

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

“Better Service Through Knowledge”

December 2018

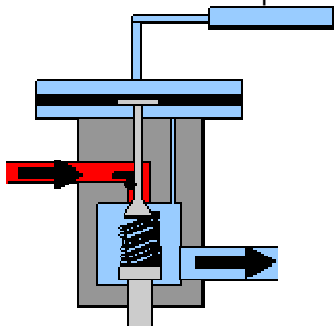
WWW.METRONYRSES.ORG



Balanced Port Expansion Valves

Thermostatic expansion valves (TXV) meter the flow of refrigerant into the evaporator. They are designed to maintain a specific superheat value at the outlet of the evaporator. Within the expansion valve, the refrigerant is fed through some type of port. A needle/pin assembly is used to adjust the size of the port opening to vary the amount of refrigerant entering the evaporator.

There are three main pressures within the TXV which are designed to move the needle assembly in a direction to either increase or decrease the port size of the TXV. The valve's bulb pressure acts to increase the valve's port size.



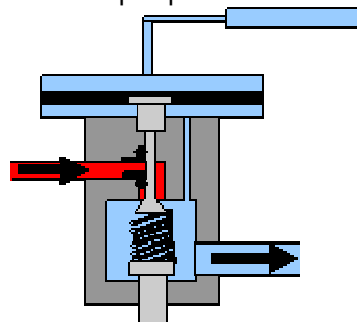
CONVENTIONAL TXV

The evaporator pressure and the internal spring pressure act to decrease the port size.

Although not considered a major factor in the operation

of the TXV, the inlet liquid pressure does affect the operation of the needle assembly in a conventional TXV, causing a slight change in one direction or another

To alleviate this pressure from influencing the operation of the TXV, valve manufacturers have designed the Balance Ported Expansion Valve. The inlet liquid pressure on balance ported expansion valves does not affect its operation. The pin assembly within the valve is machines in such a fashion that the inlet liquid pressure applies a force equally in both direction on the pin/needle assembly. This results in the inlet liquid pressure having no effect on its operation.



BALANCED PORTED TXV

Automatic Expansion Valves

The automatic expansion valve, more commonly referred to as an AXV or AEV, is similar in construction to the TXV. However this metering device is a constant pressure regulator. It is designed and constructed to maintain a constant evaporating pressure of the refrigerant in the evaporator. The flow of the refrigerant into the evaporator is based on the pressure of the refrigerant in the evaporator. As the pressure in the evaporator decreases, the valve opens and allows more refrigerant to flow through it. As the pressure increases, the valve closes and allows less refrigerant to flow through it.

The AXV consists of a diaphragm, an adjustable spring, and a needle valve. The diaphragm controls the operation of the needle valve. The adjustable spring is placed on top of the diaphragm and acts to open the needle valve. The opposing pressure acting to close the needle valve is the pressure of the refrigerant in the evaporator. As the pressure in the evaporator drops, the spring pressure will overcome the pressure on the underside of the diaphragm and move the needle valve to a more open position, allowing more refrigerant into the evaporator. As the refrigerant pressure increases in the evaporator, it will impose a higher pressure on the underside of the diaphragm which will overcome the spring tension and move the needle valve to a more closed position, reducing the flow of refrigerant into the evaporator. The pressure applied by the spring can be adjusted to allow for different maximum evaporating pressures. Normally there is an adjustment screw on top of the valve body which is connected to the spring inside the dome of the valve.

The application of this type of metering device is similar to that of the capillary tube. It should only be used on systems with a fairly constant heat load on the evaporator. Since it does not control the amount of superheat at the outlet of the evaporator, it does not work well on systems with sufficient changes in the heat load applied to the evaporator. In fact, dramatic changes in heat loads will cause problems with the system. If a high heat load is placed on the evaporator, the valve will reduce the refrigerant flow into the evaporator instead of feeding more refrigerant. The evaporator pressure will rise and since the closing force of the needle valve is the pressure of the refrigerant in the evaporator, it will move to a more closed position, restricting the flow of refrigerant into the evaporator. On low heat load conditions the valve will open more and let more refrigerant into the evaporator,

JOHNSTONE **HVAC/R**
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

H&L
HEATING SUPPLY, Inc.
 COMMERCIAL / INDUSTRIAL /
 RESIDENTIAL

AUTHORIZED DEALER OF

- HONEYWELL • McDONNELL MILLER •
- FIREYE • HEAT TIMER •
- FUEL WATCHMAN •
- BELL AND GOSSETT • ASCO •
- POWERFLAME BURNERS •
- T.A.C. BUILDING AUTOMATION •
- ECLIPSE GAS BOOSTER •
- SIEMENS GAS TRAINS •
- GRUNDFOS •

BRIAN T. O'NEILL
 BRIAN@HLHEATINGSUPPLY.COM

1100 CONEY ISLAND AVENUE
 BROOKLYN, NY, 11230
 (718) 859-2424
 FAX (718) 859-5727

UR
**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

RA
RATHE
 ASSOCIATES

EXPECT MORE
 & GET IT.

REPRESENTING THE
 INDUSTRY'S FINEST
 MANUFACTURERS

CERTIFIED FACTORY
 TRAINING BY
 INDUSTRY EXPERTS

LOOK TO US FOR ALL YOUR
 PLUMBING, HEATING & HVAC NEEDS

NY 631.822.1200
 NJ 908.703.4686 • fax 631.822.1400
 ratheassoc.com

COMING TOPICS

*Steam Systems: Proper Installation,
 Troubleshooting & Pitfalls*


Heat Pumps—What's New?

*What Else is New in Motor Technology
 for the HVAC Industry*

The Latest in Compressor Technology

If you have any suggestions or requests for **FUTURE
 EDUCATIONAL PROGRAMS**, please let us know!

JUST ICE



Suppliers of Food-Grade Ice Blocks
 11 lb • 25 lb • 75 lb
 300 lb Carving Blocks

Just Ice NY Corp.
 110-90 Dunkirk Street, St. Albans, NY 11435

www.justiceony.net • Email: kurt@justiceony.net
 Phone: 718-864-9000 • Fax: 718-864-9001

SEE US 1st

Harvey's

WHOLESALE DISTRIBUTORS
 Refrigeration/AC/Heating

BROOKLYN (718) 257-3347
 10720 Avenue D

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

MT. VERNON (914) 688-3631
 551 S. Columbus Ave.

DUPONT

**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
 7 days a week!"



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

ABCO

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

DUPONT
Suva

Centrotherm
 solutions beyond



The only
 UL-1738
 polypropylene
 vent pipe
 approved in NYC

ETL
 Intertek

518.434.3400
www.centrotherm.us.com

METROPOLITAN NEW YORK CHAPTER, RSES

For Information Call: Stan Hollander, CMS (718) 232-6679

Annual Holiday Dinner (December Meeting)

Starting at 6:30pm

Join us for our Holiday Buffet. Bring nothing but yourselves and your appetites. Riccardo's puts out a great table for us to enjoy. Did I say "bring nothing but"? You can certainly bring a friend or colleague. They can enjoy a fine meal with us, and then partake of the educational opportunities which we have to offer, as well as our friendship and camaraderie. Who knows? They may even want to become a part of this great organization of ours.

The Officers of The Metropolitan NY Chapter RSES wish all our members, friends & their families a very

*****Happy, Healthy, and Safe Holiday & Holiday Season*****

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

Wednesday December 12th, 2018

Buffet at 6:30pm, Educational Program at 7:30pm

at

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

One & Two Pipe Steam Systems, Counterflow Systems, Sizing of Steam Systems, Troubleshooting Different Types of Systems, And – Very Importantly: How To Work More Efficiently & Profitably on These Systems

By: Rich Michael—Peerless Boilers

PRESIDENT'S MESSAGE

The Air-conditioning, Heating and Refrigeration Exposition (AHR Expo) is scheduled for January 14 through the 16th in Atlanta Georgia.

This is an excellent opportunity to see what our industry has to offer. It claims to be the world's largest HVACR Marketplace. There will be over 2100 manufacturers and suppliers exhibiting their products. This is a yearly show with the next one in Orlando, Florida in 2020. If you are able to attend please keep the chapter in mind. If you see something you feel would be a good educational topic please let us know about it.