

ATTACHMENT A

Scope of Work



SCOPE OF WORK

1. BACKGROUND/OVERVIEW

- A. Virginia Railway Express (VRE) operates a fleet that includes twenty (20) MP36PH-3C locomotives built by MotivePower Inc. (MPI). Each locomotive is equipped with four (4) Wabtec/MPI transfer switches used for motoring or braking circuitry.
- B. The locomotives use transfer switches to functionally switch the power either to the dynamic brake grids or to the power contactors and on to the traction motors. The switches and power contactors are located in the high voltage cabinet.

2. GENERAL REQUIREMENTS

- A. The Contractor shall provide all labor, supervision, equipment, material, and transportation necessary to deliver a total of eighty (80) transfer switches to VRE in accordance with the scope of work specified herein.
- B. The transfer switches shall adhere to all applicable requirements of the current editions of the following:
 - 1. 49 CFR 229, Railroad Locomotive Safety Standards; and
 - 2. 49 CFR 238, Passenger Equipment Safety Standards.

3. SPECIFIC REQUIREMENTS

- A. The Contractor shall deliver to VRE eighty (80) transfer switches for its fleet of MP36PH-3C locomotives.
- B. The transfer switches shall be Electro-Motive Diesel (EMD) factory Part No. 8464113, or EMD factory UTEX Part No. 8471767, or approved equal.
- C. The Contractor shall deliver new or UTEX EMD transfer switches to fit an MPI MP36PH-3C locomotive high voltage cabinet.
- D. Each transfer switch shall have a unique serial number prominently displayed on a permanently applied serial number plate.

4. SALIENT CHARACTERISTICS

Each transfer switch shall be configured and operate in accordance with the following characteristics:



A. Operating Temperatures

1. Operate in temperatures that may exceed 200F;
2. Working Voltage 74 Volts Direct Current (VDC);
3. Pickup (at 20C) 24 VDC; and
4. Dropout (at 20C) 5-28 VDC.

B. Switch

1. Shall be a two-pole, double throw switch;
2. Shall operate 1000 ampere operated by a magnetic switch;
3. Designed to set up various power circuits;
4. Shall not make break load current;
5. Shall have hold-on features built in to prevent the contacts from blowing open under fault conditions;
6. Moving parts shall be free from excess friction;
7. Bearing surfaces shall be designed to operate without lubrication;
8. Contact Tips:
 - a. Shall be free of foreign objects but need not be smooth;
 - b. Shall not be cleaned, dressed or filed;
 - c. Shall operate satisfactorily even when pitted, blackened or eroded; and
 - d. Overtravel shall be provided to compensate for allowable wear.
9. The switch assembly shall be serviceable allowing for the replacement of all subcomponents;
10. Shall have top terminal connections to accommodate existing locomotive cabling; and
11. Shall mount to an MPI MP36PH-3C locomotive high voltage cabinet using existing mounting provisions.



C. Magnet Coil

1. The switch shall be operated by an intermittent duty magnet coil;
2. The coil shall be economized with a series resistor;
 - a. Resistance 75 ohms (+/-5%); and
 - b. Wattage 55 watts.
3. Normal excitation of the economized operating coil shall be 0.78 ampere at 74 VDC; and
4. Resistance (at 20C) 19.8 ohms (+/-10%).

D. Interlock

1. Shall have an enclosed four circuit interlock switch in a dustproof housing;
2. The interlock switch shall have external terminal tabs for circuit connections; and
3. Each interlock terminal shall have identification letters molded into the interlock housing.

5. **DELIVERY SCHEDULE**

- A. The Contractor shall deliver eighty (80) transfer switches to VRE within one hundred eighty-five (185) consecutive calendar days from the Notice-To-Proceed (NTP). Early delivery will be accepted.
- B. The Contractor shall ship, two (2) shipments, each containing forty (40) transfer switches, to VRE in accordance with Section 6 below.
- C. The initial shipment of forty (40) transfer switches shall be delivered to VRE within one hundred twenty (120) consecutive calendar days from the receipt of the NTP by the Contractor. Early delivery will be accepted.
- D. The final shipment shall be delivered to VRE within sixty (60) consecutive calendar days from the first shipment of transfer switches.

6. **SHIPMENT**

- A. Shipments shall be FOB destination, freight prepaid and allowed.
- B. Any damage incurred in shipping the transfer switches to VRE is the sole responsibility of the Contractor.



- C. In response to any damage that occurs during shipping, the Contractor shall replace each damaged transfer switch within fifteen (15) consecutive calendar days of being notified by VRE of the damage.
- D. A Purchase Order and written shipping release shall be obtained from VRE by the Contractor before shipping the transfer switches.
- E. Deliveries shall be made between the hours of 9:00 A.M. and 4:00 P.M. Eastern Time, Monday through Friday (excluding Federal Observed Holidays), to the following location:

VRE Crossroads Maintenance and Storage Facility Warehouse
9400 Crossroads Parkway
Fredericksburg, VA 22408
- F. With each shipment to VRE, the Contractor shall prepare its own packing list documenting the equipment by part number, serial number, and VRE Purchase Order number.

7. **TRANSFER SWITCH CORE EXCHANGE**

- A. All transfer switch cores will be packaged securely and shipped to the Contractor's designated ship-to address within sixty (60) consecutive calendar days of receipt and acceptance of each shipment (as specified in Section 5.C. and 5.D.) of transfer switches by VRE.
- B. Each core return shipment from VRE will be accompanied by a Return Core Certification form. This form shall provide quantities and serial numbers of all transfer switch cores contained in each shipment to the Contractor.
- C. Additionally, the Return Core Certification form confirms the receipt and acceptance of each transfer switch core by the Contractor and must be signed by the Contractor's authorized personnel and returned to VRE within fifteen (15) calendar days of receipt.
- D. All completed and signed Return Core Certification forms shall be returned by the Contractor to VRE's Manager of Operations Administration, Detrius Williams, at dwilliams@vre.org.
- E. All testing and quality control of the returned cores shall be the responsibility of the Contractor.

