**Fuse Holders As listed to UL 512**

When used with a motor disconnecting means and properly sized branch circuit fuses, fuse holders may provide main, feeder, branch circuit, motor, motor circuit, and group motor protection. They cannot be used alone as a motor disconnecting means to meet NEC® 430.109, nor can they be used alone as a motor controller (On-Off function) to meet NEC® Article 430, Part VII.

**Identification**

Fuse holders as listed to UL 512 will contain a marking near the agency listing symbol. This marking should read Listed Fuse Holder.

**Disconnect Switches-Fused and Non-Fused As listed To UL 98**

These are disconnect switches from 30 through 6000 amps, that may be used on service equipment, panelboards, switchboards, industrial control equipment, motor control centers, motor branch circuits, etc. These switches may be used as a motor disconnecting means to meet NEC® 430.109. They may also be used as a motor controller (on-off function) to meet NEC® article 430, Part VII, and may be used both as a motor disconnecting means and a motor controller (NEC® 430.111).

**Allowed Uses:**

- Motor Branch Circuit and “at the motor” Disconnecting Means
- Motor Controller

**Identification**

Disconnect switches as listed to UL 98 will contain a marking near the agency symbol. This marking should read “Listed Misc. Sw.”

**Motor Switches (Manual Motor Controllers) As listed To UL 508**

These switches may be used as a motor controller (On-Off function) to meet NEC® Article 430 Part VII. As motor controllers, they have creepage and clearance distances that are less than those required by UL 98. As a result, they cannot be used as a motor disconnecting means to meet NEC® 430.109. If the device is listed as a “manual motor controller” and is additionally marked “Suitable as Motor Disconnect” it shall be permitted to serve as a motor disconnecting means if it is located between the final motor branch-circuit short-circuit and ground-fault protective device and the motor. This marking and listing is optional, so a review of the device markings will be required if intended to be used for this purpose.

**Identification**

Motor Switches/Manual motor controllers as listed to UL508 will contain a marking near the agency listing symbol. This marking should read “Suitable Motor Disconnect.”

**Pullout Switches As Listed To UL 1429**

These are switches from 30 through 200 amps at 600V or less. Pullout switches with horsepower ratings are suitable for motor disconnecting means to meet NEC® 430.109, as motor controllers to meet NEC® Article 430 Part VII (if rated 100Hp or less), and in general use for panelboards, switchboards, etc. They may be used both as a motor disconnecting means and a motor controller to meet NEC® 430.111. Pullout switches with amp ratings only (no Hp ratings) are suitable for general use only, not motor circuits. If they are marked “Motor circuit pullout switch” they may be used in a motor circuit. When used with properly sized branch circuit fuses, pullout switches may be used for motor, motor circuit, and group motor protection.

**Allowed Uses:**

- Motor Branch Circuit and “at the motor” Disconnecting Means
- Motor Controller

**Identification**

Pullout switches as listed to UL1429 will contain a marking near the agency symbol. This marking should read Listed Pullout Switch.

**Molded Case Switches As listed to UL 489**

These switches are very similar to molded case thermal magnetic circuit breakers except that they have no thermal overload protection. They may or may not be equipped with a “magnetic” instantaneous trip as a self-protect mechanism. They may be used on service equipment, panelboards, switchboards, industrial control equipment, motor control centers, motor branch circuits, etc. They are suitable for use as a motor circuit disconnect per NEC® 430.109. They may be used as a motor controller (On-Off function) to meet NEC® Article 430 Part VII, and as both a motor disconnecting means and motor controller to meet NEC® 430.111.

**Allowed Uses:**

- Motor Branch Circuit and “at the motor” Disconnecting Means
- Motor Controller

**Identification**

Molded Case Switches as listed to UL489 will contain a marking near the agency listing symbol. This marking should read Listed Molded Case Switch.
Warning
Supplemental Protectors are NOT suitable for Motor Branch Circuit Protection

Supplemental protectors are being used for motor branch circuit protection in numerous applications throughout the industry. This is a MISAPPLICATION and the urgency of the matter is prompting the creation of safety notices, articles, and technical bulletins to alert the users of this misapplication. Supplemental protectors are not suitable for branch circuit protection and cannot be used for this purpose per 240.10 of the National Electrical Code®. Supplemental protectors are intended to be used as a component of an end product such as commercial appliances, kitchen appliances, luminaires (lighting fixtures), etc. They are offered in a wide variety of performance characteristics, voltage ratings, and interrupting ratings and therefore each supplemental protector is only allowed to be used under specific conditions. Supplemental protectors are UL recognized to UL1077, Supplemental protectors for use in Electrical Equipment, for this reason. A recognized or restricted product is not field installable and therefore an investigation assuring application of the product within its conditions of acceptability is required.

Why Are They Being Misapplied?
Here are some of the popular reasons why:

• Supplemental protectors look very similar to Molded Case Circuit Breakers leading to the assumption that they provide the same protection
• Supplemental protectors are often labeled as circuit breakers or Miniature Circuit Breakers (MCB) in literature
• Many of these devices are rated as a circuit breaker per IEC and confusion over North American and IEC ratings leads to misapplication

So What Do I Need To Do?
In order to correct the application, suitable protection for the motor branch circuit needs to be provided. The simplest correction to this problem is the replacement of the misapplied supplemental protector with a device that is suitable for branch circuit protection.

• A WORD OF CAUTION: The supplemental protector can only be used in an end product that is evaluated as an assembly. If the device does not go through an investigation, there is no assurance that the supplemental protector is being used for its intended use within its conditions of acceptability. Therefore the replacement of this device is the safest approach.

So What Can I Use?
NEC® 430.52 provides a list of acceptable devices for motor branch circuit protection. Among the list of acceptable devices are time delay and fast acting branch circuit fuses.

Summary
Supplemental protectors are being misapplied on numerous occasions. Many reasons lead to this misapplication including mistaking supplemental protectors as North American circuit breakers. The key to properly identifying supplemental protectors is to look for the recognition mark. If the device you are using has a recognition mark, more than likely it is a supplemental protector and replacement is necessary for a proper installation.

For more in-depth discussion, download Tech Talk 3 and Supplement from www.cooperbussmann.com

Motor Circuit Protection Device Selection Chart & Supplemental Protectors

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</thead>
<tbody>
<tr>
<td><strong>Motor Circuit and Controller Disconnect</strong></td>
<td>Yes¹</td>
<td>Yes</td>
<td>No</td>
<td>Yes⁶,⁷</td>
<td>No</td>
<td>No</td>
<td>Yes⁵,⁶</td>
<td>No</td>
</tr>
<tr>
<td><strong>Motor Branch Short Circuit and Ground Fault Protection</strong></td>
<td>Yes</td>
<td>Yes⁶</td>
<td>No</td>
<td>Yes⁶,⁶</td>
<td>No</td>
<td>No</td>
<td>Yes⁵,⁶</td>
<td>No</td>
</tr>
<tr>
<td><strong>Motor Controller</strong></td>
<td>Yes²</td>
<td>Yes</td>
<td>Yes⁹</td>
<td>Yes⁹</td>
<td>Yes</td>
<td>Yes⁹</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Motor Overload</strong></td>
<td>Yes</td>
<td>Yes³</td>
<td>Yes¹⁰</td>
<td>Yes¹⁰</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td><strong>Motor Disconnect</strong></td>
<td>Yes²</td>
<td>Yes</td>
<td>Yes⁴</td>
<td>Yes</td>
<td>No</td>
<td>Yes⁴</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

1. When used in conjunction with a UL98 Fusible Switch.
2. Where used in conjunction with a UL98 or UL508 fusible switch. If UL508 switch, see footnote 4
3. Often cannot be sized close enough.
4. Must be located on the load side of motor branch short-circuit protective device, marked "Suitable as Motor Disconnect," and be provided with a lockable handle.
5. When used in conjunction with a motor starter as part of a listed and labeled combination motor controller.
7. Additional Terminal Kit Often Required.
8. If Slash Voltage Rated, Limited to Solidly Grounded Wye Systems ONLY.
10. Class 10 Overload Protection Only.

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