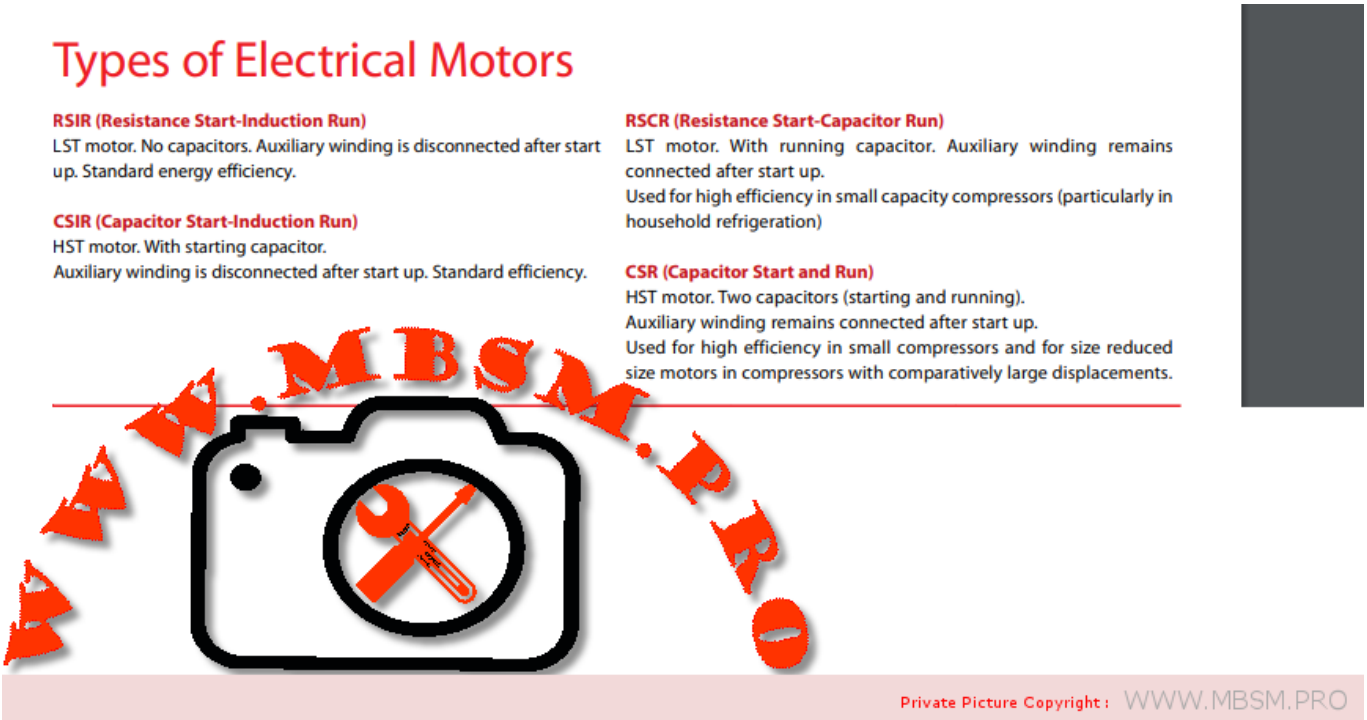
Types of Electrical Motors, RSIR, CSIR, RSCR, CSR, PTC, NTC, LST, HST, MBP, HBP, LBP

Category: compressor,Files
written by www.mbsm.pro | 8 April 2021
Types of Electrical Motors
RSIR (Resistance Start-Induction Run)
LST motor. No capacitors. Auxiliary winding is disconnected after start up. Standard energy efficiency.
CSIR (Capacitor Start-Induction Run)
HST motor. With starting capacitor.
Auxiliary winding is disconnected after start up. Standard efficiency.
RSCR (Resistance Start-Capacitor Run)
LST motor. With running capacitor. Auxiliary winding remains connected after start up.
Used for high efficiency in small capacity compressors (particularly in household refrigeration)
CSR (Capacitor Start and Run)
HST motor. Two capacitors (starting and running).
Auxiliary winding remains connected after start up.
Used for high efficiency in small compressors and for size reduced size motors in compressors with comparatively large displacements



Type of starting device
Current relay – (electromechanical). RSIR/CSIR motors and CSR low/medium-power motors with NTC (the NTC is connected in series with the starting capacitor and the main purpose is to reduce the current peaks in the relay contacts)
Potential relay – (electromechanical). CSR high-power motors.
PTC – (Positive Temperature Coefficient), the resistance increases

with the temperature. Device only with RSIR or RSCR motors in the (Small L, B), L and P ranges.
NTC – (Negative Temperature Coefficient), the resistance decreases with the temperature. Used in some CSR in order to reduce dimensions and components.

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Type of torque
LST – Low Starting Torque – Systems with capillary tube or balanced pressures at start up.
HST – High Starting Torque – Systems with expansion valve or capillary tube, with unbalanced pressures at start up.

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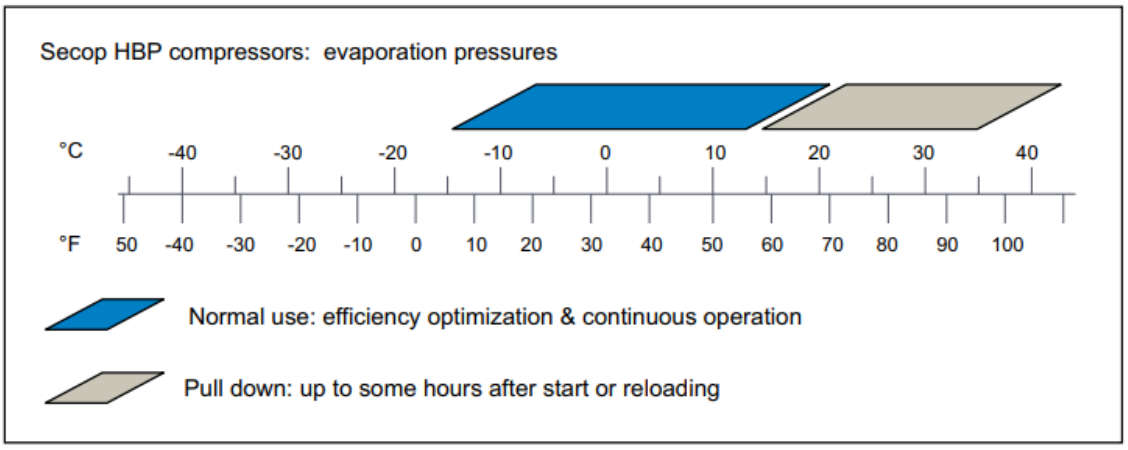

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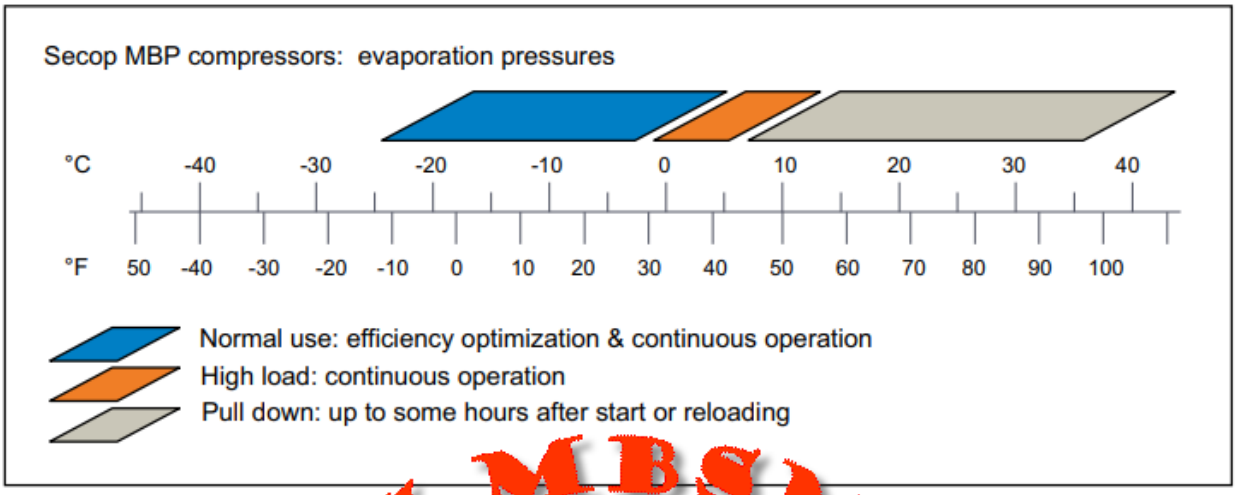

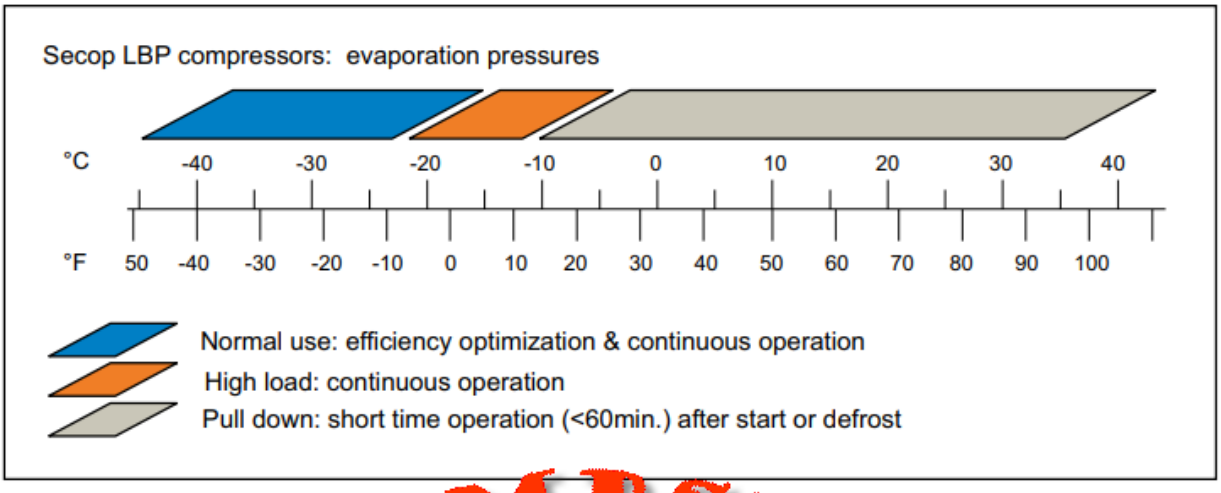

Compressors ZMC, EGL70AT, 1/5Hp, 1Ph, GL70AT, R-134a, standard Efficiency, 220-240V 50Hz, Cubigel Compressor, Cubigel, RSIR, LBP – LST – S, no Starting capacitor

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G	L	Y	60	R	A	a

Indicates refrigerant.
G = R134a **N** = R290
M = R404A/R507 **H** = R600a

Indicates compressor range (overall design).
L = 4.5 - 10.7cm³ **X** = 16.0 - 23.0cm³
U = 4.5 - 8.9cm³ **P** = 12.0 - 18.0cm³ **S** = 18.0 - 38.0cm³

Indicates energy efficiency level. Not appearing in case of Standard efficiency.
Blank = Standard Efficiency
C = Enhance Efficiency
M = Medium
Y = High Efficiency - Run Capacitor Optional RSIR/RSCR or CSIR/CSR
T = Top Efficiency - Run Capacitor RSCR or CSR
S = Super Efficiency - Run Capacitor Optional RSIR/RSCR or CSIR/CSR

Indicates approximate compressor displacement under the following rule:
U / L ranges 10 times the approx. displacement in cm³/rev (GL90TB -> approx 9 cm³/rev)
P / X / S ranges The approx. displacement in cm³/rev (MX21TG -> approx 21 cm³/rev)

Indicates the starting torque, application type and compressor cooling:
A = LBP - LST - S
C = LBP - LST - FAN
D = LBP - HST - S
F = LBP - HST -FAN
L = LBP - HST - Fan (Current Relay)
M = HMBP - LST/HST - S/FAN
N = LMBP - LST/HST - S/FAN
P = HMBP - LST - FAN
R = HMBP - HST - FAN (CSR versions with Current Relay)
T = HMBP - HST - FAN (CSR versions with Potential Relay)

Indicates the rated voltage:
A = 220-240V 50Hz
B = 220-240V 50Hz (standard efficiency)
G = 200-220V 50Hz / 220-230V 60Hz
J = 100V 50/60Hz
N = 200-220V 50Hz or 200-240V 50Hz /

	GD40AA	4.06	1/10	LBP	S	220-240V 50Hz ~1	RSIR	P	C	34	50	**70**	**0.77**	155	**82**	**1.00**	6.1	Dd
	GD40AF	4.06	1/10	LBP	S	200-220/220-230V 50/60Hz ~1	RSIR	P	C	31	47	**66**	**0.67**	147	**78**	**0.88**	6.8	Dd
	GLY45AAa	4.56	1/8	LBP	S	220-240V 50Hz ~1	RSIR	P	C	47	65	**89**	**1.01**	192	**104**	**1.30**	8.7	Lb
	GLY45AAb	4.56	1/8	LBP	S	220-240V 50Hz ~1	RSCR	P	C	48	66	**90**	**1.05**	193	**105**	**1.36**	8.7	Lb
	GL45AAa	4.56	1/8	LBP	S	220-240V 50Hz ~1	RSIR	P	C	37	57	**81**	**0.81**	184	**96**	**1.06**	7.9	Lb
	GL45AAb	4.56	1/8	LBP	S	220-240V 50Hz ~1	CSIR	R	C-V	37	57	**81**	**0.81**	184	**96**	**1.06**	7.9	Lb
	GL45AF	4.56	1/8	LBP	S	200-220/220-230V 50/60Hz ~1	RSIR	P	C	36	56	**80**	**0.74**	184	**95**	**0.97**	8.4	Lb
	GL45ANa	4.56	1/8	LBP	S	200-240/220-230V 50/60Hz ~1	RSIR	P	C	36	56	**80**	**0.78**	184	**95**	**1.03**	8.4	Lb
	GLY55AAa	5.46	1/7	LBP	S	220-240V 50Hz ~1	RSIR	P	C	53	78	**108**	**1.03**	238	**127**	**1.33**	8.7	Lb
	GLY55AAb	5.46	1/7	LBP	S	220-240V 50Hz ~1	RSCR	P	C	54	78	**109**	**1.09**	239	**128**	**1.40**	8.7	Lb
	GLY60AAa	5.98	1/6	LBP	S	220-240V 50Hz ~1	RSIR	P	C	58	85	**119**	**1.03**	255	**139**	**1.34**	8.7	Lb
	GLY60AAb	5.98	1/6	LBP	S	220-240V 50Hz ~1	RSCR	P	C	58	86	**120**	**1.10**	256	**140**	**1.42**	8.7	Lb
	GL60AAa	5.98	1/6	LBP	S	220-240V 50Hz ~1	RSIR	P	C	50	75	**107**	**0.85**	239	**126**	**1.10**	8.4	Lb
	GL60AAb	5.98	1/6	LBP	S	220-240V 50Hz ~1	CSIR	R	C-V	50	75	**107**	**0.85**	239	**126**	**1.10**	8.4	Lb
	GL60AF	5.98	1/6	LBP	S	200-220/220-230V 50/60Hz ~1	RSIR	P	C	57	81	**113**	**0.82**	245	**132**	**1.07**	9.1	Lb
	GL60ANa	5.98	1/6	LBP	S	200-240/220-230V 50/60Hz ~1	RSIR	P	C	57	82	**114**	**0.83**	244	**133**	**1.09**	9.1	Lc
	GL60ANb	5.98	1/6	LBP	F	200-240/220-230V 50/60Hz ~1	CSIR	R	C-V	57	82	**114**	**0.83**	244	**133**	**1.09**	9.1	Lc
	GL60ANc	5.98	1/6	LBP	S	200-240/220-230V 50/60Hz ~1	CSIR	R	C-V	57	82	**114**	**0.83**	244	**133**	**1.09**	9.1	Lc
	GL60ANd	5.98	1/6	LBP	OC	200-240/220-230V 50/60Hz ~1	RSIR	P	C	57	82	**114**	**0.83**	244	**133**	**1.09**	9.2	D
	GLY70AAa	6.65	1/5	LBP	S	220-240V 50Hz ~1	RSIR	P	C	70	96	**132**	**1.05**	288	**154**	**1.36**	9.7	Lb
	GLY70AAb	6.65	1/5	LBP	S	220-240V 50Hz ~1	RSCR	P	C	71	97	**133**	**1.12**	289	**155**	**1.44**	9.7	Lb
	GL70AA	6.65	1/5	LBP	S	220-240V 50Hz ~1	RSIR	P	C	58	86	**121**	**0.87**	268	**142**	**1.12**	8.8	Lc
	GL70ANa	6.65	1/5	LBP	S	200-220/220-230V 50/60Hz ~1	RSIR	P	C	70	95	**129**	**0.83**	278	**151**	**1.08**	9.4	Lc
	GL70ANb	6.65	1/5	LBP	F	200-220/220-230V 50/60Hz ~1	CSIR	R	C-V	70	95	**129**	**0.83**	278	**151**	**1.08**	9.4	Lc
	GL70ANc	6.65	1/5	LBP	S	200-220/220-230V 50/60Hz ~1	CSIR	R	C-V	70	95	**129**	**0.83**	278	**151**	**1.08**	9.4	Lc
	GL70ANd	6.65	1/5	LBP	OC	200-220/220-230V 50/60Hz ~1	RSIR	P	C	70	96	**129**	**0.83**	278	**151**	**1.08**	9.5	Ld
	GLY75AAa	7.38	1/5	LBP	S	220-240V 50Hz ~1	RSIR	P	C	74	107	**147**	**1.06**	311	**172**	**1.36**	9.9	Lc
	GLY75AAb	7.38	1/5	LBP	S	220-240V 50Hz ~1	RSCR	P	C	76	108	**147**	**1.12**	312	**172**	**1.44**	9.9	Lc
	GL75AA	7.38	1/5	LBP	S	220-240V 50Hz ~1	RSIR	P	C	68	95	**132**	**0.91**	296	**155**	**1.18**	9.0	Lc

Model: GL70AA

General data

Refrigerant:	R134a
Discharge element:	C
Cooling:	S
Maximum ambient temperature [°C]:	43

Compressor's data

Cylinder capacity [cm³]:	6,7
Displacement [m³/h]:	1,1
Weight [kg]:	9,6
Oil charge [cm³]:	345
Oil type:	ISO VG 19 ESTER

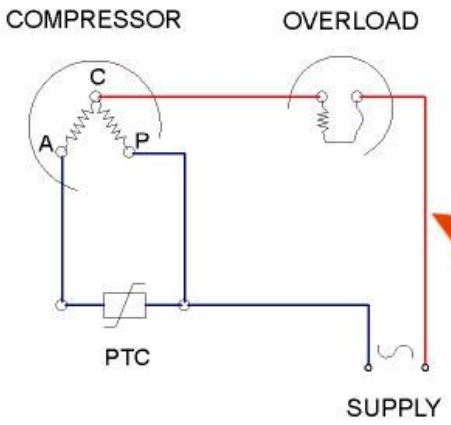
Engine's data

Engine type:	RSIR
Power [KM]:	1/5
Starting element:	LST
Power supply:	220V 50Hz
Voltage range:	187-264
Locked rotor current [A]:	10,9
Running winding resistance (25°C) [Ω]:	12,59
Starting winding resistance (25°C) [Ω]:	22,02

Electrical data

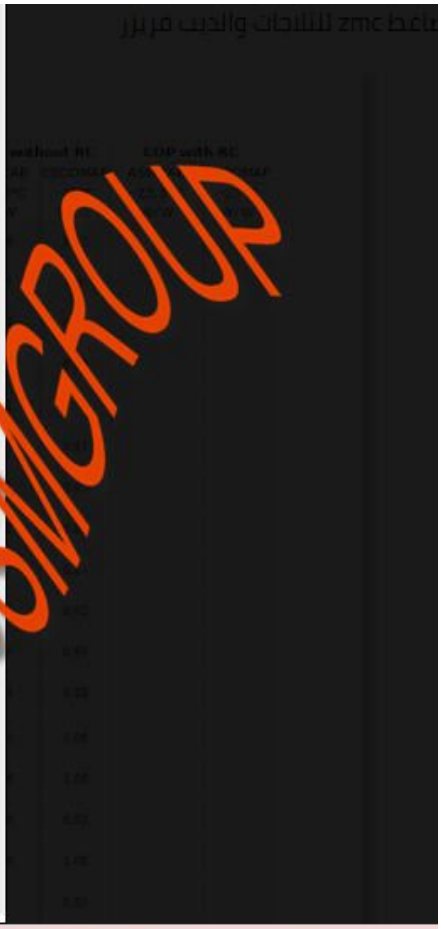
Relays:	3003
Shielding element:	MRA38028, T0508, AF18FU
Starting capacitor volume [µF]:	

RSIR



R134a

Model	Refr.	HP	Ambient Temp C	Rated Voltage	Cooling Capacity		COP without RC		COP with RC	
					ASHRAE	CECOMAF	ASHRAE	CECOMAF	ASHRAE	CECOMAF
					-23.3°C kcal/h	-25°C W	-23.3°C W/W	-25°C W/W	-23.3°C W/W	-25°C W/W
GL45AA	LBP: R134a	1/8	43	A	96	82	1.06	0.92		
GL45AN	LBP: R134a	1/8	50	C	96	81	1.05	0.8		
GL60AA	LBP: R134a	1/6	43	A	132	114	1.14	0.89		
GL60AF	LBP: R134a	1/6	43	D	132	113	1.07	0.82		
GL60AH	LBP: R134a	1/6	43	A	133	114	1.31	1.01		
GL60AN	LBP: R134a	1/6	50	C	132	114	1.07	0.83		
GL70AA	LBP: R134a	1/5	43	A	149	128	1.18	0.92		
GL70AN	LBP: R134a	1/5	50	D	150	129	1.08	0.83		
GL70AT	LBP: R134a	1/5	43	E	144	122	1.09	0.84		
GL75AA	LBP: R134a	1/5	43	A	155	133	1.18	0.92		
GL80AA	LBP: R134a	1/5	43	A	173	148	1.18	0.93		
GL80AF	LBP: R134a	1/5	43	D	166	141	1.14	0.88		
GL80AH	LBP: R134a	1/5	43	A	175	150	1.35	1.06		
GL80AN	LBP: R134a	1/4	43	A	196	168	1.36	1.06		
GL90AA	LBP: R134a	1/4	43	A	195	167	1.19	0.93		
GL90AH	LBP: R134a	1/4	43	A	217	182	1.38	1.08		
GL90AN	LBP: R134a	1/4	50	D	190	165	1.1	0.85		
GL90AT	LBP: R134a	1/4	43	E	190	161	1.19	0.92		
GL99AA	LBP: R134a	1/4	43	A	214	182	1.24	0.96		
GL99AH	LBP: R134a	1/4	43	A	215	182	1.39	1.08		
GL80AD	LBP: R134a	1/5	43	W	0	0	0	0		
GL90AD	LBP: R134a	1/4	43	W	0	0	0	0		



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