

Application to Commit Energy
Efficiency/Peak Demand
Reduction Programs
(Mercantile Customers Only)

Case No.: <u>15-0006 -E</u>L-EEC

Mercantile Customer: Cincinnati VAMC

Electric Utility: **Duke Energy** 

Program Title or

Water Cooled Chiller Tune Up

Description:

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. <u>10-834-EL-POR</u>

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider (Option 2) will also qualify for the 60-day automatic approval so long as the exemption period does not exceed 24 months. Rider exemptions for periods of more than 24 months will be reviewed by the Commission Staff and are only approved up the issuance of a Commission order.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible. Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at <u>ee-pdr@puc.state.oh.us</u>.

# **Section 1: Mercantile Customer Information**

Name: Cincinnati VAMC

Principal address: 3200 Wine St. Mail Stop 138

Cincinnati, OH 45220

Address of facility for which this energy efficiency program applies:

3200 Wine St. Mail Stop 138 Cincinnati, OH 45220

Name and telephone number for responses to questions:

Megan Fox, (980)373-1198

Electricity use by the customer (check the box(es) that apply):

- The customer uses more than seven hundred thousand kilowatt hours per year at the above facility. (Please attach documentation.)
- ☐ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.)

# **Section 2: Application Information**

- A) The customer is filing this application (choose which applies):
  - ☐ Individually, without electric utility participation.
  - ✓ Jointly with the electric utility.
- B) The electric utility is: **Duke Energy**
- C) The customer is offering to commit (check any that apply):
  - □ Energy savings from the customer's energy efficiency program. (Complete Sections 3, 5, 6, and 7.)
  - □ Capacity savings from the customer's demand response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)
  - ✓ Both the energy savings and the capacity savings from the customer's energy efficiency program. (Complete all sections of the Application.)

# **Section 3: Energy Efficiency Programs**

- A) The customer's energy efficiency program involves (check those that apply):
  - Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)).

September 2013 & November 2013

- ☐ Installation of new equipment to replace equipment that needed to be replaced The customer installed new equipment on the following date(s):
- ☐ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s):
- □ Behavioral or operational improvement.
- B) Energy savings achieved/to be achieved by the energy efficiency program:
  - 1) If you checked the box indicating that the project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: <u>114,107</u>\_kWh

2) If you checked the box indicating that the customer installed new equipment to replace equipment that needed to be replaced, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by the higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: \_\_\_\_kWh

Please describe any less efficient new equipment that was rejected in favor of the more efficient new equipment.

3) If you checked the box indicating that the project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: XXXXX kWh (See Attachment 1 - Appendix 2)

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment.

4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined.

\_\_\_\_\_

Annual savings: XXXXX kWh (See Attachment 1 - Appendix 2)

# **Section 4: Demand Reduction/Demand Response Programs**

- A) The customer's program involves (check the one that applies):
  - ✓ Coincident peak-demand savings from the customer's energy efficiency program.
  - Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)
  - □ Potential peak-demand reduction (check the one that applies):
    - □ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.
    - ☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.
- B) On what date did the customer initiate its demand reduction program?

Month(s) and Year(s)

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

62 KW (See Attachment 1 - Appendix 2)

# Section 5: Request for Cash Rebate Reasonable **Arrangement (Option 1) or Exemption from Rider (Option 2)**

Under this section, check the box that applies and fill in all blanks relating to that choice.

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app		. All	2 is selected, the application will not qualify for the 60-day applications, however, will be considered on a timely base				
A)	The	custon	ner is applying for:				
	✓ Option 1: A cash rebate reasonable arrangement.						
	OR						
		Option 2: An exemption from the energy efficiency comechanism implemented by the electric utility.					
	OR						
		Comr	nitment payment				
B)	The	The value of the option that the customer is seeking is:					
	Option 1:		A cash rebate reasonable arrangement, which is the lesser of (show both amounts):				
			✓ A cash rebate of \$5090.00 (See Attachment 1 - Appendix 3).				
	Option 2:		An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.				
			<ul> <li>An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)</li> </ul>				
			OR				
			A commitment payment valued at no more than \$ (Attach documentation and				
			calculations showing how this payment amount was				

determined.)

recovery

OR

Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of the customer's ongoing efficiency program. (Attach documentation that establishes the ongoing nature of the program.) In order to continue the exemption beyond the initial 24 month period, the customer will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

# **Section 6: Cost Effectiveness**

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

Total Resource Cost (TRC) Test.	The calculated TRC value is:	
(Continue to Subsection 1, then ski	p Subsection 2)	

<b>√</b>	Utility Cost Test (UCT). The calculated UCT value is 2.62(See Attachment 1
	- Appendix 4)

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _	
Our program costs were	
The incremental measure costs were .	

# Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were \$8,581 (See Attachment 1 - Appendix 5).

The utility's program costs were \$3,827(See Attachment 1 - Appendix 6).

The utility's incentive costs/rebate costs were \$5090 (See Attachment 1 - Appendix 3).

# **Section 7: Additional Information**

Please attach the following supporting documentation to this application:

Narrative description of the program including, but not limited to, make, model, and year of any installed and replaced equipment.

A copy of the formal declaration or agreement that commits the program or measure to the electric utility, including:

- 1) any confidentiality requirements associated with the agreement;
- 2) a description of any consequences of noncompliance with the terms of the commitment;
- 3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;
- 4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,
- 5) a commitment by the customer to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.

# Refer to Offer Letter following this application

A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.

# Attachment 1 – Veterans Admin Hospital

# Appendix 1 – Electric History

VETERANS ADMIN HOSP 539				
3200 VINE				
CINCINNATI, OH 45220				
Date	Days	Read	Actual KWH	Bill KWH
9/30/2014	32	0	1,858,106	1,830,234
8/29/2014	29	0	1,898,347	1,869,872
7/31/2014	30	0	1,947,410	1,918,199
7/1/2014	29	0	1,949,834	1,920,586
6/2/2014	32	0	1,875,778	1,847,641
5/1/2014	30	0	1,599,288	1,575,299
4/1/2014	29	0	1,461,403	1,439,482
3/3/2014	31	0	1,486,519	1,464,221
1/31/2014	29	0	1,344,374	1,324,208
1/2/2014	31	0	1,462,788	1,440,846
12/2/2013	34	0	1,650,454	1,625,697
10/29/2013	29	0	1,572,998	1,549,403
9/30/2013	32	0	2,005,721	1,975,635
8/29/2013	29	0	1,923,900	1,895,041
7/31/2013	30	0	2,076,806	2,045,654

7/31/2013	30	0	2,076,806	2,045,654
7/1/2013	31	0	1,984,270	1,954,506
5/31/2013	30	0	1,664,933	1,639,959
5/1/2013	29	0	1,443,852	1,422,194
4/2/2013	32	0	1,387,162	1,366,355
3/1/2013	29	0	1,279,428	1,260,237
1/31/2013	29	0	1,247,306	1,228,596
1/2/2013	34	0	1,452,638	1,430,848
11/29/2012	31	0	1,376,340	1,355,695
10/29/2012	31	0	1,624,889	1,600,516
9/28/2012	30	0	1,855,042	1,827,216

# Appendix 2 – Annual kWh and kW savings

Measure	Measure Amount	Unit of	Annual kWh Gross with losses (per unit)	TOTAL Annual kWh Gross with losses	Saved Summer coincident kW with losses Per Unit	Total KW Gross with losses
SelfDirect Water Cooled Chiller Tune Up per ton	2670	per ton	43	114,107	0.02	62.40

Appendix 3 – Cash Rebate

Measure	Amount
SelfDirect Water Cooled Chiller Tune Up per ton	\$5,090.00

Appendix 4 – Utility Cost Test

Measure	UCT
SelfDirect Water Cooled Chiller Tune Up per ton	2.62

Appendix 5 – Avoided Supply Costs

					Total
					Avoided
Measure	T&D	Production	Capacity	Quantity	Costs
SelfDirect Water Cooled Chiller Tune Up per ton	\$0.00	\$3.21	\$0.00	2670	\$8,581

# Appendix 6 – Utility Program Costs

Measure	Qty	Admin Costs	Total Costs
SelfDirect Water Cooled Chiller Tune Up per ton	2670	\$1.43	\$3,827



# **Ohio Mercantile Self Direct Program**

Application Guide & Cover Sheet

conservation measure.

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

Email this form along with <u>completed Mercantile Self Direct Prescriptive or Custom applications</u>, proof of payment, energy savings calculations and spec sheets to <u>SelfDirect@Duke-Energy.com</u>. You may also fax to 1-513-629-5572.

locations are eligible for th	ined as using at least 700,00 e Mercantile Self Direct pro Energy Ohio account with 70 n multiple locations	gram. Indicate which applie	an account in multiple es:
Please list Duke Energy acother utilities as required):	ccount numbers below (atta	ch listing of multiple accou	nts and/or billing history for
Account Number	Annual Usage	Account Number	Annual Usage
91800750	20,000,000 k wh		
Energy Smart \$aver® Cus	s prior to submission to Dul	bates are applicable to Pre	escriptive measures that were
the Smart \$aver program to page two as a guide to det	allow for, though do not requ to be evaluated using the Cu termine which Self Direct pro late application forms in cor	ustom process in the Self Dogram best fits your project	re Prescriptive in nature under Direct program. Use the list on t(s). Apply for Self Direct set.
Self Direct Program rules a rebates.	also allow for behaviorally b	ased and/or no cost and lo	w cost projects to receive
Please check each box to	indicate completion/inclusio	n of the following program	requirements:
All sections of appropriate application(s) are completed	Proof of payment.*	Manufacturer's Spec sheets	☐ Energy model/calculations and detailed inputs for Custom applications
*If a single payment record	d is intended to demonstrate	the costs of both Prescrip	tive & Custom projects, please

include an additional document with an estimated breakout of costs for each Prescriptive and Custom energy

<sup>\*\*</sup>Behavioral energy efficiency and demand reduction projects must be both measurable and verifiable. Provide justification with your application. Rebates for such projects may be small in magnitude.



Application Type	Prescriptive Measures with Optiona	al Custom Processing
Heating & Cooling and Window Films, Programmable Thermostats, &	☐ Energy Star Window/Sleeve/Room AC ☐ Central Air Unit	☐ Air Source Heat Pump Water Heater
Guest Room Energy Management Systems	☐ Setback/Programmable Thermostat ☐ Guestroom Energy Management Control	☐ Window Film
Chillers & Thermal Storage	☐ Air Cooled Chiller	☐ Water Cooled Chiller
Motors, Pumps and Variable Frequency Drives (VFDs)	☐ VFD – Applied to Process Pump ☐ VFD – Applied to HVAC Pump	☐ VFD – applied to HVAC Fan
Food Service	☐ ENERGY STAR Hot Food Holding Cabinet ☐ Night Covers for Display ☐ ECM Cooler, Freezer, and Display Case Motors ☐ ENERGY STAR Solid or Glass Door Reach-in Freezer	☐ Anti-Sweat Heater Control ☐ Cooking Equipment ☐ ENERGY STAR ICE MACHINE or Refrigerator
Process Equipment	☐ Engineered Nozzle – COMPRESSED AIR ☐ Air compressor equipped with VFD	Pellet Dryer Duct Insulation
Chiller Tune-ups	☑ Air cooled chiller tune-up	☑ Water cooled chiller tune-up

Please indicate above any Prescriptive energy conservation measures to be evaluated through the Custom process. Only Prescriptive measures listed above are eligible for this option. To receive a Self Direct Custom rebate, a detailed analysis of pre-project and post-project energy usage and project costs must be included in the application.

Although some Self Direct Prescriptive measures are eligible for evaluation through Custom processes, such an approach may not be most effective for certain measures.



# MERCANTILE SELF DIRECT Ohio Chiller Tune-up Service Application

Questions? Call 1-866-380-9580 or visit www.duke-energy.com. Email the complete, signed application with all required documents to SelfDirect@duke-energy.com or fax to 513-629-5572. Is this application: NEW (original) or REVISED (changes made to original application) Building Type - Required (check one) ☐ Data Centers ☐ Full Service Restaurant Office ☐ Education/K-12 M Healthcare Public Assembly ☐ Education Other ☐ Industrial ☐ Public Order/Safety ☐ Elder Care/Nursing Home Lodging ☐ Religious Worship/Church ☐ Food Sales/Grocery Retail (Small Box) ☐ Service ☐ Fast Food Restaurant Retail (Big Box) ☐ Warehouse Other: How did you hear about the program? (check one) □ Duke Energy Representative ☐ Web Site Radio ☐ Contractor / Vendor ∏ Other Please check each box to indicate completion of the following program requirements: All sections of application Invoice with make, model Tax ID number for payee Customer/vendor agree to W-9 for payee number, quantity and Terms and Conditions equipment manufacturer Customer Information Customer/Business Cincinnati VAMC Contact Kevin Henderson Phone 513 487-6698 Account Number 91800750 Street Address (Where rebate should be mailed) 3200 Vine St., Mail Stop 138 Cincinnati OH Zip Code 45220 Installation Street Address same City State Zip Code E-mail Address \*Failure to provide the account number associated with the location where the installation took place will result in rejection of the application. Vendor Information Vendor Daikin/McQuay Contact Gary Hardoerfer Phone 513 609-1481 Fax Street Address 13600 Industrial Park Blvd City Minneapolis State MN Zip Code 55441 E-mail Address Gary.Hardoerfer.daikinapplied.com If Duke Energy has questions about this application, who should we contact? □ Customer ☐ Vendor Payment Information Who should receive rebate payment? □ Customer Vendor (Customer must sign below) I hereby authorize payment of rebate Customer Signature (written signature) directly to the vendor: 1946 Customer Tax ID # Provide Tax ID Number for Payee 31-0542398 Vendor Tax ID # Terms and Conditions I have read and hereby agree to the Terms & Conditions and Program Requirements. Customer Signature Vendor Signature (written signature) (written signature)

Date

Title

Date

Title



Rebates are subject to change and may be discontinued at the sole discretion of Duke Energy. Equipment must be installed and operable to be eligible for rebates. As Federal Energy Policy Law changes, equipment efficiency requirements are subject to change.

Manufacturer and Model #	# of Units	Tons Per unit*	Total Project Cost	Current Service Date	Previous Service Date	Total Rebate
Carrier 19XRV 6566465LE64	3	750	\$8,398.00	9/17/13	**************************************	
Carrier 30GTN210E6200A	2	210	\$1,882.00	11/14/13		

A. Add up equipment capacity of all units serviced (in tons) and multiply by \$2/ton =	\$5,340.00
B. Cost of service = \$10,180.00 x 50% of total service cost =	\$5,090.00
Total Rebate (lesser amount of row A or row B)=	\$5,090.00

### Service Requirements:

- 1. This rebate is available only once per unit in a 12 month period.
- 2. An individual chiller is considered one unit.
- 3. Copy of paid invoice must be included with this application
- 4. Self serviced (internal) labor should not be included as part of the total service cost. Only external labor will be considered as part of the total service invoice.
- 5. Cooling service must include the following normal maintenance items (please check if completed):

Air cooled condenser coil cleaning	Compressor amp draw	□ Low Pressure controls
System Pressure check and adjust	Supply motor amp draw	☐ High Pressure controls
	☐ Condenser fan(s) amp draw	☐ Crankcase heater operation
⊠ Belt inspect or replace	∠ Liquid line temperature	☐ Water cooled chiller condenser tube cleaning
□ Contactors condition		Water cooled chiller evaporator tube cleaning
	☐ Oil level & pressure	

# Rebate Eligibility

- Rebates are only available to customers on Duke Energy Ohio non-residential rate.
- · Duke Energy Customers who purchase electric generation from an alternative supplier are eligible to participate.
- Rebate will not be paid until eligible equipment has been installed, is available to operate, and verification has been completed by Duke Energy staff as noted in the Term & Conditions stated below.
- Duke Energy reserves the right to revise rebate levels and/or qualifying efficiency levels at anytime.
- Customer may assign the rebate to the vendor who installed/supplied the equipment. The customer's signature is required in the
  appropriate places on this form to assign the rebate to the vendor. Customer agrees that such an action constitutes an irrevocable
  assignment of the rebate. This assigned rebate must reduce the purchase price paid for the equipment by an equivalent amount.
- Any equipment which, either separately or as part of a project, has or will receive a rebate from any other Duke Energy program
- In no case will Duke Energy pay a rebate above the actual cost of the service.
- · Rebate recipient assumes all responsibilities for any tax consequences resulting from Duke Energy rebate payment.
- To qualify for Duke Energy rebates, applicants who provide their social security number as their federal tax identification number for tax purposes must sign and return the "Customer consent to release personal information" form ("Consent Form") along with the application. Rebate applications are processed by a 3<sup>rd</sup> party vendor. The 3<sup>rd</sup> party vendor is responsible for mailing the 1099 form at the end of the calendar year for tax filing. Duke Energy and the 3<sup>rd</sup> party vendor have signed a confidentiality agreement to protect your personal information. If your social security number is your federal tax ID number and you elect not to sign the Consent Form, please do not send Duke Energy the application, as you will not be qualified to participate in the rebate program.



November 13th, 2014

DUKE ENERGY
Mercantile Self Direct Program
139 East Fourth Street
Cincinnati, OH 45202
513 629 5572 fax

Mr. Henderson Cincinnati VAMC 3200 Vine St Cincinnati, OH 45220

Subject: Your Application for a Duke Energy Mercantile Self-Direct Rebate

Dear Mr. Henderson:

Thank you for your Duke Energy Mercantile Self Direct rebate application. As noted in the Energy Conservation Measure (ECM) chart on page two, a total rebate of \$5090 has been proposed for your Water Cooled Chiller Tune Up project completed in the 2013 calendar years. All Self Direct Rebates are contingent upon approval by the Public Utilities Commission of Ohio (PUCO).

At your earliest convenience, please indicate if you accept this rebate by

- providing your signature on page two
- completing the PUCO-required affidavit on page three.

Please return the documents to my attention via fax at 513-629-5572 or e-mail to SelfDirect@Duke-Energy.com. Upon receipt, Duke Energy will submit the necessary documentation to PUCO. Following PUCO's approval, Duke Energy will remit payment.

At Duke Energy, we value your business and look forward to working with you on this and future energy efficiency projects. We hope you will consider our Smart \$aver® incentives, when applicable. Please contact me if you have any questions.

Sincerely,

Megan Fox

CC:

**Product Manager** 

Mercantile Self Direct Rebates

Megan Fox

Mike Heath, Account Executive

Please indicate your response to this re	bate offer within 30 days o	of receipt.
Rebate is accepted.	Rebate is declined.	
By accepting this rebate, Cincinnati VAN efficiency projects listed on the following demand response and/or energy efficient	pages into Duke Energy'	
Additionally, Cincinnati VAMC also agre to secure approval of this arrangement and reporting requirements imposed by	as required by PUCO and	to comply with any information
Finally, Cincinnati VAMC affirms that all to this rebate offer is true and accurate to, project scope, equipment specification completion dates, and the quantity of er	Information in question wons, equipment operational	vould include, but not be limited al details, project costs, project
If rebate is accepted, will you use the m reduction projects?	onies to fund future energ	y efficiency and/or demand
YES NO		
If rebate is declined, please indicate rea	ason (optional):	
Kun Hindisson Ke	evin Henderson	<u>11/</u> 14/14
Customer Signature Printed	Name	Date

# **Proposed Rebate Amounts**

Measure ID	Energy Conservation Measure (ECM)	Proposed Rebate Amount
ECM-1	Water Cooled Chiller Tune Up (Qty: 2670 tons)	\$5090.00
Total		\$5090.00

# Ohio Public Utilities Commission

15-0006 -EL-EEC

**Application to Commit Energy Efficiency/Peak Demand Reduction Programs** (Mercantile Customers Only)

> Karen S. Winstead Notary Public, State of Ohio My Commission Expires 1-19-2019

Case No.:LL-LEC
State of <u>OHIU</u> :
Kevin Henderson, Affiant, being duly sworn according to law, deposes and says that:
1. I am the duly authorized representative of:
Cincinneti VAMC [insert customer or EDU company name and any applicable name(s) doing business as]
I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.
3. I am aware of fines and penalties which may be imposed under Ohio Revised Code Sections 2921.11, 2921.31, 4903.02, 4903.03, and 4903.99 for submitting false information.
Kun Henderson, Energy Manager Signature of Affiant & Title
Sworn and subscribed before me this 3 day of December,  2014 Month/Year
<u>KAREN S. WINSTEAD</u> , Normey Publis Signature of Official administering oath  RAREN S. WINSTEAD, Normey Published  Print Name and Title
My commission expires on Lanuary 19, 2019

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Project Name: KLH - Geiler VA Chillers Sales Office: CAC Distributing

# **Evergreen Chiller Performance Outputs**

SCHRUDDE & ZIMMERNAN, INC.

08/18/2008 04:17 PM

Tag Name: CH-1

 Chiller
 19XRV6566465LEH64

 Chiller Model
 VFD - Unit Mounted

 Starter / VFD
 R-134a

 Cooler
 R-134a

 Size
 65

 Waterbox Type
 Nozzle-in-Head, 150 psi

 Passes
 2

 Tubing
 Super E2 (SUPE2), .025 in, Copper Fouling Factor (hr-sqft-F)/BTU

 Compressor
 5ize

 Size
 465

 Flow Controls
 8

 Float Valve Size
 8

 Flasc Orifice
 30

60	Line Voltage/Hertz
	Size
	Motor
0.00025	Fouling Factor ("x-sqft-F)/BTU
Fluid Type Fresh Water	Fluid Type
Spike Fin III (SPK3),	Tubing
7	Passes
Nozzle-in-Head, 150 psi	Waterbox Type
66	Size
	Condenser
Refrigerant Weight1530	Refrigerant Weight
27415	Total Operating Weight
Total Rigging Weight 24132	Total Rigging Weight

	**************************************	***************************************								
Output Type	Full Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load	Part Load
Percent Load	100.00	90.00	80.00	70.00	60.00	50.00	40.00	30.00	20.00	10,00
Chiller Capacity	750 Tons	675 Tons	600 Tons	525 Tons	450 Tons	375 Tons	300 Tons	225 Tons	150 Tons	75 Tons
Chiller Input kW	422 kW	333 kW	263 kW	208 kW	155 kW	113 kW	96 kW	83 kW	70 kW	60 kW
Chiller Input Power	0.562 kW/Ton	0.493 kW/Ton	0,438 kW/Ton	0.396 kW/Ton	0.345 kW/Ton	0.301 kW/Ton	0.322 kW/Ton	0.367 kW/Ton	0.467 kW/Ton	0.800 kW/Ton
Cooler										
Entering Temp.	53.97 F	52.97 F	51.98 F	50.98 F	49.98 F	48.99 F	47.99 F	46.99 F	45.99 F	45.00 F
Leaving Temp.	44.00 F	44.00 F	44.00 F	44.00 F	44.00 F	44.00 F	44.00 F	44.00 F	44.00 F	44.00 F
Flow Rate	1800.0 gpm	1800.0 gpm	1800.0 gpm	1800.0 gpm	1800.0 gpm	1800.0 gpm	1800.0 gpm	1800.0 gpm	1800.0 gpm	1800.0 gpm
Pressure Drop	23.2 ft wg	23.3 ft wg	23.3 ft wg	23.3 ft wg	23.4 ft wg	23.4 ft wg	23.5 ft wg			23.6 ft wg
Condenser										and the state of t
Leaving Temp.	94.27 F	89.20 F	84.19 F	79.22 F	74.24 F	69.32 F	68.47 F	67.64 F	66.80 F	65.97 F
Entering Temp.	85.00 F	81.00 F	77.00 F	73.00 F	69.00 F	65.00 F				
Flow Rate	2250.0 gpm	2250.0 gpm	2250.0 gpm	2250.0 gpm	2250.0 gpm	2250.0 gpm	2250.0 gpm	2250.0 gpm	2250.0 gpm	2250.0 gpm
Pressure Drop	21.9 ft wg	22.1 ft wg	22.4 ft wg	22.6 ft wg	22.8 ft wg	23.1 ft wg				23.2 ft wg
Motor										
Motor Rated Load Amps	642	546	462	395	330	276	250	227	206	191
Chiller Rated Line Amps	584	468	378	311	245	188	167	148	131	121



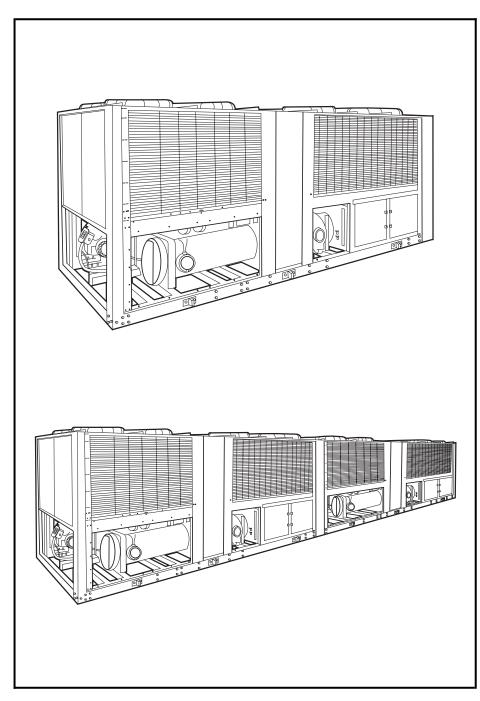
# Product Data

# 30GTN,GTR Air-Cooled Reciprocating Liquid Chillers with ComfortLink™ controls 50/60 Hz

Nominal Capacities: 36 to 410 Tons

127 to 1445 kW

# ComfortLink



# Features/Benefits

# ComfortLink™ control

Your link to a world of simple and easy to use air-cooled chillers that offer outstanding performance and value. The 30GTN,GTR liquid chillers employ more than the latest advanced microprocessor controls, they utilize an expandable platform that grows as your needs change. From stand-alone operation to remotely monitored and operated multi-chiller plants, *ComfortLink* controls can keep you plugged in.

ComfortLink controls are fully communicating, and are cable ready for connection to a Carrier Comfort Network (CCN). Occupancy scheduling, temperature and pressure read-outs, and the ComfortLink scrolling marquee clear language display compliment the standard features, linking you to a world of carefree comfort. The 30GTN,GTR chillers are built on the legendary performance of the Carrier model 30G Flotronic™ chiller and share many of the same time-proven features and technologies providing easy operation, quick installation and start-ups that save you money!

# Superior temperature control equals potential for greater productivity

Whether in the classroom, on the production floor, or in the office, *ComfortLink* controls can help you to adapt to changing weather and business conditions. Accurate temperature control provided by the Carrier *ComfortLink* system helps to maintain higher levels of indoor air quality, thermal comfort, and productivity space.

While many air-cooled chillers use only leaving fluid temperature control, the 30GTN,GTR chillers utilize



leaving fluid temperature control with a standard entering fluid temperature compensation. This Carrier exclusive provides smart control and intelligent machine capacity staging. Unlike many chillers, Carrier model 30GTN,GTR chillers do not require constant fluid flow. The ability to operate with variable flow also allows building owners to realize even greater overall system energy savings in the chilled water pumping system of up to 85%, and not just at the chiller.

# **Energy management made easy**

While 30GTN,GTR chillers have many standard features such as network communications capability and temperature reset based on return fluid temperature, they can also expand as needs change. Supply temperature reset based on outside air or space temperature is as easy as adding a thermistor. The Energy Management option can allow you to take advantage of changing utility rate structures with easy to use load shedding, demand limiting and temperature reset capabilities. Reset triggered via 4 to 20 mA signal makes integrating from an existing building management system simple.

The *ComfortLink*™ platform can be expanded further with the Service Option which has all of the features of the Energy Management option, along with an additional hand-held ComfortLink Navigator display, remote service connection port, and GFCI convenience outlet (60 Hz only). While providing additional information in a clear language format, the Navigator display can be plugged into the unit at either the control panel or at the remote service port, allowing the service technician to operate the unit from where the maintenance or service work is being performed, thereby minimizing downtime to ensure the system is ready for operation in the shortest amount of time. Both the Energy Management and Service Options can be factorysupplied or can be added in the field at a later date as needs change.

# Full and part load efficiency advantage

The 30GTN,GTR chillers with *ComfortLink* control offer outstanding efficiencies (EER [Energy Efficiency Ratio], COP [coefficient of performance], and IPLV [integrated part load value]) in both full (up to 10.0 EER) and part load operation (IPLVs up to 14.7). Increased part load efficiency is provided by dual independent refrigeration circuits,

suction cut-off unloading, and return fluid temperature compensation.

The fully integrated ComfortLink control system maintains efficient control over the compressors, unloaders, expansion valves, and condenser fans to optimize performance as conditions change. The Carrier exclusive long-stroke electronic expansion valve (EXV) operates at reduced condensing pressures, thereby allowing the control to operate the fans down to lower outdoor temperatures. By utilizing valve position information, the control maintains the highest possible evaporator pressure and minimizes the excessive superheat that conventional thermal expansion valve (TXV) systems require. Wider operating ranges equal increased efficiencies and lower installed costs.

# **Building design flexibility**

Design and consulting engineers will appreciate the broad selection of sizes and wide operating range offered by the 30GTN,GTR chillers. With built-in dual chiller control, imaginative large tonnage systems can be easily engineered and controlled with smaller, easier to handle modules. Modular design allows engineers to consider side by side, offset, or angled placement to fit the awkward spaces that the architect sometimes leave for mechanical systems. Or, in the case of planned expansion, additional cooling can be brought on-line and controlled from the same system.

In some places facility managers may find that the cash flow provided by building up large air cooled multi-chiller plants can easily off-set any efficiency losses when compared to large water cooled centrifugal type chilled water plants.

# Quality and reliability

To assure long life and quality performance, every chiller (both 50 and 60 Hz) is factory run tested at full load. Individual components are also tested at many levels to assure that

only the best parts make it into 30GTN,GTR chillers. Long life and reliability are also a function of design. While some manufacturers like to talk about moving parts, Carrier's engineers recognized the potential dangers to chiller systems caused by problems in the power distribution system. Low voltage and phase imbalances are but a few of the conditions that can hurt the compressor's motor. Model 30G chillers were one of the first to offer ground current sensing to prevent compressor motor burn-out that would contaminate the system and potentially threaten the life of future replacement compressors. The 06E semi-hermetic compressors are built for performance and have proven themselves in commercial refrigeration equipment worldwide.

With tens of thousands of chillers operating in all corners of the world, end-users count on the reliability of Carrier 30G chillers. The Carrier McMinnville, Tennessee (U.S.A.) plant is an ISO 9002/BS 5750 part II registered facility as are many of Carrier's other component and assembly plants throughout the world.

### **Features**

- Simple and easy to use ComfortLink communicating controls.
- Wide operating envelope from -28 to 52 C (-20 to 125 F).
- Accurate temperature control with return fluid compensation.
- Value added features built-in; dual chiller control, reset from return.
- Superior full and part-load efficiency.
- Precise multiple-step capacity.
- Low noise operation (quieter than many screw chillers).
- Dual independent refrigerant circuits.
- Full load factory run tested.
- Wide range of sizes available from stock.
- History of proven performance and reliability.

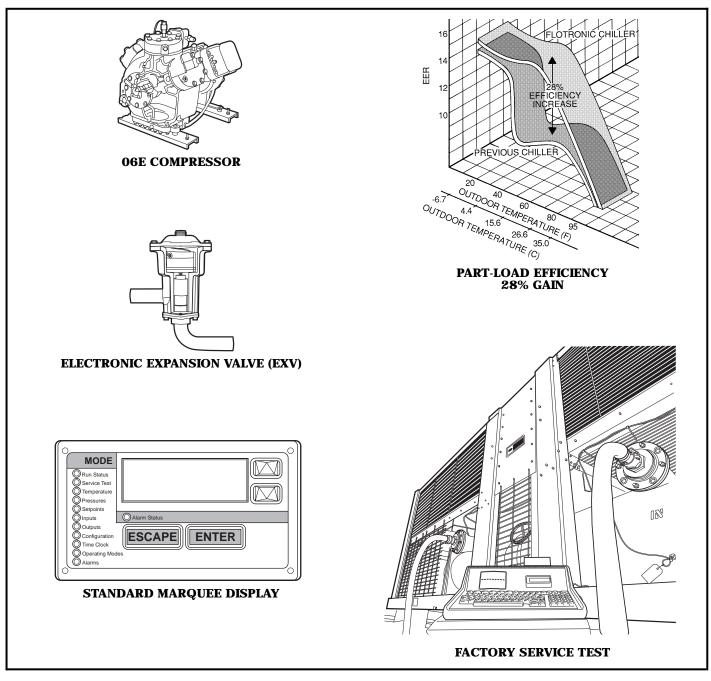
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# Features/Benefits (cont)





# **Quality Assurance**





Certificate No FM 21837

Approvals: ISO 9002 EN 29002 BS5750 PART 2 ANSI/ASQC Q92

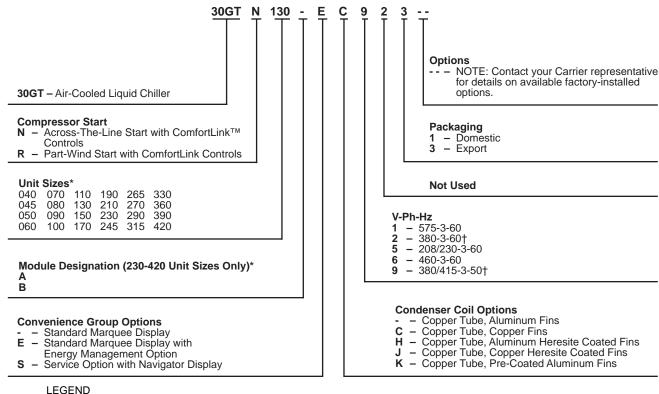
# Performance Assurance



Rated in accordance with ARI Standard 550/590-98 (60 Hz only)

# Model number nomenclature





**EXV** — Electronic Expansion Valve

\*Refer to Unit Sizes and Modular Combinations below. †Export only — not for U.S. domestic sale.

### UNIT SIZES AND MODULAR COMBINATIONS

UNIT MODEL 30GTN,GTR	NOMINAL TONS	SECTION A UNIT 30GTN,GTR	SECTION B UNIT 30GTN,GTR
40	40		_
45	45		_
50	50		_
60	60	1	
70	70		
80	80	1	
90	90		
100	100	1	
110	110		
130	125		_
150	145		
170	160	1	
190	180	_	_
210	200		_
230	220	150	080
245	230	150	090
255	240	150	100
270	260	170	100
290	280	190	110
315	300	210	110
330	325	170	170
360	350	190	190/170*
390	380	210	190
420	410	210	210

<sup>\*60</sup> Hz units/50 Hz units.

# **60 Hz UNITS, ENGLISH**

30GTN,GTR UNIT SIZE	040	045	050	060	070	080	090	100	110
SYSTEM MODULES	_	_	_	_	_	_	_	_	_
APPROX OPERATING WEIGHT (lb) Cu-Al Cu-Cu	3550 3838	3681 3969	3856 4289	4740 5157	5028 5656	6630 7355	7015 7740	8610 9560	8660 9610
REFRIGERANT TYPE						R-22			
Charge, Total/Over Clear Glass (lb) Ckt A Ckt B	39/12 48/12	40/12 46/12	48/12 60/12	52/14 54/14	70/15 69/15	78/15 78/15	78/15 78/15	98/20 105/20	98/20 105/20
COMPRESSORS					Reciprocatin	ng, Semi-Hermetic			
Speed (rpm) 06E* (Qty) Ckt A (Qty) Ckt B Oil Charge (Compressor/pt)	(1) 250 (1) 250	(1) 250 (1) 265	(1) 265 (1) 275	(1) 275 (1) 299	(1) 299 (1) 299 250/14 0, 265/19	1750   (1) 250, (1) 275   (1) 299   0.0, 275/19.0, 299/19.0	(1) 250, (1) 265 (2) 265	(1) 265, (1) 275 (1) 265, (1) 275	(1) 265, (1) 299 (1) 265, (1) 275
No. Capacity Control Steps	4	4	4	4	4	6	8	8	8
Capacity (%) Ckt A Ckt B Minimum Capacity Step (%)	50.0 50.0 25.0	42.4 57.6 21.2	47.6 52.4 31.7	43.3 56.7 28.8	50.0 50.0 33.3	56.0 44.0 22.0	47.0 53.0 18.0	50.0 50.0 15.0	54.0 46.0 14.0
CONDENSER FANS					Propelle	r, Direct Drive			
Standard Fan Speed (rpm) No. BladesDia. (in.)						1140 4 30			
No. FansHp/kW (each) Total Airflow (cfm) High Static	41/0.746 35,000	41/0.746 35,000	41/0.746 34,000	61/0.746 52,000	61/0.746 51,000	61/0.746 57,000	61/0.746 57,000	81/0.746 76,000	81/0.746 76,000
Fan Speed (rpm) No. BladesDia. (in.)					1	1740 2 30			
No. FansHp/kW (each) Total Airflow (cfm)†	45/3.73 40,000	45/3.73 40,000	45/3.73 40,000	65/3.73 60,000	65/3.73 60,000	65/3.73 60,000	65/3.73 60,000	85/3.73 80,000	85/3.73 80,000
CONDENSER COILS						l, Plate Fin, Enhanced			
Fins/in. No. Rows (Ckt A or B) Face Area, Ckt A and B Total (sq ft) Max Working Pressure Refrigerant (psig)	17 2 80.5	17 2 80.5	17 3 80.5	17 2 116.7	17 3 116.7	17 3 128.3 450	17 3 128.3	17 3 168.0	17 3 168.0
COOLER					ne Direct Exp				
Weight (empty, lb) No. Refrigerant Circuits	485	545	545	620	620	745   2	745	860	860
Net Water Volume, includes nozzles (gal.) Max Working Pressure Refrigerant Side (psig) Max Working Pressure Fluid Side (psig)	10.9 278 300	13.5 278 300	13.5 278 300	18.0 278 300	18.0 278 300	24.5 278 300	24.5 278 300	30.3 278 300	30.3 278 300
FLUID CONNECTIONS (in.) Inlet and Outlet Drain (NPT)	3	3	3	4	Victa   4	aulic Type   4	4	5	5

### LEGEND

Cu-Al — Copper Tubing — Aluminum Fins Condenser Coil
 Cu-Cu — Copper Tubing — Copper Fins Condenser Coil
 OD — Outside Diameter

\*06E250 compressors have 4 cylinders; all others have 6.  $\dagger$ Based on rated external static pressure of 0.4 or 1.0 in. wg as appropriate.



30GTN,GTR UNIT SIZE	130	150	170	190	210	230		
SYSTEM MODULES	_	_	_	_	_	Α	В	Total
APPROX OPERATING WEIGHT (Ib) Cu-Al Cu-Cu	10,046 11,318	10,481 11,753	11,293 12,565	12,676 14,195	13,380 14,899	10,481 11,753	6630 7355	17,111 19,108
REFRIGERANT TYPE				R-	·22			
Charge, Total/Over Clear Glass (lb) Ckt A Ckt B	133/28 137/28	143/35 144/35	153/45 162/45	178/30 173/30	190/40 185/40	143/35 144/35	78/15 78/15	_/ <u>_</u> /
COMPRESSORS				Reciprocating,	Semi- Hermetic			
Speed (rpm) 06E* (Qty) Ckt A (Qty) Ckt B Oil Charge (Compressor/pt)	(1) 275, (1) 299 (1) 275, (1) 299	(3) 265 (2) 299	(3) 275 (3) 275	(1) 265, (1) 275, (1) 299 (1) 265, (1) 275, (1) 299	750   (3) 265, (1) 275   (1) 275, (2) 299   275/19.0, 299/19.0	(3) 265 (2) 299	(1) 250, (1) 275 (1) 299	_/ <u>_</u> /_
No. Capacity Control Steps	8	10	12	6	7	10	6	-
Capacity (%) Ckt A Ckt B Minimum Capacity Step (%)	50 50 14	50 50 11	50 50 11	50 50 14	50 50 12	50 50 11	56 44 22	_
CONDENSER FANS					Direct Drive			
Standard Fan Speed (rpm) No. BladesDia. (in.) No. FansHp/kW (each) Total Airflow (cfm) High Static	1140 430 101/0.746 100,000	1140 430 101/0.746 100,000	1140 430 101/0.746 100,000	1140 430 121/0.746 120,000	1140 430 121/0.746 120,000	1140 430 101/0.746 100,000	1140 430 61/0.746 57,000	 161/0.746 157,000
Fan Speed (rpm) No. BladesDia. (in.) No. FansHp/kW (each) Total Airflow (cfm)†	1740 12 30 105/3.73 100,000	1740 12 30 105/3.73 100,000	1740 12 30 105/3.73 100,000	1740 12 30 125/3.73 120,000	1740 12 30 125/3.73 120,000	1740 12 30 105/3.73 100,000	1740 12 30 65/3.73 60,000	 165/3.73 160,000
CONDENSER COILS	47	1 47		OD, Vertical and Horizontal,			1 47	
Fins/in. No. Rows (Ckt A or B) Face Area, Ckt A and B Total (sq ft) Max Working Pressure Refrigerant (psig)	17 3 225.1 450	17 3 225.1 450	17 3 225.1 450	17 3 268.9 450	17 3 268.9 450	17 3 225.1 450	17 3 128.3 450	353.4 —
COOLER				n, Shell and Tube			uleDirect Expansion, S	
Weight (empty, lb) No. Refrigerant Circuits Net Water Volume, includes nozzles (gal.) Max Working Pressure Refrigerant Side (psig) Max Working Pressure Fluid Side (psig)	1320 2 52.0 278 300	1320 2 52.0 278 300	1630 2 61.0 278 300	1630 2 61.0 278 300	1865 2 70.4 278 300	1320 2 52.0 278 300	745 2 24.5 278 300	2065 4 76.5 —
FLUID CONNECTIONS (in.) Inlet and Outlet Drain (NPT)	6	6	6		ic Type	6	4	

### LEGEND

Cu-Al — Copper Tubing — Aluminum Fins Condenser Coil
 Cu-Cu — Copper Tubing — Copper Fins Condenser Coil
 OD — Outside Diameter

\*06E250 compressors have 4 cylinders; all others have 6.  $\dagger$ Based on rated external static pressure of 0.4 or 1.0 in. wg as appropriate.



30GTN,GTR UNIT SIZE		245			255		270			
SYSTEM MODULES	Α	В	Total	Α	В	Total	Α	В	Total	
APPROX OPERATING WEIGHT (Ib) Cu-Al Cu-Cu	10,481 11,753	7015 7740	17,496 19,493	10,481 11,753	8610 9560	19,091 21,313	11,293 12,565	8610 9560	19,903 22,125	
REFRIGERANT TYPE					R-22			•		
Charge, Total/Over Clear Glass (lb) Ckt A Ckt B	143/35 144/35	78/15 78/15	_/ <u>_</u>	143/35 144/35	98/20 105/20	_/ <u>_</u>	153/45 162/45	98/20 105/20	_/ <u>_</u>	
COMPRESSORS				Rec	iprocating, Semi-Herr	metic				
Speed (rpm) 06E* (Qty) Ckt A (Qty) Ckt B Oil Charge (Compressor/pt)	(3) 265 (2) 299	(1) 265, (1) 250 (2) 265		(3) 265 (2) 299 250/14.0	1750   (1) 265, (1) 275   (1) 265, (1) 275   265/19.0, 275/19.0,		(3) 275 (3) 275	(1) 265, (1) 275 (1) 265, (1) 275	=	
No. Capacity Control Steps	10	8	_	10	8		12	8	-	
Capacity (%) Ckt A Ckt B	50 50 11	47 53 18	=	50 50 11	50 50 15	=	50 50 11	50 50 15	_	
Minimum Capacity Step (%) CONDENSER FANS	11	10	_		Propeller, Direct Drive		11	15	_	
Standard					1 /					
Fan Speed (rpm) No. BladesDia. (in.) No. FansHp/kW (each) Total Airflow (cfm)	1140 430 101/0.746 100,000	1140 430 61/0.746 57,000	— — 161/0.746 157,000	1140 430 101/0.746 100,000	1140 430 81/0.746 76,000	  181/0.746 176,000	1140 430 101/0.746 100.000	1140 430 81/0.746 76,000	 181/0.746 176,000	
High Static Fan Speed (rpm) No. BladesDia. (in.)	1740 1230	1740 1230	— —	1740 1230	1740 1230	— —	1740 1230	1740 1230	— —	
No. FansHp/kW (eách) Total Airflow (cfm)†	105/3.73 100,000	65/3.73 60,000	165/3.73 160,000	105/3.73 100,000	85/3.73 80,000	185/3.73 180,000	105/3.73 100,000	8 5/3.73 80,000	185/3.73 180,000	
CONDENSER COILS Fins/in.	17	l 17		D, Vertical and H	lorizontal, Plate Fin, I I 17	Enhanced Copper	Tubing I 17	l 17	ı	
No. Rows (Ckt A or B) Face Area, Ckt A and B Total (sq ft) Max Working Pressure Refrigerant (psig)	3 225.1 450	3 128.3 450	353.4 —	3 225.1 450	3 168.0 450	393.1 —	3 225.1 450	3 168.0 450	393.1 —	
COOLER					e Direct Expansion					
Weight (empty, lb) No. Refrigerant Circuits	1320 2	745 2	2065 4	1320 2	860	2180 4	1630 2	860 2	2490 4	
Net Water Volume, includes nozzles (gal.) Max Working Pressure Refrigerant Side (psig) Max Working Pressure Fluid Side (psig)	52.0 278 300	24.5 278 300	76.5 — —	52.0 278 300	30.3 278 300	82.3 — —	61.0 278 300	30.3 278 300	91.3 — —	
FLUID CONNECTIONS (in.)					Victaulic Type					
Inlet and Outlet Drain (NPT)	6 ¾	4 <sup>3</sup> / <sub>4</sub>	_	6 <sup>3</sup> ⁄ <sub>4</sub>	5 3⁄ <sub>4</sub>	_	6 ¾	5 ¾		

### LEGEND

Cu-Al — Copper Tubing — Aluminum Fins Condenser Coil
 Cu-Cu — Copper Tubing — Copper Fins Condenser Coil
 OD — Outside Diameter

\*06E250 compressors have 4 cylinders; all others have 6. †Based on rated external static pressure of 0.4 or 1.0 in. wg as appropriate.



30GTN,GTR UNIT SIZE		290			315			330	
SYSTEM MODULES	Α	В	Total	Α	В	Total	Α	В	Total
APPROX OPERATING WEIGHT (Ib) Cu-Al Cu-Cu	12,676 14,195	8660 9610	21,336 23,805	13,380 14,899	8660 9610	22,040 24,509	11,293 12,565	11,293 12,565	22,586 25,130
REFRIGERANT TYPE Charge, Total/Over Clear Glass (lb)				R-2	22				
Ckt A Ckt B	178/30 173/30	98/20 105/20	_/ <u>_</u>	190/40 185/40	98/20 105/20	_/ <u>_</u>	153/45 162/45	153/45 162/45	—/— —/—
COMPRESSORS				Reciprocating,	Semi-Hermetic				
Speed (rpm) 06E* (Ctty) Ckt A (Qty) Ckt B Oil Charge (Compressor/pt)	(1) 265, (1) 275, (1) 299 (1) 265, (1) 275, (1) 299	(1) 265, (1) 299 (1) 265, (1) 275	_	17: (3) 265, (1) 275 (1) 275, (2) 299 265/19.0, 275/	(1) 265, (1) 299 (1) 265, (1) 275	=	(3) 275 (3) 275	(3) 275 (3) 275	=
On Charge (Compressor/pt) No. Capacity Control Steps Capacity (%)	6	8	-	7	19.0, 299/19.0	-	12	12	_
Ckt A Ckt B Minimum Capacity Step (%)	50 50 14	54 46 14	_ _ _	50 50 12	54 46 14	_ _ _	50 50 11	50 50 11	=
CONDENSER FANS				Propeller, D	Direct Drive				
Standard Fan Speed (rpm) No. BladesDia. (in.) No. FansHp/kW (each) Total Airflow (cfm)	1140 430 121/0.746 120,000	1140 430 81/0.746 76,000	201/0.746 196,000	1140 430 121/0.746 120,000	1140 430 81/0.746 76,000	— 201/0.746 196,000	1140 430 101/0.746 100,000	1140 430 101/0.746 100,000	 
High Static Fan Speed (rpm) No. BladesDia. (in.) No. FansHp/kW (each) Total Airflow (cfm)†	1740 1230 125/3.73 120,000	1740 1230 85/3.73 80,000	 205/3.73 200,000	1740 1230 125/3.73 120,000	1740 1230 85/3.73 80,000	— 205/3.73 200,000	1740 1230 10 5/3.73 100,000	1740 1230 105/3.73 100,000	 205/3.73 200,000
CONDENSER COILS			%-in. OD, Vertion	al and Horizontal, F		Copper Tubing			
Fins/in. No. Rows (Ckt A or B) Face Area, Ckt A and B Total (sq ft) Max Working Pressure Refrigerant (psig)	17 3 268.9 450	17 3 168.0 450	436.9 —	17 3 268.9 450	17 3 168.0 450	436.9 —	17 3 225.1 450	17 3 225.1 450	450.2 —
COOLER				er ModuleDirect E					
Weight (empty, lb) No. Refrigerant Circuits Net Water Volume, includes nozzles (gal.) Max Working Pressure Refrigerant Side (psig) Max Working Pressure Fluid Side (psig)	1630 2 61.0 278 300	860 2 30.3 278 300	2490 4 91.3 — —	1865 2 70.4 278 300	860 2 30.3 278 300	2725 4 100.7 — —	1630 2 61.0 278 300	1630 2 61.0 278 300	3260 4 122.0 —
FLUID CONNECTIONS (in.) Inlet and Outlet Drain (NPT)	6 ¾	5 ¾		Victauli 6 ³⁄₄	c Type 5 3/4		6 ¾	6 ¾	

### LEGEND

Cu-Al — Copper Tubing — Aluminum Fins Condenser Coil
 Cu-Cu — Copper Tubing — Copper Fins Condenser Coil
 OD — Outside Diameter

\*06E250 compressors have 4 cylinders; all others have 6.  $\dagger$ Based on rated external static pressure of 0.4 or 1.0 in. wg as appropriate.



30GTN,GTR UNIT SIZE		360			390			420	
SYSTEM MODULES	Α	В	Total	Α	В	Total	Α	В	Total
APPROX OPERATING WEIGHT (lb) Cu-Al Cu-Cu	12,676 14,195	12,676 14,195	25,352 28,390	13,380 14,899	12,676 14,195	26,056 29,094	13,380 14,899	13,380 14,899	26,760 29,798
REFRIGERANT TYPE					R-22				
Charge, Total/Over Clear Glass (lb) Ckt A Ckt B	178/30 173/30	178/30 173/30	_/ <u>_</u>	190/40 185/40	178/30 173/30	_/ <u>_</u>	190/40 185/40	190/40 185/40	_/_ _/_
COMPRESSORS				Reciprocatin	g, Semi-Hermetic				
Speed (rpm) 06E* (Qty) Ckt A (Qty) Ckt B Oil Charge (Compressor/pt)	(1) 265, (1) 275, (1) 299 (1) 265, (1) 275, (1) 299	(1) 265, (1) 275, (1) 299 (1) 265, (1) 275, (1) 299	=	(3) 265, (1) 275 (1) 275, (2) 299	1750   (1) 265, (1) 275, (1) 299   (1) 265, (1) 275, (1) 299   (5) 19.0, 299/ 19.0	=	(3) 265, (1) 275 (1) 275, (2) 299	(3) 265, (1) 275 (1) 275, (2) 299	=
No. Capacity Control Steps Capacity (%)	6	6	-	7	6	-	7	7	_
Ckt A Ckt B Minimum Capacity Step (%)	50 50 14	50 50 14	_ _	50 50 12	50 50 14	_	50 50 12	50 50 12	_
CONDENSER FANS	17	17		. –	r, Direct Drive		12	12	
Standard Fan Speed (rpm) No. BladesDia. (in.) No. FansHp/kW (each) Total Airflow (cfm) High Static	1140 430 121/0.746 120,000	1140 430 121/0.746 120,000	241/0.746 240,000	1140 430 121/0.746 120,000	1140 430 121/0.746 120,000	241/0.746 240,000	1140 430 121/0.746 120,000	1140 430 121/0.746 120,000	 241/0.746 240,000
Fan Speed (rpm) No. BladesDia. (in.) No. FansHp/kW (each) Total Airflow (cfm)†	1740 1230 125/3.73 120,000	1740 1230 125/3.73 120,000	245/3.73 240,000	1740 1230 125/3.73 120,000	1740 1230 125/3.73 120,000	24 5/3.73 240,000	1740 1230 1244.4 120,000	1740 1230 125/3.73 120,000	 245/3.73 240,000
CONDENSER COILS Fins/in.	17	³⁄ε I 17	-in. OD, Verti	cal and Horizonta I 17	I, Plate Fin, Enhanced Co 17	pper Tubing	l 17	l 17	I
No. Rows (Ckt A or B) Face Area, Ckt A and B Total (sq ft) Max Working Pressure Refrigerant (psig)	3 268.9 450	3 268.9 450	537.8 —	3 268.9 450	3 268.9 450	537.8 —	3 268.9 450	3 268.9 450	537.8 —
COOLER					t Expansion, Shell and Tu				
Weight (empty, lb) No. Refrigerant Circuits Net Water Volume, includes nozzles (gal.) Max Working Pressure Refrigerant Side (psig) Max Working Pressure Fluid Side (psig)	1630 2 61.0 278 300	1630 2 61.0 278 300	3260 4 122 — —	1865 2 70.4 278 300	1630 2 61.0 278 300	3495 4 131.4 —	1865 2 70.4 278 300	1865 2 70.4 278 300	3730 4 140.8 —
FLUID CONNECTIONS (in.) Inlet and Outlet Drain (NPT)	6 3/ <sub>4</sub>	6 <sup>3</sup> / <sub>4</sub>	=	Victa 6 3/4	aulic Type 6 3/4	=	6 3/4	6 ¾	

### LEGEND

Cu-Al — Copper Tubing — Aluminum Fins Condenser Coil
 Cu-Cu — Copper Tubing — Copper Fins Condenser Coil
 OD — Outside Diameter

\*06E250 compressors have 4 cylinders; all others have 6. †Based on rated external static pressure of 0.4 or 1.0 in. wg as appropriate.





<b>K</b> .	
Follow-up Required?	
Follow-up Required?	☑No
Service Sticker Put on Job This Call? ☐ Yes	ĎĬ No

Air Conditioning	Service O		Service Order Date	Completio		go l of l
Factory Service	FS 7907	() § Fs	11/11/13		Complete Par	ge f of f
Customer No Loc. N	lo Address	Customer P.O. No. Credit or Warranty	T & M Parts Prod. U	Init Sales	□ Centril. Warran □ Material Warra □ Field Warranly	nty
		Authorization No. Contract	G ☐ Contrac G ☐ Contrac ☐ Sold S	ct Inspection	☐ Other Warranty ☐ Parts Trans.: T ☐	
	F	Nomber Salesperson Mgr.	<u> </u>	Negotialed?	□ Yes □ No	
	:	Salesperson Mgr. Number Initials	Centrifugal	McQuay Other	and the second second	Tot. Neg. Mat'l
Job Name:		Used From				
VA HOSPITAL		Labor Used From	Neg. Labor	Neg. O	ut. Serv.	Neg. Expenses
3200 VINEST.		Used Fróm Labor Used From Revenue Credit Other				
CINTILOH		Account		d Price (Put Unde		
Seq. Serial Number	Model	Shop Order #	tart-up Operating Date Hours	No. of Starts	Failure Code	Responsibility Code
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grange of Management and Management of Section 2018	o a como esta esta appropriato su transferir de la como esta esta esta esta esta esta esta esta	er and the second second second second	Vehicle Expense:	Miles At	Per Mile=\$	Total
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		ပ် Other Equipment	Days x Cost Pe	si Day		
Customer	Date DUNCAN	Truck Charge				
Service Technician	Date	Hazardous Wasle (C	Cust. Init. if Cust. Retai			
Service Technician  VINNE Bedrum  Employee	1/11/13			Subtotal		
5 VINNICIOEHOM MN Employee		Freight  Exempt / Negotiated	Tay Onotod: TVoo	□No		
Manager	Date	Fr J Crewith Medonated		nd Total		



Follow-up Required? □ Yes Service Sticker Already on Job? □ Yes Service Sticker Put on Job This Call? □ Yes	Ø No
Service Sticker Already on Job? ☐ Yes	(X) No
Service Sticker Put on Job This Call?□ Yes	/XI No

Service Sticker Fut on 30	ID THIS CART	LI les Al 140		
Service Order FS 79071.3	Job Number FS	Service Order Date	Completion Date U2113 Complete (Yes)	Page / of /

Customer No Loc, No						Customer P.O. No.  Credit or Warranty Authorization No.  Contract Number  Customer P.O. No.  Condition Warranty Authorization No.  Contract Number				Init Sales of Repair of Inspection	r ☐ Other Warranty Labor		
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Signatures	VINNIE	BOHR	MANN 1	1/21/13		Freight							
<u>@</u>  -	Manager		Employee No. Date	* F		☐ Exempt	/ Negotiated T	ax Quote	d: □Yes	□No			
									Gra	nd Total			



Follow-up Required?	ИN
Follow-up Required?	D'N
Service Sticker Put on Job This Call? \By	(X)N

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Follow-up Required?	□No
Service Sticker Already on Job? ☐ Yes	<b>X</b> No
Service Sticker Put on Job This Call?□ Yes	X No

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Service Order 789852	Job Number FS	Service C 9/16	713 9	Сртр <b>// (</b> /	pletion Date //3 Complete res	Page	of

Bill To:	Customer No Loc. No  □ New Customer □ Change of Address		38	Customer P.O. No.  Credit or Warranty Authorization No.  Contract Number			Type of Order	Contract Repair			☐ Centrif. Warranty Labor ☐ Material Warranty ☐ Field Warranty ☐ Other Warranty Labor ☐ Parts Trans.: To				
						esperson	Mgr. Initials			Ne	egotiated?	□Yes □	No		
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Form No. 13F-1207 (6/05)



Bill To:

Job Name:

	Follow-up Red Service Slicke Service Slicke	quired? er Already er Put on	on Job? Job This Call?	Yes □ Yes □ Yes		No No No				
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<i>T</i> ) -	Manager		Date	1	_ Exempt	/ Negol	iated Tax C	Quoted: 🗆	Yes	□No		

**Grand Total** 



REMIT TO: DAIKIN APPLIED

24827 NETWORK PLACE

Chicago IL 60673

(ADDRESS NOT FOR OVERNIGHT MAIL)

DAIKIN APPLIED 13600 Industrial Park Blvd. Minneapolis, MN 55441 Phone: (763) 553-5330

FED. ID.: 41-0404230

BILL TO:

Attn: Accounts Payable

**DEPARTMENT OF VETERANS AFFAIRS MEDICAL** 

CENTER

3200 VINE STREET Cincinnati OH 45220 SHIP TO:

DEPARTMENT OF VETERANS

**AFFAIRS MEDICAL** 

CENTER

3200 VINE STREET Cincinnati OH 45220

INVOICE							
Number	2610219						
Invoice Date	05-DEC-13						
Purchase Order	CREDIT CARD						
Service Office	Cincinnati Service						
Service Order	215423						
Customer No.	284928						

1 of 1

Page

Terms	Due Date	Start Date	Complete Date	Ship Date	Ship Via
Net 30 Days	04-JAN-14	11-NOV-13	14-NOV-13		

Item No.	Qty	Model Number / Description	Unit Price	Extended
		As of October 1, 2013 we changed our company name from MCQUAY INTERNATIONAL to DAIKIN APPLIED		
AAA		THANK YOU FOR YOUR BUSINESS. IF YOU HAVE QUESTIONS REGARDING THIS INVOICE PLEASE CONTACT (513-762-9200) S/N: VA CARRIER UNIT ADDL TIME FOR CONDENSER CLEANING.		
1	1	NEGOTIATED: Negotiated;	1,882.00	1,882.00

Subject to Daikin Applied's standard terms and conditions (Form #2F-1216-REV). IF these terms and	SUBTOTAL	TAX	TOTAL
conditions are not on file, contact Dalkin Applied at (763) 553-5330. Past due accounts are subject to interest charges. GSA Registration #GS-07F-0377V	1,882.00	0.00	1,882.00







**Factory Service** 13600 Industrial Park Blvd. Minneapolis, MN 55441 Phone: (763) 553-5330

REMIT TO: MCQUAY INTERNATIONAL

24827 NETWORK PLACE

Chicago IL 60673 (ADDRESS NOT FOR OVERNIGHT MAIL)

FED. ID.: 41-0404230

BILL TO: Attn: Accounts Payable

**DEPARTMENT OF VETERANS AFFAIRS MEDICAL** CENTER

3200 VINE STREET

Cincinnati OH 45220

SHIP TO:

**DEPARTMENT OF VETERANS** AFFAIRS MEDICAL

CENTER

3200 VINE STREET Cincinnati OH 45220

INVOICE							
		**					
Number	2604580						
Invoice Date	17-SEP-13						
Purchase	CREDIT CARD -						
Order	MIKE DUNCAN						
Service Office	Cincinnati Service						
Service Order	203485						
Customer No.	284928						

1 of 1

Page

Terms	Due Date	Start Date	Complete Date	Ship Date	Ship Via
Net 30 Days	17-OCT-13	26-AUG-13	13-SEP-13		

Item No.	Qty	Model Number / Description	Unit Price	Extended
		AS OF OCTOBER 1, 2013 WE WILL BE CHANGING OUR COMPANY NAME TO DAIKIN APPLIED AMERICAS INC. and we will do business as DAIKIN APPLIED		
		THANK YOU FOR YOUR BUSINESS. IF YOU HAVE QUESTIONS REGARDING THIS INVOICE PLEASE CONTACT (513-762-9200) S/N: VA CARRIER UNIT ANNUAL PM OF CHILLER #1.		
1	1	NEGOTIATED: Negotiated;	2,996.00	2,996.00

Subject to McQuay International's standard terms and conditions (Form 2F-1216). IF these terms and	<del>eushoma</del> t.	HAX	тонац
conditions are not on file, contact McQuay International at (763) 553-5330. Past due accounts are subject to interest charges.	2,996.00	0.00	2,996.00



Factory Service 13600 Industrial Park Blvd. Minneapolis, MN 55441 Phone: (763) 553-5330

Attn: Accounts Payable DEPARTMENT OF VETERANS AFFAIRS MEDICAL

BILL TO:

CENTER

3200 VINE STREET

Cincinnati OH 45220

REMIT TO: MCQUAY INTERNATIONAL

24827 NETWORK PLACE

Chicago IL 60673

(ADDRESS NOT FOR OVERNIGHT MAIL)

FED. ID.: 41-0404230

SHIP TO:

DEPARTMENT OF VETERANS

**AFFAIRS MEDICAL** 

CENTER

3200 VINE STREET Cincinnati OH 45220

INVOICE						
Number	2605111					
	00.050.40					
Invoice Date	23-SEP-13					
Purchase	MIKE DUNCAN					
Order	CREDIT CARD					
Service						
Office	Cincinnati Service					
Service Order	203483					
Customer No.	284928					
Page	1 of 1					

Terms	Due Date	Start Date	Complete Date	Ship Date	Ship Via
Net 30 Days	23-OCT-13	26-AUG-13	17-SEP-13		

Item No.	Qty	Model Number / Description	Unit Price	Extended
		AS OF OCTOBER 1, 2013 WE WILL BE CHANGING OUR COMPANY NAME TO DAIKIN APPLIED AMERICAS INC. and we will do business as DAIKIN APPLIED		
		THANK YOU FOR YOUR BUSINESS. IF YOU HAVE QUESTIONS REGARDING THIS INVOICE PLEASE CONTACT (513-762-9200) S/N: VA CARRIER UNIT ANNUAL PM OF CARRIER CHILLER #2.		
1	1	NEGOTIATED: Negotiated;	2,996.00	2,996.00

Subject to McQuay International's standard terms and conditions (Form 2F-1216). If these terms and	<del>SUBTOTAL</del>	ЭЖ	TOTAL
conditions are not on file, contact McQuay International at (763) 553-5330. Past due accounts are subject to interest charges.	2,996.00	0.00	2,996.00



Factory Service 13600 Industrial Park Blvd. Minneapolis, MN 55441 Phone: (763) 553-5330

Attn: Accounts Payable

3200 VINE STREET

Cincinnati OH 45220

DEPARTMENT OF VETERANS AFFAIRS MEDICAL

BILL TO:

REMIT TO: MCQUAY INTERNATIONAL 24827 NETWORK PLACE

Chicago IL 60673

(ADDRESS NOT FOR OVERNIGHT MAIL)

FED. ID.: 41-0404230

SHIP TO:

DEPARTMENT OF VETERANS AFFAIRS MEDICAL

CENTER

3200 VINE STREET Cincinnati OH 45220

INVOICE					
		**			
Number	2602970				
Invoice Date	_28-AUG-13				
Purchase	MIKE DUNCAN				
Order	CREDIT CARD				
Service					
Office	Cincinnati Service				
Service Order	201997				
Customer No.	284928				
	-				
Page	1 of 1				

Terms	Due Date	Start Date	Complete Date	Ship Date	Ship Via	
Net 30 Days	27-SEP-13	19-AUG-13	21-AUG-13			

Item No.	Qty	Model Number / Description	Unit Price	Extended
714444444		THANK YOU FOR YOUR BUSINESS. IF YOU HAVE QUESTIONS REGARDING THIS INVOICE PLEASE CONTACT (513-762-9200) S/N: VA CARRIER UNIT PREVENTATIVE MAINTENANCE ON CARRIER CHILLER PER PROPOSAL SRGH72313.		
1	1	NEGOTIATED: Negotiated;	2,306.00	2,306.00

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Processo purat.

Subject to McQuay International's standard terms and conditions (Form 2F-1216). IF these terms and	SUBTOTAL	XAT	TOTAL.
conditions are not on file, contact McQuay International at (763) 553-5330. Past due accounts are subject to Interest charges.	2,306.00	0.00	2,306.00



Follow-up Required?	
Service Sticker Already on Job? Yes	MNC
Service Sticker Put on Job This Call?□ Yes	∭No

		*		
Service Order FS 790490	Job Number FS	Service Order Date 8/19/13	Completion Date	Page of

Customer No Loc. No P.O  New Customer		Customer P.O. No.  Credit or Warranty Authorization No.  Contract Number		A M   Parts   Prod. Unit Sales   Contract Repair   Contract Inspection   Sold Service			□ Centrif, Warranty Labor     □ Material Warranty     □ Field Warranty     □ Other Warranty Labor     □ Parts Trans.: To						
	•••				alespe	rson	Mgr. Initials			Negotiated	? □Yes	□No	
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			Date	•	·		J				1	-	

(Rev. August 2013) Department of the Treasury

# Request for Taxpayer **Identification Number and Certification**

Give Form to the requester. Do not send to the IRS.

mema	Name (so shows so was formed to the shows to													
Print or type Specific Instructions on page 2.	Name (as shown on your income tax return)													
	Cincinnati VAMC													
	Business name/disregarded entity name, if different from above													
	Check appropriate box for federal tax classification:  Individual/sole proprietor C Corporation S Corporation Partnership Trust/estate  Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership)						Exemptions (see instructions):  Exempt payee code (if any)  Exemption from FATCA reporting code (if any)							
	✓ Other (see instructions) ► Government													
	AND SE	ester's name and address (optional)												
	3200 Vine St													
See S	City, state, and ZIP code													
Š	Cincinnati, OH 45220													
	List account number(s) here (optional)													
Par											58425.207			
					al security number									
to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other						Т								
entities, it is your employer identification number (EIN). If you do not have a number, see <i>How to get a</i>							-							
TIN or	page 3.		AT 35	•		•								
Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.					Employer identification number									
						-	4 2	3	9	8				
		3	•	- 0	1	•	- 2	3	3	0				
Par	II Certification		NEED NO.				G166 78 V							
	penalties of perjury, I certify that:							400000						
1. The	e number shown on this form is my correct taxpayer identification number (or I am waiting for a numb	oer to	be	issuec	to	me)	, and							
Se	n not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have rvice (IRS) that I am subject to backup withholding as a result of a failure to report all interest or divid longer subject to backup withholding, and	not ends	beer , or (	notifi (c) the	ed t IRS	by the	ne Inte s notif	ernal ied n	Rev	enu nat I	e am			
3. I ar	n a U.S. citizen or other U.S. person (defined below), and													
4. The	FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is cor	rect.												
Certif becau interes genera	ication instructions. You must cross out item 2 above if you have been notified by the IRS that you use you have failed to report all interest and dividends on your tax return. For real estate transactions, at paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an incally, payments other than interest and dividends, you are not required to sign the certification, but you can be page 3.	are c item lividu	2 d	oes no	t ap	oply	. For r	morte	gage RA).	and	i			
Sign Here	Signature of U.S. person ▶ Date ▶	8/	15	14										
Gan	vithholding tax on foreign partners	ers's	hare	of effe	tive	lv co	nnect	ed inc	ome	and	_			

# General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. The IRS has created a page on IRS.gov for information about Form W-9, at www.irs.gov/w9. Information about any future developments affecting Form W-9 (such as legislation enacted after we release it) will be posted on that page.

### Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, payments made to you in settlement of payment card and third party network transactions, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

- 1. Certify that the TIN you are giving is correct (or you are waiting for a number
- 2. Certify that you are not subject to backup withholding, or
- 3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct.

Note. If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- · An individual who is a U.S. citizen or U.S. resident alien.
- · A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- · An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and payd posting 1446 withholding as weakly status. and avoid section 1446 withholding on your share of partnership income.