



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0454 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Tornatech, Inc.

Manufacturer's Technical Representative: Felix Turcotte

Mailing Address: 7075 Pl. Robert-Joncas #132, Saint-Laurent, Quebec, H4M 2z2, Canada

Telephone: 514.334.2503 Email: felixt@tornatech.com

Product Information

Product Name: Electric & Diesel Fire Pump Controllers

Product Type: Fire Pump Controller

Product Model Number: Varies, see attachment.

(List all unique product identification numbers and/or part numbers)

General Description: Electric and diesel fire pump controllers with various subcomponents with carbon or stainless steel enclosures.

Mounting Description: Rigid base/wall and rigid wall mounted

Applicant Information

Applicant Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

Contact Person: Matthew J. Tobolski, PhD, SE

Mailing Address: 5215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 541.205.4064 Email: mtobolski@structint.com

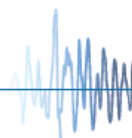
I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:  Date: 10/20/2017

Title: Executive Advisor Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 12/16/15)



OSHPD

Page 1 of 3



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

Name: Matthew J. Tobolski, PhD, SE California License Number: S5648

Mailing Address: 5215 Hellyer Ave., Suite 210, San Jose, CA 95138

Telephone: 541.205.4064 Email: mtobolski@structint.com

Supports and Attachments Preapproval

- ☐ Supports and attachments are preapproved under OPM-
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- ☒ Supports and attachments are not preapproved

Certification Method

- ☒ Testing in accordance with: ☒ ICC-ES AC156
- ☐ Other (Please Specify): _____

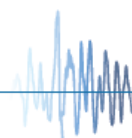
Testing Laboratory

Company Name: Environmental Testing Laboratory

Contact Name: Paul E. Little

Mailing Address: 11034 Indian Trail, Dallas, TX 75229

Telephone: 972.247.9657 Email: Paul@etldallas.com





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = 1.50 @ $S_{DS} = 2.0g$; 1.44 @ $S_{DS} = 3.2g$

S_{DS} (Design spectral response acceleration at short period, g) = 2.0 @ $z/h = 1.0$; 3.2 @ $z/h = 0.0$

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0 @ $S_{DS} = 2.0g$; 0.0 @ $S_{DS} = 3.2g$

Equipment or Component Natural Frequencies (Hz) = See Attachment A

Overall dimensions and weight (or range thereof) = See Attachment A

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) = _____

S_{DS} (Design spectral response acceleration at short period, g) = _____

S_{D1} (Design spectral response acceleration at 1 second period, g) = _____

R (Response modification coefficient) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = _____

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☐ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☒ Other(s) (Please Specify): Attachment A

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

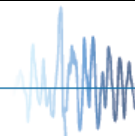
Signature:  Date: November 22, 2017

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = See Above z/h = See Above

Condition of Approval (if applicable): _____

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.						TABLE 1	
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx							
Certified Product Construction Summary: Painted carbon steel & stainless steel enclosure.							
Certified Options Summary: Anti-condensation heater, thermostat and humidistat. Field programmable I/O board.							
Mounting Configuration: Base/wall mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}\quad z/h=1.0$ $S_{DS}= 3.2\text{ g}\quad z/h=0.0$		$I_P= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Across-the-line Starter	GPA	12	20	48	170		Interp.
		14	24	54	230		Interp.
		18	30	68	400		Interp.
		18	36	68	450		Interp.
Across-the-line Starter W/ Automatic Power Transfer Switch	GPA+GPU	12	36	48	280	UUT: 229 lbs.	11
		14	44	54	390		Interp.
		18	54	68	850		Interp.
		18	72	68	1000	UUT: 955 lbs.	12
Partwinding Starter	GPP	12	20	48	170		Interp.
		14	24	54	230		Interp.
		18	30	68	400		Interp.
		18	36	68	450		Interp.
Partwinding Starter W/ Automatic Power Transfer Switch	GPP+GPU	12	36	48	280		Interp.
		14	44	54	390		Interp.
		18	54	68	850		Interp.
		18	60	68	1000		Interp.
<i>Note: The model numbers listed in this table (GPA, GPA+GPU, GPP, GPP+GPU, GPR, GPR+GPU, GPS, GPS+GPU, GPW, GPW+GPU, GPY, GPY+GPU) represent specific sets of subcomponents. Test units 1, 2 ,3 ,4 & 9 cover the range of materials, enclosures, and subcomponents for all models. Models that do not list a UUT are interpolated between the test units.</i>							

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.						TABLE 1	
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx							
Certified Product Construction Summary: Painted carbon steel & stainless steel enclosure.							
Certified Options Summary: Anti-condensation heater, thermostat and humidistat. Field programmable I/O board.							
Mounting Configuration: Base/wall mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\ g \quad z/h=1.0$ $S_{DS}= 3.2\ g \quad z/h=0.0$		$I_P= 1.5$	
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Wye-Delta Closed Starter	GPW	12	26	48	275		Interp.
		14	30	54	350		Interp.
		18	36	68	510	UUT: 510 lbs.	3
		18	60	68	600		Interp.
Wye-Delta Closed Starter w/ Automatic Power Transfer Switch	GPW+GPU	12	42	48	315		Interp.
		14	50	54	440		Interp.
		18	60	68	850		Interp.
		18	72	68	1150		Interp.
Wye-Delta Open Starter	GPY	12	20	48	200		Interp.
		14	24	54	300		Interp.
		18	30	68	500		Interp.
Wye-Delta Open Starter w/ Automatic Power Transfer Switch	GPY+GPU	12	36	48	300		Interp.
		14	44	54	490		Interp.
		18	54	68	990		Interp.
		18	60	68	1100		Interp.
Note: The model numbers listed in this table (GPA, GPA+GPU, GPP, GPP+GPU, GPR, GPR+GPU, GPS, GPS+GPU, GPW, GPW+GPU, GPY, GPY+GPU) represent specific sets of subcomponents. Test units 1, 2, 3, 4 & 9 cover the range of materials, enclosures, and subcomponents for all models. Models that do not list a UUT are interpolated between the test units.							

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.						TABLE 1	
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx							
Certified Product Construction Summary: Painted carbon steel & stainless steel enclosure.							
Certified Options Summary: Anti-condensation heater, thermostat and humidistat. Field programmable I/O board.							
Mounting Configuration: Base/wall mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2016		Seismic Certification Limits:				$S_{DS}= 2.0\text{ g}$ $z/h=1.0$ $S_{DS}= 3.2\text{ g}$ $z/h=0.0$	$I_P= 1.5$
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Soft Start Soft Stop	GPS	12	26	48	200	UUT: 189 lbs.	4
		14	30	54	320		Interp.
		18	36	68	475	UUT: 453 lbs.	2
		18	54	68	600		Interp.
		18	60	68	750		Interp.
Soft Start Soft Stop W/ Automatic Power Transfer Switch	GPS+GPU	12	42	48	335		Interp.
		14	50	54	600		Interp.
		18	60	68	1050		Interp.
Autotransformer Starter	GPR	12	26	48	310		Interp.
		14	30	54	425		Interp.
		18	36	68	765		Interp.
		18	60	68	1210		Interp.
Autotransformer Starter W/ Automatic Power Transfer Switch	GPR+GPU	12	42	48	600		Interp.
		14	50	54	810		Interp.
		18	60	68	1210	UUT: 1210 lbs.	1
		18	72	68	1210	UUT: 1003 lbs.	9
<i>Note: The model numbers listed in this table (GPA, GPA+GPU, GPP, GPP+GPU, GPR, GPR+GPU, GPS, GPS+GPU, GPW, GPW+GPU, GPY, GPY+GPU) represent specific sets of subcomponents. Test units 1, 2 ,3 ,4 & 9 cover the range of materials, enclosures, and subcomponents for all models. Models that do not list a UUT are interpolated between the test units.</i>							

TRU PROJECT NO. 1700921



TRU Compliance, LLC - A Structural Integrity Associates, Inc. Affiliate
844.TRU.0200 | info@trucompliance.com

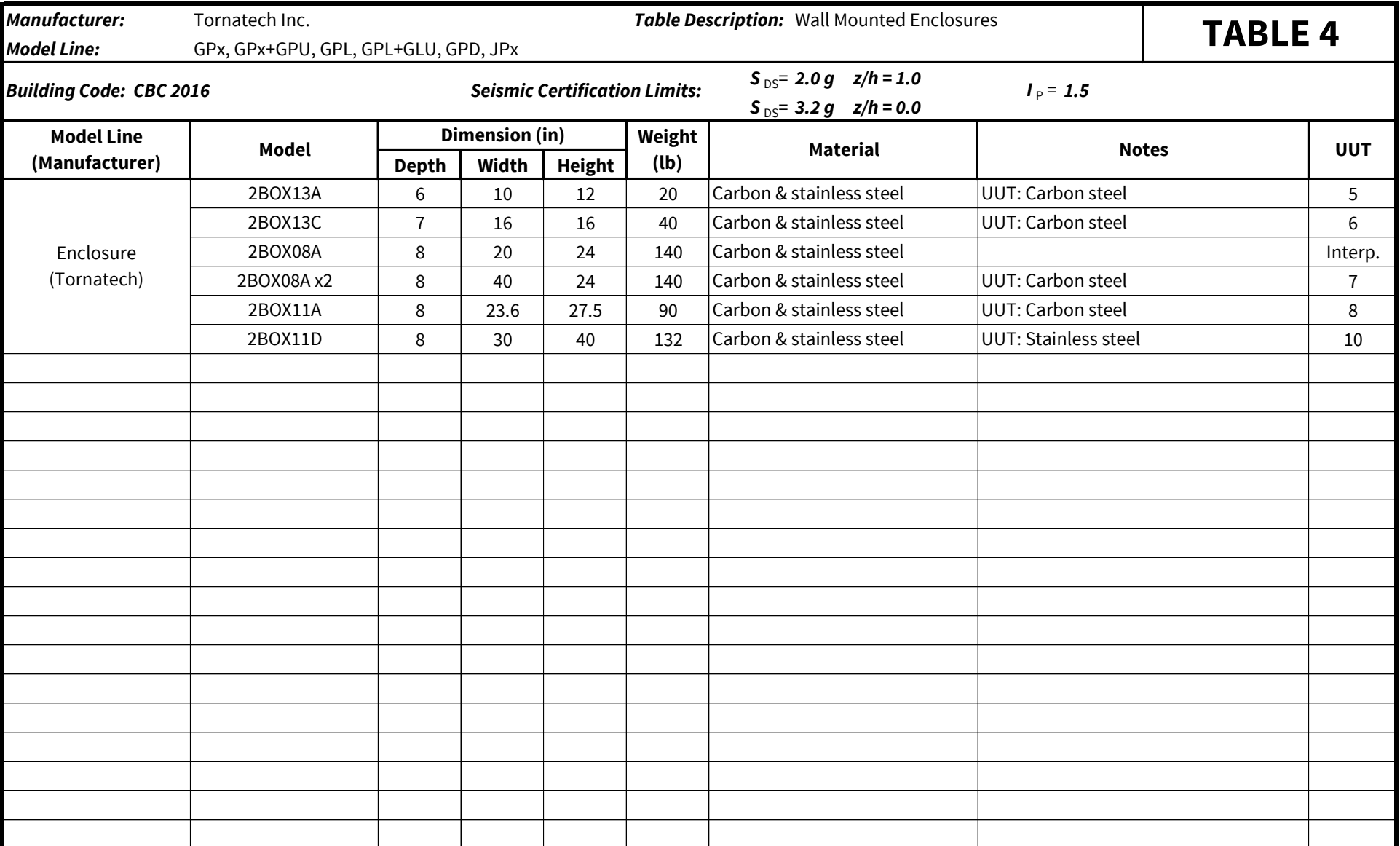
SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Base/Wall Mounted Enclosures						TABLE 3			
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx											
Building Code: CBC 2016		Seismic Certification Limits:						$S_{DS}= 2.0\text{ g} \quad z/h = 1.0$ $S_{DS}= 3.2\text{ g} \quad z/h = 0.0$		$I_P = 1.5$	
Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT			
		Depth	Width	Height							
Enclosure (Tornatech)	2BOX101A/2BOX201A	12	20	48	290	Carbon & stainless steel		Extrap.			
	2BOX101B/2BOX201B	12	26	48	380	Carbon & stainless steel	UUT: Carbon steel	4			
	2BOX101C/2BOX201C	12	36	48	520	Carbon & stainless steel		11			
	2BOX101D/2BOX201D	12	42	48	600	Carbon & stainless steel		Interp.			
	2BOX102A/2BOX202A	14	24	54	390	Carbon & stainless steel		Interp.			
	2BOX102B/2BOX202B	14	30	54	490	Carbon & stainless steel		Interp.			
	2BOX102C/2BOX202C	14	44	54	710	Carbon & stainless steel		Interp.			
	2BOX102D/2BOX202D	14	50	54	810	Carbon & stainless steel		Interp.			
	2BOX103A/2BOX203A	18	30	68	610	Carbon & stainless steel		Interp.			
	2BOX103B/2BOX203B	18	36	68	730	Carbon & stainless steel	UUT: Carbon steel	2,3			
	2BOX103C/2BOX203C	18	54	68	1090	Carbon & stainless steel		Interp.			
	2BOX103D/2BOX203D	18	60	68	1210	Carbon & stainless steel	UUT: Carbon steel	1			
	2BOX103G/2BOX203G	18	72	68	1210	Carbon & stainless steel	UUT: Stainless steel	9, 12			

TRU PROJECT NO. 1700921



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Base/Wall Mounted Electrical Components			TABLE 5
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\ g \quad z/h = 1.0$ $S_{DS}= 3.2\ g \quad z/h = 0.0$	$I_P = 1.5$
Component Type	Manufacturer	Model	Description	Notes	UUT
Soft-starter	Siemens	3RW4427	93A	GPS only	4
		3RW4056	115-230 VAC, 145-162A	GPS only	Interp.
		3RW4075	480V, 315A	GPS only	2
Circuit Breaker	Siemens	MCP 100A	100A		4
		MCP 125A	125A		Interp.
		MCP 250A	250A		Interp.
		MCP 400A	400A		2, 3
		MCP 600A	600A		1
	Schneider	HJL36150M74	150A		11
		JJL36250M75	250A		Interp.
		LJL36400M37X	400A		Interp.
		LJL36600M37X	600A		Interp.
		PJL36080M68	800A		12
Switches	Siemens	MCS 100A	100A		4
		MCS 125A	125A		Interp.
		MCS 250A	250A		Interp.
		MCS 400A	400A		2
		MCS 600A	600A		1, 3, 9
		3VL9400-2AB01	1NO+1NC	UUT: (2) installed	1
		A01JLD64	1NO+1NC	UUT: (4) installed	1, 9
	Tornatech	TSWTOR100	100A		11
		TSWTOR200	200A		Interp.
		TSWTOR260	260A		Interp.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Base/Wall Mounted Electrical Components			TABLE 5
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h = 1.0$	$I_P = 1.5$
				$S_{DS}= 3.2\text{ g}$ $z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Switches	Tornatec	TSWTOR400	400A		Interp.
		TSWTOR600	600A		Interp.
		TSWTOR800	800A		12
		TSP150	150A		9
		TSP250	250A		Interp.
		TSP400	400A		Interp.
		TSP600	600A		1
	Schneider	HGL36000S15	150A		11
		JGL36000S25	250A		Interp.
		LGL36000S40X	400A		Interp.
		LGL36000S60X	600A		Interp.
		PJL36000S80	800A		12
	Saia-Burgess	XGG6-88-P27Z1	16A, 250V, 60mm lever		1, 3, 9
Shunt Trip	Siemens	S17JLD6	24VAC	Installs in MCS	1, 3, 9
		3VL9400-1SC01	24VAC/DC	Installs in MCS	2
Fan	Orion	0A172SAP-11-1TB	115VAC, 235 CFM		1, 9
Transformers	Transfab	DL 150VA 208-240V	For 100/200/260/400A versions		Extrap.
		DL 150VA 380/400/415-240V	For 100/200/260/400A versions		11
		DL 150VA 440/460/480-240V	For 100/200/260/400A versions		Interp.
		DL 150VA 600-240V	For 100/200/260/400A versions		Interp.
		DL 200VA 208-240V	For 600/800A versions		Interp.
		DL 200VA 380/400/415-240V	For 600/800A versions		Interp.
		DL 200VA 440/460/480-240V	For 600/800A versions		Interp.

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Base/Wall Mounted Electrical Components			TABLE 5
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h = 1.0$	$I_P = 1.5$
				$S_{DS}= 3.2\text{ g}$ $z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Transformers	Transfab	DL 200VA 600-240V	For 600/800A versions		12
	Rex Manufacturing	RS75J	75kVA	GPR only	9
		RS150J	150kVA	GPR only	Interp.
		RS400J	400kVA	GPR only	1
	Transfab	EXS114340	600/120V, 100VA, 50-60Hz.		1, 2, 9
		ET5841	Toroidal 4000:1		1-3, 9
		ET5874	Toroidal 3600:1		4
		DL 8849QB	600/24V, 25VA, 50-60Hz.		1, 9
		DL 8882QB	600/24V, 50VA, 60Hz.		1, 4, 9
	Marcus Transformer	MTC250-39	600/120V, 250VA, 60Hz.		2, 4
Resistor	I-Gard Corp.	TR-600-75	Wye-Delta, 600V, 75HP		9
		TR-600-150	Wye-Delta, 600V, 150HP	GPW only	Interp.
		TR-600-400	Wye-Delta, 600V, 400HP	GPW only	3
	Huntington Vishay	ALSR5F-5-1.0-1%	1 Ohm, 5W, 1% Ceramic		1-4, 9
Contactor	Siemens	3RT103	Frame size S2		Extrap.
		3RT104	Frame size S3		4
		3RT105	Frame size S6		1, 3
		3RT106	Frame size S10		1-3, 9
		3RT107	Frame size S12		1, 9
		3RH1921-1DA11	1NO+1NC		4
		3RH1921-1FA22	2NO+2NC	UUT: (2) installed	1, 9
		3RH1921-1FC22	2NO+2NC, Late break	UUT: (2) installed	3
		3RT1016-1BB41	24VDC Contactor 9A		11,12

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Base/Wall Mounted Electrical Components			TABLE 5
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\ g \quad z/h = 1.0$ $S_{DS}= 3.2\ g \quad z/h = 0.0$	$I_P = 1.5$
Component Type	Manufacturer	Model	Description	Notes	UUT
Contactor	Siemens	3RA1912-2H	Mechanical Interlock		11,12
	Schneider	LC1D25			11
		LC1D40			Interp.
		LC1D65A			Interp.
		LC1D80			Interp.
		LC1D95			Interp.
		LC1D115			Interp.
		LC1F185			Interp.
		LC1F225			Interp.
		LC1F265			Interp.
		LC1F330			Interp.
		LC1F400			Interp.
		LC1F630			Interp.
		LC1F800			12
		Contactor Replacement Parts	Siemens	3RT202	Replacement for 3RT102
3RT203	Replacement for 3RT103				12
Solenoid Valve	Tornatech	1ASC024	24VDC		1-4
Actuator Motor	Hiwin	LAS-2-1-100-24G	600N, 100mm stroke		1
Alarm Bell	Tornatech	1NEW001	12VDC, Ø150mm, red		1-4
Pressure Transducer	Telemecanique	XMLP600PPF13Q3	600psi, 0.5-4.5V, 1/4" NPT		1-4, 9
Control Relay	Siemens	3RH1122-1AB00	24VAC, 2NO/2NC, 50/60Hz.		1-4, 9
Switch Contact Block	Siemens	3SB3400-0B	10A, 1NO		1, 4, 9
Heater	DBK	HP06-2-15-240	160W, 110/240V		2

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Base/Wall Mounted Electrical Components			TABLE 5
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS} = 2.0\text{ g}$ $z/h = 1.0$	$I_P = 1.5$
				$S_{DS} = 3.2\text{ g}$ $z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Thermostat	DBK	FGT100	0-60°C, NC		2
Humidistat	DBK	RFHSS-112	24V-230V, 50/60Hz., 40-90% rH		2
Trip Module	Tornatech	2PLA048	24VDC	For CB Sentron 100A, 125A	4
Battery	Tornatech	1VIZ001	Li-ion AA	Installs in 2VIZ001	1-4, 9
Thermocouple	Tornatech	1VIZ006	C11, Type K, 3 feet		4
		1VIZ007	C11, Type K, 5 feet		1, 2, 9
HMI	Tornatech	2VIZ001	Programmable logic controller		1-4
		2VIZ101	Programmable logic controller		9,11,12
I/O Board	Tornatech	2VIZ003	Transfer switch side		1
		2VIZ005	Expansion board		2
		2VIZ012	Normal side		1-4
		2VIZ102	Electric normal side		9,11,12
		2VIZ103	Electric transfer switch side		9,11,12
		2VIZ105	Expansion		9
Auxiliary Contact	Tornatech	1SOC011	Aux. Contact NO/NC		11
3-Way Valve	Tornatech	1ASC028	24VDC 3-Way Valve 500 psi Brass		11
		1ASC029	24VDC 3-Way Valve 500 psi Stainless		Interp.
		1ASC030	12VDC 3-Way Valve 500 psi Brass		Interp.
		1ASC031	12VDC 3-Way Valve 500 psi Stainless		12

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Wall Mounted Electrical Components			TABLE 6
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS} = 2.0\text{ g}$ $z/h = 1.0$	$I_P = 1.5$
				$S_{DS} = 3.2\text{ g}$ $z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Circuit Breaker	Telemecanique	GV2-ME10	4-6.3A		5
		GV3P50	37-50A		Interp.
		GV3P65	48-65A		6
	Cutler Hammer	ED3150L	150A		7
	Siemens	ED63B125	125A		7
	Schneider	Multi 9	15A, 1 pole, curve C		8
		MG-24506	10A		8
		MG-17406	15A		8
	Lovato	P1MB1PD10	Miniature CB, 1 pole, D curve, 10A		10
		P1MB1PB16	Miniature CB, 1 pole, B curve, 16A		10
		P1MB1PC25	Miniature CB, 1 pole, C curve, 25A		10
Switches	Katko	KU325N	25A		5
		KU340N	40A		8
		VKA3100N	100A		6
	Lovato	GA025A	25A Disconnect switch		10
		GA040A	40A Disconnect switch		Interp.
		GA063A	63A Disconnect switch		Interp.
		GA080A	80A Disconnect switch		10
		GAX7200	Disconnect switch handle		10
	Toratech	TSP150	150A		7
	Saia-Burgess	XGG6-88-P27Z1	16A, 250V		7
Switches	Siemens	3VL9400-2AB01	1NO/1NC	Installs in Siemens MCS 150A	7
		MCS 150A	150A		7

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Wall Mounted Electrical Components			TABLE 6
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\text{ g}$ $z/h=1.0$	$I_P= 1.5$
				$S_{DS}= 3.2\text{ g}$ $z/h=0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT
Control Relay	Siemens	3RH1122-1AB00	24VAC, 2NO/2NC, 50/60Hz.		7
Solenoid Valve	Tornatech	1ASC025	12VDC		8, 10
Contactor	Telemecanique	LC1D09B7	9A, 24V, 50/60Hz.		5
		LC1D65B7	65A		6
		LC1F115	115A		7
Transformer	Transfab	DO 0025HC	25VA, 120/240-12/24V, 50/60Hz, 1PH		5
		ET5874	3600:1		7
		DL 8848FB	208/24V, 25VA, 50/60Hz.		7
		DL 9316SB	208/240V, 24V, 50VA, 50/60Hz.		7
		DL 9997SB	100VA, 208/240-24V, 50/60Hz		6
Surge Arrester	Square D	SDSA 3650	40kA surge current rating per phase		7
Contact Block	Schneider	GV-AE11	1NO/1NC		5
	Siemens	3SB3400-0B	1 NO Contact, 10A		8, 10
Battery charger	TTI	1BATT004	12V		10
		1BATT005	24V		8
Pressure Transducer	Hoskin	PAN-600-MV	600PSI, 600mV, 1/4" NPT		5, 6
	Telemecanique	XMLP600PPF13Q3	600PSI, 0.5-4.5V, 1/4" NPT		7, 8, 10
Circuit Board Actuator Motor	Tornatech	2IPD005	Control circuit board		6
	Hiwin	LAS-2-1-100-24G	600N, 100mm stroke		7
HMI	Tornatech	2VIZ001	Programmable Logic Controller		7, 8
		2VIZ101	Programmable Logic Controller		10
Battery	Tornatech	1VIZ001	Li-ion battery	Installs in 2VIZ001	7, 8, 10
Resistor	Huntington Vishay	ALSR-5-4.0-1%	4 Ohm, 5W, 1% Ceramic		7

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 1700921



Manufacturer: Tornatech Inc.		Table Description: Wall Mounted Electrical Components			TABLE 6
Model Line: GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx					
Building Code: CBC 2016		Seismic Certification Limits:		$S_{DS}= 2.0\ g \quad z/h = 1.0$ $S_{DS}= 3.2\ g \quad z/h = 0.0$	$I_p = 1.5$
Component Type	Manufacturer	Model	Description	Notes	UUT
I/O Board	Tornatech	2VIZ003	Transfer switch side		7
		2VIZ005	Expansion		8
		2VIZ012	Normal side		7
		2VIZ023	Diesel board		8
		2VIZ102	Electric normal side	Identical to 2VIZ012	Interp.
		2VIZ103	Electric transfer switch side	Identical to 2VIZ003	Interp.
		2VIZ104	Diesel board		10
		2VIZ105	Expansion		10
EMC Filter	EPCOS/TDK	B84111F0000B110	1PH, 250V, 50/60Hz., 10A		8, 10
Alarm Bell	Tornatech	1NEW001	12VDC, Ø150mm, red		8, 10
Heater	DBK	HP06-2-15-240	160W, 110-240V		8, 10
Thermostat	DBK	FGT100	0-60 °C, NC		8, 10
Humidistat	DBK	RFHSS-112	24V-230V, 50/60Hz., 40-90% rH		8, 10
Fuses	Ferraz Shawmut	GDL6/10	0.6A, 1/4"x1-1/4" Glass, 250V		5
GDL1-1/4		1.25A, 1/4"x1-1/4" Glass, 250V		8, 10	
Fuses	Bel Fuse	5ST8-R	8.0A, 5x20mm, 250VAC		8, 10

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 1
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPR + GPU-600/400/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 14 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Breaker: Siemens - MCP 600A; **Switches:** Siemens - MCS 600A / 3VL9400-2AB01 / A01JLD64, Tornatech - TSP600, Saia-Burgess - XGG6-88-P27Z1;
Shunt Trip: Siemens - S17JLD6; **Transformer:** Rex Manufacturing - RS400J, Transfab - EXS114340 / ET5841 / DL8849QB / DL8882QB; **Contactor:** Siemens - 3RT105 / 3RT106 / 3RT107 / 3RH1921-1FA22 / 3SB3400-0B; **Surge Arrester:** Square D - SDSA 3650; **Solenoid Valve:** Tornatech - 1ASC024; **Actuator Motor:** Hiwin - LAS-2-1-100-24G; **Fan:** Orion - 0A172SAP-11-1TB; **Alarm Bell:** Tornatech - 1NEW001; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3; **Control Relay:** Siemens - 3RH1122-1AB00; **Resistor:** Huntington Vishay - ALSR5F-5-1.0-1%; **Battery:** Tornatech - 1VIZ001; **Thermocouple:** Tornatech - 1VIZ007; **HMI:** Tornatech - 2VIZ001; **I/O Board:** Tornatech - 2VIZ003 / 2VIZ012.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
1,210	18.0	60.0	68.0	15.1	17.1	>33.3				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid base/wall mounting - Base: (4) 7/16" grade 5 bolts, Wall: (2) 3/8" grade 5 bolts.
 Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
 Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 2
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPS-600/300/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 14 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Soft-starter: Siemens - 3RW4075; **Circuit Breaker:** Siemens - MCP 400A; **Switches:** Siemens - MCS 400A; **Shunt Trip:** Siemens - 3VL9400-1SC01;
Transformer: Transfab - EXS114340 / ET5841, Marcus Transformer - MTC250-39; **Contactors:** Siemens - 3RT106 / 3SB3400-0B; **Surge Arrester:** Square D - SDSA 3650; **Solenoid Valve:** Tornatech - 1ASC024; **Alarm Bell:** Tornatech - 1NEW001; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3; **Control Relay:** Siemens - 3RH1122-1AB00; **Resistor:** Huntington Vishay - ALSR5F-5-1.0-1%; **Heater:** DBK - HP06-2-15-240; **Thermostat:** DBK - FGT100; **Humidistat:** DBK - RFHSS-112; **Trip Module:** Tornatech - 2PLA048; **Battery:** Tornatech - 1VIZ001; **Thermocouple:** Tornatech - 1VIZ007; **HMI:** Tornatech - 2VIZ001; **I/O Board:** Tornatech - 2VIZ005 / 2VIZ012.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
453	18.0	36.0	68.0	17.6	19.6	>33.3				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid base/wall mounting - Base: (4) 7/16" grade 5 bolts, Wall: (2) 3/8" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 3
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPW-600/400/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 14 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Siemens - MCP 400A; **Switches:** Siemens - MCS600A, Saia-Burgess - XGG6-88-P27Z1; **Shunt Trip:** Siemens - S17JLD6; **Transformer:** Transfab - ET5841; **Resistor:** I-Gard Corp. - TR-600-400, Huntington Vishay - ALSR5F-5-1.0-1%; **Contactor:** Siemens - 3RT105 / 3RT106 / 3RH1921-1FC22 / 3SB3400-0B; **Surge Arrester:** Square D - SDSA 3650; **Solenoid Valve:** Tornatech - 1ASC024; **Alarm Bell:** Tornatech - 1NEW001; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3; **Control Relay:** Siemens - 3RH1122-1AB00; **Battery:** Tornatech - 1VIZ001; **HMI:** Tornatech - 2VIZ001; **I/O Board:** Tornatech - 2VIZ012.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
510	18.0	36.0	68.0	17.6	18.8	>33.3				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid base/wall mounting - Base: (4) 7/16" grade 5 bolts, Wall: (2) 3/8" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 4
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPS-600/60/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 16 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Soft Starter: Siemens - 3RW4427; **Circuit Breaker:** Siemens - MCP100A; **Switches:** Siemens - MCS100A; **Transformer:** Transfab - ET5874 / DL8882QB, Marcus Transformer - MTC250-39; **Contactors:** Siemens - 3RT104 / 3RH1921-1DA11 / 3SB3400-0B; **Surge Arrestor:** Square D - SDSA 3650; **Solenoid Valve:** Tornatech - 1ASC024; **Alarm Bell:** Tornatech - 1NEW001; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3; **Control Relay:** Siemens - 3RH1122-1AB00; **Resistor:** Huntington Vishay - ALSR5F-5-1.0-1%; **Trip Module:** Tornatech - 2PLA048; **Battery:** Tornatech - 1VIZ001; **Thermocouple:** Tornatech - 1VIZ006; **HMI:** Tornatech - 2VIZ001; **I/O Board:** Tornatech - 2VIZ012.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
189	12.0	26.0	48.0	16.6	24.2	>33.3				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid base/wall mounting - Base: (4) 7/16" grade 5 bolts, Wall: (2) 3/8" grade 5 bolts.
 Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
 Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 5
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	JP1-120/0.25/1/60	
Serial Number:		N/A

Product Construction Summary:
Painted 16 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Telemecanique - GV2-ME10; **Switches:** Katko - KU325N; **Contactors:** Telemecanique - LC1D09B7; **Transformer:** Transfab - DO 0025HC; **Contact Block:** Schneider - GV-AE11; **Pressure Transducer:** Hoskin - PAN-600-MV; **Fuses:** Ferraz Shawmut - GDL6/10.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
20	6.0	10.0	12.0	N/A	N/A	N/A				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid wall mounted with (4) 1/4" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 6
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	JP3-220/20/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 16 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Telemecanique - GV3P65; **Switches:** Katko - VKA3100N; **Contactors:** Telemecanique - LC1D65B7; **Transformer:** Transfab - DL 9997SB; **Pressure Transducer:** Hoskin - PAN-600-MV; **Circuit Board:** Tornatech - 2IPD005.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
38	7.0	16.0	16.0	N/A	N/A	N/A				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:




Rigid wall mounted with (4) 1/4" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 7
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPL+GLU-208/30/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 16 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Cutler Hammer - ED3150L, Siemens - ED63B125; **Switches:** Tornatech - TSP150, Saia-Burgess - XGG6-88-P27Z1, Siemens - 3VL9400-2AB01 / MCS 150A; **Control Relay:** Siemens - 3RH1122-1AB00; **Contactors:** Telemecanique - LC1F115;
Transformer: Transfab - ET5874 / DL 8848FB / DL 9316SB; **Surge Arrester:** Square D - SDSA 3650; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3; **Actuator Motor:** Hiwin - LAS-2-1-100-24G; **HMI:** Tornatech - 2VIZ001; **Battery:** Tornatech - 1VIZ001; **I/O Board:** Tornatech - 2VIZ003 / 2VIZ012; **Resistor:** Huntington Vishay - ALSR-5-4.0-1%.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
140	8.0	40.0	24.0	N/A	N/A	N/A				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid wall mounted with (8) 1/4" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 8
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPD-24-220	
		Serial Number: N/A

Product Construction Summary:
Painted 16 GA. carbon steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Schneider - Multi 9 / MG-24506 / MG-17406; **Switches:** Katko - KU340N; **Solenoid Valve:** Tornatech - 1ASC025;
Contact Block: Siemens - 3SB3400-0B; **Battery Charger:** TTI - 1BATT005; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3;
HMI: Tornatech - 2VIZ001; **Battery:** Tornatech - 1VIZ001; **I/O Board:** Tornatech - 2VIZ005 / 2VIZ023; **EMC Filter:** EPCOS/TDK - B84111F0000B110; **Alarm Bell:** Tornatech - 1NEW001; **Heater:** DBK - HP06-2-15-240; **Thermostat:** DBK - FGT100; **Humidistat:** DBK - RFHSS-112; **Fuses:** Ferraz Shawmut - GDL1-1/4, Bel Fuse - 5ST8-R.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
73	8.0	23.6	27.5	N/A	N/A	N/A				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid wall mounted with (4) 1/4" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 9
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPR + GPU-600/400/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 14 GA. stainless steel enclosure.

Options/Subcomponent Summary:
Switches: Siemens - MCS 600A / A01JLD64, Tornatech - TSP150, Saia-Burgess - XGG6-88-P27Z1; **Shunt Trip:** Siemens - S17JLD6; **Transformer:** Rex Manufacturing - RS75J, Transfab - EXS114340 / ET5841 / DL 8849QB / DL 8882QB; **Resistor:** I-Gard Corp - TR-600-75, Huntington Vishay - ALSR5F-5 1.0-1%; **Contactor:** Siemens - 3RT106 / 3RT107 / 3RH1921-1FA22 / 3SB3400-0B; **Fan:** Orion - 0A172SAP-11-1TB; **Alarm Bell:** Tornatech - 1NEW002; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3; **Control Relay:** Siemens - 3RH1122-1AB00; **Battery:** Tornatech - 1VIZ001; **Thermocouple:** Tornatech - 1VIZ007; **HMI:** Tornatech - 2VIZ101; **I/O Board:** Tornatech - 2VIZ102 / 2VIZ103 / 2VIZ105.

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
1,003	18.0	72.0	68.0	15.3	17.46	>33				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid base/wall mounting - Base: (4) 7/16" grade 5 bolts, Wall: (2) 3/8" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 10
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPD-12-220	
Serial Number:		N/A

Product Construction Summary:
Painted 16 GA. stainless steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Lovato - P1MB1PD10 / P1MB1PB16 / P1MB1PC25; **Switches:** Katko - VKA3100N, Lovato - GA080A / GAX7200;
Solenoid Valve: Tornatech - 1ASC025; **Contact Block:** Siemens - 3SB3400-0B; **Battery Charger:** TTI - 1BATT004; **Pressure Transducer:** Telemecanique - XMLP600PPF13Q3; **HMI:** Tornatech - 2VIZ101; **Battery:** Tornatech - 1VIZ001; **I/O Board:** Tornatech - 2VIZ104 / 2VIZ105; **EMC Filter:** EPCOS/TDK - B84111F0000B110; **Alarm Bell:** Tornatech - 1NEW001; **Heater:** DBK - HP06-2-15-240; **Thermostat:** DBK - FGT100; **Humidistat:** DBK - RFHSS-112; **Fuses:** Ferraz Shawmut - GDL1-1/4, Bel Fuse - 5ST8-R.

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
132	8.0	30.0	40.0	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S_{DS} (g)	z/h	I_p	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)	
CBC 2016	ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	2.13	0.85	
		3.2	0.0	1.5					

Test Mounting Details:



UUT 10



Rigid wall mounted with (4) 3/8" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 11
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPx+GPU-220/60/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 16 GA. stainless steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Schneider HJL36150M74; **Switch:** Tornatech - TSWTOR100; **Transformer:** Transfab DL 150VA 380/400/415-240V
Solenoid Valve: Tornatech - 1ASC028; **Contact Block:** Siemens - 3RT1016-1BB41 & 3RA1912-2H; Schneider - LC1D25 & Siemens 3RT202; **Auxiliary Contact:** Tornatech - 1SOC011; **HMI:** Tornatech - 2VIZ101; **I/O Board:** Tornatech - 2VIZ102 & 2VIZ103

UUT Properties										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
229	12.0	36.0	48.0	12.5	15.9	>33.3				
UUT Highest Passed Seismic Run Information										
Building Code		Test Criteria		S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156		2.0	1.0	1.5	3.2	2.4	2.13	0.85
				3.2	0.0	1.5				

Test Mounting Details:



Rigid base/wall mounting - Base: (4) 7/16" grade 5 bolts, Wall: (2) 3/8" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 1700921



Manufacturer:	Tornatech Inc.	UUT 12
Model Line:	GPx, GPx+GPU, GPL, GPL+GLU, GPD, JPx	
Model Number:	GPA+GPU-600/400/3/60	
Serial Number:		N/A

Product Construction Summary:
Painted 16 GA. stainless steel enclosure.

Options/Subcomponent Summary:
Circuit Breaker: Schneider P JL36080M68; Switch: Tornatech - TSWTOR800, Schneider - P JL36000S80; Transformer: DL 200VA 600-240V Selenoid Valve: Tornatech - 1ASC031; Contact Block: Siemens - 3RT1016-1BB41 & 3RA1912-2H; Schneider - LC1F800 & Siemens 3RT203; Auxiliary Contact: Tornatech - 1SOC011; HMI: Tornatech - 2VIZ101; I/O Board: Tornatech - 2VIZ102 & 2VIZ103

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
955	18.0	72.0	68.0	12.6	15	17.2

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS} (g)	z/h	I _P	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	2.13	0.85
		3.2	0.0	1.5				

Test Mounting Details:



Rigid base/wall mounting - Base: (4) 7/16" grade 5 bolts, Wall: (2) 3/8" grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.