CAPACITORS

All PSC motors are designed to be used with an external capacitor. This capacitor operates in the circuit continuously. It is commonly referred to as a run capacitor. The most common capacitor for fan/blower motors is 5 Mfd., 370 volt. However, other ratings will also be used depending on the model.

FACT A capacitor is a device capable of storing and releasing an electric charge.

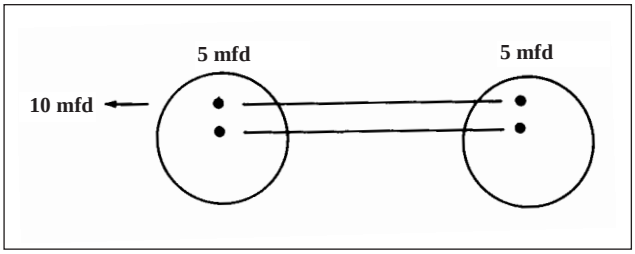
FACT Always discharge a capacitor before removing it from an installation.

FACT The capacitor used with a capacitor start motor is called a start capacitor because it is used only while the motor is starting.

FACT The capacitor rating is printed on the capacitor itself, the motor nameplate or the system wiring diagram. You must know this rating to properly choose the replacement capacitor.

FACT Capacitors are rated by both capacity (2 Mfd, 5 Mfd., etc.) and voltage (370 volt, 440 volt, etc.). The rated capacitor size should not be changed, since the motor operates at maximum efficiency when using the specified capacitor size. If necessary, the replacement capacitor voltage rating can be higher than specified, buy not lower without impairing capacitor life.

FACT Capacitors can be hooked up in parallel to increase capacity. For example, two 5 Mfd., 370 volt capacitors connected in parallel are the equivalent of a 10 Mfd., 370 volt capacitor. **See illustration below.**



CAPACITORS (continued)

FACT Capacitor life is about 60,000 hours. Continuous operation, at rated voltage and maximum case temperature of 70 degrees C(158 degrees F). All Fasco PSC motor nameplates include a wiring diagram, and normally the capacitor is connected to the two brown leads.

FACT Replace the capacitor when replacing a defective motor. If a defective capacitor is in the circuit the motor probably will not run. If it does run, it will operate as if overloaded. The motor speed will be low, and it will overheat and probably trip the overload protector.

CAUTION

A high-quality capacitor can hold a charge for long periods of time. To prevent a painful shock, the capacitor should be discharged before its removal.

FACT There are three safe ways to test capacitors in the field.

1. Replace the old capacitor with a new one.
2. A capacitor tester can be used. Needs to provide readings in microfarads.
3. An ohmmeter can be used. If the capacitor is taking a charge, it will swing the ohmmeter needle toward "0" ohms and hold at that point then slowly deflect. It deflects since the battery in the meter will begin to charge the capacitor. If it is open circuited, the needle will not move off infinity.

FACT Always check the capacitor before replacing a PSC motor.

FACT A motor with a shorted capacitor can still start and run, but will operate as if seriously overloaded.

FACT This is a quick tip for distributors who bench test motors before handing them over to customers. When finishing your test, be sure to discharge the capacitor with an appropriate resister such as a 15 Kohm 2 watt resister. Depending how the motor leads are connected, it may be such that it discharges through the windings when the motor is de-energized.

Series connection:
If, for example, two 5 Mfd., 370 VAC capacitors are wired in series, the following formula will show equivalent capacitance and voltage rating they produce when connected this way.

Mfd. = 1 / (1/Capacitor one) + (1/Capacitor two)
= 1/(1/5 + 1/5)
= 2.5 Mfd.

The two 370 VAC capacitor ratings add together in a series connection giving 740 VAC total capability.

Parallel connection:
If the two capacitors are wired in parallel the following formula will show the Mfd. result.

Mfd. = Capacitor one + Capacitor two
= 5 + 5
= 10 Mfd.

In a parallel connection, the two 370 VAC capacitor ratings do not add together, so the total capability is still 370 VAC.

CONDENSATION AND DRAIN PLUGS

FACT Differences between daytime and nighttime temperatures can create condensate in totally enclosed motors. A drain hole should be at the lowest point in the motor to permit the condensate water to exit.

FACT Certain Fasco motors are designed to be used in outside applications as with condensers, for example. Motors used in these condensers may be totally enclosed non-vented. When replacing these motors with Fasco motors, be sure to pull the blue condensation plug on the Fasco motor, on the end that will point down. By pulling the drain plug, the condensation that builds up in the motor can drain properly.

FACT Remember that Fasco has two colors of plugs on the motors. The blue plugs are condensation drain plugs and the yellow plugs are for re-oiling.