Application:
Shallbetter Inc. Padmounted Capacitor Banks are constructed in accordance with the latest applicable industry standards and the governing local and/or National Electrical Code requirements.

The Shallbetter Padmounted Capacitor Banks are intended for use on underground distribution systems where the need for reactive power compensation and/or voltage support exists.

Component Options:
- Choice of Oil, vacuum switches for switched banks
- Current-Limiting reactors
- Neutral Unbalanced detectors
- Loop or radial feed designs
- Provisions for future expansion of kVAR.
- CPT sized for system.
- Choice of capacitor controller to meet your specification.

Capacitors:
- Capacitors sized to meet your specification.
  - 5kV, 15kV and 25kV
  - 50,100,200,300 and 400 kVAR standard sizes.
  - Externally fused as a standard.
  - 2-Bushing designs as a standard.
  - Single-Bushing designs per your specification.

Enclosure Options:
1) 0.125” #5052H32 grade Aluminum
2) 11-Gauge or 12-Gauge 304L Stainless Steel
3) PMS or Pantone custom colors per your requirement.

Data Sheet 500.1.1 Page 1
### 5/15/25 kV Capacitor Bank

200/600 Amp - Livefront / Deadfront - Outdoor

<table>
<thead>
<tr>
<th>Circuit Diagram</th>
<th>Style</th>
<th>KV</th>
<th>H</th>
<th>W</th>
<th>D</th>
<th>Weight</th>
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<tr>
<td><img src="image1.png" alt="Circuit Diagram" /></td>
<td>SCBL-P1</td>
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<td>1150</td>
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<td>25</td>
<td>72</td>
<td>72</td>
<td>72</td>
<td>1900</td>
</tr>
</tbody>
</table>

* Note: For 5kV applications, use 15kV table.

* Typical SCBL-P1 shown for reference only.
Data Sheet 500.1.1

5/15/25 kV Capacitor Bank
200/600 Amp - Livefront / Deadfront - Outdoor

Catalog Selection Guide

MODEL

SCBD - DEADFRONT
SCBL - LIVEFRONT

TYPE

PHASE

1
3

STYLE

VOLTAGE (kV)

05
15
25
35

ENCLOSURE MATERIAL

SPECIAL DESIGNATIONS

AL - ALUMINUM
GA - GALVANEAL
SS - STAINLESS
STEEL

SW - SWITCHED
FX - FIXED
ST - MULTI-STEPPED

KVAR RATING

CONNECTION

U - UNGROUNDED WYE
G - GROUNDED WYE
W - DOUBLE WYE
D - DELTA

PADMOUNT, 72” MAX., ENCLOSURE HEIGHT.

EXAMPLE: SCBL-P3-3151200USW-GA-XXXX

PADMOUNT, LIVEFRONT CAPACITOR BANK, 60” x 60” x 60”, 3 PHASE, 15 KV,
12 KVAR, UNGROUNDED WYE CONNECTED, SWITCHED, CABINET IS
CONSTRUCTED OF GALVANEAL STEEL.
Factory Check Sheet

RATINGS:
Nominal System Voltage/Maximum Design Voltage/Basic Insulation Level (BIL):
- □ 5 kV, 60 kV BIL
- □ 15 kV, 95 kV BIL
- □ 25 kV, 125 kV BIL
- □ Other ___ kV, ___ kV BIL

Continuous Current:
- □ 200 amp or 600 amp

Main Switching Device:
- □ ___ amp, Type: □ Oil □ Vacuum

Fusing Rate:
- □ ___ amp, Type: ___, Voltage: ___ kV
- □ ___ amp, Type: ___, Voltage: ___ kV

kVAr Rating (TOTAL):

ENCLOSURE:
Material:
- □ A60 Galvanneal Steel
- □ 304 L Stainless Steel
- □ 5052-H32 Aluminum

Paint Finish:
- □ Green, Munsell No., 7GY 3.29/1.5
- □ Gray (ANSI 70). Munsell No., 8.3G 7.0/0.4
- □ Gray (ANSI 61). Munsell No., 8.3G 6.10/0.54
- □ Other: ______________________

3-Point Latch Type:
- □ Penta-Head Bolt and shielded padlockable shackle, Shallbetter #70155. Manufactured to meet or exceed A.N.S.I. C57.12.28 for Padmount Equipment Enclosure Integrity.
- □ Hex-Head Bolt and shielded padlockable shackle, Shallbetter #70156
- □ Padlocking Handle, Shallbetter #70153

Bushing Wells and/or Bushings, (Model SCBD only):
- □ Bushing Wells: 200 amp
- □ Bushings: 600 amp

Equipment Compartment Barriers:
- □ Ground Switch. Group operated, external operating handle.
- □ Equipment Compartment Barriers:
  - □ Ground Bails
  - □ Ground Bosses, 1/2-13 UNC. Qty: ____. Location: ____________.

- □ Louvers for enclosure ventilation.
- □ Insulation “No-Drip” Compound. Applied to the inside surface of the enclosure roof to prevent condensation.
- □ Base Undercoating. Applied to the bottom 2” of the enclosure.
- □ REA Deadfront Barriers. Barriers inside the enclosure door for each compartment, secured by recessed penta-head bolt.
  Note: Replaces compartment barriers.

- □ Control Options:
- □ Control Power Transformer:
- □ Specials: ________________
Typical Specification

General
This specification is to provide technical guidelines for the manufacturing of outdoor Pad-Mounted Livefront or Deadfront Capacitor Bank assemblies. The manufacturer shall furnish new [5kV] [15kV] [25kV] class padmounted switchgear complete with components, accessories and services as described herein and as shown on the contract drawings. The padmounted switchgear shall have a rating of [200A] [600A] with [X] kVAR at [X] elevation.

- If elevation is great than 3300 feet, please specify if the de-rating is taken into account.

The capacitor bank assembly shall be designed complete including all required components and shall be completely factory assembled and tested prior to shipment.

Standards
The capacitor bank equipment furnished shall comply with the material and testing requirements of the latest revisions of all applicable ANSI, IEEE, and NEMA standards.

Ratings
The primary metering enclosure shall have the following ratings:

- Nominal Design Voltage ___kV
- Maximum Design Voltage 15/25kV
- Basic Impulse Level (BIL) 95/125kV
- Continuous Current 200/600 Amps
- kVAR ______

Roof
The cabinet roof shall be cross-kinked for water shedding in all directions.

Enclosure
The cabinet shall be of 12-Gauge Galvanneal steel. The enclosure shall be of an all welded construction (bolting and after welding, is not acceptable). All welds on the roof, doors and cabinet corners are to be ground smooth. The base shall be square and smooth to enable it to rest solidly on a level concrete or fiberglass pad. The optional deadfront wall shall provide additional support to the roof and form a one-piece barrier between the termination and component compartments. The cabinet shall meet or exceed ANSI C57.12.28 tamper resistance requirements.

Access
The design of the enclosure and components shall be arranged so all components are completely visible without any disassembly of the cabinet.

Doors
All doors shall include a true three-point latching mechanism that requires the doors to be securely latched before the padlock shackle can be inserted. This door-latching scheme shall require only a single padlock per door or per set of double doors. Each door handle shall be provided with a recessed 304L stainless steel Penta head bolt as part of its security system. Doors shall be equipped with 304L stainless steel hinge assemblies and hinge pins. Each door shall be equipped with a 304L stainless steel door-holder located at the top of the enclosure doors. These holders shall be hidden from view when the door is closed. It shall not be possible for the door-holders to swing inside the enclosure. The door-holders shall lock in place automatically and hold the doors open at an angle of at least 110 degrees.

Barriers
If required insulating inner phase and end barriers of red fiberglass reinforced polyester (GPO-3) shall be provided if required to achieve proper clearances.

Lifting Tabs
Lifting tabs shall be removable. A resilient material shall be placed between the lifting tabs and the enclosure to prevent the tabs from scratching the enclosure finish. To help retard corrosion, this material shall be closed-cell neoprene to prevent moisture from being absorbed and held between the tabs and the enclosure.

Finish
The finish of the switchgear cabinet shall meet or exceed the requirements of ANSI C57.12.28. The topcoat of the finish shall be accordance with the specified color. Final finish coat shall be applied to minimum dry build of (6) six to (8) eight mils when dry.
Components

1) CABLE TERMINATION SECTION
   a) Cable termination provisions shall be provided for termination of customer cables.
   b) [5kV] [15 kV] [25kV], [200A Bushing Wells] [600A bushings]

2) MAIN IN LINE FUSE SECTION
   a) (Optional) Surge arresters [Distribution Class] [Intermediate Class] Ratings of the surge arresters shall be determined by the manufacturer based on the system ratings of the end user.
   b) (Optional) Main in-line fusing
   c) Current Limiting Fuses
   d) General Electric Type EJO-1
   e) Westinghouse Type CLE
   f) Cooper Type NX
   g) Power Fuses
   h) S&C Type SM-20
   i) S&C Type SM-4
   j) Cutler Hammer Type DBU

3) CAPACITOR SECTION
   a) INDIVIDUAL CAPACITORS
      i) Capacitors shall have a stainless steel tank with light gray finish for resistance to severely corrosive environments.
      ii) Capacitors shall have light gray wet process porcelain bushings, glazed for high strength and durability. Bushings shall be hermetically sealed to the capacitor tank.
      iii) Capacitors shall have stainless steel mounting brackets with industry standard mounting centers for unit interchangeability. The underside of each bracket shall be unpainted for positive grounding to the mounting surface.
      iv) Each capacitor shall be provided complete with a parallel groove terminal on each bushing. Parallel groove terminals shall accommodate #8 solid to #1 stranded aluminum or copper conductors.
      v) Each capacitor shall be provided with an internal discharge resistor to reduce terminal voltage to less than 50 volts within 5 minutes after the capacitor has been disconnected.
   vi) Each capacitor shall be provided with a stainless steel nameplate listing required NEMA and ANSI/IEEE data. Additionally, each capacitor shall contain no PCB contaminates and shall be provided with a blue "non-PCB" decal.
   vii) Capacitors shall be externally fused.
   b) INDIVIDUAL CAPACITOR FUSES
      i) Each fuse shall be non-expulsion, capacitor-rated, current limiting, with blown fuse indication.
      ii) Each fuse shall be rated for a minimum interruption of 50,000 symmetrical amperes.
      iii) Fuse size shall be determined by the vendor to ensure protection against case rupture.
   c) KEY INTERLOCK SYSTEM (OPTIONAL)
      i) A solenoid key interlock shall be provided such that the key to operate the disconnect switch cannot be removed unless all the capacitor switching devices have been open for five minutes.
      ii) Removal of the key will disable the "normal" control of the capacitor switching devices.
      iii) The disconnect switch cannot open unless the solenoid key is available. The disconnect switch shall not closed unless the ground switch is locked open.
      iv) The ground switch cannot close unless the disconnect switch is locked open. The ground switch cannot open unless all the capacitor section doors have been locked closed.
      v) The capacitor compartment doors shall not open unless the ground switch is locked closed.
Typical Specification – Continued

d) GROUND SWITCH (OPTIONAL)
   i) A stainless steel ground switch with a fully insulated manually operated handle shall be provided to ensure that all the stored energy has been discharged from the capacitors while providing safety and a visual ground indication.
   ii) The ground switch shall be tested for a rating of 40 kA Asymmetrical momentary current. Certified test reports shall be provided with the bid.
   iii) The ground switch shall be manufactured by Shallbetter Inc.

e) INRUSH CURRENT LIMITING REACTORS (OPTIONAL)
   i) If required, single phase inrush current limiting reactors shall be provided on each phase to limit the high frequency inrush current to values below the I2T rating of the fuses as well as below the kA x kH.
   ii) Ratings of the switching device calculations showing the need for the reactors and the size shall be provided with the bid.
   iii) The inrush current limiting reactors shall be manufactured by Shallbetter Inc.

Grounding Provisions
A ground connection pad shall be provided in each compartment of the pad-mounted gear. The pad shall be welded to the interior of the enclosure near the cable entrances. The pad shall be unpainted 304L stainless steel. The pads shall be a minimum of 2” X 3-1/2” with 9/16” holes spaced 1-3/4” center to center.

Bus
All buses shall be of silver-plated copper. All joints shall have suitable hardware and treatment to prevent harmful oxidation and loss of optimum contact pressure.

Termination Compartment
Termination compartment shall have [200 Amp bushing wells] or [600 Amp bushings] to permit connection of elbows. Termination compartments shall be provided with one 304L stainless steel parking stand for each bushing or bushing well. The parking stand shall be located immediately adjacent to the associated bushing or bushing well and shall accommodate standard feed-thru and standoff insulators, and other similar accessories.

Labeling
The outside of each enclosure shall be provided with “Mr. Ouch WARNING” labels in accordance with NEMA 260. The inside of each enclosure door and each hanging barrier shall be provided with “Mr. Ouch DANGER” labels in accordance with NEMA 260. The labels shall have a minimum durability rating of 10 years under vertical exterior exposure to the weathering environment.

Nameplate
The outside of the primary metering cabinet shall have a non-corrosive nameplate indicating:
- Manufacturer's name
- Catalog no.
- Model no.
- Serial no.
- Date of manufacture.

Packaging
Each pad-mounted switchgear shall be secured to a non-returnable wood pallet suitable for handling with a forklift. The pad-mounted switchgear shall be packaged in accordance with good commercial practice to ensure safe delivery without damage to the finish or any other part of the unit.

Inspection
After delivery, each pad-mounted switchgear will be inspected for defects and conformance to this specification. The supplier (or its representative) will be notified of all deficiencies. Mutual arrangements shall be made for correcting the deficiencies.