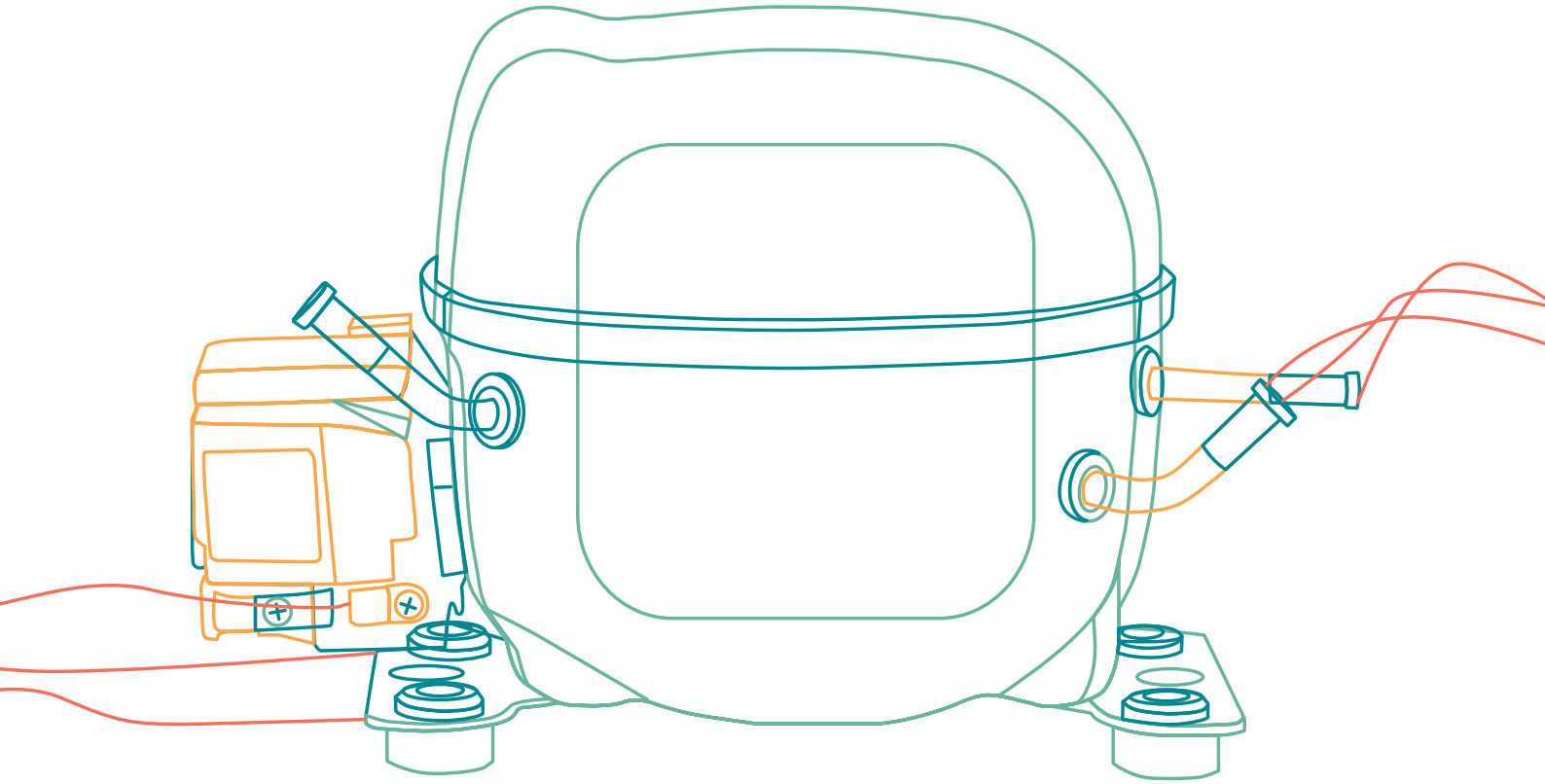
COMPRESSORS LINE

BRAZIL RANGE FOR EUROPE



Maximum energy optimization
from production to product.

R134a

R290

embraco

POWER IN.
CHANGE ON.

ABOUT EMBRACO

OUR PRODUCTS

NOMENCLATURE

GENERAL DATA & PERFORMANCE

EXTERNAL VIEWS &
WIRING DIAGRAMS

ABOUT EMBRACO

Embraco specializes in cooling solutions and is the global market leader in hermetic compressors. Our mission is to offer innovative solutions for a better quality of life, as we work to achieve excellence with sustainability.

Technology leadership, operational excellence and sustainability are some of the pillars that define Embraco in the global market. Our products are preferred by the leading manufacturers of refrigeration equipment.

With global operations and production capacity exceeding 38 million units per year, we offer solutions that are differentiated for their innovation and low energy consumption. Close to 11,500 people are employed in our factories and offices located in Brazil (headquarters), United States, Mexico, China, Italy, Slovakia and Russia.

Energy efficiency is the base for all our product developments. We are a reference on this subject, since our products meet the most stringent international standards with relation to energy consumption.

Fulfilling our role as the global leader, we antecipate market changes and, in doing so, keep ourselves in permanent transformation. We're continuously reviewing our processes, promoting growth aligned with our organization's pillars.

Our products

BRAZIL RANGE

EM

F

EG

EUROPE RANGE

EM

NE

NT

NJ

CONDENSING UNIT

UEM

UNE

UNT

UNJ

SLIDING UNITS

FULLMOTION

VEM

VEG

VNE

Applications & Test conditions

LBP
(Low Back Pressure)
Low evaporating temperatures (lower than -20 °C)
Applications:
refrigerators, frozen food cabinets, frozen food display cases, display windows, etc.

MBP
(Medium Back Pressure)
Medium evaporating temperatures (higher than -20 °C);
Applications:
fresh food cabinets, drink coolers, ice makers etc.

M/HBP
(Medium / High Back Pressure)
Evaporating temperatures between -20°C and +10°C;
Applications: coolers, merchandisers, etc

HBP
(High Back Pressure)
High evaporating temperatures (higher than -15 °C)
Applications: fresh food cabinets, ice makers, dehumidifiers. dryers,etc.

TEST CONDITIONS (RATING POINT)	APPLICATION	EVAPORATING TEMPERATURE C°	CONDENSING TEMPERATURE C°	GAS RETURN TEMPERATURE C°	SUBCOOLING	COMPRESSOR AMBIENT TEMPERATURE C°
EN 12900	LBP	-35°	40°	20° (*)	NO SUBCOOLING	32°
	MBP	-10°	45°	20° (*)		
	HBP	+5°	50°	20° (*)		
ARI 540	LBP	-23,3°	48,9°	4,4°	NO SUBCOOLING	35°
	MBP	-6,7°	48,9°	4,4°		
	HBP	+7,2°	54,4°	18,3°	8,3 K	
ASHRAE SUBCOOLED	LBP	-23,3°	54,4°	32,2°	22,2 K	32,2°
	MBP and HBP	7,2°	54,4°	35°	8,3 K	35°
CECOMAF	LBP	-25	55°	32°	NO SUBCOOLING	32°

CONVERSION UNIT	
1 watt	3,41 Btu/h
1 watt	0,86 kcal/h
1 kcal/h	3,97 Btu/h

Electrical motor starting torque

LST
Low Starting Torque:
Compressors with RSIR-RSCR-PSC electrical motors for systems with capillary tube and with balanced pressures at start up.

HST
High Starting Torque:
Compressors with CSIR-CSR and 3ph electrical motors for systems with balanced or unbalanced pressures at start up.

Cooling type

Static (S)
Compressors approved for static cooling are those that don't allow operation of a fan motor associated with the condenser.

Forced (F)
Compressors approved for forced cooling are those that require the operation of a fan motor associated with the condenser.

Static/ Forced (S/F)
Compressors approved for static and forced cooling are those which may or may not be used with a fan motor associated with the condenser.

Electrical components available

Type of motor	Thermal protector (*)	Starting Device			Capacitors	
		Current Relay	PTC Relay	Voltage Relay	Start	Run
RSIR	✓	✓	✓	✗	✗	✗
RSCR	✓	✗	✓	✗	✗	✓
CSIR	✓	✓	✗	✓ (**)	✓	✗
CSR	✓	✗	✗	✓	✓	✓
PSC	✓	✗	✗	✗	✗	✓

(*) Can be internal in some of the Europe line compressors.
(**) Available for some specific Europe line products.

Electrical motor types

RSIR
Resistence Start – Inductive Run
This motor type, used in the compressor of small power, has a low starting torque (LST) and must be applied only to capillary tube systems where the pressures equalize. The motor is characterized by a start winding with high ohmic resistance and must be disconnected when it reaches the stabilized rotational speed. An electromagnetic relay, calibrated for the motor current, disconnects the start winding at the end of the start up. An alternative to the electromagnetic relay is, for some models, a PTC solid state-starting device.

RSCR
Resistance Start – Capacitive Run
Similar to RSIR motor version but uses a PTC solid state starting device and a permanent connected run capacitor to improve its efficiency.

CSIR
Capacitive Start – Inductive Run
Similar to RSIR motor, with a different start winding in series with a start capacitor of suitable capacitance to get a high starting torque.

CSR
Capacitive Start & Run
CSR version with capacitive run and start windings. Same as PSC motor but with a start capacitor in series with the start winding. A potential starting relay, calibrated for each motor, disconnects the start capacitor at the end of the start. The motor is characterized by a high starting torque (HST) and high efficiency.

PSC
Permanent Split Capacitor:
PSC version with capacitive run winding. This motor is characterized by the run capacitor permanently connected in series with the start winding; both remain connected even after the motor starts. The starting torque is enough to guarantee that the compressor starts only with balanced pressures in capillary tubes systems or with a pressure equalizer.

3Ø
Three Phase
Three-phase windings with star connections

Packaging and containers loading

SERIES	Single pack		Multiple pack	
	Pallet	Container	Pallet	Container
EM	100	2400	100/120	2400/2880
EG/F	72	1728	80	1920

NOMENCLATURE

EM

(BRAZIL LINE)

EM I S 30 H H R

FAMILY

EM

TECHNOLOGY GENERATION

- ☐ Or A – Standard
- I – 1st generation
- T – 2nd generation
- U – 3rd generation
- Y – 4th generation
- Z – 5th generation
- X – 6th generation

MECHANICAL KIT (EMBRACO INTERNAL USE)

- S – Standard
- ☐ – Not standard

COMPRESSOR CAPACITY

In Btu/h – 60 Hz – ASHRAE:
check point divided by 10

STARTING DEVICE

- P – PTC + Run capacitor (optional)
- R – Current relay
- C – PTC + Run capacitor (mandatory)
- X – Relay + Start capacitor (mandatory)
- S – PTC + Run capacitor + Start capacitor
- V – PTC + Run capacitor + Start capacitor (optional)

EFFICIENCY LEVEL / APPLICATION

- N – standar efficiency (LBP)
- J – intermediate efficiency (LBP)
- E – improved efficiency 1st generation (LBP)
- S – improved efficiency 2nd generation (LBP)
- H – standard efficiency (L/M/HBP)
- D – standard efficiency (HBP)
- B – standard efficiency (M/HBP)

REFRIGERANT FLUID

- H – R -134a
- C – R-600a
- U – R-290
- ☐ – Blends

EG

(BRAZIL LINE)

EG A S 100 H L R

FAMILY

EG

TECHNOLOGY GENERATION

- ☐ Or A – Standard
- S – 1st generation
- T – 2nd generation
- U – 3rd generation
- Y – 4th generation
- Z – 5th generation
- X – 6th generation

MECHANICAL KIT (EMBRACO INTERNAL USE)

- S – Standard
- ☐ – Not standard

STARTING DEVICE

- R – Relay
- P – PTC + Run capacitor (optional)
- C – PTC + Run capactor (mandatory)
- X – Relay + Start capacitor

APPLICATION

L - LBP

REFRIGERANT FLUID

- H – R -134a
- C – R-600a
- ☐ – Blends

COMPRESSOR CAPACITY

In Btu/h – 60 Hz – ASHRAE:
check point divided by 10

F

(BRAZIL LINE)

FF C 60 □ B K

FAMILY

F

STARTING DEVICE

F – Current relay
G – PTC relay

TECHNOLOGY GENERATION

C – Standard
I – 1st generation
C – 2nd generation
V – 3rd generation
S – 4th generation
U – 5th generation

COMPRESSOR DISPLACEMENT/CAPACITY

Approximate compressor displacement in cm^3 (for FF and FFI compressors)

Approx. capacity in Btu/h – 60 Hz – ASHRAE: check point divided by 10 (For FG, FFU and FFC compressors)

STARTING TORQUE

□ – LST (low starting torque)
K – LST (low starting torque)
X – HST (high starting torque)

APPLICATION

A – L/MBP
B – L/M/HBP
H – HBP

REFRIGERANT FLUID

H – R -134a
C – R-600a
U – R-290
G – R-404A
□ – Blends

Product Map: Compressors Brazil Range for European Market

R-134a

	L-MBP	VOLT. FREQ.	HP	DISPL. [cc]	-23,3°C / 54,4°C cool cap [W]	-23,3°C / 54,4°C EER [W/W]	M-HBP	VOLT. FREQ.	HP	DISPL. [cc]	0°C/54.4°C cool cap [W]	0°C/54.4°C EER [W/W]
EM/EMI 	EM20HHR	220-240V / 50-60Hz	1/12	2,27	50	0,86	EM20HHR	220-240V / 50-60Hz	1/12	2,27	170	1,91
	EM20HHR	220-240V / 50-60Hz	1/12	2,27	48	0,83	EMIS20HHR	220V / 60Hz	1/12	2,27	216	1.93
	EMIS20HHR	220V / 60Hz	1/12	2,27	59	0,82	EMIS20HHR	220V / 60Hz	1/12	2,27	226	1.98
	EMIS20HHR	220V / 60Hz	1/12	2,27	59	0,82	EMIS30HHR	220V / 50-60Hz	1/12	3,00	260	2
	EMI30HER	220-240V / 50-60Hz	1/10	3,00	72	1,13	EMIS30HHR	220V / 50-60Hz	1/10	3,00	271	2,08
	EMIS30HHR	220V / 50-60Hz	1/10	3,00	79	0,93	EM30HHR	220-240V / 50-60Hz	1/10	3,00	256	2,04
	EMIS30HHR	220V / 50-60Hz	1/10	3,00	76	0,94	EM45HHR	220-240V / 50Hz	1/8	3,77	321	2,15
	EM30HHR	220-240V / 50-60Hz	1/10	3,00	76	0,88	EM55HHR	220-240V / 50-60Hz	1/6	4,60	401	2,25
	EMI45HER	220-240V / 50-60Hz	1/8	3,77	100	1,21	EM65HHR	220-240V / 50Hz	1/6+	5,54	476	2,16
	EM45HHR	220-240V / 50Hz	1/8	3,77	102	1,03		220V / 50-60Hz	1/6+	5,54	486	1,98
	EMIE65HER	220-240V / 50-60Hz	1/6	5,19	149	1,22						
	EMI70HER	220V / 50Hz	1/5	5,89	166	1,18						
		220V / 60Hz	1/5	5,89	207	1,34						
	EMU65HLP	220-240V / 50Hz	1/4	5,96	185	1,47						
EG 	EGAS70HLR	220-240V / 50-60Hz	1/5+	5,56	164	1,48						
	EGAS80HLR	220-240V / 50-60Hz	1/4+	6,36	193	1,47						
	EGAS90HLR	220-240V / 50-60Hz	1/3-	7,15	219	1,50						
	EGAS100HLR	220-240V / 50-60Hz	1/3	7,95	251	1,52						
	EGU130HLR	220-240V / 50Hz	1/3+	10,61	318	1,55						
FFU 	FFU70HAK	220-240V / 50-60Hz	1/4	6,36	185	1,43						
	FFU80HAK	220-240V / 50-60Hz	1/4+	6,76	199	1,41						
	FFU100HAK	220-240V / 50-60Hz	1/3	7,95	239	1,34						
	FFU130HAX	220-240V / 50Hz	1/3+	10,61	309	1,38						
		115-127 V 60 Hz 1 ~	1/3+	10,61	366	1,41						
		220V / 60Hz	1/3+	10,61	366	1,38						
	FFU160HAX	220-240V / 50Hz	1/2	12,92	381	1,43						
	FFU160HAX	220V / 60Hz	1/2	12,92	449	1,45						
FF/FFI 	FF7,5HBK	220-240V / 50-60Hz	1/5+	6,92	166	1,11	FF7,5HBK	220-240V / 50-60Hz	1/5+	6,92	537	2,04
	FF8,5HBK	220-240V / 50Hz	1/4	7,95	194	1,11	FF8,5HBK	220-240V / 50Hz	1/4	7,95	632	2,12
		115-127 V 60 Hz 1 ~	1/4	7,95	217	1,1		115-127 V 60 Hz 1 ~	1/4	7,95	689	1,95
		220V / 60Hz	1/4	7,95	217	1,11		220V / 60Hz	1/4	7,95	688	1,95
	FFI12HBK	220-240V / 50Hz	1/3+	11,14	320	1,38	FFI12HBK	220-240V / 50Hz	1/3+	11,14	967	2,21
	FFI12HBX	220V / 60Hz	1/3+	11,14	349	1,18	FFI12HBX	220V / 60Hz	1/3+	11,14	1119	2,17

R-290

	L-MBP	VOLT. FREQ.	HP	DISPL. [cc]	-23,3°C / 54,4°C cool cap [W]	-23,3°C / 54,4°C EER [W/W]	
EMI 	EMI50UER	220-240V / 50-60Hz	1/6	3,00	127	1,28	
		220-240V / 50-60Hz	1/6	3,00	153	1,33	Performance in 60Hz
		115-127V / 60Hz	1/6	3,00	153	1,32	
	EMI70UER	220-240V / 50-60Hz	1/5	4,08	177	1,18	
		220-240V / 50-60Hz	1/5	4,08	210	1,3	Performance in 60Hz
		115-127V / 60Hz	1/5	4,08	205	1,27	
	EMI90UEX	220-240V / 50Hz	1/4+	4,99	229	1,28	
		220V / 60Hz	1/4+	4,99	277	1,37	
		115-127V / 60Hz	1/4+	4,99	277	1,37	
EM2X 	EM2X1121U	220-240V / 50Hz	1/4+	5,54	265	1,78	
		220V / 60Hz	1/4+	5,54	327	1,78	
		115-127V / 60Hz	1/4+	5,54	321	1,74	
	EM2X1125U	220-240V / 50Hz	1/4+	6,09	302	1,76	
		220V / 60Hz	1/4+	6,09	365	1,76	
		115-127V / 60Hz	1/4+	6,09	362	1,73	
FFU 	FFU130UAX	220-240V / 50-60Hz	1/3+	6,76	319	1,49	
		220-240V / 50-60Hz	1/3+	6,76	395	1,56	Performance in 60Hz
		115-127V / 60Hz	1/3+	6,76	399	1,51	
	FFU160UAX	220-240V / 50Hz	1/2	7,95	399	1,45	
		220V / 60Hz	1/2	7,95	489	1,54	
		115-127V / 60Hz	1/2	7,95	489	1,54	

GENERAL & DATA PERFORMANCE

HOW TO READ YOUR CATALOGUE

1

50 Hz | 60 Hz

2

R-134a | R-290

3

L/MBP | M/HBP

4 **5** **6**

	SERIES MODEL	VOLT. FREQ.	HP	DISPL. [cc]	MOTOR TYPE	PERFORMANCE DATA -35/45 Cooling [W]	-23,3/54,4 Cooling [W]	-23,3/54,4 Efficiency [W/W]	-10/54,4 Cooling [W]	APPLICATION	TORQUE	COOLING TYPE	OIL CHARGE cm³	OIL TYPE	EXP DEVICE	HEIGHT (mm)
EM	EM20HHR	220-240V / 50-60Hz	1/12	2,27	RSIR/CSIR	23	50	0,86	105	L/MBP	LST	S	160	POE22	C	155
	EM20HHR	220-240V / 50-60Hz	1/12	2,27	RSIR/CSIR	23	48	0,83	105	L/MBP	LST	F	160	POE22	C	155
	EMI30HER	220-240V / 50-60Hz	1/10	3,00	RSIR/CSIR	32	72	1,13	159	LBP	LST	S	160	ISO22/ ISO10	C	155
	EMI530HHR	220V / 50-60Hz	1/10	3,00	RSIR/CSIR	33	79	0,93	164	L/MBP	LST	S	160	POE22	C	166
	EMI530HHR	220V / 50-60Hz	1/10	3,00	RSIR/CSIR	39	76	0,94	170	L/MBP	LST	F	160	POE22	C	166
	EM30HHR	220-240V / 50-60Hz	1/10	3,00	RSIR/CSIR	42	76	0,88	164	L/M/HBP	LST	S/F	160	ISO22	C	155

1. Frequency
2. Refrigerant gas
3. Application
4. Model selection
5. Performance
6. Additional information

R-134a
L-MBP 50Hz

	SERIES MODEL	VOLT. FREQ.	HP	DISPL. [cc]	MOTOR TYPE	PERFORMANCE DATA -35/45 Cooling [W]	PERFORMANCE DATA -23,3/54,4 Cooling [W]	PERFORMANCE DATA -23,3/54,4 Efficiency [W/W]	PERFORMANCE DATA -10/54,4 Cooling [W]	APPLICATION	TORQUE	COOLING TYPE	OIL CHARGE cm³	OIL TYPE	EXP DEVICE	HEIGHT (mm)	EXT VIEW	WIRING DIAGRAM
EM	**EM20HHR**	220-240V / 50-60Hz	1/12	2,27	RSIR/CSIR	23	50/48	0,86	105	L/MBP	LST	S/F	160	POE22	C	155	EM/EMI	EM/EMI
EM	**EMI30HER**	220-240V / 50-60Hz	1/10	3,00	RSIR/CSIR	32	72	1,13	159	LBP	LST	S	160	ISO22/ ISO10	C	155	EM/EMI	EM/EMI
EM	**EMIS30HHR**	220V / 50-60Hz	1/10	3,00	RSIR/CSIR	33/39	79/76	0,93/ 0,94	164/170	L/MBP	LST	S/F	160	POE22	C	166	EM/EMI	EM/EMI
EM	**EM30HHR**	220-240V / 50-60Hz	1/10	3,00	RSIR/CSIR	42	76	0,88	164	L/M/HBP	LST	S/F	160	ISO22	C	155	EM/EMI	EM/EMI
EM	**EMI45HER**	220-240V / 50-60Hz	1/8	3,77	RSIR/CSIR	56	100	1,21	209	LBP	LST	S	160	POE22	C	166	EM/EMI	EM/EMI
EM	**EM45HHR**	220-240V / 50Hz	1/8	3,77	RSIR/CSIR	50	102	1,03	201	L/M/HBP	LST	S/F	160	ISO22	C	171	EM/EMI	EM/EMI
EM	**EMIE65HER**	220-240V / 50-60Hz	1/6	5,19	RSIR/CSIR	78	149	1,22	290	LBP	LST	S	160	ISO10	C	171	EM/EMI	EM/EMI
EM	**EMI70HER**	220V / 50Hz	1/5	5,89	RSIR/CSIR	92	166	1,18	265	LBP	LST	S	160	POE22	C	166	EM/EMI	EM/EMI
EM	**EMU65HLP**	220-240V / 50Hz	1/4	5,96	RSIR	93	185	1,47	375	LBP	LST	S	150	ISO07	C	171	EM/EMI	EM/EMI
EG	**EGAS70HLR**	220-240V / 50-60Hz	1/5	5,56	RSIR/CSIR	79	164	1,48	337	LBP	LST	S	230	POE10	C	195	EG/F	EG
EG	**EGAS80HLR**	220-240V / 50-60Hz	1/4+	6,36	RSIR	104	193	1,47	304	LBP	LST	S/F	280	POE10	C	195	EG/F	EG
EG	**EGAS90HLR**	220-240V / 50-60Hz	1/3-	7,15	RSIR/CSIR	113	219	1,50	426	LBP	LST	S	280	POE10	C	195	EG/F	EG
EG	**EGAS100HLR**	220-240V / 50-60Hz	1/3	7,95	RSIR/CSIR	130	251	1,52	485	LBP	LST	S/F	280	POE10	C	201	EG/F	EG
EG	**EGU130HLR**	220-240V / 50Hz	1/3+	10,61	RSIR	162	318	1,55	625	LBP	LST	F	230	ISO10	C	201	EG/F	EG
F	**FFU70HAK**	220-240V / 50-60Hz	1/4	6,36	RSIR/CSIR	100	185	1,43	375	L/MBP	LST	S/F	280	ISO10	C	201	EG/F	F
F	**FFU80HAK**	220-240V / 50-60Hz	1/4+	6,76	RSIR-CSIR	109	199	1,41	391	L/MBP	LST	S	280	ISO10	C	201	EG/F	F
F	**FF7,5HBK**	220-240V / 50-60Hz	1/5+	6,92	RSIR/CSIR	78	166	1.11	341	L/M/HBP	LST	S	280	POE22	C	195	EG/F	F
F	**FF8,5HBK**	220-240V / 50Hz	1/4	7,95	RSIR/CSIR	101	194	1,11	398	L/M/HBP	LST	S/F	280	POE22	C	195	EG/F	F
F	**FFU130HAX**	220-240V / 50Hz	1/3+	10,61	CSIR	162	309	1,38	607	L/MBP	HST	F	280	POE10	C/V	201	EG/F	F
F	**FFI12HBK**	220-240V / 50Hz	1/3+	11,14	RSIR/CSIR	152	320	1,38	634	L/M/HBP	LST	F	280	POE22	C	201	EG/F	F
F	**FFU160HAX**	220-240V / 50Hz	1/2	12,92	CSIR	207	381	1,43	735	L/MBP	HST	F	280	ISO22	C/V	201	EG/F	F

R-134a
M-HBP 50Hz

	SERIES MODEL	VOLT. FREQ.	HP	DISPL. [cc]	MOTOR TYPE	PERFORMANCE DATA -10/54.4 Cooling [W]	PERFORMANCE DATA 0/54.4 Cooling [W]	PERFORMANCE DATA 0/54.4 Efficiency [W/W]	PERFORMANCE DATA 7,2/54.4 Cooling [W]	APPLICATION	TORQUE	COOLING TYPE	OIL CHARGE cm³	OIL TYPE	EXP DEVICE	HEIGHT (mm)	EXT VIEW	WIRING DIAGRAM
EM	**EM20HHR**	220-240V / 50-60Hz	1/12	2,27	RSIR/CSIR	105	170	1,91	232	M/HBP	LST	S/F	160	POE22	C	155	EM/EMI	EM/EMI
EM	**EMIS30HHR**	220V / 50-60Hz	1/10	3,00	RSIR/CSIR	164/170	260/271	2/2,08	350/362	M/HBP	LST	S/F	160	POE22	C	166	EM/EMI	EM/EMI
EM	**EM30HHR**	220-240V / 50-60Hz	1/10	3,00	RSIR/CSIR	164	256	2,04	341	L/M/HBP	LST	S/F	160	ISO22	C	171	EM/EMI	EM/EMI
EM	**EM45HHR**	220-240V / 50Hz	1/8	3,77	RSIR/CSIR	200	321	2,15	435	L/M/HBP	LST	S/F	160	ISO22	C	171	EM/EMI	EM/EMI
EM	**EM55HHR**	220-240V / 50-60Hz	1/6	4,60	RSIR	267	401	2,25	529	HBP	LST	F	160	POE22	C	166	EM/EMI	EM/EMI
EM	**EM65HHR**	220-240V / 50Hz	1/6+	5,54	RSIR/CSIR	360	476	2,16	616	M/HBP	LST	F	160	POE22	C	166	EM/EMI	EM/EMI
EM		220V / 50-60Hz	1/6+	5,54	RSIR/CSIR	304	486	1,98	645	M/HBP	LST	F	160	POE22	C	166	EM/EMI	EM/EMI
F	**FF7,5HBK**	220-240V / 50-60Hz	1/5+	6,92	RSIR/CSIR	342	537	2,04	719	L/M/HBP	LST	S	280	POE22	C	195	EG/F	F
F	**FF8,5HBK**	220-240V / 50Hz	1/4	7,95	RSIR/CSIR	398	632	2,12	846	L/M/HBP	LST	S/F	280	POE22	C	195	EG/F	F
F	**FFI12HBK**	220-240V / 50Hz	1/3+	11,14	RSIR/CSIR	633	967	2,21	1262	L/M/HBP	LST	F	280	POE22	C	201	EG/F	F

SET CONDITIONS: ASHRAE32 LBP, ASHRAE46 M/HBP

R-134a
L-MBP 60Hz

	SERIES MODEL	VOLT. FREQ.	HP	DISPL. [cc]	MOTOR TYPE	PERFORMANCE DATA -35/45 Cooling [W]	-23,3/54,4 Cooling [W]	-23,3/54,4 Efficiency [W/W]	-10/54,4 Cooling [W]	APPLICATION	TORQUE	COOLING TYPE	OIL CHARGE cm³	OIL TYPE	EXP DEVICE	HEIGHT (mm)	EXT VIEW	WIRING DIAGRAM
EM	EMIS20HHR	220V / 60Hz	1/12	2,27	RSIR/CSIR	30	59	0,82	132/138	L/MBP	LST	S/F	160	POE22	C	155	EM/EMI	EM/EMI
EM	EMI70HER	220V / 60Hz	1/5	5,89	RSIR	110	207	1,34	391	LBP	LST	F	160	POE10	C	166	EM/EMI	EM/EMI
F	FF8,5HBK	115-127 V 60 Hz 1 ~	1/4	7,95	RSIR/CSIR	110	217	1,1	437	L/M/HBP	LST	S/F	280	POE22	C	195	EG/F	F
		220V / 60Hz	1/4	7,95	RSIR/CSIR	108	217	1,11	437	L/M/HBP	LST	S/F	280	POE22	C	195	EG/F	F
F	FFU130HAX	115-127 V 60 Hz 1 ~	1/3+	10,61	CSIR	190	366	1,41	767	L/MBP	HST	F	280	POE10	C/V	201	EG/F	F
		220V / 60Hz	1/3+	10,61	CSIR	190	366	1,38	767	L/MBP	HST	F	280	POE10	C/V	201	EG/F	F
F	FFI12HBX	220V / 60Hz	1/3+	11,14	CSIR	195	349	1,18	716	L/M/HBP	HST	F	280	ISO22	V	201	EG/F	F
F	FFU160HAX	220V / 60Hz	1/2	12,92	CSIR	261	449	1,45	910	L/MBP	HST	F	280	ISO22	C/V	201	EG/F	F

R-134a
M-HBP 60Hz

	SERIES MODEL	VOLT. FREQ.	HP	DISPL. [cc]	MOTOR TYPE	PERFORMANCE DATA -10/54.4 Cooling [W]	0/54.4 Cooling [W]	0/54.4 Efficiency [W/W]	7,2/54.4 Cooling [W]	APPLICATION	TORQUE	COOLING TYPE	OIL CHARGE cm³	OIL TYPE	EXP DEVICE	HEIGHT (mm)	EXT VIEW	WIRING DIAGRAM
EM	EMIS20HHR	220V / 60Hz	1/12	2,27	RSIR/CSIR	132/137	216/226	1,93/1,98	296/308	M/HBP	LST	S/F	160	POE22	C	155	EM/EMI	EM/EMI
F	FF8,5HBK	115-127 V 60 Hz 1 ~	1/4	7,95	RSIR/CSIR	438	689	1,95	925	L/M/HBP	LST	S/F	280	POE22	C	195	EG/F	F
		220V / 60Hz	1/4	7,95	RSIR/CSIR	437	688	1,95	925	L/M/HBP	LST	S/F	280	POE22	C	195	EG/F	F
F	FFI12HBX	220V / 60Hz	1/3+	11,14	CSIR	716	1119	2,17	1482	L/M/HBP	HST	F	280	ISO22	V	201	EG/F	F

SET CONDITIONS: ASHRAE32 LBP, ASHRAE46 M/HBP

R-290
L-MBP 50Hz

	SERIES MODEL	VOLT. FREQ.	HP	DISPL. [cc]	MOTOR TYPE	PERFORMANCE DATA -35/45 Cooling [W]	-23,3/54,4 Cooling [W]	-23,3/54,4 Efficiency [W/W]	-10/54,4 Cooling [W]	APPLICATION	TORQUE	COOLING TYPE	OIL CHARGE cm³	OIL TYPE	EXP DEVICE	HEIGHT (mm)	EXT VIEW	WIRING DIAGRAM
EM	EMI50UER	220-240V / 50-60Hz	1/6	3,00	RSIR/CSIR	77/87	127/153	1,28/1,33	212/291	L/MBP	LST	F	160	ISO32	C	171	EM/EMI	EM/EMI
EM	EMI70UER	220-240V / 50-60Hz	1/5	4,08	RSIR/CSIR	120	177/210	1,18/1,30	398	L/MBP	LST	F	160	ISO32	C	171	EM/EMI	EM/EMI
EM	EMI90UEX	220-240V / 50Hz	1/4+	4,99	CSIR	132	229	1,28	335	L/MBP	HST	F	160	ISO32	C/V	171	EM/EMI	EM/EMI
EM	EM2X1121U	220-240V / 50Hz	1/4+	5,54	RSCR	151	265	1,78	459	LBP	LSR	S	150	ISO10	C	171	EM2X	EM/EMI
EM	EM2X1125U	220-240V / 50Hz	1/4+	6,09	RSCR	175	302	1,76	516	LBP	LST	S	150	ISO10	C	171	EM2X	EM/EMI
F	FFU130UAX	220-240V / 50-60Hz	1/3+	6,76	CSIR	192/248	319/395	1,49/1,56	580/677	L/MBP	HST	F	280	ISO32	V	201	EG/F	F
F	FFU160UAX	220-240V / 50Hz	1/2	7,95	CSIR	239	399	1,45	690	L/MBP	HST	F	280	ISO32	V	201	EG/F	F

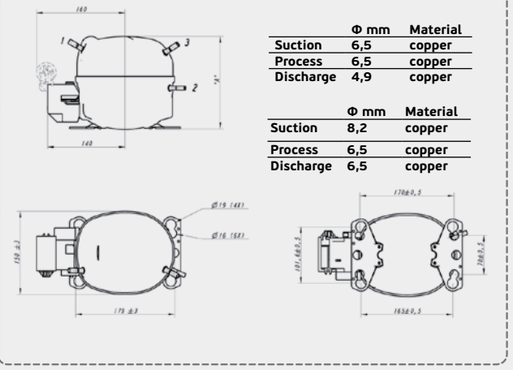
R-290
L-MBP 60Hz

	SERIES MODEL	VOLT. FREQ.	HP	DISPL. [cc]	MOTOR TYPE	PERFORMANCE DATA -35/45 Cooling [W]	-23,3/54,4 Cooling [W]	-23,3/54,4 Efficiency [W/W]	-10/54,4 Cooling [W]	APPLICATION	TORQUE	COOLING TYPE	OIL CHARGE cm³	OIL TYPE	EXP DEVICE	HEIGHT (mm)	EXT VIEW	WIRING DIAGRAM
EM	EMI50UER	115-127V / 60Hz	1/6	3,00	RSIR/CSIR	87	153	1,32	290	L/MBP	LST	F	160	ISO32	C	171	EM/EMI	EM/EMI
EM	EMI70UER	115-127V / 60Hz	1/5	4,08	RSIR/CSIR	120	205	1,27	398	L/MBP	LST	F	160	ISO32	C	171	EM/EMI	EM/EMI
EM	EMI90UEX	220V / 60Hz	1/4+	4,99	CSIR	147	277	1,37	517	L/MBP	HST	F	160	ISO32	C/V	171	EM/EMI	EM/EMI
		115-127V / 60Hz	1/4+	4,99	CSIR	167	277	1,37	499	L/MBP	HST	F	160	ISO32	C/V	171	EM/EMI	EM/EMI
EM	EM2X1121U	220V / 60Hz	1/4+	5,54	RSCR	186	327	1,78	547	LBP	LST	S/F	150	ISO10	C	171	EM2X	EM/EMI
		115-127V / 60Hz	1/4+	5,54	CSCR	186	321	1,74	547	LBP	LST	S	150	ISO10	C	171	EM2X	EM/EMI
EM	EM2X11215U	220V / 60Hz	1/4+	6,09	RSCR	218	365	1,76	622	LBP	LST	S/F	150	ISO10	C	171	EM2X	EM/EMI
		115-127V / 60Hz	1/4+	6,09	CSCR	218	362	1,73	622	LBP	LST	S	150	ISO10	C	171	EM2X	EM/EMI
F	FFU130UAX	115-127V / 60Hz	1/3+	6,76	CSIR	259	399	1,51	705	L/MBP	HST	F	280	ISO32	V	201	EG/F	F
F	FFU160UAX	220V / 60Hz	1/2	7,95	CSIR	299	489	1,54	840	L/MBP	HST	F	280	ISO32	V	201	EG/F	F
		115-127V / 60Hz	1/2	7,95	CSIR	301	489	1,54	864	L/MBP	HST	F	280	ISO32	V	201	EG/F	F

EXTERNAL & WIRING DIAGRAMS

EXTERNAL VIEWS

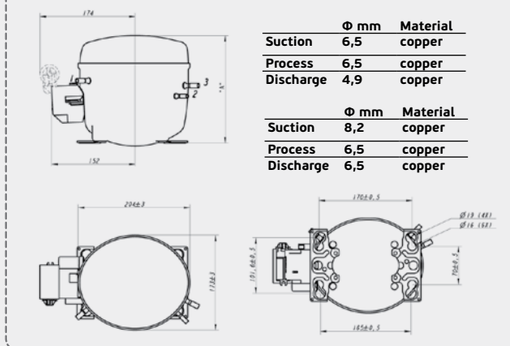
EM/EMI



	Φ mm	Material
Suction	6,5	copper
Process	6,5	copper
Discharge	4,9	copper

	Φ mm	Material
Suction	8,2	copper
Process	6,5	copper
Discharge	6,5	copper

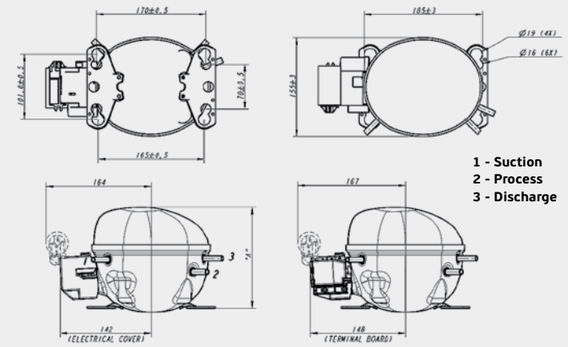
EG/F



	Φ mm	Material
Suction	6,5	copper
Process	6,5	copper
Discharge	4,9	copper

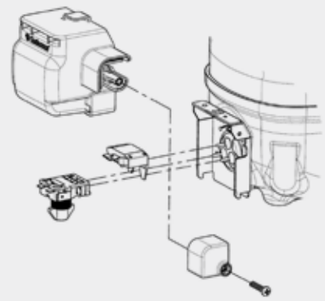
	Φ mm	Material
Suction	8,2	copper
Process	6,5	copper
Discharge	6,5	copper

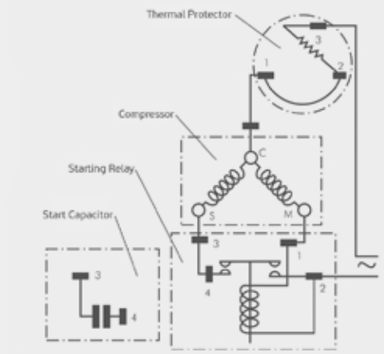
EM2X



WIRING DIAGRAMS

EM/EMI





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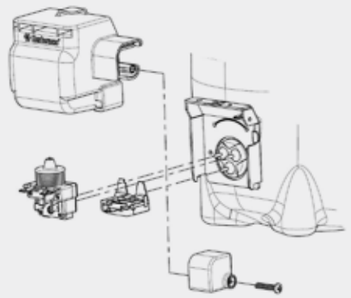

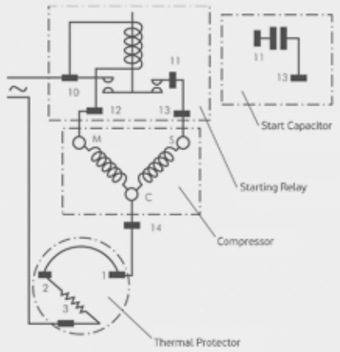

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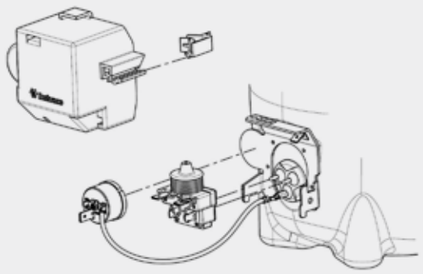

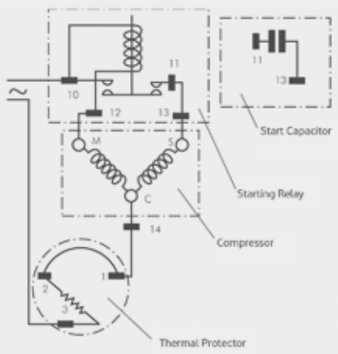

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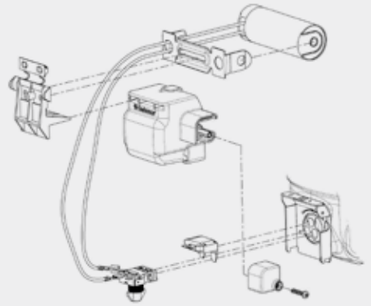

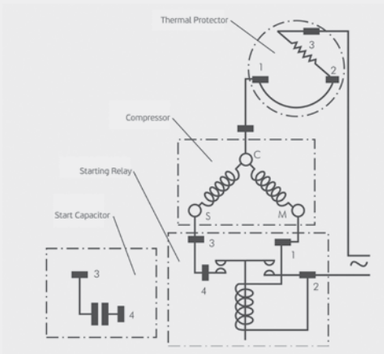

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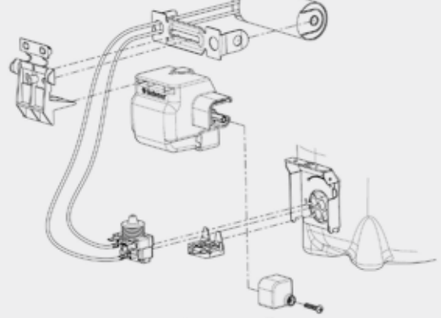

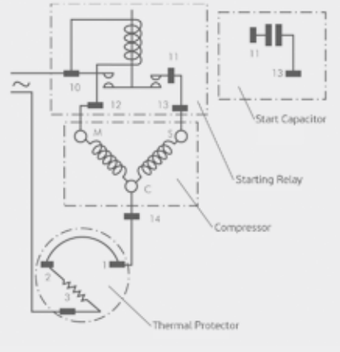

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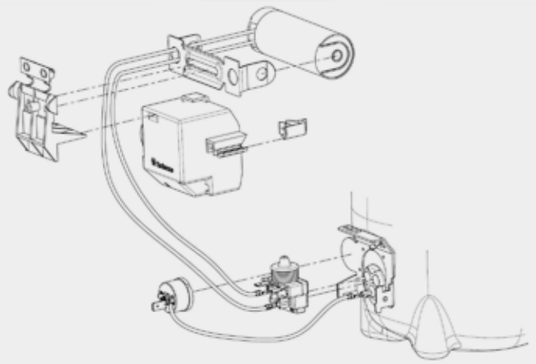

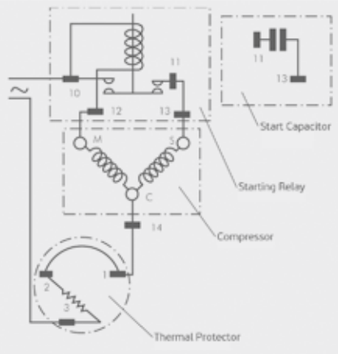

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CONTACT US:
marketing.europe@embraco.com

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