Mbsm.pro, Table, starting, capacitors, compressor

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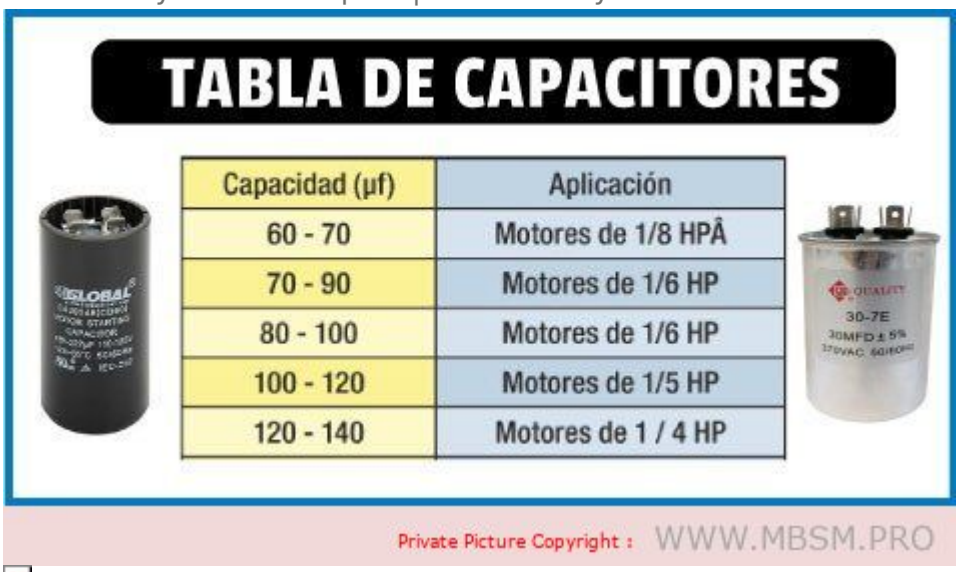


▷ Starting and Running Capacitors Table

Do you need to replace a start **or run capacitor** and you don't know which one the equipment has? In this post we will give you some **tables of start and run capacitors** so that you can access it when you need it.
The topic regarding the **calculation of capacitors for single-phase compressors** is of great importance, because whoever is repairing needs to know when it is in poor condition and also what the replacement of the damaged part will be.
The technician who manipulates the equipment has to know that the new capacitor that he has bought to replace the old one must exactly meet the working voltage or greater than that of the original.
It is also important to highlight in this article that the compressor voltage has almost no relation to the capacitor voltage.
If you do not have the original capacitor data, you can approximate it using the following **capacitor values for single-phase motors** that we present below.
They can be used as a guide or reference for selecting, **replacing capacitors** when the exact values are unknown.

Table of starting capacitors for single-phase motors

TABLA DE CAPACITORES ELECTROLÍTICOS PARA ARRANQUE DE MOTORES MONOFÁSICOS EN 110 Y 220 V.C.A.	
Capacidad (µf)	Aplicación
60 - 70	Motores de 1/8 HPÂ
70 - 90	Motores de 1/6 HP
80 - 100	Motores de 1/6 HP
100 - 120	Motores de 1/5 HP
120 - 140	Motores de 1 / 4 HP
140 - 160	Motores de 1 / 3 HP
170 - 190	Motores de 1 / 2 HP
190 - 210	Motores de 1 / 2 HP
210 - 240	Motores de 1 / 2 HP
240 - 270	Motores de 3 / 4 HP
270 - 310	Motores de 3 / 4 HP
320 - 360	Motores de 1 HP
360 - 400	Motores de 1 HP
380 - 420	Motores de 1 1 / 2Â HP
400 -430	Motores de 1 1 / 2Â HP
450 - 500	Motores de 1 1 / 2Â HP
500 - 600	Motores de 2 HP
660 - 700	Motores de 2 HP
700 -800	Motores de 2 HP

Tabla de capacitores electrolíticos

Table of Start and Run Capacitors for Single Phase Capacitors

In this table, which is very similar to the previous one, I attach **capacitor values for single-phase motors.**
both working and starting capacitors, this way you will have the most user-friendly information in a single image

Motor	Capacitor de arranque		Capacitor de trabajo	
Potencia (Hp)	Capacitancia(µf)	Voltaje(V)	Capacitancia(µf)	Voltaje(V)
1/8	72-88	110V	5	370V
	75-80	110V	6	370V
1/6	86-100	110V	7,5	370V
			7,5	440V
1/4	108-130	110V	10	370V
	124-149	110V	10	440V
1/3	161-193	110V	12,5	370V
			15	370V
			15	440V
1/2	200-240	110V	15	370V
	216-259	110V	15	440V
3/4	324-388	110V	17,5	370V
	340-408	110V	20	370V
			20	370V
1	378-440	110V	20	370V
	400-480	110V	20	370V
1 1/2	540-648	110V	25	370V
	75-90	250V		
	81-97	250V	25	440V
	108-130	250V		
	121-145	250V		
2	127-152	330V	20	370V
			25	370V
	135-162	330V	30	370V
			35	370V
3	130-162	330V	40	440V
5	829-1200	110V	40	370V
	161-193	250V	50	370V
	270-324	250V		

Capacitor Table for Three-Phase Electric Motors

As a general rule, low-power three-phase electric motors have an operating voltage of 220 VD / 380 VY, but we must always **make sure** .
To do this, it is best to look at the motor’s nameplate. Where the voltages and connection will be indicated to know the type of **Capacitor they use.**

Tabla para Motores Trifásicos

Capacitores para compensar motores asincrónicos trifásicos 3 x 400 Vca. 50 Hz.

Potencia en el eje. (H.P.)	Potencia en el eje. (KW)	Velocidad de sincronismo. (R.P.M.)	Corriente a plena carga. (A.)	Potencia React. Capac.Optima. (KVAR)	Capacitor en KVAR
1	0,75	750	2,475	0,5586	0,75
		1000	2,275	0,5173	0,50
		1500	2,038	0,3800	0,50
		3000	1,838	0,2750	-
1,5	1,1	750	3,475	0,9387	1,00
		1000	3,275	0,7210	0,75
		1500	2,763	0,6538	0,75
		3000	2,550	0,3570	0,50
2	1,5	750	4,063	0,9149	1,00
		1000	3,976	0,8533	1,00
		1500	3,600	0,7686	0,75
		3000	3,417	0,3740	0,50
3	2,2	750	6,000	1,5176	2,00
		1000	5,525	1,0213	1,00
		1500	5,150	0,9247	1,00
		3000	4,925	0,4450	0,50
4	3	750	7,813	2,0300	2,00
		1000	7,463	1,5500	1,00
		1500	6,950	1,3400	1,00
		3000	6,288	0,5660	0,50
5,5	4	750	10,215	2,6700	3,00
		1000	9,875	1,9950	2,00
		1500	8,600	1,5500	1,00
		3000	8,140	0,6600	0,75
7,5	5,5	750	13,800	3,3675	3,00
		1000	13,500	2,6100	2,00
		1500	11,750	1,8500	2,00
		3000	11,313	0,6900	0,75
10	7,5	750	18,225	4,3290	4,00
		1000	16,850	3,3300	3,00
		1500	15,650	2,5500	2,00
		3000	14,763	0,8100	0,75
15	11	750	25,815	5,8640	6,00
		1000	24,520	4,5100	5,00
		1500	22,000	3,2240	3,00
		3000	22,038	1,7600	2,00
20	15	750	33,800	8,0000	8,00
		1000	31,480	5,3800	5,00
		1500	30,060	4,6370	5,00
		3000	28,840	2,3200	2,00
25	18,5	750	38,000	7,5600	7,00
		1000	38,200	7,3200	7,00
		1500	38,100	5,0150	5,00
		3000	34,760	3,5000	3,00
30	22	750	44,000	10,3200	10,00
		1000	45,380	8,9600	9,00
		1500	44,620	6,4100	6,00
		3000	41,780	4,8100	5,00
40	30	750	60,000	12,3800	12,00
		1000	58,000	10,7600	10,00
		1500	56,850	9,4000	10,00
		3000	56,430	6,6200	7,00
50	37	750	75,000	17,6200	17,00
		1000	71,000	12,7500	12,00
		1500	70,000	11,7640	12,00
		3000	70,450	8,4520	8,00
60	45	750	89,000	19,9500	20,00
		1000	86,000	15,9500	16,00
		1500	84,000	13,1400	13,00
		3000	83,000	9,1380	10,00

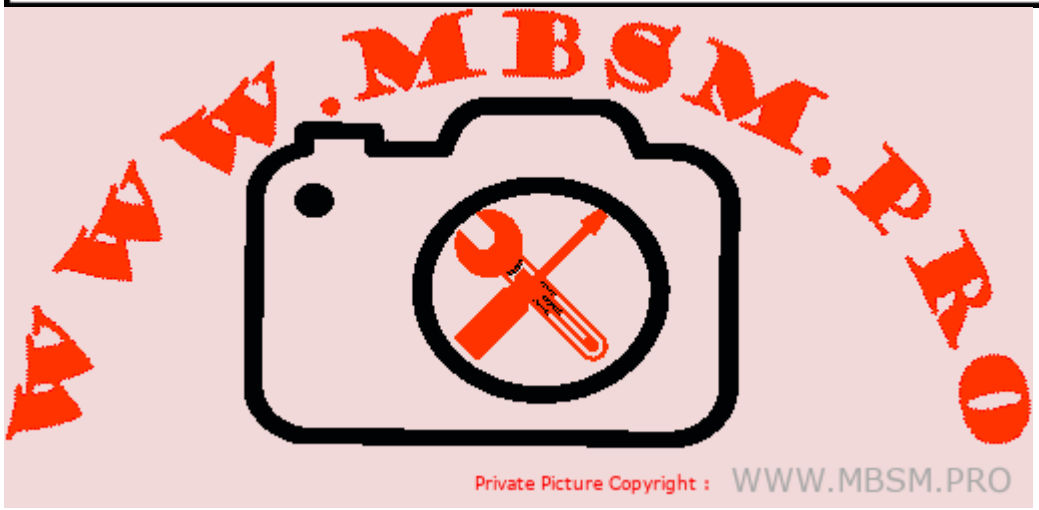
Los valores de esta tabla se han calculado como promedio de los motores normalizados de plaza.
Por lo tanto pueden encontrarse diferencias con algun modelo en particular.

Tabla compresores Trifásicos Asíncronos

Fan run capacitor table

If you need to **change** a **running or permanent fan capacitor,** this table attached below can guide you to resolve the fault of the equipment you are repairing:

CAPACIDAD (uf)	Aplicación	POTENCIA (HP)
1,5	Ventiladores de techo	1/40
2,5	Ventiladores de techo	1/33 1/125 1/20
3	Ventiladores de techo	1/12 1/15 1/25
4	Ventiladores de techo	1/6 1/10
5	Motores en general	1/8
6	Motores en general	1/4 a 1/8
10	Motores en general	1/3 a 1/2
12,5	Motores en general	1/4 a 1/2
16 a 18	Motores en general	3/4
20	Motores en general	3/4 a 1
22 a 30	Motores en general	1 a 1 1/2
4 a 6	Forzadores de refrigeracion	1/4
8	Forzadores de refrigeracion	1/3
12 a 16	Motocompresores	1/2
8	Motocompresores	3/4
22 a 27	Motocompresores	1
32 a 35	Motocompresores	1 1/2



Understanding Starting Capacitors for Compressors: A Comprehensive Guide

Introduction

Starting capacitors play a crucial role in the efficient operation of compressors, especially in single-phase motors. They help generate the necessary starting torque and ensure smooth operation. This guide provides a detailed overview of starting capacitors, their importance, and how to select the right one for your compressor. We'll also explore key specifications and troubleshooting tips to ensure optimal performance.

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1. What is a Starting Capacitor?

A starting capacitor is an electrical component used in single-phase motors to

create a phase shift, which generates the torque needed to start the motor. Without a starting capacitor, single-phase motors would struggle to start due to insufficient torque.

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2. Key Functions of Starting Capacitors

- **Generate Starting Torque:** Provides the necessary torque to start the compressor motor.
- **Phase Shift Creation:** Creates a 90-degree phase shift to simulate a second phase in single-phase motors.
- **Smooth Operation:** Ensures the motor starts smoothly without excessive current draw.

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3. Table: Starting Capacitor Specifications for Compressors

Compressor Model	Power (W)	Voltage (V)	Capacitance (μF)	Max. Current (A)	Release Current (A)
BSA15	150	230	10	1.55	1.6
BSA10	250	230	15	2.43	2.07
B10A19	300	230	20	3.0	2.56
B12A12	350	230	25	3.5	2.95
B16A13	500	230	30	5.15	4.85
B9A11	750	230	35	7.0	5.9

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4. How to Calculate the Right Capacitor for Your Compressor

The capacitance of a starting capacitor is critical for optimal performance. Here’s a simple formula to calculate the required capacitance:

Formula:

C=P×1062πfV2cos□(ϕ)$C = \frac{P \times 1062}{2\pi f V^2 \cos(\phi)}$C=2πfV2cos(ϕ)P×1062□

Where:

- CC = Capacitance (in microfarads, μF)
- PP = Motor power (in watts, W)
- ff = Frequency (in hertz, Hz, typically 50 or 60 Hz)
- VV = Voltage (in volts, V)
- cos□(ϕ)$\cos(\phi)$cos(ϕ) = Power factor (typically 0.85 for motors)

Example Calculation:

For a motor with:

- Power (PP) = 150 W
- Voltage (VV) = 230 V
- Frequency (ff) = 50 Hz
- Power factor (cos□(ϕ)$\cos(\phi)$cos(ϕ)) = 0.85

C=150×1062π50×2302×0.85≈10.61 μF$C = \frac{150 \times 1062}{\pi 50 \times 2302 \times 0.85} \approx 10.61 \mu F$C=π50×2302×0.85150×1062□≈10.61μF

In this case, a **10 μF** capacitor would be ideal.

5. Common Issues with Starting Capacitors

- **Failed Capacitor:** A faulty capacitor can prevent the motor from starting or cause it to overheat.
- **Incorrect Capacitance:** Using a capacitor with the wrong capacitance can lead to insufficient torque or excessive current draw.
- **Overheating:** Poor ventilation or excessive load can cause the capacitor to overheat and fail.

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6. Troubleshooting Tips

1. **Check Continuity:** Use a multimeter to test the capacitor for continuity. A failed capacitor will show no continuity.
2. **Measure Capacitance:** Use a capacitance meter to ensure the capacitor’s value matches the required specifications.
3. **Inspect for Physical Damage:** Look for bulging, leaks, or burn marks on the capacitor, which indicate failure.
4. **Test Under Load:** Ensure the compressor starts smoothly and does not draw excessive current during startup.

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7. Advantages of Using the Right Starting Capacitor

- **Improved Motor Lifespan:** Reduces stress on the motor during startup.
- **Energy Efficiency:** Minimizes power consumption during operation.
- **Reliable Performance:** Ensures consistent and reliable compressor operation.

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8. Conclusion

Selecting the right starting capacitor for your compressor is essential for ensuring efficient and reliable operation. By understanding the specifications, calculating the correct capacitance, and performing regular maintenance, you can extend the lifespan of your compressor and avoid costly repairs.