

# Emerson's Next Generation FHP Compressors



**Copeland**<sup>®</sup>  
brand products

  
**EMERSON**<sup>™</sup>  
Climate Technologies

# ECZ Hermetic FHP Reciprocating Compressors

## Emerson's Next Generation Fractional Horse Power Refrigeration Solutions

Emerson Climate's Fractional Horse Power compressors are known in India, for more than four decades, for their wide range, ease of application, efficiency, reliability and excellent after-sales service – including 'repair services' even beyond warranty period.

It has been our endeavor to continuously innovate and offer enhanced product value to be the best in the world. Emerson Climate Technologies (India) Limited is pleased to announce the launch of the **Next Generation ECZ Hermetic FHP Reciprocating Compressors**, to meet different cooling needs of our customers for domestic and export business.

ECZ Platform comprises of seven compressor models which are in the range of 0.18HP to 0.37HP.

### Product Advantage

- Higher Cooling Capacity
- Best-In-Class Energy Efficiency
- High Product Quality and Reliability
- Compact Shape
- Dual Frequency - Motor Capability
- Mount-On Accessories

### Customer Advantage

- Low Running Cost
- Opportunity To Optimize Appliance Cost
- Reliable Product

## ECZ Model Nomenclature

**COMPRESSOR FAMILY SERIES**  
ECZ PRODUCT FAMILY

**CAPACITY**  
NUMBERS OF DIGITS IN NOMINAL COMPRESSOR COOLING CAPACITY AT 60Hz RATING CONDITIONS

**CAPACITY**  
FIRST TWO DIGITS IN NOMINAL COMPRESSOR COOLING CAPACITY AT 60Hz RATING CONDITIONS

**APPLICATION**

L	LBP
C	CBP
H	HBP

**REFRIGERANT**

E	R-22
G	R-134a
H	R-290
L	R-404A

**ECZ 4 21 H G - 1 1 M - 1 1 D 0**

**TYPICAL ELECTRICAL CODES**

CODE	50 Hz	60 Hz
1	220-230V, 1Ph	220-230V, 1Ph
2	-	230V, 1Ph
3	220-230V, 1Ph	-
4	-	115V, 1Ph
5	380-420V, 3Ph	-

**MOTOR & PROTECTOR CODES**

CODE	MOTOR	PROTECTOR
1	STANDARD	EXTERNAL
2	STANDARD	INTERNAL
3	MODIFIED	EXTERNAL
4	MODIFIED	INTERNAL

**MOTOR CIRCUIT & ACCESSORIES SUPPLY**

	RSIR	CSIR	CSCR	3PH	PSC
NO ACCESSORIES	A	E	L	T	W
PREWIRED MO	B	F	M		X
CLOSED BOX		G	N		
PARTIAL ACCESSORIES		H	P		Y
FUTURE	C,D	J,K	Q,R,S	U,V	Z

**PRODUCT VARIATIONS**  
4 CHARACTER BILL OF MATERIAL NUMBER INDICATING CONFIGURATION

# Product Specifications –

Parameter		High Temp					Low Temp	
<b>* PERFORMANCE SPECIFICATIONS</b>								
Model		ECZ421HG-11B	ECZ426HG-11M	ECZ431HG-11M	ECZ434HG-11M	ECZ444HG-11M	ECZ380LG-11M	ECZ416LG-13M
Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a
Performance Nominals @ 50 Hz								
Capacity	Btu/hr	1780	2150	2555	3050	3850	650	1260
	Watt	521	630	749	894	1127	191	369
Power	Watt	226	240	285	335	415	155	286
EER	Btu/Watt-Hr	7.88	8.96	8.96	9.10	9.28	4.2	4.4
	W/W	2.31	2.62	2.63	2.67	2.72	1.2	1.29
Current	Amp	1.6	1.1	1.3	1.6	2.10	1.0	1.3
Performance Nominals @ 60Hz								
Capacity	Btu/hr	2125	2575	3050	3420	4500	800	-
	Watt	622	754	894	1002	1318	234	-
Power	Watt	271	300	355	367	485	190	-
EER	Btu/Watt-Hr	7.84	8.58	8.6	9.30	9.28	4.2	-
	W/W	2.30	2.51	2.52	2.73	2.72	1.2	-
Current	Amp	1.6	1.3	1.6	1.6	2.30	1.0	-
<b>MECHANICAL SPECIFICATIONS</b>								
Displacement	cc/rev	5.30	6.00	7.22	8.7	10.5	7.22	13.8
Oil Charge	cc	240	240	240	260	260	240	280
Oil Type	-	POE	POE	POE	POE	POE	POE	POE
Cooling Type	CFM	350	350	350	350	350	350	350
Net Weight	Kg	9.4	9.4	9.6	11.2	11.2	9.6	11.7
<b>ELECTRICAL SPECIFICATIONS</b>								
*Motor Circuit		RSIR	CSCR	CSCR	CSCR	CSCR	CSCR And CSIR	CSCR
Voltage Range @50Hz		180-260	187-260	187-260	180-260	180-260	180-260	180-260
Voltage Range @60Hz		207-253	207-253	207-253	207-253	207-253	207-253	207-253
LRA	Amp @50/60Hz	12	9	10	13.5	13.5	10	15.80
MCC	Amp @50/60Hz	3	2	2.3	2.5	3	2	3.35
Start Capacitor	mfd	--	40-60	40-60	40-60	40-60	40-60	80-100
Run Capacitor	mfd	-	6	6	6	6	6	10
OLP Model		5TM743	5TM734	5TM734	5TM739	5TM743	5TM734	5TM758
Relay Model		KARP4027	KARPN3041	KARPN3541	KARPN4241	KARPN4241	KARPN3541	KARPN4241

\*Performance at ASRE/T Rating Conditions. \*For circuit diagrams please refer to page No.5

## Notes

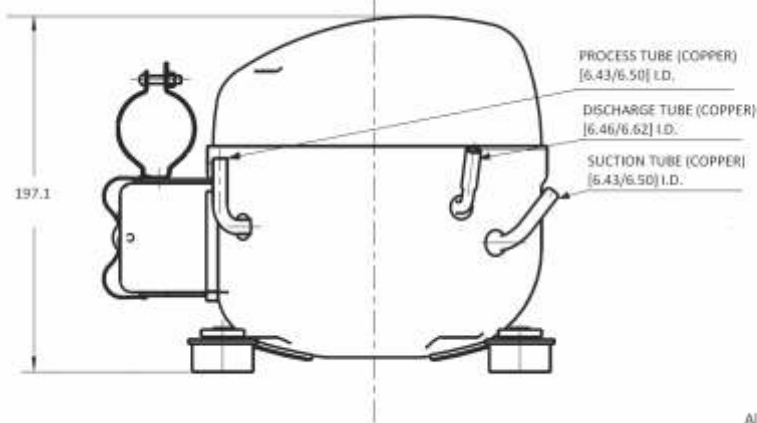
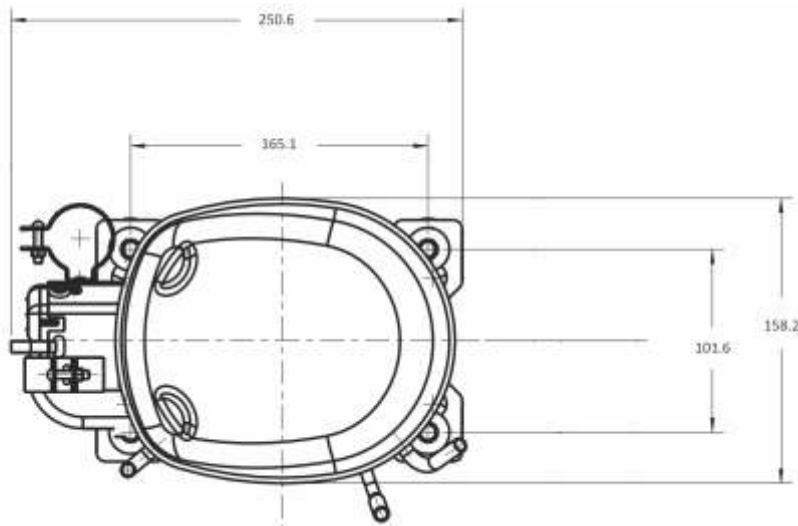
- Electrical rating is 230V, 50Hz and 230V, 60Hz for single phase models and 400V, 50Hz for three phase models.
- Operating voltage range signifies the range of voltage for which the compressor can start and run upto 43°C ambient.
- Cooling capacity and power consumption are nominal values at specified rating conditions and subject to ±5% variation.
- Direct air flow on glass terminal cover should be avoided.
- Compressors with CSIR, CSCR circuit and three phase models may be used with thermostatic expansion valve.
- Compressors with RSIR Circuit must use capillary tube only.
- All compressors use two pole motors.
- Compressors for specific applications are rated for IS-10617 Part I and Part III - 1983
- All run capacitor should have a rating of 440 VAC and start capacitor 275 VAC surge, unless otherwise specified by Emerson Climate Technologies (India) Limited.

## ASRE/T Rating Conditions-

Rating	Ambient Temp.	Evaporating Temp.	Condensing Temp.	Sub cooled Liquid Temp.	Return gas Temp.
	°C(°F)	°C(°F)	°C(°F)	°C(°F)	°C(°F)
HBP	35(95)	7.2(45)	54.4(130)	46.1(115)	35(95)
CBP	35(95)	-6.7(20)	54.4(130)	46.1(115)	35(95)
LBP	32(90)	-23.3(-10)	54.4(130)	32(90)	32(90)

# Dimensional Drawing

All Compressor Models Are With Same Dimensions



All Dimensions in mm

## ECZ Model Standard Bill Of Material

COMPRESSOR MODELS
ECZ421HG-11B
ECZ426HG-11M
ECZ431HG-11M
ECZ434HG-11M
ECZ444HG-11M
ECZ380LG -11M
ECZ416LG -13M

MOUNTING CONFIGURATION							
DETAILS	1	2	3	4	5	6	7
7.5 X 7.5 (SQUARE MOUNT)	✓						
4.8 X 8.0 (RECTANGULAR MOUNT)		✓					
4.0 X 6.5 & 2.75 x 6.69 (DUAL RECTANGULAR MOUNT)			✓				
6.12 X 8.0 (TRIANGULAR MOUNT)				✓			
8.44 X 9.75 (TRIANGULAR MOUNT)					✓		
6.53 X 8.68 (TRIANGULAR MOUNT)							✓

TUBING CONFIGURATION										
	0	1	2	3	4	5	6	7	8	9
	A	B	C	D	E	F	G	H	J	K
W/O HEATER										
WITH HEATER										
SUCTION	SIDE TUBE VERTICAL			✓						✓
	SIDE TUBE INCLINED			✓				✓		
	SIDE TUBE HORIZONTAL		✓					✓		
	TOP TUBE HORIZONTAL	✓					✓			
	SPUD					✓				✓
DISCHARGE	TUBE	✓	✓	✓	✓	✓	✓	✓	✓	✓
	SPUD									
PROCESS	TUBE HORIZONTAL	✓	✓	✓	✓					
	TUBE VERTICAL						✓	✓	✓	✓

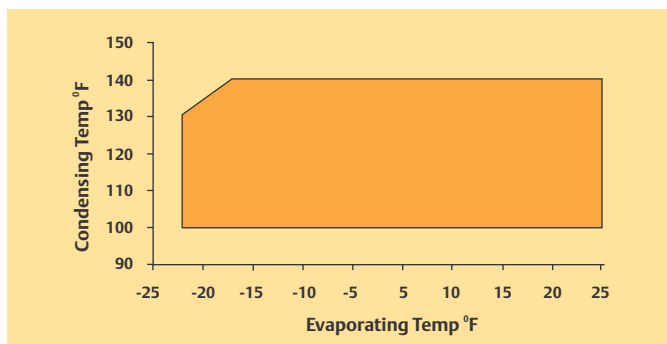
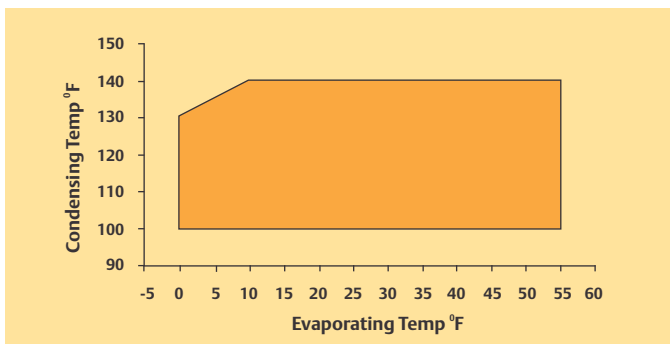
SUPPLY INDICATOR	
CODE	DETAILS
D	DOMESTIC (With Warranty)
E	EXPORT (W/O Warranty)
X	OTHER DIGITS TO BE ASSIGNED FOR CUSTOMER SPECIFIC REQUIREMENTS

APPROVAL INDICATOR	
CODE	DETAILS
1	NO APPROVALS
2	UL/CB + OTHER IF ANY
3	OTHER APPROVALS W/O UL/CB
4	CCC

# Operating Envelopes

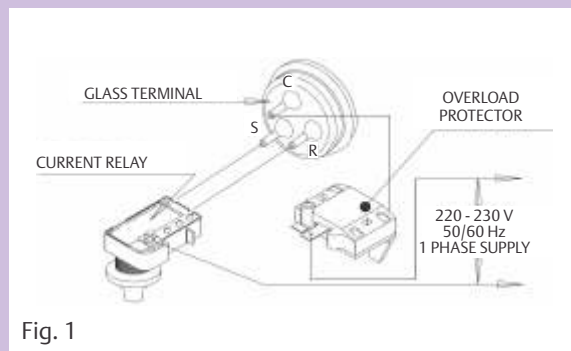
For ECZ421HG-11B-37XX, ECZ426HG-11M-37XX  
 ECZ431HG-11M-37XX, ECZ434HG-11M-37XX,  
 & ECZ444HG-11M-37XX

For ECZ380LG-11M-37XX, ECZ416LG-13M-37XX

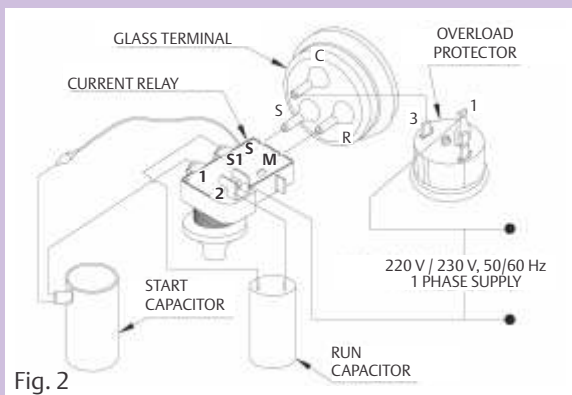


# Wiring Diagram

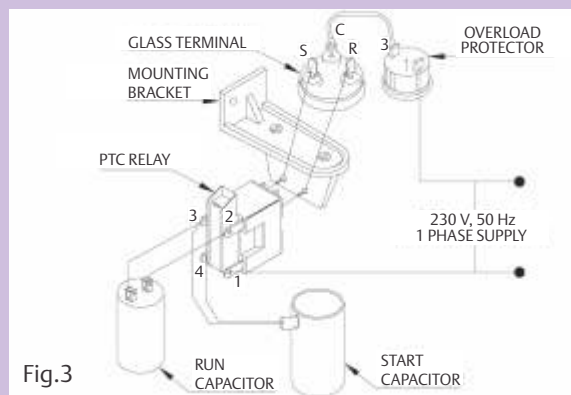
## RESISTANCE START INDUCTION RUN (RSIR) WITH CURRENT RELAY



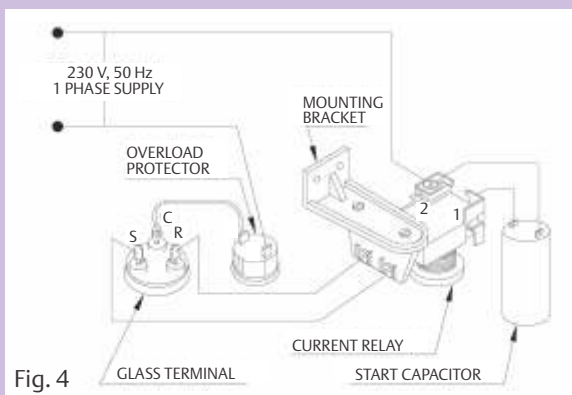
## CAPACITOR START CAPACITOR RUN (CSCR) WITH CURRENT RELAY



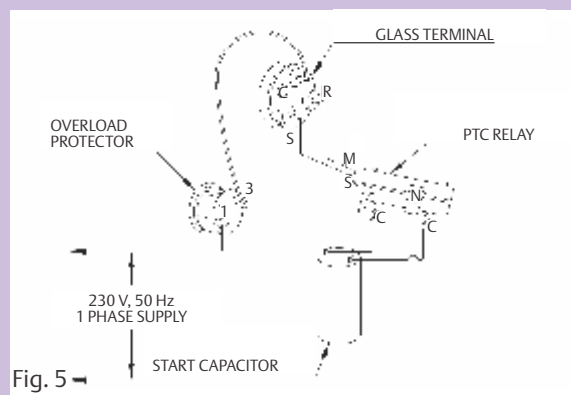
## CAPACITOR START CAPACITOR RUN (CSCR) WITH PTC



## CAPACITOR START INDUCTION RUN (CSIR) WITH CURRENT RELAY



## CAPACITOR START INDUCTION RUN (CSIR) WITH PTC



## Certifications

Model	CB	RoHS
ECZ421HG-11B	✓	✓
ECZ426HG-11M	✓	✓
ECZ431HG-11M	✓	✓
ECZ434HG-11M	✓	✓
ECZ444HG-11M	✓	✓
ECZ380LG-11M	✓	✓
ECZ416LG-13M	✓	✓



## Model Selection

Model	Water Cooler Capacity (Ltr./Hr)	Bottle Cooler Capacity (Ltr.)	Visi Cooler Case	Deep Freezer (Hard Top/Glass Top)
ECZ421HG-11B	20LPH	100-120 Ltr.	2 (110 Ltr.)	-
ECZ426HG-11M	-	150-200 Ltr.	4 (150 Ltr.)	-
ECZ431HG-11M	-	220-250 Ltr.	7 (250 Ltr.)	-
ECZ434HG-11M	-			-
ECZ444HG-11M	40LPH	260-310 Ltr.	9 (400 Ltr.)	-
ECZ380LG-11M	-	-	-	300 Ltr. /200 Ltr.
ECZ416LG-13M	-	-	-	500 Ltr. /400 Ltr.

**Note:** These are preliminary guidelines. The actual compressor selection may differ from guidelines. Please check the system details before selecting the compressor model.

## Applications

Low Temperature	Medium Temperature	High Temperature
Deep Freezer Ice Cube Machine Laboratory Appliance	Bottle Cooler Visi Cooler Display Cabinet Pastry Cabinet Softy Ice Cream	Water Cooler Oil Coolers / Panel Cooler Refrigerated Air Dryer

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