Instruction Booklet **IB157001EN** Effective May 2015

Fixed capacitor banks (Unipump, Unipak, and Unipak detuned filter) low voltage (600 V and below), NEMA 1 (indoor) and NEMA 3R (outdoor) enclosed versions

Contents

Powering Business Worldwide

Introduction

Manual organization

This manual is intended to serve as a general guide for the installation, operation, and maintenance of Eaton's fixed power factor capacitor banks. These instructions must be read carefully before unpacking, installation, operation, and maintenance of this bank.

Product overview

Eaton's Unipak, Unipump, and Unipak filter series fixed power factor capacitor banks are intended for correction of (displacement) power factor at and upstream of the connection point of the capacitor bank. Eaton's Unipak detuned filters will also avoid resonance, if applied correctly, in addition to providing reactive power (VARs) for displacement power factor correction.

Safety precautions

⚠ WARNING

ELECTRICAL SHOCK HAZARD. IMPROPER INSTALLATION COULD CAUSE DEATH, INJURY AND EQUIPMENT DAMAGE. FOLLOW ALL WARNINGS AND CAUTIONS. COMPLETELY READ AND UNDERSTAND THE INFORMATION IN THIS INSTRUCTION MANUAL BEFORE ATTEMPTING TO INSTALL OR OPERATE THIS EQUIPMENT.

IMPROPER WIRING COULD CAUSE DEATH, INJURY, AND/OR EQUIPMENT DAMAGE. ONLY LICENSED/QUALIFIED ELECTRICIANS WHO ARE TRAINED IN THE INSTALLATION AND SERVICE OF ELECTRICAL SERVICES ARE TO INSTALL AND SERVICE THIS EQUIPMENT. HAZARDOUS VOLTAGES ARE PRESENT INSIDE THE EQUIPMENT DURING NORMAL OPERATION. FOLLOW ALL SAFE WORK PRACTICES TO AVOID ELECTRICAL SHOCK.

ARC FLASH DURING INSTALLATION COULD CAUSE INJURY. USE APPROPRIATE SAFETY PRECAUTIONS AND EQUIPMENT FOR ARC FLASH PROTECTION.

These units should be installed, operated, and maintained by qualified personnel as defined by OSHA 29CFR1910 subpart 5 and by a competent person familiar with electrical installations rated 600 V.

These instructions do not cover all details, variations, or combinations of the equipment, its installation, checkout, and safe operation. Care must be exercised to comply with local, state, and national regulations, as well as safety practices for this class of equipment.

These instructions are not a substitute for training and operating procedures for this type of equipment.

Improper handling may cause electrical shock, fire, and incorrect operation including reduction in useful life of the capacitor bank.

Consult the capacitor cell resin Material Safety Data Sheet for specific handling, environmental, health, and safety information prior to use.

Capacitors are electrical energy storage devices and can store electrical energy indefinitely unless properly discharged. Each capacitor is fitted with a discharge resistor designed to reduce the residual voltage in the capacitor to 50 V or less after a minute.

Follow all caution and warning nameplates before attempting to install, operate, or service the capacitor bank.

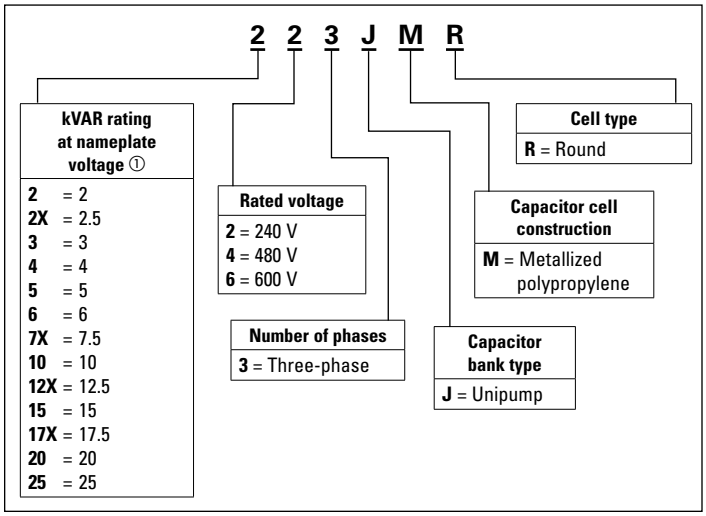
Before handling the capacitor, disconnect all and any electrical power supply from the circuit into which the capacitor bank is being installed. Extreme caution must be taken to prevent accidental contact with the terminals of the capacitor during installation, operation, and service of this equipment. Accidental contact with the capacitor, if not properly discharged, can result in personal injury or death.

The customer is responsible for determining the correct application and suitability of the purchased unit for their application and for installing, connecting, operating, and maintaining the capacitor in accordance with this manual and within the specifications of the capacitor.

These instructions may not address all or specific requirements of national and/or local codes and regulations, nor to any site or customer-specific requirements that may be applicable to the installation of this capacitor bank. Following these instructions, even in its entirety, would not automatically ensure compliance with codes or regulation requirements.

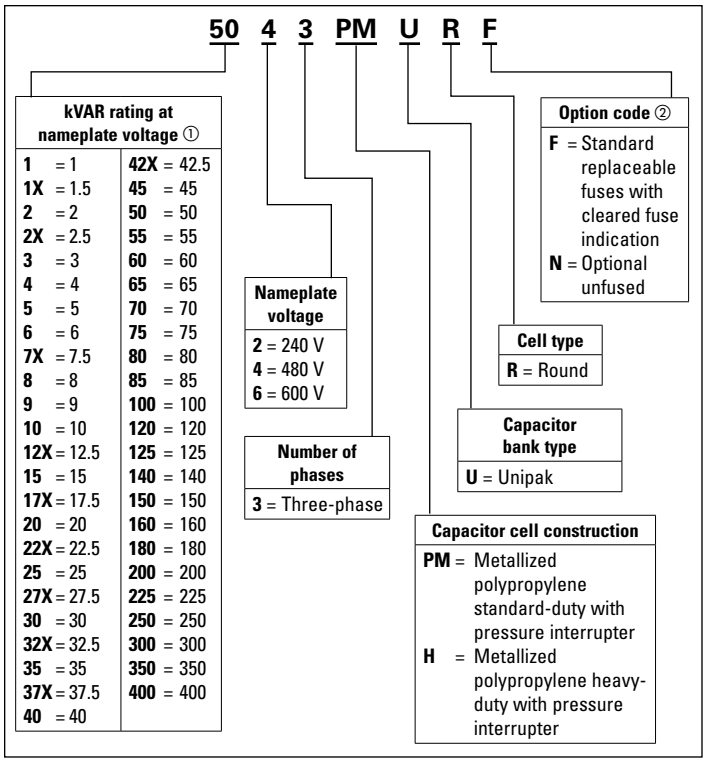
Catalog numbering systems

Table 1. Unipump catalog numbering system



① Ratings are based on 60 Hz operation.

Table 2. Unipak catalog numbering system



① Ratings are based on 60 Hz operation.

② Standard units have replaceable fuses with cleared fuse indication. Unfused units are intended for use with upstream overcurrent protection, as in the case of motor-connected capacitors.

Receiving

Check the capacitor bank when receiving to verify that there is no shipment or handling damage during transit. Minor damage such as scratches or small dents to the outer enclosure will not inhibit the capacitor's performance, but units with large dents or leaks should not be installed. In case of major damage, file a claim against the carrier and also notify the nearest Eaton sales office for instructions regarding the disposition of the capacitor bank.

Check the capacitor's nameplate to verify that the nameplate voltage rating matches the system and the applied voltage.

Installation

Install capacitor bank in accordance with all applicable local electrical standards (NEC® NFPA 70, etc.). Failure to properly install capacitor bank in accordance with local electrical safety standards may cause electrical shock, fire, and incorrect operation including reduction in useful life of the capacitor bank.

Preparation for installation

The capacitor bank storage temperature range is –40 °C to +55 °C, and the operating temperature range is –40 °C to +46 °C. For optimal equipment life, prepare to install the capacitor bank in an area free of external heat sources, such as direct sunlight.

For optimal equipment life, a harmonic resonance evaluation should be performed prior to installation, particularly if an unfiltered capacitor bank is used.

Installation locations

Capacitor banks should be located in a well-ventilated area with a minimum of 3 inches of clearance around all sides and top of the enclosure to ensure good air circulation.

Equipment rated for indoor use should be installed indoors in a dry environment. Outdoor rated units shall be shielded from the radiant heat of direct sunlight by a canopy or a sunshade.

Both for indoor and outdoor installations, the maximum ambient temperature should not exceed 40 °C (104 °F) and the annual average temperature should not exceed 35 °C (95 °F). Higher location ambient temperatures will cause capacitor failure and reduction in useful life of the capacitor, including instantaneous failures.

Installation procedures

Mechanical installation

To open the capacitor bank enclosure, remove the screws holding the top cover. Grasp the front cover and tilt it forward and down to separate it from the base unit.

Inspect the internal capacitor cells to verify that no physical damage has occurred during shipment or handling.

Inspect and ensure that the power conductors are secured and tight in their terminals by applying a gentle tug on the wires on both ends.

Inspect the discharge resistors for any marks of damage or cracks and that they are seated and intact in the terminal.

If any signs of loose or cracked discharge resistor is noticed, stop and do not proceed with the installation and immediately notify your nearest Eaton sales person for further instructions.

Mechanically secure the capacitor bank to either the wall or the floor using anchor fasteners.

Electrical installation

In accordance with NEC® 460, conductors should be sized for at least 135% of the nameplate full load amps of the capacitor unit. NEC 460 also requires that the power factor capacitors must be provided with a disconnecting means and overcurrent protection.

When connecting the capacitor bank on the load side of a motor starter overload relay, it is not necessary to provide additional disconnecting or overcurrent protection devices.

Fuses should be rated at least 165% of rated capacitor current. A circuit breaker should be rated at least 135% of the rated capacitor current.

Eaton requires that all customer feeder supply wiring be 90 °C rated stranded copper wire sized and used at its 75 °C ampacity rating.

Observe all torque requirements for electrical connections. When making connection using crimp terminals, be sure to use the crimping tool recommended by the terminal manufacturer. Wire and cable connections having improper torque may cause loosening of the electrical connections resulting in localized heating or fire. The unit should be cleaned of any debris, metal shavings, insulation, and conductor strippings before being put into service.

An appropriately sized ground conductor should always be connected to the ground terminal. Lack of ground connection or improper grounding may result in electric shock or fire or inability of ground fault protection to operate.

Conduit entry location should be selected so as to allow the straightest connection to the provided mechanical lugs without compromising the conductors' bending radii. Connect the capacitor bank by securing power conductors into the provided mechanical lugs and tighten to the torque provided in **Table 3**. Connect ground conductor into grounding lug and secure by tightening per torque requirements below.

Conduit sizes, tray sizes, and cable ampacity must be according to the National Electrical Code or applicable electrical codes in the customer's area.

Proceed to connect the feeder cables to the disconnecting switch/ circuit breaker. This operation must be performed with the equipment completely de-energized.

Table 3. Recommended torque

Torque based on conductor size		Torque based on bolt size	
AWG	**Pound-inch**	**Inches**	**Pound-inch**
30–10	80	1/8	45
8	80	5/32	100
6–4	165	3/16	120
3	275	7/32	150
2	275	1/4	200
1	275	5/16	275
1/0–2/0	385	3/8	375
3/0–4/0	500	1/2	500
250–350	650	9/16	600
400	825		
500	825		
600–750	1000		

Note: Follow the lower torque value between the conductor size and the bolt size.

Post installation evaluation

To ensure proper installation and maintain warranty.

Electrical test

Only a qualified electrician should perform the following test, making sure appropriate PPE and arc flash boundaries are followed and met.

Perform insulation-resistance tests with all three-phase terminal(s) shorted to case for 30 seconds. Test voltage and minimum resistance shall be as follows:

Maximum rating of equipment in volts	Minimum test voltage, DC in volts	Recommended minimum insulation resistance in mega-ohms
250–500	500	25
600	1000	100

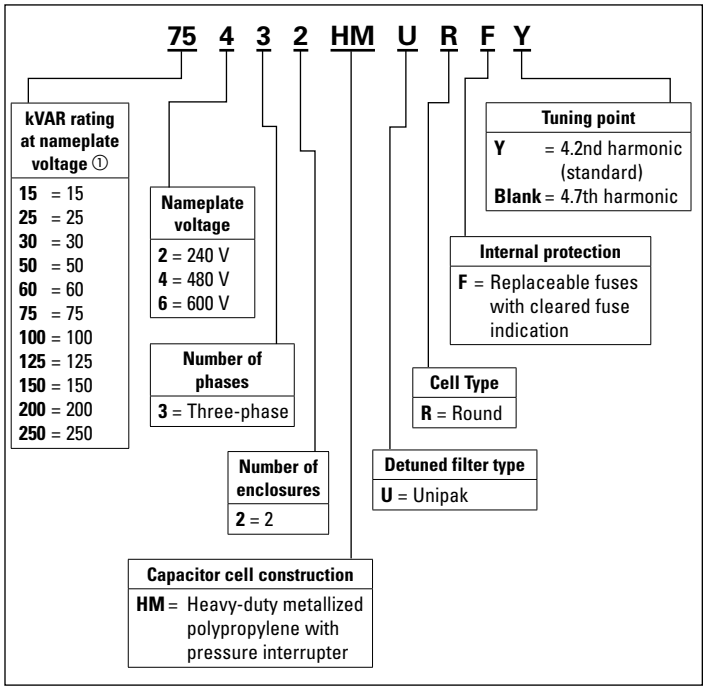
If the insulation resistance values are less than the recommended minimum, stop and do not proceed to energize the unit. Contact Eaton for troubleshooting.

Installation instructions for Unipak filter

All instructions and requirements in this manual also apply to Unipak detuned filter. Only additional and specific requirements for Unipak filter are noted below.

Unipak detuned filter is supplied as a two-part unit. One part is the Unipak (capacitor enclosure) and the other part is the reactor enclosure.

Table 4. Unipak detuned filter catalog numbering system



① Units are designed for 60 Hz operation. Consult factory for other frequencies.

Mechanical installation instructions for Unipak filter

Reactor enclosure shall be positioned and mechanically secured next to the capacitor enclosure with a minimum 9-inch separation (minimum 12-inch separation preferred) between the two enclosures to allow for ventilation and interconnecting conductor bending radii.

Electrical installation instructions for Unipak filter

Customer conductors will be landed in the reactor enclosure, and the capacitor and reactor enclosure are to be field interconnected by the customer using the same size and type cable as the supply/feeder conductor. A standard interconnection drawing is shown in **Figure 1**. Mechanical lugs are provided in both enclosures for interconnection of the two parts.

Electrical test instructions for Unipak filter

Only a qualified electrician should perform the following test, making sure appropriate PPE and arc flash boundaries are followed and met.

Perform an insulation-resistance test at the reactor with all three incoming phase conductors shorted to ground for 30 seconds. Ensure the two 1 amp control fuses are isolated/disconnected from the test path. Test voltage and minimum resistance shall be as follows:

Maximum rating of equipment in volts	Minimum test voltage, DC in volts	Recommended minimum insulation resistance in mega-ohms
250–500	500	25
600	1000	100

If the insulation resistance values are less than the recommended minimum, stop and do not proceed to energize the unit. Contact Eaton for troubleshooting assistance.

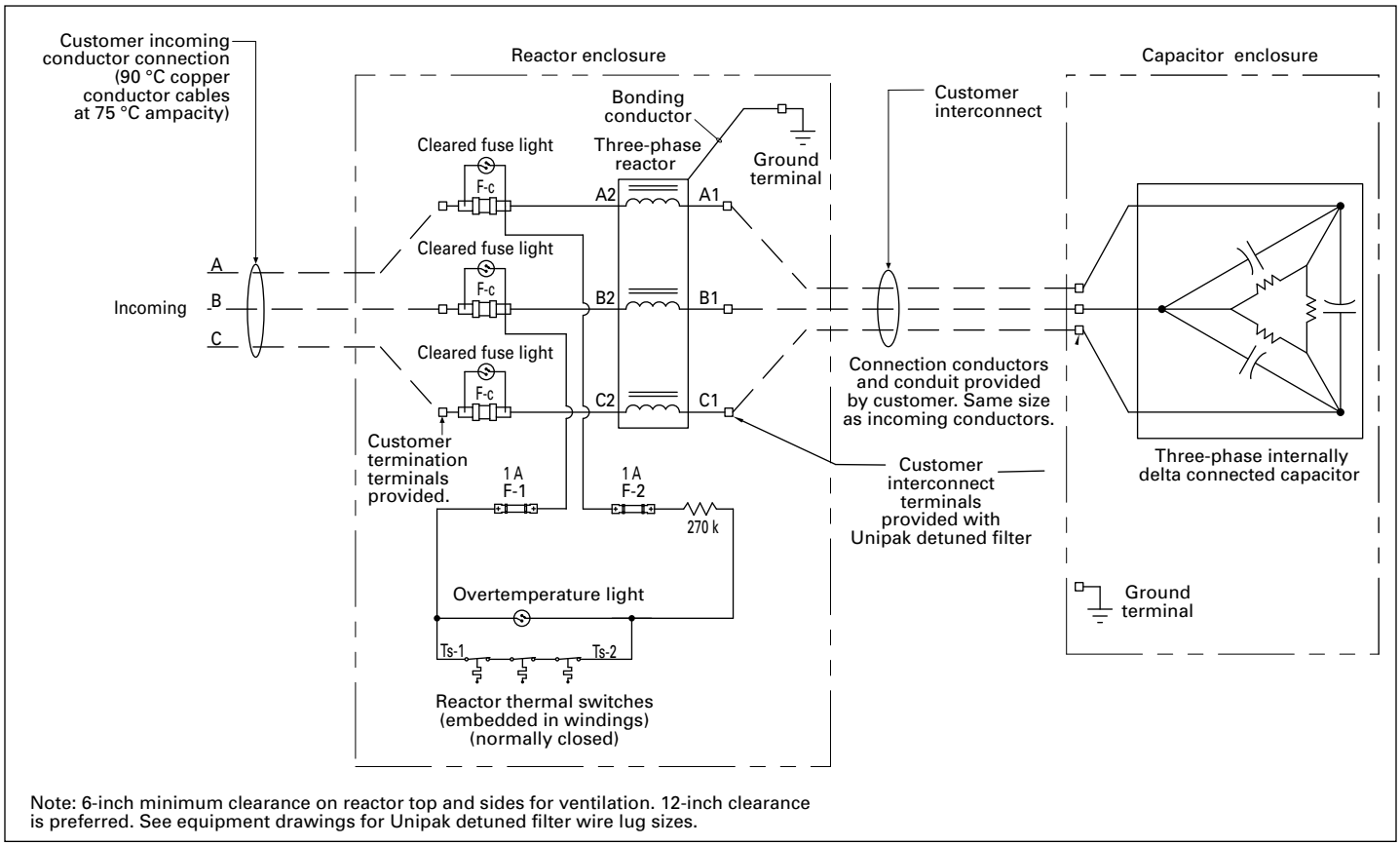
Table 5. Unipump wire sizes

240 Vac		480 Vac		600 Vac	
kVAR	Cable size (AWG)	kVAR	Cable size (AWG)	kVAR	Cable size (AWG)
2	14	2	14	5	14
2.5	14	2.5	14	7.5	14
3	14	3	14	10	14
4	14	4	14	12.5	12
5	12	5	14	15	12
6	12	6	14	17.5	8
7.5	12	7.5	14	20	8
		10	14		
		12.5	12		
		15	12		
		17.5	8		
		20	8		
		25	8		

Note: Ratings based on 60 Hz operation.

Table 6. Unipak capacitor bank lug sizes

240 V			480 V			600 V		
kVAR	Phase wire lug size (AWG)	Ground wire lug size (AWG)	kVAR	Phase wire lug size (AWG)	Ground wire lug size (AWG)	kVAR	Phase wire lug size (AWG)	Ground wire lug size (AWG)
1	10–18	2–14	1	10–18	2–14	5	10–18	2–14
1.5	10–18	2–14	2	10–18	2–14	7.5	10–18	2–14
2	10–18	2–14	2.5	10–18	2–14	10	10–18	2–14
2.5	10–18	2–14	3	10–18	2–14	12.5	10–18	2–14
3	10–18	2–14	4	10–18	2–14	15	2–14	2–14
4	10–18	2–14	5	10–18	2–14	17.5	2–14	2–14
5	2–14	2–14	6	10–18	2–14	20	2–14	2–14
6	2–14	2–14	7.5	10–18	2–14	22.5	2–14	2–14
7.5	2–14	2–14	8	10–18	2–14	25	2–14	2–14
8	2–14	2–14	9	10–18	2–14	27.5	2–14	2–14
10	2–14	2–14	10	10–18	2–14	30	2–14	2–14
12.5	2–14	2–14	12.5	2–14	2–14	32.5	2–14	2–14
15	2–14	2–14	15	2–14	2–14	35	2–14	2–14
17.5	2–14	2–14	17.5	2–14	2–14	37.5	2–14	2–14
20	2–14	2–14	20	2–14	2–14	40	2–14	2–14
22.5	2–14	2–14	22.5	2–14	2–14	42.5	2–14	2–14
25	2–14	2–14	25	2–14	2–14	45	2–14	2–14
27.5	2–14	2–14	27.5	2–14	2–14	50	2–14	2–14
30	14–2/0	2–14	30	2–14	2–14	55	2–14	2–14
32.5	14–2/0	2–14	32.5	2–14	2–14	60	2–14	2–14
35	14–2/0	2–14	35	2–14	2–14	65	14–2/0	2–14
37.5	6–250 kcmil	2–14	37.5	2–14	2–14	70	14–2/0	2–14
40	6–250 kcmil	2–14	40	2–14	2–14	75	14–2/0	2–14
42.5	6–250 kcmil	2–14	42.5	2–14	2–14	80	14–2/0	2–14
45	6–250 kcmil	2–14	45	2–14	2–14	85	14–2/0	2–14
50	6–250 kcmil	2–14	50	2–14	2–14	90	14–2/0	2–14
60	6–250 kcmil	2–14	55	14–2/0	2–14	100	6–250 kcmil	2–14
70	4–500 kcmil	14–2/0	60	14–2/0	2–14	120	4–500 kcmil	14–2/0
75	4–500 kcmil	14–2/0	65	14–2/0	2–14	125	4–500 kcmil	14–2/0
80	4–500 kcmil	14–2/0	70	14–2/0	2–14	140	4–500 kcmil	14–2/0
90	4–500 kcmil	14–2/0	75	14–2/0	2–14	150	4–500 kcmil	14–2/0
100	4–500 kcmil	14–2/0	80	6–250 kcmil	2–14	160	4–500 kcmil	14–2/0
120	4–500 kcmil	14–2/0	85	6–250 kcmil	2–14	180	4–500 kcmil	14–2/0
140	4–500 kcmil	14–2/0	90	6–250 kcmil	2–14	200	4–500 kcmil	14–2/0
150	4–500 kcmil	14–2/0	100	6–250 kcmil	2–14	225	4–500 kcmil	14–2/0
160	4–500 kcmil	14–2/0	120	4–500 kcmil	2–14	250	4–500 kcmil	14–2/0
180	4–500 kcmil	14–2/0	125	4–500 kcmil	14–2/0	300	4–500 kcmil	14–2/0
200	4–500 kcmil	14–2/0	140	4–500 kcmil	14–2/0	350	4–500 kcmil	14–2/0
			150	4–500 kcmil	14–2/0	400	4–500 kcmil	14–2/0
			160	4–500 kcmil	14–2/0			
			180	4–500 kcmil	14–2/0			
			200	4–500 kcmil	14–2/0			
			225	4–500 kcmil	14–2/0			
			250	4–500 kcmil	14–2/0			
			300	4–500 kcmil	14–2/0			
			350	4–500 kcmil	14–2/0			
			400	4–500 kcmil	14–2/0			



Note: 6-inch minimum clearance on reactor top and sides for ventilation. 12-inch clearance is preferred. See equipment drawings for Unipak detuned filter wire lug sizes.

Figure 1. Connection schematic

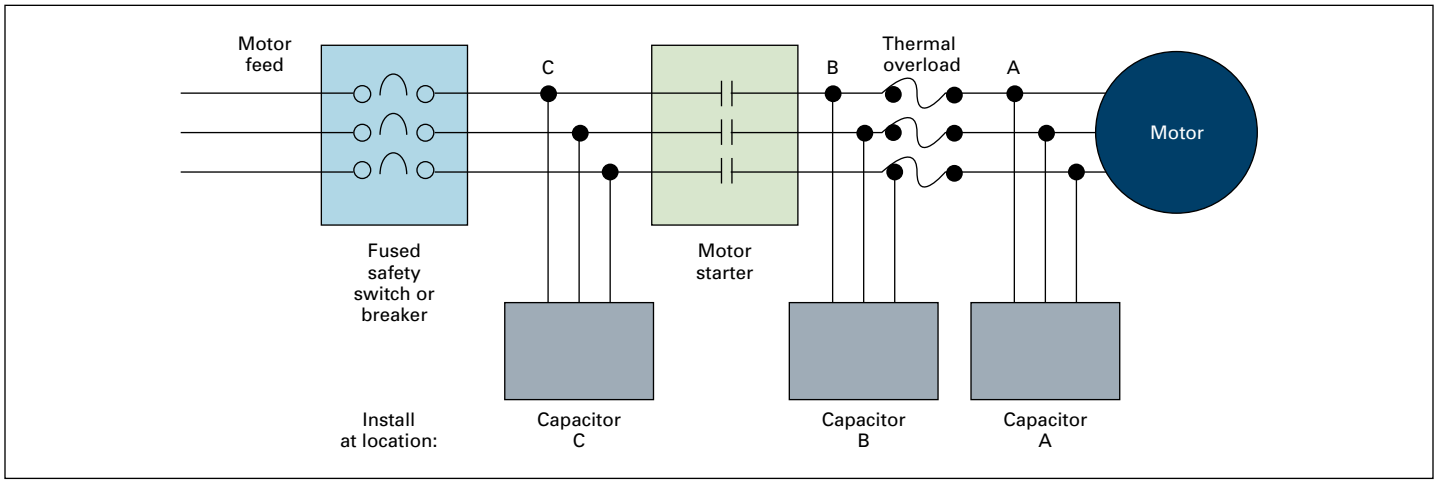


Figure 2. Capacitor connection locations

Electrical connections

Capacitors should be ideally connected to as close to the inductive load as possible for optimum power factor correction.

At load

Three options exist for installing capacitors in the motor circuit. See **Figure 2** to determine which option is best for each motor.

Location A—motor side of overload relay

- New motor installations in which overloads can be sized in accordance with reduced current draw required.

Location B—line side of starter

- Existing motors when overload rating surpasses code

Location C—line side of starter

- Motors that are jogged, plugged, reversed
- Multi-speed motors
- Starters with open transition
- Reduced voltage starters

At the service feeder

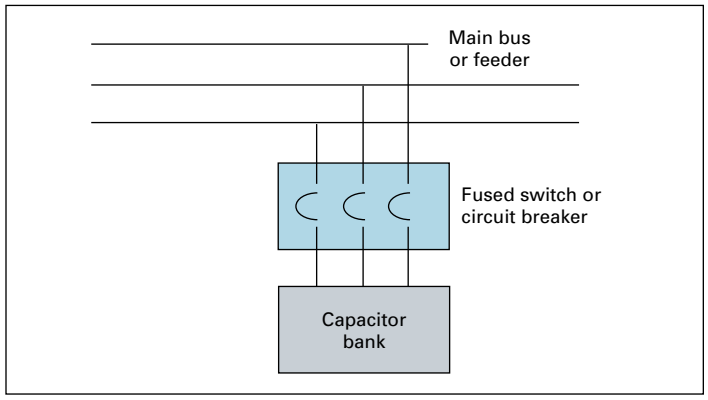


Figure 3. Service entrance schematic

When correcting entire plant loads, capacitor banks can be installed at the service entrance, if load conditions and transformer size permits. If the amount of correction is too large, some capacitors can be installed at individual motors or branch circuits.

If the amount of connected capacitance is greater than required, a leading power factor may result during light load conditions. A system evaluation may be required to determine if the leading power factor and associated voltage rise during light load conditions are acceptable.

When capacitors are connected to the bus, feeder, motor control center, or switchboard, a disconnect and overcurrent protection must be provided.

Startup and commissioning

Connect power to the capacitor bank (energize through upstream switch). Using an ammeter, measure capacitor current in each phase and verify that it is consistent (±10%) with the rated current (see **Table 7**). Using a voltmeter, measure phase-to-phase voltage and verify that it is consistent (±10%) with the voltage rating stated on the nameplate.

The full load ampacity of the capacitor is calculated as:

Full Load Amps = Rated kVAR x 1000 / (Sq-rt 3 x Rated Voltage)

It is recommended that both the voltage and the current be measured again after approximately 24 hours of operation.

During normal operation, cleared fuse indicator lights will NOT be illuminated. An illuminated lamp indicates that a fuse has cleared (opened).

Alternate system voltages and frequencies

Power factor capacitors may be applied to power systems with actual voltage equal to or less than the rated capacitor voltage but the effective kVAR will be reduced. Unfiltered capacitors may also be used on either 50 Hz or 60 Hz systems but again with de-rating. Contact factory for availability of 50 Hz filtered capacitor banks, as the reactors are frequency specific. Never connect capacitors to a system with a higher voltage than the capacitor rated voltage.

Actual kVAR = Rated kVAR x (Applied Voltage / Rated Voltage)^2 x (Applied Frequency / Rated Frequency)

Table 7. Rated current values in amperes

kVAR	240 Vac	480 Vac	600 Vac
1	2.4	—	—
1.5	3.6	1.8	—
2	4.8	2.4	—
2.5	6	3	—
3	7.2	3.6	—
4	9.6	4.8	—
5	12	6	4.9
6	14.4	7.2	—
7.5	18	9	7.4
8	19.2	9.6	—
9	—	10.8	—
10	24	12	9.8
12.5	30	15	12
15	36	18	15
17.5	42	21	17
20	48	24	20
22.5	54	27	22
25	60	30	25
27.5	—	33	27
30	72	36	29
32.5	78	39	32
35	84	42	34
37.5	90	45	37
40	96	48	39
42.5	102	51	42
45	108	54	44
50	120	60	49
55	—	66	54
60	144	72	59
65	—	78	64
70	168	84	69
75	180	90	74
80	192	96	78
85	—	102	83
90	216	108	88
100	240	120	98
120	288	144	118
125	—	150	123
140	336	168	137
150	360	180	147
160	384	192	157
180	432	216	176
200	480	240	196
225	—	270	221
250	—	300	245
300	—	360	294
350	—	420	343
400	—	480	392

Operating features

During normal operation, cleared fuse indicator lamps will not illuminate. When a fuse clears on an energized unit, the associated lamp will glow.

Unipak detuned filters are equipped with a self-resetting reactor over-temperature indicator lamp. Thermal overload indicating light activates when reactor temperature reaches 180 °C.

Reactor cabinet thermal overload and cleared fuse indicator lamps

Maintenance

The following maintenance items require the capacitor to be energized and should be performed only by trained and qualified personnel.

⚠ WARNING

ONLY QUALIFIED ELECTRICIANS SHOULD HANDLE THE INSTALLATION AND MAINTENANCE OF THIS CAPACITOR BANK; OTHERWISE, ELECTRIC SHOCK, ARC FLASH, OR FIRE MAY OCCUR.

Retorque

Before handling the capacitor, disconnect all and any electrical power supply from the circuit into which the capacitor bank is being installed. Extreme caution must be taken to prevent accidental contact with the terminals of the capacitor during installation, operation, and service of this equipment. Accidental contact with the capacitor, if not properly discharged, can result in personal injury or death.

After five minutes of removing all power from the capacitor bank, the capacitors inside the enclosure can be accessed by shorting all terminals and then grounding the leads using an insulated shorting jumper wire. Using a DC voltmeter, confirm that the capacitor has entirely discharged as evidenced by zero voltage present between the capacitor terminals prior to performing installation, operation, or service of the capacitor bank. Accidental contact with energized parts may cause personal injury or death.

Generally, power factor capacitor banks are considered to be maintenance free. Over time, the capacitance value may decrease, especially when self-healing occurs.

The following inspections should be made during regular maintenance intervals, or semi-annually.

- Periodically inspect the individual capacitor cells for bulging. If the top (terminal area) is bulging, then it is likely that the pressure switch has operated and the capacitor is no longer operational. For proper performance, any failed capacitor cells should only be replaced with direct factory replacements
- To verify the general condition of the capacitors, take a current measurement in each capacitor phase. A discrepancy in current between phases may indicate a failed capacitor cell. For proper performance, any failed capacitor cells should only be replaced with direct factory replacements
- Remove any dust and dirt that may have accumulated within your capacitor cabinet. Check to ensure that the enclosure is properly and adequately ventilated
- Routinely check to see that wire terminations are securely fastened to capacitor terminals. If required, torque the cage clamp style capacitor cell terminals to 22 in-lb using a calibrated torque wrench or screwdriver and the recommended Phillips head Ph1 or Pozidriv Pz2 bit
- Routinely check torque on all terminations. Verify they are in compliance with the torque chart (see **Table 3**)

Measure the voltage between each of the phases and verify it is within ±10% of the voltage rating stated on the nameplate. Measure the current in each capacitor phase and verify that it is within ±10% of current rating stated on the nameplate.

Troubleshooting

Symptom	Problem	Solution
Cleared fuse indicator lamp lit	Cleared fuse	Disconnect power supply to the capacitor bank. Wait at least five minutes before opening the capacitor bank cover. Locate the blown fuse and its associated capacitor cell(s). Inspect the cells for bulging or other indication of failure. Replace the cleared fuse and failed capacitors. Contact factory for additional troubleshooting assistance.
Capacitor phase currents are unbalanced (greater than 20%)	Cleared fuses or failed capacitor cells	Identify cleared fuse and/or failed capacitor cells (bulged top) and replace using exact replacement. Contact factory for additional troubleshooting assistance.
Capacitor bulged or not reading capacitance / draws zero current	Customer application	Check the application for overvoltage, ambient temperature, harmonics, and/or transients. Contact factory for additional troubleshooting assistance.
Cleared fuses	Customer application	Check the application. Most common causes for fuses clearing is back-to-back transient switching, very high ambient temperatures, excessive harmonic or overcurrent, and/or voltage transients. Contact factory for additional troubleshooting assistance.
OL light is lit (Unipak filter)	Customer application	Check the application. This indication lights up when the reactor temperature switch is activated indicating high hot spot temperature. Most common causes are very high ambient temperatures, excessive harmonic or overcurrent, and resonance. Contact factory for additional troubleshooting assistance.

All troubleshooting is to be performed by electrically qualified personnel. For advanced troubleshooting, refer to Eaton IB158006EN.

General specifications

Standards and certifications

- UL® 810 and CSA® C.22.2 No. 190 Listed (Unipump and Unipak)
- UL 508A and CSA C22.2 No. 190 (Unipak detuned filter)

Features and specifications

- **Outer capacitor enclosure:** Heavy, No. 14 gauge steel finished with durable baked powder coat finish. Wall-mounting flanges and floor-mounting feet. Elimination of knockouts permits indoor/outdoor use. Manufactured to NEMA® 1 and 3R requirements
- Elevated floor-mounting feet allow access for easy maintenance
- **Capacitor enclosure cover:** "L" shaped gasketed cover with multiple fasteners provides front opening for ease of installation and service
- **Unipak operating temperature:** –40 °F to +115 °F (–40 °C to +46 °C)
- **Unipak storage temperature:** –40 °F to +131 °F (–40 °C to +55 °C)
- **Power and ground terminal lugs:** Furnished inside enclosure
- **Pressure-sensitive interrupter:** All units have built-in UL recognized pressure-sensitive interrupter, and thermally or mechanically activated disconnecting link removes capacitor from the supply before dangerous pressure buildup or excessive fault current occurs. Bulged capacitor cell top provides easy visual indication of interrupter operation
- **Standard fusing:**
  - **Size Code A1:** Three midget-type fuses with 100,000 A interrupting capacity
  - **Size Code A2 and larger:** Slotted-blade type fuses with 200,000 A interrupting capacity; fuses mounted on stand-off bushings; solderless connectors for easy hookup of incoming line conductors
  - **Fuse indicating lights:** Red, neon cleared-fuse indicating lights are protected by transparent weatherproof guard
- **Options:**
  - Non-fused units available, selected sizes
  - Heavy-duty capacitor cells, selected sizes

Reactors (Unipak detuned filter only)

- **Detuning:** Standard reactor designs are detuned to the 4.2nd harmonic and recommended to protect capacitors against harmonic resonance. Detuning to other harmonics is available as an option. The harmonic spectrum should be evaluated for applications involving reactors tuned above the 4.2nd harmonic to ensure optimal equipment life, specifically when used in conjunction with six-pulse motor drives
- **Construction:** 100% copper windings for cool operating temperatures; designed operating temperature rise less than 80 °C. Open frame construction with 220 °C insulation system
- **Thermal sensors:** One per phase, self-resetting thermal switches provide reactor overtemperature protection and indication
- **Reactor indicating light:** Thermal overload indicating light activates when reactor temperature reaches 180 °C
- **Fuses:** Standard fusing with cleared fuse indication
- **Enclosure:** Manufactured to NEMA 1 requirements

Warranty

Standard warranty is 1 year, parts only, against manufacturing defects for entire unit. For units with standard-duty capacitor cells, the capacitor cells provided with the unit have a standard 2-year warranty against manufacturing defects, parts only. For units with heavy-duty capacitor cells, the capacitor cells have a standard 5-year warranty against manufacturing defects, parts only.

Instruction Booklet IB157001EN
Effective May 2015

Fixed capacitor banks (Unipump, Unipak, and Unipak detuned filter) low voltage (600 V and below), NEMA 1 NEMA 3R (outdoor) enclosed versions

For technical support and application engineering assistance, please contact Eaton's TRC at
1-800-809-2772 option 4, option 2.

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