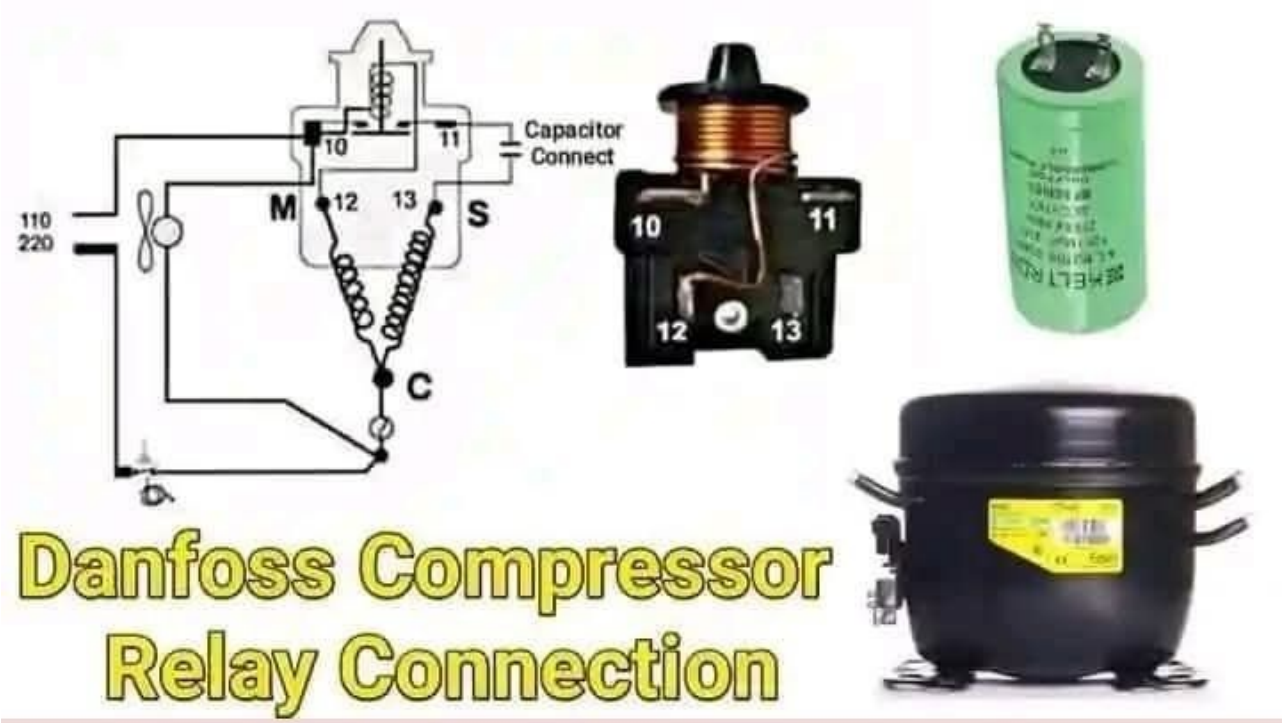
Mbsm.pro, Danfoss, Compressor, Relay, Capacitor, Connection

Category: compressor
written by www.mbsm.pro | 17 January 2025



Understanding the correct connection of a Danfoss relay to an electric compressor is essential for ensuring the efficient and safe operation of refrigeration systems. This guide provides a detailed explanation of the components, connection steps, and troubleshooting tips to help you properly install and maintain the relay. By following the outlined procedures, you can enhance the performance of your compressor, prevent common faults, and extend the lifespan of your refrigeration system. Whether you're a technician or a DIY enthusiast, this comprehensive overview will equip you with the knowledge needed to handle Danfoss relay connections with confidence.

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 - 10.7cm³ **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 /

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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
	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	Ld
	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

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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 [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

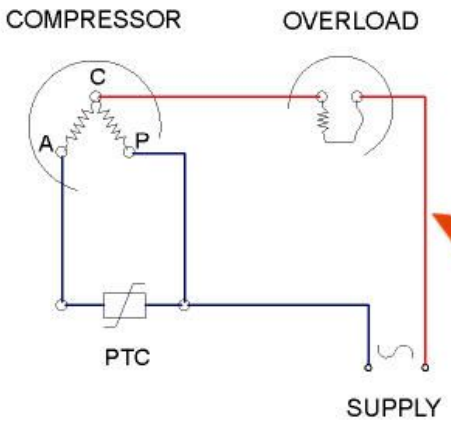
Electrical data

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

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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	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	140	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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Compresor Embraco, T/M-B FFU160HAX 1/2 HP,1,533 BTU/h,R-134 A ,MBP

Category: Technologie,Tester ok
written by www.mbsm.pro | 17 January 2025



Compresor Embraco, T/M-B FFU160HAX 1/2 HP,1,533 BTU/h,R-134 A ,MBP

QD110H , Chest Freezer Compressor ,1/3HP ,220V/50Hz ,R134A

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1/3HP Refrigeration Compressor 220V/50Hz R134A
AC Compressor: R134A Hermetic LBP Piston Reciprocationg Compressor
Model: WQ110H
Power Supply: 220-240/50-60V/Hz
Displacement: 11CC
Nominal Power: 1/3HP
Rated Power: 233W

Cooling Capacity: 280W
COP: 1.20W/W
Motor Type: RSIR
Starting relay: Starting Relay/PTC
Starting Capacitor: /μ F
Running Capacitor: /μ F
Cooling Type: F
Application: LBP
Certificate: 3C
1X20’FCL: 1600PCS



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Application:
LBP: Low back pressure; Refrigerator, Freezer, Wine cooler
MBP: Medium Back Pressure; Air-conditioner, vending machine
HBP: High Back Pressure: Air-conditioner, ice maker

LBP ASHRAE Test Condition:
Evapration Temperature: -23.3 ºC
Condensing Temperature: 54.4 ºC
Subcooling Temperature: 32.2 ºC
Ambient Temperature: 32.2 ºC
MBP ASHRAE Test condition:
Evapration Temperature: -5 ºC
Condensing Temperature: 54.4 ºC
Ambient Temperature: 35 ºC
Subcooling Temperature: 46.1
Suction Temperature: 35 ºC
HBP ASHRAETest condition:
Evapration Temperature: 7.2ºC
Condensing Temperature: 54.4ºC
Ambient Temperature: 35ºC
Subcooling Temperature: 46.1ºC
Suction Temperature: 35ºC
Parameter Variation Range:
Cooling Capacity: ≥ 95%
Inpurt Power: ≤ 115%
Current: ≤ 110%
COP: ≥ 95%
Cooling Type:
S: Natural cooling
F1: Fan cooling, 200mm fan diameter, 1.5m/s air speed
F2: Fan cooling, 200mm fan diameter, 3m/s air speed

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www.mbsm.pro , when capacitor explodes , Pictures

Category: Pictures,Technologie,Tester ok
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A capacitor is a device used to store an electric charge, consisting of one or more pairs of conductors separated by an insulator.
Unexpectedly the electrolytic capacitors explodes with huge sound and sometime it smoke.

Get started , how to explode a capacitor ???
All capacitors have a maximum voltage and their destruction depends upon the internal construction. Explosions are understood only by delving into the internal construction of electrolytic capacitors – the primary culprit.
Most small value capacitors are simple sandwiches of conductor and insulator and when the voltage exceeds the dielectric strength of the insulation, they short out and burn, crack, pop, open, or smoke. Explosions are rare for these. Popping open is more likely. Their failure is self evident either visually or by failure to function in the circuit.
Most large value capacitors in order to be as small in physical size as possible, have to get the conductive plates of the capacitor as close together as possible and at the same time not so small that the voltage rating is impractical.
It is for this reason that the family of electrolytic capacitors was developed. The trick they use to get high capacity with small separations and reasonable voltage is that they use the “anodizing” of chemical electrolysis on one surface and a water based electrolyte for the other surface. Take one apart and see. Notice that when a conductive metal is “anodized” by electrochemical process it turns into a dull film that is rather tough and is an insulator. This means that the actual conductive plate of the capacitor has this film entirely between itself and the other plate.
Then the other plate uses a trick too. There’s a water base solution soaked into a paper separator. Now if there was no water, the paper would be the dielectric of a normal capacitor separating the plates. But not here. Here the water has an alkali added to become a fair conductor. And as a liquid it soaks right into the surface structures of the capacitor. So it’s not the paper thickness at all – and not even the insulating surface on the other plate, but the inner recesses of the anodized surface that determine the dielectric distances.
So the operating voltage that a capacitor can tolerate depends upon how thick this anodized film is. And that is a function of it’s manufacture. Now there is a most useful characteristic that tells us we are nearing the max voltage, called leakage.
Here is a way you can check this out. Put in series, a test electrolytic capacitor (polarize it correctly), a variable power supply, a microammeter, and a 1 meg resistor (to limit and protect the meter). From zero as you increase the voltage there will be no current initially, then as you approach the spec op voltage, there will start a small leakage current. Since you have a limiting resistor here, you can increase the voltage without damage. continuing to increase the voltage discovers an increasing leakage current. It is a matter of practice how much safety you apply between the rating and the actual voltage of the circuit.
You can now see how it is that an electrolytic capacitor fails, it is not a voltage breakdown of the dielectric material, but the increase of leakage current that is troublesome. A rising leakage means heat which will boil the water and make steam – that’s the explosion process.
This is explosion as occasional failure of the few. But there is a more spectacular explosion process – it’s explosion by mistake – namely being installed backward. In such a case, the anodizing chemistry is reversed and rather rapidly, the anodized film starts to reverse, and quickly thins out at a weak spot in the rather large effective film area of the capacitor. Then we have

short circuit currents and steam generation rather quickly. This sort of explosion usually fills the space (the casing or the whole room if exposed) with little shreads of aluminum foil and alkali soaked paper.
This insightful solution is most successful to achieve capacitors with large values in small spaces, but has a lot of lesser characteristics as the price to pay.
The worst limit, is storage. Electrolytic capacitors store very poorly, and the voltage rating can reduce substantially as the internal chemistry deteriorates. Some equipment manufacturers recommend that capacitors stored for a few years have their inner anodizing conditions restored by simply putting them to the spec voltage for a day to restore full spec.
At the least, if you replace capacitors with old stock, and it didn’t explode when power was restored, be aware that it may not reach it’s spec capacity value for a few hours. A capacitor in use will always be maintained by the voltage in the circuit you use it in.
When electrolytics are used without the circuit supplying a maintenance voltage to keep the anodized film that all depends upon, such as in speaker cross over applications that have no sustaining DC, then the values of the capacitor will deteriorate at least at storage rates, and if AC currents are substantial, even faster.
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mbsm-dot-pro-capacitor-explodes- Pictures-A.jpg (1 MB)





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mbsm-dot-pro-capacitor-explodes- Pictures-B.jpg (1 MB)





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mbsm-dot-pro-capacitor-explodes- Pictures-C.jpg (1 MB)





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mbsm-dot-pro-capacitor-explodes- Pictures-J.jpg (739 KB)



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