

GENERAL INFORMATION

The compressor must not be subjected to high voltage starting tests under vacuum conditions. All Embraco compressors have already been submitted to a 1650V high voltage test for one second.

The compressors must not be tested unless they are connected to the refrigeration system.

The system to which the compressor will be assembled must be developed and adequately prepared for use with HFC 134a and ester oil, i.e. with low moisture indexes and without alkaline residues and chlorides.

In the “EMI”, “FFI”, “FGS” and “EG” series, the use of the process connector as suction line will cause a drop in capacity, the extent of which depends on the compressor size.

Desiccants similar to the XH7 or XH9 (3Å) types are recommended.

- Due to the sensitivity of the HFC 134a ester oil systems we would like to make the following recommendations:
- only one system should be connected to each vacuum pump;
 - draw vacuum on both sides of appliance, with vacuum level below 0.6 mbar;
 - vacuum pumps must be installed on the same level as the compressor or lower;
 - use short hoses wherever possible;
 - vacuum level should be measured on the appliance and not on the pump;
 - draw final vacuum through charging board;
 - perform rough leak detection through charging board. In case of leak, the compressor should not be charged;
 - limit content of non-condensable gases to 1%;
 - use HFC 134a as flushing agent to clean systems;
 - gas charging and evacuating equipment must be used exclusively with HFC 134a to avoid chlorinated residue contamination.

OPERATING CONDITIONS

Starting and Operating Voltage

Embraco compressors start at 90% of the nominal voltage, with equalized pressures of up to 8.0 kgf/cm². Depending on the application conditions and systems characteristics, compressor may work under lower voltage as shown in the table below.

OPERATING VOLTAGE RANGES			
115V 60Hz	220-240V 50Hz	100V 50/60Hz	220V 50Hz 220V 60Hz 220V 50/60Hz
103 to 127	198 to 255	85 to 110	187 to 242

Winding Temperature

The winding temperature should not exceed 130°C during continuous operation. To evaluate the winding temperature, we recommend the “Ohmic Resistance Measurement Method”.

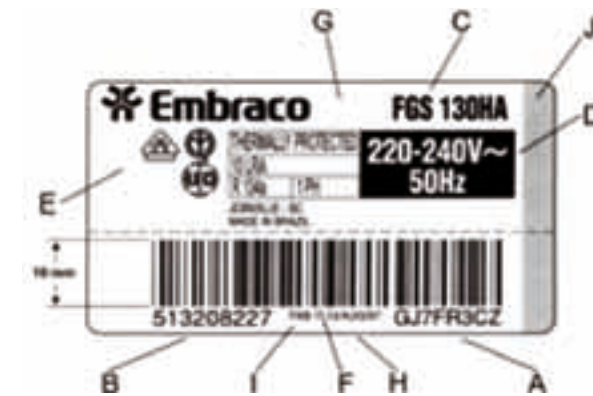
Condensing Pressure Limit

When operating under maximum ambient temperature conditions (43°C), the condensing pressure, in continuous operation, must not exceed 16.2 kgf/cm² (230 psig) and the peak condensing pressure must not exceed 20.6 kgf/cm² gauge (293 psig).

START CAPACITOR

The compressors EM HNR, EMI HER and EM HHR can operate without starting capacitor. However, in those cases when electrical supply problems or not equalized pressures occur at the compressor start, a starting capacitor can be applied. In this case eliminate the electrical bridge between terminals 3 and 4, and connect the starting capacitor between these terminals. Same for F and EG series, starting capacitor shall be connected between terminals 11 and 13.

IDENTIFICATION LABEL



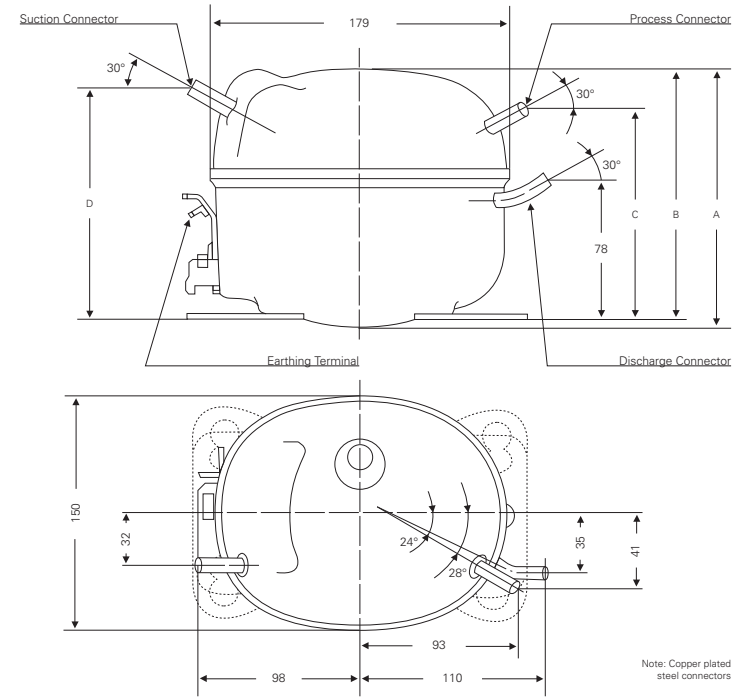
- A - Serial number for traceability.
- B - Part number.
- C - Model designation.
- D - Maximum input current – LRA/Refrigerant - R 134a
Number of phases - 1 PH/Compressor Main Voltage - VACV~
(Voltage indication: 220V black/115V white background).
- E - Logos indicate the compressor Certification/Approvals.
- F - Bar code 39 (ratio 3:1 and 6.5 mils).
- G - Paper: White/Print: Black - Dimensions: 70x38 mm.
- H - Manufacturing date.
- I - Manufacturing plant.
- J - Orange border will only appear on 220V labels.

TEST CONDITIONS

TEMPERATURE	LBP CHECK POINT ASHRAE CONDITION	HBP CHECK POINT ASHRAE CONDITION
EVAPORATING TEMP.	-23.3°C	+7.2°C
CONDENSING TEMP.	+54.4°C	+54.4°C
LIQUID TEMP.	+32.2°C	+32.2°C
AMBIENT TEMP.	+32.2°C	+32.2°C
GAS SUCTION TEMP.	+32.2°C	+32.2°C

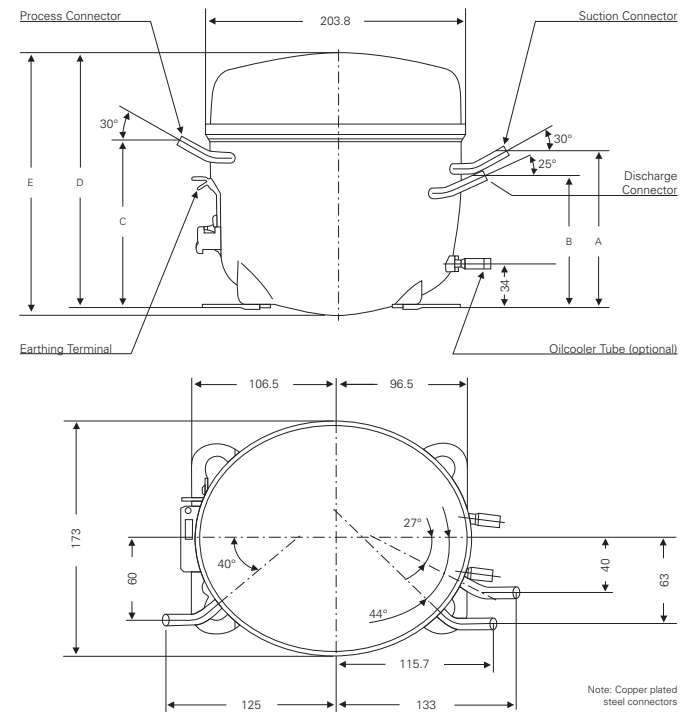


SERIE EM - R134a
DIMENSIONS (mm)



COMPRESSOR MODEL	A	B	C	D
EM 20/30/40 HNP - EM 20/30 HHR	157	155	139	144
EM 50/60 HNP - EM 45/55/65 HHR	168	166	150	155

SERIE F/EGAS - R134a
DIMENSIONS (mm)



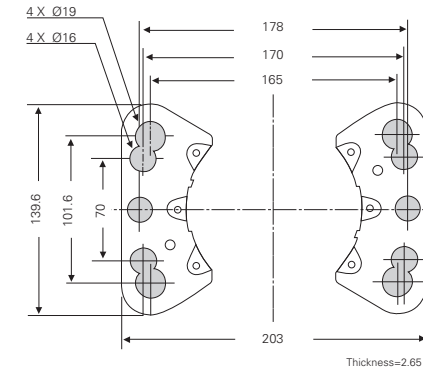
COMPRESSOR MODEL	A	B	C	D	E
FFI 6/7.5 HAK - FF 6/7.5/8.5 HBK EGAS 70/80/90	118	94	126	195	201
FFI 8.5/10 HAK - FF 10HBK FFI 12HBK - FFI 12HBX EGAS 100	124	100	132	201	207



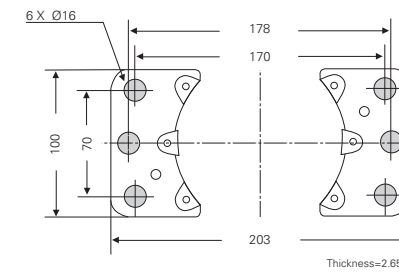
SERIE EM - R134a

MODEL DESIGNATION	VOLTAGE/FREQUENCY V/Hz	DISPLACEMENT cm ³	CAPACITY / EVAPORATING TEMPERATURE - ASHRAE														STARTING DEVICE										
			-30°C		-25°C		CHECK POINT -23.3°C		-20°C		-15°C		-10°C		-5°C			0°C		+5°C		CHECK POINT +7.2°C		+10°C		+15°C	
			W	W	CAP W	EER W/W	W	W	W	W	W	W	W	W	W	W		W	W	W	W	W	CAP W	EER W/W	W	W	W
EM 20HNP	220-240V 50Hz	2.27	12	23	37	0.74	41	66	97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	PTC	
EM 30HNP	220-240V 50Hz	3.01	32	51	62	0.92	77	106	142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	PTC	
EM 40HNP	220-240V 50Hz	3.77	52	78	88	1.07	110	147	192	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	PTC	
EM 50HNP	220-240V 50Hz	4.99	71	106	120	1.12	146	197	255	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	PTC	
EM 60HNP	220-240V 50Hz	5.54	89	129	139	1.15	176	232	297	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	PTC	
EM 20HHR	220-240V 50Hz 220V 60Hz	2.27	27	44	50	0.86	58	78	102	130	164	203	246	2.51	253	316										Relay	
EM 20HHR	115V 60Hz	2.27	32	50	59	0.89	68	92	122	156	197	240	297	2.53	305	385										Relay	
EM 30HHR	220-240V 50Hz 220V 60Hz	3.01	50	71	76	0.88	96	127	164	206	256	312	343	2.45	377	450										Relay	
EM 30HHR	115V 60Hz	3.01	57	85	91	1.01	117	153	196	246	306	374	404	2.58	458	554										Relay	
EM 45HHR	220-240V 50Hz 220V 60Hz	3.77	72	98	104	1.09	131	170	208	247	311	385	430	2.40	466	558										Relay	
EM 45HHR	115V 60Hz	3.77	82	118	125	1.19	160	205	250	298	375	465	520	2.50	562	673										Relay	
EM 55HHR	220-240V 50Hz 220V 60Hz	4.60	-	-	-	-	-	-	-	326	399	485	533	2.69	583	694										Relay	
EM 55HHR	115V 60Hz	4.60	-	-	-	-	-	-	-	377	471	579	630	2.60	701	837										Relay	
EM 65HHR	220-240V 50Hz	5.54	-	-	-	-	-	-	-	405	475	567	639	2.61	681	818										Relay	
EM 65HHR	115V 60Hz	5.54	-	-	-	-	-	-	-	470	577	706	762	2.50	844	1001										Relay	

EM BASE PLATE (mm)

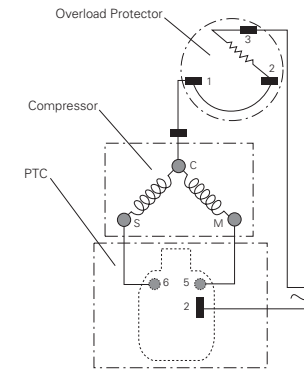


UNIVERSAL type

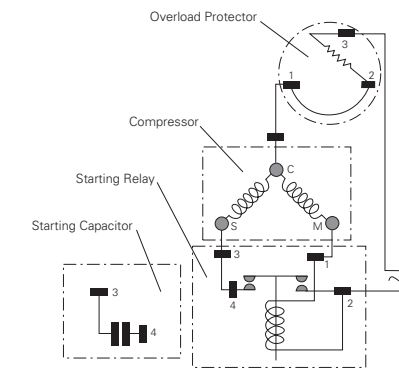


EUROPEAN type

ELECTRICAL DIAGRAMS



EM HNP Compressors



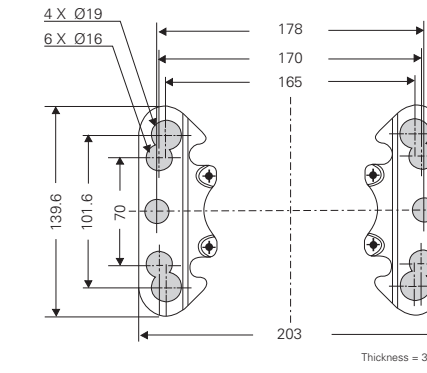
EM HHR Compressors

SERIE F/EG - R134a

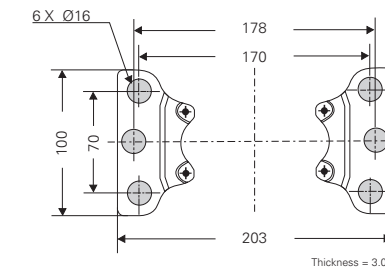
MODEL DESIGNATION	VOLTAGE/FREQUENCY V/Hz	DISPLACEMENT cm ³	CAPACITY / EVAPORATING TEMPERATURE - ASHRAE														STARTING DEVICE										
			-30°C		-25°C		CHECK POINT -23.3°C		-20°C		-15°C		-10°C		-5°C			0°C		+5°C		CHECK POINT +7.2°C		+10°C		+15°C	
			W	W	CAP W	EER W/W	W	W	W	W	W	W	W	W	W	W		W	W	W	W	W	CAP W	EER W/W	W	W	W
EGAS70HLR 50-60Hz	220-240V 50Hz 220V 60Hz	5.56	101	145	164	1.47	200	264	336	412	495	580	620	-	680	-										Relay	
EGAS80HLR 50-60Hz	220-240V 50Hz 220V 60Hz	6.36	123	174	195	1.52	235	306	390	490	605	720	765	-	840	-										Relay	
EGAS90HLR 50-60Hz	220-240V 50Hz 220V 60Hz	7.15	143	197	219	1.50	260	335	424	530	655	780	835	-	910	-										Relay	
EGAS100HLR 50-60Hz	220-240V 50Hz 220V 60Hz	7.95	162	225	251	1.52	298	383	483	603	750	895	955	-	1040	-										Relay	
FFI 8.5HAK 50-60Hz	220-240V 50Hz 220V 60Hz	7.16	134	184	207	1.31	246	310	409	509	625	755	800	2.99	930	-										Relay	
FFI 10HAK 50-60Hz	220-240V 50Hz 220V 60Hz	9.05	153	218	245	1.41	300	405	510	635	780	940	1070	2.87	1160	-										Relay	
FFI 12HAK	220-240V 50Hz	11.15	183	268	302	1.42	362	468	614	766	922	1125	1237	2.80	1362	-										Relay	
EGAS70HLR	115-127V 60Hz	5.56	125	180	204	1.58	249	328	417	510	604	708	756	-	830	-										Relay	
EGAS80HLR	115-127V 60Hz	6.36	151	215	240	1.55	289	377	482	605	738	878	933	-	1025	-										Relay	
FFI 12HBX	220V 60Hz	11.15	230	320	360	1.18	440	585	720	910	1120	1350	1465	2.52	1590	1850										Relay	
FFI 12HBX	115V 60Hz	11.15	230	320	360	1.19	440	585	720	910	1120	1350	1465	2.52	1590	1850										Relay	

NOTE: FFHAK MODELS CAN BE USED IN HBP APPLICATION DEPENDING ON SYSTEM DESIGN AND OPERATING CONDITIONS.

F/EG BASE PLATE (mm)

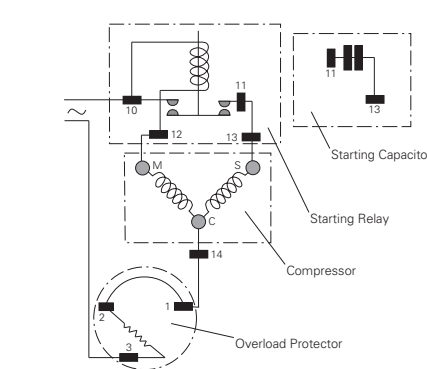


UNIVERSAL type



EUROPEAN type

ELECTRICAL DIAGRAMS



F/EG Compressors

TEST CONDITIONS

Condensing Temp.: 54.4°C
Suction Gas Temp.: 32.2°C
Liquid Subcooled: 32.2°C
Ambient Temp.: 32.2°C

TOLERANCES

Capacity: ±5%
Power Consumption: ±5%
Current Consumption: ±5%
Efficiency: ±7%

CONVERSIONS

1 Watt: 3.41 Btu/h
1 Watt: 0.86 Kcal/h
1 Kcal/h: 3.97 Btu/h