



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP - 0417 - 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Trane

Manufacturer's Technical Representative: Pavak Mehta

Mailing Address: 101 William White Blvd, Pueblo, CO 81001

Telephone: 1-608-787-2078 Email: pmehta@trane.com

Product Information

Product Name: Stealth™ RTAE

Product Type: Air-Cooled Chiller

Product Model Number: See attached

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

General Description: 150 ton to 300 ton air-cooled chiller with or without transformer, 12PAT or VAT. Seismic enhancement made to the test units and modifications required to address anomalies during the tests shall be incorporated into the production units.

Mounting Description: Rigid base mounted with or without neoprene pads

Applicant Information

Applicant Company Name: Buehler and Buehler Structural Engineers, Inc.

Contact Person: Scott Hooker

Mailing Address: 600 Q Street, Sacramento, CA 95811

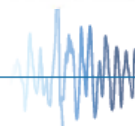
Telephone: 1-916-443-0303 Email: shooker@bbse.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant:  Date: 12/4/14

Title: President Company Name: Buehler and Buehler Structural Engineers, Inc.

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



OSHPD



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: Buehler and Buehler Structural Engineers, Inc.

Name: Scott R. Hooker, S.E. California License Number: S 3937

Mailing Address: 600 Q Street, Suite 200, Sacramento, CA 95811

Telephone: 1-916-443-0303 Email: shooker@bbse.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: U.S. Army Engineer Research and Development Center Construction Engineering Research Lab

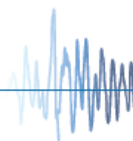
Contact Name: James Wilcoski

Mailing Address: 2902 Newmark Drive, Champaign, IL 61826-1076

Telephone: 1-217-373-6763 Email: James.Wilcoski@usace.army.mil

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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 10/21/14)





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Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.04 ($S_{DS} = 2.30$, $z/h = 0$), 1.59 ($S_{DS} = 2.21$, $z/h = 1$) Rigid Mount
1.38 ($S_{DS} = 2.30$, $z/h = 0$), 3.98 ($S_{DS} = 2.21$, $z/h = 1$) Neoprene Pads

S_{DS} (Design spectral response acceleration at short period, g) = $S_{DS} = 2.30$ ($z/h = 0$), $S_{DS} = 2.21$ ($z/h = 1.0$)

a_p (In-structure equipment or component amplification factor) = 1 (rigid mounted), 2.5 (neoprene pads)

R_p (Equipment or component response modification factor) = 2.5 (rigid mounted with or without neoprene pads)

Ω_0 (System overstrength factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = $z/h = 0$ ($S_{DS} = 2.30$), $z/h = 1.0$ ($S_{DS} = 2.21$)

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

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

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, 2010: Yes No

List of Attachments Supporting Special Seismic Certification

Test Report(s) Drawings Calculations Manufacturer's Catalog

Other(s) (Please Specify): Test Witness Letter

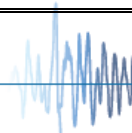
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2019

Signature:  Date: April 6, 2015

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): _____





Special Seismic Certification
OSHPD Preapproval
Trane Stealth RTAE Air-Cooled Chiller Product Line



Table 1. Certified Product List

Model Number	Nominal Capacity	Tested/ Interpolated	Length (in)	Width (in)	Height (in)	Max Operating Weight (lbs)
RTAE150 0X*	150 ton	Extrapolated	230.44	87.8125	95.75	11,479
RTAE150F UAA1AA1FN1X2A1A00AA0100XAC03	150 ton	UUT-1	283.44	87.8125	95.75	13,408
RTAE150 01*	150 ton	Interpolated	283.44	87.8125	95.75	13,438
RTAE150G UAA1AA1FN1X2A1A00AA1X00XAC03	150 ton	UUT-3	283.44	87.8125	95.75	12,743
RTAE150 1X*	150 ton	Interpolated	283.44	87.8125	95.75	13,638
RTAE165 0X*	165 ton	Interpolated	283.63	87.8125	95.75	12,533
RTAE165 01*	165 ton	Interpolated	336.63	87.8125	95.75	14,488
RTAE165 1X*	165 ton	Interpolated	336.63	87.8125	95.75	14,688
RTAE180 0X*	180 ton	Interpolated	283.63	87.8125	95.75	12,880
RTAE180 01*	180 ton	Interpolated	336.63	87.8125	95.75	14,835
RTAE180 1X*	180 ton	Interpolated	336.63	87.8125	95.75	15,035
RTAE200 0X*	200 ton	Interpolated	336.81	87.8125	95.75	14,007
RTAE200 01*	200 ton	Interpolated	389.81	87.8125	95.75	16,013
RTAE200 1X*	200 ton	Interpolated	389.81	87.8125	95.75	16,213
RTAE225 0X*	225 ton	Interpolated	336.81	87.8125	95.75	15,466
RTAE225 01*	225 ton	Interpolated	389.81	87.8125	95.75	17,449
RTAE225 1X*	225 ton	Interpolated	389.81	87.8125	95.75	17,649
RTAE250 0X*	250 ton	Interpolated	336.81	87.8125	95.75	15,861
RTAE250 01*	250 ton	Interpolated	389.81	87.8125	95.75	17,844
RTAE250 1X*	250 ton	Interpolated	389.81	87.8125	95.75	18,044
RTAE275 0X*	275 ton	Interpolated	390.00	87.8125	95.75	17,095
RTAE275 01*	275 ton	Interpolated	443.00	87.8125	95.75	19,050
RTAE275 1X*	275 ton	Interpolated	443.00	87.8125	95.75	19,250
RTAE300 0X*	300 ton	Interpolated	443.25	87.8125	95.75	18,265
RTAE300 01*	300 ton	Interpolated	496.25	87.8125	95.75	20,221
RTAE300D UAA2AA1FP1F3B3D00DB01C4EBCA3	300 ton	UUT-2	496.25	87.8125	95.75	20,221
RTAE300 1X*	300 ton	Interpolated	496.25	87.8125	95.75	20,421
RTAE300A UAA2AA1FP1F3B3D00DB1XC4EBCA3	300 ton	UUT-4	496.25	87.8125	95.75	20,421

Note 1: * = digit 28and29 of model number

Note 2: Unit manufacturer is Trane Company

Note 3: Frame material is Carbon Steel

Note 4: Model Number listed above have the following

- a. Part numbers for the unit or system uniquely identify the configuration, manufacturers, and materials of the sub-components within the unit or system
- b. Sub-component manufacturers and materials within the two tested units used for interpolation are the same.
- c. Sub-component manufacturers and materials within the interpolated units are the same as the two tested units used for interpolation.
- d. Configuration of the interpolated units is similar to the two tested units used for interpolation.

Note 5: Max operating weight determined max configuration weight as documented in mfr catalog, with adjustment for specific components as applicable



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Table 2. Certified Sub-Component List

Compressor					
<i>Part Number</i>	<i>Nominal capacity</i>	<i>Voltage</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
CHHSRB1B1A0	100 tons	460	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	tested (UUT-1, UUT-3)
CHHSRB1B1A0	100 tons	400, 380	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	Interpolated
CHHSRC1B1A0	100 tons	460, 400, 380	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	Interpolated
CHHSSE1B1A0	150 tons	400, 380	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	Interpolated
CHHSSE2B1A0	150 tons	460, 400, 380	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	Interpolated
CHHSSE3B1A0	150 tons	460, 400	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	Interpolated
CHHSSF1B1A0	150 tons	460, 400, 380	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	Interpolated
CHHSSF2B1A0	150 tons	400	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	Interpolated
CHHSSF2B1A0	150 tons	380	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	tested (UUT-2)
CHHSSF2B1A0	150 tons	460	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel	tested (UUT-4)

Condenser Coils -- Aluminum tubes and aluminum fins				
<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>	
572424210100	Ingersoll Rand	Aluminum, epoxy coating	Extrapolated	
572424210100	Ingersoll Rand	Aluminum	tested (UUT-1, UUT-2, UUT-3, UUT-4)	

Note: Epoxy coated coils are provided as a option to customers. The standard coated is dipped into a thin epoxy material. No structural modification of the coil is made under this process

Condenser Fan				
<i>Part Number</i>	<i>Voltage</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
X38011139010	460	Kenco Plastics Inc	Nylon	tested (UUT-1, UUT-3, UUT-4)
X38011139010	400	Kenco Plastics Inc	Nylon	Interpolated
X38011139010	380	Kenco Plastics Inc	Nylon	tested (UUT-2)

Condenser Fan Motor				
<i>Part Number</i>	<i>Voltage</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
X70371264010	460	EBM Papst	Carbon steel and copper	tested (UUT-1, UUT-3, UUT-4)
X70371264010	400	EBM Papst	Carbon steel and copper	Interpolated
X70371264010	380	EBM Papst	Carbon steel and copper	tested (UUT-2)

Evaporator shell			
<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
572423970100	Ingersoll Rand	A56 steel, copper	tested (UUT-1, UUT-3)
572423980100	Ingersoll Rand	A56 steel, copper	Interpolated
572423990100	Ingersoll Rand	A56 steel, copper	Interpolated
572424000100	Ingersoll Rand	A56 steel, copper	tested (UUT-2, UUT-4)

Control Box Assembly			
<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
572443000100	Ingersoll Rand	plastic, copper, aluminum, carbon steel	tested (UUT-1, UUT-3)
572444000100	Ingersoll Rand	plastic, copper, aluminum, carbon steel	tested (UUT-2, UUT-4)



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Table 2. Certified Sub-Component List (Cont'd)

Variable Frequency Drives			
Part Number	Manufacturer	Material	Interpolated / Included With Test
X13611994020	Unico	Ceramic, copper, aluminum, carbon steel, plastic	tested (UUT-1, UUT-3)
X13611994030	Unico	Ceramic, copper, aluminum, carbon steel, plastic	Interpolated
X13611994040	Unico	Ceramic, copper, aluminum, carbon steel, plastic	Interpolated
X13611995010	Unico	Ceramic, copper, aluminum, carbon steel, plastic	tested (UUT-2, UUT-4)

Expansion valves			
Part Number	Manufacturer	Material	Interpolated / Included With Test
X15111804010	Sporlan	Carbon steel and copper	tested (UUT-1, UUT-3)
X15111804020	Sporlan	Carbon steel and copper	tested (UUT-2, UUT-4)

Refrigerant Pumps			
Part Number	Manufacturer	Material	Interpolated / Included With Test
X24011012010	Wilo, USA	Cast iron, carbon steel, cast aluminum	tested (UUT-1, UUT-2, UUT-3, UUT-4)

Coolant flow control valve			
Part Number	Manufacturer	Material	Interpolated / Included With Test
x15102840001	Sporlan	Brass, copper, carbon steel	tested (UUT-1, UUT-2, UUT-3, UUT-4)

Oil separator				
Part Number	Manufacturer	Material	Interpolated / Included With Test	Diameter
572424120200	Ingersoll Rand	A56 steel, copper	tested (UUT-1, UUT-3)	10"
572424140200	Ingersoll Rand	A56 steel, copper	tested (UUT-2, UUT-4)	12"

Twelve Pulse Auto Transformer (12 PAT) - IEEE519 Compliant			
Part Number	Manufacturer	Material	Interpolated / Included With Test
X13550868020	Unico	Aluminum and carbon steel	tested (UUT-1)
X13550868040	Unico	Aluminum and carbon steel	Interpolated
X13550868010	Unico	Aluminum and carbon steel	Interpolated
X13550868030	Unico	Aluminum and carbon steel	tested (UUT-2)

Voltage Auto Transformer (VAT) Assembly				
Part Number	Manufacturer	Material	Interpolated / Included With Test	Voltage
X13550907010	Basler Electric	Copper and Carbon Steel	tested (UUT-4)	PRI: 200V, SEC: 460V
X13550907010	Basler Electric	Copper and Carbon Steel	Interpolated	PRI: 230V, SEC: 460V
X13550908010	Basler Electric	Copper and Carbon Steel	Interpolated	PRI: 200V/230V, SEC: 460V
X13550909010	Basler Electric	Copper and Carbon Steel	Interpolated	PRI: 575V, SEC: 460V
X13550910010	Basler Electric	Copper and Carbon Steel	tested (UUT-3)	PRI: 575V, SEC: 460V

Line Reactors				
Part Number	Manufacturer	Material	Interpolated / Included With Test	AMPS
X136411530200	MTE Corp	Copper and carbon steel	tested (UUT-3)	204
X136411530400	MTE Corp	Copper and carbon steel	Interpolated	263
X136411530100	MTE Corp	Copper and carbon steel	Interpolated	338
X136411530300	MTE Corp	Copper and carbon steel	tested (UUT-4)	421



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Table 3. UUT Summary

<i>Model Number</i>	<i>Nominal Capacity</i>	<i>UUT Mark</i>	<i>Mounting</i>	<i>Excitation Direction</i>	<i>Frequency* (Hz)</i>	<i>Length (in)</i>	<i>Width (in)</i>	<i>Height (in)</i>	<i>Operating Weight (lbs)</i>
RTAE150FUAA1AA1FN1X2A1A00AA0100XAC03	150 ton	UUT-1	Rigid base mount	X	12.0	283.44	87.8125	95.75	12,850
				Y	10.5				
				Z	13.0				
RTAE300DUAA2AA1FP1F3B3D00DB01C4EBCA3	300 ton	UUT-2	Base mount with neoprene pads	X	10.0	496.25	87.81	95.75	20,400
				Y	7.1				
				Z	10.0				
RTAE150GUAA1AA1FN1X2A1A00AA1X00XAC03	150 ton	UUT-3	Rigid base mount	X	12.0	283.44	87.81	95.75	12,100
				Y	9.8				
				Z	14.0				
RTAE300AUAA2AA1FP1F3B3D00DB1XC4EBCA3	300 ton	UUT-4	Base mount with neoprene pads	X	10.0	496.25	87.81	95.75	20,600
				Y	6.8				
				Z	9.6				

* Frequencies are for units prior to ICC ES AC-156 testing.
 Operating weight determined from scale at testing laboratory (+/- 50 lbs) - difference in weight compared to certified list due to replacement of nitrogen vs refrigerant



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Table 4. UUT Summary Sub-Component List

UUT-1: RTAE150FUAA1AA1FN1X2A1A00AA0100XAC03			
<i>Sub-Component</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Compressor	CHHSRB1B1A0	Ingersoll Rand	A36 cast iron, neodymium magnets, copper, carbon steel
Condenser coils	572424210100	Ingersoll Rand	Aluminum
Condenser fan	X38011139010	Kenco Plastics Inc	Nylon
Condenser fan motor	X70371264010	EBM Papst	Carbon steel and copper
Evaporator shell	572423970100	Ingersoll Rand	A56 steel, copper
Control box assembly	572443000100	Ingersoll Rand	plastic, copper, aluminum, carbon steel
Variable frequency drive	X13611994020	Unico	Ceramic, copper, aluminum, carbon steel, plastic
Expansion valves	X15111804010	Sporlan	Carbon steel and copper
Refrigerant pumps	X24011012010	Wilo, USA	Cast iron, carbon steel, cast aluminum
Coolant flow control valve	x15102840001	Sporlan	Brass, copper, carbon steel
Oil separator	572424120200	Ingersoll Rand	A56 steel, copper
12 PAT assembly	X13550868020	Unico	Aluminum and steel

UUT-2: RTAE300DUAA2AA1FP1F3B3D00DB01C4EBCA3			
<i>Sub-Component</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Compressor	CHHSSF2B1A0	Ingersoll Rand, Regal motors	A36 cast iron, neodymium magnets, copper, carbon steel
Condenser coils	572424210100	Ingersoll Rand	Aluminum
Condenser fan	X38011139010	Kenco Plastics Inc	Nylon
Condenser fan motor	X70371264010	EBM Papst	Carbon steel and copper
Evaporator shell	572424000100	Ingersoll Rand	A56 steel, copper
Control box assembly	572444000100	Ingersoll Rand, UNICO, other	plastic, copper, aluminum, carbon steel
Variable frequency drive	X13611995010	Unico	Ceramic, copper, aluminum, carbon steel, plastic
Expansion valves	X15111804020	Sporlan	Carbon steel and copper
Refrigerant pumps	X24011012010	Wilo, USA	Cast iron, carbon steel, cast aluminum
Coolant flow control valve	x15102840001	Sporlan	Brass, copper, carbon steel
Oil separator	572424140200	Ingersoll Rand	A56 steel, copper
12 PAT assembly	X13550868030	Unico	Aluminum and steel



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Table 4. UUT Summary Sub-Component List Cont'd)

UUT-3: RTAE150GUA1AA1FN1X2A1A00AA1X00XAC03			
<i>Sub-Component</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Compressor	CHHSRB1B1A0	Ingersoll Rand, Regal motors	A36 cast iron, neodymium magnets, copper, carbon steel
Condenser coils	572424210100	Ingersoll Rand	Aluminum
Condenser fan	X38011139010	Kenco Plastics Inc	Nylon
Condenser fan motor	X70371264010	EBM Papst	Carbon steel and copper
Evaporator shell	572423970100	Ingersoll Rand	A56 steel, copper
Control box assembly	572443000100	Ingersoll Rand, UNICO, other	plastic, copper, aluminum, carbon steel
Variable frequency drive	X13611994020	Unico	Ceramic, copper, aluminum, carbon steel, plastic
Expansion valves	X15111804010	Sporlan	Carbon steel and copper
Refrigerant pumps	X24011012010	Wilo, USA	Cast iron, carbon steel, cast aluminum
Coolant flow control valve	x15102840001	Sporlan	Brass, copper, carbon steel
Oil separator	572424120200	Ingersoll Rand	A56 steel, copper
VAT assembly	X13550907010	Basler Electric	Carbon steel and copper
Line Reactors	X1364115302	MTE Corporation	Carbon steel and copper

UUT-4: RTAE300AUA2AA1FP1F3B3D00DB1XC4EBCA3			
<i>Sub-Component</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Compressor	CHHSF2B1A0	Ingersoll Rand, Regal motors	A36 cast iron, neodymium magnets, copper, carbon steel
Condenser coils	572424210100	Ingersoll Rand	Aluminum
Condenser fan	X38011139010	Kenco Plastics Inc	Nylon
Condenser fan motor	X70371264010	EBM Papst	Carbon steel and copper
Evaporator shell	572424000100	Ingersoll Rand	A56 steel, copper
Control box assembly	572444000100	Ingersoll Rand, UNICO, other	plastic, copper, aluminum, carbon steel
Variable frequency drive	X13611995010	Unico	Ceramic, copper, aluminum, carbon steel, plastic
Expansion valves	X15111804020	Sporlan	Carbon steel and copper
Refrigerant pumps	X24011012010	Wilo, USA	Cast iron, carbon steel, cast aluminum
Coolant flow control valve	x15102840001	Sporlan	Brass, copper, carbon steel
Oil separator	572424140200	Ingersoll Rand	A56 steel, copper
VAT assembly	X13550910010	Basler Electric	Carbon steel and copper
Line Reactors	X1364115303	MTE Corporation	Carbon steel and copper

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Shake Table Test Setup

UUT Designation	UUT-1	Seismic Parameters							
Identification No.	RTAE150FUAA1AA1FN1X2A1A00AA0100XAC03	Building Code	Test Criteria	S_{Ds} (g)	z/h	Horizontal		Vertical	
Attachment Method	Eight (8) 1/2"Ø Grade 8 bolts					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
		CBC 2013	AC156	2.21	1.0	3.54	2.65	1.48	0.60
				2.30	0.0	2.30	0.92	1.54	0.62



Notes: The UUTs were full of contents during the test.
 After the test, the UUT was functional and the structural integrity of the component attachment and force-resisting systems was maintained.

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Shake Table Test Setup

UUT Designation	UUT-2	Seismic Parameters							
Identification No.	RTAE300DUAA2AA1FP1F3B3D00DB01C4EBCA3	Building Code	Test Criteria	S_{Ds} (g)	z/h	Horizontal		Vertical	
Attachment Method	Twelve (12) 1/2"Ø Grade 8 bolts with neoprene pads					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
		CBC 2013	AC156	2.22	1.0	3.55	2.66	1.49	0.60
				2.30	0.0	2.30	0.92	1.54	0.62



Notes: The UUTs were full of contents during the test.
 After the test, the UUT was functional and the structural integrity of the component attachment and force-resisting systems was maintained.

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Shake Table Test Setup

UUT Designation	UUT-3	Seismic Parameters							
Identification No.	RTAE150GUAA1AA1FN1X2A1A00AA1X00XAC03	Building Code	Test Criteria	S_{Ds} (g)	z/h	Horizontal		Vertical	
Attachment Method	Eight (8) 1/2"Ø Grade 8 bolts					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
		CBC 2013	AC156	2.28	1.0	3.65	2.74	1.53	0.62
				2.30	0.0	2.30	0.92	1.54	0.62



Notes: The UUTs were full of contents during the test.
 After the test, the UUT was functional and the structural integrity of the component attachment and force-resisting systems was maintained.

Special Seismic Certification
 OSHPD Preapproval
 Trane Stealth RTAE Air-Cooled Chiller Product Line

Shake Table Test Setup

UUT Designation	UUT-4	Seismic Parameters							
Identification No.	RTAE300AUAA2AA1FP1F3B3D00DB1XC4EBCA3	Building Code	Test Criteria	S_{Ds} (g)	z/h	Horizontal		Vertical	
Attachment Method	Twelve (12) 1/2"Ø Grade 8 bolts with neoprene pads					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
		CBC 2013	AC156	2.25	1.0	3.60	2.70	1.51	0.61
				2.30	0.0	2.30	0.92	1.54	0.62



Notes: The UUTs were full of contents during the test.
 After the test, the UUT electrical component were functional and the structural integrity of the component attachment and force-resisting systems was maintained.

Model Number Descriptions

Unit Model Number

Digits 1,2 – Unit Model

RT = Rotary Chiller

Digits 3– Unit Type

A = Air-cooled

Digits 4 – Development Sequence

E = Development Sequence

Digits 5-7 – Nominal Capacity

149 = 150 Nominal Tons Single Circuit
 164 = 165 Nominal Tons Single Circuit
 150 = 150 Nominal Tons
 165 = 165 Nominal Tons
 180 = 180 Nominal Tons
 200 = 200 Nominal Tons
 225 = 225 Nominal Tons
 250 = 250 Nominal Tons
 275 = 275 Nominal Tons
 300 = 300 Nominal Tons

Digit 8– Unit Voltage

A = 200/60/3
 B = 230/60/3
 C = 380/50/3
 D = 380/60/3
 E = 400/50/3
 F = 460/60/3
 G = 575/60/3
 H = 400/60/3

Digit 9 – Manufacturing Location

U = Trane Commercial Systems, Pueblo, CO USA

Digits 10, 11– Design Sequence

** = Factory assigned

Digit 12 – Unit Sound Package

1 = InvisiSound™ Standard Unit
 2 = InvisiSound Superior (Line Wraps, Reduced Fan Speed)
 3 = InvisiSound Ultimate (Compressor Sound Attenuation, Line Wraps, Reduced Fan Speed)

Digit 13 – Agency Listing

0 = No Agency Listing
 A = UL/CUL Listing
 C = CE European Safety Standard

Digit 14 – Pressure Vessel Code

A = ASME Pressure Vessel Code
 D = Australia Pressure Vessel Code
 C = CRN or Canada Equivalent Pressure Vessel Code
 L = Chinese Pressure Vessel Code
 P = PED European Pressure Vessel Code

Digit 15 – Factory Charge

1 = Refrigerant Charge HFC-134a
 2 = Nitrogen Charge

Digit 16 – Evaporator Application

F = Standard Cooling (40 to 68°F/5.5 to 20°C)
 G = Low Temp Process (<40°F Leaving Temp)
 C = Ice-making (20 to 68°F/-7 to 20°C) w/ Hardwired Interface

Digit 17 – Evaporator Configuration

N = 2 Pass Evaporator
 P = 3 Pass Evaporator

Digit 18 – Evaporator Fluid Type

1 = Water
 2 = Calcium Chloride
 3 = Ethylene Glycol
 4 = Propylene Glycol
 5 = Methanol

Digit 19 – Water Connection

X = Grooved Pipe
 F = Grooved Pipe + Flange

Digit 20 – Flow Switch

1 = Factory Installed - Other Fluid (15 cm/s)
 2 = Factory Installed - Water 2 (35 cm/s)
 3 = Factory Installed - Water 3 (45 cm/s)

Digit 21 – Insulation

A = Factory Insulation - All Cold Parts 0.75"
 B = Evaporator-Only Insulation - High Humidity/Low Evap Temp 1.25"

Digit 22 – Unit Application

1 = Standard Ambient (32 to 105°F/0 to 40.6°C)
 2 = Low Ambient (0 to 105°F/-17.7 to 40.6°C)
 3 = Extreme Low Ambient (-20 to 105°F/-28.9 to 40.6°C)
 4 = High Ambient (32 to 125°F/0 to 52°C)
 5 = Wide Ambient (0 to 125°F/-17.7 to 52°C)

Digit 23 – Condenser Fin Options

A = Aluminum Fins with Slits
 D = CompleteCoat™ Epoxy Coated Fins

Digits 24, 25 – Not Used

Digit 26 – Power Line Connection Type

A = Terminal Block
 C = Circuit Breaker
 D = Circuit Breaker w/ High Fault Rated Control Panel

Digit 27 – Short Circuit Current Rating

A = Default A Short Circuit Rating
 B = High A Short Circuit Rating

Digit 28 – Transformer

0 = No Transformer
 1 = Factory Installed Transformer

Digit 29 – Line Voltage Harmonic Mitigation

X = Line Reactors (~30%TDD)
 1 = Filter circuit (IEEE519 Compliant)

Digit 30 – Electrical Accessories

0 = No Convenience Outlet
 C = 15A 115V convenience Outlet (Type B)

Digit 31 – Remote Communication Options

0 = No Remote Digital Communication
 1 = LonTalk® Interface LCI-C (Tracer™ Compatible)
 2 = BACnet® MS/TP Interface (Tracer compatible)
 3 = ModBus™ Interface

Digit 32 – Hard Wire Communication

X = None
 A = Hard Wired Bundle - All
 B = Remote Leaving Water Temp Setpoint
 C = Remote Leaving temp and Demand Limit Setpoints
 D = Programmable Relay
 E = Programmable Relay and Leaving Water and Demand

Limit

Setpoint
 F = Percent Capacity
 G = Percent Capacity and Leaving Water and Demand Limit

Setpoint

H = Percent Capacity and Programmable Relay

Digit 33 – Not Used



Model Number Descriptions

Digit 34 – Structural Options

- A = Standard Unit Structure
- B = Seismic to International Building Code (IBC)
- C = California Office of Statewide Health Planning and Development (OSHPD) Certification
- D = Wind Load for Florida Hurricane 175 MPH
- E = Seismic (IBC) and Wind Load
- F = OSHPD and Wind Load

Digit 35 – Appearance Options

- 0 = No Appearance Options
- A = Architectural Louvered Panels

Digit 36 – Unit Isolation

- 0 = No Isolation
- 1 = Elastomeric Isolators
- 3 = Seismic Rated Isopads

Digit 37 – Not Used

- 0 = Not Used

Digit 38 – Not Used

- 0 = Not Used

Digit 39 – Special

- 0 = None
- S = Special

Compressor Model Number

Digits 1-4 – Compressor Type

CHHS= Positive displacement, helical rotary (twin screw) hermetic compressor

Digit 5 – Frame Size

- R = R Frame: 70 - 100 tons
- S = S Frame: 112 - 165 tons

Digit 6 – Motor Length

- B = 145 mm
- C = 170 mm
- E = 165 mm
- F = 190 mm

Digit 7 – Motor Winding Characteristics

- * = Factory assigned

Digit 8 – Volume Ratio

- B = High Volume Ratio

Digit 9 – Refrigerant

- 1 = R-134a

Digits 10-11 – Design Sequence

- ** = Factory assigned

Compressor Serial Number

Digits 1-2 – Year

YY = Last two digits of year of manufacture

Digit 3 – Week

WW= Week of build, from 00 to 52

Digit 5 – Day

- 1 = Monday
- 2 = Tuesday
- 3 = Wednesday
- 4 = Thursday
- 5 = Friday
- 6 = Saturday
- 7 = Sunday

Digits 6-8 – Coded Time Stamp

TTT= Used to ensure uniqueness of serial number

Digit 9 – Assembly Line

Assembly line compressor was built on. Varies with facility

Digit 10 – Build Location

- A = Monterrey