01.4IB.50040A
PowlVac® Dummy Circuit Breaker

For Use in PowlVac® Metal-Clad Switchgear
5kV & 15kV / 1200A, 2000A, & 3000A / 36kA, 50kA, & 63kA
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Signal Words

As stated in ANSI Z535.4-2007, the signal word is a word that calls attention to the safety sign and designates a degree or level of hazard seriousness. The signal words for product safety signs are “Danger”, “Warning”, “Caution” and “Notice”. These words are defined as:

**DANGER**

_DANGER_ indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

**WARNING**

_WARNING_ indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**CAUTION**

_CAUTION_, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**CAUTION**

_CAUTION_, used without the safety alert symbol, is used to address practices not related to personal injury.

**NOTICE**

_NOTICE_ is used to address practices not related to personal injury.

Qualified Person

For the purposes of this manual, a qualified person, as stated in NFPA 70®, is one who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved. In addition to the above qualifications, one must also be:

1. trained and authorized to energize, deenergize, clear, ground, and tag circuits and equipment in accordance with established safety practices.
2. trained in the proper care and use of personal protective equipment (PPE) such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.
3. trained in rendering first aid if necessary.
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Ch 1 General Information

WARNING

The equipment described in this document may contain high voltages and currents which can cause death or serious injury.

The equipment is designed for use, installation, and maintenance by knowledgeable users of such equipment having experience and training in the field of high voltage electricity. This document and all other documentation shall be fully read, understood, and all warnings and cautions shall be abided by. If there are any discrepancies or questions, the user shall contact Powell immediately at 1.800.480.7273.

WARNING

Prior to adjustments, servicing, maintenance, or any act requiring the operator to make physical contact with the equipment, the power source must be disconnected and the equipment grounded. Failure to do so may result in death or serious injury.

NOTICE

The information in this instruction bulletin is not intended to explain all details or variations of the Powell equipment, nor to provide for every possible contingency or hazard to be met in connection with installation, testing, operation, and maintenance of the equipment. For additional information and instructions for particular problems, which are not presented sufficiently for the user’s purposes, contact Powell at 1.800.480.7273.

NOTICE

Powell reserves the right to discontinue and to change specifications at any time without incurring any obligation to incorporate new features in products previously sold.
A. **Scope**

The information in this instruction bulletin describes the following PowlVac® dummy circuit breakers.

- 50340G01 - 5kV & 15kV, 36kV & 50kA, 1200A
- 50340G02 - 5kV & 15kV, 36kV & 50kA, 2000A
- 50340G03 - 5kV & 15kV, 36kV & 50kA, 3000A
- 50340G04 - 5kV & 15kV, 63kA, 1200A
- 50340G06 - 5kV & 15kV, 63kA, 2000A
- 50340G07 - 5kV & 15kV, 63kA, 3000A

B. **Purpose**

The information in this instruction bulletin is intended to provide information required to properly operate and maintain the PowlVac dummy circuit breakers described in **Ch 1 General Information, A. Scope**.

This instruction bulletin provides:

1. Safety guidelines
2. General descriptions of the operation and maintenance of the PowlVac Dummy breaker
3. Instructions for installation and placing the dummy circuit breaker into service
4. Instructions for part replacement
5. Information for ordering renewal parts
6. Procedure for critical adjustments
7. Illustrations, photographs, and description of the dummy circuit breaker

The illustrations contained in this document may not represent the exact construction details of the PowlVac dummy circuit breaker. The illustrations in this document are provided as general information to aid in showing component locations.

All illustrations and photos are shown using deenergized equipment.

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**WARNING**

Follow the appropriate safety precautions while handling any of the equipment. Failure to do so may result in death or serious injury.

To the extent required, the products described herein meet the applicable ANSI, IEEE, and NEMA Standards; however, no such assurance is given with respect to local codes and ordinances which may vary greatly.

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**NOTICE**

Changes to the instruction bulletin may be implemented at any time and without notice. Go to powellind.com to ensure use of the current instruction bulletin for Powell equipment.

For more information visit powellind.com. To contact the Powell Service Division call 1.800.480.7273 or 713.944.6900, or email info@powellservice.com.

For specific questions or comments pertaining to this instruction bulletin email documents@powellind.com with the IB number in the subject line.

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**D. Associated Bulletins**

- 01.4IB.51000C PowlVac® Metal-Clad Switchgear 5kV & 15kV
- 01.4IB.51200B PowlVac-AR® Arc Resistant Switchgear 5kV & 15kV
Ch 2 Safety

A. Safe Work Condition

The information in Section A is quoted from NFPA 70E 2012 - Article 120, 120.1 Establishing an Electrically Safe Work Condition.

120.1 Process of Achieving an Electrically Safe Work Condition

1. Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams, and identification tags.

2. After properly interrupting the load current, OPEN the disconnecting device(s) for each source.

3. Wherever possible, visually verify that all blades of the disconnecting devices are fully OPEN or that drawout type circuit breakers are withdrawn to the fully disconnected position.

4. Apply lockout/tagout devices in accordance with a documented and established policy.

5. Use an adequately rated voltage detector to test each phase conductor or circuit part to verify they are deenergized. Test each phase conductor or circuit part both phase-to-phase, and phase-to-ground. Before and after each test, determine that the voltage detector is operating satisfactorily.

Informational Note: See ANSI/ISA-61010-1 (82.02.01)/UL 61010-1, Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements, for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 V and below.

6. Where the possibility of induced voltages or stored electrical energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being deenergized could contact other exposed energized conductors or circuit parts, apply ground connecting devices rated for the available fault duty.

B. Safety Guidelines

Study this instruction bulletin and all other associated documentation before uncrating the circuit breakers.

Each user has the responsibility to instruct and supervise all personnel associated with usage, installation, operation, and maintenance of this equipment on all safety procedures.

Furthermore, each user has the responsibility of establishing a safety program for each type of equipment encountered.

The safety rules in this instruction bulletin are not intended to be a complete safety program. The rules are intended to cover only some of the important aspects of personnel safety related to PowlVac® dummy circuit breakers.
C. GENERAL

1. Only supervised and qualified personnel trained in the usage, installation, operation, and maintenance of a dummy circuit breaker shall be allowed to work on this equipment. It is mandatory that the appropriate instruction bulletins, supplements, and service advisories be studied, understood, and followed.

2. Maintenance programs must be consistent with both customer experience and manufacturer’s recommendations, including service advisories and instruction bulletin(s). A well planned and executed routine maintenance program is essential for the dummy circuit breaker’s reliability and safety.

3. Service conditions and circuit breaker applications shall also be considered in the development of safety programs. Variables include ambient temperature; humidity; actual continuous current; thermal cycling; number of operations; interrupting duty; and any adverse local conditions including excessive dust, ash, corrosive atmosphere, vermin and insect infestations.

D. SPECIFIC

1. **DO NOT WORK ON AN ENERGIZED DUMMY CIRCUIT BREAKER.** If work must be performed on a dummy circuit breaker, remove it from service and remove it from the metal-clad switchgear.

E. SAFETY LABELS

The equipment described in this document has DANGER, WARNING, CAUTION, and instruction labels attached to various locations. All equipment DANGER, WARNING, CAUTION, and instruction labels shall be observed when the dummy circuit breaker is handled, operated, or maintained.

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**NOTICE**

**Warning and Caution labels are located in various places. Do not remove or deface any of these warning/caution labels.**
Ch 3 Equipment Description

A. General

NOTICE

Powell is committed to continuous product improvement.

It is possible that improvements occurred between revisions to this document and therefore, may not be described in these instructions. If the equipment does not resemble the photographs and descriptions contained herein, contact Powell before attempting to perform any actions.

A dummy circuit breaker is an accessory used in metal-clad switchgear as a non automatic element in place of a circuit interrupting element. The dummy element is different in that it has no circuit switching capability or stored energy operating mechanism. A dummy element cannot be inserted or withdrawn from any compartment while circuits are energized. The dummy circuit breaker has solid conductors (normally bus bars) connected between line and load side primary disconnecting devices. When installed in a circuit breaker compartment of a metal-clad switchgear section, the dummy circuit breaker connects the line and load side primary disconnecting devices of the circuit breaker compartment. Syn. dummy element.

A dummy breaker may be used to provide a method for connecting and disconnecting a primary circuit or circuits without using a circuit breaker (or other removable primary interrupting device). A dummy breaker may be used in applications such as a temporary connection in a switchgear compartment where a circuit breaker will be installed as part of a future expansion. Dummy breakers may also be used to provide isolation between an incoming source and the primary bus.

Since the dummy breaker has no current interrupting capability, it is necessary to provide interlocking that prevents the dummy breaker from making or interrupting current when being inserted or withdrawn from the connected position. This condition can be met by disconnecting all sources of power which might supply current to the dummy breaker location and disconnecting all loads which might draw power from the dummy breaker location. In many cases, this will require that remote sources (or loads) be interlocked to meet this condition (e.g., for a dummy installed in a main circuit breaker cell, or a dummy installed in a tie circuit breaker cell that connects electrically to a remotely located switchgear assembly). Key interlocks are normally used for this application.
Figure 1  Front View of Dummy Circuit Breaker with Cover

a. Nameplate
b. Cover Bolt
c. Slider Cover Plate
d. Caution Label
e. Breaker Position Indicator
f. Caution Nameplate
g. Racking Drive Shaft Shutter
h. handle
Figure 2  Rear View of Dummy Circuit Breaker

a. Primary Disconnect Device  
b. Barrier  
c. Pole Support  
d. Ground Shoe  
e. Wheel
Figure 3  Side View of Dummy Circuit Breaker

- a. Racking Crank Arm
- b. Anti-Rollout Latch
B. **Racking Mechanism**

The racking mechanism is the mechanical assembly that facilitates moving the dummy circuit breaker between the test/disconnected and the connected positions in the circuit breaker compartment.

The standard racking mechanism consists of a racking shaft with racking crank arms at each end which are supported by the frame side sheets. The racking shaft also supports a worm gear assembly at the right end just inside the right side sheet. In addition, the racking crank arms have rollers attached to each end of the racking shaft which engage the vertical slots of the racking cams in the circuit breaker compartment. Rotation of the racking crank arms will drive the circuit breaker into or out of the connected position. This action also operates the compartment shutters. As the racking drive shaft rotates, the worm rotates the worm gear until the threaded plate which moves along the racking shaft encounters either a front or back sleeve attached to the shaft and prevents any further rotation. At this time, the breaker position indicator on the front of the circuit breaker will display “BREAKER CONNECTED”, or “BREAKER TEST/DISCONNECTED”.

In addition, a bolt on the left side sheet serves as a backup to the threaded plate, providing a positive stop to the left crank arm. This positive stop prevents further rotation of the racking shaft, thus stopping circuit breaker travel. At this time, the breaker position indicator on the front of the dummy circuit breaker will display “BREAKER CONNECTED”.

The main racking mechanism components for the PowlVac® dummy circuit breaker are:

1) **Breaker Position Indicator**

The breaker position indicator (Figure 1, e) is visible through an opening in the dummy circuit breaker front cover. The indicator displays whether the element is in the connected or the test/disconnected positions. When the breaker position indicator displays “BREAKER CONNECTED”, and this is fully visible in the aperture, the dummy breaker is in the connected position. When the breaker position indicator displays “BREAKER TEST/DISCONNECTED”, and this is fully visible in the aperture, the dummy breaker is in the test/disconnected position. In positions other than the connected and test/disconnected positions, the breaker position indicator does not display an indication. Refer to **Ch 4 Installation**, **E. Inserting the Dummy Circuit Breaker into the Circuit Breaker Compartment** for more information.
2) **Interlocking**

PowlVac® dummy circuit breakers are provided with several interlocks that operate in conjunction with the circuit breaker compartment to ensure the proper operation of the circuit breaker. Do not attempt to modify or bypass these interlocks, as they are necessary for the safe operation of the circuit breaker.

Since the dummy circuit breaker doesn’t have current interrupting capability, it is necessary to ensure that it can be inserted into and withdrawn from the switchgear compartment without attempting to interrupt current. This condition is assured by one of two methods:

- All sources of power which might supply current to the dummy circuit breaker location must be disconnected, **OR**
- All loads which might draw current through the dummy circuit breaker must be disconnected.

A key interlocking scheme is used to ensure the proper operation of the dummy circuit breaker. Each compartment containing a dummy circuit breaker is supplied with a key interlock mechanism which prevents the dummy circuit breaker from being inserted or withdrawn. The key to release this mechanism is available only when one of the two necessary conditions for proper operation of the dummy circuit breaker is satisfied.

Each application of a dummy circuit breaker is different, so the key interlocking scheme must be designed to fit the power system configuration and operating conditions in which the dummy circuit breaker is used. If the necessary interlocking can be accomplished in the metal-clad switchgear in which the dummy circuit breaker is installed, the interlocks will normally be furnished as a part of the switchgear. In many instances, however, the interlocking will involve switching devices which are not part of the switchgear in which the dummy circuit breaker is located.

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**CAUTION**

*It is the user’s responsibility to ensure that a properly designed key interlocking system is in use, so that there can be no current flow through the dummy circuit breaker. Failure to do so could result in minor or moderate injury.*
Ch 4 Installation

A. Receiving

When the dummy circuit breaker is received check for any sign of damage. If damage is found or suspected, file all claims immediately with the transportation company and notify the nearest Powell representative.

Estimated size and weight for shipping a PowlVac® dummy circuit breaker on a pallet:

- Size: 42” width x 42” depth x 47” height
- Weight: 300 lbs.

Figure 4 shows the dummy circuit breaker enclosed in the carton used for shipment. The carton is attached to the shipping pallet by two metal bands. Remove these bands and lift the carton from the pallet so that the circuit breaker is visible. The dummy circuit breaker is attached to the pallet by three metal shipping brackets. When these are removed the dummy circuit breaker may be removed from the shipping pallet. Refer to Ch 4 Installation, B. Handling for more information.

When a metal-clad switchgear assembly is installed in a Power Control Room, a dummy circuit breaker housed in the lower circuit breaker compartment may be shipped installed in the equipment. In these cases, the circuit breaker will be in the test/disconnected position and it will be bolted to the compartment floor by use of a shipping bracket (Figure 5, a). The horizontal leg of the bracket is bolted to the compartment floor and the vertical leg is bolted to the front of the circuit breaker using the lower cover bolts. Remove these four bolts, discard the shipping angle, and replace the four bolts.

Figure 5   Circuit Breaker with Shipping Bracket

Note: PowlVac ARM circuit breaker shown.
B. Handling

After the dummy circuit breaker has been removed from its shipping pallet it may be rolled on its own wheels on a level surface. This is the preferred way of handling the dummy circuit breaker. When rolling the dummy circuit breaker it should be pushed and steered by the steel frame or the front cover.

![CAUTION]

Do not handle or move the circuit breaker by the primary disconnecting devices, as damage may occur.

If necessary, the dummy circuit breaker can be moved by a fork lift truck or an overhead crane. When using a fork lift truck take care to avoid components located under the dummy circuit breaker floor pan. The forks on the truck should be set for a dimension over the forks of 28 inches. The forks should then ride under the wheel axles. The dummy circuit breaker can also be lifted by an overhead crane using the two lifting points which have been provided for hooks at the top of the circuit breaker frame side sheets (Figure 6).

C. Storage

Shipping and storage of electrical equipment requires measures to prevent the deterioration of the apparatus over a long unused period. The mechanical and dielectric integrity must be protected. Electrical equipment is designed for use in a variety of environments. When the equipment is in transit and storage, these design considerations are not fully functional. In general, the following measures must be considered.

1. Equipment designed for indoor installation must be stored indoors in a climate controlled environment to prevent condensation of moisture. Exposure to rain and the elements, even for a short period, can permanently damage the equipment. Space heaters within the equipment should be energized, if so equipped. Humidity controlling desiccant materials should be utilized when space heaters are not provided or cannot be energized. The temperature should be kept above 33°F/1°C
and below 140°F/60°C. The relative humidity should be kept below 60% or a dew point of 15°C/59°F. The equipment should be stored in such a manner as to leave all doors and panels accessible for inspection. The equipment must be inspected on a routine basis to assure operational integrity.

2. Equipment designed for outdoor exposure may be stored either in indoor or outdoor storage locations. The equipment must be protected from airborne external contaminates if stored outdoors. Outdoor storage will also require additional care to maintain temporary covers over the openings and shipping splits. The equipment must be provided with control power to facilitate the energization of space heaters, as well as other temperature and humidity controlling equipment. The temperature should be kept above freezing (>33°F/1°C) and below (<140°F/60°C). The relative humidity should be kept below 60% or a dew point of 15°C/59°F. The equipment should be stored in such a manner as to leave all doors and panels accessible for inspection. The equipment must be inspected on a routine basis to assure its integrity.

3. The auxiliary control devices, ship loose material and protective relays must also be protected. This includes items such as battery chargers, UPS systems, lighting, installation hardware and air conditioning. If prolonged storage is anticipated, humidity controlling desiccant materials should be utilized. Desiccant packets should be installed in all compartments and packing containers.

D. Placing the Dummy Circuit Breaker Into Service

Before shipment from the factory, all dummy circuit breaker functions are thoroughly checked. The user must verify functions after receipt. Powell recommends that the tests be performed in the sequence listed below:

1) Racking Mechanism Check

The racking mechanism may be checked outside the circuit breaker compartment.

The racking drive shaft can be accessed by moving the racking drive shaft shutter downward.

Insert the racking handle onto the racking drive shaft. The racking crank arms at the sides of the circuit breaker should be in the fully withdrawn position and point towards the primary disconnecting devices.

The breaker position indicator on the front of the circuit breaker should display, "BREAKER TEST/DISCONNECTED". Rotate the racking handle in a clockwise direction. The racking crank arms will move downward and rotate until the breaker position indicator displays "BREAKER CONNECTED". Stop bolts on the side sheet of the breaker prevent further rotation of the racking drive shaft. Once the breaker position indicator displays "BREAKER CONNECTED", the racking mechanism will have reached the end of its travel and a significant increase in the amount of resistance encountered will indicate that further force should not be exerted. Once factory torque limits are reached a torque limiting clutch on the racking handle will engage and disallow any further racking. In this position, the racking handle may be removed from the racking drive shaft and the racking drive shaft shutter will spring back to the closed position.
Once again, depress the racking drive shaft shutter, insert the racking handle and rotate in a counterclockwise direction until the racking crank arms are once more in the fully withdrawn position and the breaker position indicator displays “BREAKER TEST/ DISCONNECTED”.

If you attempt to insert an improperly rated circuit breaker or dummy circuit breaker into the circuit breaker compartment, these plates will interfere with each other and deter further insertion. The interference will occur before the circuit breaker or dummy circuit breaker reaches the disconnected position. Do not attempt to force the circuit breaker or dummy circuit breaker past the compartment interference plate or remove the interference plates from either the compartment or the element. Remove the incorrectly rated device and insert a properly rated circuit breaker or dummy circuit breaker into the circuit breaker compartment.

1) Prior to Inserting the Dummy Circuit Breaker into the Circuit Breaker Compartment

a. Check the Primary Disconnecting Devices and Circuit Breaker Compartment

Examine the primary disconnecting devices for any signs of damage and contamination. Check to see that none are bent out of alignment. If contamination is found refer to Ch 5 Maintenance, A. GENERAL DESCRIPTION, 2) Inspection and Cleaning and Ch 5 Maintenance, B. MECHANISM AREA, 2) Lubrication for cleaning and lubrication procedures. If the primary disconnecting devices are damaged make no attempt to repair. Contact Powell for further information.

Examine the circuit breaker compartment to see that it is clean and clear of debris that might interfere with circuit breaker travel.
b. Racking the Dummy Circuit Breaker Into the Circuit Breaker Compartment

The described racking procedures apply only for the PowlVac® dummy circuit breaker. For all other constructions, refer to the appropriate instructions or instruction bulletin(s) for the applicable racking procedures.

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2) Inserting the Dummy Circuit Breaker to the Disconnected Position

**CAUTION**

Prior to inserting the dummy circuit breaker into the circuit breaker compartment, make sure that the control circuits are deenergized.

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a. Perform the necessary switching operations in the power system and operate the key interlocking system to ensure that there will be no primary voltage and no primary current flow through the dummy circuit breaker when inserted.

b. Use the key obtained from step a to unlock the key interlock in the compartment into which the dummy circuit breaker is to be inserted. The key will be held captive in the lock. Turn the interlock mechanism (Figure 7) counterclockwise so that the paddle at the bottom of the mechanism is horizontal.

c. To insert the dummy circuit breaker into the lower circuit breaker compartment, open the compartment door and align the wheels with the floor pan channels of the compartment. Verify that the floor pan channels are free of debris prior to inserting the dummy circuit breaker.

d. Roll the dummy circuit breaker into the compartment until the position interlock bar and roller contacts a positive stop.

Note: This is the Disconnected Position.

The anti-rollout latch on the lower right side of the circuit breaker will engage the block in the compartment, preventing accidental removal of the circuit breaker from the compartment.

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**CAUTION**

Before inserting any dummy circuit breaker into a compartment, the user must verify that the dummy circuit breaker rating meets or exceeds the metal-clad switchgear rating.

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**CAUTION**

Before inserting a dummy circuit breaker into the circuit breaker compartment, be sure that the indicator flag on the front cover of the dummy circuit breaker displays “BREAKER TEST/DISCONNECTED”.

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**CAUTION**

Before attempting to rack a dummy circuit breaker in or out of a circuit breaker compartment equipped with a key interlock, make sure that the interlock is unlocked and in the open position.

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**NOTICE**

The illustrations shown for all racking procedures are provided to show device locations and are intended only as a guideline. These illustrations may not be representative of site specific safety practices for performing the procedure. Before attempting any racking procedure, review Chapter 2.
3) **Inserting the Dummy Circuit Breaker to the Connected Position**

   a. Using the racking handle provided, or a wrench with a standard ¾” hex socket, turn the racking drive shaft clockwise until the dummy circuit breaker is fully inserted into the compartment. At this point the breaker position indicator will read “CONNECTED”. Remove the racking handle or wrench.

   The maximum force required on the racking arm crank for normal insertion of a dummy circuit breaker will not exceed 65lbs. Excessive force may damage the dummy circuit breaker or the switchgear.

   **Note: This is the Connected Position.**

   b. Pull down on the shutter interlock handle (Figure 7, d) and hold it in the lower position. This will operate a shutter to close the access hole to the racking shaft.

   c. Rotate the key interlocking mechanism fully clockwise, so the interlock paddle is vertical and in front of the cover of the dummy circuit breaker. This will prevent the withdrawal of the dummy circuit breaker. Operate the key interlock to lock the mechanism in this position. The key is now removable.

   d. Operate the key interlocking system and perform the necessary switching operations in the power to restore it to service.

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**Figure 7  Detail of Key Interlock Mechanism**

Front View Side View

- a. **Interlock Mechanism (in locked position)**
- b. **Key Interlock**
- c. **Front Cover of Dummy Circuit Breaker**
- d. **Shutter Interlock Handle**

**F. REMOVING THE DUMMY CIRCUIT BREAKER FROM THE CIRCUIT BREAKER COMPARTMENT**

The dummy circuit breaker may be withdrawn from the compartment by reversing the above procedure verifying that all primary circuits are deenergized. After the dummy circuit breaker is racked out to the fully disconnected position, it will be retained in the compartment by the anti-rollout latch (Figure 3, b). To remove the dummy circuit breaker, depress the latch handle and roll the dummy circuit breaker out of the compartment.
Ch 5  Maintenance

A. General

**CAUTION**

Prior to beginning any maintenance procedures, make certain that the control circuits are deenergized and the circuit breaker is resting securely outside the circuit breaker compartment. Do not work on a closed circuit breaker or a circuit breaker with the main closing spring charged.

**NOTICE**

Before attempting any maintenance work, it is important to study and fully understand the safety practices outlined in Chapter 2 of this instruction bulletin. If there is any reason to believe there are any discrepancies in the descriptions contained in this instruction bulletin, or if they are deemed to be confusing and/or not fully understood, contact Powell immediately.

The PowlVac® dummy circuit breaker does not require any significant routine maintenance, but whenever it is removed from its compartment, it is recommended that it be inspected, cleaned, and lubricated.

B. Inspection and Cleaning

**CAUTION**

*When cleaning the dummy circuit breaker insulating supports and bus insulation, use only denatured alcohol or isopropyl alcohol to remove foreign material. Failure to do so may damage the dielectric and/or the mechanical properties of the insulation.*

Visually check the dummy circuit breaker for loose or damaged parts. Tighten or replace loose or missing hardware. Any damaged parts that will interfere with the normal operation of the dummy circuit breaker should be replaced. This inspection will be much easier if the front cover and inter-phase barrier assembly are removed.

Clean the dummy circuit breaker by removing any loose dust and dirt. Do not use compressed air to clean the circuit breaker. This may result in loose dirt or grit being blown into bearings or other critical parts, thus causing excessive wear. Use a vacuum cleaner, or wipe with a dry lint-free cloth or an industrial-type wiper to clean the circuit breaker. Do not use solvents, de-greasers, or any aerosol products to clean in the area of any mechanisms.

Primary insulation should be cleaned. Wipe clean with a dry lint-free cloth or an industrial type wiper. If dirt adheres and cannot be removed by wiping, remove it with a mild solvent such as denatured alcohol. Be sure that the dummy circuit breaker is dry before returning it to service. Do not use any type of detergent to wash the surface of the insulators as detergent may leave an electrically conducting residue on the surface as it dries.
C. **Lubrication**

Powell offers a complete lubrication kit (Powlube-104) which contains all the lubricants required for maintaining the circuit breakers. Powlube-104 consists of (1) A-grease, (1) B-grease, and (1) C-oil. Prior to March 2014, Powell provided Powlube-101 and Powlube-102 which contained (1) tube of Anderol 757 or Rheolube 368A, (1) tube of Mobilgrease 28 and (1) bottle of Anderol A456 oil.

A – Grease should be lightly applied to those bearing surfaces that are accessible. Inaccessible surfaces, such as bearings, may be lubricated with a light synthetic machine oil such as C - Oil. B – Grease should be applied to the electrical contact surfaces.

*Table A, Lubrication* lists the location of all surfaces that should be lubricated, the type of lubricant to be used, and the method of applying the lubricant. The guiding rule in lubrication is to lubricate regularly, use lubricant sparingly and remove all excess lubricant. Tilting the dummy circuit breaker will enable the lubricant to cover the bearing surfaces.
### Table A Lubrication

<table>
<thead>
<tr>
<th>Location</th>
<th>Lubricant</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Disconnect Fingers</td>
<td>B - Grease</td>
<td>Wipe clean. Apply lubricant only to actual contact surface.</td>
</tr>
<tr>
<td>Racking Crank Arm (Worm &amp; Wheel)</td>
<td>A - Grease</td>
<td>Feed grease between worm and wheel rotating worm shaft</td>
</tr>
<tr>
<td></td>
<td></td>
<td>between disconnected and connected position.</td>
</tr>
<tr>
<td>Worm Shaft Bearings</td>
<td>C - Oil</td>
<td></td>
</tr>
<tr>
<td>Racking Shaft Support Bearings</td>
<td>C - Oil</td>
<td></td>
</tr>
<tr>
<td>Racking Crank Arm Rollers</td>
<td>C - Oil</td>
<td>Tilt dummy breaker sideways and rotate roller while</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lubricating.</td>
</tr>
<tr>
<td>Wheels</td>
<td>C - Oil</td>
<td>Tilt dummy breaker sideways and rotate wheels while</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lubricating.</td>
</tr>
</tbody>
</table>

**Note:** For all previous lubrication requirements Powlube-104 A-Grease replaces Anderol 757 and Rheolube 368A, B-Grease replaces Mobilgrease 28 and C-Oil replaces Mobil 1 and Anderol 456. See Ch 5 Maintenance, C. Lubrication for more details.

**Note:** See the similarly rated PowlVac® STD circuit breaker instruction bulletin for visual reference to be lubricated.
Ch 6  Recommended Renewal Parts

A. Ordering Instructions

1. Order Renewal Parts from Powell at powellind.com or call 1.800.480.7273.

2. Always specify complete nameplate information, including:
   - Circuit Breaker Type
   - Serial Number
   - Rated Voltage
   - Rated Amps
   - Impulse Withstand

3. Specify the quantity and description of the part and the instruction bulletin number. If the part is in any of the recommended renewal parts tables, specify the catalog number. If the part is not in any of the tables, a description should be accompanied by a marked illustration from this instruction bulletin, a photo or simply submit a sketch showing the part needed.

B. Recommended Renewal Parts

A sufficient amount of renewal parts should be stored to enable the prompt replacement of any worn, broken or damaged part. A sufficient amount of stocked parts minimizes service interruptions caused by breakdowns and saves time and expense. When continuous operation is a primary consideration, a larger quantity of renewal parts should be stocked depending on the severity of the service and the time required to secure replacement parts.

Since parts may be improved periodically, renewal parts may not be identical to the original parts. Table B lists the recommended spare parts to be carried in stock by the user. The recommended quantity is not specified. This must be determined by the user based on the application. As a minimum, it is recommended that one set of parts be stocked per ten circuit breakers or less.

Powell recommends that only qualified technicians perform maintenance on these units. Refer to the Qualified Person section in the front of this instruction bulletin. If these circuit breakers are installed in a location where they are not maintained by a qualified technician, a spare circuit breaker should be on site ready for circuit breaker replacement. The malfunctioning unit can then be returned to the factory for reconditioning.
### Table B  Miscellaneous Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ground Connection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25kA</td>
<td>50951G02</td>
<td></td>
</tr>
<tr>
<td>36kA</td>
<td>50952G03</td>
<td></td>
</tr>
<tr>
<td>50kA</td>
<td>50952G02</td>
<td></td>
</tr>
<tr>
<td>63kA</td>
<td>50952G02P</td>
<td></td>
</tr>
<tr>
<td><strong>PowlVac® Hardware Kit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6050G24</td>
<td></td>
</tr>
<tr>
<td><strong>PowlVac® Lubrication Kit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Powlube-104</td>
<td></td>
</tr>
</tbody>
</table>
01.4IB.50040A
PowlVac® Dummy Circuit Breaker

For use in PowlVac® Metal-Clad Switchgear
5kV & 15kV / 1200A, 2000A, & 3000A / 36kA, 50kA & 63kA

July 2015