



APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

*For Office Use Only***APPLICATION NO.****OSP – 0135-10**Check whether application is: NEW RENEWAL

1.0 Carrier Corporation Anthony Molavi
Manufacturer *Manufacturer's Technical Representative*
9701 Old Statesville Road, Charlotte, NC 28269
Mailing Address

(704) 921-3976 Anthony.Molavi@carrier.utc.com
Telephone *E-mail Address*

2.0 CARRIER Chillers: Model 23XRV and 30RB series Water and Air Cooled Chillers
Product Name *Product Type*

23XRV Frame 3,4,5, and 30RB60 through 30RB390
Product model No (List all unique product identification numbers and/or serial numbers)

General Description: 23XRV is a water-cooled chiller base mounted with spring isolators. Rigid base mounted 30RB is an air-cooled chiller. OSP for 23XRV series is ONLY valid for installation with spring isolators & snubbers, and NOT valid for units installed without spring isolators & snubbers. OSP for 30RB series is ONLY valid for units installed without spring isolators & snubbers. OSP for 30RB series is also valid for modular combinations (see attached list).

3.0 Carrier Corporation Anthony Molavi
Applicant Company Name *Contact Person*
9701 Old Statesville Road Charlotte, NC 28269
Mailing Address

(704) 921-3976 Anthony.Molavi@carrier.utc.com
Telephone *E-mail Address*

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

11/15/2010

Signature of Applicant

Date

Program Manager

Applied Water-Cooled Screw & Centrifugal Chillers
TitleCarrier Corp.
Company Name



Registered Design Professional Preparing the Report

4.0 Buehler and Buehler Structural Engineers, Inc
Company Name

Ali Sumer 72785 / Civil
Contact Name *California License Number*

600 Q St. Suite 200, Sacramento, CA 95811
Mailing Address

(916) 443-0303 asumer@bbse.com
Telephone *E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0 Buehler and Buehler Structural Engineers, Inc
Company Name

Scott R. Hooker 3937 / Structural
Contact Name *California License Number*

600 Q St. Suite 200, Sacramento, CA 95811
Mailing Address

(916) 443-0303 shooker@bbse.com
Telephone *E-mail Address*

Anchorage Pre-Approval

6.0 Anchorage is pre-approved under OPA-
 (Separate application for anchorage pre-approval is required)

Anchorage is not Pre-approved

Certification Method

7.0 Testing in accordance with: ICC-ES AC-156 Other (Please Specify):

Analysis

Experience data

Combination of Testing, Analysis, and/or Experience Data (Please Specify):

Testing Laboratory (if applicable)

8.0 University at Buffalo, SEESL Mark Pitman
Company Name *Contact Name*

Department of Civil, Structural, and Environmental Engineering, University at Buffalo, State University of
 New York, Buffalo, NY 14260-4300
Mailing Address

(716) 645-5400 mpitman@eng.buffalo.edu
Telephone *E-mail:*

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Approval Parameters

9.0

Design in accordance with ASCE 7-05 Chapter 13: Yes No

Design Basis of Equipment or Components (F_p/W_p) = 1.44 g for 30RB, 4.5 g for 23XR

S_{DS} (Spectral response acceleration at short period) = 2.00 g

a_p (In-structure equipment or component amplification factor) = 1.0 for 30 RB, 2.5 for 23XR

R_p (Equipment or component response modification factor) = 2.5 for 30RB, 2.0 for 23XR

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component fundamental period(s) = See Attachment

Building period limits (if any) = N/A

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

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: Yes No
 Design Basis of Equipment or Components (V/W) =

S_{DS} (Spectral response acceleration at short period) =

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient) = 1.0

Ω_0 (System overstrength factor) = 1.0

C_d (Deflection amplification factor) = 1.0

I_p (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: Yes No

10.0 List of attachments supporting the special seismic certification of equipment or components:

- Test Report
- Drawings
- Manufacturer's Catalog
- Calculations
- Others (Please Specify):

11.0 OSHPD Approval (For Office Use Only)

Chris Tokas

11/22/2010

December 31, 2016

Signature & Date

Approval Expiration Date

Chris Tokas, SHFR

S_{DS} (g) = **2.0** z/h = **1.0**

Name & Title

Special Seismic Certification Valid Up to

Condition of Approval (if any): **Approval is limited to units and sub-components listed in Section 2.0 of application and attached Tables # 2, # 3, & # 4.**

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Special Seismic Certification
OSHPD Preapproval
Carrier 23XRV and 30RB Product Line



Table 1. Shake Table Tested Units Summary**

Model Number	Tonnage	UUT Mark	Mounting	Excitation Direction	Frequency* (Hz)	Length (in)	Width (in)	Height (in)	Operating Weight (lbs)	Notes
30RB60	60	UUT-1	Base - Hard Mount	X	9.0	95	89	90.5	4,791	With internal seismic bracings
				Y	8.4					
				Z	11.1					
30RB300	300	UUT-2	Base - Hard Mount	X	6.6	424	89	90.5	16,893	With internal seismic bracings
				Y	4.2					
				Z	8.7					
23XR Frame 3	variable: 300 to 550	UUT-3	Base - with isolators	X	2.7	184.75	76	86.625	20,223	Seismic strap at top of the control panel
				Y	2					
				Z	2.8					
23XR Frame 5	variable: 300 to 550	UUT-4	Base - with isolators	X	4.5	172.5	83.75	90.75	25,093	Seismic strap at top of the control panel
				Y	4					
				Z	6.9					

* Frequencies are for units tested prior to AC156.

** Tested at Univ. at Buffalo Report No: UB CSEE/SEESL-2010-11

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Special Seismic Certification OSHPD Preapproval Carrier 23XRV and 30RB Product Line



30RB Model Number Nomenclature

30RB – Air-Cooled AquaSnap® Chiller

Design Series

Nominal Sizes		
060	110	275
070	120	300
080	130	315*
090	150	330*
100	160	250
		345*
		360*
		390*

Voltage

- 1 – 575-3-60
- 2 – 380-3-60
- 5 – 208/230-3-60
- 6 – 460-3-60

Condenser Coil / Low Sound Options

- Aluminum Fin / Copper Tube
- 0 – Copper Fin / Copper Tube
- 1 – Aluminum Pre-Coat Fin / Copper Tube
- 2 – Aluminum E-Coat Fin / Copper Tube
- 3 – Copper E-Coat Fin / Copper Tube
- 4 – Microchannel (MCHX)
- 5 – E-Coat, Microchannel (MCHX)
- 6 – Aluminum Fin / Copper Tube, Cmptr Enclosures
- 7 – Copper Fin / Copper Tube, Cmptr Enclosures
- 8 – Aluminum Pre-Coat Fin / Copper Tube, Cmptr Enclosures
- 9 – Aluminum E-Coat Fin / Copper Tube, Cmptr Enclosures
- B – Copper E-Coat Fin / Copper Tube, Cmptr Enclosures
- C – Microchannel (MCHX), Cmptr Enclosures
- D – E-Coat, Microchannel, Cmptr Enclosures

Hydronics Option

- No Pump Installed
- 0 – Single Pump, 3 HP
- 1 – Single Pump, 5 HP
- 2 – Single Pump, 7.5 HP
- 3 – Single Pump, 10 HP
- 4 – Single Pump, 15 HP
- 6 – Dual Pump, 3 HP
- 7 – Dual Pump, 5 HP
- 8 – Dual Pump, 7.5 HP, Low Head
- 9 – Dual Pump, 7.5 HP, High Head
- B – Dual Pump, 10 HP
- C – Dual Pump, 15 HP
- Z – Special order designation

Cooler / Brine Options

- Integral Cooler
- 0 – Integral Cooler, Cooler Heater
- 4 – Integral Cooler, Microchannel (MCHX)
- 5 – Integral Cooler, Cooler Heater, Microchannel (MCHX)
- 9 – Integral Cooler, Medium Temperature Brine
- B – Integral Cooler, Cooler Heater, Medium Temperature Brine
- D – Integral Cooler, Medium Temperature Brine, Microchannel (MCHX)
- F – Integral Cooler, Cooler Heater, Medium Temperature Brine, Microchannel (MCHX)
- T – Integral Cooler, Microchannel (MCHX), Heat Reclaim
- V – Integral Cooler, Cooler Heater, Microchannel (MCHX), Heat Reclaim

LEGEND

EMM	– Energy Management Module
GFI-CO	– Ground Fault Interrupting Convenience Outlet
LON	– Local Operating Network
SCCR	– Short Circuit Current Rating
XL	– Across-the-Line Start

*Refer to unit sizes and modular combinations below.
 †Sponsored by ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers).
 NOTE: A 'Z' in position 11 indicates a special order machine. Digits following do not correspond to tables.

- Security/Packaging Option**
- L – No Packaging
 - 0 – Skid
 - 1 – Skid, Top Crate and Bag
 - 3 – Condenser Coil Trim Panels
 - 4 – Skid, Condenser Coil Trim Panels
 - 5 – Skid, Top Crate and Bag, Condenser Coil Trim Panels
 - 7 – Condenser Coil Trim Panels, Upper and Lower Grilles
 - 8 – Skid, Condenser Coil Trim Panels, Upper and Lower Grilles
 - 9 – Skid, Top Crate and Bag, Condenser Coil Trim Panels, Upper and Lower Grilles
 - C – Condenser Coil Trim Panels, Upper and Lower Grilles, Upper Hail Guards
 - D – Skid, Condenser Coil Trim Panels, Upper and Lower Grilles, Upper Hail Guards
 - F – Skid, Top Crate and Bag, Condenser Coil Trim Panels, Upper and Lower Grilles, Upper Hail Guards
 - H – Skid, High SCCR
 - J – Skid, Top Crate, Bag, High SCCR
 - K – High SCCR
 - M – Coil Trim Panels, High SCCR
 - N – Skid, Coil Trim Panels, High SCCR
 - P – Skid, Top Crate, Bag, Coil Trim Panels, High SCCR
 - R – Coil Trim Panels, Upper and Lower Grilles, High SCCR
 - S – Skid, Coil Trim Panels, Upper and Lower Grilles, High SCCR
 - T – Skid, Top Crate, Bag, Coil Trim Panels, Upper and Lower Grilles, High SCCR
 - W – Coil Trim Panels, Upper and Lower Grilles, Upper Hail Guards, High SCCR
 - X – Skid, Coil Trim Panels, Upper and Lower Grilles, Upper Hail Guards, High SCCR
 - Y – Skid, Top Crate, Bag, Coil Trim Panels, Upper and Lower Grilles, Upper Hail Guards, High SCCR

- Controls/Communication Option**
- None
 - 0 – EMM
 - 1 – Remote Service Port, GFI-CO
 - 2 – EMM, Remote Service Port, GFI-CO
 - 7 – BACnet[†] Translator
 - 8 – BACnet Translator, EMM
 - 9 – BACnet Translator, Remote Service Port, GFI-CO
 - B – BACnet Translator, EMM, Remote Service Port, GFI-CO
 - H – LON Translator
 - J – LON Translator, EMM
 - K – LON Translator, Remote Service Port, GFI-CO
 - L – LON Translator, EMM, Remote Service Port, GFI-CO

- Electrical Option**
- Single Power Connection, Terminal Block, XL
 - 0 – Single Power Connection, Terminal Block, XL, Full End Covers
 - 3 – Dual Power Connection, Terminal Block, XL
 - 4 – Dual Power Connection, Terminal Block, XL, Full End Covers
 - 7 – Single Power Connection, Non-Fused Disconnect, XL
 - 8 – Single Power Connection, Non-Fused Disconnect, XL, Full End Covers
 - C – Dual Power Connection, Non-Fused Disconnect, XL
 - D – Dual Power Connection, Non-Fused Disconnect, XL, Full End Covers

- Refrigeration Circuit Option**
- No Suction Line Insulation
 - 0 – Suction Insulation
 - 1 – Suction Service Valves
 - 2 – Low Ambient Head Pressure Control Operation
 - 3 – Suction Insulation, Suction Service Valves
 - 4 – Suction Insulation, Low Ambient Head Pressure Control Operation
 - 5 – Suction Service Valves, Low Ambient Head Pressure Control Operation
 - 6 – Suction Insulation, Service Valves, Low Ambient Head Pressure Control Operation
 - 7 – Minimum Load Control
 - 8 – Suction Insulation, Minimum Load Control Operation
 - 9 – Suction Service Valves, Minimum Load Control Operation
 - B – Low Ambient Operation, Minimum Load Control Operation
 - C – Suction Insulation, Suction Service Valves, Minimum Load Control Operation
 - D – Suction Insulation, Low Ambient Head Pressure Control Operation, Minimum Load Control Operation
 - F – Suction Service Valves, Low Ambient Head Pressure Control Operation, Minimum Load Control Operation
 - G – Suction Insulation, Suction Service Valves, Low Ambient Head Pressure Control Operation, Minimum Load Control Operation

Quality Assurance
 Certified to ISO 9001:2000

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Special Seismic Certification
 OSHPD Preapproval
 Carrier 23XRV and 30RB Product Line



Table 2. 30RB Approved Unit List

Model Number	Nominal Tons	Module A	Module B	Tested/ Interpolated	Length (in)	Width (in)	Height (in)	Operating Weight (lbs)
30RB060	60	-	-	UUT-1	95	89	90.5	4,593
30RB070	70	-	-	Interpolated	95	89	90.5	4,799
30RB080	80	-	-	Interpolated	95	89	90.5	5,082
30RB090	90	-	-	Interpolated	142	89	90.5	6,656
30RB100	100	-	-	Interpolated	142	89	90.5	6,879
30RB110	110	-	-	Interpolated	142	89	90.5	7,243
30RB120	120	-	-	Interpolated	189	89	90.5	8,543
30RB130	130	-	-	Interpolated	189	89	90.5	9,010
30RB150	150	-	-	Interpolated	189	89	90.5	10,139
30RB160	160	-	-	Interpolated	236	89	90.5	11,472
30RB170	170	-	-	Interpolated	236	89	90.5	11,807
30RB190	190	-	-	Interpolated	283	89	90.5	13,460
30RB210	210	-	-	Interpolated	283	89	90.5	15,181
30RB225	225	-	-	Interpolated	283	89	90.5	15,514
30RB250	250	-	-	Interpolated	330	89	90.5	17,157
30RB275	275	-	-	Interpolated	377	89	90.5	18,845
30RB300	300	-	-	UUT-2	424	89	90.5	16,893
30RB315*	315	30RB160	30RB160	Interpolated	472	89	90.5	22,944
30RB330*	330	30RB170	30RB160	Interpolated	472	89	90.5	23,279
30RB345*	345	30RB170	30RB170	Interpolated	472	89	90.5	23,614
30RB360*	360	30RB190	30RB170	Interpolated	519	89	90.5	25,267
30RB390*	390	30RB190	30RB190	Interpolated	566	89	90.5	26,920

*Modular combinations (may be attached or installed separate).

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Table 3. Sub-Component List: 30RB

Compressor					
<i>Model Number</i>	<i>Nominal Tons</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer</i>	<i>Included With</i>
30RB060	60	X		Danfoss	UUT-1
30RB070	70			Danfoss	Interpolated
30RB080	80			Danfoss	Interpolated
30RB090	90			Danfoss	Interpolated
30RB100	100			Danfoss	Interpolated
30RB110	110			Danfoss	Interpolated
30RB120	120			Danfoss	Interpolated
30RB130	130			Danfoss	Interpolated
30RB150	150			Danfoss	Interpolated
30RB160	160			Danfoss	Interpolated
30RB170	170			Danfoss	Interpolated
30RB190	190			Danfoss	Interpolated
30RB210	210			Danfoss	Interpolated
30RB225	225			Danfoss	Interpolated
30RB250	250			Danfoss	Interpolated
30RB275	275			Danfoss	Interpolated
30RB300	300		X	Danfoss	UUT-2

Condenser					
<i>Model Number</i>	<i>Nominal Tons</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer*</i>	<i>Interpolated / Included With Test</i>
30RB060	60	X		Carrier/Delphi	UUT-1
30RB070	70			Carrier/Delphi	Interpolated
30RB080	80			Carrier/Delphi	Interpolated
30RB090	90			Carrier/Delphi	Interpolated
30RB100	100			Carrier/Delphi	Interpolated
30RB110	110			Carrier/Delphi	Interpolated
30RB120	120			Carrier/Delphi	Interpolated
30RB130	130			Carrier/Delphi	Interpolated
30RB150	150			Carrier/Delphi	Interpolated
30RB160	160			Carrier/Delphi	Interpolated
30RB170	170			Carrier/Delphi	Interpolated
30RB190	190			Carrier/Delphi	Interpolated
30RB210	210			Carrier/Delphi	Interpolated
30RB225	225			Carrier/Delphi	Interpolated
30RB250	250			Carrier/Delphi	Interpolated
30RB275	275			Carrier/Delphi	Interpolated
30RB300	300		X	Carrier/Delphi	UUT-2

* Fins-and-tubes by Carrier and Microchannel by Delphi

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Table 3. Sub-Component List: 30RB (Cont'd)

Cooler					
<i>Model Number</i>	<i>Nominal Tons</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
30RB060	60	X		Carrier	UUT-1
30RB070	70			Carrier	Interpolated
30RB080	80			Carrier	Interpolated
30RB090	90			Carrier	Interpolated
30RB100	100			Carrier	Interpolated
30RB110	110			Carrier	Interpolated
30RB120	120			Carrier	Interpolated
30RB130	130			Carrier	Interpolated
30RB150	150			Carrier	Interpolated
30RB160	160			Carrier	Interpolated
30RB170	170			Carrier	Interpolated
30RB190	190			Carrier	Interpolated
30RB210	210			Carrier	Interpolated
30RB225	225			Carrier	Interpolated
30RB250	250			Carrier	Interpolated
30RB275	275			Carrier	Interpolated
30RB300	300		X	Carrier	UUT-2

Control Box					
<i>Model Number</i>	<i>Nominal Tons</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer*</i>	<i>Interpolated / Included With Test</i>
30RB060	60	X		Schneider	UUT-1
30RB070	70			Schneider	Interpolated
30RB080	80			Schneider	Interpolated
30RB090	90			Schneider	Interpolated
30RB100	100			Schneider	Interpolated
30RB110	110			Schneider	Interpolated
30RB120	120			Schneider	Interpolated
30RB130	130			Schneider	Interpolated
30RB150	150			Schneider	Interpolated
30RB160	160			Schneider	Interpolated
30RB170	170			Schneider	Interpolated
30RB190	190			Schneider	Interpolated
30RB210	210			Schneider	Interpolated
30RB225	225			Schneider	Interpolated
30RB250	250			Schneider	Interpolated
30RB275	275			Schneider	Interpolated
30RB300	300		X	Schneider	UUT-2

*Formerly known as "Square-D"

Condenser Fan Motor					
<i>Model Number</i>	<i>Nominal Tons</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer*</i>	<i>Interpolated / Included With Test</i>
30RB060	60	X		Marathon	UUT-1
30RB070	70			Marathon	Interpolated
30RB080	80			Marathon	Interpolated
30RB090	90			Marathon	Interpolated
30RB100	100			Marathon	Interpolated
30RB110	110			Marathon	Interpolated
30RB120	120			Marathon	Interpolated
30RB130	130			Marathon	Interpolated
30RB150	150			Marathon	Interpolated
30RB160	160			Marathon	Interpolated
30RB170	170			Marathon	Interpolated
30RB190	190			Marathon	Interpolated
30RB210	210			Marathon	Interpolated
30RB225	225			Marathon	Interpolated
30RB250	250			Marathon	Interpolated
30RB275	275			Marathon	Interpolated
30RB300	300		X	Marathon	UUT-2

*Formerly known as "Regel Beloit"



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23XRV Model Number Nomenclature

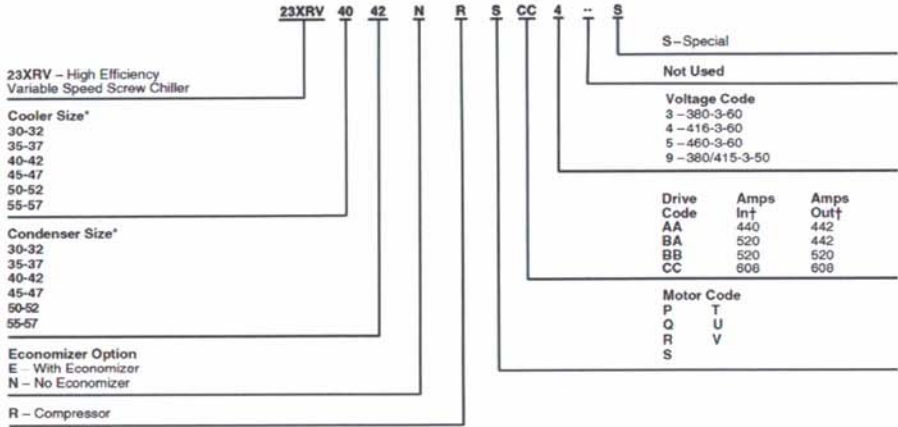


Table 4. Sub-Component List: 23XRV

Heat Exchanger (Cooler / Condenser)					
Frame	Size	Smallest	Largest	Manufacturer	Interpolated / Included With Test
3	30	X		Carrier	Interpolated
	31			Carrier	Interpolated
	32			Carrier	Interpolated
	35			Carrier	Interpolated
	36			Carrier	Interpolated
	37			Carrier	UUT-3
4	40			Carrier	Interpolated
	41			Carrier	Interpolated
	42			Carrier	Interpolated
	45			Carrier	Interpolated
	46			Carrier	Interpolated
5	47			Carrier	Interpolated
	50			Carrier	Interpolated
	51			Carrier	Interpolated
	52			Carrier	UUT-4
	55			Carrier	Interpolated
	56			Carrier	Interpolated
	57		X	Carrier	Interpolated

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Table 4. Sub-Component List: 23XRV (Cont'd)

Compressor and Motor*					
<i>Frame</i>	<i>Motor Type</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
3 or 4 or 5	P	(same size)	(same size)	Carrier	Interpolated
	Q	(same size)	(same size)	Carrier	Interpolated
	R	(same size)	(same size)	Carrier	UUT-3 & UUT4
	S	(same size)	(same size)	Carrier	Interpolated
	T	(same size)	(same size)	Carrier	Interpolated
	U	(same size)	(same size)	Carrier	Interpolated
	V	(same size)	(same size)	Carrier	Interpolated

* = Motor supplied by Baldor (One motor can be applied for all motor type - P thru V).

Oil Vaporizer & Sump (includes oil pump)					
<i>Frame</i>	<i>Size</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
3 or 4 or 5	(same size)	(same size)	(same size)	Carrier	UUT-3 & UUT4

* Control Box (includes VFD)					
<i>Frame</i>	<i>Size</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
3 or 4 or 5	(same size)	(same size)	(same size)	Rockwell & Whitepath	UUT-3 & UUT4

* = Control Box assembled by Whitepath and VFD manufactured by Rockwell.

Muffler					
<i>Frame</i>	<i>Size</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
3 or 4 or 5	(same size)	(same size)	(same size)	Carrier	UUT-3 & UUT4

Economizer					
<i>Frame</i>	<i>Size</i>	<i>Smallest</i>	<i>Largest</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
3 or 4 or 5	(same size)	(same size)	(same size)	Carrier	UUT-3 & UUT4

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