



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

APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION  
PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: **OSP – 0026 – 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 AQUAEDGE Chillers

Product Type: Hermetic Centrifugal Chillers

Product Model Number: 19XR and 19XRV Heat Exchanger Frame 2, 3, 4, 5, 6, 7, 8, AA, AB, BC, CC, CD (200 to 3000 tons)  
(List all unique product identification numbers and/or part numbers)

General Description: High efficiency hermetic centrifugal chillers (single and dual stage compressors).

Mounting Description: Rigid floor mounted

**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: 01/08/2014

Engineering Manager

Title: Applied Water-Cooled Screw Chillers Company Name: Carrier Corporation

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





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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: U.S. Army CERL

Contact Name: James Wilcoski

Mailing Address: P.O. Box 9005 – Champaign, IL 61826

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

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**Seismic Parameters**

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

Design Basis of Equipment or Components ( $F_p/W_p$ ) =  $\frac{1.51 \text{ at } z/h = 1.0 \ \& \ 1.09 \text{ at } z/h = 0.0 \text{ for Frames 2 thru 8}}{1.18 \text{ at } z/h = 1.0 \ \& \ 1.19 \text{ at } z/h = 0.0 \text{ for Frames AA thru CD}}$

$S_{DS}$  (Design spectral response acceleration at short period, g) =  $\frac{2.10 \text{ at } z/h = 1.0 \ \& \ 2.42 \text{ at } z/h = 0.0 \text{ for Frames 2 thru 8}}{1.64 \text{ at } z/h = 1.0 \ \& \ 2.64 \text{ at } z/h = 0.0 \text{ for Frames AA thru CD}}$

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

$R_p$  (Equipment or component response modification factor) = 2.5

$\Omega_0$  (System overstrength factor) = 2.5

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 0.0 to 1.0, See SDS levels above

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) = \_\_\_\_\_

$\Omega_0$  (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, Certification Letter

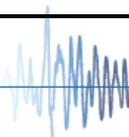
**OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2019**

Signature:  Date: June 25, 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**  
**Carrier XR, XRV Product Line**



**Table 1. Certified Product List**

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

Frame	Heat Exchangers	Capacity Range	Compressor	Length (ft-in)	Width (ft-in)	Height (ft-in)	Operating** Weight (lbs)	Tested or Interpolated
2	20-22	200-300	Single	14' - 1 1/4"	6' - 1 1/16"	6' - 3 1/4"	15,209	UUT-3
3	30-32	200-500	Single	16' - 4 3/4"	6' - 1 1/16"	6' - 9 5/8"	24,510	Interpolated
	35-37	200-500	Single	18' - 1 1/4"	6' - 1 1/16"	6' - 9 5/8"	26,020	Interpolated
4	40-42	300-550	Single	16' - 8 1/4"	6' - 3 1/4"	7' - 0 3/4"	29,700	Interpolated
	45-47	300-600	Single	16' - 4 3/4"	6' - 3 1/4"	7' - 0 3/4"	31,800	Interpolated
5	50-52, 5K-5R, 5A-5C	300-650	Single	16' - 8 1/2"	6' - 8 7/8"	7' - 2 3/8"	36,233	Interpolated
	55-57, 5T-5Z, 5F-5H	300-800	Single	18' - 5"	6' - 8 7/8"	7' - 2 3/8"	37,961	Interpolated
6	60-64, 6K-6R	600-650	Single	16' - 8 3/4"	6' - 11 3/4"	7' - 4 3/8"	38,733	Interpolated
	65-69, 6T-6Z	600-800	Single	18' - 5 1/4"	6' - 11 3/4"	7' - 4 3/8"	40,838	Interpolated
7	70-74, 7K-7R	600-1200	Single	19' - 9 3/4"	9' - 6 3/8"	9' - 9 1/2"	49,949	Interpolated
	75-79, 7T-7Z	900-1300	Single	21' - 9 3/4"	9' - 6 3/8"	9' - 9 1/2"	55,139	Interpolated
8	80-84, 8K-8R	900-1300	Single or Dual	19' - 10 1/2"	10' - 5"	9' - 11 1/4"	64,866	Interpolated
	85-89, 8T-8Z	900-1500	Single (UUT-4) Dual (UUT-5)	21' - 10 1/2"	10' - 5"	9' - 11 1/4"	60,401 (UUT-4), 68,839 (UUT-5)	UUT-4 & UUT-5
A-A	A4-A4	1500-2250	Dual	19' - 2 1/2"	10' - 5 3/8"	11' - 6 1/8"	107,073	Interpolated
	A6-A6			21' - 2 1/2"	10' - 5 3/8"	11' - 6 1/8"		Interpolated
A-B	A4-B4		Dual	19' - 8 1/2"	10' - 9 5/8"	11' - 6 1/8"		Interpolated
	A6-B6			21' - 6 1/2"	10' - 9 5/8"	11' - 6 1/8"		Interpolated
B-C	B6-C6	2250-3000	Dual	22' - 1/4"	12'	12' - 1/4"	150,000	Interpolated
C-C	C6-C6		Dual	22' - 1/4"	12' - 1/2"	12' - 1/2"	160,000	Interpolated
C-D	C6-D6		Dual	22' - 1/2"	13' - 1/4"	12' - 6 1/2"	155,892	UUT-6A & UUT-6B

\* 19XR heights can vary depending on the configuration of VFD

\*\* Unit weights listed are maximum operating weights.



**Special Seismic Certification**  
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**Table 2. Certified Sub-Component List**

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

Heat Exchanger (Cooler & Condenser)						
Frame	Cooler	Condenser	Material	Manufacturer	Tested or Interpolated	Code Nomenclature:
2	20	20-22	copper tubes and carbon steel shell	Carrier	Extrapolated	<b>Cooler:</b> 20-22 (12')
	21	20-22	copper tubes and carbon steel shell	Carrier	Extrapolated	
	22	20-22	<b>copper tubes and carbon steel shell</b>	<b>Carrier</b>	<b>UUT-3</b>	
3	30	30-32	copper tubes and carbon steel shell	Carrier	Interpolated	30-32 (12') and 35-37(14') 40-42 (12') and 45-47(14') 50-52 (12') and 55-57(14') 50-54 (12') and 55-59(14') 60-64 (12') and 65-69(14')
	31	30-32	copper tubes and carbon steel shell	Carrier	Interpolated	
	32	30-32	copper tubes and carbon steel shell	Carrier	Interpolated	
	35	35-37	copper tubes and carbon steel shell	Carrier	Interpolated	
	36	35-37	copper tubes and carbon steel shell	Carrier	Interpolated	
	37	35-37	copper tubes and carbon steel shell	Carrier	Interpolated	
4	40	40-42	copper tubes and carbon steel shell	Carrier	Interpolated	5A, 5B, 5C, 5F, 5G, 5H are customized-tube arrangements. Frame sizes with K-R and T-Z are with 1" O.D. tubing.
	41	40-42	copper tubes and carbon steel shell	Carrier	Interpolated	
	42	40-42	copper tubes and carbon steel shell	Carrier	Interpolated	
	45	45-47	copper tubes and carbon steel shell	Carrier	Interpolated	
	46	45-47	copper tubes and carbon steel shell	Carrier	Interpolated	
5	47	45-47	copper tubes and carbon steel shell	Carrier	Interpolated	<b>Condenser:</b> 20-22 (12') 30-32 (12') and 35-37(14') 40-42 (12') and 45-47(14') 50-52 (12') and 55-57(14') 50-54 (12') and 55-59(14') 60-64 (12') and 65-69(14')
	50	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
	51	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
	52	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
	53	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
	54	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
	55	55-59	copper tubes and carbon steel shell	Carrier	Interpolated	
	56	55-59	copper tubes and carbon steel shell	Carrier	Interpolated	
	57	55-59	copper tubes and carbon steel shell	Carrier	Interpolated	
	58	55-59	copper tubes and carbon steel shell	Carrier	Interpolated	
	59	55-59	copper tubes and carbon steel shell	Carrier	Interpolated	
	5A	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
	5B	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
	5C	50-54	copper tubes and carbon steel shell	Carrier	Interpolated	
5F	55-59	copper tubes and carbon steel shell	Carrier	Interpolated		
5G	55-59	copper tubes and carbon steel shell	Carrier	Interpolated		
6	5H	55-59	copper tubes and carbon steel shell	Carrier	Interpolated	
	60	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
	61	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
	62	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
	63	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
	64	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
	65	65-69	copper tubes and carbon steel shell	Carrier	Interpolated	
	66	65-69	copper tubes and carbon steel shell	Carrier	Interpolated	
	67	65-69	copper tubes and carbon steel shell	Carrier	Interpolated	
	68	65-69	copper tubes and carbon steel shell	Carrier	Interpolated	
	69	65-69	copper tubes and carbon steel shell	Carrier	Interpolated	
	6K	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
	6L	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
	6M	60-64	copper tubes and carbon steel shell	Carrier	Interpolated	
6P	65-69	copper tubes and carbon steel shell	Carrier	Interpolated		
6Q	65-69	copper tubes and carbon steel shell	Carrier	Interpolated		
6R	65-69	copper tubes and carbon steel shell	Carrier	Interpolated		



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

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

<b>Heat Exchanger (Cooler &amp; Condenser)</b>					
<i>Frame</i>	<i>Cooler</i>	<i>Condenser</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Tested or Interpolated</i>
7	70	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	71	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	72	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	73	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	74	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	75	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	76	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	77	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	78	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	79	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	7K	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	7L	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	7M	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	7P	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	7Q	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	7R	70-74	copper tubes and carbon steel shell	Carrier	Interpolated
	7T	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	7U	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	7V	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
	7X	75-79	copper tubes and carbon steel shell	Carrier	Interpolated
7Y	75-79	copper tubes and carbon steel shell	Carrier	Interpolated	
7Z	75-79	copper tubes and carbon steel shell	Carrier	Interpolated	
8	80	80-84	copper tubes and carbon steel shell	Carrier	Interpolated
	81	80-84	copper tubes and carbon steel shell	Carrier	Interpolated
	82	80-84	copper tubes and carbon steel shell	Carrier	Interpolated
	83	80-84	copper tubes and carbon steel shell	Carrier	Interpolated
	84	80-84	copper tubes and carbon steel shell	Carrier	Interpolated
	85	85-89	copper tubes and carbon steel shell	Carrier	Interpolated
	86	85-90	copper tubes and carbon steel shell	Carrier	Interpolated
	87	85-91	copper tubes and carbon steel shell	Carrier	Interpolated
	88	85-92	copper tubes and carbon steel shell	Carrier	Interpolated
	89	85-93	copper tubes and carbon steel shell	Carrier	UUT-5
	8K	85-94	copper tubes and carbon steel shell	Carrier	Interpolated
	8L	85-95	copper tubes and carbon steel shell	Carrier	Interpolated
	8M	85-96	copper tubes and carbon steel shell	Carrier	Interpolated
	8P	85-97	copper tubes and carbon steel shell	Carrier	Interpolated
	8Q	85-98	copper tubes and carbon steel shell	Carrier	Interpolated
	8R	85-99	copper tubes and carbon steel shell	Carrier	Interpolated
	8T	85-89	copper tubes and carbon steel shell	Carrier	Interpolated
	8U	85-89	copper tubes and carbon steel shell	Carrier	Interpolated
	8V	85-89	copper tubes and carbon steel shell	Carrier	Interpolated
	8X	85-89	copper tubes and carbon steel shell	Carrier	Interpolated
8Y	85-89	copper tubes and carbon steel shell	Carrier	Interpolated	
8Z	85-89	copper tubes and carbon steel shell	Carrier	UUT-4	

Code Nomenclature:

**Cooler:**

70-74 (14') and 75-79(16')  
 80-84 (14') and 85-89(16')  
 Frame sizes with K-R and  
 T-Z are with 1" O.D. tubing.

**Condenser:**

70-74 (14') and 75-79(16')  
 80-84 (14') and 85-89(16')



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

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

Heat Exchanger (Cooler & Condenser)					
Frame	Cooler	Condenser	Material	Manufacturer	Tested or Interpolated
A4-A4	A4A-A4H	A4A-A4H	copper tubes and carbon steel shell	Carrier	Interpolated
		A40-A47	copper tubes and carbon steel shell	Carrier	Interpolated
	A40-A47	A4A-A4H	copper tubes and carbon steel shell	Carrier	Interpolated
		A40-A47	copper tubes and carbon steel shell	Carrier	Interpolated
A4-B4	A4A-A4H	B4A-B4H	copper tubes and carbon steel shell	Carrier	Interpolated
		B40-B47	copper tubes and carbon steel shell	Carrier	Interpolated
	A40-A47	B4A-B4H	copper tubes and carbon steel shell	Carrier	Interpolated
		B40-B47	copper tubes and carbon steel shell	Carrier	Interpolated
A6-A6	A6A-A6H	A6A-A6H	copper tubes and carbon steel shell	Carrier	Interpolated
		A60-A67	copper tubes and carbon steel shell	Carrier	Interpolated
	A60-A67	A6A-A6H	copper tubes and carbon steel shell	Carrier	Interpolated
		A60-A67	copper tubes and carbon steel shell	Carrier	Interpolated
A6-B6	A6A-A6H	B6A-B6H	copper tubes and carbon steel shell	Carrier	Interpolated
		B60-B67	copper tubes and carbon steel shell	Carrier	Interpolated
	A60-A67	B6A-B6H	copper tubes and carbon steel shell	Carrier	Interpolated
		B60-B67	copper tubes and carbon steel shell	Carrier	Interpolated
B6-C6	B6A-B6H	C6A-C6H	copper tubes and carbon steel shell	Carrier	Interpolated
		C60-C67	copper tubes and carbon steel shell	Carrier	Interpolated
	B60-B67	C6A-C6H	copper tubes and carbon steel shell	Carrier	Interpolated
		C60-C67	copper tubes and carbon steel shell	Carrier	Interpolated
C4-C6	C6A-C6H	C6A-C6H	copper tubes and carbon steel shell	Carrier	Interpolated
		C60-C67	copper tubes and carbon steel shell	Carrier	Interpolated
	C60-C67	C6A-C6H	copper tubes and carbon steel shell	Carrier	Interpolated
		C60-C67	copper tubes and carbon steel shell	Carrier	Interpolated
C6-D6	C6A-C6H	D6A-D6H	copper tubes and carbon steel shell	Carrier	Interpolated
		D60-D67	copper tubes and carbon steel shell	Carrier	Interpolated
	C60-C67	D6A-D6H	copper tubes and carbon steel shell	Carrier	Interpolated
		D60-D67	copper tubes and carbon steel shell	Carrier	Interpolated
	<b>C67</b>	<b>D67</b>	<b>copper tubes and carbon steel shell</b>	<b>Carrier</b>	<b>UUT-6A &amp; 6B</b>

**Code Nomenclature:**  
**Example: A40**  
 Position 1- Cooler or Condenser Code  
 Position 2- Unit Size (4=14' & 6=16')  
 Position 3- Tube Size (0-7=3/4" & A-H=1" tube)

**Cooler Codes:**  
 A= 51" OD  
 B= 58" OD  
 C= 65" OD

**Condenser Codes:**  
 A= 47" OD  
 B= 52.75" OD  
 C= 59" OD  
 D= 67.25" OD



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

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

Compressor & Motor							
Compressor Frame Size	Motor Type	Voltage/Hertz	Horsepower Range (hp)	Material	Compressor Manufacturer	Motor Manufacturer	Tested or Interpolated
XR2	Semi-Hermetic	208/60	175-360	Carbon Steel Shell/Copper	Carrier	Reliance	Extrapolated
	Semi-Hermetic	230/60		Carbon Steel Shell/Copper	Carrier	Reliance	Extrapolated
	Semi-Hermetic	380/60		Carbon Steel Shell/Copper	Carrier	Reliance	Extrapolated
	Semi-Hermetic	416/60		Carbon Steel Shell/Copper	Carrier	Reliance	Extrapolated
	Semi-Hermetic	460/60		Carbon Steel Shell/Copper	Carrier	Reliance	Extrapolated
	<b>Semi-Hermetic</b>	<b>460/60 (310 hp)</b>		<b>Carbon Steel Shell/Copper</b>	<b>Carrier</b>	<b>Reliance</b>	<b>UUT-3</b>
	Semi-Hermetic	230/50		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
XR3	Semi-Hermetic	380/60	276-500	Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	416/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	460/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	460/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	400/50		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
XR4	Semi-Hermetic	380/60	455-805	Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	416/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	460/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	460/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	400/50		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
XR5	Semi-Hermetic	380/60	770-1302	Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	416/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	460/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	<b>Semi-Hermetic</b>	<b>460/60 (770 hp)</b>		<b>Carbon Steel Shell/Copper</b>	<b>Carrier</b>	<b>Reliance</b>	<b>UUT-4</b>
	Semi-Hermetic	380/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	416/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	400/50		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
XRE	Semi-Hermetic	380/60	770-1302	Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	416/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic	460/60		Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	<b>Semi-Hermetic</b>	<b>460/60 (770 hp)</b>		<b>Carbon Steel Shell/Copper</b>	<b>Carrier</b>	<b>Reliance</b>	<b>UUT-5</b>
	Semi-Hermetic	380/60		Carbon Steel Shell/Copper	Carrier	Reliance	Extrapolated
	Semi-Hermetic	416/60		Carbon Steel Shell/Copper	Carrier	Reliance	Extrapolated
XR6	Semi-Hermetic	2400/60, 3000/50, 3300/50-60, and 4160/60	1500-2100	Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
XR7	Semi-Hermetic	2400/60, 3000/50, 3300/50-60	2250-2900	Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	Semi-Hermetic			Carbon Steel Shell/Copper	Carrier	Reliance	Interpolated
	<b>Semi-Hermetic</b>			<b>4160/60</b>	<b>2900</b>	<b>Carbon Steel Shell/Copper</b>	<b>Carrier</b>

\* Identical motor are configured to meet the needs of the compressor



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

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

<b>Oil Pump</b>					
<b>Compressor Frame Size</b>	<b>Capacity</b>	<b>Voltage/Hertz</b>	<b>Material</b>	<b>Manufacturer</b>	<b>Tested or Interpolated</b>
XR2	13	208/60	Carbon Steel	Carrier	Extrapolated
	13	230/60	Carbon Steel	Carrier	Extrapolated
	13	380/60	Carbon Steel	Carrier	Extrapolated
	13	416/60	Carbon Steel	Carrier	Extrapolated
	13	460/60	Carbon Steel	Carrier	Extrapolated
	<b>13</b>	<b>460/60</b>	<b>Carbon Steel</b>	<b>Carrier</b>	<b>UUT-3</b>
	13	230/50	Carbon Steel	Carrier	Interpolated
	13	400/50	Carbon Steel	Carrier	Interpolated
XR3	13	380/60	Carbon Steel	Carrier	Interpolated
	13	416/60	Carbon Steel	Carrier	Interpolated
	13	460/60	Carbon Steel	Carrier	Interpolated
	13	460/60	Carbon Steel	Carrier	Interpolated
	13	400/50	Carbon Steel	Carrier	Interpolated
XR4	13	380/60	Carbon Steel	Carrier	Interpolated
	13	416/60	Carbon Steel	Carrier	Interpolated
	13	460/60	Carbon Steel	Carrier	Interpolated
	13	460/60	Carbon Steel	Carrier	Interpolated
	13	400/50	Carbon Steel	Carrier	Interpolated
XR5, XRE	15	200/60	Carbon Steel	Carrier	Interpolated
	15	230/60	Carbon Steel	Carrier	Interpolated
	15	380/60	Carbon Steel	Carrier	Interpolated
	<b>15</b>	<b>460/60</b>	<b>Carbon Steel</b>	<b>Carrier</b>	<b>UUT-4</b>
	<b>15</b>	<b>4160/60</b>	<b>Carbon Steel</b>	<b>Carrier</b>	<b>UUT-5</b>
	15	575/60	Carbon Steel	Carrier	Extrapolated
	15	200/50	Carbon Steel	Carrier	Extrapolated
	15	400/50	Carbon Steel	Carrier	Extrapolated
XR6	20	346/50	Carbon Steel	Carrier	Interpolated
	20	380/50	Carbon Steel	Carrier	Interpolated
	20	400/50	Carbon Steel	Carrier	Interpolated
	20	415/50	Carbon Steel	Carrier	Interpolated
	20	440/50	Carbon Steel	Carrier	Interpolated
	20	380/60	Carbon Steel	Carrier	Interpolated
	20	415/60	Carbon Steel	Carrier	Interpolated
	20	416/60	Carbon Steel	Carrier	Interpolated
	20	440/60	Carbon Steel	Carrier	Interpolated
	20	460/60	Carbon Steel	Carrier	Interpolated
	20	480/60	Carbon Steel	Carrier	Interpolated
XR7	20	346/50	Carbon Steel	Carrier	Interpolated
	20	380/50	Carbon Steel	Carrier	Interpolated
	20	380/60	Carbon Steel	Carrier	Interpolated
	20	415/60	Carbon Steel	Carrier	Interpolated
	20	416/60	Carbon Steel	Carrier	Interpolated
	20	440/60	Carbon Steel	Carrier	Interpolated
	20	460/60	Carbon Steel	Carrier	Interpolated
	<b>20</b>	<b>480/60</b>	<b>Carbon Steel</b>	<b>Carrier</b>	<b>UUT-6A &amp; UUT-6B</b>



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

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

<b>Control Box (No VFD)</b>					
<i>Compressor Frame/ Diffuser Type</i>	<i>Control Panel Part #</i>	<i>Panel Voltage/Hz</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
XR2	19XR04030701	115/60	Painted Carbon Sheet Metal Cabinet	Whitepath	UUT-3
XR3	19XR04030701	115/60	Painted Carbon Sheet Metal Cabinet	Whitepath	Interpolated
XR4	19XR04030701	115/60	Painted Carbon Sheet Metal Cabinet	Whitepath	Interpolated
XR4	19XR04030704	115/60	Painted Carbon Sheet Metal Cabinet	Whitepath	Interpolated
XR5	19XR04030704	115/60	Painted Carbon Sheet Metal Cabinet	Whitepath	UUT- 4
XRE	19XR04030704	115/60	Painted Carbon Sheet Metal Cabinet	Whitepath	UUT-5
XR6 & XR7	19XF04030901	380-480/50-60	Painted Carbon Sheet Metal Cabinet	UTEK	UUT-6A & UUT-6B

<b>VFD (includes Control Panel)</b>					
<i>Compressor Frame</i>	<i>VFD Drive Code</i>	<i>VFD Drive Amperage (A)</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
XR2	2AA	440	Painted Carbon Sheet Metal Cabinet	Rockwell	Extrapolated
	R0230	230	Painted Carbon Sheet Metal Cabinet	Rockwell	Extrapolated
	R0335	335	Painted Carbon Sheet Metal Cabinet	Rockwell	UUT-3
	R0445	445	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
XR3	2AA	440	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
	2CC	608	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
	R0230	230	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
	R0335	335	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
XR4	R0445	445	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
	2CC	608	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
	4AA	900	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
	4CC	1200	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
XR5 & XRE	4AA	900	Painted Carbon Sheet Metal Cabinet	Rockwell	Interpolated
	4CC	1200	Painted Carbon Sheet Metal Cabinet	Rockwell	UUT-4 & UUT-5



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

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

<b>Water Box</b>				
<i>Frame</i>	<i>Type</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
2	Nozzel in Head	Carbon Steel	Macor	UUT-3
	Marine	Carbon Steel	Macor	UUT-3
3	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
4	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
5	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
6	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
7	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
8	Nozzel in Head	Carbon Steel	Macor	UUT-4 & UUT-5
	Marine	Carbon Steel	Macor	UUT-4 & UUT-5
A-A	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
A-B	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
B-C	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
C-C	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	Interpolated
C-D	Nozzel in Head	Carbon Steel	Macor	Interpolated
	Marine	Carbon Steel	Macor	UUT-6A & UUT-6B

<b>Oil Cooler</b>				
<i>Compressor Frame</i>	<i>Part No.</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
XR2,XR3,XR4,XR5,XRE	02XR05013301	Brazed Plate	Alfa Laval	UUT-3, UUT-4, & UUT-5
		Stainless Steel		
XR6	02XF65008101	Stainless Steel	Alfa Laval	Interpolated
XR7	02XF75002701	Stainless Steel	Alfa Laval	UUT-6A & 6B

<b>Pump Out Unit</b>				
<i>Compressor Frame</i>	<i>Part No.</i>	<i>Material</i>	<i>Manufacturer</i>	<i>Interpolated / Included With Test</i>
XRE	-	Carbon & Stainless Steel	Carrier	UUT-5



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**Table 3. UUT Summary**

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

Model Number	Tonnage	UUT Mark	Mounting	Excitation Direction <sup>3</sup>	Frequency <sup>1</sup> (Hz)	Length (in)	Width (in)	Height (in)	Operating Weight <sup>2</sup> (lbs)
19XR Frame 2 (19XRV-2222287BHH64)	299	UUT-3	Rigid Base Mount	X	19.0 Hz	169.25	73.06	75.25	15,209
				Y	20.0 Hz				
				Z	25.0 Hz				
19XR Frame 8 (19XRV-8Z8955DMBH64)	1000	UUT-4	Rigid Base Mount	X	6.1 Hz	262.5	125	119.25	60,401
				Y	8.5 Hz				
				Z	15.0 Hz				
19XR Frame 8 (19XR-8989E61EPCD68)	1500	UUT-5	Rigid Base Mount	X	8.1 Hz	262.5	125	119.25	68,839
				Y	11.7 Hz				
				Z	21.8 Hz				
19XR Dual Stage (w/XR7) (19XR-C67D67736ZZG)	3000	UUT-6A (Condenser & Economizer)	Rigid Base Mount	X	7.0 Hz	264.5	79 <sup>6</sup>	132.18	77,334
				Y	11.0 Hz				
				Z	17.0 Hz				
19XR Dual Stage (w/XR7) (19XR-C67D67736ZZG)	3000	UUT-6B (Cooler & Compressor)	Single (UUT-4) Dual (UUT-5)	X	9.0 Hz	264.5	77.5 <sup>6</sup>	150.3	78,558
				Y	12.0 Hz				
				Z	22.0 Hz				

- Unit frequencies were measured prior to ICC-ES AC156 testing.
- Weight as tested
- Excitation Direction: X = front to back; Y = side to side; Z = vertical
- All units were charged with refrigerant before AC156 testing.
- All units were tested, retained structural integrity and satisfied the operability tests before and after the shake table tests.
- UUT-6A and UUT-6B combine to make up one large chiller



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**Table 4. UUT Summary Sub-Component List**

Carrier 19XR, XRV, XRE Chillers with Single and Dual-Stage Compressors

<b>UUT-3</b>				
<i>Sub-Component</i>	<i>Model Number</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Condenser Assembly	22	09XR24008101	Carrier	Carbon-Steel & Copper
Condenser Nozzle Arrangement (Marine)	-	09XR34004003	Carrier	Carbon-Steel
Cooler Assembly	22	10WR24046901	Carrier	Carbon-Steel & Copper
Cooler Nozzle Arrangement (Nozzle in head)	-	10XR34001501	Carrier	Carbon-Steel
VFD	A2AA5KA	19XVA2AA5KA	Rockwell	Carbon-Steel & Copper
Compressor/Motor Assembly	XR2	02X24020001	Carrier	Carbon-Steel
Oil Pump	-	02XR44050602	Carrier	Carbon-Steel
Oil Cooler	-	02XR05013301	Alfa-Laval	Stainless Steel

<b>UUT-4</b>				
<i>Sub-Component</i>	<i>Model Number</i>	<i>Part Number</i>	<i>Single (UUT-4) Dual (UUT-5)</i>	<i>Material</i>
Condenser Assembly	89	09XR84013602	Carrier	Carbon-Steel & Copper
Condenser Nozzle Arrangement (Marine)	-	09XR84013602	Carrier	Carbon-Steel
Cooler Assembly	8Z	10XR84046904	Carrier	Carbon-Steel & Copper
Cooler Nozzle Arrangement (Nozzle in head)	-	10XR840011301	Carrier	Carbon-Steel
VFD	A4CC5KA	19XVA4CC5KA	Rockwell	Carbon-Steel & Copper
Compressor/Motor Assembly	XR5	02X24020001	Carrier	Carbon-Steel
Oil Pump	-	02XR44050602	Carrier	Carbon-Steel
Oil Cooler	-	02XR05013301	Alfa-Laval	Stainless Steel



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**Table 4. UUT Summary Sub-Component List (cont'd)**

<b>UUT-5</b>				
<i>Sub-Component</i>	<i>Model Number</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Condenser Assembly	89	09XR84013602	Carrier	Carbon-Steel & Copper
Condenser Nozzle Arrangement (Marine)	-	09XR84013602	Carrier	Carbon-Steel
Cooler Assembly	89	10XF84000102	Carrier	Carbon-Steel & Copper
Cooler Nozzle Arrangement (Nozzle in head)	-	10XR84011301	Carrier	Carbon-Steel
VFD	A4CC5KA	19XVA4CC5KA	Rockwell	Carbon-Steel & Copper
Compressor/Motor Assembly	XRE	02XF5400001	Carrier	Carbon-Steel
Oil Pump	-	02XR440050602	Carrier	Carbon-Steel
Oil Cooler	-	02XR05013301	Alfa-Laval	Stainless Steel

<b>UUT-6A</b>				
<i>Sub-Component</i>	<i>Model Number</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Cooler Assembly	D67	10XF34000101	Carrier	Carbon-Steel & Copper
Cooler Nozzle Arrangement (Nozzle in head)	-	10XF34001001	Carrier	Carbon-Steel
Compressor/Motor Assembly	XR7	02XF74000001	Carrier	Carbon-Steel
Oil Pump	-	02XF64050607	Carrier	Carbon-Steel
Oil Cooler	-	02XF75002701	Alfa-Laval	Stainless Steel

<b>UUT-6B</b>				
<i>Sub-Component</i>	<i>Model Number</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Condenser Assembly	D67	09XF44001101	Carrier	Carbon-Steel & Copper
Condenser Nozzle Arrangement (Marine)	-	09XF44001803	Carrier	Carbon-Steel
Economizer Assy	XR7 ECON	08XF74001101	Carrier	Carbon-Steel

\* UUT-6A and UUT-6B make up one large chiller unit

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Shake Table Test Setup      Test #1

UUT Designation	UUT - 3	<b>Seismic Parameters</b>							
Identification No.	19XRV-2222287BHH64	<b>Building Code</b>	<b>Test Criteria</b>	<b>S<sub>Ds</sub> (g)</b>	<b>z/h</b>	<b>Horizontal</b>		<b>Vertical</b>	
Attachment Method	Rigid at the base. Unit legs were welded to adapter plates.					<b>A<sub>FLX-H</sub></b>	<b>A<sub>RIG-H</sub></b>	<b>A<sub>FLX-V</sub></b>	<b>A<sub>RIG-V</sub></b>
		CBC 2013	AC 156	2.42	0.0	2.42	0.97	1.47	0.59
		CBC 2013	AC 156	2.10	1.0	3.36	2.52	1.4	0.56

Single (U



Notes:    The UUT was full of contents (refrigerant & water) during the test.  
             The structural integrity of the component attachment and force-resisting systems was maintained.  
             After the test the UUT was functional and operated within Carrier operational limits.

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Shake Table Test Setup      Test #2

UUT Designation	UUT - 4	<b>Seismic Parameters</b>							
Identification No.	19XRV8Z8955DMBH64	<b>Building Code</b>	<b>Test Criteria</b>	<b>S<sub>Ds</sub> (g)</b>	<b>z/h</b>	<b>Horizontal</b>		<b>Vertical</b>	
Attachment Method	Rigid at the base. Unit was bolted to the fixture by six 3/4" dia. grade 8 bolts at each leg.					<b>A<sub>FLX-H</sub></b>	<b>A<sub>RIG-H</sub></b>	<b>A<sub>FLX-V</sub></b>	<b>A<sub>RIG-V</sub></b>
		CBC 2013	AC 156	2.42	0.0	2.42	0.97	1.47	0.59
		CBC 2013	AC 156	2.10	1.0	3.36	2.52	1.4	0.56



Notes:      The UUT was full of contents (refrigerant & water) during the test.  
               The structural integrity of the component attachment and force-resisting systems was maintained.  
               After the test the UUT was functional and operated within Carrier operational limits.



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Shake Table Test Setup      Test #3

UUT Designation    UUT - 5 Identification No.    19XR-8989E61EPCD68 Attachment Method    Rigid at the base. Unit was bolted to the fixture by six 3/4" dia. grade 8 bolts at each leg.	<b>Seismic Parameters</b>							
	<b>Building Code</b>	<b>Test Criteria</b>	<b>S<sub>Ds</sub> (g)</b>	<b>z/h</b>	<b>Horizontal</b>		<b>Vertical</b>	
					<b>A<sub>FLX-H</sub></b>	<b>A<sub>RIG-H</sub></b>	<b>A<sub>FLX-V</sub></b>	<b>A<sub>RIG-V</sub></b>
	CBC 2013	AC 156	2.60	0.0	2.60	1.04	1.73	0.69
CBC 2013	AC 156	2.10	1.0	3.36	2.52	1.4	0.56	



Notes:    The UUT was full of contents (refrigerant & water) during the test.  
             The structural integrity of the component attachment and force-resisting systems was maintained.  
             After the test the UUT was functional and operated within Carrier operational limits.



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Shake Table Test Setup      Test #4

UUT Designation      UUT - 6A  
 Identification No.      19XR-C67D67736ZZG  
 Attachment Method      Rigid at the base. Unit was bolted to the base fixture by six 1-1/4" dia. grade 8 bolts at each leg.

Seismic Parameters				Horizontal		Vertical	
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
CBC 2013	AC 156	2.64	0.0	2.64	1.06	1.76	0.704
CBC 2013	AC 156	1.64	1.0	2.64	1.97	1.09	0.44



Notes:      The UUT was full of contents (refrigerant & water) during the test.  
                  The structural integrity of the component attachment and force-resisting systems was maintained.  
                  After the test the UUT was functional and operated within Carrier operational limits.



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Shake Table Test Setup      Test #5

UUT Designation      UUT - 6B  
 Identification No.      19XR-C67D67736ZZG  
 Attachment Method      Rigid at the base. Unit was bolted to the base fixture by six 1-1/4" dia. grade 8 bolts at each leg.

Seismic Parameters				Horizontal		Vertical	
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
CBC 2013	AC 156	2.64	0.0	2.64	1.06	1.76	0.704
CBC 2013	AC 156	1.64	1.0	2.64	1.97	1.09	0.44



Notes:      The UUT was full of contents (refrigerant & water) during the test.  
                  The structural integrity of the component attachment and force-resisting systems was maintained.  
                  After the test the UUT was functional and operated within Carrier operational limits.



# Special Seismic Certification OSHPD Preapproval Carrier 19XR, 19XRV Product Line

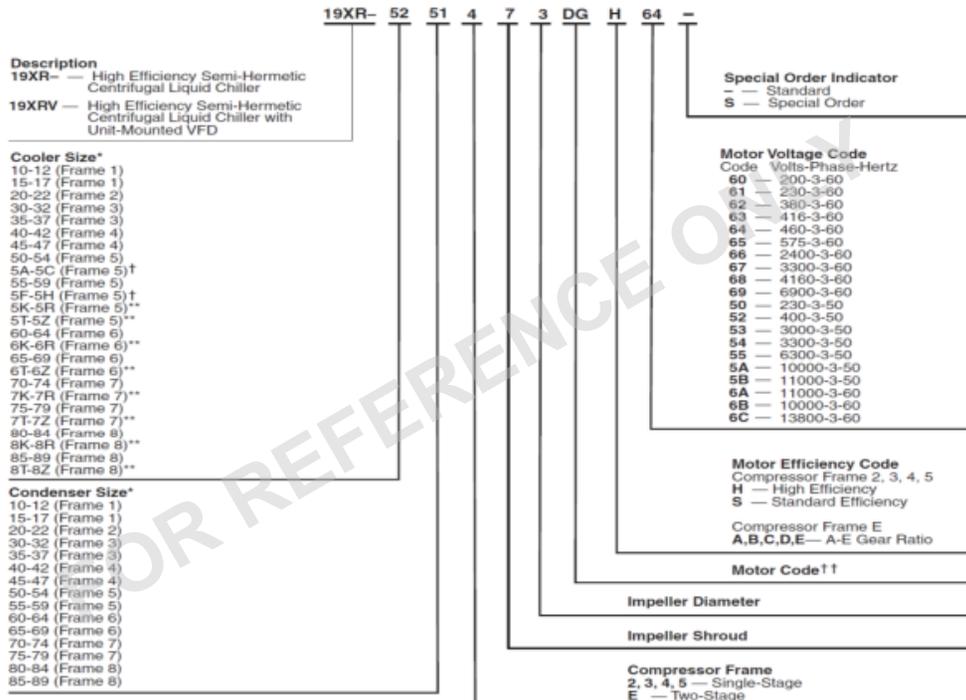


## Model Number Nomenclature

### Model number nomenclature



#### 19XR,XRV SINGLE-STAGE COMPRESSOR AND TWO-STAGE COMPRESSOR FRAME SIZE E



**Quality Assurance**  
 Certified to ISO 9001



AHRI (Air Conditioning, Heating, and Refrigeration Institute)  
 Performance Certified

\*Frame sizes 1 through 6 available on single-stage units only.  
 †Refer to 19XR,XRV Computer Selection Program for details on these sizes.  
 \*\* Frame sizes with K-R and T-Z are with 1 in. OD evaporator tubing.  
 ††Refer to the 19XR,XRV Computer Selection Program for motor size details.

### SEISMICOMPLIANT™

\* Meets IBC 2006, ASCE-7-05, CBC 2007, and OSHPD seismic requirements.  
 Seismic rating available on select models.

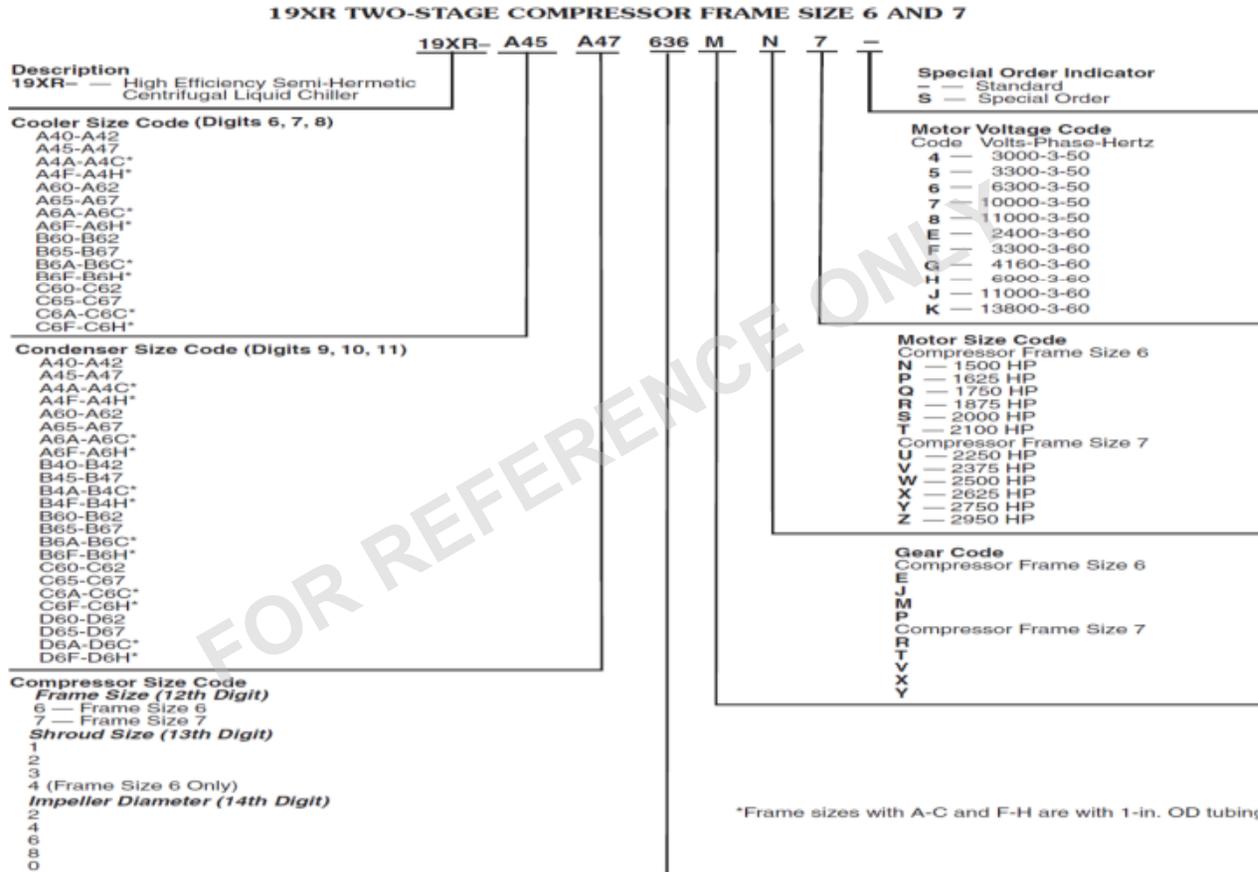


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**Model Number Nomenclature**

**Model number nomenclature (cont)**



Compliance with UL 1995 (CSA C22.2 No. 236)



AHRI (Air-Conditioning, Heating, and Refrigeration Institute) Performance Certified

**Quality Assurance**  
Certified to ISO 9001