TRANSTECTOR®
SUPERIOR SURGE SUPPRESSION

700 A/V Series

Voltage Regulator and Power Conditioner for Varian Medical Systems

1451-032 Rev. D

Configurations

Varian Models	Transtector North American Power Center Models Select Unit Based On Input Voltage	kVA	Input - Output Voltage (60 Hz)	Dimensions	Weight
Low Energy [600C, 6EX]	8BLX-15K-700A/V 8CLX-15K-700A/V 8DLX-15K-700A/V 8ELX-15K-700A/V	15 15 15 15	208 - 208Y/120 240 - 208Y/120 480 - 208Y/120 600 - 208Y/120	21.5"W x 29"D x 30"H 54.6 CM x 73.6 CM x 76.2 CM	520 lbs. 235.87 kg
On Board Imaging (OBI)	8BNX-60K (I) -700AV/T 8CNX-60K (I) -700AV/T 8DNX-60K (I) -700AV/T 8ENX-60K (I) -700AV/T	60 (I) 60 (I) 60 (I) 60 (I)	208 - 480Y/277 240 - 480Y/277 480 - 480Y/277 600 - 480Y/277		720 lbs. 325.22 kg
High Energy [2100C, 21EX, 2100C/D, 2300C/D, 23EX]	8BLX-50K-700A/V 8CLX-50K-700A/V 8DLX-50K-700A/V 8ELX-50K-700A/V	50 50 50 50	208 - 208Y/120 240 - 208Y/120 480 - 208Y/120 600 - 208Y/120	45"W x 29"D x 44"H 114.3 CM x 73.6 CM x 111.8 CM	970 lbs. 439.98 kg
Ximatron C-Series	8BNX-100K-700A/V 8DNX-100K-700A/V	100 100	208 - 480Y/277 480 - 480Y/277		1660 lbs. 752.96 kg
Acuity	8BNX-100K (I) -700AV/T 8CNX-100K (I) -700AV/T 8DNX-100K (I) -700AV/T 8ENX-100K (I) -700AV/T	100 (I) 100 (I) 100 (I) 100 (I)	208 - 480Y/277 240 - 480Y/277 480 - 480Y/277 600 - 480Y/277		970 lbs. 439.98 kg
Trilogy, IX [All OBI compatible machines]	8BLNX-110K (I) -700A/V 8CLNX-110K (I) -700A/V 8DLNX-110K (I) -700A/V 8ELNX-110K (I) -700A/V	110 (I) 110 (I) 110 (I) 110 (I)	208 - 208Y/120 & 480Y/277 240 - 208Y/120 & 480Y/277 480 - 208Y/120 & 480Y/277 600 - 208Y/120 & 480Y/277	48"W x 36"D x 66"H 121.9 CM x 91.44 CM x 167.64 CM	1950 lbs. 752.50 kg

Features

- Intelligent Voltage Regulation
- Very Stable Power Output ± 2.5%
- Ultra Low Impedence < 2.0%
- Multiple Voltage Inputs and Outputs
- Input Circuit Breaker
- Tap Switching Technology
- Triple Shielded Isolation Transformer
- User Friendly LED Monitor Panel
- Maintenance Bypass
- Easy Installation
- UL and CUL approved
- Internal TVSS

Actual Applications

Varian Simulators
Varian Linear Accelerators
Varian On Board Imaging (OBI)

c UL us

Warranty Two (2) year manufacturer warranty
One (1) year onsite comprehensive warranty

www.transtector.com 208.772.8515 800.882.9110 sales@transtector.com

TRANSTECTOR SERIES 700A/V

15 KVA POWER CONDITIONER SPECIFICATIONS

For Varian Low Energy Linear Accelerators

1.0 SCOPE

This specification covers the electrical characteristics of the 15 KVA Power Conditioner which provides clean regulated power for Varian Linear Accelerators and peripherals.

2.0 GENERAL

The Power Line Conditioner consists of an all copper, multiple tapped, triple shield isolation transformer. The low output impedance of the transformer in conjunction with the electrostatic shields assures precision hospital grade performance with excellent noise and transient attenuation. Independently controlled inverse parallel electronic switches for each of the 7 taps per phase provide tight regulation over a wide input range. Linear devices are used for line synchronization to prevent phase shift errors normally associated with simple CT zero current crossing acquisition. The microprocessor control accurately selects the correct tap to maintain the output no greater than ±2.5% of nominal, correcting for voltage disturbances within one cycle. Digital processing technique provides fast and accurate regulation without output voltage over or undershoots.

2.0.1 MODEL NUMBERS

MODEL	INPUT VOLTAGE	OUTPUT VOLTAGE
8BLX-15K-700 A/V	208 volts nominal input	208/120 volts output
8CLX15K-700 A/V	240 volts nominal input	208/120 volts output
8DLX-15K-700 A/V	480 volts nominal input	208/120 volts output
8ELX-15K-700 A/V	600 volts nominal input	208/120 volts output

2.1 AGENCIES

2.1.1 STANDARDS
The systems shall be designed in accordance with:
American National Standards Institute
Institute of Electrical and Electronic Engineers
National Electric Code (NEC)
National Fire Protection Association (NFPA Article 70)
Underwriters Laboratories (U/L) 1449, 1012
FCC Article 15, Section J, Class A
ISO 9001

2.1.2 LISTINGS / COMPLIANCE
The system shall be listed to C-U/L standards UL1012
The system shall comply to: FCC Article 15, Section J, Class A and
ANSI C62.14 (electromagnetic compatibility)

3.0 DYNAMIC ELECTRICAL CHARACTERISTICS

3.1 OPERATING VOLTAGE
The input voltage shall be 208 VAC, 240 VAC, 480 or 600 VAC, three phase 60Hz, the output shall be a WYE derived 7 tap regulating system at 208/120 VAC, rated for 100% continuous duty at 15 KVA. The standard transformer design shall be capable of accepting three (3) input voltages, 208 VAC, 240 VAC or 480 VAC. Each unit will be pre-wired at the factory to accommodate the alternative nominal input voltage. The input voltage and input breaker can be changed in the field to accommodate an alternative input voltage.

3.2 LINE VOLTAGE REGULATION
Usable Input Line Voltage +15%, -23%. Output Line Voltage ±2.0% typical.

The design of the system shall indicate that with an input voltage of -10% of nominal, increasing the load to 1000% shall cause the output voltage to fall no lower than -6%.

3.3 OUTPUT VOLTAGE
Output voltage shall be 208/120 volts derived from a WYE configuration, 120 V line-neutral.

3.4 OUTPUT CONNECTIONS
An output terminal strip is provided for the 208/120 VAC three phase power and a 30 Amp single pole breaker is provided for peripheral equipment.

3.5 INPUT/OUTPUT WIRING
The Allen Bradley 1492-CE 2 terminals allow wire sizes from # 12 to # 1/0 to be connected to the input and output terminals. The ILSCO TA-2/0 terminal allows wire sizes from # 14 to #2/0 to be connected to the ground.

3.6 RESPONSE TIME
Response time is less than 1/2 cycle.

3.7 CORRECTION TIME
The output voltage is corrected within 1 cycle.

3.8 LOAD REGULATION
The output is maintained to within 2% of nominal or less, from no load to full load.

3.9 IMPEDENCE
Output impedance shall be less than 2%

3.10 OPERATING FREQUENCY
60 Hertz ± 3 Hertz

3.11 HARMONIC DISTORTION
Less than 1% THD added to the output waveform under any dynamic linear loading conditions presented to the line regulator.

3.12 TURN-ON CHARACTERISTICS
When energized the voltage overshoot is 5% or less of the nominal voltage for less than 1 cycle.

3.13 OVERLOAD RATING
200% for ten seconds.
1000% for one cycle.

3.14 NOISE ATTENUATION
Common mode noise attenuation is typically 140 dB or greater.
Transverse mode noise attenuation is 3 dB down at 1000 Hertz, 40 dB down per decade to below 50 dB with a resistive load.

3.15 AUDIBLE NOISE
Not to exceed 55dB measured @1 meter

3.16 EFFICIENCY
98% Typical at full load. Excitation losses shall be less than 0.75% of KVA rating

3.17 BTU
The Power Line conditioner shall generate no more than 1540 BTU/Hour @ full load.

3.18 POWER FACTOR
Input power factor shall be greater than .95 with a resistive load and reflect no triplen harmonics to the utility under non-linear loads.

3.19 LINE to LINE BALANCE
The Power Line Conditioner shall not produce more than a 2% phase to phase unbalance

3.20 MTBF
The system shall exhibit a MTBF > 10,000Hr.

3.21 SURGE and SPIKE SUPPRESSION
Three Transtector model I2RICP 120 V, silicon avalanche diode TVSS units shall be installed parallel to the secondary output of the power line conditioner to provide bi-directional and bi-polar surge protection. The unit shall be non-degrading and provide ≤330 volt UL SVR rating. The suppression network systems shall be UL recognized and conform to UL 1449 ratings when subjected to ANSI/IEEE C62.41-1991 category C1/B3 waveforms. The surge suppressor modules are installed on the load side of the transformer, connected in parallel by a 30 Amp circuit breaker.

4.0 MAIN TRANSFORMER

4.1 BASIC CONSTRUCTION
The transformer windings are of all copper conductor construction with separate primary and secondary isolated windings.

4.2 MAGNETIC
Grain oriented, M6 grade, stress relieved silicon transformer steel is utilized to minimize losses and provide maximum efficiency. Flux density will not exceed 15k gauss.

4.3 INSULATION
Class N (200° C) insulation is utilized throughout.

4.4 SHIELDING
The transformer has multiple (three) copper shields to minimize inner winding capacitance, transient and noise coupling between primary and secondary windings. Inner winding capacitance is limited to .001 pf or less.

4.5 COOLING
The transformer is designed for natural convection cooling. Fans are located on the rear of the unit.

4.6 OPERATING TEMPERATURE
The system operating range: 0 to 40 degrees C, 32 to 104 degrees Fahrenheit

4.7 OPERATING HUMIDITY
0-95% relative humidity non-condensing.

5.0 MAIN INPUT BREAKER

A main input molded case, thermal magnetic circuit breaker, rated at 125 % of the full load input current, is furnished as an integral part of the unit. For example, a 70 Amp breaker will be provided for a 208 VAC input and a 25 Amp breaker will be provided for a 480 VAC input.

6.0 BY-PASS SWITCH

A manually operated rotary bypass switch provides bypassing of the regulator portion of the Power Line Conditioner. The regulator can be either on-line or bypassed with one turn of the switch. The transformer and suppression circuitry remains in the circuit when in the bypass mode. The bypass switch is located on the rear of the unit.

7.0 MONITORING
7.1 ALERT LIGHT
An indicator light shall annunciate that the output has been disabled by one of the following conditions:
(1) Transformer over-temperature
(2) SCR thermal over-temperature

7.2 INDICATING LAMPS
Output ON indicating lamps shall provided for each phase.

8.0 CABINET

8.1 TERMINATION
Termination is rear access with input and output connections made of copper stand off bus.

8.2 VENTILATION
Ventilation originates from the bottom of the cabinet and exhausts at the rear of the cabinet.

8.3 MOBILITY
The Power Line Conditioner cabinets are equipped with fixed casters located so as not to exceed 600 lbs/sq inch on any one caster.

8.4 ACCESSIBILITY
The cabinet is constructed with lift off side panels for ease of access. The left side is the access panel for the SCR controller boards.

8.5 WEIGHT
Unit weight: 520 lbs.

8.6 DIMENSIONS
21.5”W X 29”D X 30”H

9.0 CONTROLS

The control portion of the cabinet containing the circuit boards and connection to the semi-conductor devices is separate from the transformer and input / output termination.

10.0 WARRANTY

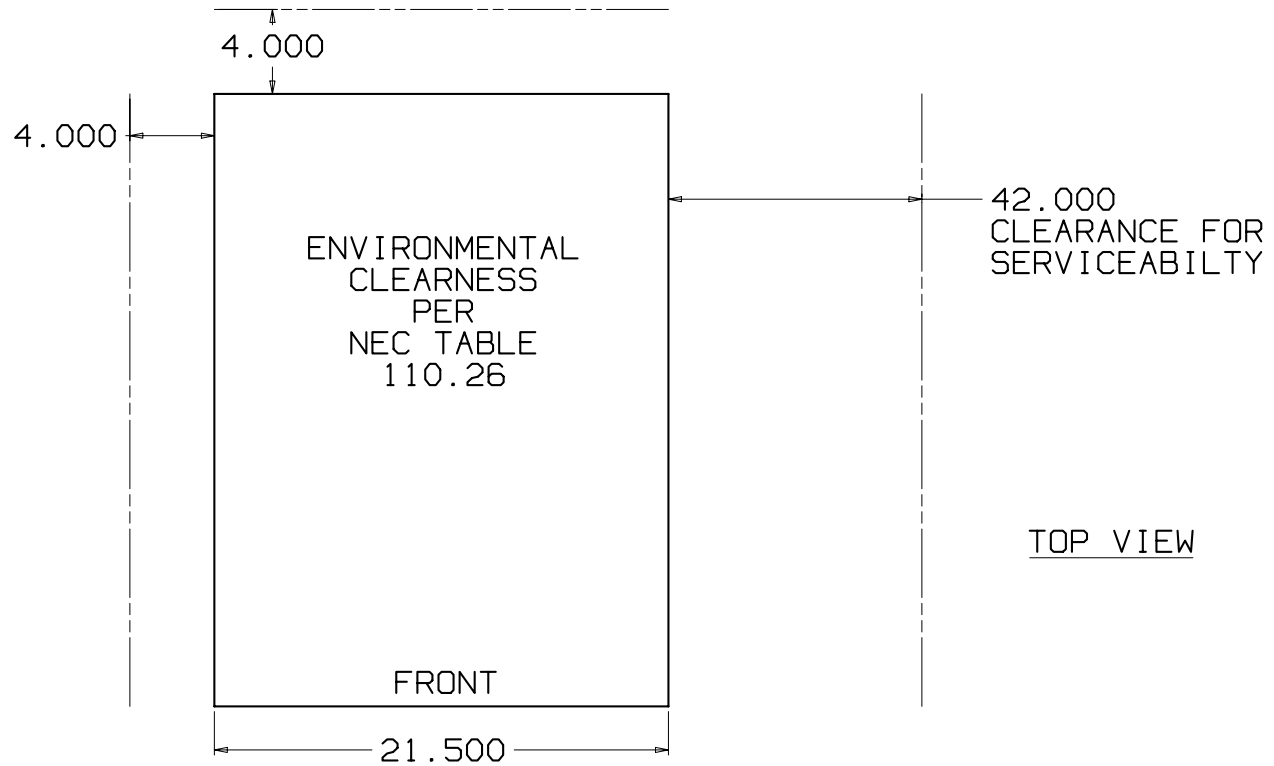
All units shall be covered under a standard commercial two year warranty covering parts and workmanship. Units within the contiguous US shall include a comprehensive warranty in the first year covering on site labor and expenses.

11.0 SERVICE

Transtector shall provide immediate phone support/consultation and if possible, same day parts shipment. (contact must be prior to 12:00 PM PST). If necessary, on site service shall be scheduled the same day for service to be conducted within 24 to 48 hours, based on customer requirements. Typical service hours are 8 AM to 5 PM Monday through Friday.

12.0 CONTACT

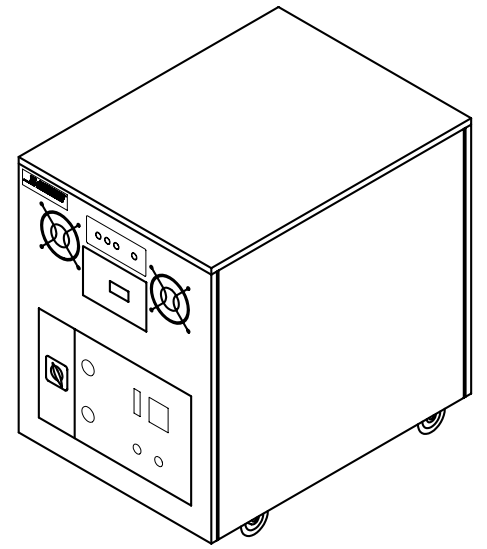
Rick Ribbeck
Transtector Systems
10701 Airport Dr.
Hayden Lake ID 83835
Phone: 1-800-882-9110
Fax: 1-208-762-6133
Email: rribbeck@transtector.com

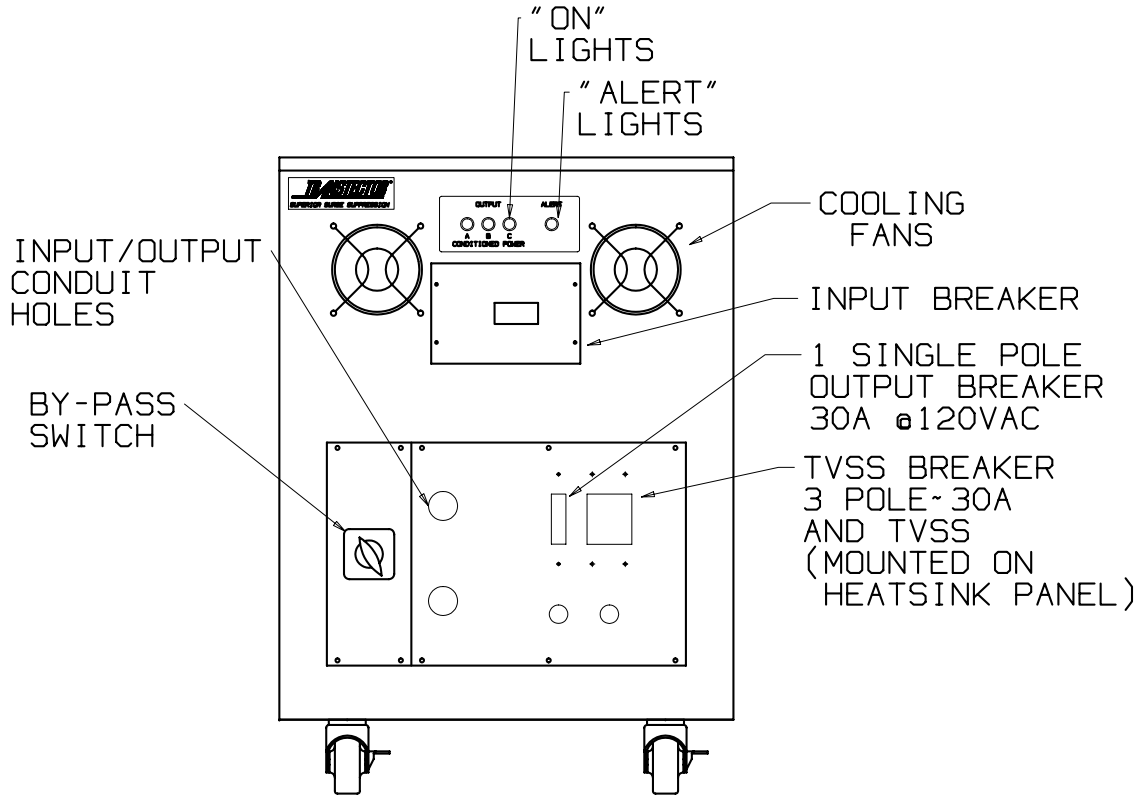


TOP VIEW

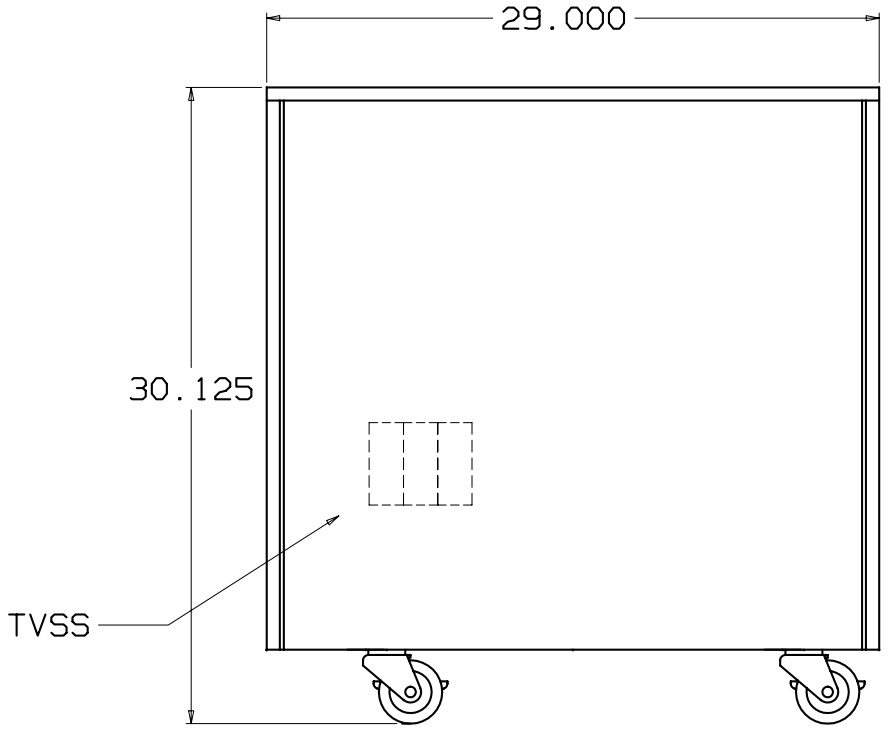
TO REMOVE TOP: REMOVE RETAINING SCREW IN REAR OF TOP, LIFT REAR, & SLIDE FORWARD.

TO REMOVE SIDE: REMOVE RETAINING SCREW IN TOP OF PANEL, & BOTTOM SIDE. LIFT PANEL OFF.





FRONT VIEW



RIGHT SIDE VIEW

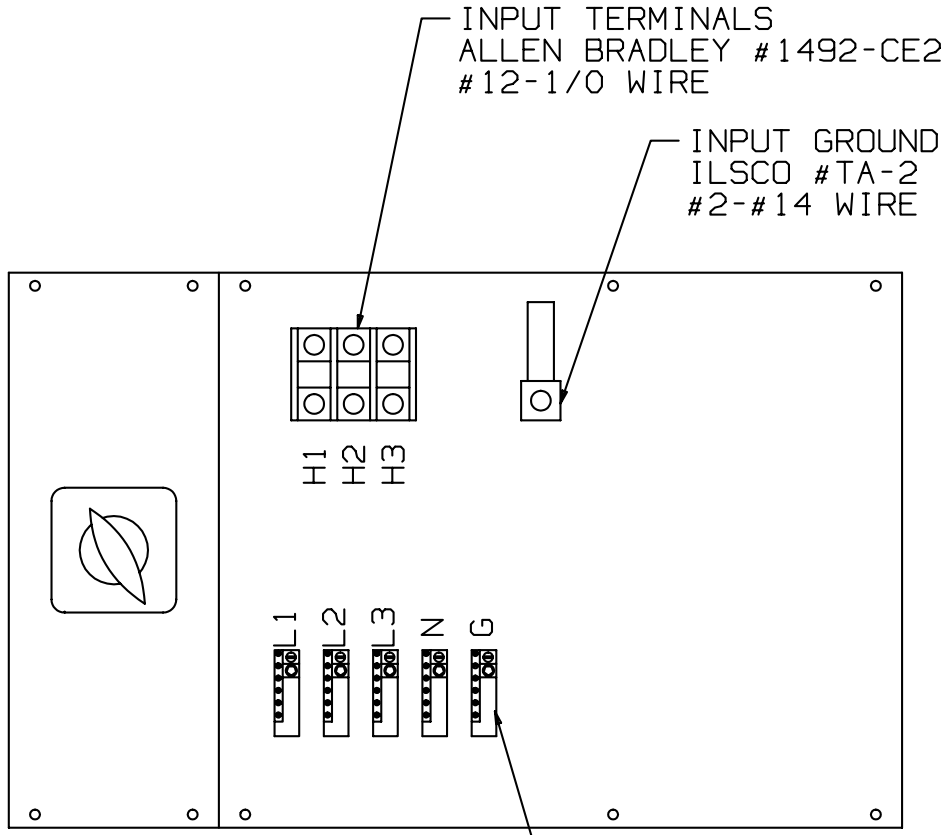
15KVA WEIGHT: 520LBS., BTU/HR: 1500

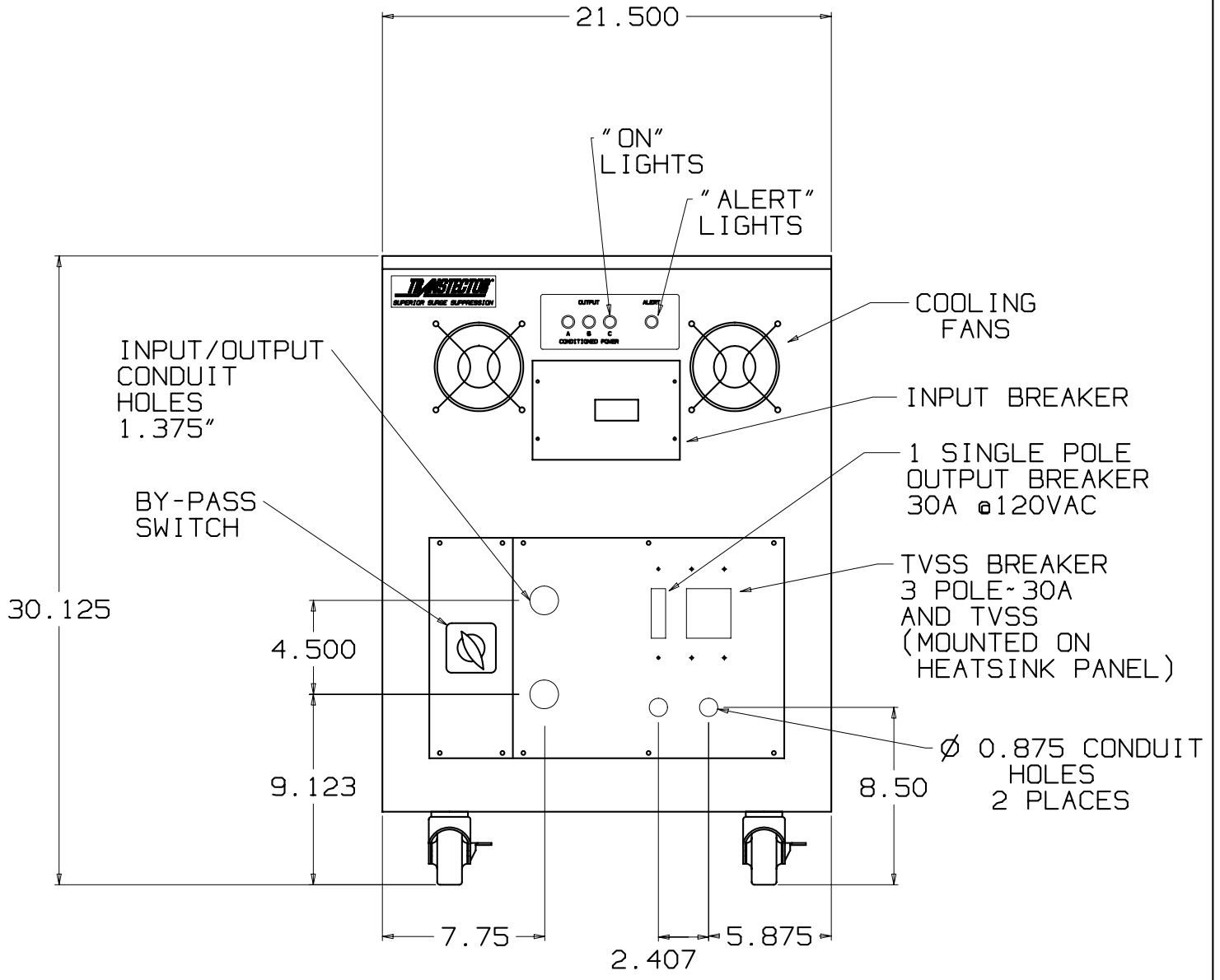
TRANSIENTECTOR
SUPERIOR SURGE SUPPRESSION
Hayden Lake, ID 83835

SERIES 700A POWER CONDITIONER 15KVA
480/208VAC INPUT
208/120V OUTPUT
60Hz

MATERIAL . .	DRAWN T.SZWAST	DATE 4/16/05
	CHECKED .	DATE
TOLERANCE	SHEET 1 OF 3	
SCALE .	NO. 418145-0	

INPUT / OUTPUT
TERMINAL
INFORMATION





FRONT VIEW

15KVA WEIGHT: 520LBS., BTU/HR: 1500

SUPERIOR SURGE SUPPRESSION
Hayden Lake, ID 83835

SERIES 700A POWER CONDITIONER 15KVA
480/208V INPUT
208/120V OUTPUT
60Hz

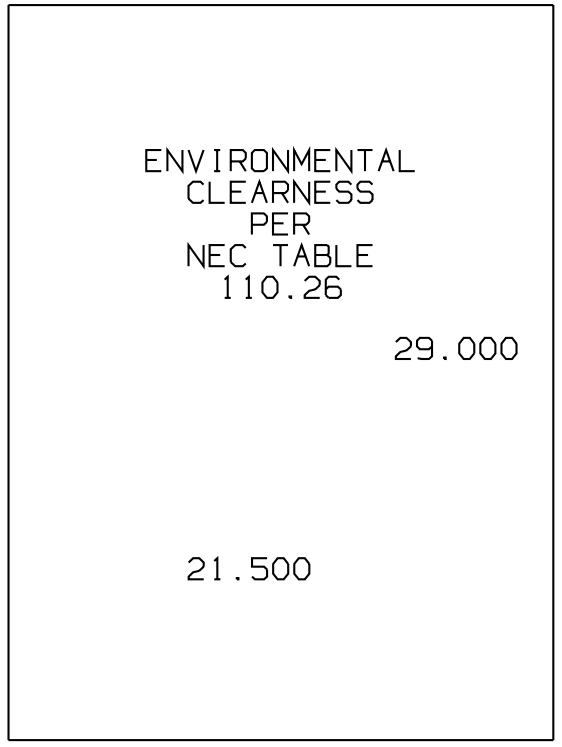
.	DRAWN T.SZWAST	DATE 4/16/05
	CHECKED .	DATE
.	SHEET 2 OF 3	
. .	NO. 418145-0	

TO REMOVE TOP: REMOVE RETAINING SCREW IN REAR OF TOP,
LIFT REAR, & SLIDE FORWARD.

TO REMOVE SIDE: REMOVE RETAINING SCREW IN TOP OF PANEL,
& BOTTOM SIDE. LIFT PANEL OFF.

4.000

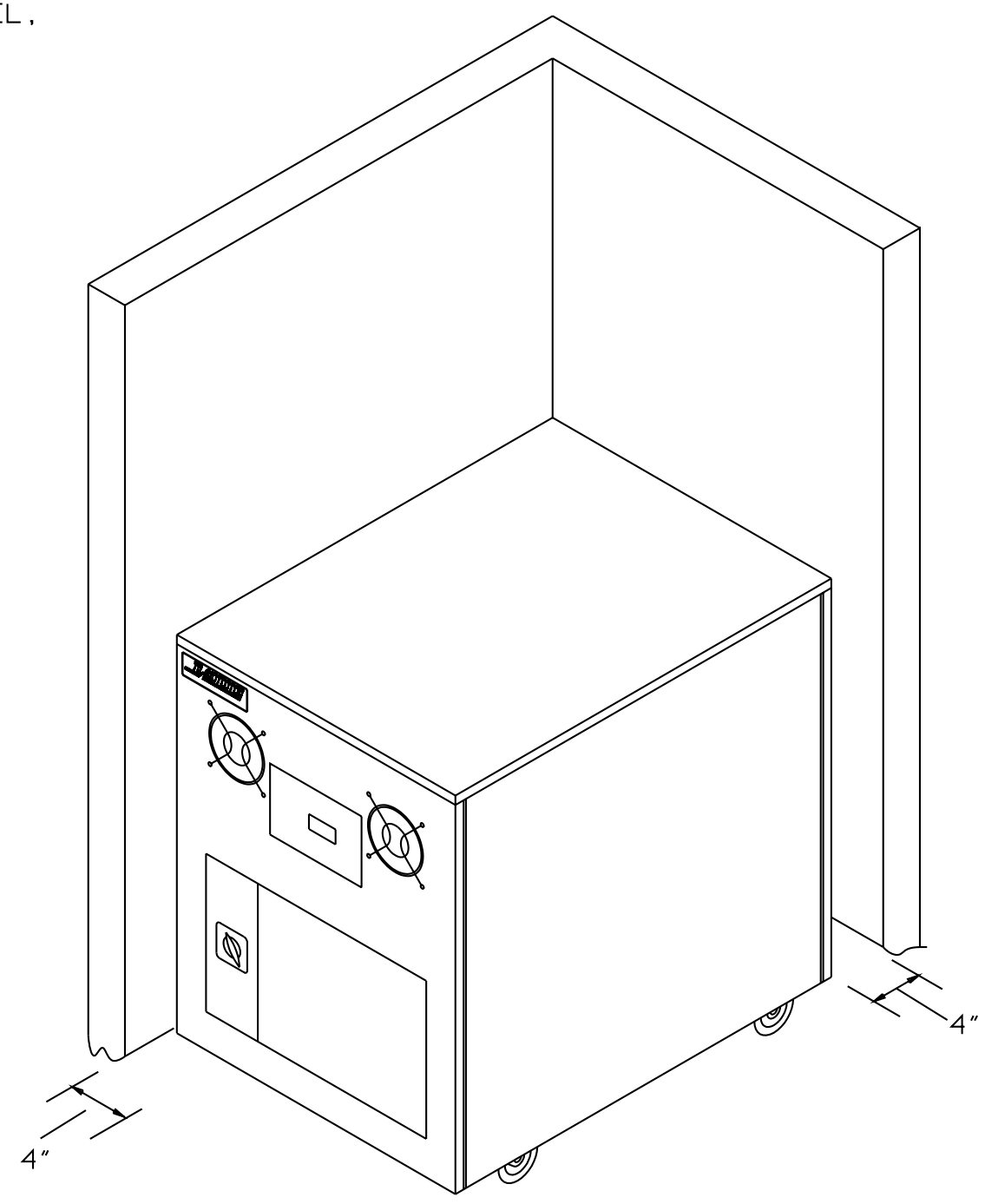
4.000



42.000
CLEARANCE FOR
SERVICEABILTY

FRONT

TOP VIEW



15KVA WEIGHT: 520LBS., BTU/HR: 1500

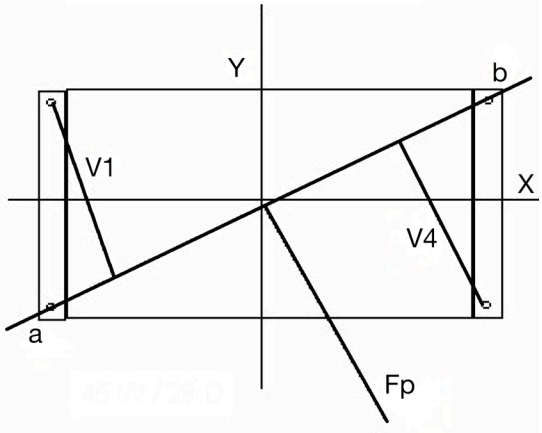
TRANSIENTION
SUPERIOR SURGE SUPPRESSION
Hayden Lake, ID 83835

SERIES 700A POWER CONDITIONER 15KVA
480/208V INPUT
208/120V OUTPUT
60Hz

DRAWN T.SZWAST	DATE 4/16/05
CHECKED .	DATE .
SHEET 3 OF 3	
NO. 418145-0	

Seismic Calculations 15kVA

Coastal California, Zone 4	Z = 0.4
Equipment Anchorage	I = 1.5
Uniform Building Code, Table 160	Cp = 0.75
	Fp = Z x I x (Cp) x Wp = 0.45 x Wp
Cabinet Weight	520 lbs.
Center of Gravity Height	20.00 in.
	Wp(max) = 598.0 lbs.
	Wp(min) = 442.0 lbs.
Vertical Force	Fp = 0.45 x 598 = 269.1 lbs.
Moment	(Fp) = 0.15 x 598 = 89.7 lbs.
	Mo = 20 x 269.1 = 5382 in. lbs.



Corners (a,b) 36.0 in.
V1 =V4 = 16.5 in.

Tension = Fp x Cg /V4 = 630.1 lbs
Shear = Wp(max)Fp/4 lbs., each anchor = 149.5 lbs.

EXAMPLE: <Rawl Power Bolt # 6913>
3/8” embedded 2.5” in minimum 2000psi concrete

Tension Rating of bolt: 5200 lbs.
Shear Rating of bolt: 7270 lbs.

Interaction = (T/Tbolt) + (S/Sbolt)
Interaction = .14
Interaction = < 1 (OK)