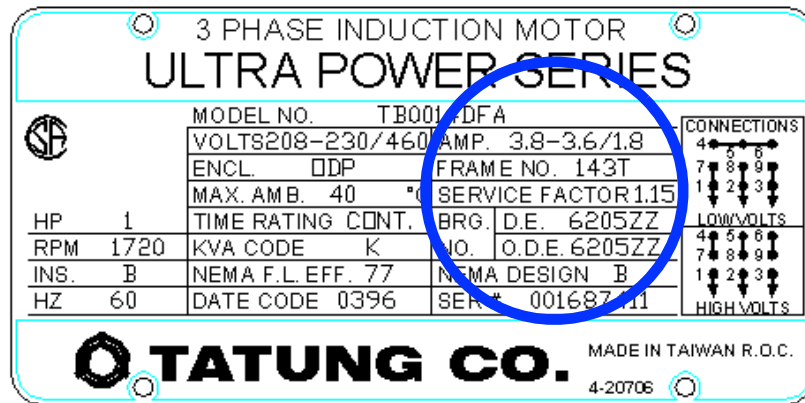




What The SF (Service Factor) Indicates On A Motor Nameplate



In the NEMA Standard MG1-1.42 we find this definition:

"The service factor of an ac motor is a multiplier which, when applied to the rated horsepower, indicates a permissible horsepower loading which may be carried under the conditions specified"...

Those "conditions," include a winding temperature rise at the service factor horsepower that exceeds the rated insulation system temperature by 10° C. Thus, at 115% of rated horsepower, a motor can be expected to run 10° hotter than the standard limit applicable to rated load. A useful rule of thumb says that 10° higher temperature cuts insulation thermal life in half.

That means a motor running continuously at the "permissible" service factor overload will have greatly reduced life.

The service factor is meant to provide for occasional, sporadic, intermittent overload caused by variations in plant operation. These typically include process disturbances, such as random variations in the density of material being processed by industrial machinery. The service factor allows the motor to "ride through" such temporary conditions.

But long-term overheating to the service factor temperature rating — 10° C above the design temperature of the insulation — will reduce winding life.

If the motor is operating in a low ambient temperature (below the standard 40° C), that may not happen.

In any event, use a service factor with great care. Its existence will not increase available motor torque, nor permit more frequent or more severe starting.

NOTE: The service factor is required to appear on the nameplate only if it is higher than 1.0.