

Instruction Bulletin

Type VR Electric Racking Device for use with MASTERCLAD Switchgear Class 6055

Retain for future use.

SECTION 1—INTRODUCTION

This bulletin provides installation, operation, and maintenance instructions for the Type VR Electric Racking Device (ERD).

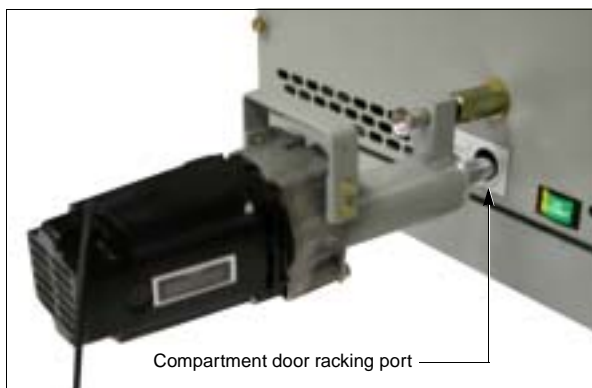


Figure 1: Type VR Electric Racking Device

The ERD is used for electrically installing and removing Type VR circuit breakers, ground and test (G&T) devices, and removable shorting (RS) devices to and from the CONNECTED position in the circuit breaker compartment. The ERD is rated 120V, 60 Hz and has a 50 ft. (15.2 m) long cord to allow for remote racking.

The ERD contains a clutch that limits the torque to 25 lb-ft. (34 N•m) that is applied to the circuit breaker racking gears.

Product Overview and Component Identification

Figure 2 identifies the main components of the ERD.

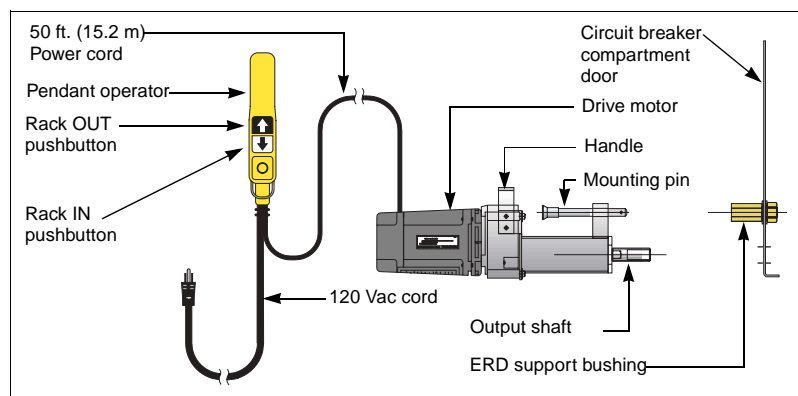


Figure 2: Electric Racking Device Components

Mounting

The ERD is mounted on the circuit breaker compartment door by inserting the ERD mounting pin into the ERD support bushing. The ERD output shaft rotates the racking shaft through the racking port in the circuit breaker compartment door (see Figure 1).

SECTION 2—SAFETY PRECAUTIONS

This section contains important safety precautions that must be followed to install, service, or maintain electrical equipment. Carefully read and follow the safety precautions outlined below.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, BURN, OR EXPLOSION

- Only qualified personnel familiar with medium voltage equipment are to perform work described in this set of instructions. Workers must understand the hazards involved in working with or near medium voltage circuits.
- Perform such work only after reading and understanding all of the instructions contained in this bulletin.
- Turn OFF all power before working on or inside equipment.
- Use a properly rated voltage sensing device to confirm that the power is OFF.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume all circuits are live until they are completely de-energized, tested, grounded, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of backfeeding.
- Handle this equipment carefully and install, operate, and maintain it correctly in order for it to function properly. Neglecting fundamental installation and maintenance requirements may lead to personal injury, as well as damage to electrical equipment or other property.
- Never attempt to hold this device while it is in operation. Strong operating torques can entangle hands or arms and cause severe injury.
- Be aware of potential hazards; wear personal protective equipment, and take adequate safety precautions.
- Do not make any modifications to the equipment or operate the system with the interlocks removed. Contact your local Square D representative for additional instructions if the equipment does not function as described in this manual.
- Carefully inspect your work area and remove any tools and objects left inside the equipment.
- Replace all devices, doors, and covers before turning on the power to this equipment or energizing the switchgear.
- All instructions in this manual are written with the assumption that the customer has taken these measures before performing maintenance or testing.

Failure to follow these instructions will result in death or serious injury.

SECTION 3—RECEIVING, HANDLING, AND STORAGE

Receiving

Upon receipt, check the packing list against the equipment received to verify the order and shipment are complete. Claims for shortages or errors must be made in writing to Square D within 60 days after delivery. Failure to give such notice will constitute unqualified acceptance and a waiver of all such claims by the purchaser.

Immediately inspect the ERD for any damage that may have occurred in transit. If damage is found or suspected, file a claim with the carrier immediately and notify Square D. Delivery of equipment to a carrier at any of the Square D plants or other shipping point constitutes delivery to the purchaser regardless of freight payment and title. All risk of loss or damage pass to the purchaser at that time.

Refer to *Square D Terms and Conditions of Sale*.

Handling

Use care when unpacking and handling the ERD. The device weighs about 24 lb (10.9 kg).

▲ CAUTION

HAZARD OF PERSONAL INJURY

Never attempt to hold this device while it is in operation. Strong operating torques can entangle hands or arms and cause severe injury.

Failure to follow this instruction can result in injury or equipment damage.

Storage

Store the unit in a clean, dry, corrosive-free protected area to avoid damage.

SECTION 4—INSTALLATION

Installing the Circuit Breaker into the TEST/
DISCONNECT Position

SECTION 4—OPERATION

If an ERD is shipped with the switchgear, a door mounted ERD support bushing well is factory installed (see Figure 2). Contact your local Square D field sales representative if these items are needed but were not ordered with the switchgear.

Refer to the installation chapter in Square D instruction bulletin 6055-31 to install a circuit breaker or other devices into the TEST/DISCONNECT position of the compartment.

To rack the circuit breaker or other devices from the TEST/DISCONNECT position to the CONNECTED position follow steps 1–6 (see Figure 3).

▲ CAUTION

HAZARD OF PERSONAL INJURY

- Before installing or removing the ERD, verify that the power plug is not connected to a power source.
- Never attempt to hold this device while it is in operation. Strong operating torques can entangle hands or arms and cause severe injury.

Failure to follow this instruction can result in injury or equipment damage.

1. Verify that the circuit breaker is in the **OPEN (O)** position. If not, operate the circuit breaker manually until the mechanism springs are discharged and the indicators on the circuit breaker read **OPEN (O)** and **DISCHARGED**.

NOTE: If racking a G&T or a RS device, refer to the instruction bulletin supplied with the device for proper instructions before attempting to rack it into the compartment.

2. Close and securely fasten the circuit breaker compartment door.
3. Install the ERD on the compartment door.



Figure 3: ERD Mounted on the Circuit Breaker Compartment Door (Circuit Breaker in the TEST/DISCONNECT Position)

NOTES:

– When a circuit breaker or other device has been completely racked in, the clicking sound is generated. This is caused by ERD clutch slipping as it runs up against the stops.

– The push button can be released at any time during the racking procedure to stop the racking procedure.

4. Stretch out the operator cord as far as possible to allow maximum operating clearance for personnel. Plug the ERD into a 120 Vac outlet.
5. Press and hold the RACK IN pushbutton (see Figure 2 on page 1) until a loud “clicking” sound is heard (approximately 6 seconds after pressing the pushbutton). Release the pushbutton immediately when the clicking sound begins. Verify that the racking position indicator on the compartment door reads CONNECTED (see Figure 4).
NOTE: Do Not close the circuit breaker unless the indicator on the circuit breaker compartment door shows fully “CONNECTED”.
6. Upon completion of the racking procedure, disconnect the power plug from the power source. Remove the ERD from the circuit breaker compartment door.



Figure 4: ERD with Circuit Breaker in the CONNECTED Position

Racking the Circuit Breaker from the CONNECTED Position to the TEST/DISCONNECT Position

Follow these instruction to rack out the circuit breaker from the CONNECTED position to the TEST/DISCONNECT position.

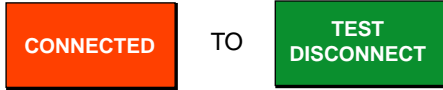


Figure 5: ERD with Circuit Breaker in the CONNECTED Position

1. Open the circuit breaker. Verify that the circuit breaker is in the **OPEN (O)** position. Remove the control power fuses to the circuit breaker closing/opening/charging circuits.
2. Close and securely fasten the circuit breaker compartment door.
3. Install the ERD on the compartment door.
4. Stretch out the operator cord as far as possible to allow maximum operating clearance for personnel. Plug the ERD into a 120 Vac outlet.
5. Press and hold the RACK OUT pushbutton (see Figure 2 on page 1) until a loud "clicking" sound is heard (approximately 6 seconds after pressing the pushbutton). Release the pushbutton immediately when the clicking sound begins (see Figure 6).

NOTE: The racking position indicator should read "TEST/DISCONNECT".

6. Upon completion of the racking procedure, disconnect the power plug from the power source. Remove the ERD from the circuit breaker compartment door.



Figure 6: ERD Mounted on the Circuit Breaker Compartment Door (Circuit Breaker in the TEST/DISCONNECT Position)

SECTION 6—SCHEMATIC

Electrical Circuit Operation

Interlocked pushbuttons control the 120 Vac universal motor (see Figure 7). Half-wave rectifier (D1) reduces the motor speed. Capacitor (C1) and surge protector (V1) protect the diode rectifier (D1). Pressing the RACK IN pushbutton makes the output shaft rotate counter-clockwise (looking into the output shaft). Pressing the RACK OUT pushbutton rotates the output shaft clockwise.

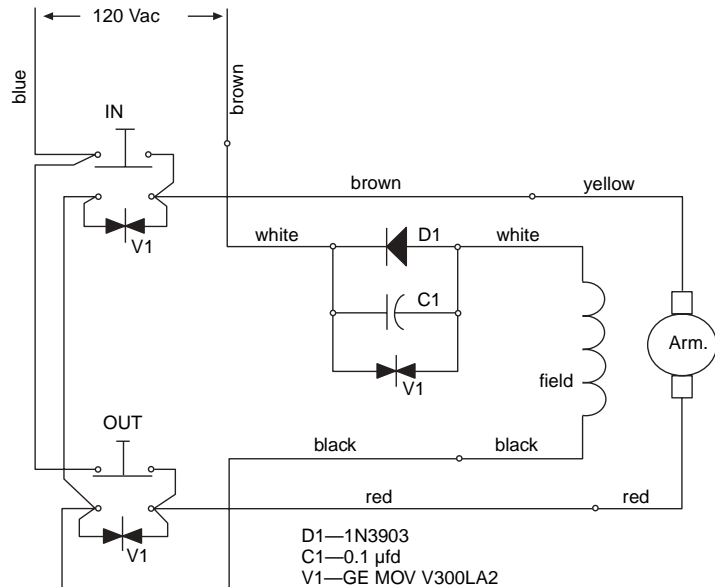


Figure 7: Schematic Diagram

SECTION 7—MAINTENANCE

Torque Limiting Clutch

Replacement Parts and Servicing

No regular maintenance is necessary.

The torque limiting clutch is factory-set at 25 ft-lbs (34 N•m) output and should not be adjusted.

When ordering replacement parts be sure to specify part number, part description, and the class number from the Square D catalog where this information was obtained.

If your ERD should become damaged or you encounter problems making repairs or replacing parts, return it to Square D for repair. Contact your local Square D field sales representative for more information.



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