

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continued Education for the HVAC/R Industry
“Better Service Through Knowledge”

February 2014

WWW.METRONYRSES.ORG



Crankcase Pressure Regulators

Crankcase pressure regulators (CPR) are a common accessory added to many low temperature refrigeration applications such as walk-in and reach-in freezers. They are designed to prevent the compressor's motor from overloading when the suction pressure/crankcase pressure rises above its designed working pressure. On many low temperature applications this can occur during or after a defrost cycle, or after a normal shutdown period. The CPR is an outlet pressure regulator and will not allow the crankcase pressure to rise above a predetermined level.

The CPR is installed in the suction line between the compressor and the evaporator. Normally there are no other components installed downstream between the outlet of the CPR and the compressor. This is to ensure that the outlet of the CPR senses the true crankcase pressure of the compressor.

It is generally not recommended that this type of regulator be used on a system that also uses a maximum operating pressure (MOP) type of expansion valve. The use of both of these valves on the same system may cause longer pull down times. This, however, may be overcome if the pressure settings of both valves is sufficiently spread apart. When using a CPR on a system that is also using a discharge bypass valve for capacity control, the pressure setting of the CPR must be higher than that of the bypass valve.

The typical CPR is a close-on-rise regulator. The outlet pressure (crankcase pressure) of the valve is the closing force within it. The opposing opening force within the valve is an interior spring. These two forces oppose each other to regulate the port size within the valve. The interior spring is adjustable to apply a maximum opening force. If the pressure applied at the outlet of the valve (crankcase pressure) is above the spring force, the valve will close down. The inlet pressure of the CPR has no effect of the operation of the valve. The inlet pressure is applied equally to both the underside of its bellows and the top of its valve seat disc, canceling out the effect of the inlet pressure.



The selection of a CPR is based on five basic system conditions:

- refrigerant;
- refrigeration capacity of the system;
- design suction pressure of the system;
- maximum crankcase pressure recommended by the compressor manufacturer; and
- pressure drop across the valve at design load conditions.

Once these conditions are known, a valve can be chosen from the manufacturer's selection table. These valves should not be selected based on the line size of suction line since a manufacturer may use the same line size for many different capacities.

The control setpoint of a CPR will need to be adjusted on the start up of a new system or any time the valve is replaced. Always refer to the instructions provided by the manufacturer when adjusting these valves. If the instructions are not available, the following guidelines can be helpful:

- Allow the system to be off long enough to allow the pressures to stabilize and the evaporator pressure to reach a high level—one that would simulate the pressure during or after a defrost period, or the initial start up of the case.
- Turn the adjustment screw on the valve all the way out (normally this is done by turning the screw counter clockwise) so that the valve is set to an initial low setting.
- Start the system and observe both the crankcase pressure and the amperage draw of the compressor. Slowly turn the adjustment screw in (normally this is done by turning the screw clockwise) until the amperage draw reaches the maximum allowed by the compressor manufacturer.

This should allow a technician to achieve an acceptable setpoint for the valve. Some systems may have two CPRs which are piped in parallel. When adjusting these valves, both will need to be adjusted at the same time and at the same rate. This will ensure that the load is divided equally across both valves.



HVAC/R
Parts
Supplies
Equipment

27-01 BROOKLYN QUEENS
EXPRESSWAY WEST
WOODSIDE, NY 11377

FAX (718) 274-4972

Large
Local
Stock
Free Catalogue

718-545-4896
WHOLESALE ONLY

Supco

**SEALED UNIT
PARTS CO., INC.**

P.O. BOX 21
2230 LANDMARK PLACE
ALLENWOOD, NJ 08720 USA
(732) 223-6644
FAX: (732) 223-1617



*Support Services for the
HVAC Contractor*

HVAC Water Treatment

Specialty Cleaning
Pipe • Duct • Coil

HVAC Antifreeze

Lab Services

Indoor Air Quality

718-361-6666
www.csiontheweb.com



**UNITED
REFRIGERATION INC.**

Refrigeration, Air
Conditioning, Heating,
Supplies, Equipment & Parts

Jim Herlinger
Branch Manager
51-05 59th Place
Woodside, NY 11377-7408

Tel: 718 476-2600
Fax: 718 476-2648
Branchv2@uri.com

HALSEY SUPPLY
CO. INC.

FOR ALL YOUR

- AIR CONDITIONING
- REFRIGERATION
- EQUIPMENT
- PARTS SUPPLIES
- EPA-CERTIFICATION TESTING

241 HALSEY STREET
BROOKLYN, NY 11216

(718) 574-4774
FAX (718) 574-4778

**T
H
I
S
S
P
A
C
E**

COMING EVENTS

Daikin Variable Flow/Variable Volume Systems

Ice Machine Servicing and Troubleshooting

Identifying and Sizing Fans & Blowers

Torch Use & Safety – Back to Basics

Servicing Scroll & Screw Compressors

If you have any suggestions or requests for
Future programs, please let us know!

**T
H
I
S
S
P
A
C
E**

SEE US 1st



WHOLESALE DISTRIBUTORS
Refrigeration/AC/Heating

BROOKLYN (718) 257-3347
10720 Avenue D

JAMAICA (718) 526-0330
139-29 Queens Blvd.

MT. VERNON (914) 668-3631
551 S. Columbus Ave.



**Fire Ice
Mechanical Inc.**

HVAC/R Service Contractors

KURT J. EGGERT

Vogt Tube-Ice Authorized Dealer/
Sales & Factory Certified Technicians
Goldenrod Distributor,
The Newest in Water Treatment Technology
Air Conditioning & Refrigeration

Tel (718) 631-1503
Fax (718) 279-4686

ThermatiX Supply

Plumbing, Heating, and Air
Conditioning Supplies

"We keep you supplied"



73 Broadway, Hicksville, NY 11801
toll free: (877) 390-9421
tel: (516) 513-0985 / 0986
fax: (516) 620-5942
email: sales@thermatixsupply.com



49-70 31st STREET
L.I.C., NY 11101
Phone: 718-937-9000
Fax: 718-392-1296
1-800-937-9000




WEDDINGS
OUR SPECIALTY

- Special Attention Given To
- Dinner Dances • Company Parties
- Cocktail Parties • Business Meetings
- Fund Raisers • Fashion Shows
- Engagement Parties • Christenings
- Special Discounts Given to Senior Citizens

*Riccardo's
by the bridge*

21-01 24th Avenue, Astoria, NY 11102
718 721-7777
ANTHONY M. CORBISIERO
RICHARD F. CORBISIERO

Metro NY Chapter RSES HVAC Training Courses

The Metropolitan New York Chapter RSES will offer the RSES Technical Institute Course 3 on Tuesday & Thursday evenings, **STARTING FEBRUARY 11th, 2014** in Long Island City, NY

Dates*: For 11 weeks on Tuesdays & Thursdays*

2/11 & 2/13	2/18 & 2/20	2/25 & 2/27
3/4 & 3/6	3/11 & 3/13	3/18 & 3/20
3/25 & 3/27	4/1 & 4/3	4/8 & 4/10
4/15 & 4/17	4/22 & 4/24	

**Dates Tentative – Subject to Change*

Time: 6:00 PM – 10:00 PM

Location: Long Island City High School
14-30 Broadway
Long Island City, NY 11106

Cost for Course 1, 2 or 3:

\$849.00 for RSES members
\$949.00 non-RSES members (also includes 1 year membership in RSES)

Includes: Technical Institute course manual, course tuition, Certificate of Completion after passing final exam, 72 hours toward NATE Recertification, for those eligible.

Register by calling, mailing or
Emailing the form below

FOR ADDITIONAL INFORMATION VISIT:

<http://www.metronyrses.org>

or Email: school@metronyrses.org

or Phone Stan Hollander: 718 232-6679

by Mail: Metro NY Chapter RSES

Attn: Stan Hollander, 1837 61st Street, Brooklyn, NY 11204

–Checks and Charges Welcome –

Please make checks payable to "Metro NY RSES"



TECHNICAL INSTITUTE COURSE 3 TRAINING COURSE OVERVIEW

Begins with comprehensive introduction to heat pump theory, including watersource heat pumps. Topics covered include computer-room environmental control, economizers, fans and blowers, air filtration and distribution evaporative condensers and cooling towers, water treatment, multiple-rack systems, hydronics, troubleshooting, controls and controls components, pneumatic relays, typical control applications, and control maintenance. Detailed information on lessons and content for Course 3 can be found at:

<http://metronyrses.org/ti3.pdf>

— DETACH & RETURN THIS SECTION WITH PAYMENT – BE SURE TO KEEP COPY FOR YOUR RECORDS —

REGISTRATION FORM For February 2014 Class

Name: _____ Company: _____
Address: _____ City: _____ State: _____ Zip: _____
Email: _____ Phone: _____
Check / Credit Card Number: _____ Exp: _____
Name on Credit Card: _____

Are you a current RSES Member. If Yes, RSES Membership Number: _____

Please register early - space is limited.

Check or Credit Card Accepted for Payment

Make check to "Metro NY RSES" and mail w/ registration to: Metro NY RSES, Attn: Stan Hollander, 1837 61st Street, Brooklyn, NY 11204

To register by Email submit this form with Credit Card information to: school@metronyrses.org

METROPOLITAN NEW YORK CHAPTER, RSES

Election of Officers—Fourth Notice

At the February meeting (sorry we didn't get to it last month, as originally scheduled) we will have Election of Officers and Board Members. If any member in good standing wishes to hold an office or be on the Board of Directors and/or would like to nominate another member for any of these important positions, please advise any current officer.

Officers

President: Drew Garda
Vice President: Vacant
Treasurer: Steven Aiello
Secretary: Nito Mehra
Sergeant-at-Arms: Kurt Eggert

Members-Board of Directors

Howard DaCosta
Herb Meyer
Stan Hollander, CMS
Rich Bruno

Appointed Positions

Educational Director: Stan Hollander, CMS
Newsletter Editors:
Stan Hollander, CMS & Herb Meyer
Publicity: Position Available

**In the unlikely event of meeting cancellations,
announcement will be posted on our web site**

Wednesday February 12th, 2014 at 7:30pm

at

**RICCARDO'S
21-01 24th Avenue, Astoria NY 11102**

***Introduction to Variable Refrigerant Volume/ Variable
Refrigerant Flow, Heat Pump vs. Heat Recovery, 2 pipe
and 3 pipe VRF Heat Recovery Systems and VRF
Installation Best Practices.***

By

Bill Artis—Daikin North America

— PLACE LABEL HERE —

**EDUCATIONAL PROGRAM
Wednesday February 12th, 2014
at 7:30pm
SEE DETAILS THIS PAGE**

