



SECTION X

SPECIAL INSTRUCTIONS FOR TYPE “EX” UNITS CLASS I GROUP D AND CLASS II GROUP G RATING

I. EX BATTERY.

- A. All batteries used on EX rated units must be approved for use in Class I Group D and Class II Group G hazardous locations. An authorized EX battery manufacturer must supply these batteries.
- B. EX rated batteries must be supplied with the following characteristics:
 - 1. A battery latching plate that securely fastens the battery plug to the battery receptacle located on the battery enclosure. The battery latching plate is hinge mounted from the battery case cover and prevents the battery plug from being pulled out without first raising the latching plate. When this latching plate is raised, the electrical circuit to the battery receptacle is disconnected cutting out all power.

CAUTION

UL and FM REQUIRE THAT AN EX RATED UNIT USE A PADLOCK OR KEYLOCK TO SECURELY LOCK THE BATTERY LATCHING PLATE TO THE BATTERY CASE. THIS PREVENTS UNAUTHORIZED PERSONNEL FROM RAISING THE BATTERY COVER OR PULLING THE BATTERY PLUG OUT WHICH CAN CREATE ACCIDENTAL SPARKS THAT CAN CAUSE AN EXPLOSION.

- 2. Keylock or padlock to securely fasten the battery latching plate to the battery case.
- 3. Insulating material securely fastened to the underside of the battery cover.
- C. SAFETY GUIDELINES
 - 1. All batteries must be fully charged for the start of each operating shift. Operating units with low battery voltage causes excessive heat and can cause switch contacts, coils, and motor brushes to fail prematurely.

CAUTION

EX BATTERIES MUST BE CHARGED IN A NON-HAZARDOUS LOCATION

- 2. Operate an EX unit only when the battery latching plate is securely locked into place.
- 3. Never bypass the battery interlock switch with anything other than the battery latching plate locked into place.
- 4. Never operate a unit that has the battery insulation missing from the underside of battery cover.
- 5. Only authorized personnel should raise the battery cover.



- 6. An EX unit should never leave the service department without the battery latching plate securely locked into place.

II. ELECTRICAL COMPONENTS.

CAUTION

MAINTENANCE OR REPAIRS ON EX RATED UNITS SHOULD BE DONE BY AUTHORIZED AND TRAINED PERSONNEL ONLY IN NON-HAZARDOUS LOCATIONS.

All ETS units are equipped with intrinsically safe-circuits and use M-I mineral insulated cabling.

- A. When performing maintenance procedures on EX rated units, pay very close attention when disassembling as to the location of insulating materials, wires, spacers, etc. so they can be reinstalled correctly.
- B. Replacement of any components such as motors, wires, tape, insulation, etc. must be approved for use on EX rated units.

NOTE- Check with ETS manufacturer before replacing any electrical components.

- C. Use proper wire terminals when replacing.
- D. Cabling, Conduit and Sealed Fittings.

ETS units are equipped with M-I mineral insulated cabling approved for use in Class I Group D and Class II Group G hazardous locations. Special Sealed type fittings are located prior to the conduit entering the EX boxes. These fittings prevent explosion proof vapors or gas from entering the electrical compartments.

- 1. If replacement of cabling becomes necessary, replace with M-I mineral insulating wiring which is approved for use on EX rated units.
- 2. Each sealed fitting is packed with Crouse Hinds Chico "X" Fiber and sealed with Chico A-5 sealing compound.

CAUTION

WHENEVER REPLACING CONDUIT, NEW Sealed TYPE FITTINGS MUST BE INSTALLED AND RESEALED WITH CROUSE HINDS CHICO "X" FIBER AND CHICO A-5 SEALING COMPOUND.



III. EXPLOSION PROOF BOXES.

Each ETS unit is supplied with explosion proof boxes which house the drive unit, pump motor unit, and electrical components. These boxes are flange mounted to the chassis using four bolts. The use of an explosion proof box enclosure creates a modular design which offers ease in servicing and replacement of components. Each explosion proof box is made of an aluminum alloy and have been approved for use in Class I Group D and Class II Group G hazardous locations. If it becomes necessary, a complete box assembly can be supplied direct to you with components intact. For complete components supplied in each EX box, please refer to the parts section of this manual.

SAFETY: When repairing components or removing boxes from the chassis, please adhere to the following:

- A. When bolting EX box covers in place, make sure that the adjoining surfaces of the lid and box are thoroughly clean and free of any scratches.

CAUTION

THE ADJOINING SURFACES ON THE EX BOX ENCLOSURE AND LID MUST BE FREE FROM DAMAGE. IF THESE SURFACES BECOME DAMAGED IN ANY WAY, THE BOX MUST BE REPLACED IMMEDIATELY!

- B. Be sure to securely replace all bolts mounting the box to the chassis and the box lid to the box housing. It is very important that all bolts are fastened in place properly. No unit should be operated with bolts that are not properly torqued or missing from any of the mountings on the EX boxes.
- C. When re-attaching fittings from the cabling to the EX box housing, make sure the threads on both the fittings and box enclosure are clean and free from chips to ensure proper thread engagement.

CAUTION

FULL FIVE THREAD ENGAGEMENT MUST BE MAINTAINED ON ALL CABLE FITTINGS AT ALL TIMES. IF THREADS ON THE CABLE FITTINGS OR EX BOX HOUSING BECOME DAMAGED, THEY MUST BE REPLACED IMMEDIATELY TO ENSURE THE UNIT IS IN FULL COMPLIANCE.

NOTE- If it becomes necessary to replace an EX box, one can be supplied fully equipped with internal components intact or housing only. Contact the factory when replacement is required.

IV. CHASSIS.

- A. Brass or aluminum
 - 1. Brass or aluminum anti-sparking strips are attached to the chassis and chassis forks.
 - 2. The brass or aluminum anti-sparking strips must be secure on the unit at all times. Do not operate a unit with any of these brass or aluminum strips missing.
- B. EX boxes.



C. Wheels

1. The EX design requires that each unit must have two static conductive wheels able to ground out static electricity.
2. Your ETS unit has two static conductive caster wheels. This enables the use of poly-tread load wheels in forks.
3. The static conductive wheels are especially compounded to meet the requirements of Underwriters Laboratories, Inc. for use on equipment operating in hazardous areas. Electrical resistance is less than 1700 ohms while the wheel is under 25% of rated capacity. The static conductive wheel hardness is 70 +/- 5 on a type "A" Shore durometer.

DISCLAIMER: ETS, Inc. Cannot guarantee the Static Conductivity of these wheels after they leave our plant because of lack of control over how the wheels are used or maintained. The Static Conductivity can be impaired or destroyed by dirt, wax, oil or other extraneous matter picked up on the floor during use. Every order for the ETS units using these wheels is accepted subject to this disclaimer.

CAUTION

WHEN REPLACING THE CASTER WHEELS, THEY MUST BE APPROVED FOR USE ON EX UNITS. THESE WHEELS WILL HAVE A YELLOW "EX" LOGO FOR USE IN HAZARDOUS LOCATIONS MOLDED INTO THE SIDE OF THE WHEEL.

V. SAFETY GUIDELINES FOR EX UNITS.

Adhere to the GENERAL SAFETY INSTRUCTIONS located in SECTION A in addition to the following:

- A. Never operate an EX rated unit with any of the brass or aluminum anti-spark strips missing. These strips must be securely attached to the chassis at all times.
- B. Make sure the battery is securely fastened to the unit and the battery latching plate is locked into place.
- C. The EX boxes and box lids must be bolted into place tightly before operation.