



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP-0109

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Jefferson Electric

Manufacturer's Technical Representative: Jon Wiedman

Mailing Address: 200 Newton Bridge Road, Athens, GA 30607

Telephone: (630) 497-8070

Email: jwiedman@vf-transformer.com

Product Information

Product Name: Transformers

Product Type: Transformers – Dry Type

Product Model Number: Various. See Attachment

General Description: Encapsulated, Totally Enclosed, and Ventilated Transformers. 1.5 – 1000 kVA.

Mounting Description: Rigid, Floor/Wall Mounted

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: TRU Compliance, by Structural Integrity Associates

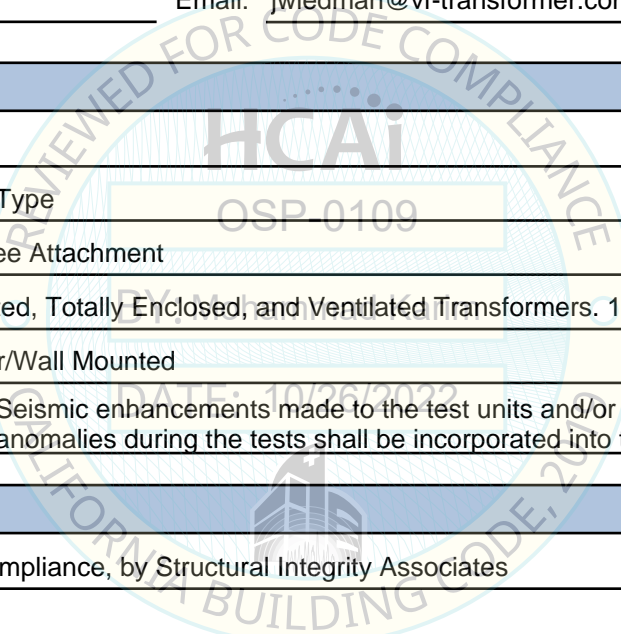
Contact Person: Daniel Zentner

Mailing Address: 233 SW Wilson Ave, Suite 101, Bend, OR 97702

Telephone: (541) 292-5839

Email: dzentner@structint.com

Title: Program Manager





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

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

Company Name: STRUCTURAL INTEGRITY ASSOCIATES, INC.
Name: Andrew Coughlin California License Number: S6082
Mailing Address: 5215 Hellyer Ave, Suite 101, San Jose, CA 951381025
Telephone: (415) 635-8461 Email: acoughlin@structint.com

Certification Method

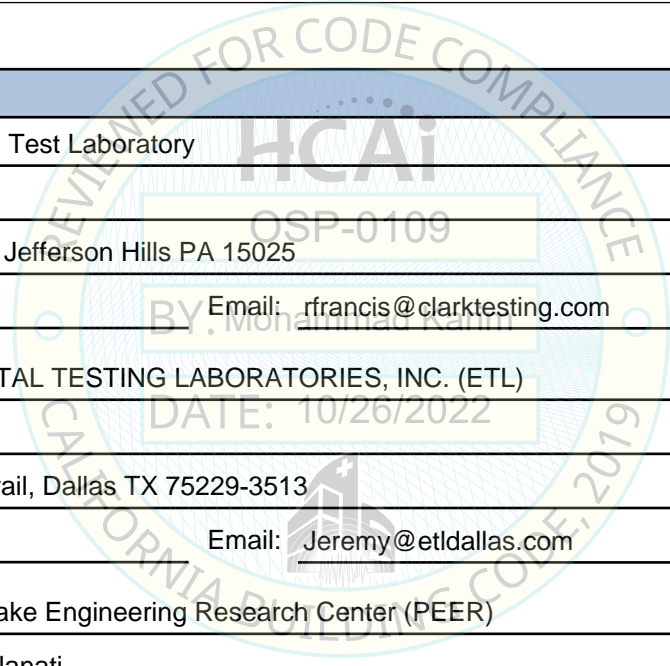
GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3
 Other (Please Specify): _____

Testing Laboratory

Company Name: Clark Dynamics Test Laboratory
Contact Person: Robert Francis
Mailing Address: 1801 Route 51, Jefferson Hills PA 15025
Telephone: (412) 387-1001 Email: rfrancis@clarktesting.com

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)
Contact Person: Jeremy Lange
Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513
Telephone: (972) 247-9657 Email: Jeremy@etldallas.com

Company Name: Pacific Earthquake Engineering Research Center (PEER)
Contact Person: Amarnath Kasalanati
Mailing Address: 1301 South 46th St., Bldg. 420, Richmond CA 94720-1729
Telephone: (510) 642-3437 Email: Amarnath1@berkeley.edu





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.44

SDS (Design spectral response acceleration at short period, g) = 2.0

a_p (Amplification factor) = 1.0

R_p (Response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

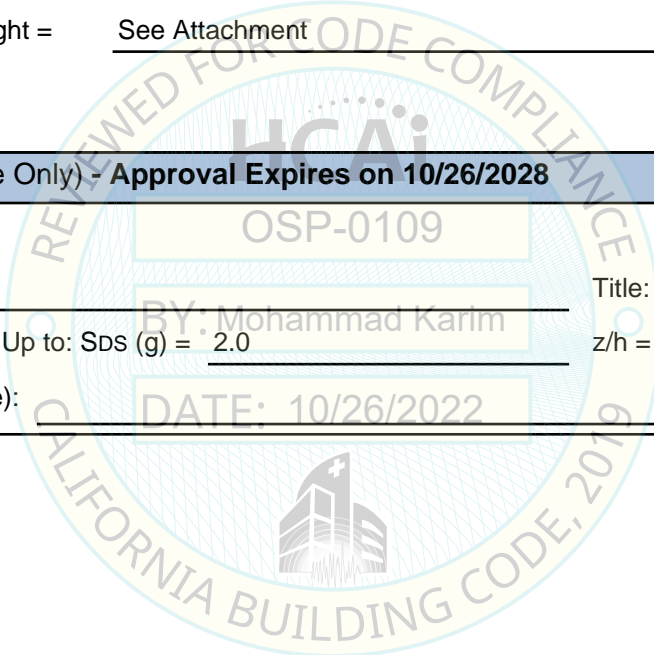
HCAI Approval (For Office Use Only) - Approval Expires on 10/26/2028

Date: 10/26/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.0 z/h = See Above

Condition of Approval (if applicable): DATE: 10/26/2022



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.						TABLE 1	
Model Line: Dry-Type Transformers							
Certified Product Construction Summary: NEMA 3R, carbon steel enclosures							
Certified Options Summary: Transformers can be branded as Jefferson Electric, Bemag, Pioneer Power Solutions, Pioneer Power, Beaver Electrical Machinery, Harmonics Limited, V&F Transformer, or Siemens Industry, Inc.							
Mounting Configuration: Wall mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2022		Seismic Certification Limits:			$S_{DS} = 2.0 g$ $z/h = 1.0$	$I_p = 1.5$	
					$S_{DS} = 2.0 g$ $z/h = 0.0$		
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Single Phase - Al Encapsulated	1.5 kVA	5.3	6.7	12.5	32		Interp.
	2 kVA	5.3	6.7	12.5	40		Interp.
	3 kVA	7.2	7.6	14.6	68		Interp.
	5 kVA	7.2	7.6	14.6	85		Interp.
	7.5 kVA	8.6	13.5	16.1	130		2
	10 kVA	8.6	13.5	16.1	157		Interp.
	15 kVA	10.1	16.5	21.1	255		Interp.
	25 kVA	10.1	16.5	21.1	285		Interp.
Single Phase - Cu Encapsulated	1.5 kVA	5.3	6.7	12.5	32		Interp.
	2 kVA	5.3	6.7	12.5	40		Interp.
	3 kVA	7.2	7.6	14.6	68		Interp.
	5 kVA	7.2	7.6	14.6	85		Interp.
	7.5 kVA	8.6	13.5	16.1	140		Interp.
	10 kVA	8.6	13.5	16.1	185		Interp.
	15 kVA	10.1	16.5	21.1	270		Interp.
	25 kVA	10.1	16.5	21.1	320		3
Single Phase - Al/Cu Encapsulated	1.5 kVA	5.3	6.7	12.5	32		Interp.
	2 kVA	5.3	6.7	12.5	40		Interp.
	3 kVA	7.2	7.6	14.6	68		Interp.
	5 kVA	7.2	7.6	14.6	85		10
	7.5 kVA	8.6	13.5	16.1	140		Interp.
	10 kVA	8.6	13.5	16.1	185		Interp.
	15 kVA	10.1	16.5	21.1	270		Interp.
	25 kVA	10.1	16.5	21.1	290		9

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

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Mounting Configuration: Wall mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.								
Building Code: CBC 2022		Seismic Certification Limits:			$S_{DS} = 2.0 g \quad z/h=1.0$ $S_{DS} = 2.0 g \quad z/h=0.0$		$I_p = 1.5$	
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT	
		Depth	Width	Height				
Three phase - Al/Cu Encapsulated	3 kVA	8.1	15.1	13.1	110		Interp.	
	6 kVA	8.1	15.1	13.1	140		Interp.	
	9 kVA	9.1	19	15.1	235		Interp.	
	15 kVA	9.1	19	15.1	250		Interp.	
Three phase - Al Encapsulated	3 kVA	8.1	15.1	13.1	115		Interp.	
	6 kVA	8.1	15.1	13.1	130		Interp.	
	9 kVA	9.1	19	15.1	225		Interp.	
	15 kVA	9.1	19	15.1	250		12	
Three phase - Cu Encapsulated	3 kVA	8.1	15.1	13.1	110		Interp.	
	6 kVA	8.1	15.1	13.1	140		Interp.	
	9 kVA	9.1	19	15.1	235		Interp.	
	15 kVA	9.1	19	15.1	250		11	

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.						TABLE 2	
Model Line: Dry-Type Transformers							
Certified Product Construction Summary: NEMA 1 or NEMA 3R, carbon steel enclosures. 3-Phase Ventilated: 500 - 1000 kVA units include additional seismic bracing 3-Phase Totally Enclosed: 225 - 500 kVA units include additional seismic bracing							
Certified Options Summary: Transformers can be branded as Jefferson Electric, Bemag, Pioneer Power Solutions, Pioneer Power, Beaver Electrical Machinery, Harmonics Limited, V&F Transformer, or Siemens Industry, Inc.							
Mounting Configuration: Base mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2022		Seismic Certification Limits:			$S_{DS} = 2.0 g$	$z/h = 1.0$	$I_p = 1.5$
					$S_{DS} = 2.0 g$	$z/h = 0.0$	
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
3 Phase - Al Encapsulated	30 kVA	9.5	23	33	720		Interp.
	45 kVA	11	24.5	36	800		Interp.
	75 kVA	12.8	25.3	37	1110	UUT: NEMA 3R	1
3 Phase - Cu Encapsulated	30 kVA	9.5	23.0	33	849		Interp.
	45 kVA	11	24.5	36	1028		Interp.
	75 kVA	12.8	25.3	37	1144	UUT: NEMA 3R	8
3 Phase - Al/Cu Encapsulated	30 kVA	9.5	23	33	849		Interp.
	45 kVA	11.0	24.5	36	1028		Interp.
	75 kVA	12.8	25.3	37	1144		Interp.
Single Phase - Al Totally Enclosed	1 kVA	12	13	18	67		Interp.
	2 kVA	12	13	18	104		Interp.
	3 kVA	12	13	18	155		Interp.
	5 kVA	14	17	21	188		Interp.
	7.5 kVA	14	17	21	211		Interp.
	10 kVA	17	22	25	298		Interp.
	15 kVA	17	22	25	451		Interp.
	25 kVA	21	27	32	538		Interp.
	37.5 kVA	23	29	38	691		Interp.
	50 kVA	26	33	42	844		Interp.
	75 kVA	26	33	42	1235		Interp.
	100 kVA	30	35	46	2001		Interp.
	150 kVA	33	48	60	2555		Interp.
	167 kVA	33	48	60	3340		Interp.
200 kVA	33	48	60	4000		Interp.	

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Mounting Configuration: Base mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
Building Code: CBC 2022		Seismic Certification Limits:			$S_{DS} = 2.0 g$	$z/h = 1.0$	$I_p = 1.5$
					$S_{DS} = 2.0 g$	$z/h = 0.0$	
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Single Phase - Al Totally Enclosed	225 kVA	40	52	72	4500		Interp.
	250 kVA	40	52	72	5000		Interp.
Single Phase - Cu Totally Enclosed	1 kVA	12	13	18	77		Interp.
	2 kVA	12	13	18	120		Interp.
	3 kVA	12	13	18	178		Interp.
	5 kVA	14	17	21	216		Interp.
	7.5 kVA	14	17	21	243		Interp.
	10 kVA	17	22	25	343		Interp.
	15 kVA	17	22	25	519		Interp.
	25 kVA	21	27	32	619		Interp.
	37.5 kVA	23	29	38	795		Interp.
	50 kVA	26	33	42	971		Interp.
	75 kVA	26	33	42	1420		Interp.
	100 kVA	30	35	46	2301		Interp.
	150 kVA	33	48	60	2938		Interp.
	167 kVA	33	48	60	3841		Interp.
	200 kVA	33	48	60	4600		Interp.
225 kVA	40	52	72	5175		Interp.	
250 kVA	40	52	72	5750		Interp.	
Single Phase - Al/Cu Totally Enclosed	1 kVA	12	13	18	77		Interp.
	2 kVA	12	13	18	120		Interp.
	3 kVA	12	13	18	178		Interp.
	5 kVA	14	17	21	216		Interp.
	7.5 kVA	14	17	21	243		Interp.

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Certified Options Summary:
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Mounting Configuration:
 Base mounted - rigid
 Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code: CBC 2022 **Seismic Certification Limits:** $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$
 $S_{DS} = 2.0 g$ $z/h = 0.0$

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Single Phase - Al/Cu Totally Enclosed	10 kVA	17	22	25	343		Interp.
	15 kVA	17	22	25	519		Interp.
	25 kVA	21	27	32	619		Interp.
	37.5 kVA	23	29	38	795		Interp.
	50 kVA	26	33	42	971		Interp.
	75 kVA	26	33	42	1420		Interp.
	100 kVA	30	35	46	2301		Interp.
	150 kVA	33	48	60	2938		Interp.
	167 kVA	33	48	60	3841		Interp.
	200 kVA	33	48	60	4600		Interp.
	225 kVA	40	52	72	5175		Interp.
	250 kVA	40	52	72	5750		Interp.
3-Phase - Al Totally Enclosed	1 kVA	12	13	18	78		Interp.
	2 kVA	12	13	18	144		Interp.
	3 kVA	12	13	18	166		Interp.
	6 kVA	14	17	21	243		Interp.
	9 kVA	14	17	21	300		Interp.
	12 kVA	17	22	25	350		Interp.
	15 kVA	17	22	25	350		Interp.
	30 kVA	21	27	32	600		Interp.
	45 kVA	23	29	38	795		Interp.
	75 kVA	26	33	42	1210		Interp.
	112.5 kVA	30	35	46	1500		Interp.
	150 kVA	30	35	52	2125		Interp.

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					$S_{DS} = 2.0 g$	$z/h = 0.0$	
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
3-Phase - Al Totally Enclosed	225 kVA	33	48	60	3090		Interp.
	300 kVA	40	52	72	4800		Interp.
	500 kVA	44	66	81	5500		Interp.
3-Phase - Cu Totally Enclosed	1 kVA	12	13	18	90		Interp.
	2 kVA	12	13	18	166		Interp.
	3 kVA	12	13	18	191		Interp.
	6 kVA	14	17	21	279		Interp.
	9 kVA	14	17	21	345		Interp.
	12 kVA	17	22	25	403		Interp.
	15 kVA	17	22	25	403		Interp.
	30 kVA	21	27	32	690		Interp.
	45 kVA	23	29	38	914		Interp.
	75 kVA	26	33	42	1392		Interp.
	112.5 kVA	30	35	46	1725		Interp.
	150 kVA	30	35	52	2444		Interp.
	225 kVA	33	48	60	3554		Interp.
	300 kVA	40	52	72	5520		Interp.
	500 kVA	44	66	81	6325		Interp.
3-Phase - Al/Cu Totally Enclosed	1 kVA	12	13	18	90		Interp.
	2 kVA	12	13	18	166		Interp.
	3 kVA	12	13	18	191		Interp.
	6 kVA	14	17	21	279		Interp.
	9 kVA	14	17	21	345		Interp.
	12 kVA	17	22	25	403		Interp.

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					$S_{DS} = 2.0 g$ $z/h = 0.0$		
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
3-Phase - Al/Cu Totally Enclosed	15 kVA	17	22	25	403		Interp.
	30 kVA	21	27	32	690		Interp.
	45 kVA	23	29	38	914		Interp.
	75 kVA	26	33	42	1392		Interp.
	112.5 kVA	30	35	46	1725		Interp.
	150 kVA	30	35	52	2444		Interp.
	225 kVA	33	48	60	3554		Interp.
	300 kVA	40	52	72	5520		Interp.
	500 kVA	44	66	81	6325		Interp.
Single Phase - Al Ventilated	1 kVA	12	13	18	56		Interp.
	2 kVA	12	13	18	67		Interp.
	3 kVA	12	13	18	85		Interp.
	5 kVA	12	13	18	104		Interp.
	7.5 kVA	14	15	24	155		Interp.
	10 kVA	14	15	24	188		Interp.
	15 kVA	20.5	15	27	211		Interp.
	25 kVA	22.5	17	29	298		Interp.
	37.5 kVA	23.5	20	31	451		Interp.
	50 kVA	25.5	22	32	538		Interp.
	75 kVA	27.5	22	34	691		Interp.
	100 kVA	29.5	22	36	844		Interp.
	150 kVA	37	35	46	1155		Interp.
	167 kVA	37	35	52	1200		Interp.
200 kVA	37	35	52	1245		Interp.	

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Mounting Configuration: Base mounted - rigid Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.							
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					$S_{DS} = 2.0 g$ $z/h=0.0$		
Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Single Phase - Al Ventilated	225 kVA	37	35	52	1615		Interp.
	250 kVA	37	35	52	1580		Interp.
Single Phase - Cu Ventilated	1 kVA	12	13	18	64	UUT: NEMA 1	4
	2 kVA	12	13	18	77		Interp.
	3 kVA	12	13	18	98		Interp.
	5 kVA	12	13	18	120		Interp.
	7.5 kVA	14	15	24	178		Interp.
	10 kVA	14	15	24	216		Interp.
	15 kVA	20.5	15	27	243		Interp.
	25 kVA	22.5	17	29	343		Interp.
	37.5 kVA	23.5	20	31	519		Interp.
	50 kVA	25.5	22	32	619		Interp.
	75 kVA	27.5	22	34	795		Interp.
	100 kVA	29.5	22	36	971		Interp.
	150 kVA	37	35	46	1328		Interp.
	167 kVA	37	35	46	1380		Interp.
	200 kVA	37	35	52	1432		Interp.
225 kVA	37	35	52	1857		Interp.	
250 kVA	37	35	52	1817		Interp.	
Single Phase - Al/Cu Ventilated	1 kVA	12	13	18	64		Interp.
	2 kVA	12	13	18	77		Interp.
	3 kVA	12	13	18	98		Interp.
	5 kVA	12	13	18	120		Interp.
	7.5 kVA	14	15	24	178		Interp.

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

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 Transformers can be branded as Jefferson Electric, Bemag, Pioneer Power Solutions, Pioneer Power, Beaver Electrical Machinery, Harmonics Limited, V&F Transformer, or Siemens Industry, Inc.

Mounting Configuration:
 Base mounted - rigid
 Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code: CBC 2022 **Seismic Certification Limits:** $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$
 $S_{DS} = 2.0 g$ $z/h = 0.0$

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Single Phase - Al/Cu Ventilated	10 kVA	14	15	24	216		Interp.
	15 kVA	20.5	15	27	243		Interp.
	25 kVA	22.5	17	29	343		Interp.
	37.5 kVA	23.5	20	31	519		Interp.
	50 kVA	25.5	22	32	619		Interp.
	75 kVA	27.5	22	34	795		Interp.
	100 kVA	29.5	22	36	971		Interp.
	150 kVA	37	35	46	1328		Interp.
	167 kVA	37	35	46	1380		Interp.
	200 kVA	37	35	52	1432		Interp.
	225 kVA	37	35	52	1857		Interp.
	250 kVA	37	35	52	1817		Interp.
3 Phase - Al Ventilated	1 kVA	12	13	18	59		Interp.
	2 kVA	12	13	18	78		Interp.
	3 kVA	12	13	18	101		Interp.
	6 kVA	12	13	18	144		Interp.
	9 kVA	14	17	21	199		Interp.
	12 kVA	14	17	21	243		Interp.
	15 kVA	21	19	22	250		Interp.
	30 kVA	22	22	25	350		Interp.
	45 kVA	23.5	25	28	500		Interp.
	75 kVA	26	27	32	740		Interp.
	112.5 kVA	29	29	38	930		Interp.
	150 kVA	32.5	33	42	1210		Interp.

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	TABLE 2
Model Line: Dry-Type Transformers	

Certified Product Construction Summary:
 NEMA 1 or NEMA 3R, carbon steel enclosures.
3-Phase Ventilated: 500 - 1000 kVA units include additional seismic bracing
3-Phase Totally Enclosed: 225 - 500 kVA units include additional seismic bracing

Certified Options Summary:
 Transformers can be branded as Jefferson Electric, Bemag, Pioneer Power Solutions, Pioneer Power, Beaver Electrical Machinery, Harmonics Limited, V&F Transformer, or Siemens Industry, Inc.

Mounting Configuration:
 Base mounted - rigid
 Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code: CBC 2022 **Seismic Certification Limits:** $S_{DS} = 2.0 g$ $z/h = 1.0$ $I_p = 1.5$
 $S_{DS} = 2.0 g$ $z/h = 0.0$

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
3 Phase - Al Ventilated	225 kVA	37	35	46	1500		Interp.
	300 kVA	37	35	52	2125		Interp.
	500 kVA	43.5	48	60	3090		Interp.
	750 kVA	44	52	72	4800		Interp.
	1000 kVA	61	66	81	5500		Interp.
3-Phase - Cu Ventilated	1 kVA	12	13	18	68		Interp.
	2 kVA	12	13	18	90		Interp.
	3 kVA	12	13	18	116		Interp.
	6 kVA	12	13	18	166		Interp.
	9 kVA	14	17	21	229		Interp.
	12 kVA	14	17	21	279		Interp.
	15 kVA	21	19	22	288		Interp.
	30 kVA	22	22	25	403		Interp.
	45 kVA	23.5	25	28	575		Interp.
	75 kVA	26	27	32	851		Interp.
	112.5 kVA	29	29	38	1070		Interp.
	150 kVA	32.5	33	42	1392		Interp.
	225 kVA	37	35	46	1725		Interp.
	300 kVA	37	35	52	2560		Interp.
	500 kVA	43.5	48	60	3554		Interp.
750 kVA	44	52	72	5520		Interp.	
1000 kVA	61	66	81	6780		Interp.	
3- Phase - Al/Cu Ventilated	1 kVA	12	13	18	68		Interp.
	2 kVA	12	13	18	90		Interp.

UNIT UNDER TEST (UUT) SUMMARY SHEET

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.
Model Line: Dry-Type Transformers

UUT	Unit Description	Report Number	Testing Lab	Year Tested	ISO 17025 Accredited?	S _{DS}	z/h	I _p
1	75 kVA, 3Φ, Al windings, NEMA 3R	9276, Rev. 0	Clark Testing	2010	No ¹	2.0 2.0	1.0 0.0	1.5
2	7.5 kVA, 1Φ, Al windings, NEMA 3R	9276, Rev. 0	Clark Testing	2010	No ¹	2.0 2.0	1.0 0.0	1.5
3	25 kVA, 1Φ, Cu windings, NEMA 3R	9276, Rev. 0	Clark Testing	2010	No ¹	2.0 2.0	1.0 0.0	1.5
4	1 kVA, 1Φ, Cu windings, NEMA 1	9276, Rev. 0	Clark Testing	2010	No ¹	2.0 2.0	1.0 0.0	1.5
6	1000 kVA, 3Φ, Al and Cu windings, NEMA 3R	14368, Rev. 1	Environmental Testing Laboratory	2017	Yes	2.0 3.2	1.0 0.0	1.5
7	300 kVA, 3Φ, Al and Cu windings, NEMA 3R	14368, Rev. 1	Environmental Testing Laboratory	2017	Yes	2.0 3.2	1.0 0.0	1.5
8	75 kVA, 3Φ, Cu windings, NEMA 3R	14368, Rev. 1	Environmental Testing Laboratory	2017	Yes	2.0 3.2	1.0 0.0	1.5
9	25 kVA, 1Φ, Al and Cu windings, NEMA 3R	14368, Rev. 1	Environmental Testing Laboratory	2017	Yes	2.0 3.2	1.0 0.0	1.5
10	5 kVA, 1Φ, Al and Cu windings, NEMA 3R	14368, Rev. 1	Environmental Testing Laboratory	2017	Yes	2.0 3.2	1.0 0.0	1.5
11	15 kVA, 3Φ, Cu windings, NEMA 3R	16049-TR-001, Rev. 0	Pacific Earthquake Engineering Research Center	2017	Yes	2.0 3.2	1.0 0.0	1.5
12	15 kVA, 3Φ, Al windings, NEMA 3R	16049-TR-001, Rev. 0	Pacific Earthquake Engineering Research Center	2017	Yes	2.0 3.2	1.0 0.0	1.5

Notes:
1. Clark Testing was not ISO 17025 accredited at the time of testing but has been reviewed by TRU Compliance and found to meet the requirements for ICC-ES AC156 testing. Review form is on file with TRU Compliance.

UNIT UNDER TEST (UUT) SUMMARY SHEET

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 1
Model Line: Dry-Type Transformers	
Model Number: 413-1234-800 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
75 kVA. 3 Phase. Aluminum windings. Encapsulated

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,110	12.8	25.3	37.0	15.6	20.8	> 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 2022	ICC-ES AC156	2.0 2.0	1.0 0.0	1.5	3.20	2.40	1.33	0.53

Test Mounting Details:



The unit was rigid floor mounted using (4) 1/2" Grade 5 bolts, washers, and lock washers.
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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 2
Model Line: Dry-Type Transformers	
Model Number: 411-0131-277 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
7.5 kVA. Single Phase. Aluminum windings. Encapsulated

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
125	8.6	10.6	16.1	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 2022	ICC-ES AC156	2.0 2.0	1.0 0.0	1.5	3.20	2.40	1.33	0.53

Test Mounting Details:



The unit was rigid wall mounted using (4) 1/4" Grade 5 bolts, washers, and lock washers. 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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 3
Model Line: Dry-Type Transformers	
Model Number: 411-1187-804 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
25 kVA. Single Phase. Copper windings. Encapsulated

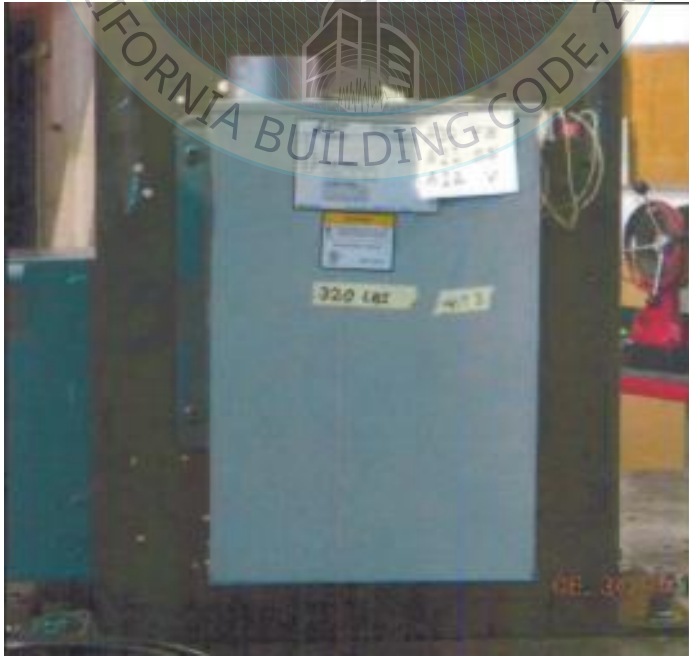
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
320	10.1	13.7	21.1	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 2022	ICC-ES AC156	2.0 2.0	1.0 0.0	1.5	3.20	2.40	1.33	0.53

Test Mounting Details:



The unit was rigid wall mounted using (4) 1/4" Grade 5 bolts, washers, and lock washers. 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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 4
Model Line: Dry-Type Transformers	
Model Number: 421-8071-000 Serial Number: N/A	

Product Construction Summary:
NEMA 1. Carbon steel ventilated enclosure

Options/Subcomponent Summary:
1 kVA. Single Phase. Copper windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
57	12.0	13.0	18.0	15.6	20.8	25.1

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 2022	ICC-ES AC156	2.0 2.0	1.0 0.0	1.5	3.20	2.40	1.33	0.53

Test Mounting Details:



The unit was rigid floor mounted using (4) 1/2" Grade 5 bolts, washers, and lock washers.
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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 6
Model Line: Dry-Type Transformers	
Model Number: 423-4900-112 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel ventilated enclosure.
Upgraded seismic bracing included.

Options/Subcomponent Summary:
1000 kVA; 3-phase; Aluminum and Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
6780	61.0	66.0	81.0	5.7	4.6	3.7

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 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	2.13	0.85
		3.2	0.0					

Test Mounting Details:



The unit was rigid floor mounted using (8) 1/2" Grade 8 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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.
Model Line: Dry-Type Transformers
Model Number: 423-4900-113 **Serial Number:** N/A

UUT 7

Product Construction Summary:
 NEMA 3R. Carbon steel ventilated enclosure.
 (4) additional 1/4" self-tapping screws added to each side at base of enclosure.

Options/Subcomponent Summary:
 300 kVA; 3-phase; Aluminum and Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2560	37.0	35.0	52.0	11.3	6.9	28.9

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 2022	ICC-ES AC156	2.0 3.2	1.0 0.0	1.5	3.20	2.40	2.13	0.85

Test Mounting Details:



The unit was rigid floor mounted using (4) 1/2" Grade 8 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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 8
Model Line: Dry-Type Transformers	
Model Number: 413-1234-800 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
75 kVA; 3-phase; Copper windings; Encapsulated

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1144	12.8	25.3	37.0	24.8	32.4	> 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 2022	ICC-ESAC156	2.0	1.0	1.5	3.20	2.40	2.13	0.85
		3.2	0.0					

Test Mounting Details:



The unit was rigid floor mounted using (4) 1/2" Grade 8 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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 9
Model Line: Dry-Type Transformers	
Model Number: 411-0081-000 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
25 kVA; Single Phase; Aluminum and Copper windings; Encapsulated

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
290	10.1	16.5	21.1	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 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	2.13	0.85
		3.2	0.0					

Test Mounting Details:



The unit was rigid wall mounted using (6) 1/4" Grade 5 bolts and standard washers.
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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 10
Model Line: Dry-Type Transformers	
Model Number: 411-0111-000 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
5 kVA; Single phase; Aluminum and Copper windings; Encapsulated

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
85	7.2	7.6	12.75	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 2022	ICC-ES AC156	2.0 3.2	1.0 0.0	1.5	3.20	2.40	2.13	0.85

Test Mounting Details:



The unit was rigid wall mounted using (5) 1/4" Grade 5 bolts and standard washers.
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

2200920-CR-001-R0



Manufacturer: Jefferson Electric Inc.	UUT 11
Model Line: Dry-Type Transformers	
Model Number: 413-1161-800 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
15 kVA; Three phase; Copper windings; Encapsulated

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
250	9.0	19.0	15.0	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 2022	ICC-ES AC156	2.0 3.2	1.0 0.0	1.5	3.20	2.40	2.13	0.85

Test Mounting Details:



The unit was rigid wall mounted using (6) 1/4" Grade 8 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



2200920-CR-001-R0

Manufacturer: Jefferson Electric Inc.	UUT 12
Model Line: Dry-Type Transformers	
Model Number: 413-1164-000 Serial Number: N/A	

Product Construction Summary:
NEMA 3R. Carbon steel enclosure

Options/Subcomponent Summary:
15 kVA; Three phase; Aluminum windings; Encapsulated

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
250	9.0	19.0	15.0	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 2022	ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	2.13	0.85
		3.2	0.0					

Test Mounting Details:



The unit was rigid wall mounted using (6) 1/4" Grade 8 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.