

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

Category: compressor, Files

written by [www.mbsm.pro](http://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.



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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.

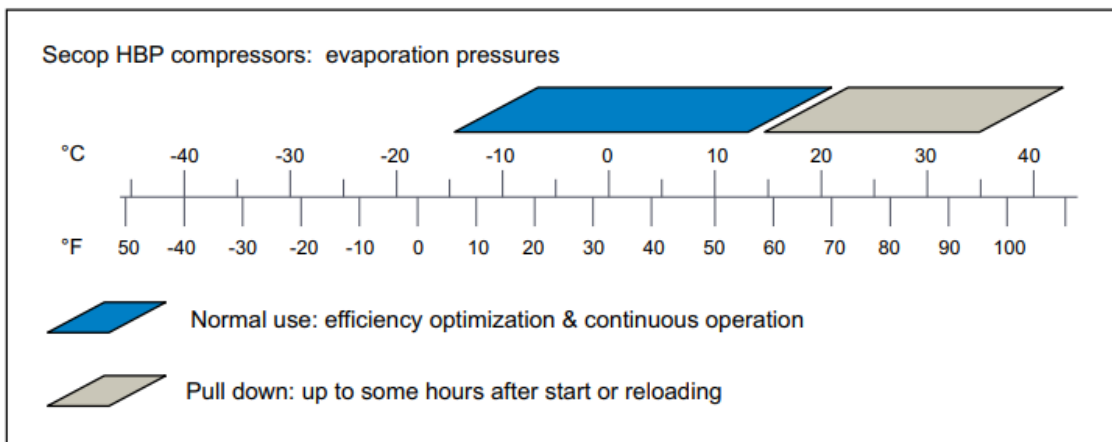
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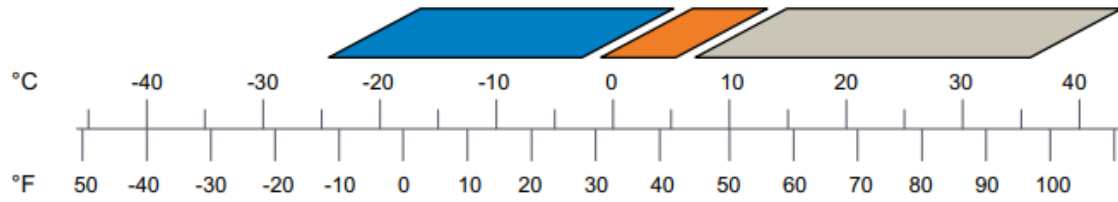





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Secop MBP compressors: evaporation pressures

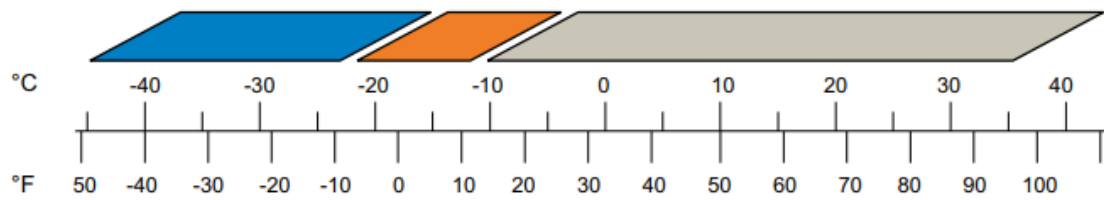





-  Normal use: efficiency optimization & continuous operation
-  High load: continuous operation
-  Pull down: up to some hours after start or reloading



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Secop LBP compressors: evaporation pressures



-  Normal use: efficiency optimization & continuous operation
-  High load: continuous operation
-  Pull down: short time operation (<60min.) after start or defrost



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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

Category: compressor

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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 - 10.7cm<sup>3</sup>    **X** = 16.0 - 23.0cm<sup>3</sup>  
**U** = 4.5 - 8.9cm<sup>3</sup>    **P** = 12.0 - 18.0cm<sup>3</sup>    **S** = 18.0 - 38.0cm<sup>3</sup>

Indicates energy efficiency level. Not appearing in case of Standard efficiency.

**Blank** = Standard Efficiency      **T** = Top Efficiency - Run Capacitor  
**C** = Enhance Efficiency            **RSCR** or **CSR**  
**M** = Medium                            **S** = Super Efficiency - Run Capacitor  
**Y** = High Efficiency - Run Capacitor    Optional **RSIR/RSCR** or **CSIR/CSR**  
Optional **RSIR/RSCR** or **CSIR/CSR**

Indicates approximate compressor displacement under the following rule:

**U / L** ranges 10 times the approx. displacement in cm<sup>3</sup>/rev (GL90TB -> approx 9 cm<sup>3</sup>/rev)  
**P / X / S** ranges The approx. displacement in cm<sup>3</sup>/rev (MX21TG -> approx 21 cm<sup>3</sup>/rev)

Indicates the starting torque, application type and compressor cooling:

**A** = LBP - LST - S      **L** = LBP - HST - Fan (Current Relay)      **R** = HMBP - HST - FAN  
**C** = LBP - LST - FAN    **M** = HMBP - LST/HST - S/FAN            (CSR versions with Current Relay)  
**D** = LBP - HST - S      **N** = LMBP - LST/HST - S/FAN            **T** = HMBP - HST - FAN  
**F** = LBP - HST - FAN    **P** = HMBP - LST - FAN                      (CSR versions with Potential Relay)

Indicates the rated voltage:

**A** = **220-240V 50Hz**                                    **G** = 200-220V 50Hz / 220-230V 60Hz  
**B** = 220-240V 50Hz (standard efficiency)    **J** = 100V 50/60Hz  
**C** = 220-240V 50Hz (standard efficiency)    **N** = 200-220V 50Hz or 200-240V 50Hz /



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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
GL45AAa	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
GL60AAa	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
GL60AAb	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
GL60AAc	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
GL60AAd	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	Lc
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
GL70AAa	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
GL70AAb	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
GL70AAc	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
GL70AAd	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
GLY80AAa	8.10	1/5	LBP	S	220-240V 50Hz ~1	RSCR	P	C	80	120	164	1.07	340	181	1.37	10.6	Lc

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### Model: GL70AA

#### General data

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

#### Compressor's data

Cylinder capacity [cm <sup>3</sup> ]:	6,7
Displacement [m <sup>3</sup> /h]:	1,1
Weight [kg]:	9,6
Oil charge [cm <sup>3</sup> ]:	345
Oil type:	ISO VG 19 ESTER

#### Engine's data

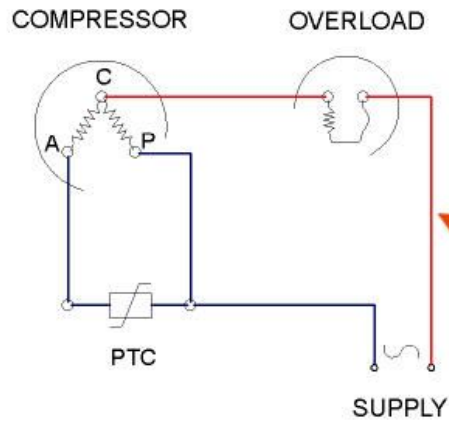
Engine type:	RSIR
Power [KM]:	1/5
Starting element:	LST
Power supply:	220V 50Hz
Voltage range:	187-264
Locked rotor current [A]:	10,9
Running winding resistance (25°C) [Ω]:	12,59
Starting winding resistance (25°C) [Ω]:	22,02

#### Electrical data

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

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# RSIR



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## R134a

Model	Refr.	HP	Ambient Temp C	Rated Voltage	Cooling Capacity		COP without RC		COP with RC	
					ASHRAE -23.3°C kcal/h	CECOMAF -25°C W	ASHRAE -23.3°C W/W	CECOMAF -25°C W/W	ASHRAE -23.3°C W/W	CECOMAF -25°C W/W
GL45AA	LBP-R134a	1.0	43	A	96	82	1.06	0.82		
GL45AH	LBP-R134a	1.0	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	140	128	1.18	0.92		
GL70AH	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	1.10	0.83		
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	1.10	0.93		
GL90AH	LBP-R134a	1.4	43	A	217	182	1.30	1.06		
GL90AN	LBP-R134a	1.4	50	D	190	169	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	1.30	1.06		
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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**ZMC**

**EGL70AT 0707**

200-220V-50HZ

**R 134 a**

MADE IN EGYPT



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