INSTALLATION and OPERATION MANUAL for TYPE-X PURGED ENCLOSURE 120 V.A.C.

Engineering No. 90298500A
(6/97)

This publication is provided solely as a guide for individuals who have received Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

METTLER TOLEDO
350 W. Wilson Bridge Road
Worthington, Ohio 43085
(614) 438-4511

PRECAUTIONS

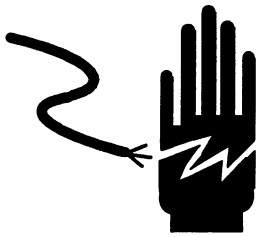
READ this manual BEFORE operating or servicing this equipment.

FOLLOW these instructions carefully.

SAVE this manual for future reference.

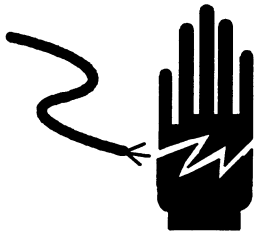
DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.



⚠ WARNING

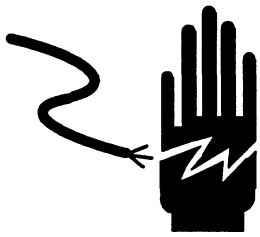
ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.



⚠ WARNING

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY.

DO NOT REMOVE THE GROUND PRONG.



⚠ WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE REMOVING THE FUSE OR SERVICING.

⚠ CAUTION

BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT OR BODILY HARM.

TABLE OF CONTENTS

NOTICE

DO NOT PERFORM SERVICE OR ATTEMPT TO INSTALL THE X-PURGED EQUIPMENT BEFORE THE HAZARDOUS AREA HAS BEEN SECURED BY AUTHORIZED REPRESENTATIVES OF THE MANAGEMENT OF THE FACILITY.

INTRODUCTION

The Purge Gas Supply Control and Pressure Switch assemblies are factory installed only.

This manual contains instructions for the installation and use of the X-Purge enclosures for Mettler-Toledo, Inc. controlled systems.

Type X-Purge reduces the classification within the enclosure as defined by the National Electrical Code, Class I & II, Div. 2, Applicable Groups C, D, F & G to non-hazardous. The enclosure is to be supplied with clean air, or inert gas, of sufficient flow and pressure to reduce to an acceptably safe level the concentration of any flammable gasses initially pressure and maintains this safe level with the enclosure by positive pressure and continuous flow. Flow Class II locations combustible dusts must be removed and positive pressure maintained to insure safe operation of the pressurized equipment. A differential pressure switch is used to remove power when the door is open or upon failure of the air purging system.

To free the enclosure of hazardous gas concentrations, a pressure switch and timer prevent internal circuitry from being energized until at least four (4) volumes of air have passed through the enclosure. There is a fixed timer of approximately 15.8 minutes, with the purge gas supply at the specified pressure and flow rate will allow a minimum of four (4) volumes to pass through the enclosure. A "Purge Ok" lamp is provided to indicate to the user that enclosure pressure is above minimum limit and that the timer has timed out.

IMPORTANT:

Mettler-Toledo, Inc. X-Purge enclosures are designed for use only in Class I, Div. 1 and 2, Group C & D, and Class II, Div. 1 and 2, Groups E, F & G hazardous areas. If the hazardous classification is other than the classification listed above, or is not known, DO NOT attempt to install or use the X-Purging equipment.

Read carefully and follow all instructions. Enclosures must be installed according to these instructions to insure proper operation and compliance with National Fire Protection Association Bulletin NFPA #496.

For assistance contact your local Mettler-Toledo, Inc. service representative.

CUSTOMER REQUIREMENTS

The following customer requirements must be met to NFPA Standard 496 for application of a Mettler Toledo X-Purge System Enclosure:

1. Locate system in an area having as low a degree of hazard as practical.

2. The purging gas supply must be normal instrument quality, free of dust or liquids and containing no flammable vapors or gasses. Ordinary plant compression air is usually not suitable. The purging gas supply may be nitrogen gas. Pressure must be no greater than 200 PSI.

3. The compressor input line should preferably not pass through the hazardous atmosphere. If this cannot be avoided, the line must be constructed of non-combustible material, designed to prevent leakage of hazardous gasses or vapors into the system, and protected against mechanical damage and corrosion.

4. The compressor intake must be located in a non-hazardous area.

5. All A.C. electrical wiring not included with the enclosures must be provided by the customer in conduit with sealed joints. All conduit entries to the X-Purge enclosure must be fitted with standard sealing conduits and sealed according to NEC practices, ARTICLE 500.

6. Provide an effective earth ground for the system.

IMPORTANT:

DO NOT source power which is not interlocked by the X-Purge to ANY circuit in the enclosure. (Separate control power interlocking is provided.)

The power for ALL circuitry in the enclosure MUST BE sourced and controlled by the X-Purge power safety interlock. Confirm that all power internal to the enclosure is disconnected as a result of the loss of cabinet pressure.

INSTALLATION INSTRUCTIONS

Refer to External Wiring Diagrams provided with system. Figures 1, 2 and 3 on the following pages show specific details of the connection.

The wire from the main disconnect which is provided by the installer, to X1, X2 and GND (shown on Figure 2) plus the wire between TB and X1A, X2A and enclosure GND (shown on Figures 2 and 3) are customer supplied and must be No. 14 AWG copper, with 60°C insulated wire or larger installed in conduit with proper conduit seals.

1. Connect a wire from the X-Purge enclosure pressure switch "N.O." terminal (see Figure 1) to Safe-Pak terminal "A" located in timer module (see Figure 2).

2. Connect a wire from the X-Purge enclosure pressure switch "C." terminal (see Figure 1) to Safe-Pak terminal "B" located in timer module (see Figure 2).

3. Connect a black wire from the terminal block TB terminal "1", in the timer module (see Figure 2), to terminal X1A in X-Purge enclosure (see Figure 3).

4. Connect a white wire from the terminal block TB terminal "X2", in the timer module (see Figure 2), to terminal "X2A" in X-Purge enclosure (see Figure 3).

5. Connect a green wire from the ground lug terminal, in the timer module, to GND terminal in X-Purge enclosure (see Figure 3).

6. Connect customer supplied input power to the designated wires X1 (LINE), X2 (NEUTRAL) and GND in round junction box, which is part of the timer module assembly (see Figure 2).

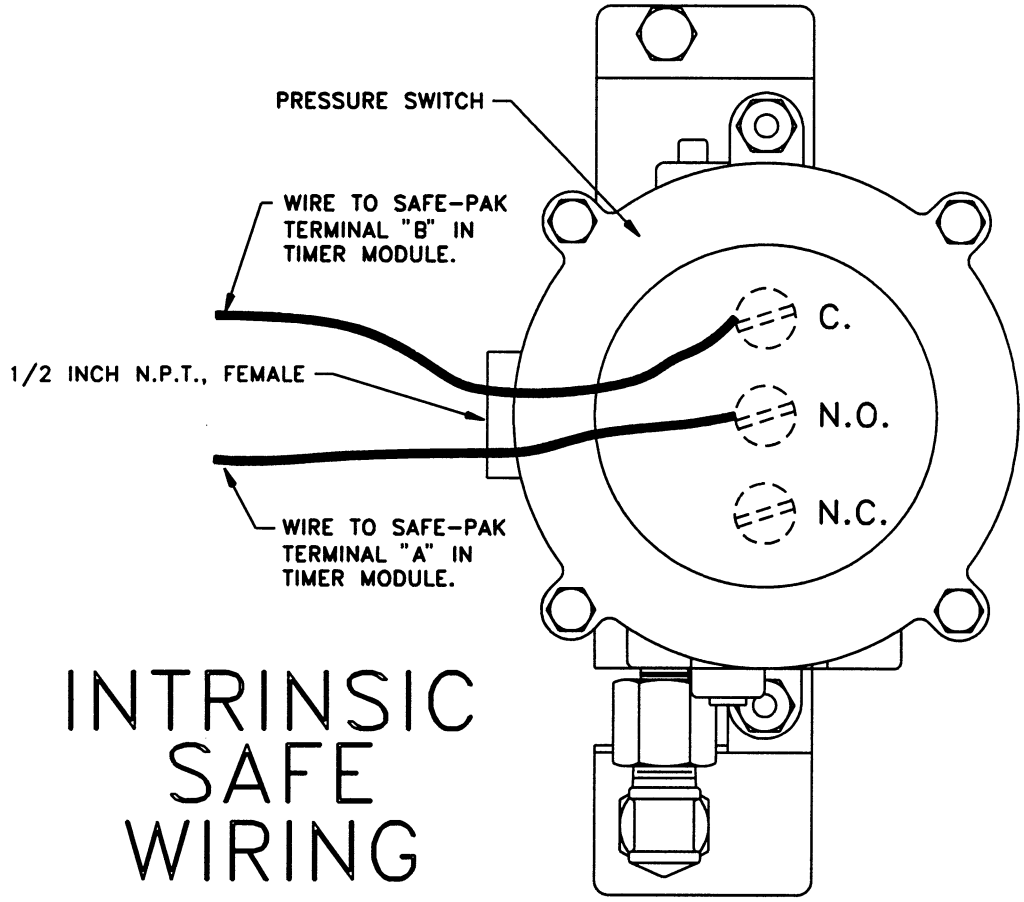
7. Connect #6 gauge ground wire, from the X-Purge enclosure ground lug terminal to an effective earth ground (see Figure 3).

8. Open all sealing conduits and fill with the approved conduit sealant for hazardous areas. The conduit sealant material specified for use with the sealing fittings provided must be used.

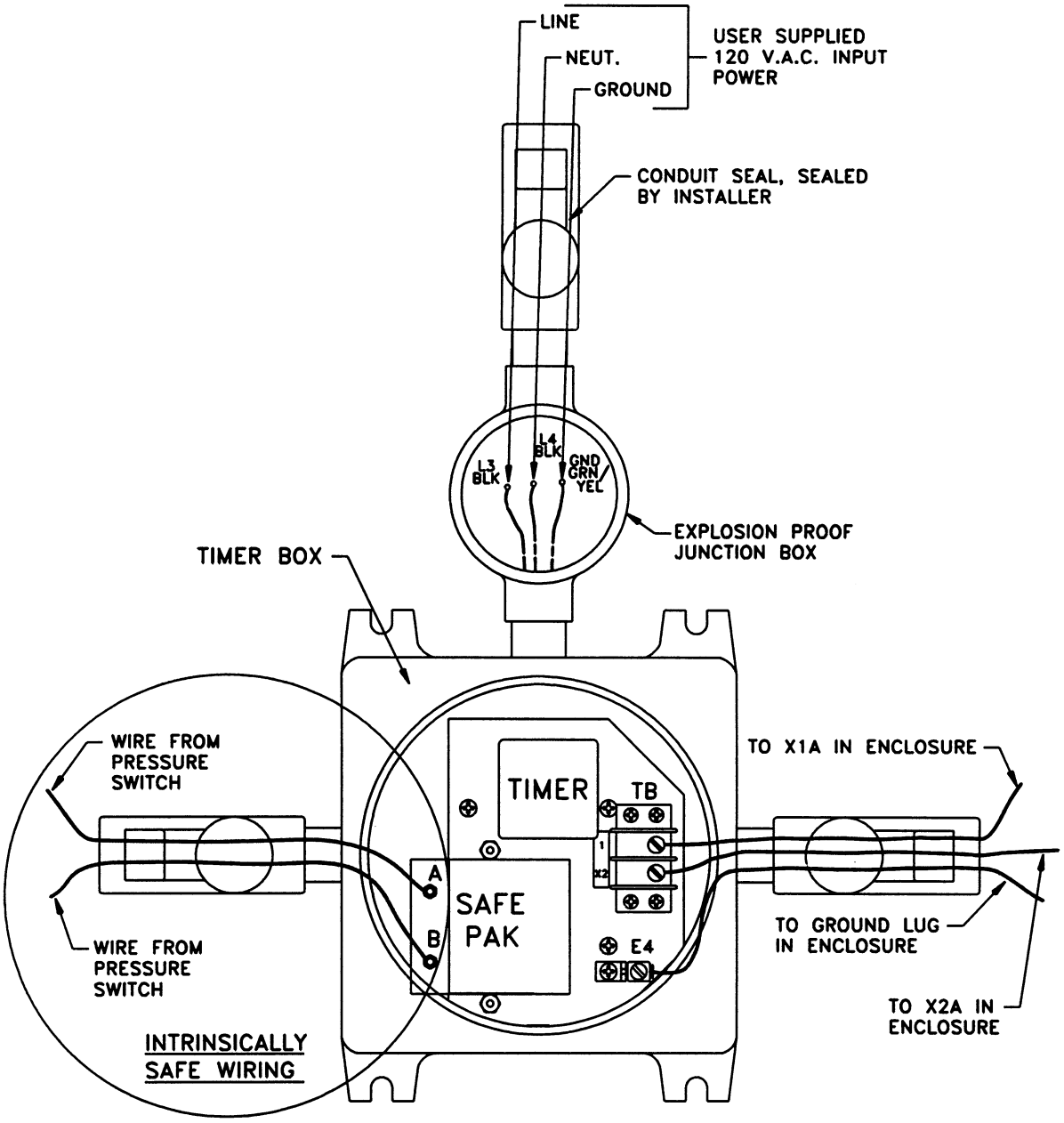
(EXAMPLE Adalet conduit seals must be sealed with Adalet's sealing compound called Adaco sealing cement. Killark conduit seals must be sealed with Killark sealing compound.)

9. Close the conduit seals and all covers on enclosures tightly.

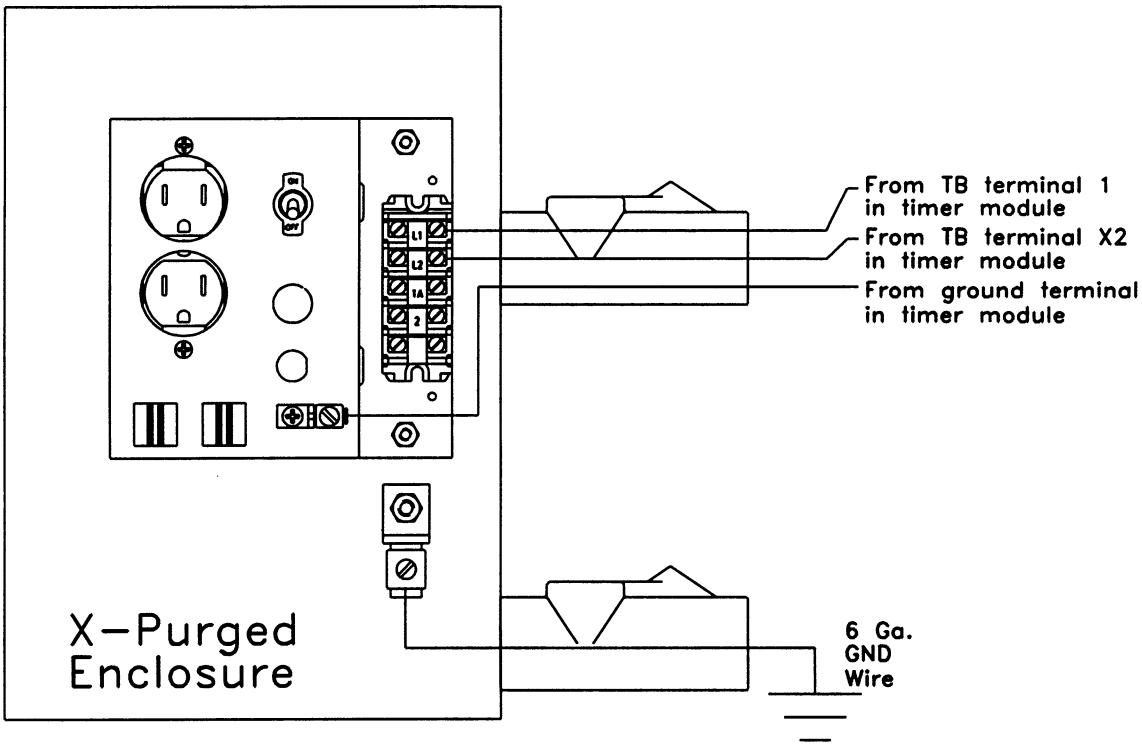
INSTALLATION INSTRUCTIONS — FIGURE 1



INSTALLATION INSTRUCTIONS — FIGURE 2



INSTALLATION INSTRUCTIONS — FIGURE 3



CALIBRATION

Each X-Purge enclosure is calibrated at the factory to the following specifications:

Regulator

Factory set to provide 200 CFH flow (approximately 2 PSI) with flowmeter adjusted for maximum flow.

Flowmeter

Adjust to provide 125 CFH flow.

IMPORTANT:

DO NOT attempt to re-calibrate factory settings of the pressure switch, or purge timer as seemingly unimportant variations may impair safety.

Pressure Switch

Factory set to open at 0.5 inches of water, decreasing pressure. Purge time is based upon this value.

Purge Timer

Factory set for 15.8 minutes time so that at least four enclosure volumes of purge air at 125 CFH have passed through the enclosure before power is restored.

WARNING
DO NOT TAMPER WITH ELECTRICAL TIMING CIRCUITRY. TAMPERING COULD RESULT IN UNSAFE OPERATION.

SET-UP

The flowmeter and regulator are factory set for normal conditions, however, it may be necessary to re-adjust these items in the field. At initial setup, the regulator and flowmeter should be adjusted as follows:

1. Set the flowmeter for maximum flow by turning the control valve fully counter-clockwise. DO NOT unscrew or withdraw the valve stem beyond the threaded section.

2. Adjust regulator to provide 200 CFH flow as indicated by the flowmeter. Rate of flow is read at the point of maximum width of the indicator float. Turn the adjust knob counter-clockwise to reduce flow and clockwise to increase flow. When the flow rate has been set to 200 CFH, push the yellow locking sleeve inward to lock the adjusting knob.

3. Adjust the flowmeter to 125 CFH by turning the control valve clockwise.

NOTE:

The following conversion factors may be useful in changing reading in PSI to reading in inches of water (H_20):

$$(IN/H_20) = PSI \times 27.71$$
$$PSI = (IN/H_20) \div 27.71$$

SEQUENCE OF OPERATION

1. Purging gas supply enters the regulator when input pressure is between approximately 2 and 5 PSI.
2. The purge gas supply flows into the enclosure monitored by a flowmeter adjusted to 125 CFH. The flowmeter is installed in the supply line to allow maintenance personnel to make precise flow adjustments.
3. The flow of purge gas into the enclosure creates pressure which is monitored by a differential pressure switch. When pressure decreases to less than .5" H_20 (.01804 PSI), an internal switch opens causing power to be interrupted. When pressure increases to approximately 0.7 to 0.85 inches of water, the switch will close again.
4. A Contact from the pressure switch is wired to an intrinsically safe switching unit and timer located within the timer module. When the switch contact closes, the switching unit, of the Safe-Pak, energizes the timer. The timer is set for an interval sufficient to permit at least four volumes of air to pass through the enclosure before the equipment is energized.
5. **WARNING:** ENCLOSURE MUST NOT BE OPENED OR ANY COVER REMOVED UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS.

WARNING:
IN CLASS II, DIVISION 1 and 2 LOCATIONS, POWER SHALL NOT BE RESTORED AFTER THE ENCLOSURE HAS BEEN OPEN UNTIL COMBUSTIBLE DUST HAVE BEEN REMOVED.

Power will not be restored after the enclosure has been opened until the enclosure has been purged for 15.8 minutes.

A pressure relief valve and muffler assembly protects the enclosure from over pressurization. The relief valve is to open at 1/3 PSI and directs exhaust through the muffler for filtering and diffusion.

Explosion proof lights and NEMA 4/12/13 rated switches are used on X-Purged enclosure.

WARNING:
DO NOT REPLACE ANY OF THE SWITCHES OR LIGHTS ON THE ENCLOSURE, UNLESS WITH AN EXACT DUPLICATE, WITHOUT SPECIFIC WRITTEN APPROVAL OF METTLER TOLEDO SYSTEMS GROUP ENGINEERING. USE OF UN-APPROVED SWITCHES OR LIGHTS WILL RENDER THE ENCLOSURE UNSAFE FOR HAZARDOUS AREAS.

SERVICE AND MAINTENANCE

Service Contact

Any problems encountered with the installation as outlined in these instructions may be referred to your local Mettler Toledo Service Representative.

Deviations from the instructions specified in this manual are prohibited without specific written approval from Mettler Toledo Systems Group Engineering.

Maintenance

1. Pressure Switch

Keep this switch clean. Monthly, or more often is required in applications where there is excessive condensation within the switch, rotate the vent drain plug one turn clockwise, then turn it to its original position to dislodge deposits.

2. Fuse Replacement

WARNING:

The enclosure is fused for a maximum of 3 amps or less. Replace only with a fuse of equal type and ampere rating.

RECOMMENDED SPARE PARTS

PART NUMBER	DESCRIPTION	QUANITY
90158500A	AIR REGULATOR	1
90169900A	PRSSURE GAGE	1
12661300A	PRESSURE SWITCH	1
11886700A	RELIEF VALVE	1
11886600A	EXHAUST FILTER	1
11887600A	SAFE-PAK RELAY	1
A11889400A	PURGE TIMER	1

MAINTENANCE LOG

MAINTENANCE DESCRIPTION	PERFORMED BY	DATE

METTLER TOLEDO
Scales & Systems
350 West Wilson Bridge Road
Worthington, Ohio 43085-2273

P/N:90298500A

90298500A