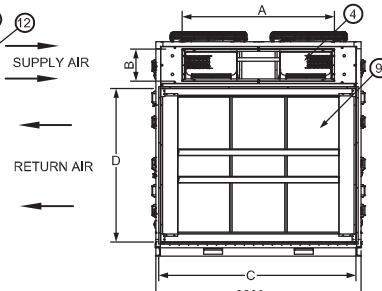
TOP VIEW

LOAD DISTRIBUTION (KG)			
S.NO	40TR	45TR	50TR
L1	610	610	610
L2	580	580	580
L3	520	540	550
L4	520	540	550
L5	533	550	565
L6	533	550	565

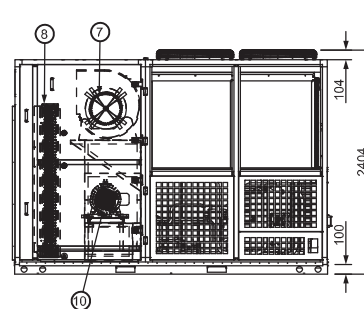
SUPPLY AND RETURN AIR OPENING SIZE		
A	SA OPENING WIDTH	1636 MM
B	SA OPENING HEIGHT	347 MM
C	RA OPENING WIDTH	2103 MM
D	RA OPENING HEIGHT	1653 MM



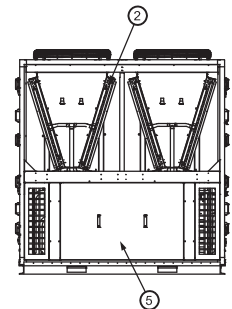
LHS VIEW



FRONT VIEW



RHS VIEW

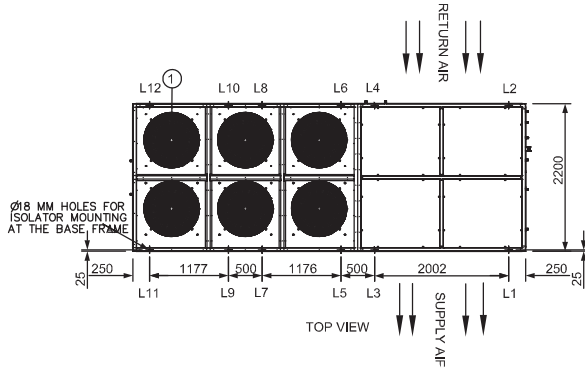


BACK VIEW

# GENERAL ARRANGEMENT DRAWINGS

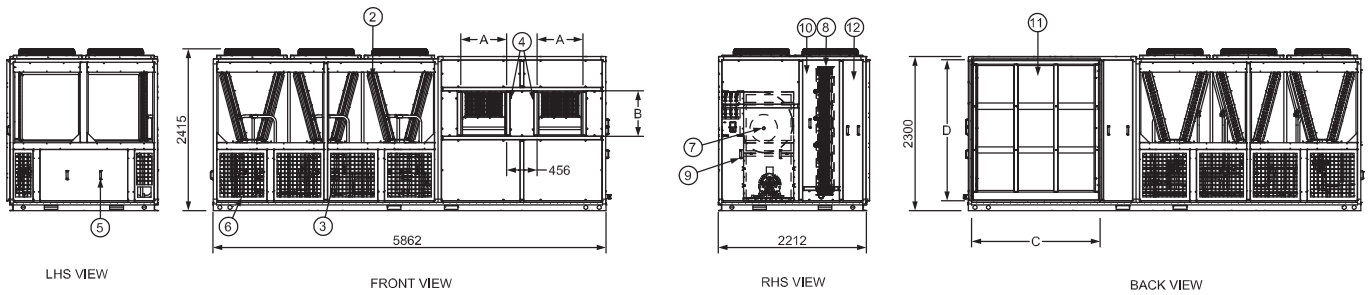
## GENERAL ARRANGEMENT & LOAD DISTRIBUTION DRAWING - 60TR / 70TR

S.NO	LEGENDS
1	COND FAN, MOTOR & GRILL
2	CONDENSOR COIL
3	COMPRESSOR
4	SUPPLY AIR OPENING
5	CONTROL PANEL ACCESS
6	COMPRESSOR ACCESS
7	SUPPLY AIR BLOWER & MOTOR
8	EVAPORATOR COIL
9	BLOWER ACCESS
10	COIL ACCESS
11	PRE FILTER
12	FILTER ACCESS



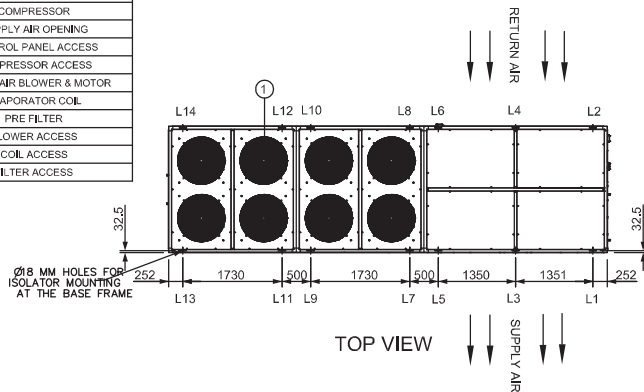
LOAD DISTRIBUTION (KG)		
S.NO	60TR	70TR
L1	330	330
L2	360	360
L3	300	300
L4	360	360
L5	420	430
L6	420	430
L7	420	430
L8	420	430
L9	420	430
L10	420	430
L11	430	440
L12	430	440

SUPPLY AND RETURN AIR OPENING SIZE			
A	SA OPENING WIDTH	682 MM	
B	SA OPENING HEIGHT	678 MM	
C	RA OPENING WIDTH	1912 MM	
D	RA OPENING HEIGHT	2100 MM	



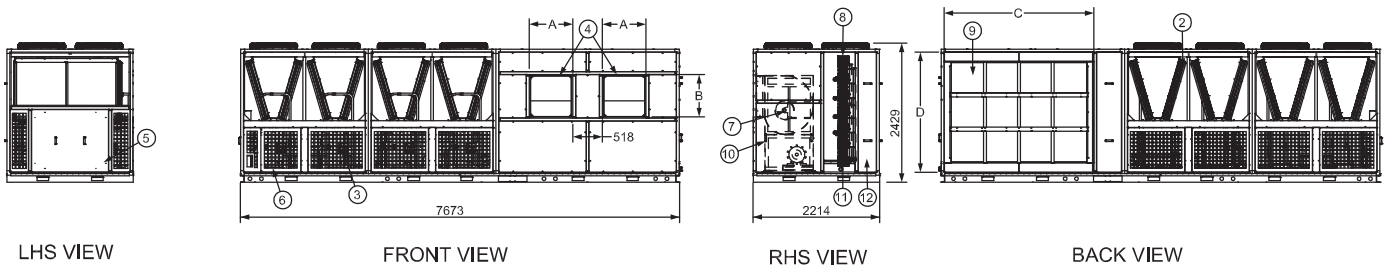
## GENERAL ARRANGEMENT & LOAD DISTRIBUTION DRAWING - 80TR / 90TR

S.NO	LEGENDS
1	COND FAN, MOTOR & GRILL
2	CONDENSOR COIL
3	COMPRESSOR
4	SUPPLY AIR OPENING
5	CONTROL PANEL ACCESS
6	COMPRESSOR ACCESS
7	SUPPLY AIR BLOWER & MOTOR
8	EVAPORATOR COIL
9	PRE FILTER
10	BLOWER ACCESS
11	COIL ACCESS
12	FILTER ACCESS



LOAD DISTRIBUTION (KG)		
S.NO	80TR	90TR
L1	315	315
L2	320	325
L3	290	290
L4	320	325
L5	290	290
L6	320	325
L7	430	455
L8	430	455
L9	430	455
L10	430	455
L11	430	455
L12	430	455
L13	450	475
L14	450	475

SUPPLY AND RETURN AIR OPENING SIZE			
A	SA OPENING WIDTH	760 MM	
B	SA OPENING HEIGHT	760 MM	
C	RA OPENING WIDTH	2612 MM	
D	RA OPENING HEIGHT	2100 MM	





# ENGINEERING SPECIFICATIONS - R407C

## UNIT SPECIFICATIONS ENGINEERING SPECIFICATIONS - R407C

Engineering Specifications High EER Roof Top Package units										
Description	Unit of measurement	UNIT MODEL								
		3RTH360GC2	3RTH420GC2	3RTH480GC2	3RTH540GC2	3RTH600GC2	3RTH720GC3	3RTH840GC3	3RTH960GC4	3RTH1080GC4
Nominal Cooling Capacity @ 35°C (T1)	Btu /Hr	342,449	401,745	491,656	558,534	615,047	738,114	857,517	950,964	1,034,050
Power Consumption @ T1	Watts	35,154	41,492	49,346	56,140	61,548	73,736	85,405	99,376	106,912
EER @ T1		9.7	9.7	10.0	9.9	10.0	10.0	10.0	9.6	9.7
Cooling Capacity @ 46° (T3) *	Btu /Hr	316,800	359,618	433,717	490,529	526,913	647,966	754,184	858,051	931,719
Power consumption /Ton @ 46° (T3) *	Watts	42,240	47,949	57,829	65,404	70,255	86,396	100,558	119,174	129,405
Heating Capacity	Kwatts/tr.	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.67	1.67
Heating Power consumption	Btu /Hr	343,134	407,772	501,489	565,881	624,272	760,257	874,619	963,354	1,054,731
Air Flow (Evaporator)	Watts	34,802	41,077	48,853	55,759	60,933	72,999	84,551	93,382	105,843
External static pressure	CFM	12,000	13,000	14,000	16,000	18,000	21,000	25,000	29,000	32,400
Refrigerant Type	Inch H2O g	1.0"	1.4"	1.4"	1.4"	1.6"	1.6"	1.6"	1.6"	1.6"
R407C										
Centrifugal										
Belt Drive										
Blower	Type									
	Drive									
	Dia x width	18" x 18" - Twin	18" x 18" - Twin	18" x 18" - Twin	18" x 18" - Twin	18" x 18" - Twin	20" x 20" - Twin	20" x 20" - Twin	20" x 20" - Twin	20" x 20" - Twin
	Qty	1	1	1	1	1	1	1	1	1
Blower Motor	Power Supply	V/Ph/Hz								
	HP	10.00	10.00	15.00	15.00	15.00	20.00	20.00	25.00	25.00
Air filter Type	Face Area	25.22	25.22	30.46	30.46	30.46	38.41	38.41	52.39	52.39
Evaporator	Tube Dia / no of row/ FPI	1/2" / 3 / 12	1/2" / 4 / 12	1/2" / 4 / 12	1/2" / 4 / 12	1/2" / 4 / 12	1/2" / 4 / 14	1/2" / 5 / 14	1/2" / 4 / 12	1/2" / 5 / 12
	Material Tubes - Fins	380-415V/3Ph/50 Hz								
Expansion valve	Type	CU-AL								
	Qty	2	2	2	2	2	3	3	4	4
Supply air Opening size	W X H	1580 x 485	1580 x 485	1636 x 347	1636 x 347	1636 x 347	642 x 638	642 x 638	864 x 720	864 x 720
Return air Opening size	W X H	1850 x 1240	1850 x 1240	1653 x 2104	1653 x 2104	1653 x 2104	2050 x 1686	2050 x 1686	2721 x 2205	2721 x 2205
	Power Supply	V/Ph/Hz								
	Type	380-415V/3Ph/50 Hz								
Compressor	Quantity	2	2	2	2	2	3	3	4	4
	Protection	Internal								
	Crancase heater	2 x 90	2 x 90	2 x 90	2 x 90	2 x 90	3 x 90	3 x 90	4 x 90	4 x 90
Condenser Fan	Type	Propeller / Direct driven								
	y t Q	3	3	4	4	4	6	6	8	8
	Dia of Fan	30"	30"	30"	30"	30"	30"	30"	30"	30"
Condenser Coil	Type of coil	Corrugated al fin with Inner grooved copper coil								
	Face Area	46.50	46.50	78.70	78.70	78.70	124.00	124.00	165.34	165.34
	Tube Dia / no of row/ FPI	3/8" / 3 / 14	3/8" / 3 / 14	3/8" / 3 / 14	3/8" / 4 / 14	3/8" / 4 / 14	3/8" / 3 / 14	3/8" / 4 / 14	3/8" / 3 / 14	3/8" / 4 / 14
	Power Supply	V/Ph/Hz								
Condenser Fan Motor	HP	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
	Qty	3	3	4	4	4	6	6	8	8
Dimensions	Length	3335	3325	3350	3350	3350	5862	5862	7673	7673
	Width	2150	2150	2200	2200	2200	2212	2212	2214	2214
	Height	2100	2100	2404	2404	2404	2415	2415	2429	2429
Unit Weight	KG	2210	2270	3296	3370	3420	4730	4810	5335	5550
Note:	As a result of continuous research & development, the above specifications are subject to change without notice, need to contact our sales team time to time									
	*Cooling Capacity & Power Consumption / Ton are rated as per ESMA T3 condition									

# UNIT SPECIFICATIONS

## ELECTRICAL DATA FOR 30TR- 90TR-50HZ UNITS

### 380/415V-3PH-50HZ ("G" VOLTAGE) POWER SUPPLY - R407C

MODEL	V/PH/Hz	Operating Voltage		Compressor			Condenser Motor			BLOWER MOTOR		HEATER		MCA (COOL)	MCA (HEATE)	MOCP (COOL)	MOCP (HEATE)	
		MIN	MAX	TYPY	RLA	LRA	QTY	HP	AMPS	QTY	HP	AMPS	KW	AMPS	AMPS	AMPS	AMPS	AMPS
3RTH360GC2	380-415/3/50	342	456	SCR	26.0	174	1	1 1/2	3.0	3	10	14.5	30	43.5	87	69.0	115	85
					29.3	225	1											
3RTH420GC2	380-415/3/50	342	456	SCR	29.3	225	2	1 1/2	3.0	3	10	14.5	30	43.5	90	69.0	120	85
3RTH480GC2	380-415/3/50	342	456	SCR	37.0	272	2	1 1/2	3.0	4	15	22.0	40	60.8	118	98.0	155	120
3RTH540GC2	380-415/3/50	342	456	SCR	37.0	272	1	1 1/2	3.0	4	15	22.0	40	60.8	128	98.0	170	120
					45.0	310	1											
3RTH600GC2	380-415/3/50	342	456	SCR	45.0	310	2	1 1/2	3.0	4	15	22.0	50	76.0	135	117.0	180	140
3RTH720GC3	380-415/3/50	342	456	SCR	37.0	272	3	1 1/2	3.0	6	20	30.0	50	76.0	170	125.0	205	155
3RTH840GC3	380-415/3/50	342	456	SCR	37.0	272	1	1 1/2	3.0	6	20	30.0	50	76.0	187	125.0	230	155
					45.0	310	2											
3RTH960GC4	380-415/3/50	342	456	SCR	37.0	272	4	1 1/2	3.0	8	25	38.3	60	91.2	220	153.0	255	190
3RTH1080GC4	380-415/3/50	342	456	SCR	37.0	272	2	1 1/2	3.0	8	25	38.3	60	91.2	238	153.0	280	190
					45.0	310	2											

**NOTE:**

SCR - Scroll Compressor, RLA - Running Load Amps, LRA - Locked Rotor Amps, FLA - Full Load Amps, MCA - Minimum Circuit Amps  
MOCP - Maximum Over Current Protection





















FAN PERFORMANCE - 3RTH360																		
External Static Pressure																		
Air Flow (CFM)	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8500	647	2.72	694	2.92	754	3.65	800	3.93	838	4.46	872	4.93	900	5.32	927	5.78	972	6.11
9000	644	2.87	689	3.15	748	3.79	793	4.07	829	4.80	862	5.06	890	5.45	919	5.91	963	6.28
10000	637	3.17	679	3.62	730	4.07	780	4.34	811	4.88	843	5.33	871	5.70	902	6.15	945	6.61
11000	630	3.47	670	4.09	715	4.36	767	4.62	793	5.16	824	5.60	851	5.96	886	6.40	927	6.93
<b>12000</b>	<b>628</b>	<b>4.00</b>	<b>672</b>	<b>4.42</b>	<b>706</b>	<b>4.67</b>	<b>758</b>	<b>4.96</b>	<b>785</b>	<b>5.58</b>	<b>810</b>	<b>6.00</b>	<b>840</b>	<b>6.25</b>	<b>887</b>	<b>6.67</b>	<b>916</b>	<b>7.25</b>
13000	624	4.56	666	5.06	703	5.40	751	5.66	777	6.17	800	6.50	830	6.67	879	7.18	914	7.77

FAN PERFORMANCE - 3RTH420																		
External Static Pressure																		
Air Flow (CFM)	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
9500	640	3.02	684	3.39	738	3.93	787	4.20	820	4.74	853	5.20	881	5.57	911	6.03	954	6.44
10000	637	3.17	679	3.62	730	4.07	780	4.34	811	4.88	843	5.33	871	5.70	902	6.15	945	6.61
11000	630	3.47	670	4.09	715	4.36	767	4.62	793	5.16	824	5.60	851	5.96	886	6.40	927	6.93
12000	628	4.00	672	4.42	706	4.67	758	4.96	785	5.58	810	6.00	840	6.25	887	6.67	916	7.25
<b>13000</b>	<b>624</b>	<b>4.56</b>	<b>666</b>	<b>5.06</b>	<b>703</b>	<b>5.40</b>	<b>751</b>	<b>5.66</b>	<b>777</b>	<b>6.17</b>	<b>800</b>	<b>6.50</b>	<b>830</b>	<b>6.67</b>	<b>879</b>	<b>7.18</b>	<b>914</b>	<b>7.77</b>
14000	622	5.21	666	5.75	701	6.15	750	6.48	772	6.80	796	7.05	824	7.21	877	7.62	911	8.50

FAN PERFORMANCE - 3RTH480																		
External Static Pressure																		
Air Flow (CFM)	0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
10000	637	3.17	679	3.62	730	4.07	780	4.34	811	4.88	843	5.33	871	5.70	902	6.15	945	6.61
11000	630	3.47	670	4.09	715	4.36	767	4.62	793	5.16	824	5.60	851	5.96	886	6.40	927	6.93
12000	628	4.00	672	4.42	706	4.67	758	4.96	785	5.58	810	6.00	840	6.25	887	6.67	916	7.25
13000	624	4.56	666	5.06	703	5.40	751	5.66	777	6.17	800	6.50	830	6.67	879	7.18	914	7.77
<b>14000</b>	<b>622</b>	<b>5.21</b>	<b>666</b>	<b>5.75</b>	<b>701</b>	<b>6.15</b>	<b>750</b>	<b>6.48</b>	<b>772</b>	<b>6.80</b>	<b>796</b>	<b>7.05</b>	<b>824</b>	<b>7.21</b>	<b>877</b>	<b>7.62</b>	<b>911</b>	<b>8.50</b>
15000	620	5.89	665	6.53	700	7.01	748	7.34	770	7.53	795	7.70	823	7.81	875	8.25	910	9.24

FAN PERFORMANCE - 3RTH540																			
External Static Pressure																			
Air Flow (CFM)	0.4		0.6		0.7		0.8		1.0		1.4		1.6		1.8		2.0		
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
11500	629	3.73	671	4.25	711	4.51	763	4.79	789	5.37	817	5.80	845	6.10	887	6.53	921	7.09	957
12000	628	4.00	672	4.42	706	4.67	758	4.96	785	5.58	810	6.00	840	6.25	887	6.67	916	7.25	945
13000	624	4.56	666	5.06	703	5.40	751	5.66	777	6.17	800	6.50	830	6.67	879	7.18	914	7.77	950
14000	622	5.21	666	5.75	701	6.15	750	6.48	772	6.80	796	7.05	824	7.21	877	7.62	911	8.50	946
15000	620	5.89	665	6.53	700	7.01	748	7.34	770	7.53	795	7.70	823	7.81	875	8.25	910	9.24	946
<b>16000</b>	<b>623</b>	<b>6.46</b>	<b>667</b>	<b>7.08</b>	<b>701</b>	<b>7.56</b>	<b>750</b>	<b>7.85</b>	<b>771</b>	<b>8.30</b>	<b>796</b>	<b>8.45</b>	<b>824</b>	<b>8.60</b>	<b>876</b>	<b>9.10</b>	<b>911</b>	<b>9.89</b>	<b>10.75</b>
17000	625	7.09	670	7.77	704	8.29	753	8.61	774	9.11	799	9.27	827	9.43	879	9.98	914	10.85	951
17500	627	7.40	672	8.11	706	8.66	755	9.00	776	9.51	802	9.69	830	9.86	882	10.43	917	11.34	954

FAN PERFORMANCE - 3RTH600																			
External Static Pressure																			
Air Flow (CFM)	0.4		0.6		0.7		0.8		1.0		1.4		1.6		1.8		2.0		
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	
13000	624	4.56	666	5.06	703	5.40	751	5.66	777	6.17	800	6.50	830	6.67	879	7.18	914	7.77	950
14000	622	5.21	666	5.75	701	6.15	750	6.48	772	6.80	796	7.05	824	7.21	877	7.62	911	8.50	946
15000	620	5.89	665	6.53	700	7.01	748	7.34	770	7.53	795	7.70	823	7.81	875	8.25	910	9.24	946
16000	623	6.46	667	7.08	701	7.56	750	7.85	771	8.30	796	8.45	824	8.60	876	9.10	911	9.89	10.75
17000	625	7.09	670	7.77	704	8.29	753	8.61	774	9.11	799	9.27	827	9.43	879	9.98	914	10.85	951
<b>18000</b>	<b>629</b>	<b>7.72</b>	<b>674</b>	<b>8.46</b>	<b>708</b>	<b>9.04</b>	<b>758</b>	<b>9.38</b>	<b>779</b>	<b>9.92</b>	<b>804</b>	<b>10.10</b>	<b>832</b>	<b>10.28</b>	<b>885</b>	<b>10.88</b>	<b>920</b>	<b>11.82</b>	<b>957</b>
19000	633	8.49	678	9.30	712	9.93	762	10.31	784	10.90	809	11.10	837	11.30	890	11.95	926	12.99	963
19500	636	8.91	680	9.76	715	10.42	765	10.82	786	11.44	812	11.65	841	11.86	894	12.55	929	13.64	...

NOTE:  
 ABOVE DATA INCLUDES THE LOSSES THROUGH WET COIL AND CASING  
 ABOVE DATA INDICATE OPERATING RANGE INSIDE THE STANDARD MOTOR.  
 IF BHP IS EXCEEDING THAN THE STANDARD MOTOR THEN HIGHER CAPACITY MOTOR CAN BE PROVIDED AS AN OPTION.  
 BOLD FONT IN RPM COLUMN INDICATE BLOWER SPEED WITH FACTORY SETTING.

FAN PERFORMANCE - 3RTH720																				
External Static Pressure																				
Air Flow (CFM)	0.4		0.6		0.7		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
15000	546	5.08	568	0.79	587	1.51	606	2.22	636	5.78	662	7.27	689	7.59	723	9.26	757	8.32	778	9.12
16000	547	5.42	570	2.06	590	2.64	609	3.23	638	6.33	664	7.74	690	8.15	724	9.64	758	9.04	781	9.82
17000	548	5.76	573	3.32	592	3.78	611	4.24	640	6.88	666	8.21	691	8.70	725	10.03	759	9.76	784	10.52
18000	550	6.10	575	4.58	594	4.92	613	5.25	642	7.43	667	8.67	693	9.25	727	10.41	761	10.48	786	11.23
19000	551	6.57	577	5.98	597	6.19	616	6.40	645	8.14	669	9.32	694	10.00	728	11.01	762	11.43	789	12.02
20000	552	6.63	579	6.95	598	7.03	618	7.11	647	8.32	671	9.37	695	10.10	729	10.91	763	11.64	792	12.52
<b>21000</b>	554	7.04	582	8.26	601	8.22	620	8.18	648	9.00	672	9.98	696	10.80	<b>730</b>	<b>11.45</b>	764	12.52	793	13.25
22000	555	7.57	584	9.75	603	9.58	623	9.41	652	9.75	675	10.68	698	11.60	732	12.10	766	13.53	797	14.12
22500	557	8.10	585	9.92	605	9.88	625	9.84	653	10.31	676	11.15	699	12.00	733	12.72	768	13.91	799	14.63

FAN PERFORMANCE - 3RTH840																		
External Static Pressure																		
Air Flow (CFM)	0.6		0.7		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
18000	575	4.58	594	4.92	613	5.25	642	7.43	667	8.67	693	9.25	727	10.41	761	10.48	786	11.23
19000	577	5.98	597	6.19	616	6.40	645	8.14	677	9.32	694	10.00	739	11.01	762	11.43	789	12.52
20000	579	6.95	598	7.03	618	7.11	647	8.32	676	9.37	695	10.10	734	10.91	763	11.64	792	12.52
21000	582	8.26	601	8.22	620	8.18	648	9.00	675	9.98	696	10.80	716	11.45	764	12.52	793	13.25
22000	584	9.75	603	9.58	623	9.41	652	9.75	675	10.68	698	11.60	718	12.10	766	13.53	797	14.12
23000	586	10.09	606	10.18	627	10.28	654	10.86	675	11.63	700	12.40	720	13.34	770	14.28	801	15.14
24000	593	10.44	612	10.80	631	11.15	654	12.16	683	12.66	703	13.30	743	14.80	771	15.16	792	16.30
<b>25200</b>	598	10.99	617	11.56	636	12.13	657	12.92	688	13.42	707	14.20	<b>748</b>	<b>15.20</b>	775	16.34	797	17.13
26000	603	11.68	618	12.32	637	12.96	660	13.60	690	14.10	710	15.10	749	15.60	776	17.52	797	17.88
27000	606	12.53	620	13.25	639	13.97	663	14.47	691	14.98	713	16.20	750	16.20	776	18.94	797	18.86

FAN PERFORMANCE - 3RTH960																		
External Static Pressure																		
Air Flow (CFM)	0.6		0.7		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
23000	578	10.10	603	10.56	629	11.02	654	11.26	670	11.80	699	12.29	723	11.36	763	13.88	793	12.85
24000	583	11.14	607	11.60	631	12.07	656	12.36	674	12.87	702	13.31	727	12.70	764	14.97	794	14.30
25000	588	12.18	610	12.64	633	13.11	658	13.46	677	13.94	706	14.33	730	14.04	765	16.06	796	15.75
26000	592	13.21	613	13.68	635	14.15	659	14.56	681	15.01	709	15.35	733	15.38	767	17.15	797	17.21
27000	596	13.87	615	14.47	635	15.07	660	15.55	683	15.86	712	16.20	736	16.54	767	18.10	797	18.61
28000	601	15.82	620	16.27	639	16.72	663	16.98	688	17.52	717	17.70	736	18.42	770	19.67	799	20.38
<b>29000</b>	613	16.37	629	16.52	644	16.66	669	17.77	694	18.12	720	18.30	<b>750</b>	<b>19.18</b>	774	20.14	805	21.19
30000	607	17.14	623	17.85	640	18.56	664	18.95	694	19.22	723	19.40	742	20.75	771	21.57	799	23.19
31000	603	17.99	620	19.30	637	20.61	661	20.23	695	20.41	727	20.60	737	22.46	770	23.12	...	...
32000	597	18.48	615	20.39	633	22.30	657	21.12	695	21.21	730	21.40	730	23.76	767	24.23	...	...

FAN PERFORMANCE - 3RTH1080																		
External Static Pressure																		
Air Flow (CFM)	0.6		0.7		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
24000	579	11.09	602	11.43	625	11.77	650	12.21	666	12.86	695	13.03	721	12.49	757	14.78	786	14.05
26000	588	13.18	609	13.60	630	14.02	654	14.40	675	14.96	704	15.13	727	15.22	761	16.99	790	17.00
28000	597	15.38	616	15.81	635	16.24	658	16.51	684	17.03	712	17.20	731	17.89	764	19.11	794	19.81
30000	607	17.14	623	17.85	640	18.56	664	18.95	694	19.22	723	19.40	742	20.75	771	21.57	799	23.19
32000	615	19.55	630	20.15	645	20.74	667	20.89	701	21.22	730	21.40	743	23.34	773	23.53	801	25.71
<b>32500</b>	617	20.34	632	20.93	646	21.53	667	21.64	703	21.97	732	22.15	<b>744</b>	<b>24.27</b>	774	24.30	...	...
34000	624	22.70	637	23.29	650	23.89	670	23.88	710	24.21	738	24.40	...	...	...	...	...	...
35000	628	24.27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

NOTE  
 ABOVE DATA INCLUDES THE LOSSES THROUGH WET COIL AND CASING  
 ABOVE DATA INDICATE OPERATING RANGE INSIDE THE STANDARD MOTOR.  
 IF BHP IS EXCEEDING THAN THE STANDARD MOTOR THEN HIGHER CAPACITY MOTOR CAN BE PROVIDED AS AN OPTION.  
 BOLD FONT IN RPM COLUMN INDICATE BLOWER SPEED WITH FACTORY SETTING.





# WIRING DIAGRAMS

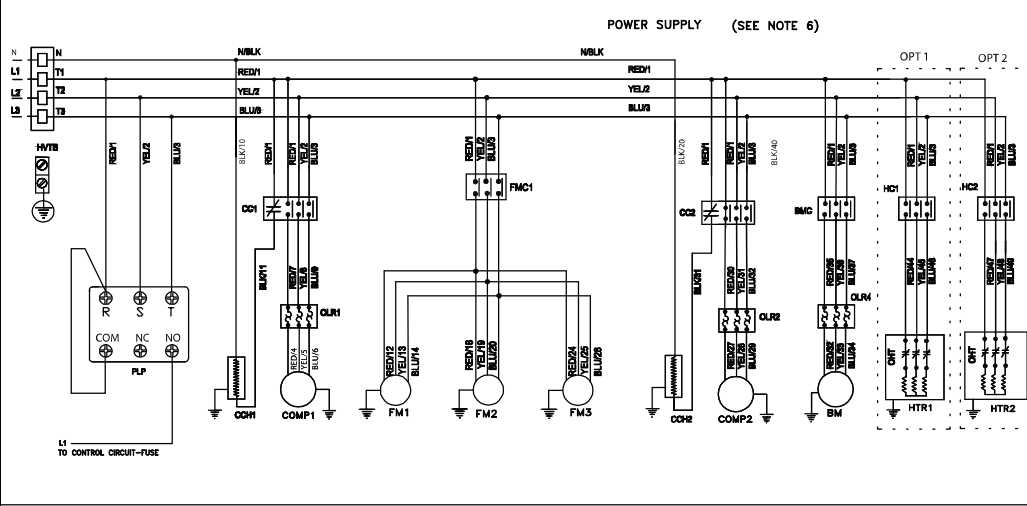
## WIRING DIAGRAM FOR 30TR / 35TR UNITS

**POWER SUPPLY**  
THIS WIRING DIAGRAM SUITS  
380-415 VOLTS / 3 PH / 50 HZ WITH NEUTRAL  
380-400 VOLTS / 3 PH / 60 HZ WITH NEUTRAL  
PL. REFER UNIT NAME PLATE FOR YOUR UNIT'S  
POWER SUPPLY

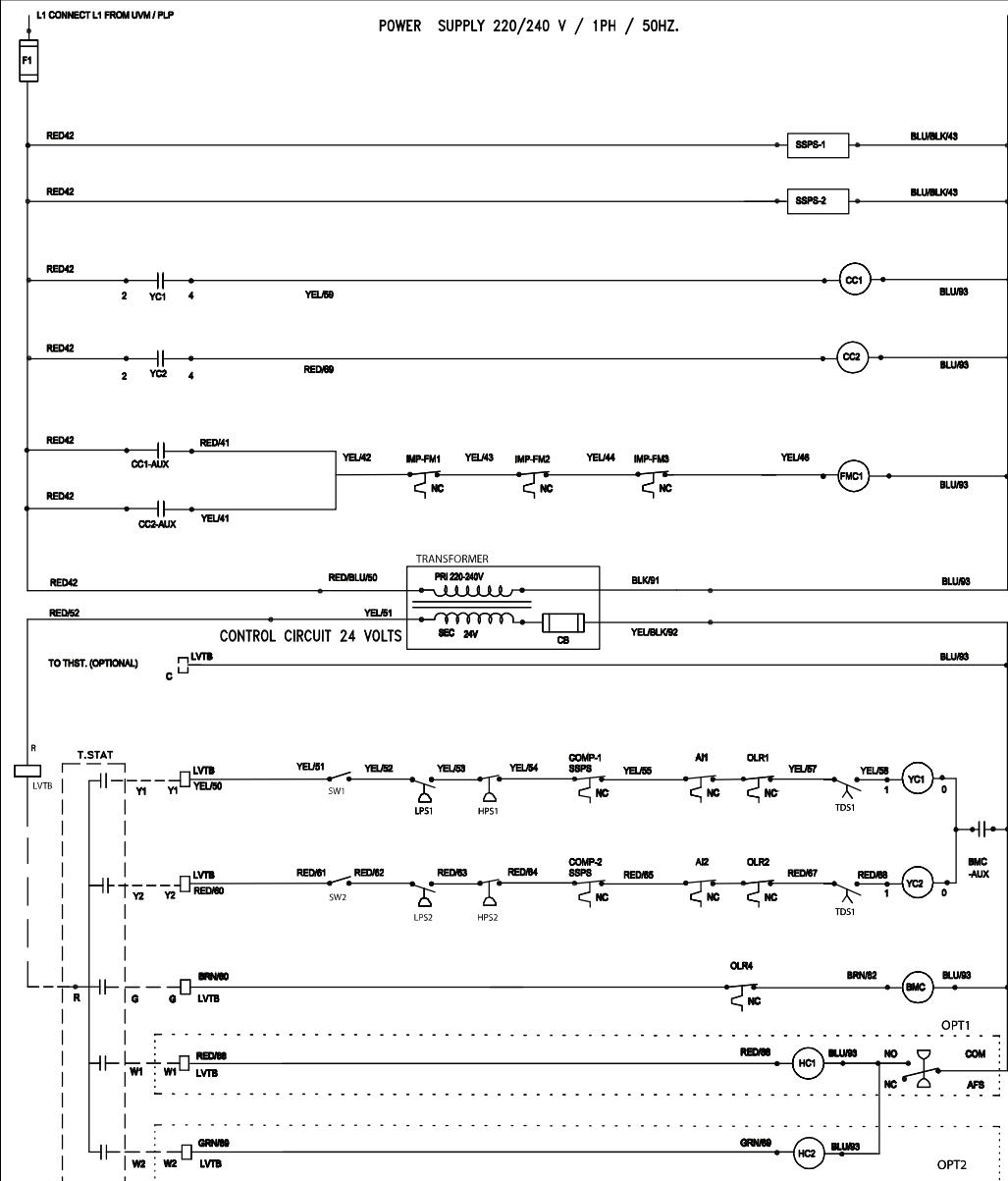
### WIRING DIAGRAM FOR PACKAGE UNITS

**AWAL GULF MANUFACTURING Co. BSC (C)**  
SITRA, BAHRAIN.

**WARNING**  
THIS UNIT IS BUILT AND WIRED ACCORDING TO COMPANY STANDARDS AND / OR JOB ORDER'S SPECIFICATIONS. ANY UNAUTHORISED CHANGE OR MODIFICATION OR SETTING OF ROOM THERMOSTAT TEMPERATURE BELOW 60°F WILL MAKE WARRANTY NULL & VOID.



- LEGEND**
- AFS - AIR FLOW SWITCH
  - AI - ANTI ICE
  - BLK - BLACK
  - BLU - BLUE
  - BM - BLOWER MOTOR
  - BMC - BLOWER MOTOR CONTACTOR
  - BRN - BROWN
  - CCH - CRANK CASE HEATER
  - CB - CIRCUIT BREAKER
  - COMP - COMPRESSOR
  - F - FUSE
  - CC - COMP CONTACTOR
  - FM - FAN MOTOR
  - FMC - FAN MOTOR CONTACTOR
  - HC - HEATER CONTACTOR
  - HPS - HIGH PRESSURE SWITCH
  - HTR - HEATER
  - HVTB - HIGH VOLTAGE TERMINAL BLOCK
  - JMP - INTERNAL MOTOR PROTECTION
  - L - LINE
  - LPS - LOW PRESSURE SWITCH
  - LVTB - LOW VOLTAGE TERMINAL BLOCK
  - N - NEUTRAL
  - NC - NORMALLY CLOSED
  - NO - NORMALLY OPEN
  - OHT - OVER HEAT THERMOSTAT
  - OLR - OVER LOAD RELAY
  - OPT - OPTIONAL
  - PLP - PHASE LOSS PROTECTION
  - PRI - PRIMARY
  - RED - RED
  - SEC - SECONDARY
  - SSPS - SOLID STATE PROTECTION SYS.
  - SW - SWITCH ON/OFF
  - TDS - TIME DELAY SWITCH
  - TRANS - TRANSFORMER
  - T.STAT - THERMOSTAT
  - UV - UNDER VOLTAGE MONITOR
  - UV - ULTRA VIOLET LIGHT
  - YC - COOLING RELAY
  - YEL - YELLOW
  - FIELD WIRING
  - TERMINAL / SPLICE
  - OPTIONAL MARKING
  - EARTHING



- NOTES**
- 1) ANY WIRE REPLACEMENT SHOULD BE OF 90°C TYPE OR EQUIVALENT AND COPPER CONDUCTOR ONLY.
  - 2) POWER MUST BE SUPPLIED TO CRANK CASE HEATER FOR A MINIMUM OF 12 HOURS PRIOR TO START UP. IF THE POWER SUPPLY HAS BEEN INTERRUPTED FOR LONGER PERIOD THEN AGAIN CRANK CASE HEATER MUST BE ENERGIZED FOR MINIMUM OF 12 HOURS BEFORE STARTING OF COMPRESSOR.
  - 3) FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER TO BE PROVIDED BY THE USER WITH RELEVANT RATING.
  - 4) PLEASE ALLOW 2 TO 3 MINUTES BEFORE STARTING OF COMPRESSOR.
  - 5) COMPRESSOR IS PROVIDED WITH INTERNAL OVERLOAD PROTECTION.
  - 6) POWER CIRCUIT FOR:  
1) 380-415 V/3PH/50HZ WITH NEUTRAL  
2) 380-400 V/3PH/60HZ WITH NEUTRAL
  - 7) REFER INSTRUCTIONS WITH THE COMPONENTS FOR STAR / DELTA CONNECTIONS

- OPTIONS**
- OPT. 1 - SINGLE STAGE HEATING
  - OPT. 2 - TWO STAGE HEATING

**WIR.DIA.RTP-2COMP-3FM-STD**  
C240373 1BC011C93 00



# WIRING DIAGRAMS

## WIRING DIAGRAMS FOR 40TR/50TR UNITS

### POWER SUPPLY

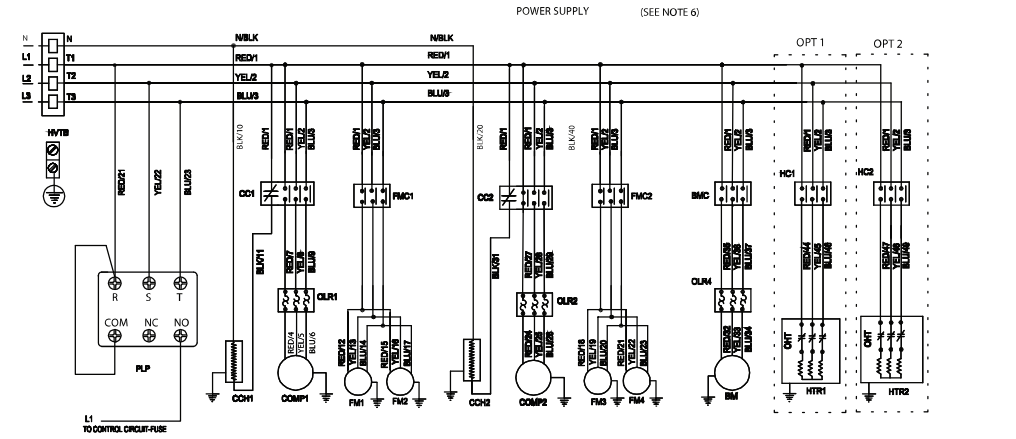
THIS WIRING DIAGRAM SUITS  
 380-415 VOLTS / 3 PH / 50 HZ WITH NEUTRAL  
 380-400 VOLTS / 3 PH / 60 HZ WITH NEUTRAL  
 PL. REFER UNIT NAME PLATE FOR YOUR  
 UNIT'S POWER SUPPLY

### WIRING DIAGRAM FOR PACKAGE UNITS

AWAL GULF MANUFACTURING Co. BSC (C)  
 SITRA, BAHRAIN.

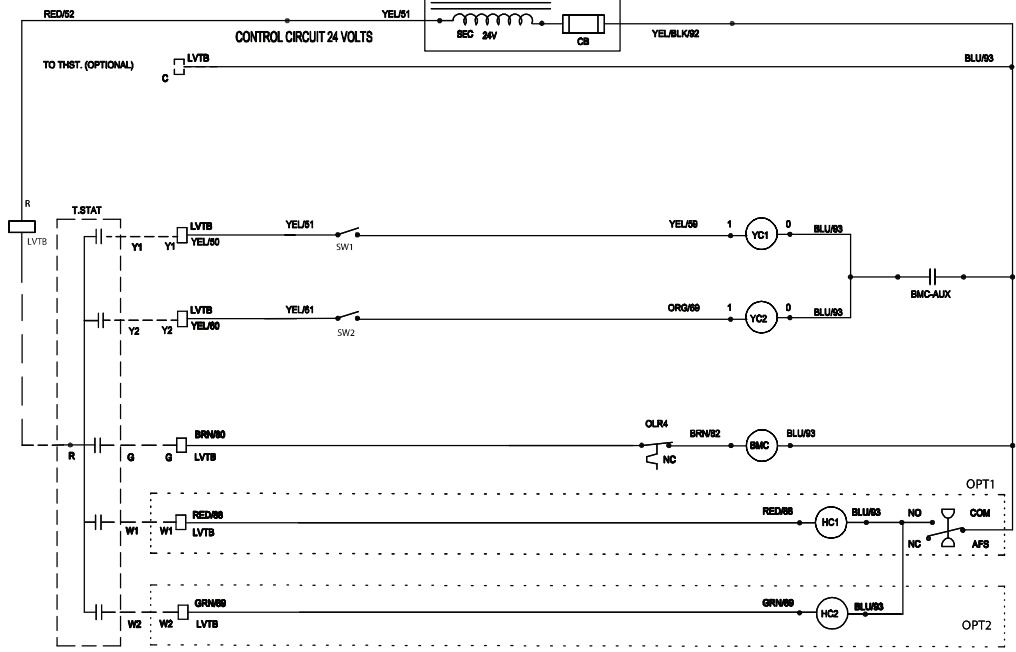
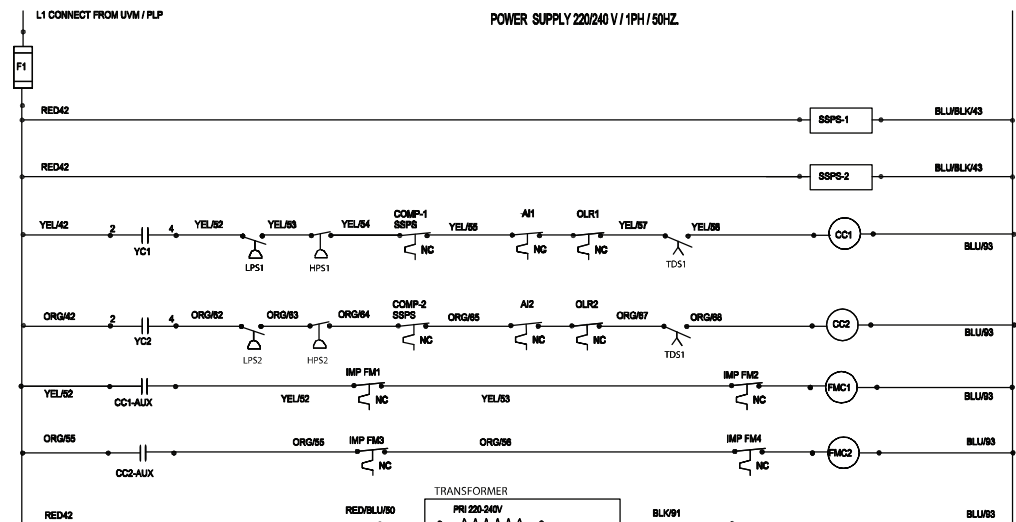
#### WARNING

THIS UNIT IS BUILT AND WIRED ACCORDING TO COMPANY STANDARDS AND / OR JOB ORDER'S SPECIFICATIONS. ANY UNAUTHORISED CHANGE OR MODIFICATION OR SETTING OF ROOM THERMOSTAT TEMPERATURE BELOW 60 F WILL MAKE WARRANTY NULL & VOID.



#### LEGEND

- AFS - AIR FLOW SWITCH
- AI - ANTI ICE
- BLK - BLACK
- BLU - BLUE
- BM - BLOWER MOTOR
- BMC - BLOWER MOTOR CONTACTOR
- BRN - BROWN
- CCH - CRANK CASE HEATER
- CB - CIRCUIT BREAKER
- COMP - COMPRESSOR
- F - FUSE
- CC - COMP CONTACTOR
- FM - FAN MOTOR
- FMC - FAN MOTOR CONTACTOR
- HC - HEATER CONTACTOR
- HPS - HIGH PRESSURE SWITCH
- HTR - HEATER
- HVTB - HIGH VOLTAGE TERMINAL BLOCK
- IMP - INTERNAL MOTOR PROTECTION
- L - LINE
- LPS - LOW PRESSURE SWITCH
- LVTB - LOW VOLTAGE TERMINAL BLOCK
- N - NEUTRAL
- NC - NORMALLY CLOSED
- NO - NORMALLY OPEN
- OHT - OVER HEAT THERMOSTAT
- OLR - OVER LOAD RELAY
- OPT - OPTIONAL
- PLP - PHASE LOSS PROTECTION
- PRI - PRIMARY
- RED - RED
- SEC - SECONDARY
- SSPS - SOLID STATE PROTECTIONSYS.
- SW - SWITCH ON/ OFF
- TDS - TIME DELAY SWITCH
- TRANS - TRANSFORMER
- T.STAT - THERMOSTAT
- UVM - UNDER VOLTAGE MONITOR
- YC - COOLING RELAY
- YEL - YELLOW
- - - - - FIELD WIRING
- - - - - - TERMINAL / SPLICE
- - - - - - OPTIONAL MARKING
- ⊕ - - - - - EARTHING



#### NOTES

- 1) ANY WIRE REPLACEMENT SHOULD BE OF 90°C TYPE OR EQUIVALENT COPPER CONDUCTOR ONLY.
- 2) POWER MUST BE SUPPLIED TO CRANK CASE HEATER FOR A MINIMUM OF 12 HOURS PRIOR TO START UP. IF THE POWER SUPPLY HAS BEEN INTERRUPTED FOR A LONGER PERIOD THEN AGAIN CRANK CASE HEATER MUST BE ENERGIZED FOR MINIMUM OF 12 HOURS BEFORE STARTING OF COMPRESSOR.
- 3) FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER TO BE PROVIDED BY THE USER WITH RELEVANT RATING.
- 4) PLEASE ALLOW 2 TO 3 MINUTES BEFORE STARTING OF COMPRESSOR.
- 5) COMPRESSOR IS PROVIDED WITH INTERNAL OVERLOAD PROTECTION.
- 6) POWER CIRCUIT FOR:  
 1380-415 V/3PH/50HZ WITH NEUTRAL  
 2380-400 V/3PH/60HZ WITH NEUTRAL
- 7) REFER INSTRUCTIONS WITH THE COMPONENTS FOR STAR / DELTA CONNECTIONS

#### OPTIONS

- OPT. 1 - SINGLE STAGE HEATING
- OPT. 2 - TWO STAGE HEATING

WIR.DIA.RTP-2COMP-4FM-STD

C240268 1BC011B03 03

# WIRING DIAGRAMS

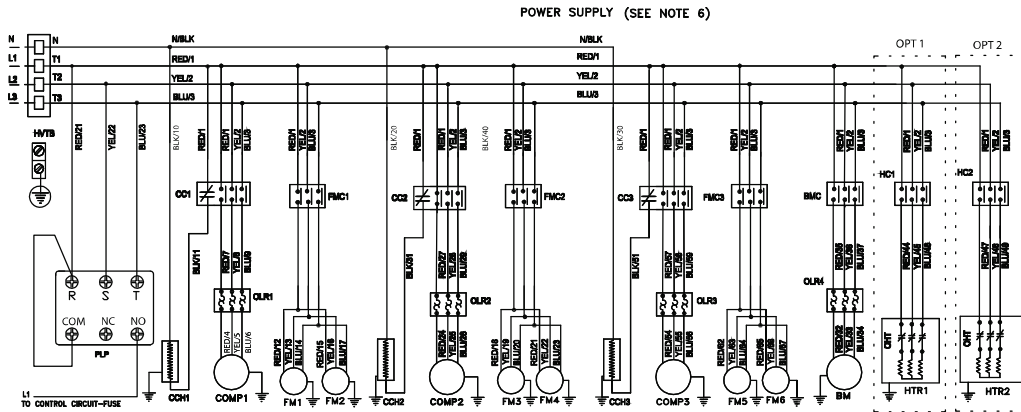
## WIRING DIAGRAM FOR 60TR / 70TR UNITS

**POWER SUPPLY**  
THIS WIRING DIAGRAM SUITS  
380-415 VOLTS / 3 PH / 50 HZ WITH NEUTRAL  
380-400 VOLTS / 3 PH / 60 HZ WITH NEUTRAL  
PL. REFER UNIT NAME PLATE FOR YOUR UNIT'S  
POWER SUPPLY

### WIRING DIAGRAM FOR PACKAGE UNITS

**AWAL GULF MANUFACTURING Co. BSC (C)**  
SITRA, BAHRAIN.

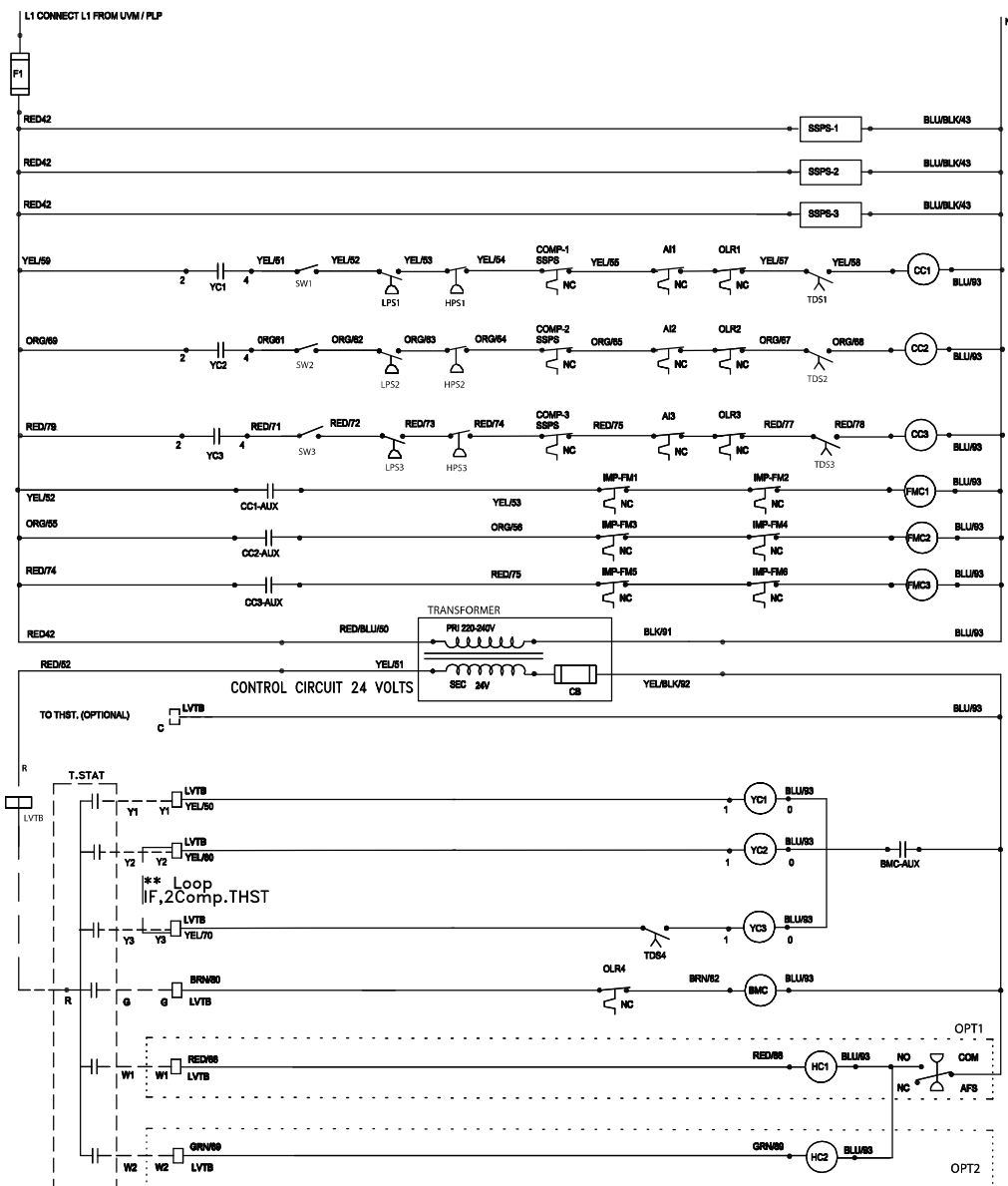
**WARNING**  
THIS UNIT IS BUILT AND WIRED ACCORDING TO COMPANY STANDARDS AND / OR JOB ORDER'S SPECIFICATIONS. ANY UNAUTHORISED CHANGE OR MODIFICATION OR SETTING OF ROOM THERMOSTAT TEMPERATURE BELOW 60°F WILL MAKE WARRANTY NULL & VOID.



#### LEGEND

- AFS - AIR FLOW SWITCH
- AI - ANTI ICE
- BLK - BLACK
- BLU - BLUE
- BM - BLOWER MOTOR
- BMC - BLOWER MOTOR CONTACTOR
- BRN - BROWN
- CCH - CRANK CASE HEATER
- CB - CIRCUIT BREAKER
- COMP - COMPRESSOR
- F - FUSE
- CC - COMP CONTACTOR
- FM - FAN MOTOR
- FMC - FAN MOTOR CONTACTOR
- HC - HEATER CONTACTOR
- HPS - HIGH PRESSURE SWITCH
- HTR - HEATER
- HVTB - HIGH VOLTAGE TERMINAL BLOCK
- IMP - INTERNAL MOTOR PROTECTION
- L - LINE
- LPS - LOW PRESSURE SWITCH
- LVTB - LOW VOLTAGE TERMINAL BLOCK
- N - NEUTRAL
- NC - NORMALLY CLOSED
- NO - NORMALLY OPEN
- OHT - OVER HEAT THERMOSTAT
- OLR - OVER LOAD RELAY
- OPT - OPTIONAL
- PLP - PHASE LOSS PROTECTION
- PRI - PRIMARY
- RED - RED
- SEC - SECONDARY
- SSPS - SOLID STATE PROTECTION SYS.
- SW - SWITCH ON/OFF
- TDS - TIME DELAY SWITCH
- TRANS - TRANSFORMER
- T.STAT - THERMOSTAT
- UV - UNDER VOLTAGE MONITOR
- UVV - ULTRA VIOLET LIGHT
- YC - COOLING RELAY
- YEL - YELLOW
- - - - - FIELD WIRING
- - - - - - TERMINAL / SPLICE
- - - - - - OPTIONAL MARKING
- ⊕ - EARTHING

### POWER SUPPLY 220/240 V / 1PH / 50HZ.



#### NOTES

- 1) ANY WIRE REPLACEMENT SHOULD BE OF 90°C TYPE OR EQUIVALENT AND COPPER CONDUCTOR ONLY.
- 2) POWER MUST BE SUPPLIED TO CRANK CASE HEATER FOR A MINIMUM OF 12 HOURS PRIOR TO START UP. IF THE POWER SUPPLY HAS BEEN INTERRUPTED FOR LONGER PERIOD THEN AGAIN CRANK CASE HEATER MUST BE ENERGIZED FOR MINIMUM OF 12 HOURS BEFORE STARTING OF COMPRESSOR.
- 3) FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER TO BE PROVIDED BY THE USER WITH RELEVANT RATING.
- 4) PLEASE ALLOW 2 TO 3 MINUTES BEFORE STARTING OF COMPRESSOR.
- 5) COMPRESSOR IS PROVIDED WITH INTERNAL OVERLOAD PROTECTION.
- 6) POWER CIRCUIT FOR:  
1) 380-415 V/3PH/50HZ WITH NEUTRAL  
2) 380-400 V/3PH/60HZ WITH NEUTRAL
- 7) REFER INSTRUCTIONS WITH THE COMPONENTS FOR STAR / DELTA CONNECTIONS

#### OPTIONS

- OPT. 1 - SINGLE STAGE HEATING
- OPT. 2 - TWO STAGE HEATING

WIR.DIA.RTP-3COMP-6FM-STD

C240267 | 1BC011B01 | 05

# WIRING DIAGRAMS

## WIRING DIAGRAMS FOR 80TR/90TR UNITS

### POWER SUPPLY

THIS WIRING DIAGRAM SUITS

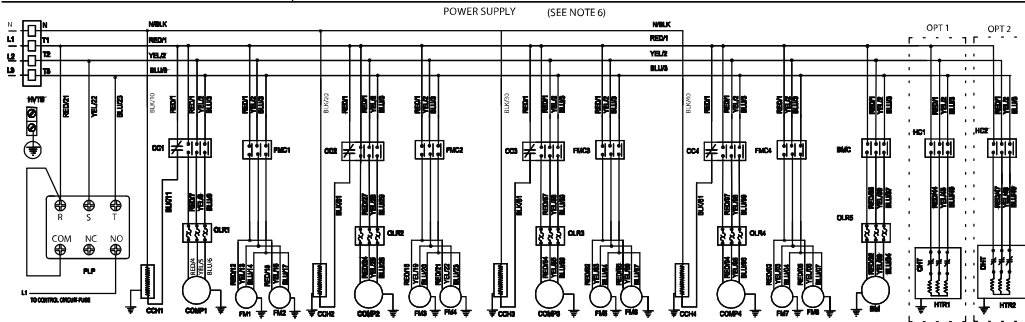
380-415 VOLTS / 3 PH / 50 HZ WITH NEUTRAL  
380-400 VOLTS / 3 PH / 60 HZ WITH NEUTRAL  
PL. REFER UNIT NAME PLATE FOR YOUR UNIT'S  
POWER SUPPLY

### WIRING DIAGRAM FOR PACKAGE UNITS

AWAL GULF MANUFACTURING Co. BSC (C)  
SITRA, BAHRAIN.

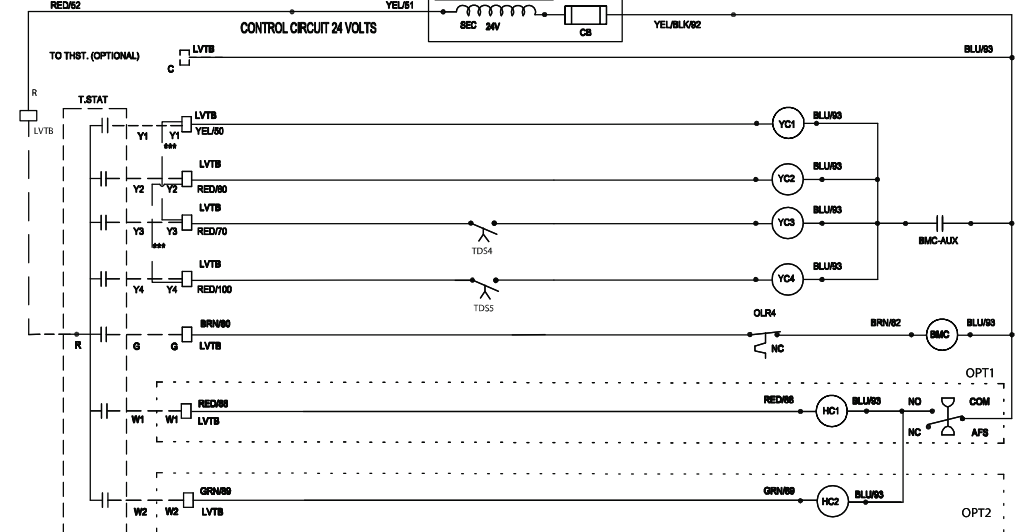
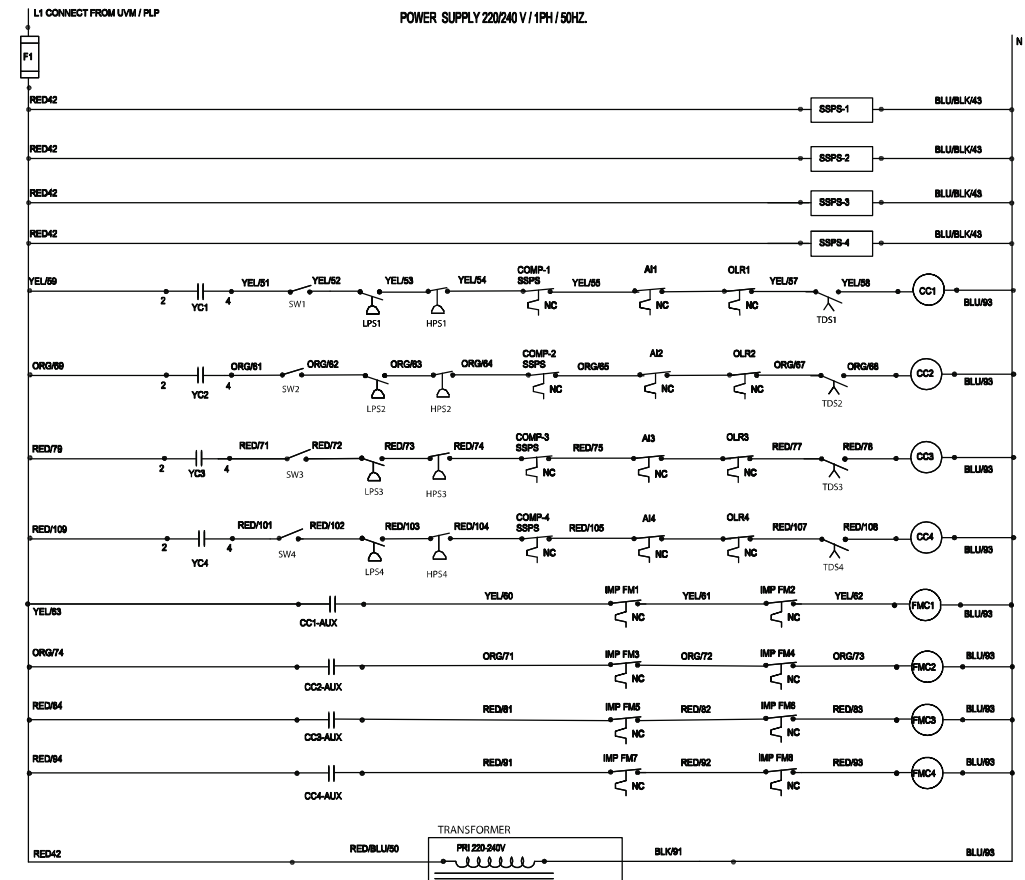
#### WARNING

THIS UNIT IS BUILT AND WIRED ACCORDING TO COMPANY STANDARDS AND / OR JOB ORDER'S SPECIFICATIONS.  
ANY UNAUTHORISED CHANGE OR MODIFICATION OR SETTING OF ROOM THERMOSTAT TEMPERATURE BELOW 60 F WILL MAKE WARRANTY NULL & VOID.



#### LEGEND

- AFS - AIR FLOW SWITCH
- AI - ANTI ICE
- BLK - BLACK
- BLU - BLUE
- BM - BLOWER MOTOR
- BMC - BLOWER MOTOR CONTACTOR
- BRN - BROWN
- CCH - CRANK CASE HEATER
- CB - CIRCUIT BREAKER
- COMP - COMPRESSOR
- F - FUSE
- CC - COMP CONTACTOR
- FC - FAN MOTOR
- FMC - FAN MOTOR CONTACTOR
- HC - HEATER CONTACTOR
- HPS - HIGH PRESSURE SWITCH
- HTR - HEATER
- HVTB - HIGH VOLTAGE TERMINAL BLOCK
- IMP - INTERNAL MOTOR PROTECTION
- L - LINE
- LPS - LOW PRESSURE SWITCH
- LVTB - LOW VOLTAGE TERMINAL BLOCK
- N - NEUTRAL
- NC - NORMALLY CLOSED
- NO - NORMALLY OPEN
- OHT - OVER HEAT THERMOSTAT
- OLR - OVER LOAD RELAY
- OPT - OPTIONAL
- PLP - PHASE LOSS PROTECTION
- FRI - PRIMARY
- RED - RED
- SEC - SECONDARY
- SSPS - SOLID STATE PROTECTION SYS.
- SW - SWITCH ON/OFF
- TDS - TIME DELAY SWITCH
- TRANS - TRANSFORMER
- T.STAT - THERMOSTAT
- UVM - UNDER VOLTAGE MONITOR
- UV - ULTRA VIOLET LIGHT
- YC - COOLING RELAY
- YEL - YELLOW
- - - - - FIELD WIRING
- - TERMINAL / SPLICE
- · - · - · - OPTIONAL MARKING
- ⊕ - EARTHING



#### NOTES

- 1) ANY WIRE REPLACEMENT SHOULD BE OF 90°C TYPE OR EQUIVALENT AND COPPER CONDUCTOR ONLY.
- 2) POWER MUST BE SUPPLIED TO CRANK CASE HEATER FOR A MINIMUM OF 12 HOURS PRIOR TO START UP. IF THE POWER SUPPLY HAS BEEN INTERRUPTED FOR LONGER PERIOD THEN AGAIN CRANK CASE HEATER MUST BE ENERGIZED FOR MINIMUM OF 12 HOURS BEFORE STARTING OF COMPRESSOR.
- 3) FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER TO BE PROVIDED BY THE USER WITH RELEVANT RATING.
- 4) PLEASE ALLOW 2 TO 3 MINUTES BEFORE STARTING OF COMPRESSOR.
- 5) COMPRESSOR IS PROVIDED WITH INTERNAL OVERLOAD PROTECTION.
- 6) POWER CIRCUIT FOR:  
1) 380-415 V/3PH/50HZ WITH NEUTRAL  
2) 380-400 V/3PH/60HZ WITH NEUTRAL
- 7) REFER INSTRUCTIONS WITH THE COMPONENTS FOR STAR / DELTA CONNECTIONS

#### OPTIONS

- OPT. 1 - SINGLE STAGE HEATING
- OPT. 2 - TWO STAGE HEATING

\*\*\* - LOOP IF 2COMP.THST

WIR.DIA.RTP-4COMP-8FM-STD

C240270

1BC011B04

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# AUTHORISED DISTRIBUTORS



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05/05/2020 8/5/2023