Installation & Operation Manual:
TSS / TPS Series Sub Base Tank

Tramont Corporation
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Thank you for choosing Tramont

TSS/TPS Series Sub Base Tank with pump/motor and System 2000PLUS™ Electronic Control Module

IMPORTANT: PLEASE READ
This guide contains information specifically related to Tramont TSS/TPS Series sub base tanks with a pump/motor and System 2000PLUS™ Electronic Control Module. For complete specifications, installation and operation instructions, warranty and other information on your tank, you must also consult the Sub Base Tank Installation and Operation Manual.

Included in this manual

- Day tank control specification, System 2000™ ECM
- Float Sensor
- Installation, TPS, primary base tank
- Installation, TPS, closed top diked base tank
- Installation, TPS, secondary containment base tank
- Installation, TSS, primary base tank
- Installation, TSS, open top diked generator base tank
- Installation, TSS, closed top diked generator base tank
- Installation, TSS, secondary containment base tank

Specification:
Day Tank Control System 2000PLUS™ ECM

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General
This section covers the electrical description and installation of the standard TRAMONT electrical control module (ECM). Installation of the "SYSTEM 2000" should be performed by a qualified electrician. These specifications describe the standard "SYSTEM 2000" ECM as the most full featured UL508 listed fuel transfer system in the industry.

Description
The heart of the "SYSTEM 2000" ECM is an electrical analog float gauge sends a signal to the ECM for: fuel level indication, pump control, high fuel level warning, low fuel level warning, low fuel level shut off, fuel in rupture basin warning, low fuel in remote tank warning and an ECM function signal. All signals and warnings are provided with N.O. and N.C. contacts for remote annunciation. The ECM can be manually controlled by ON, OFF, and TEST push buttons. In addition, an internal test button allows for a periodic test of all warning LEDs and remote annunciation relays.

Functions
The purpose of the ECM is to maintain the fuel level of the day tank by controlling the pump/motor. The pump is off at the normal fuel level and is activated at 87% full. A "pump running" indicator LED is on when the pump is activated. A motor control relay is prewired to pump motor.

WARNING: When ECM "OFF" push button is engaged the unit is disabled, however, 120 VAC power is still present within the ECM indicated by the "power on" LED.

Options
Standard - UL 508 listed control module
1920 - Duplex pumping system. Adds 2nd pump and motor for safety redundancy. Control alternates lead pump.
1930 - Controls are available for 12 VDC operation. Single or duplex. Please consult factory for specifications.
1935 - Controls are available for 24 VDC operation. Single or duplex. Please consult factory for specifications.
3240 - Pump running contacts for remote annunciation.
3250 - Critical high shutdown. Separate float switch senses high fuel level, disengaging motor and closing N.C. solenoid valve. Warning relay supplied for remote annunciation.

Incoming Power
The ECM is powered by a customer-supplied 120 VAC line. Power terminals are accessible by removing four cover screws on the ECM and removing the ECM cover exposing the terminal strip. Wires should be run through knockout provided.

Level Sensor
The day tank's level is determined by an electrical analog float gauge located beneath the ECM. The sensor sends a 0-90ohm signal to the ECM, which converts this signal into a precise fuel level. Fuel level is indicated by nine incremental LEDs on the ECM from EMPTY to FULL.

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Alarms
The ECM has five standard alarm conditions. Each alarm is indicated locally by an LED and remotely by wiring to supplied relays. A normally open and normally closed contact is provided for customer connections. Contacts are rated at 1 amp tungsten, 120 VAC or 24 VDC.

A. High fuel - activates at 106% of normal fuel level with a two second change of state time delay.
B. Low fuel - activates at 62% of normal fuel level. This enables the customer time to react to a potential problem before low fuel shutdown occurs.
C. Low fuel shutdown - activates at 6% of normal fuel level. This enables customer to shut down engine generator before fuel runs out, preventing loss of prime or engine damage.
D. Fuel in rupture basin - with a rupture basin float switch, (option #2930) the ECM will signal if fuel is in the rupture (containment) basin.
E. ECM functional - the ECM performs many internal checks (including float sensor signal verification) to ensure proper operation. If a fault occurs, this LED will go out (or flash if an erratic signal is present) and de-energize the relay. It is suggested that the customer wire to the normally closed contact thereby providing a signal if a fault does occur.

Mode
There are four modes of operation on the ECM:

A. Off - This pushbutton disables the ECM for routine maintenance to the tank system without disrupting the ECM. **Caution:** ECM functional de-energizes, which can activate a customer alarm wired to this relay.
B. On - This pushbutton activates the ECM after the Off pushbutton has been depressed. On any initial power up condition, after a power outage, the ECM will automatically turn on.
C. Test - This pushbutton will test all front panel LEDs for three seconds and activate pump/motor for as long as the button is depressed. All alarm relays will not activate but will maintain their original state.
D. Internal test - This pushbutton, located inside the ECM, will test each LED and remote annunciation relay in sequential order - High fuel to ECM functional.
Note: It is recommended that both the external and internal test switch be activated as part of a periodic maintenance program to ensure reliable operation of the day tank.

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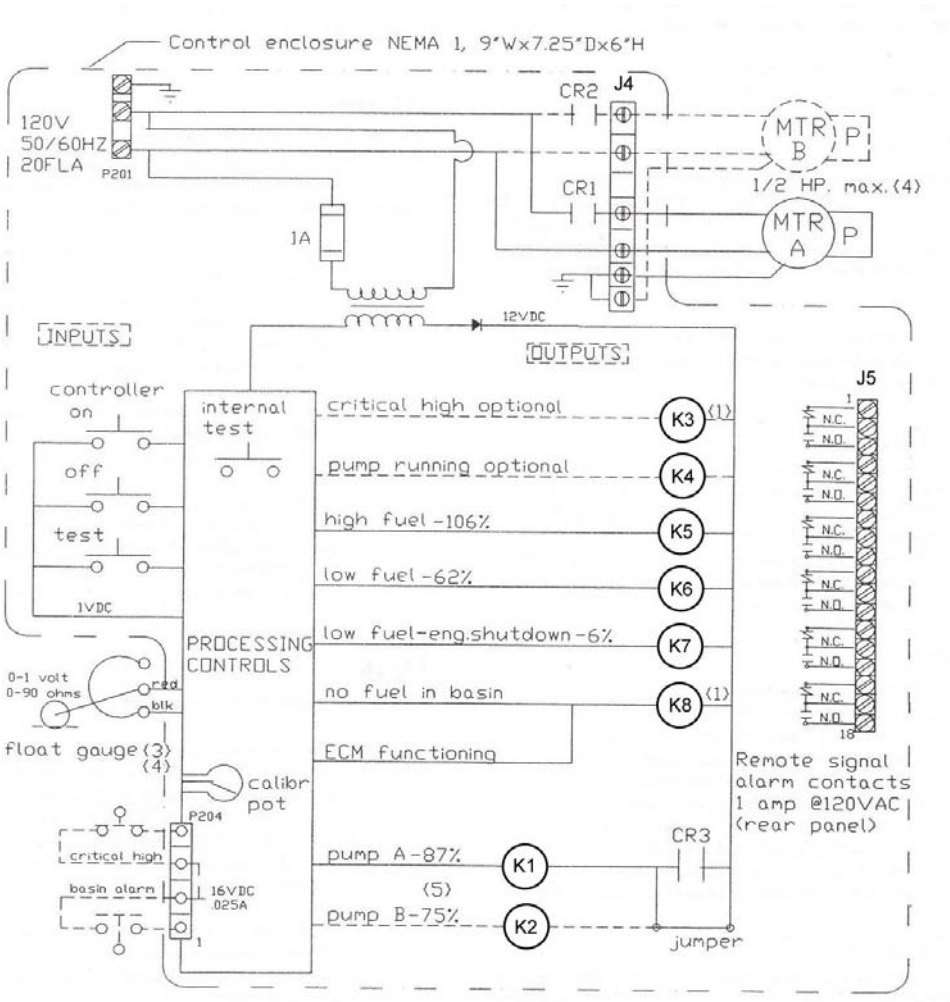
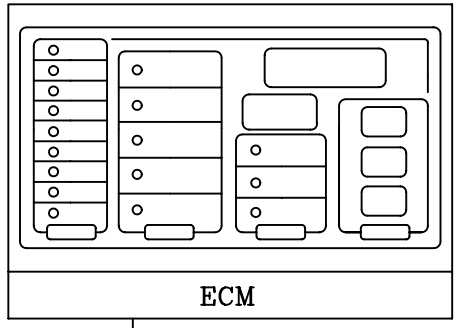
This ECM has been designed to supply the customer with all necessary options in a standard package. By following these installation guidelines a qualified electrician should be able to wire this unit into a generator control system providing the customer with complete monitoring and control over the day tank fuel transfer system.

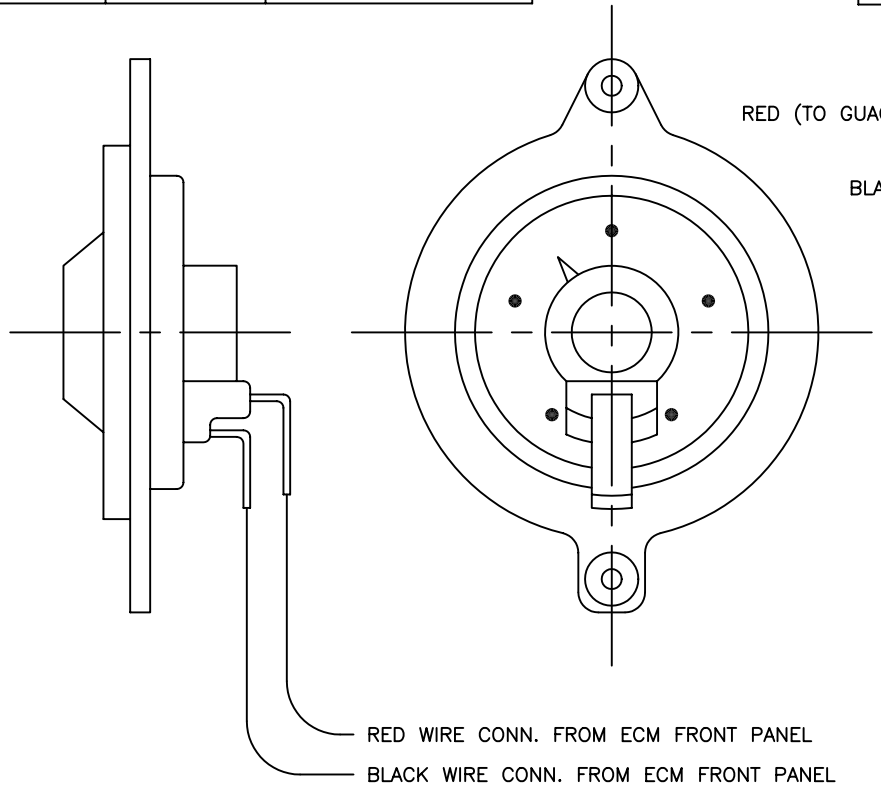


NOTES:
1. Relay is energized during normal operation.
2. Dashed line indicates optional controls.
3. The controller is normally mounted above the gauge, sitting on the day tank. However, the controller can be mounted up to 50' away from the tank and gauge using #16 gauge shielded twisted wire.
4. Motor starters are required above ½ HP.
5. Pump A and B alternate lead positions.
6. Warning: An inlet fuel strainer is highly recommended (#2230) to prevent fuel contamination, maintain fuel gauge integrity, and prolong the life of the pump.

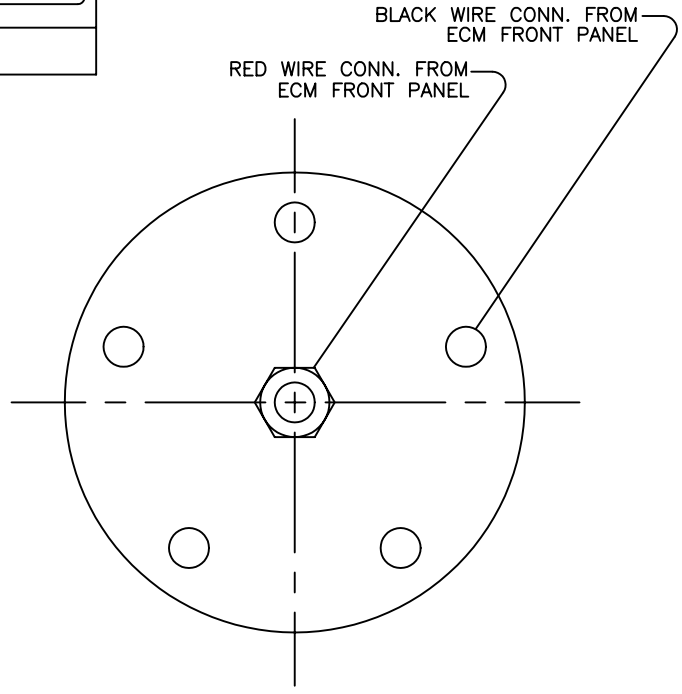
MINIMUM REQUIREMENTS FOR THE CABLE ARE TWISTED PAIR, 100% SHIELDED, WITH A DRAIN WIRE (SHIELD DRAIN). THE SHIELD/DRAIN WIRE IS TO BE CONNECTED TO THE 2000 CONTROLLER CASE (ONLY ONE END.)

GAGE	MAX. LENGTH	BELDEN PART NUMBER
20 GA	75 FEET MAX	8762
18 GA	100 FEET MAX	8760
16 GA	200 FEET MAX	8719
14 GA	300 FEET MAX	8720





SUB–BASE



DAY TANK

TRAMONT CORPORATION

LETTER	DATE	DESCRIPTION	NAME
A	07/26/96	START	CRT

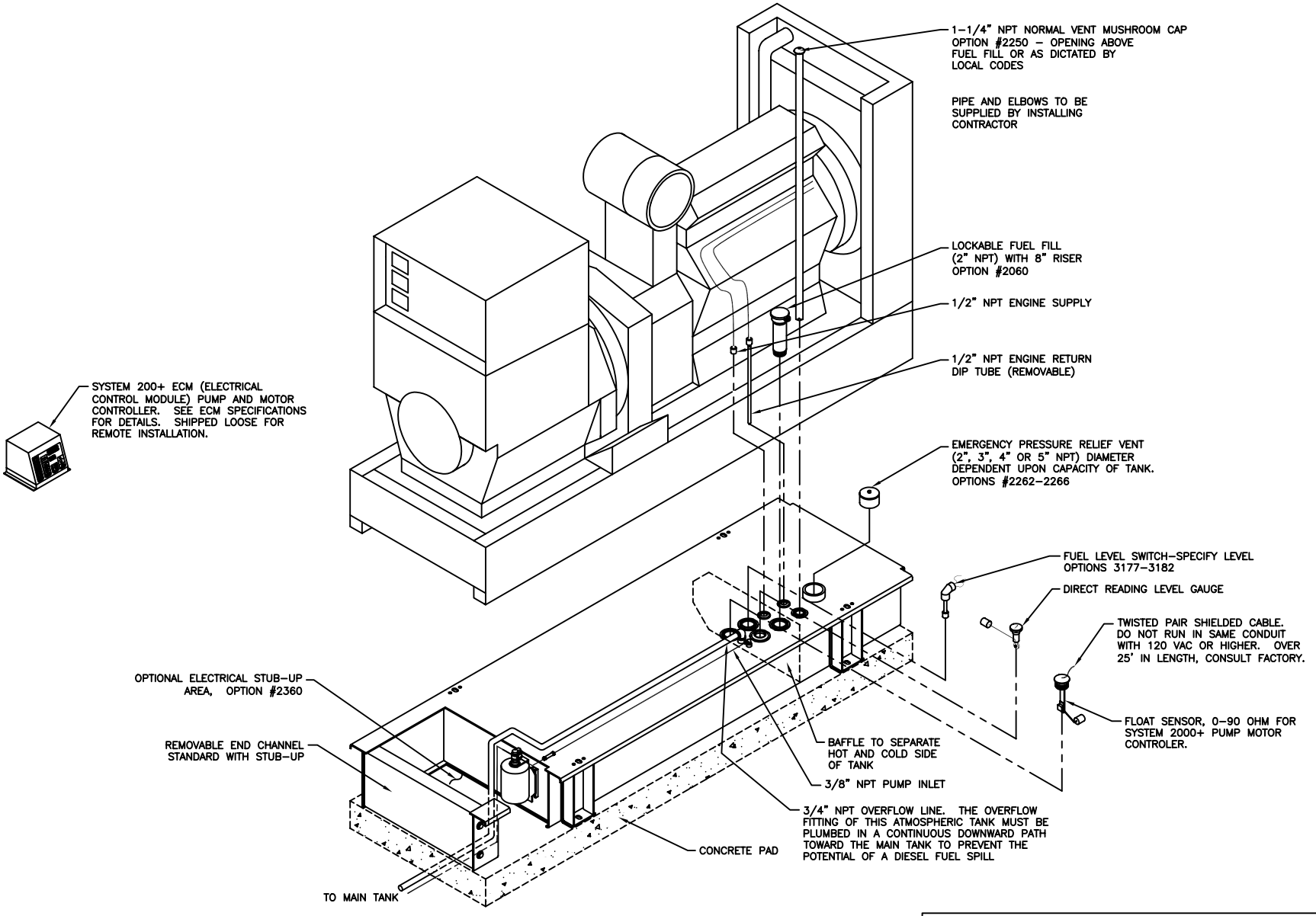
CHANGE BLOCK

SCALE: NTS
DATE: 07/26/96
FRACTIONS = +/–.5 .XX =+/– .125 .X = +/– .250 .XXX =+/– .062
DRAWN BY: CRT
SALES ENG

DESCRIPTION: ROCHESTER FLOAT SENSOR ELECTRICAL HOOKUP TO ECM

FOR: OPTION #3662 FOR SUB–BASES

DRAWING NO. 109–3038



LETTER	DATE	DESCRIPTION	NAME
A	11/12/97	START	CRT

CHANGE BLOCK

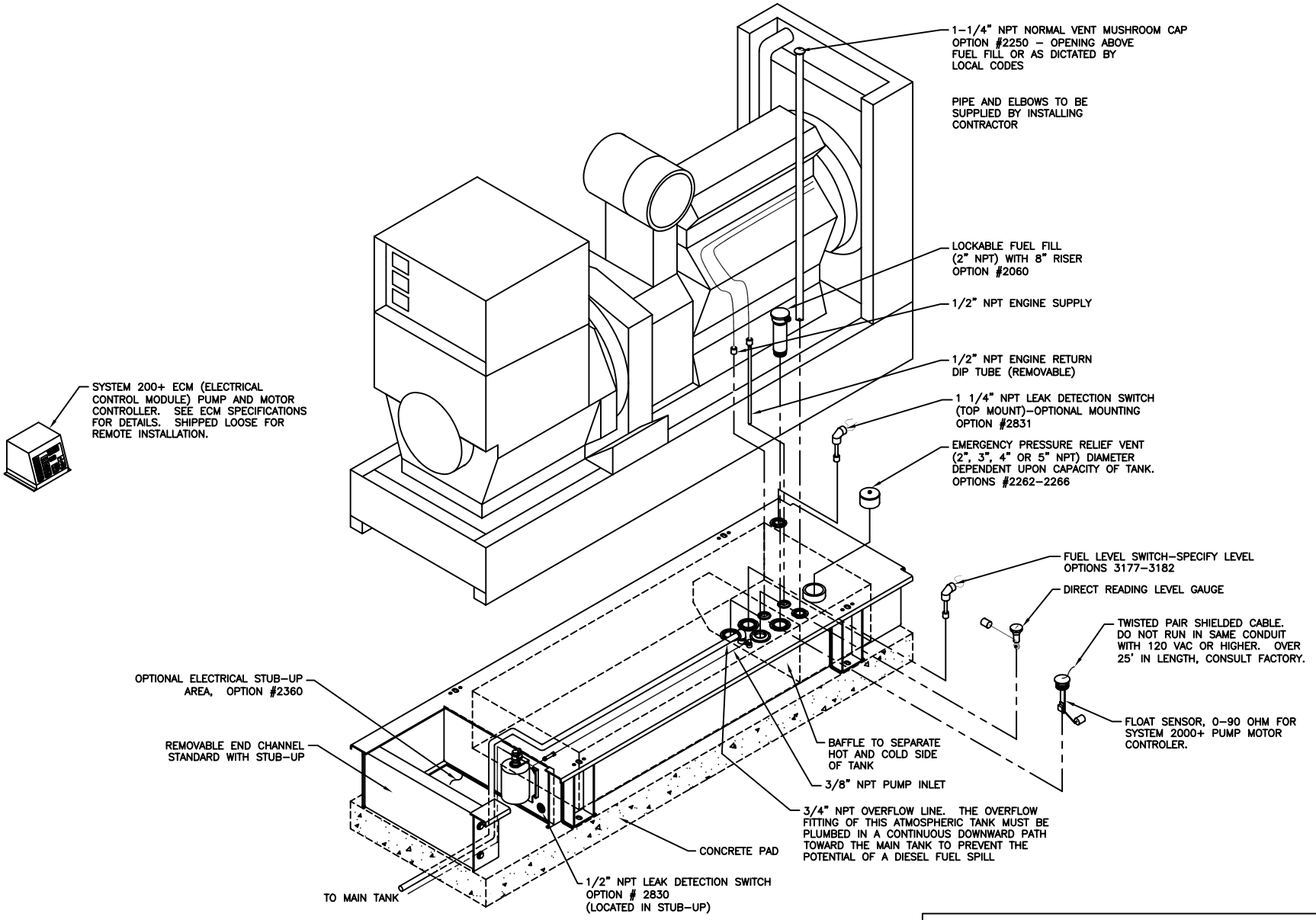
TRAMONT CORPORATION

SCALE: NTS
DATE: 11/12/97
FRACTIONS = +/-.5 .X = +/- .250 .XX =+/- .125 .XXX =+/- .062
DRAWN BY: CRT
SALES
ENG

DESCRIPTION: INSTALATION DRAWING (FOR TPS SUB-BASE)

FOR: PRIMARY GENERATOR BASE TANK

DRAWING NO. 109-4047



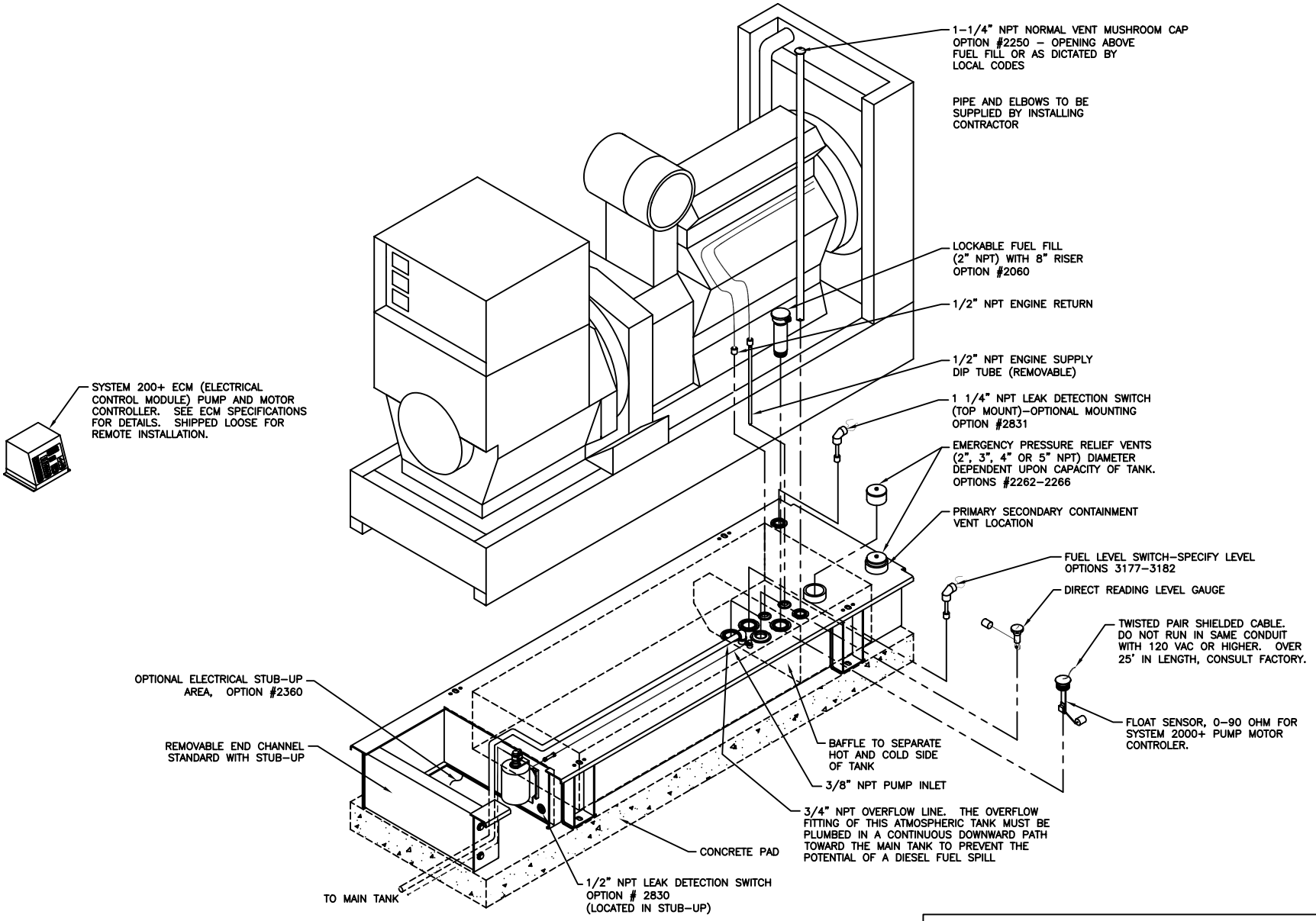
LETTER	DATE	DESCRIPTION	NAME
A	11/3/97	START	CRT

CHANGE BLOCK

TRAMONT CORPORATION

SCALE: NTS
DATE: 11/3/97
FRACTIONS = +/-.5 .X = +/- .250 .XX =+/- .125 .XXX =+/- .062
DRAWN BY: CRT
SALES ENG

DESCRIPTION: INSTALATION DRAWING (FOR TPS SUB-BASE)
FOR: CLOSED TOP DIKED BASE TANK
DRAWING NO. 109-4043



LETTER	DATE	DESCRIPTION	NAME
A	11/10/97	START	CRT

CHANGE BLOCK

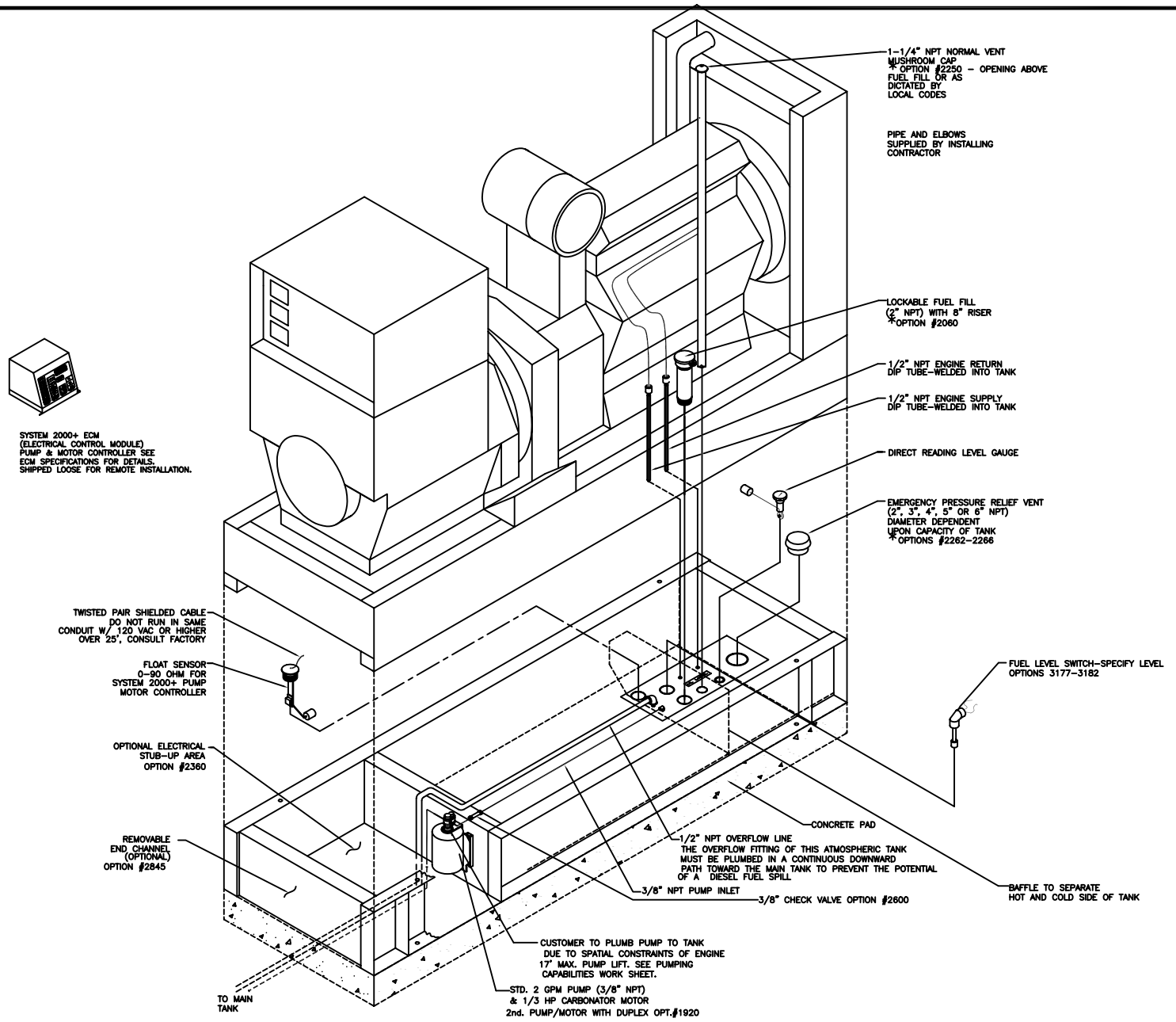
TRAMONT CORPORATION

SCALE: NTS
DATE: 11/10/97
FRACTIONS = +/-.5 .XX =+/- .125 .X = +/- .250 .XXX =+/- .062
DRAWN BY: CRT
SALES ENG

DESCRIPTION: INSTALATION DRAWING (FOR TPS SUB-BASE)

FOR: SECONDARY CONT. BASE TANK

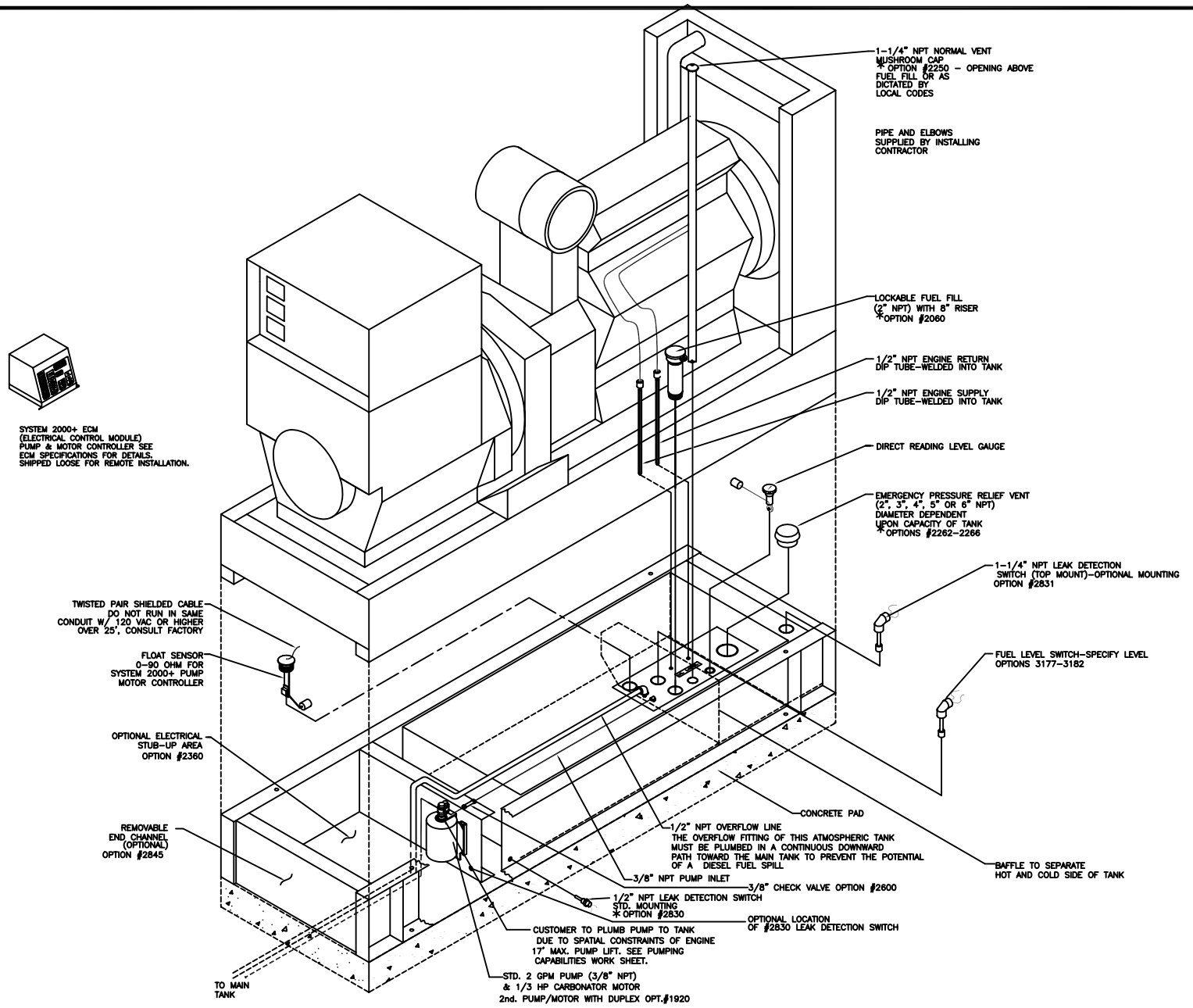
DRAWING NO. 109-4045



LETTER	DATE	DESCRIPTION	NAME
A	10-11-94	START (FROM 1094028)	RLG
CHANGE BLOCK			

TRAMONT

SCALE: NTS	FRACTIONS = +/-.5	.XX =+/- .125	DRAWN BY: RLG	DESCRIPTION: INSTALLATION DRAWING-SINGLE WALL SUB BASE FUEL CONTAINMENT SYSTEM	
DATE: 10-11-94	.X = +/- .250	.XXX =+/- .062	SALES / ENG	FOR: PRIMARY GENERATOR BASE TANK-TSS	DRAWING NO. 1094032



LETTER	DATE	DESCRIPTION	NAME
C	10-11-94	ADD PLUMBING DETAILS FOR TSS	RLG
B	09-30-94	ADD VARIOUS DETAILS	RLG
A	09-22-94	START (FROM 1094025 & 109-1054))	RLG

CHANGE BLOCK

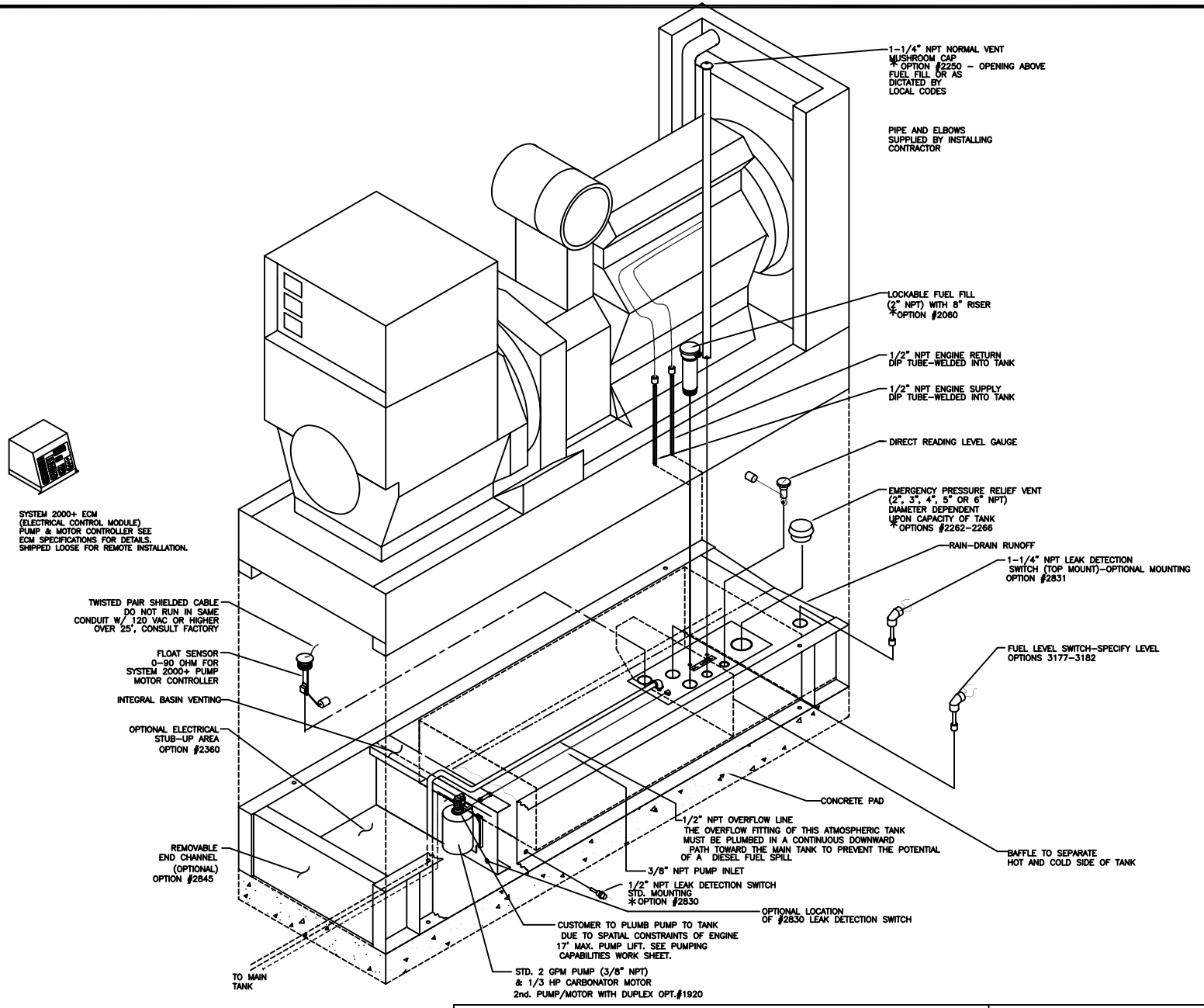
TRAMONT

SCALE:	NTS	FRACTIONS = +/-.5	.XX =+/- .125	DRAWN BY:	RLG
DATE:	09-22-94	.X = +/- .250	.XXX =+/- .062	SALES	ENG

DESCRIPTION: INSTALLATION DRAWING-DOUBLE WALL SUB BASE FUEL CONTAINMENT SYSTEM

FOR: OPEN TOP DIKED GENERATOR BASE TANK-TSS

DRAWING NO. 1094028

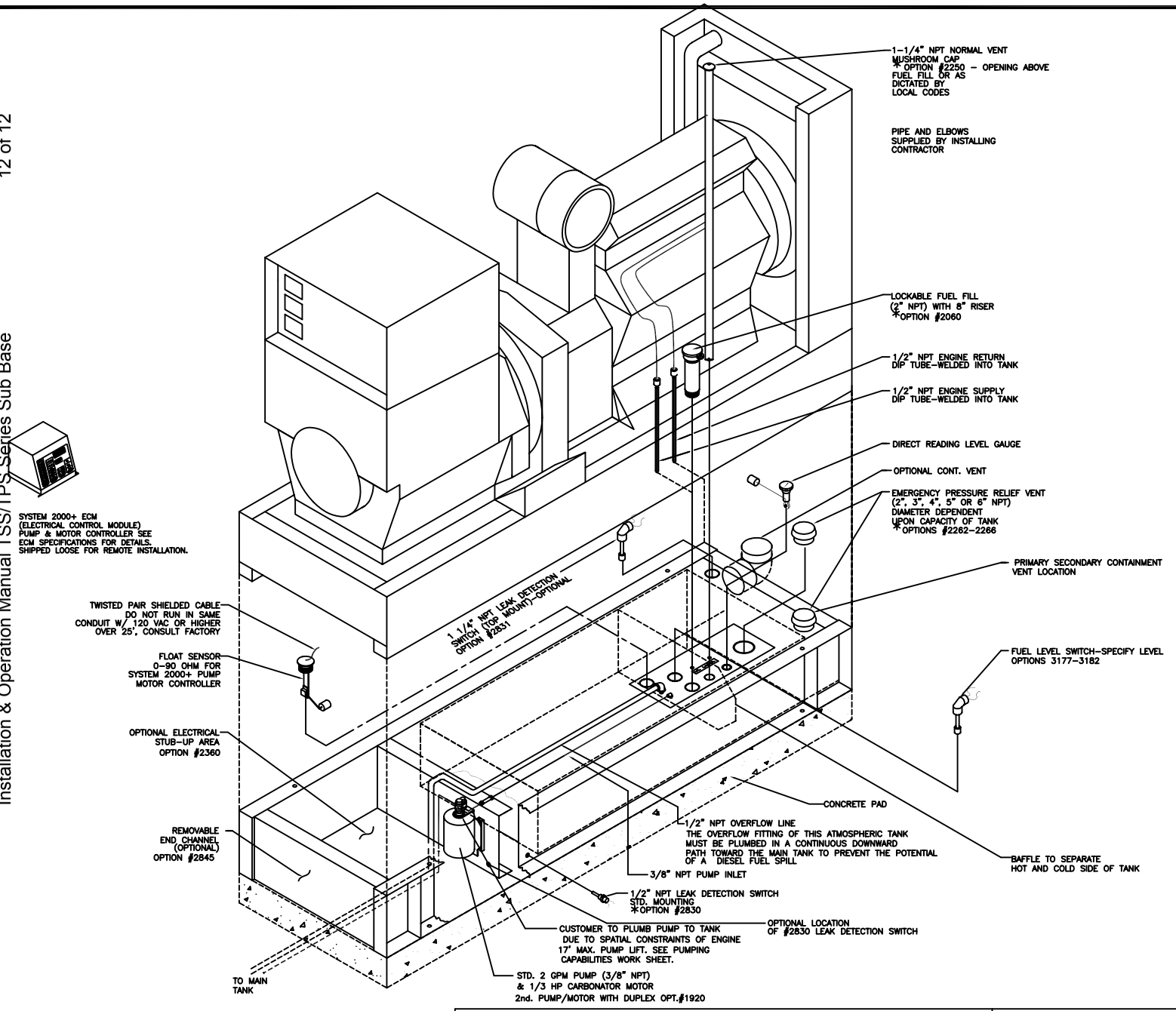


LETTER	DATE	DESCRIPTION	NAME
B	10-11-94	ADD PLUMBING DET. FOR TSS, NEW LEVEL GAGE	RLG
A	09-22-94	START (FROM 1094025 & 1091054)	RLG

CHANGE BLOCK

TRAMONT

SCALE: NTS	FRACTIONS = +/-.5	.XX =+/- .125	DRAWN BY: RLG	DESCRIPTION: INSTALLATION DRAWING-DOUBLE WALL SUB BASE FUEL CONTAINMENT SYSTEM	
DATE: 09-22-94	.X = +/- .250	.XXX =+/- .062	SALES / ENG	FOR: CLOSED TOP DIKED GENERATOR BASE TANK, TSS	DRAWING NO. 1094029



LETTER	DATE	DESCRIPTION	NAME
B	10-11-94	ADD TSS PLUMB.; NEW LEV. GAGE; 2ND CNT. VENTS	RLG
A	09-22-94	START (FROM 1094025 & 1091054)	RLG

CHANGE BLOCK

TRAMONT

SCALE:	NTS	FRACTIONS = +/-.5	.XX =+/- .125	DRAWN BY:	RLG
DATE:	09-23-94	.X = +/- .250	.XXX =+/- .062	SALES	ENG

DESCRIPTION: INSTALLATION DRAWING-DOUBLE WALL SUB BASE FUEL CONTAINMENT SYSTEM

FOR: SECONDARY CONTAINMENT GENERATOR BASE TANK, TSS

DRAWING NO. 1094030

SUB BASE TANK/DAY TANK QUALITY CONTROL CHECKLIST

IMPORTANT: PLEASE REVIEW THE ATTACHED CHECKLIST. IF YOU ARE NOT SATISFIED WITH THE CONDITION OF YOUR TANK OR IF PARTS ARE MISSING, YOU MUST CONTACT TRAMONT WITHIN SEVEN DAYS OF RECEIPT OF THIS ORDER.

TRAMONT
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3701 N. Humboldt Blvd.
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Phone: 414-967-8800
Fax: 414-967-8811
e-mail: sales@tramont.com

Date 5/29/10 Order # 160698 Serial # 73299

Model # UTAS-10 Quantity 1 Credit ✓ Dimensions (see attached drawing)

Drawing & Rev. _____ Sold to: FRONTIER POWER PRODUCTS

Labels Tramont ✓ UL Listing ✓ WI Indoor ____ WI outdoor ____ Los Angeles ____ Chicago ____

New York ____ Manufacturer (list name) TRAMONT

Paint Color GREY Coverage ✓ Cleanliness ✓

Interior Cleanliness ✓ Rust preventative ✓ Epoxy ____

PLEASE NOTE: While alarms, vents, gauges, heaters, pumps and motors are standardlyinstalled on the tank, there may be some instances in which they are shipped loose. Please carefully check all boxes shipped with your tank.

Alarms Low fuel ____ High fuel ____ Dual high/low ____ Fuel in basin: side mount ____ top mount ✓

If more than one fuel level switch, indicate type and quantity _____

Gauge Krueger L-gauge ____ Rochester gauge ____ 0-90 Ohm twin site sender ____

Other _____

Immersion heater _____

Controls System 2000PLUS 1 Single ✓ Duplex ____ Level mod ____

Serial # 101390045 Installed ✓ Shipped loose ____

Critical high ____ Reverse pump system ____ Other _____

Pumps Supply pump capacity 26PM Quantity 1 Test 20 Rev. pump capacity ____ Test ____

Motors Supply motor part # 4406 Quantity 1 Mount: C ____ Spider ____ Carb ✓

Reverse motor part # _____ Mount: C ____ Spider ____ Carb ____

Fill caps 2" locking cap ____ with riser ____ 2-1/4" manual fill cap ____ with riser ____

Removable dip tubes Supply dip tube ____ Rust preventative & locktite applied ____

Reverse dip tube ____ Rust preventative & locktite applied ____

Base (shipped loose) Remote base ____

Vents (shipped loose) Normal vent size ____ Emergency vent size ____ Quantity ____

Additional items shipped loose

Item	Quantity