



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION
PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0383-10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Carrier Corporation

Manufacturer's Technical Representative: Anthony Molavi

Mailing Address: 9701 Old Statesville Road, Charlotte, NC 28269

Telephone: (704) 921-3976

Email: Anthony.Molavi@carrier.utc.com

Product Information

Product Name: Carrier AquaSnap Chillers

Product Type: Air-Cooled Chillers

Product Model Number: 30RB090

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

This 30RB unit is a air-cooled chiller. Seismic enhancements made to the test unit and modifications required to address anomalies observed during the test shall be incorporated into the production units. Approval is limited to unit identical to tested unit.

General Description: production units. Approval is limited to unit identical to tested unit.

Mounting Description: Rigid floor mounted installations.

Applicant Information

Applicant Company Name: Carrier Corporation

Contact Person: Anthony Molavi

Mailing Address: 9701 Old Statesville Road, Charlotte, NC 28269

Telephone: (704) 921-3976

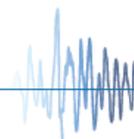
Email: Anthony.Molavi@carrier.utc.com

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: Anthony Molavi Date: 01/13/14

Title: Engineering Manager – Chillers Company Name: Carrier Corporation

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



osHPD



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

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

Company Name: Buehler & Buehler Structural Engineers Inc.

Name: Scott R. Hooker California License Number: 3937 / Structural

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

Telephone: (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: QualTech NP Laboratories

Contact Name: Marie Nemier

Mailing Address: 4600 East Tech Drive, Cincinnati OH

Telephone: (513)528-7900 Email: mnemier@curtisswright.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) = 1.80

S_{DS} (Design spectral response acceleration at short period, g) = 2.50

a_p (In-structure equipment or component amplification factor) = 1.0

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Table 3

Overall dimensions and weight (or range thereof) = See Table 1

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): Operability Test Letter

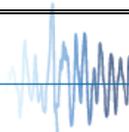
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2019

Signature:  Date: 3/17/2014

Print Name: M. R. Karim Title: SHFR

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.50 z/h = 1.0

Condition of Approval (if applicable): Approval is limited to unit identical to tested unit.





Special Seismic Certification
OSHPD Preapproval
Carrier 30RB Product Line



Table 1. Certified Product List

Carrier 30RB Chiller

<i>Unit Size</i>	<i>Module A</i>	<i>Module B</i>	<i>Capacity [tons of cooling]</i>	<i>Length [in]</i>	<i>Width [in]</i>	<i>Height [in]</i>	<i>Operating Weight [lbs]</i>	<i>Tested or Interpolated</i>
30RB090	-	-	90	142"	89"	90"	5,132	UUT-1



Special Seismic Certification
OSHPD Preapproval
Carrier 30RB Product Line



Table 2. Certified Sub-Component List

Carrier 30RB Chiller

VFD (Condenser Fan Motors)				
<i>VFD Frame Size</i>	<i>Power Range [kW]</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Tested or Interpolated</i>
B1	7.5 - 18	Aluminum	Danfoss	UUT-1
B2	22 - 30	Aluminum	Danfoss	UUT-1

Heat Exchanger (Cooler)			
<i>Cooler</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Tested or Interpolated</i>
14" Dia	copper tubes and carbon steel shell	Carrier	UUT-1

Heat Exchanger (Condenser)			
<i>Condenser</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Tested or Interpolated</i>
MCHX	Aluminum	Delphi	UUT-1

Compressor & Motor					
<i>Compressor Model</i>	<i>Motor Type</i>	<i>Voltage/Hertz</i>	<i>Horsepower (hp)</i>	<i>Manufacturer</i>	<i>Tested or Interpolated</i>
SH240	Hermetic	460/60	20	Danfoss	UUT-1
SH295	Hermetic	460/60	25	Danfoss	UUT-1

Control Box				
<i>Part #</i>	<i>Panel Voltage/Hertz</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Tested or Interpolated</i>
C30RB090	208-230/60, 380/60, 460/60, or 575/60	Painted Carbon Sheet Metal Cabinet	Schneider	UUT-5

Condenser Fan Motors					
<i>Motor Type</i>	<i>RPM</i>	<i>Power [kW]</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Tested or Interpolated</i>
TEAO	1130	2.3	Steel	Marathon	UUT-1

Notes: TEAO = Totally Enclosed Air Over



Special Seismic Certification
OSHPD Preapproval
Carrier 30RB Product Line



Table 3. UUT Summary Table 30RB ^{3,4,8}

Carrier 30RB Chiller

Model Number	Tonnage	UUT Mark	Mounting	Excitation Direction ³	Frequency ⁴ (Hz)	Length (in)	Width (in)	Height (in)	Operating Weight (lbs) ⁸	Notes
30RB90 ²	90	UUT-1	Base - Hard Mount	X	13.6	142	89	90	5,132	With internal seismic bracings
				Y	35					
				Z	20.3					

Notes:

2. Tested at QualTech NP Lab Report No: Q1302.0.
3. Excitation Direction: X = front to back; Y = side to side; Z = vertical
4. Unit frequencies were measured prior to AC156 testing.
5. Unit was tested, retained structural integrity and satisfied the operability tests before and after the shake table tests.
6. Unit was tested full of content.
7. Unit was pressurized and charged prior to AC156 testing.
8. Weight as tested = 6,656 lbs

Test Parameters for UUT-5

S_{DS} = 2.48

z/h = 1.0

A_{FLEX-H} = 3.97 (g) A_{RIG-H} = 2.98 (g)
 A_{FLEX-V} = 1.66 (g) A_{RIG-V} = 0.67 (g)

Test Setup Photos

Carrier 30RB Chillers



Figure 3: UUT-1 30RB090 Chiller during testing
Attachment: Unit base rails were bolted to WF fixture w/ (4) 3/4" A325 Bolts



Special Seismic Certification
OSHPD Preapproval
Carrier 30RB Product Line



Table 4. UUT Summary Sub-Component List

Carrier 30RB Chiller

UUT-1				
<i>Sub-Component</i>	<i>Model Number</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Cooler	14" Dia.	00PSN800094400A	Carrier	Carbon-Steel & Copper
Condenser Coils	MCHX	00PPG000472501A	Delphi	Aluminum
Compressor	SH295 (2), SH240 (2)	00PSN500297403A	Danfoss	Carbon-Steel
Control Box	C30RB090	C30RBE09064-LH---3	Schneider	Carbon-Steel
VFD (Condenser Fan Motors)	B1	HR46ZT002	Danfoss	Aluminum
VFD (Condenser Fan Motors)	B2	HR46ZV001	Danfoss	Aluminum
Condenser Fan Motors	TEAO	00PPG000007202A	Marathon	Carbon-Steel & Copper



Special Seismic Certification
OSHPD Preapproval
Carrier 30RB Product Line



30RB Model Number Nomenclature

Model number nomenclature



30RB F 190 6 - 8 0 - - - L

30RB – Air-Cooled AquaSnap® Chiller

Design Series

Nominal Sizes			
060	110	170	275 360*
070	120	190	300 390*
080	130	210	315*
090	150	225	330*
100	160	250	345*

Voltage

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

Condenser Coil 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)

Hydraulics 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
- F – Single Pump, 3 HP with VFD
- G – Single Pump, 5 HP with VFD
- H – Single Pump, 7.5 HP with VFD
- J – Single Pump, 10 HP with VFD
- K – Single Pump, 15 HP with VFD
- M – Dual Pump, 3 HP with VFD
- N – Dual Pump, 5 HP with VFD
- P – Dual Pump, 7.5 HP, Low Head with VFD
- T – Dual Pump, 7.5 HP, High Head with VFD
- Q – Dual Pump, 10 HP with VFD
- R – Dual Pump, 15 HP with VFD
- Z – Special order designation

**SEE NEXT PAGE
 FOR REMAINDER
 OF MODEL NUMBER
 NOMENCLATURE**

- Cooler Options**
- Integral Cooler, CRN (Canada)
 - 0 – Integral Cooler, Cooler Heater, CRN (Canada)
 - 4 – Integral Cooler, Microchannel (MCHX), CRN (Canada)
 - 5 – Integral Cooler, Cooler Heater, Microchannel (MCHX), CRN (Canada)
 - G – Integral Cooler, no CRN
 - H – Integral Cooler, Cooler Heater, no CRN
 - K – Integral Cooler, Microchannel (MCHX), no CRN
 - L – Integral Cooler, Cooler Heater, Microchannel (MCHX), no CRN
 - R – Integral Cooler, Microchannel (MCHX), Heat Recovery, no CRN
 - S – Integral Cooler, Cooler Heater, Microchannel (MCHX), Heat Recovery, no CRN
 - T – Integral Cooler, Microchannel (MCHX), Heat Recovery, CRN (Canada)
 - V – Integral Cooler, Cooler Heater, Microchannel (MCHX), Heat Recovery, CRN (Canada)

- LEGEND**
- CRN – Canadian Registration Number
 - EMM – Energy Management Module
 - GFJ-CO – Ground Fault Interrupting Convenience Outlet
 - LOM – Local Operating Network
 - SCCR – Short Circuit Current Rating
 - VFD – Variable Frequency Device
 - XL – Across-the-Line Start

*Refer to the Unit Sizes and Modular Combinations table below.
 NOTE: A "Z" in position 11 indicates a special order machine. Digits following do not correspond to tables.

Quality Assurance
 Certified to ISO 9001

UNIT SIZES AND MODULAR COMBINATIONS

UNIT SIZE	NOMINAL TONS	NOMINAL KW	MODULE A	MODULE B
060	60	210	—	—
070	70	245	—	—
080	80	280	—	—
090	90	315	—	—
100	100	350	—	—
110	110	385	—	—
120	120	421	—	—
130	130	456	—	—
150	150	526	—	—
160	160	562	—	—
170	170	597	—	—

UNIT SIZE	NOMINAL TONS	NOMINAL KW	MODULE A	MODULE B
190	190	667	—	—
210	210	737	—	—
225	225	791	—	—
250	250	879	—	—
275	275	967	—	—
300	300	1055	—	—
315	315	1107	160	160
330	330	1160	170	160
345	345	1213	170	170
360	360	1266	190	170
390	390	1370	190	190



Special Seismic Certification
OSHPD Preapproval
Carrier 30RB Product Line



30RB Model Number Nomenclature



30RB F 190 6 - B 0 - - - L

**SEE PREVIOUS PAGE
 FOR REMAINDER
 OF MODEL NUMBER
 NOMENCLATURE**

Refrigeration Circuit Options

- 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, Suction 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
- H - Suction Service Valves, High-Efficiency Variable Condenser Fans
- J - Suction Insulation, Suction Service Valve, High-Efficiency Variable Condenser Fans
- K - High-Efficiency Variable Condenser Fans
- L - Suction Insulation, High-Efficiency Variable Condenser Fans
- M - Suction Service Valves, High-Efficiency Variable Condenser Fans, Minimum Load Control Operation
- N - Suction Insulation, Suction Service Valve, High-Efficiency Variable Condenser Fans, Minimum Load Control Operation
- P - High-Efficiency Variable Condenser Fans, Minimum Load Control Operation
- Q - Suction Insulation, High-Efficiency Variable Condenser Fans, Minimum Load Control Operation

Packaging/Security Options

- L - No Packaging
- 0 - Skid
- 1 - Skid, Top Crate, Bag
- 3 - Coil Trim Panels
- 4 - Skid, Coil Trim Panels
- 5 - Skid, Top Crate, Bag, Coil Trim Panels
- 7 - Coil Trim Panels, Upper and Lower Grilles
- 8 - Skid, Coil Trim Panels, Upper and Lower Grilles
- 9 - Skid, Top Crate, Bag, Coil Trim Panels, Upper and Lower Grilles
- C - Trim Panels, Upper and Lower Grilles, Upper Hall Guards
- D - Skid, Trim Panels, Upper and Lower Grilles, Upper Hall Guards
- F - Skid, Top Crate, Bag, Trim Panels, Upper and Lower Grilles, Upper Hall Guards
- H - Skid, Full End Covers
- J - Skid, Top Crate, Bag, Full End Covers
- K - Full End Covers

Controls/Communication Options

- None
- 0 - EMM
- 1 - Remote Service Port, GFI-CO
- 2 - EMM, Remote Service Port, GFI-CO
- 3 - BACnet Communication
- 4 - BACnet Communication, EMM
- 5 - BACnet Communication, Remote Service Port, GFI-CO
- 6 - BACnet Communication, 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/Low Sound Options

- Single Point Power Connections, XL, Terminal Block
- 0 - Single Point Power Connections, XL, Terminal Block, High SCCR
- 3 - Dual Point Power Connections, XL, Terminal Block
- 4 - Dual Point Power Connections, XL, Terminal Block, High SCCR
- 7 - Single Point Power Connections, XL, Non-Fused Disconnect
- 8 - Single Point Power Connections, XL, Non-Fused Disconnect, High SCCR
- C - Dual Point Power Connections, XL, Non-Fused Disconnect
- D - Dual Point Power Connections, XL, Non-Fused Disconnect, High SCCR
- G - Single Point Power Connections, XL, Terminal Block, Cmpr Blankets
- H - Single Point Power Connections, XL, Terminal Block, Cmpr Blankets, High SCCR
- J - Dual Point Power Connections, XL, Terminal Block, Cmpr Blankets
- K - Dual Point Power Connections, XL, Terminal Block, Cmpr Blankets, High SCCR
- L - Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets
- M - Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, High SCCR
- N - Dual Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets
- P - Dual Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, High SCCR
- Q - Single Point Power Connections, XL, Terminal Block, Cmpr Blankets, Cmpr Enclosures
- R - Single Point Power Connections, XL, Terminal Block, Cmpr Blankets, Cmpr Enclosures, High SCCR
- S - Dual Point Power Connections, XL, Terminal Block, Cmpr Blankets, Cmpr Enclosures
- T - Dual Point Power Connections, XL, Terminal Block, Cmpr Blankets, Cmpr Enclosures, High SCCR
- V - Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, Cmpr Enclosures
- W - Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, Cmpr Enclosures, High SCCR
- X - Dual Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, Cmpr Enclosures
- W - Dual Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, Cmpr Enclosures, High SCCR

LEGEND

- CRN - Canadian Registration Number
- EMM - Energy Management Module
- GFI-CO - Ground Fault Interrupting Convenience Outlet
- LON - Local Operating Network
- SCCR - Short Circuit Current Rating
- VFD - Variable Frequency Device
- XL - Across-the-Line Start

*Refer to the Unit Sizes and Modular Combinations table on page 4.
 NOTE: A "Z" in position 11 indicates a special order machine. Digits following do not correspond to tables.