replacement
UNITS
MCC Aftermarket Replacement Units
# MCC Aftermarket Guide

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Siemens has an installed base of Motor Control Centers dating back to 1964 due to acquisitions of Allis-Chalmers in 1978, ITE Gould in 1983 and Furnas Electric in 1996. This has resulted in 11 MCC models installed across the United States. Replacement units for these models as well as the current TIASTAR MCC offerings are built in the Siemens West Chicago plant. Siemens developed this tool to help people gain a better understanding of the wide variety of this installed base of MCCs. This should enable people to order aftermarket buckets or new MCCs much easier. In this program brochure all the tools necessary for identifying existing MCC’s to ordering forms are included. All items listed as follows: timeline, product overview, identification guide, product descriptions, work sheets and ordering check sheet. The intent of this guide is to provide a tool for Siemens customers so they can make a more educated purchasing decision. If you have any questions, please contact your local Siemens representative.

### MCC Type

- **ITE Gould 9600**
- **Allis-Chalmers Mark 1**
- **Furnas Class 89**
- **ITE Gould 5600**
- **Allis-Chalmers Mark 2**
- **Siemens-Allis Marq 21**
- **Furnas System 89**
- **Siemens Model 90**
- **Siemens Model 95**
- **Siemens Model 95+**
- **Siemens TIASTAR**

### MCC Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>MCC Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964</td>
<td>ITE Gould 9600</td>
</tr>
<tr>
<td>1965</td>
<td>Allis-Chalmers Mark 1</td>
</tr>
<tr>
<td>1971</td>
<td>Furnas Class 89</td>
</tr>
<tr>
<td>1972</td>
<td>ITE Gould 5600</td>
</tr>
<tr>
<td>1975</td>
<td>Allis-Chalmers Mark 2</td>
</tr>
<tr>
<td>1979</td>
<td>Siemens-Allis Marq 21</td>
</tr>
<tr>
<td>1980</td>
<td>Furnas System 89</td>
</tr>
<tr>
<td>1990</td>
<td>Siemens Model 90</td>
</tr>
<tr>
<td>1992</td>
<td>Siemens Model 95</td>
</tr>
<tr>
<td>1993</td>
<td>Siemens Model 95+</td>
</tr>
<tr>
<td>1996</td>
<td>Siemens TIASTAR</td>
</tr>
<tr>
<td>2001</td>
<td>Siemens-Furnas</td>
</tr>
<tr>
<td>2002</td>
<td>Siemens</td>
</tr>
</tbody>
</table>

Note: Timeline represents approximate values.
This overview is a clear and concise snapshot of Siemens entire MCC product offering. For your convenience, typical MCC part numbers are shown for continued identification possibilities. Furthermore, the overview covers the standard options for the product offering.

<table>
<thead>
<tr>
<th>Original Manufacturer</th>
<th>Model</th>
<th>Production Dates</th>
<th>Bucket w/ Door &amp; Handle</th>
<th>Factory Retrofit</th>
<th>Typical MCC Number</th>
<th>X=Letter # = Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siemens</td>
<td>TIASTAR™</td>
<td>2002 - Current</td>
<td>X</td>
<td>—</td>
<td>Same as System89</td>
<td></td>
</tr>
<tr>
<td>Siemens/Furnas</td>
<td>System89</td>
<td>1980 - 2001</td>
<td>X</td>
<td>—</td>
<td>89BFXXX### ###</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>89BSXXX### ###</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>89BBXXX### ###</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WX### (ex. WU760)</td>
<td></td>
</tr>
<tr>
<td>Siemens</td>
<td>Model 95 +</td>
<td>1997 - 2001</td>
<td>X</td>
<td>—</td>
<td>95BFXXX### ###</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>95BSXXX### ###</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>95BBXXX### ###</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>XX### (ex. WU760)</td>
<td></td>
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<tr>
<td>Siemens</td>
<td>Model 95</td>
<td>1995 - 1997</td>
<td>X</td>
<td>—</td>
<td>09-001-XXXX-XXXXX-XX</td>
<td></td>
</tr>
<tr>
<td>Siemens</td>
<td>Model 90</td>
<td>1990 - 1997</td>
<td>X</td>
<td>—</td>
<td>30-001-XXXX-XXXXX</td>
<td></td>
</tr>
<tr>
<td>Siemens Allis</td>
<td>Marq 21</td>
<td>1975 - 1990</td>
<td>X</td>
<td>—</td>
<td>01-14XX-XXXXX-XX</td>
<td></td>
</tr>
<tr>
<td>Allis-Chalmers</td>
<td>Mark 2</td>
<td>1972 - 1975</td>
<td>X</td>
<td>—</td>
<td>###### (ex. 15375)</td>
<td></td>
</tr>
<tr>
<td>Allis-Chalmers</td>
<td>Mark 1</td>
<td>1965 - 1972</td>
<td>X</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITE</td>
<td>Gould 5600</td>
<td>1971 - 1992</td>
<td>—</td>
<td>X</td>
<td>84-XXXXX-XX</td>
<td></td>
</tr>
<tr>
<td>ITE</td>
<td>Gould 9600</td>
<td>1964 - 1971</td>
<td>—</td>
<td>X</td>
<td>85-XXXXX-XX</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>86-XXXXX-XX</td>
<td></td>
</tr>
<tr>
<td>Furnas</td>
<td>Class89</td>
<td>1965 - 1979</td>
<td>—</td>
<td>X</td>
<td>89FVXXXX XXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>89SVXXXX XXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>89BVXXXX XXX</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V### (ex. V2176)</td>
<td></td>
</tr>
</tbody>
</table>

1 Dates represent approximate values only.
2 Buckets exceeding 250 amps are fix mounted.
3 Contact West Chicago Aftermarket Dept for Retrofit Program at (800) 683-6200.
4 In some instances a generic 5 alphanumeric number is designed as the MCC sales order number. In most cases a 5 alphanumeric number within the MCC number is the sales order number. MCC numbers can be found inside the MCC bucket.

### Starters 240V, 480V, 575V

<table>
<thead>
<tr>
<th>Starters</th>
<th>NEMA Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVNR</td>
<td>1-6</td>
</tr>
<tr>
<td>FVR</td>
<td>1-5</td>
</tr>
<tr>
<td>2S1W-CT</td>
<td>1-5</td>
</tr>
<tr>
<td>2S1W-VT</td>
<td>1-5</td>
</tr>
<tr>
<td>2S2W-CT</td>
<td>1-5</td>
</tr>
<tr>
<td>2S2W-VT</td>
<td>1-5</td>
</tr>
<tr>
<td>RVAT</td>
<td>2-6</td>
</tr>
<tr>
<td>RVSS</td>
<td>Consult Factory</td>
</tr>
<tr>
<td>VFD</td>
<td>Consult Factory</td>
</tr>
</tbody>
</table>

### Standard Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amp Meter + CT</td>
<td>Surge Suppression</td>
</tr>
<tr>
<td>CT</td>
<td>Under Voltage CB</td>
</tr>
<tr>
<td>Voltage Monitor</td>
<td>Shunt Trip</td>
</tr>
<tr>
<td>Vac. Contactor</td>
<td>Ground Stab</td>
</tr>
<tr>
<td>Transducer</td>
<td>High Density Bucket</td>
</tr>
<tr>
<td>Fuse Puller</td>
<td>Special Paint</td>
</tr>
<tr>
<td>Bypass</td>
<td>Timer</td>
</tr>
<tr>
<td>ASI®</td>
<td>4P Relay</td>
</tr>
<tr>
<td>Ground Fault</td>
<td>Extra Unit Space</td>
</tr>
<tr>
<td>Elapse Time Meter</td>
<td></td>
</tr>
</tbody>
</table>
This guide is a detailed identification tool for Siemens MCCs. The two primary ways of identifying MCCs are by the disconnect handle, and the stab configuration. Also, the logos and a detailed part number guide can be found in each section of this guide.

**TIASTAR**

Type: Siemens

Typical MCC Number: Refer to System89. (See following.)

Description: Refer to System89 (See following).

**System89**

Type: Furnas

Typical MCC Number: 898FXX999 999 / 89BSXX999 999 / 89BBXX999 999.

The X suffix represents alphabetic designations, and the 9 represents numeric designations. Sometimes the 898F/898S/8988 and the last 3 digits are omitted, and 5th character MCC numbers are used (i.e. WB679, WR760, W6754).

Description: The unit has a gray plastic handle and a System89 logo on the top of the first section. The bucket stabs have an orange housing.

**Operating Handle and Bucket Stab:**
**Model 95 Plus**

*Type:* Siemens  

*Typical MCC Number:* 95BFXX999 999 / 95BSXX999 999/95BBXX999 999. The X suffix represents alphabetic designations and the 9 represents numeric designations. Sometimes the 9BF/9BS/9BB and the last three digits are omitted and a 5th character number is given (i.e. LA679, WU760).

*Description:* Model 95 Plus has a black linear handle. The bucket stabs either have an orange or black insulator.

**Operating Handle and Bucket Stab:**

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**Model 95/90/Marq21**

*Note:* No official logos used for Model 90/95.  

*Type:* Siemens / Siemens-Allis / Allis-Chalmers  

*Typical MCC Number:* 09-001-XXX-XXXXX-XX / 30 0010XXXXX0XXXXX or 01-14XX-XXXXX-XX / 17-14XX-XXXXX-XX. The X represents a numeric designation. Sometimes the first 6 numbers and the last 2 numbers are omitted and are assigned 5 digit MCC numbers.

*Description:* Model 95/90/Marq21 (version 2) bucket stabs have a black insulator. The Marq21 and Mark 1/2 bucket stabs were mounted 6” from the top of the bucket. The Siemens version of the Marq21 (version 2) had bucket stabs mounted on the top of the bucket and used the same bucket stabs as the Model 90/95. The Mark 1 handle was mounted on the door.

**Operating Handle and Bucket Stab:**

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**MCC Aftermarket Guide**

**Identification**

**Class 89**
*Type*: Furnas

**Typical MCC Numbers**: 89FVXXXX XXX / 89SVXXXX XXX / 89BVXXX XXX. The X represents a number designation. Sometimes the first 6 numbers and the last 2 numbers are omitted, and five-digit MCC numbers are used (i.e. V3167, V2176).

**Description**: The Class 89 had a metal operating handle with a triangular knob. The Class 89 has no vertical wire ways. All buckets are 20" wide. The bucket stabs have a green insulator. When applicable, pilot devices were door mounted.

**Operating Handle and Bucket Stab:**

- **Mark 1 Door Mounted**
- **Mark 1**
- **Siemens-Allis Version/Mark 2**
- **Class 89**

**Mark 2/Mark 1**

*Type*: Siemens / Siemens-Allis / Allis-Chalmers

**Typical MCC Numbers**: 09-001-XXX-XXXX-XX / 30-0010XXXX0XXXX or 01-14XX-XXXX-XX / 17-14XX-XXXX-XX. The X represents a number designation. Sometimes the first 6 numbers and the last 2 numbers are omitted and are assigned 5-digit MCC numbers.

**Description**: Model 95/90/Marq21 (version 2) bucket stabs have a black insulator. The Marq21 and Mark 1/2 bucket stabs were mounted 6" from the top of the bucket. The Siemens version of the Marq21 (version 2) had bucket stabs mounted on the top of the bucket and used the same bucket stabs as the Model 90/95. The Mark 1 handle was mounted on the door.

**Operating Handle and Bucket Stab:**

- **Mark 1 Door Mounted**
- **Mark 1**
- **Siemens-Allis Version/Mark 2**
ITE Gould 5600/9600

**Type:** ITE  
**Typical MCC Number:** 84-XXXX-XX / 85-XXXX-XX / 86-XXXX-XX.  
**Description:** The 9600 models were 20" wide buckets with no vertical wire way. The 5600 model was a standard 15" wide bucket.

**Operating Handle and Bucket Stab:**

- 5600, Version 1
- 5600
- 5600, Version 2
- 9600
- 9600
Replacement Capabilities

**Starter Units**
Replacement starters are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens Starter Size 1-6
- CT, CPT, PT
- CB and Fusible
- Pilot Devices, Relays, and Fuses
- UL Labeled
- Shelf is ordered separately

**Feeder Units**
Replacement feeders are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens feeder breakers and fusible switches
- Handle mechanism and hardware
- Feeder range 125A – 800A
- UL Labeled

**Note:** 9600 units are available on fixed mounted panels only.

**Product Description**
The 5600 and 9600 MCC retrofit buckets are designed to fit into their old design. 5600 units are 15” wide buckets and the fix mounted panels are 20” wide. 9600 units are 20” wide only.

The original Gould came with a variety of old CB and starters from ITE, Rowan, and AMP-CAP. These buckets are available up to NEMA size 5.

**Note:** Original components are not available. Today, we provide you with Siemens breakers and starters. A new Tiastar MCC can be cabled to an existing line up with an MLO assembly.

**TimeLine 5600:** 1971-1992
**TimeLine 9600:** 1964-1971
**Original Mfg:** ITE / Rowan Ctrl
**MCC #:** 84-XXXXX-XX
**85-XXXXX-XX**
**86-XXXXX-XX**

**MCC Plant:**

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5600-9600
MCC Aftermarket Guide

Identification

Product Description

Note: Original components are not available. Replacement units are not available. A new Tiastar MCC can be cabled to an existing line up with an MLO assembly.

Timeline: 1965-1971
Original Mfg: Allis Chambers
MCC #: #### (i.e. 15375)
MCC Plant: Wichita Falls
MCC Aftermarket Guide

Identification

Product Description

Note: Original components are not available. Replacement units are not available. A new Tiastar MCC can be spliced to an existing line up with special kits.

Timeline: 1965 – 1979
Original Mfg: Furnas Electric
MCC #: 89FVXX### ###
89SXX### ###
89BVXX### ###
V#### (ie. V2176)
MCC Plant: West Chicago
Product Description
The Mark 2 retrofit buckets are designed to fit into their old design. This is an upgrade from the Mark 1 in ValueLine family. Unit widths are normally 15" or 20" wide, and 12" tall with 6" increments.

The original Mark 2 came with a variety of CB and starters from Westinghouse and Allis-Chalmers.

Add-on MCCs:
A new TIASTAR MCC can be spliced to existing line-up.
Note: Original components are not available. Today, we provide you with Siemens breakers and starters.

Replacement Capabilities

Starter Units
Replacement starters are available in plug-in Non plug units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens Starter Size 1-6
- CT, CPT, PT
- CB and Fusible
- Pilot Devices
- Relays, Fuses
- UL Labeled

Feeder Units
Replacement feeders are available for all plug-in and Non plug units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens breakers and fusible switches
- Handle mechanism and hardware
- Feeder range 125A – 800A
- UL Labeled
MCC Aftermarket Guide

Identification

Product Description
The Marq21 retrofit buckets are designed to fit into Marq21 MCCs. Marq21 was created from the forge of two of the world’s foremost electrical companies, Siemens-Allis. Units widths are normally 15” or 20” wide, and 12” tall with 6” increments.

The original Marq21 came with a variety of CB and starters from ITE and Allis-Chambers.

Add-on MCCs:
A new TIASTAR MCC can be spliced to existing line-up with special kits. Note: Original components are not available. Today, we provide you with Siemens breakers and starters.

Time Line: 1975-1990
Original Mfg: Siemens-Allis
MCC #: 01-14XX-XXXXX-XX
Add-on MCCs: A new Tiastar MCC can be spliced to existing line up with special kits.

Replacement Capabilities

Starter Units
Replacement starters are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens Starter Size 1-6
- CT, CPT, PT
- CB and fusible
- Pilot Devices
- Relays and Fuses
- UL Labeled

Feeder Units
Replacement starters are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens breakers and fusible switches
- Handle mechanism and hardware
- Feeder range 125A - 800A
- UL Labeled
Product Description
This is an upgrade from Class 89 developed by Furnas in 1965. Bucket structures are normally 15" or 20" wide, and 12" tall with 6" increments.

The original System 89 came with a variety of CB and starters from Westinghouse, GE and Furnas Electric. Today, we provide you with Siemens breakers and starters.

Add-on MCCs:
A new TIASTAR MCC can be directly spliced to existing line-up.

Replacement Capabilities

Starter Units
Replacement starter units are available for all plug-in and Non plug-in unit MCC designs. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

• Siemens starter units
• CT, CPT, PT
• CB and Fusible
• Pilot Devices
• Relay, Fuses, VFD and Softstarts
• UL Labeled

Feeder Units
Replacement feeder units are available for all plug-in and Non plug-in units MCC designs. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

• Siemens breakers and fusible switches
• Handle mechanism and hardware
• Feeder range 125A - 800A
• UL Labeled
Replacement Capabilities

**Starter Units**
Replacement starters are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens Starter Size 1-6
- CT, CPT, PT
- CB and Fusible
- Pilot Devices
- Relays and Fuses

**Feeder Units**
Replacement feeders are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens breakers and fusible switches
- Handle mechanism and hardware
- Feeder range 125A – 800A

**Product Description**
The Model 90 retrofit buckets are designed to fit into Model 90 MCCs. Unit widths are normally 15’ or 20” wide, and 12” tall with 6” increments.

The original Model came with a variety of CB and starters from ITE, C-H, and Siemens 3TF & 3UA Overload. Today, we provide you with Siemens breakers and starters.

**Add-on MCCs:**
A new Tiastar MCC can be spliced to existing line up with special kits.

**Timeline:**
1986-1997

**Original Mfg:**
Siemens

**MCC #:**
30-001-XXXX XXXXX

**MCC Plant:**
Raleigh
Replacement Capabilities

**Starter Units**
Replacement starters are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens Starter
  - Size 1-6
- CT, CPT, PT
- CB and fusible
- Pilot Devices
- Relays and Fuses

**Feeder Units**
Replacement feeders are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens breakers and fusible switches
- Handle mechanism and hardware
- Feeder range
  - 125A – 800A

**Product Description**
The Model 95 was originally manufactured in Raleigh, NC. Model 95 served as a style template for many old MCC buckets since installation procedures and dimensions stayed the same. Unit widths are normally 15” or 20” wide, and 12” tall with 6” increments.

The original Model came with a variety of CB and starters from ITE, C-H and Siemens 3TF & 3UA Overload. Today, we provide you with Siemens breakers and starters.

**Add-on MCCs:**
A new Tiastar MCC can be spliced to existing line up with special kits.

**Timeline:**
1995-1997

**Original Mfg:** Siemens

**MCC #:** 09-001-XXXX-XXXXX-XXX

**MCC Plant:** Raleigh
MCC Aftermarket Guide

Identification

**SIEMENS**

**Model 95+**

Replacement Capabilities

**Starter Units**

Replacement starters are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens Starter Size 1-6
- CT, CPT, PT
- CB and Fusible
- Pilot Devices, VFD, Softstarts and ASI
- Relays, Fuses
- UL Labeled

**Feeder Units**

Replacement feeders are available for all plug-in and Non plug-in units. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens breakers and fusible switches
- Handle mechanism and hardware
- Feeder range 125A – 800A
- UL Labeled

**Product Description**

The Model 95+ retrofit buckets are designed to fit into Model 95+ MCCs. This upgrade from Model 95 included changes in handles, color, pilot devices, and stabs. Unit widths are normally 15” or 20” wide, and 12” tall with 6” increments.

Today, we provide you with Siemens breakers and starters.

**Add-on MCCs:**

A new TIASTAR MCC can be directly spliced to existing line-up.

**TimeLine:** 1996 to 2001

**Original Mfg:** Siemens

**MCC #:**

- 95BFXXX### ###
- 95BSXXX### ###
- 95BBXXX### ###
- XX### (ie. WU760)

**MCC Plant:** West Chicago
Product Description

Introduced in 2002, Siemens TIASTAR is an advanced SISystem™ (Smart Integrated Solution System) that provides you with seamless control of your physical plant by fusing ASI, PROFIBUS®, and ACCESS™ — as well as most legacy systems — into a robust, fully integrated management system. Units widths are normally 15” or 20” wide, and 12” tall with 6” increments. Today, we provide you with Siemens breakers and starters.

Replacement Capabilities

**Starter Units**

Replacement starter units are available for all plug-in and Non plug-in units MCC designs. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens Starter Size 1-6
- CT, CPT, PT & Pilot Devices
- CB and Fusible
- Relays, Fuses, VFD and Softstarts
- Soft Starts,
  SIMOCODE, ASI, PROFIBUS
- UL Labeled

**Feeder Units**

Replacement feeder units are available for all plug-in and Non plug-in units MCC designs. A complete unit for adding to an existing MCC includes a unit door, divider pans and all necessary mounting hardware. Features of the replacement units include:

- Siemens feeder breakers and fusible switches
- Handle mechanism and hardware
- Feeder range 125A – 800A
- UL Labeled

**Timeline:**

- 2002 – Current

**Original Mfg:** Siemens

**MCC#**:

- 89BFXX### ###
- 89BSXX### ###
- 89BBXX### ###
- WX### (ie. WU760)

**MCC Plants:** West Chicago
MCC Aftermarket Guide

Decision Model

The decision model's purpose is to help make the purchasing process easier for MCC products. The following questions will develop a clear direction for the correct product fit and function.

### MCC Application Questions

1. Is space at a premium in the factory? If "yes" then the aftermarket bucket program is a good choice because additional sections will not be necessary for the process changes and additions.

2. Is this a critical load situation, or a process industries application (continuous or batch)? If "yes" then the aftermarket bucket program is a good choice because of minimized downtime.

3. Are there any other reasons this factory cannot afford to go down for a length of time? If "yes" then the aftermarket bucket program is a good choice due to quicker installation time.

4. Is this a down situation, and does the bucket need to be quick shipped? If "yes" then the aftermarket bucket program is a good choice because, depending on the factory having all the parts, they can ship aftermarket buckets in shorter lead time than complete MCCs.

5. Is this an addition to an existing MCC that has extra spaces? If "yes" then the aftermarket bucket program is a good choice since the whole reason for extra spaces is for future add-ons.

6. Is this for preventative maintenance? If "yes" then the aftermarket bucket program is a good choice.

7. What is the duty cycle of the motor? Is the motor being used once every 24 hours, or 50% of the workday, and what is the exact time frame for that duty cycle? *Installations at night and on weekends will be more costly than in the middle of the day.

8. Something for consideration is how long it will take to replace an existing MCC, and how many hours it takes to add extra sections to an existing MCC structure? *Example contractors typically charge $60 - $150 an hour.

Note: 9600 units are available in fixed mounted configurations only.

Evaluate the existing equipment in this section so that there are enough facts to quote new installation or new MCC section vs. aftermarket bucket solutions.

<table>
<thead>
<tr>
<th>Existing Equipment</th>
<th>Splice Kit Compatible</th>
<th>Years In The Field</th>
<th>What Unused Space Is Available (6&quot;, 12&quot;, 18&quot;, etc.)</th>
<th>Feeder Buckets Needed</th>
<th>Starter Buckets Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siemens TIASTAR</td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furnas System89</td>
<td>yes</td>
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<td></td>
</tr>
<tr>
<td>Siemens Model 95 Plus</td>
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<td></td>
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<td></td>
<td></td>
</tr>
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<tr>
<td>Siemens Model 90</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Siemens-Allis/Siemens Marq21</td>
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<td></td>
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<tr>
<td>Allis-Chalmers Mark2</td>
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<td>ITE Gould 5600</td>
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<tr>
<td>Furnas Class 89</td>
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</tr>
</tbody>
</table>
MCC Aftermarket Guide

Down Time and Installation Calculation

It is imperative to quote the job from at least two perspectives. One quote could be for a new installation while another could be for a new section, and the last one should be focused on aftermarket buckets.

A. Ask for specification.
B. Utilize bucket checklist.
C. Contact MCC pricing support.

The next two charts are the necessary calculations for down time and install time of MCC products. Please consult a contractor for cost per hour for installation. Some basic guidelines are on the next page for the product lead times. The real value creation for aftermarket buckets comes with these two charts. Once developed, the two charts below will show significant cost savings with the aftermarket bucket purchasing choice.

### Down Time Calculation

<table>
<thead>
<tr>
<th></th>
<th>New MCC</th>
<th>Cost of Add On Section</th>
<th>Aftermarket Bucket</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Cost per Hour) x (Number of Hours)</td>
<td>= ( ) x ( ) =</td>
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<tr>
<td>(Cost per Hour) x (Number of Hours)</td>
<td>= ( ) x ( ) =</td>
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<td>(Cost per Hour) x (Number of Hours)</td>
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</table>

### Installation Calculation

<table>
<thead>
<tr>
<th></th>
<th>New MCC</th>
<th>Cost of Add On Section</th>
<th>Aftermarket Bucket</th>
</tr>
</thead>
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<tr>
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<td>= ( ) x ( ) =</td>
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<tr>
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<tr>
<td>(Cost per Hour) x (Number of Hours)</td>
<td>= ( ) x ( ) =</td>
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</tbody>
</table>

*Example contractors typically charge $60 - $150 an hour.
This chart is the cost comparison for new MCC’s, add on sections and aftermarket buckets. Determine a cost for the following New MCC, Add On Section and Aftermarket Bucket. After filling in cost, fill in Total # 1 and Total # 2 from the page before so all brackets are not empty. The grand total should show a distinct advantage for aftermarket buckets. Proceed to the ordering check sheet on the last page.

### Cost Comparison

<table>
<thead>
<tr>
<th></th>
<th>New MCC</th>
<th>Add On Section</th>
<th>Aftermarket Bucket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Cost</td>
<td>(Cost)</td>
<td>(Cost)</td>
<td>(Cost)</td>
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<td></td>
<td>+</td>
<td>+</td>
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<tr>
<td></td>
<td>( Total # 1) + ( Total # 1) + ( Total # 1)</td>
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<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>( Total # 2) + ( Total # 2) + ( Total # 2)</td>
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</tbody>
</table>

### Product Lead time

Here is a typical product lead-time example. Actual lead-time is subject to MCC components available. Consult factory for exact lead-time or expedite request.
Here is a typical installation time for MCC products example. Actual installation time is subject to change from contractor to contractor. Please consult contractor for exact time for installation.

**Installation Time**

- **Aftermarket Unit**: 2 – 4 hrs
- **Add on Section**: 8 – 16 hrs
- **MCC**: 40 hrs

Installation procedures are itemized in the next three statements. **Always de-energize MCC before any installation.**

1) Installing Bucket: **De-energize the MCC**, Run Conduit, Run Power Connections and Run Control Connections.

2) Installing Section: **De-energize the MCC**, Set Structure in Place, Splice Bus Bars, Run Conduit, Run Power Connections and Run Control Connections.

3) Installing MCC: **De-energize the MCC**, Disconnect Power, Disconnect Control, Rip-out Existing MCC, Set Structure in Place, Re-run Power and Control or Reconnect Power and Control.

**Note**: See Tiastar Motor Control Center Installation and Maintenance Instructions for Units Only for additional information.
MCC Aftermarket Guide
Aftermarket Bucket Order Checklist and Options

Existing MCC # ______________________
MCC Model ______________________

Complete Bucket Specifications (see options below)

- System Voltage
- Unit Type
- Starter Type
- Hp or Motor FLA
- NEMA Size
- Wiring Diagrams
- Overload Relay
- Disconnect Type
- Control Source/Voltage
- Quantity and Type of Pilot Devices

Standard Options (shunt trip, surge suppression, auxiliary contacts, etc.)

Siemens Aftermarket Buckets will be built to Siemens Standards unless a wiring diagram is supplied.

Contact Siemens West Chicago for retrofit units and compatibility.

① If starter type, then proceed with NEMA Size, Hp, and Type of Overload.
② For quicker response time, please provide sufficient wiring diagrams.

Options

- System Voltage: 230V, 480V, 575V
- Unit Type: Starter, Feeder
- Starter Type: FVNR, FVR, 2S1W-CT, 2S1W-VT, 2S2W-CT, 2S2W-VT, RVSS, RVAT, VFD
- Hp or Motor Full Load Amps: 0.5 - 400 Hp
- NEMA Size: 1-6
- Wiring Diagrams: Yes/No
- Overload Relays: ESP Solid state, Simocode, Bi-Metal Ambient Compensated,
- Disconnect Type: Circuit Breaker, Thermal Magnetic, Fusible Control
- Source / Voltage: CPT, CPT.Ext. VA, Separate Source

Types of Pilot Devices

- Selector Switch: 2P/3P, 4P
- Pilot Lights: Standard, PTT