INSULTECH

ACOUSTIC BLANKET INSULATION

DESIGNED FOR TRANE®

SHANNON ENTERPRISES OF W.N.Y., INC.
75 Main Street
North Tonawanda, NY 14120-0199

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Revised: 06/04

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INSULTECH

REMOVABLE, REUSABLE BLANKET INSULATION
FOR...**SOUND ATTENUATION**
***Reduce Harmful Noise At The Source!**

***INSULTECH* Blanket Insulation**
is a pre-engineered thermal acoustical insulation system designed to reduce harmful noise levels and improve the surrounding work environment.

***INSULTECH* Blanket Insulation**
is custom-fit, through CAD technology allowing versatility in equipment coverage. Virtually any irregular surface can be insulated and multipiece designs are typical for most equipment applicatons.

***INSULTECH* Blanket Insulation**
is a top quality design construction. The recommended design LT450A-TT features an inner and outer chemical resistant Teflon fiberglass cloth, with high density fiberglass mat and barium sulfate loaded vinyl.

***INSULTECH* Blanket Insulation**
is removable and reusable. Blanket pieces can be installed with minimal effort and they feature a stainless steel Wire-twist fastening system. No additional tools or materials are required for installation.

Advantages

— Can be installed with plant personnel
— Can be removed and reused numerous times
— Is a closed insulation system
— Is custom-fit to existing conditions
— Is an ideal replacement for Asbestos
— Is vibration resistant

Applications

— Ejectors
— Gear Box Casings
— Steam and Gas Turbine Casings
— Compressor Housings
— Exhaust Ducting
— Pressure Reducing Valves
— Custom Sound Curtains
— Liquid Chillers

TRANE - CGAF060
Design: LT450A-TT-1.5”Thk.
Overall Reduction: 8dBA

TRANE - RTAA070 (Enhanced Package)
Design: LT450A-TT-1.5”Thk.
Est. Reduction: 6-8dBA

TRANE - RTHC1B1 (Economy Package)
Design: LT450A-TT-1.5”Thk.
Est. Reduction: 5dBA

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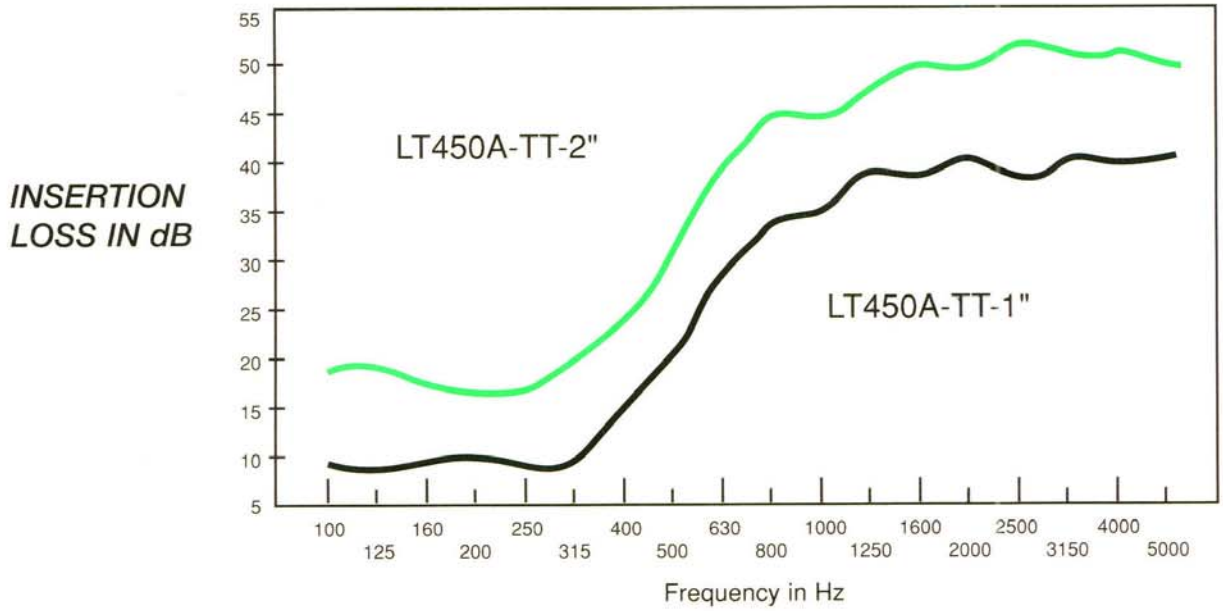
INSULTECH **Blanket Insulation** *TEST RESULTS*

INSERTION LOSS PERFORMANCE COMPARISONS



107dBA SOURCE	A-WEIGHTED MEASUREMENTS		LINEAR WEIGHTED MEASUREMENTS	
Test Frequency (in Hz)	LT 450A-TT-1" Noise Reduction (in dBA)	LT 450A-TT-2" Noise Reduction (in dBA)	LT 450A-TT-1" Insertion Loss (in dB)	LT 450A-TT-2" Insertion Loss (in dB)
100	8	19	8	18
125	8	20	7	19
160	9	17	9	17
200	9	16	9	16
250	8	17	8	16
315	10	20	9	20
400	14	24	14	23
500	21	30	20	30
630	28	39	27	39
800	34	44	33	44
1000	35	44	34	43
1250	38	46	37	46
1600	37	49	36	49
2000	38	48	38	48
2500	37	51	36	51
3150	40	50	39	50
4000	39	49	38	50
5000	41	49	40	49

With the above listed Noise Reductions measured in the A-Weighting, the total Noise Reduction from the 107 dBA loudspeaker level over a 100-5000 Hz frequency band would be: 20.8 dBA for design LT450A-TT-1" Thickness and 29.5 dBA for design LT450A-TT-2" Thickness.

The above data is representative of (ASTM) Test Procedure E1222-87 for the laboratory measurement of the insertion loss of pipe lagging systems. Shannon Enterprises will not be warranted for performance results of Insultech Blanket Insulation expressed or implied.

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Providing Acoustical Applications for the Following Trane Offices:

Revised: 07/04

USA TRANE Offices:

Buffalo, NY (Gerster Trane)
Pueblo, CO (Corporate Office)
Little Rock, AK
Birmingham, AL
Phoenix, AZ
Los Angeles, CA
Miami, FL
Tampa Bay, FL
Des Moines, IA
Chicago, IL
Peoria, IL (M.E. Hunzeker Co.)
Fort Wayne, IN
Indianapolis, IN
Kansas City, KS
Wichita, KS
Boston, MA
Detroit, MI
St. Paul, MN
St. Louis, MO
Rochester, NY
Greensboro, NC
Raleigh, NC
Akron / Canton, OH
Clevland, OH
Columbus, OH
Portland, OR
Pittsburgh, PA
Memphis, TN
Dallas, TX
Houston, TX (Hou-Tra)
San Antonio, TX
Salt Lake City, UT
Charleston, WV

Canadian TRANE Offices:

Halifax, Nova Scotia
Toronto, Ontario

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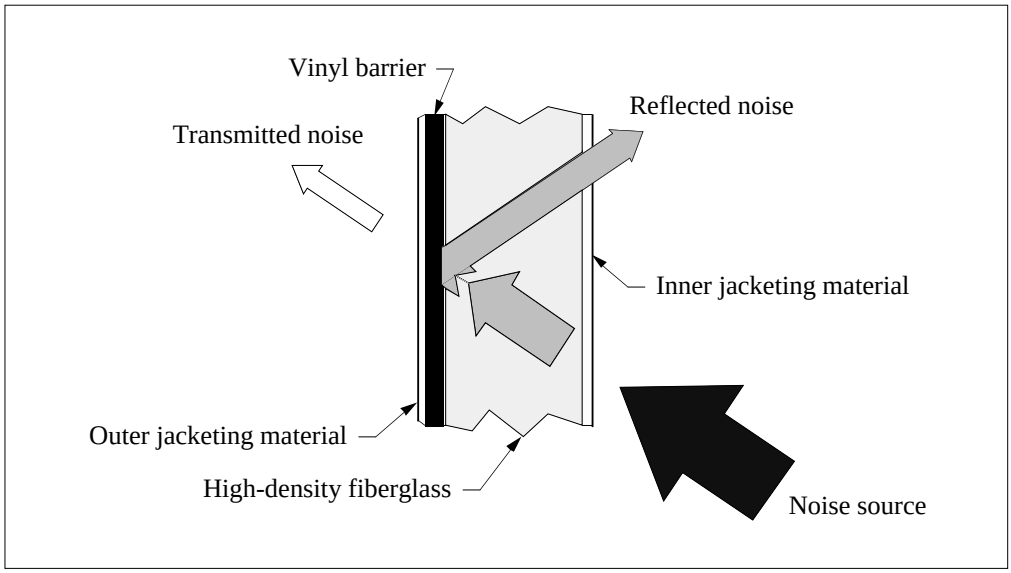
About Acoustic Blanket Insulation

Insultech Acoustic Blanket Insulation is an extremely versatile and efficient solution to common industrial noise problems. It combines high density fiberglass mat with a mass-loaded Vinyl sandwiched between a weatherproof jacketing. The purpose of the fiberglass is to reduce reflected noise and to absorb noise energy, while the mass-loaded vinyl blocks transmitted noise. The fiberglass also has excellent thermal insulation qualities. While combining both an absorbing material and a well matched barrier material, the acoustic blanketing yields a highly efficient and cost effective means for solving industrial noise control problems.



Insultech Acoustic Blanket Insulation is completely custom fit to meet your application's needs. It's flexibility and strength add to the versatility of this type of system, while the chemical resistance and high-temperature capabilities of the outer jacketing material allow **Insultech** Acoustic Insulation to perform extremely well in nearly every industrial environment.

INSULTECH

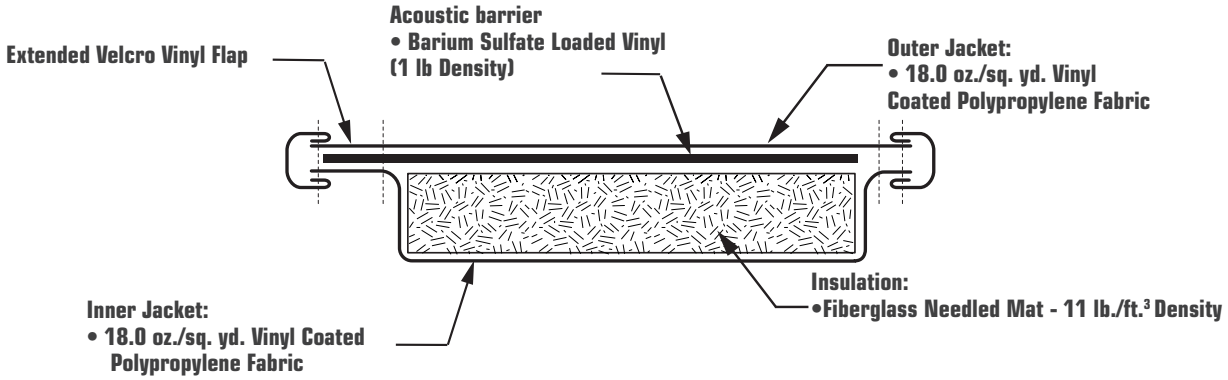
TRANE Acoustic Blanket System

Design Specification:								LT250A-VP
Service	**Temperature**		**Permeability Pervious / Impervious**		**Outdoor Use**	**Chemical Risist**	**Abrasion Resist**	**Fire Rating**
Process	250			✔	Good	Good	Good	Nonflammable

Application

- Compressor Housing • Suction Line • Discharge Line • Oil Separator • Evaporator Shell • Condensor Shell
- Equipment operating above OSHA required sound limits • Commercial Industrial OEM

Design Components:



Blanket Thickness Surface Temperature Reference:

Operating Temperature	Thickness / Surface Temperature	
250°F (121°C)	1.5"	92.0°F

* The reference cold face surface temperatures should be used as guidelines for blanket thickness design.
* The cold face surface temperature of the blanket should achieve ambient temperature conditions.
* The economic thickness of the blanket should consider blanket cost to thermal performance.
* Heat loss calculations are based on a 70°F ambient using a flat surface condition.

Blanket Thickness to Acoustic Performance:

dBA Reduction Range	Thickness	Surface Mass
6 - 10	1.5"	1.82 - 3.10 lb/SF

* The dBA reductions are approximations. These figures are only guidelines of performance.
* True estimates should include field verification of dBA levels and frequency concentrations.

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Fabrication Requirements

Blanket Construction

Blanket construction is a double sewn lock stitch with a 7 stitches per inch minimum. All raw jacket edges have a tri-fold Teflon cloth binding stitched with Teflon coated fiberglass thread. No raw cut jacket edge will be exposed.

Resistant Flap

To avoid penetrating noise at mating seams, blanket pieces will include an extended 2" wide fabric vinyl flap. This flap will cover the exposed seam and will minimize any potential noise leaks.

ID Plates

For easy identification and location, a stainless steel or aluminum name plate tag is riveted to each blanket piece. 1/8" Embossed lettering shows location, description, size, pressure rating and tag number sequence.

Quality Pins

To enhance blanket quality and to maintain uniform thickness, stainless steel quilting pins will be placed at random locations no greater than 18" apart. This will prevent shifting of the insulation filler.

Blanket Insulation Weight

When designing blanket insulation for large equipment where a multi-piece construction is necessary, the total number of pieces will be minimized. Any one piece will not exceed 50 lbs. in weight.

Assembly Drawing Requirements

Each blanket insulation project will include an instruction package shipped with the blanket material. This package will include Assembly Drawings identifying piece location, a Material List of all pieces and Instructions for Installation on how blanket insulation will be installed. The latest and most accurate records must be kept *by the supplier* on a CAD file for a minimum of ten years to assure re-orders and replacement.

Guaranteed Fit

All blanket designs will accommodate vibration probes, gauges, tubing, piping, brackets, etc. All blanket pieces are guaranteed to fit for optimum acoustic performance.

Fastening Options

1) Wiretwists

A 20 gauge stainless steel wire is doubled up and twisted in a spiral fashion with a minimum of 4 twists per inch. Wiretwist length will be 16" or longer. The Wiretwist will be secured to the lacing pin at the pin stem. Lacing pin stems will be 14 gauge.

2) Velcro Flaps

A 2" wide hook will be stitched to the blanket and a 2" wide loop will be stitched to an extended outer jacketing flap. Velcro is rated for temperatures up to 350˚F.

Design Guidelines

To access the true limitations of this recommended design, refer to the technical data sheets on each product component. Following these guidelines will produce the highest achievable service life. Blanket design quality can be reduced or enhanced by changing any one component. If a question arises regarding deviations from those stated guidelines, please contact your regional representative or call Shannon direct.

Project Qualifications

All items to be insulated will require a field takeoff prior to bid submittal, and must be reviewed for proper cost estimation. Upon receipt of project contract, each and every item must be accurately measured for retrofitting to existing field conditions and tagged with an aluminum or stainless steel identification tag showing an item number for installation reference. At the time of installation, blankets must have a corresponding item number shown on the blanket tag and must match to existing tagging on fitting. No standard blanket designs will be accepted. This will assure good thermal performance.

Warranties

All blankets will carry an 18 month warranty covering the replacement cost of the blanket. This warranty will cover blanket failure due to premature degradation from either blanket components used in the blanket, the blanket design construction or workmanship.

INSULTECH

TRANE Acoustic Blanket System

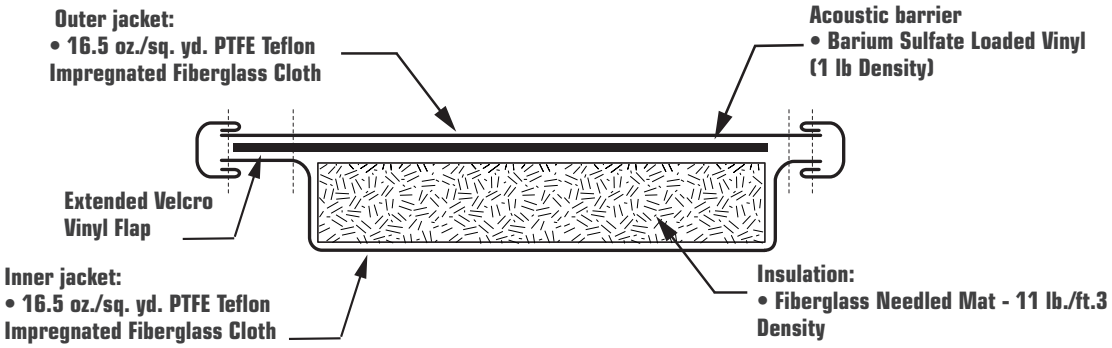
Design Specification: LT450A-TT

Service	Temperature		Permeability Pervious	Permeability Impervious	Outdoor Use	Chemical Risist	Abrasion Resist	Fire Rating
Process	450	232		✔	Excellent	Excellent	Good	Non-Flammable

Application

- Compressor Housing • Suction Line • Discharge Line • Oil Separator • Condensor Shell • Evaporator Shell
- Equipment operating above OSHA required sound limits • Commercial Industrial OEM

Design Components:



Blanket Thickness Surface Temperature Reference:

Operating Temperature	Thickness	Surface Temperature
250°F (121°C)	1.5"	92.0°F
300°F (149°C)	1.5"	98.2°F
350°F (177°C)	1.5"	104.6°F
400°F (204°C)	1.5"	111.2°F
450°F (232°C)	1.5"	118.0°F

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TRANE Acoustic Blanket System

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TRANE
Acoustic Blankets

Vinyl Coated Polypropylene — 18.0 oz. /sq. yd.

This jacket material is Vinyl Coated Polypropylene cloth. Used for many applications in the tarpaulin industry, as well as for commercial and military purposes. "Coverlight" has excellent tear and adhesive strength. It has the ability to maintain this adhesion after being immersed in water. It is abrasion, puncture, and tear resistant, along with resistance to fungicidal growth.These combined properties make this an excellent all purpose jacketing material.

Thickness	Max Fab. Width	Color	Temperature Rating Continuous / Intermittent	Tensile Strength Warp / Fill	Trapezoidal Tear Strength
0.017" typ.	60" typ.	gray	300°F	N/A	N/A

Teflon Impregnated Fiberglass — 16.5 oz. /sq. yd.

This jacket material is PTFE Teflon impregnated fiberglass cloth. It is extremely well suited for both caustic and acidic environments, which are common in chemical and petrochemical industries. In addition to excellent chemical resistance properties, this material is also waterproof, oil resistant, abrasion resistant, and can withstand temperatures up to 500°F. These combined properties make this an excellent all purpose jacketing material. Flammability Rating: V-0 Rating - UL94 vertical burn test.

Thickness	Max Fab. Width	Color	Temperature Rating Continuous / Intermittent	Tensile Strength Warp / Fill	Trapezoidal Tear Strength
0.016" typ.	60" typ.	gray	500°F	410 lbs./in. avg. Warp 375 lbs./in. avg. Fill	20 lbs. avg. Warp 20 lbs. avg. Fill

Barium Loaded Non-reinforced Vinyl — 1.0 lb./sq.ft.

This filler material is barium loaded non-reinforced PVC sound deadening material. When used in conjunction with fiberglass mat, this material creates a decoupled barrier within the acoustic blanket, giving it excellent sound attentuation properties. Elongation properties are 200%. Burn test properties: MVX-302: Pass (self ext.)., MIL STD 6411:9 Pass.

Die "C" Tear	Thickness	Max Fab. Width	Color	Temperature Rating
114 lbs./in. strength	0.108" typ.	54" typ.	black	Max. 250°F

Frequency (Hz)	125	250	500	1K	2K	4K
Transmission Loss (dB)	15	18	22	26	32	37

Fiberglass Needled Mat — 15 oz./sq.ft. (1" thick)

This material is a high-temperature fiberglass composed of type E fibers and manufactured in mat form. It is asbestos free and does not contain any organic or resinous binders. The material is noncombustible, provides excellent vibration resistance and complies with the following Military Standards: MIL-I-24244A and MIL-I-16411AII.

Fiber Diameter	Density	Temp. Rating	Alkalinity	Tensile Strength	R-Value
.00035" ave.	11.0 lb. cu. ft.	Max. 1200°F	.12%	Parallel to roll: 7 PSI Across roll: 12 PSI	3.85 per 1" thick

Frequency (Hz)	1" Thick	2" Thick	3" Thick
250	.29 +/- .04	.07 +/- .02	.04 +/- .04
500	.86 +/- .03	.30 +/- .03	.17 +/- .02
1000	.95 +/- .04	.72 +/- .08	.40 +/- .04
2000	.92 +/- .03	.94 +/- .05	.68 +/- .03
4000	.95 +/- .05	.97 +/- .05	.94 +/- .05
NRC	**.75**	**.50**	**.30**

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Questions Commonly Asked About Sound

1.) How do I add two or more sound levels?

Sound levels, measured in dB, represent a logarithmic ratio which cannot simply be added or subtracted without lengthy calculations. To simplify this, follow the below chart:

Decibel difference	0	1	2	3	4	5	6	7	8	9	10
Correction	3.0	2.6	2.1	1.8	1.5	1.2	1.0	0.8	0.6	0.5	.04

Source: OSHA Appendix A - Section 1910.95 Noise Exposure Computation

Adding two sound levels:

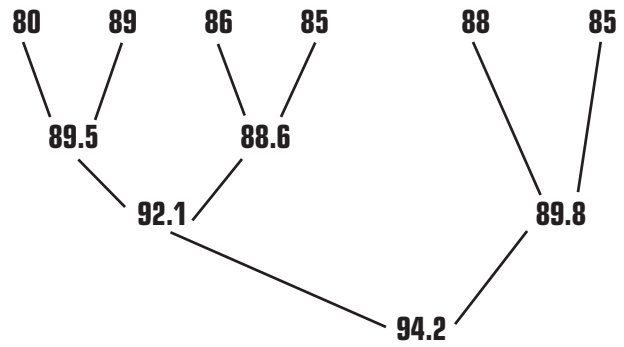
1. Subtract the lower level from the higher level.
2. Find the correction below.
3. Add the correction to the **higher** sound level.

Example: 80 dB + 81 dB = 81 + 2.6 = 83.6 dB

Adding multiple sound levels:

1. Place all levels in groups of 2.
2. Calculate the overall levels for each pair, using the method above.
3. Repeat step 1 until all values represent a single overall dB.

Example: Add 80 dB, 89 dB, 86 dB, 85 dB, 88 dB and 85 dB.



Therefore, the overall sound level is approximately 94.2 dB.

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Questions Commonly Asked About Sound

2.) Is a 7 dB overall reduction good?

Since Decibels represent a logarithmic ratio, the before and after sound pressure levels cannot be simply expressed as a percent reduction. The absolute reduction in dB, regardless of the levels, can be determined using the following chart:

Sound reduction (dB)	1	2	3	4	5	6	7	8	9	10	15	20
Absolute reduction (%)	11	21	29	37	44	50	55	60	64	68	82	90

Therefore, a 7 dB reduction represents a 55% sound pressure level reduction.

3.) Does sound pressure decrease with distance?

As the distance between the source and the receptor increases, the sound pressure decreases. In fact, each time the distance is doubled, the sound intensity decreases by 3 dB. Please refer to the chart below to determine the sound level decrease. Also note that 3' away from the source is the standard measuring distance.

Distance from noise source	3'	6'	12'	24'	48'
Sound reduction (dBA)	0	3	6	9	12

4.) What is the difference between dB and dBA?

Decibels, abbreviated dB, are a logarithmic unit for expressing sound power and sound pressure levels. A-weighting this unit, referred to as dBA, adjusts the low and high frequency levels to more closely approximate the human ear's response to noise. This scale is based on a child's hearing.

To convert dB to dBA, simply subtract the following corrections for each frequency using the following table:

Frequency (Hz)	31.5	63	125	250	500	1000	2000	4000	8000
Correction	-39.4	-26.2	-16.1	-8.6	-3.2	0	+1.2	+1.0	-1.1

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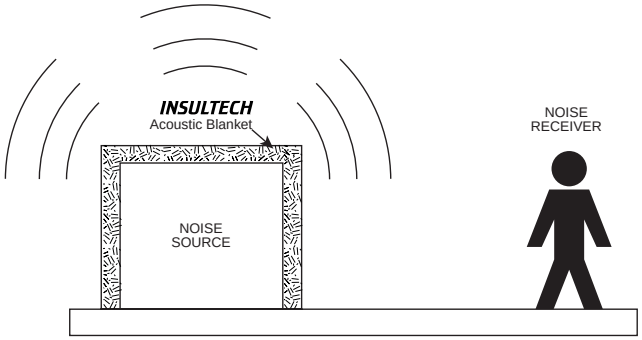
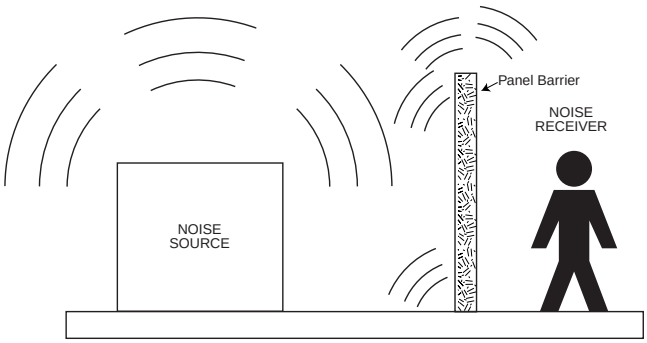
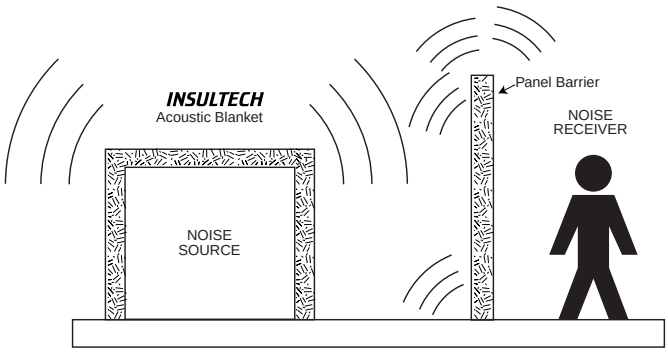
Noise Reduction Methods



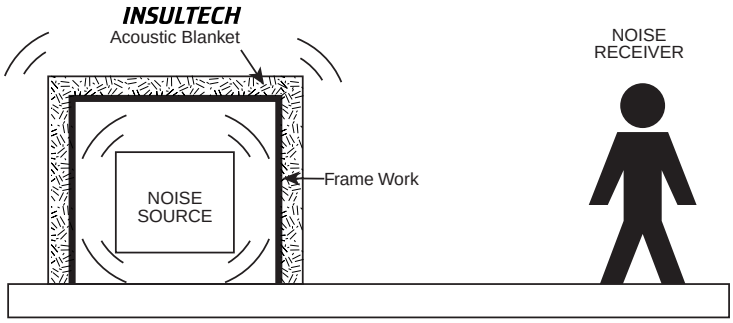
Treatment: Source Surface



Treatment: Erect Panel Barrier



Treatment: Source Surface & Panel Barrier



Treatment: Erect a Self-Supporting Blanket Enclosure

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About Industrial Noise

Many years ago, a noisy workplace meant a productive workplace. Industrial workers assumed that the noise levels were just part of their jobs. In 1970, the Occupational Safety and Health Act (OSHA) set time duration limits for employees exposed to increased noise levels. These limits are shown below:

Sound Pressure level (dBA)	83	85	87	90	92	95	97	100	102	105	108	110
Reference duration (hours)	21.1	16	12.1	8	6.1	4	3	2	1.5	1	.66	.5

Source: OSHA Appendix A - Section 1910.95 Noise Exposure Computation

To allow comparison of different sound pressure levels, some common noise sources and their respective sound pressure levels, in dBA and N/m^2, are listed below:

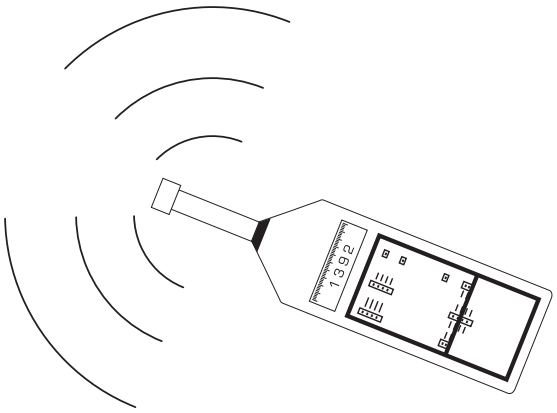
SPL (dBA)	Source	Sound pressure (N/m^2)
0	Absolute threshold of hearing	0.00002
15	Normal threshold of hearing	0.00011
30	Whisper at 3'	0.0006
45	Quiet park	0.0036
60	Normal conversation at 3'	0.02
75	Noisy office	0.11
80	Vacuum cleaner	0.20
85	Electric blender	0.36
90	Noisy factory	0.63
95	Dog bark at 3'	1.1
100	Car horn at 3'	2.0
105	Jackhammer	3.6
110	Loud rock band	6.3

INSULTECH

Industrial Noise Metering Program

Measuring Noise Reduction Levels

INSULTECH Acoustic Blanket Insulation, a proven system designed to drastically reduce industrial noise levels, now offers an effective Industrial Noise Metering Program. An important part of our verification process relies on *applied metering* -– and Shannon Enterprises provides immediate proof of noise reduction upon installation of your blanket system.



Noise Proof

Insultech's customers benefit from our ability to accurately characterize, measure and read noise levels, then customize a verification process for their specific operation.

Specific to Your Application

Using a state of the art integrating sound level meter, Shannon's professionals measure the noise level outputs of your equipment and provide detailed data to implement immediate solutions for sound reduction. We also provide a complete plan view depicting your applied noise survey locations.

On-site Survey

A complete acoustic survey includes:

- A qualified Shannon representative visiting your location.
- Before and after unweighted octave band surveys from 31.5 Hz through 8000 Hz in full octave steps (totalling 9 octave bands).
- Up to 8 locations of before and after metering.

Following the completion of the on-site survey, Shannon customers are presented with an overall summary, complete with customized graphed data and analysis.

Survey Summary

The detailed summary includes the following information:

- All of the acoustic data taken on-site and tabulated in an easy to read chart.
- A plan view drawing showing the locations of each data position.
- A written summary overviewing the entire survey.
- Sound attenuation is guaranteed for your application.

Supportive Data

The summary also addresses OSHA compliance, suggested areas of treatment, worker safety, and anticipated overall reductions using Insultech Blanket Insulation.

Consult with your regional representative for more details.

INSULTECH

Field Data

Date _____

Project _____

Location _____

Equipment _____

Primary Noise Source _____

Instrumentation:

Meter Type: Quest 2700 TYPE II

Serial No.: HU4120005

Calibration Date: _____

Octave Filter: Quest OB-50

SERIAL No.: JL4110018

Time	Temperature	%RelativeHumidity	Indoor/Outdoor	Wind Speed	Wind Direction

Test #	Position	Conditions	A-Weighted Level	Overall Level	Sound Pressure Level dB Reference: 20 μN/m²								
					31.5	63	125	250	500	1000	2000	4000	8000

Application Plan View

SHANNON
ENTERPRISES OF W.N.Y., INC.

75 Main St., P.O. Box 199 / North Tonawanda, New York 14120
(716) 693-7954 / www.blanket-insulation.com

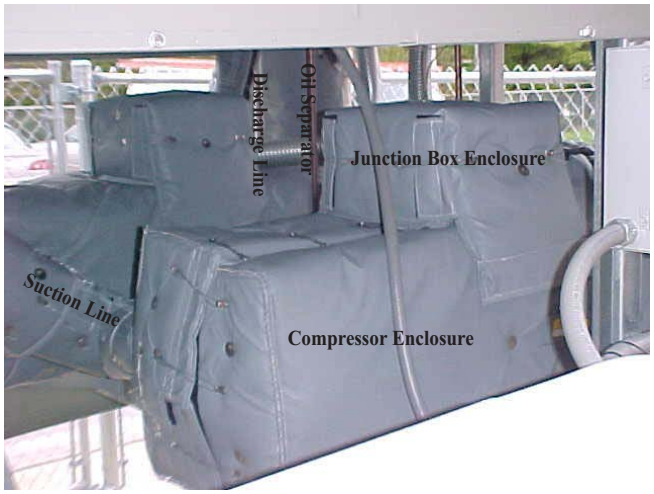
INSULTECH

Trane Model RTAA125 Rotary Screw Liquid Chiller

Design Specification : **LT250A-VP-** 1.5" Thickness

Insultech Application

This case study was performed on a Trane Model: RTAA125 Rotary Screw Liquid Chiller. INSULTECH Acoustic Blanket Insulation was used to treat various components of the equipment, determined to be major sound sources. The chiller components that were acousticlly treated include 2 each: compressor housing, suction piping, oil separator & discharge piping.



Sound Pressure Level Readings

Taken before and after INSULTECH Acoustic installation, the machine was running at 80% load at each reading.

Equipment Position

Sound readings were taken 3LF elevation from the equipment surface plane and 50LF the compressor skid. The machine was centered on a stone pad, block wall one side. Project located at midwestern college. The before/after A-weighted sound pressure levels at this location are provided below.

In Participation With:

O'NEILL ENGINEERED SYSTEMS, INC.
Specialists in Noise Control Products and Systems

W28534 Beverly Lane
Hartland, WI 53029
Ph. #: (262) 538-0215
toneill@noiseproblems.com

3205 Dana Drive
Burnsville, MN 55337
Ph. #: (952) 736-8187
chris@noiseproblems.com

Source readings were as follows:

1/3 Octave Band	Before Treatment	After Treatment	Source Reduction
63 Hz	37	37	0
125 Hz	41	41	0
250 Hz	45	45	0
500 Hz	57	57	0
1K Hz	66	51	9
2K Hz	54	46	8
4K Hz	51	43	8
8K Hz	39	39	0
	Untreated Surface	Treated Surface	Overall Reduction
Overall dBA Level:	68 dBA	59 dBA	9 dBA

INSULTECH

Trane Model RTHDUC1
Helical Rotary Screw Liquid Chiller

Design Specification :
LT250A-VP- 1.5" Thickness

Insultech Application

This case study was performed on a Trane Model: RTHDUC1 Helical Rotary Screw Liquid Chiller. Method used was: ARI-575, "Method of Measuring Machinery Sound Within an Equipment Space".

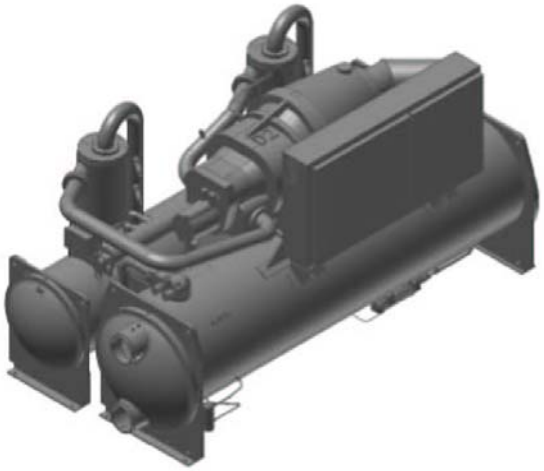
INSULTECH Acoustic Blanket Insulation was used to treat various components of the equipment, determined to be major sound sources. The chiller components that were acousticlly treated include: compressor housing & suction elbow, 2 each: oil separator & discharge piping.

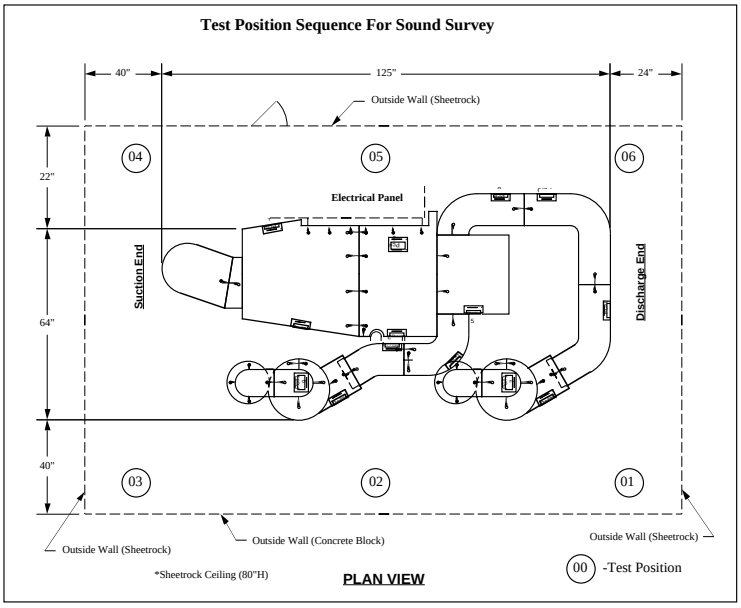
Sound Pressure Level Readings

Taken before and after INSULTECH Acoustic installation, the machine was running at 60% load at each reading.

Equipment Position

Sound readings were taken 1.5m elevation from the floor and 1m out from the vertical plane of compressor skid. The machine was on a concrete floor, block wall one side, with sheetrock walls, 3 sides and sheetrock ceiling. Project located at a light commercial office in New Hampshire. The before/after A-weighted sound pressure levels at this location are provided below.





Source readings were as follows:

1/3 Octave Band	Before Treatment	After Treatment	Source Reduction
63 Hz	45.5	43.6	1.9
125 Hz	55.1	55.7	0.0
250 Hz	79.8	77.5	2.3
500 Hz	96.2	82.3	13.9
1K Hz	94.9	78.7	16.2
2K Hz	80.4	69.6	10.7
4K Hz	69.6	58.1	11.5
8K Hz	53.0	49.2	3.8
	Untreated Surface	Treated Surface	Overall Reduction
Overall dBA Level:	97.0 dBA	87.9 dBA	9.2 dBA

INSULTECH

Trane Model CGAFC060 Hermetic Scroll Chiller

Design Specification : **LT450A-TT-** 1.5" Thickness

Insultech Application

This case study was performed on a Trane Model CGAFC060 Hermetic Scroll Liquid Chiller. INSULTECH Acoustic Blanket Insulation was used to treat various components of the machine, determined to be major sound sources. These machine components included: the motor housing, compressor housing only.

Sound Pressure Level Readings

Taken before and after INSULTECH Acoustic installation, the machine was running at 50 % load at each reading. Being an outdoor application an ambient reading taken to determine the influence of outside sources concluded that there wasn't any.

Machine Position

Sound readings were taken 2 LF from the machine surface plane and 3 LF from the rooftop. The machine was centered on a rooftop of an assisted living nursing facility. All readings were taken along the same 2 LF surface plane around the machine in the A weighting measurement.

Source readings were as follows:

	Before Treatment	After Treatment	Source Reduction
Position 1:	80.2	68.8	11.4
Position 2:	80.3	74.7	5.6
Position 3:	82.9	75.3	7.6
Position 4:	70.8	67.0	3.8
Position 5:	83.0	73.4	9.6
Position 6:	78.4	69.6	8.8

	Untreated Surface	Treated Surface	Overall Reduction
Overall dBA Level:	79.2 dBA	71.2 dBA	8.0 dBA
Ambient Reading	61.9 dBA	55.5 dBA	6.4 dBA

INSULTECH

Trane Model RTHB-255-300 Liquid Chiller

Design Specification : **LT450A-TT-** 1.5" Thickness

Insultech Application

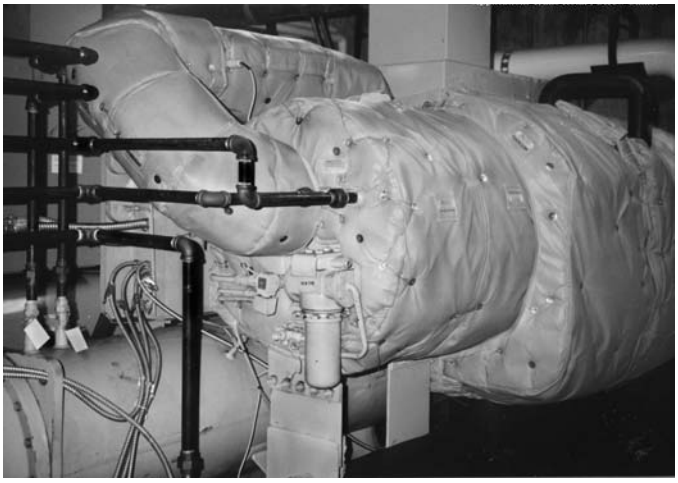
This case study was performed on a Trane Model 255-300 Rotary Screw Liquid Chiller. INSULTECH Acoustic Blanket Insulation was used to treat various components of the machine, determined to be major sound sources. These machine components included: the motor housing, compressor housing and the compressor discharge piping and isolation valve to the condenser.

Machine Position

Sound readings were taken 2 LF from the machine surface plane and 3 LF from the concrete floor. The machine was positioned in the corner of the room with another Trane Chiller positioned adjacent to the one metered. All readings were taken along the same 2 LF surface plane around the machine in the A weighting measurement.

Sound Pressure Level Readings

Taken before and after INSULTECH Acoustic installation, the machine was running at 60 % load at each reading. An ambient reading taken to determine the influence of outside sources concluded that an HVAC axial fan contributed to the high ambient sound reading. All remaining equipment had little or no influence.



Source readings were as follows:

	Before Treatment	After Treatment	Source Reduction
Position 1:	93	86.5	6.5
Position 2:	94.4	89.7	4.7
Position 3:	90.1	85	5.1
Position 4:	97.4	91.5	5.9
Position 5:	99.4	88.6	10.8
Position 6:	103.3	90.7	12.6
Position 7:	91.6	89	2.6
Position 8:	93.4	86.2	7.2
Position 9:	92.3	83.8	8.5
Position 10:	100.5	91	9.5

	Untreated Surface	Treated Surface	Overall Reduction
Overall dBA Level:	97.62 dBA	88.88 dBA	8.75 dBA
Ambient Reading (Center of Mech. Room)	91.5 dBA	85.0 dBA	

AVT, INC.

1031 McLaughlin Run Road
Bridgeville, PA 15017
Phone: 412 257-5077
FAX: 412 257-5078

e-mail: avtinc@stargate.net
website: www avtinc.net

September 24, 2002

CASE STUDY

Design Specification
INSULTECH Enhanced Package for Trane Model: RTHC1B1 Chiller

Trane Compressor Study:
Testing was completed on a quantity of two (2) **Trane** chillers, Model: RTHC1B1. Using a real time spectrum analyzer in 1/3 octave, levels were performed one (1) meter from each unit.

Source Readings:
Readings were taken one (1) meter from each compressor and one (1) meter above the floor. The objective was to reduce the overall mechanical room noise transmitting through one ceiling above and into the band room. The predominant noise was concentrated in the mid-frequency range between 250Hz and 2000Hz.

Acoustic Blanket System:
Shannon Enterprises of W.N.Y., Inc. (75 Main Street, N. Tonawanda, NY 14120 / Ph #: (716) 693-7954)
Specification: LT450A-TT (See Page: 2-1.1 & 2-1.2 — **Trane** Catalog)

Target Performance Results:
The treatment included a quantity of two (2) *Insultech* enhanced package systems specifically designed for **Trane** Model: RTHC1B1 compressors.

Sound source readings provided by the school show a 95dB reading in the mechanical room. Testing performed by ***AVT, Inc***. using a spectrum analyzer, which provided on-site printout to send to the school and the mechanical contractor showing a 79dB level after treatment.

"We were hoping for a 10dB reduction," stated the contractor. "We are thrilled with the results."

Overall levels were reduced 15dB. Quite frankly, it was better than we expected at ***AVT, Inc***. Word got out to the local **Trane** distributor who we have attempted to work with for some time. He called us to say we convinced him, and have since discussed other opportunities. Money was not released from the customer to the contractor or from the contractor to **Trane** until this issue was resolved. Now everyone is happy and everyone is paid.

INSULTECH

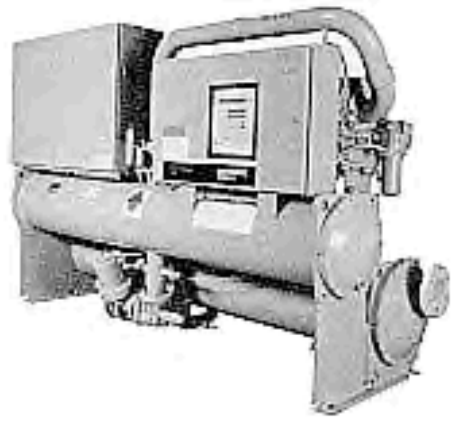
Price List

Trane RTHA & RTHB
Liquid Chiller Sound Kits
6 dBA Reduction

Design Specification No.:	LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwists/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04



RTHA & RTHB Liquid Chiller Price Sheet:		LT250A-VP (See 2.1)	
Item	**Trane Model Number / Description**	**List Price / Kit**	
	RTHA-Rotary Screw Liquid Chiller		
	Treatment: Compressor, Motor, Compressor Piping		
1	Trane Model: RTHA - 130/150	$2,763.00 / Chiller	*
2	Trane Model: RTHA - 180/215	$2,974.00 / Chiller	*
3	Trane Model: RTHA - 255/300	$3,114.00 / Chiller	*
	RTHB-Rotary Screw Liquid Chiller		
	Treatment: Compressor, Motor, Compressor Piping		
4	Trane Model: RTHB - 130/150	$2,763.00 / Chiller	*
5	Trane Model: RTHB - 180/215	$2,974.00 / Chiller	*
6	Trane Model: RTHB - 255/300	$3,114.00 / Chiller	*

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier
• All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions
***No Site Visit Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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(716) 693-7954 / www.blanket-insulation.com

Assembly Sequence

INSULTECH

RTHB Series R® CentraVac

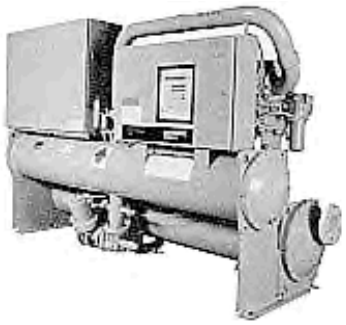
Rotary Liquid Chillers

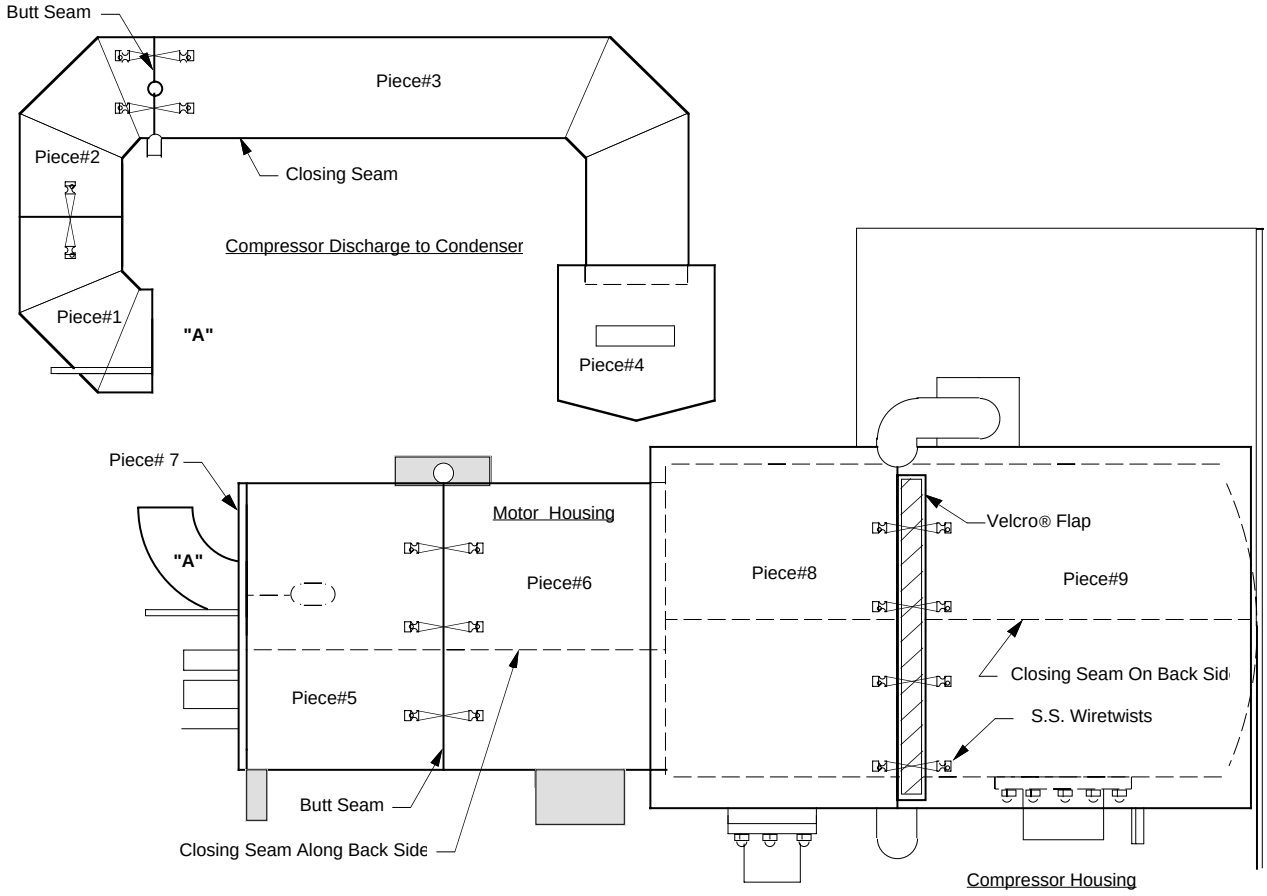
130 to 150 Tons Water Cooled

Trane Model # 180/215

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.





Scale: N.T.S.

Drawn By: Scott Bruning

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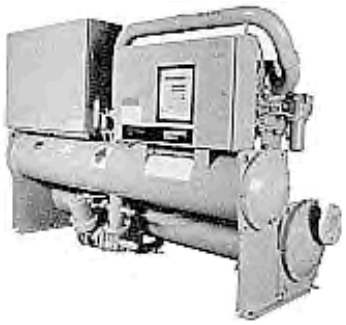
INSULTECH

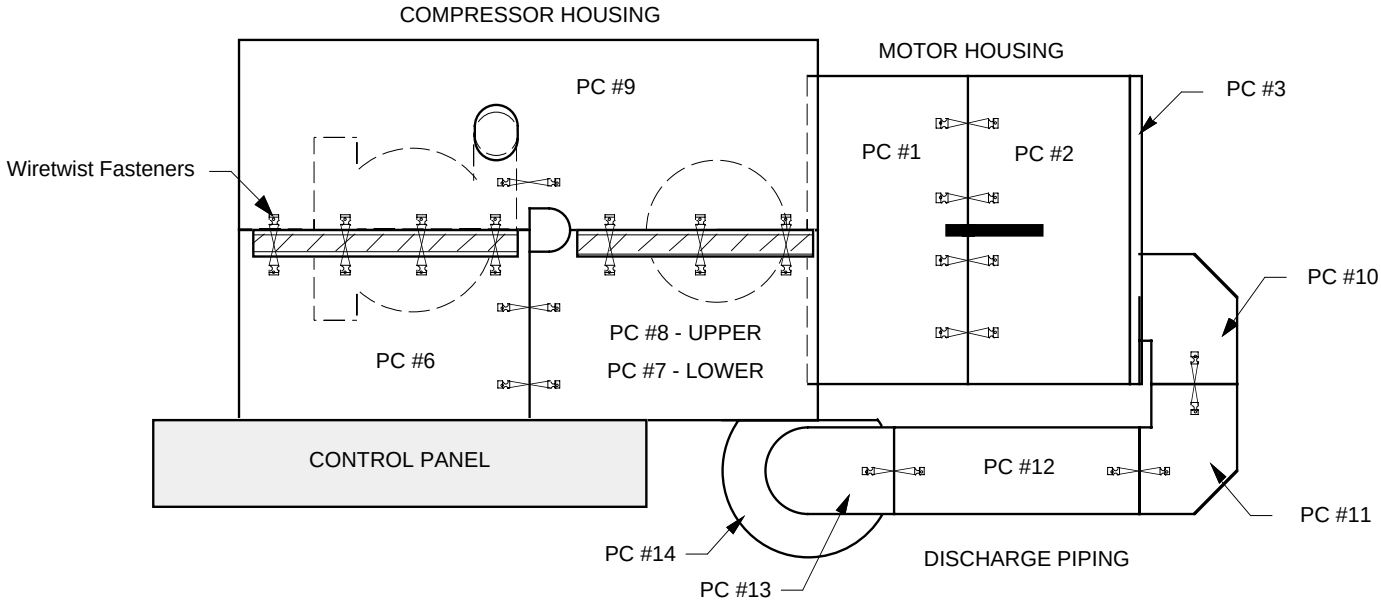
RTHB Series R® CentraVac
Rotary Liquid Chillers
130 to 150 Tons Water Cooled

Trane Model #RTHB250

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.





PLAN VIEW

NOTE: Pieces #4 and #5 are omitted

Scale: N.T.S.

Drawn By: Scott Bruning

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INSULTECH

Trane RTHC

Economy Package -5 dBA Reduction

Enhanced Package -7-9 dBA Reduction

Design Specification: LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04

RTHC Liquid Chiller Sound Kit Price Sheet: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	List Price/Kit	
	RTHC-Rotary Screw Liquid Chiller		
	Economy Package: Performance: 5 dBA Reduction		
	Treatment: Compressor / Motor Housing, Discharge Piping From Compressor To Oil Separators & Suction Elbow		
7	Trane Model: RTHC - B1-(175-200 Ton)	$2,639.00 / Chiller	*
8	Trane Model: RTHC - B2-(200-225 Ton)	$2,639.00 / Chiller	*
9	Trane Model: RTHC - C1-(225-275 Ton)	$3,728.00 / Chiller	*
10	Trane Model: RTHC - C2-(275-325 Ton)	$3,728.00 / Chiller	*
11	Trane Model: RTHC - D1-(325-400 Ton)	$3,728.00 / Chiller	*
12	Trane Model: RTHC - D2-(375-450 Ton)	$3,728.00 / Chiller	*
13	Trane Model: RTHC - D3	$4,156.00 / Chiller	*
14	Trane Model: RTHC - E3	$4,156.00 / Chiller	*
	RTHC-Rotary Screw Liquid Chiller		
	Enhanced Package: Performance: 6 - 8 dBA Reduction		
	Treatment: Compressor / Motor Housing, Discharge Piping From Compressor To Oil Separators,		
	Oil Separators, Piping From Oil Separators To Butterfly Valves, Butterfly Valves, Suction Elbow,		
	Suction Flange To Evaporator, Piping From Suction To Liquid Vapor Separator & Liquid Vapor Separator		
15	Trane Model: RTHC - B1-(175-200 Ton)	$4,393.00 / Chiller	*
16	Trane Model: RTHC - B2-(200-225 Ton)	$4,393.00 / Chiller	*
17	Trane Model: RTHC - C1-(225-275 Ton)	$6,468.00 / Chiller	*
18	Trane Model: RTHC - C2-(275-325 Ton)	$6,468.00 / Chiller	*
19	Trane Model: RTHC - D1-(325-400 Ton)	$6,468.00 / Chiller	*
20	Trane Model: RTHC - D2-(375-450 Ton)	$6,468.00 / Chiller	*
21	Trane Model: RTHC - D3	$6,896.00 / Chiller	*
22	Trane Model: RTHC - E3	$6,896.00 / Chiller	*

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier

• All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions.

*** No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

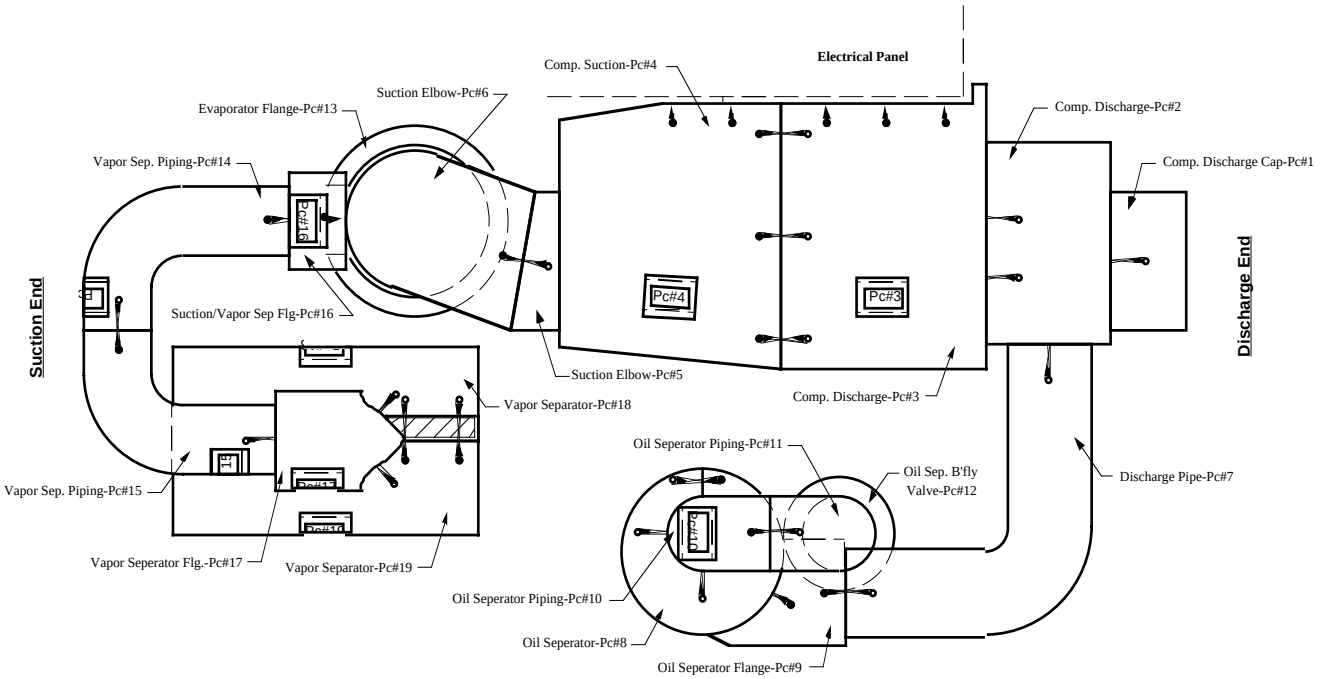
RTHC Series R® Helical Rotary Liquid Chillers

175-200 Tons (60Hz)/200-225 (60Hz)

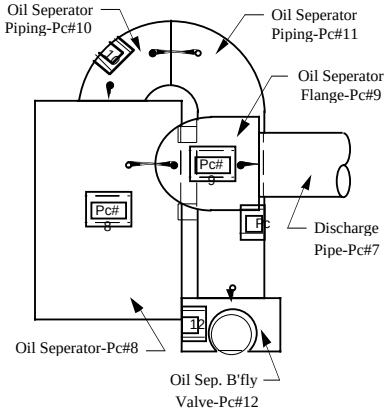
Trane Model #RTHC1B1 & RTHC1B2

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.



PLAN VIEW



SIDE ELEVATION

Scale: N.T.S.
Drawn By: Scott Bruning

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INSULTECH

RTHC Series R® Helical Rotary Liquid Chillers

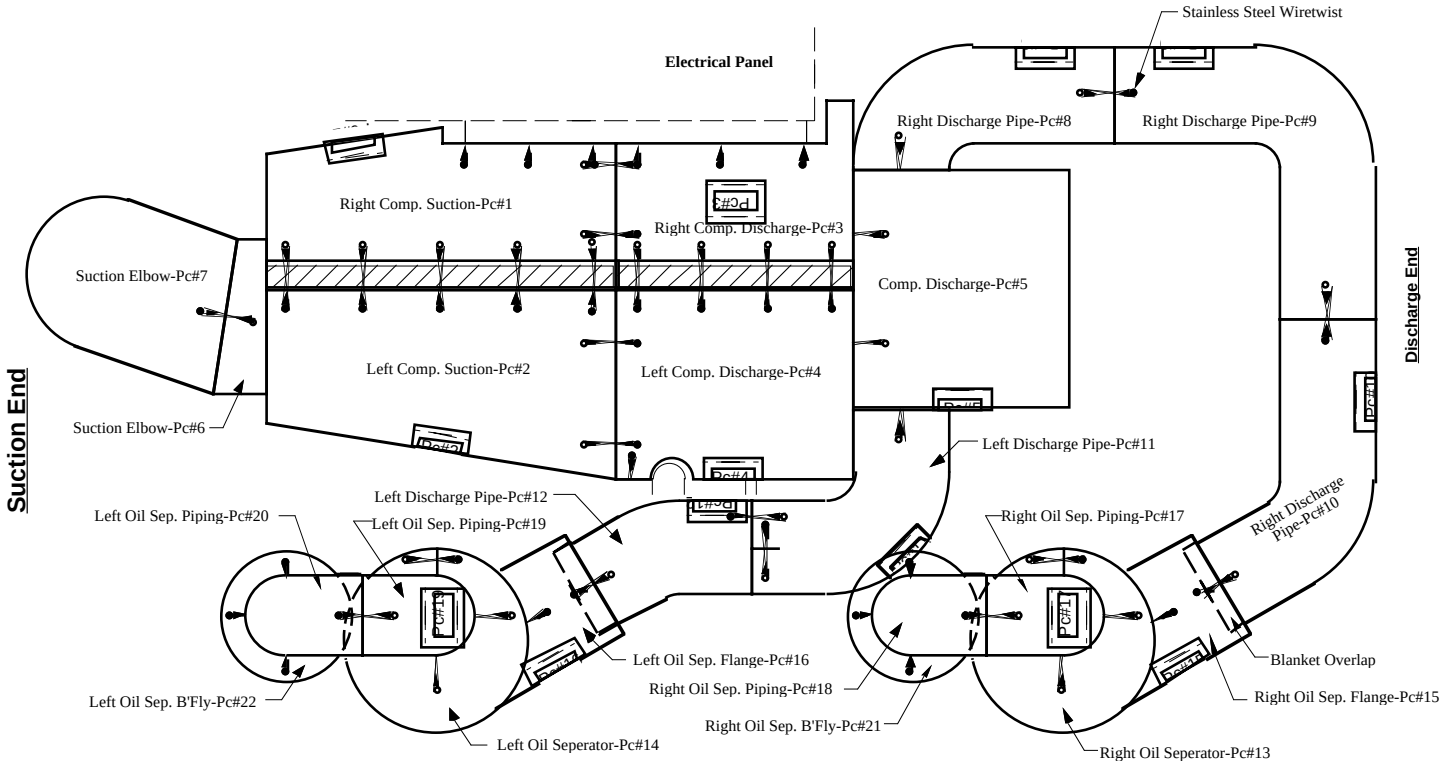
225-275 Tons (60Hz) 275-325 (60Hz)

Trane Models #RTHC1C1, RTHC1C2, RTHC1D1 & RTHC1D2

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.

Economy Package - Performance: 5dBA Reduction



PLAN VIEW

Scale: N.T.S.

Drawn By: Scott Bruning

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INSULTECH

RTHC Series R® Helical Rotary Liquid Chillers

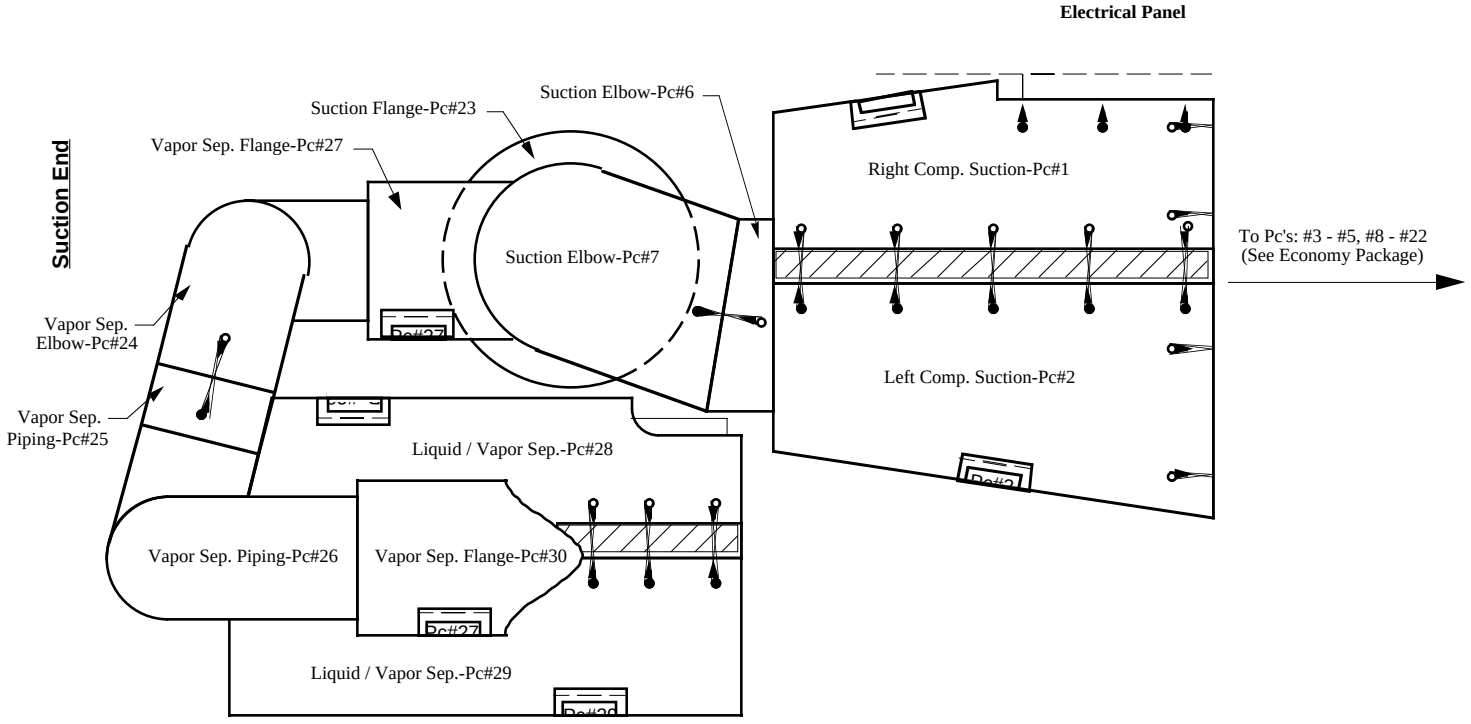
225-275 Tons (60Hz) 275-325 (60Hz)

Trane Model #RTHC1C1, RTHC1C2, RTHC1D1 & RTHC1D2

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.

Enchanced Package - Performance: 6 - 8dBA Reduction



PLAN VIEW

Scale: N.T.S.

Drawn By: Scott Bruning

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INSULTECH

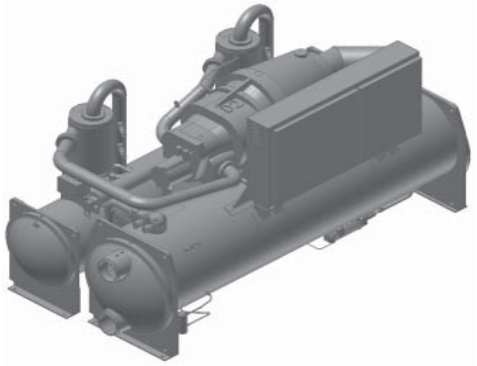
Trane RTHD

Economy Package -5 dBA Reduction

Design Specification:	LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04



RTHC Liquid Chiller Sound Kit Price Sheet: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	List Price/Kit	
	RTHD-Rotary Screw Liquid Chiller		
	Economy Package: Performance: 5 dBA Reduction **Treatment: Compressor / Motor Housing, Discharge Piping From Compressor** **To Oil Separators, Oil Separators, Piping From Oil Separators To Butterfly** **Valves, Butterfly Valves, Suction Elbow & Suction Flange**		
23	Trane Model: RTHD - B1-(175-200 Ton)	$2,639.00 / Chiller	*
24	Trane Model: RTHD - B2-(200-225 Ton)	$2,639.00 / Chiller	*
25	Trane Model: RTHD - C1-(225-275 Ton)	$3,728.00 / Chiller	
26	Trane Model: RTHD - C2-(275-325 Ton)	$3,728.00 / Chiller	
27	Trane Model: RTHD - D1-(325-400 Ton)	$3,728.00 / Chiller	
28	Trane Model: RTHD - D2-(375-450 Ton)	$3,728.00 / Chiller	
29	Trane Model: RTHD - D3	$4,156.00 / Chiller	
30	Trane Model: RTHD - E3	$4,156.00 / Chiller	

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier
• All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions.
*** No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

INSULTECH

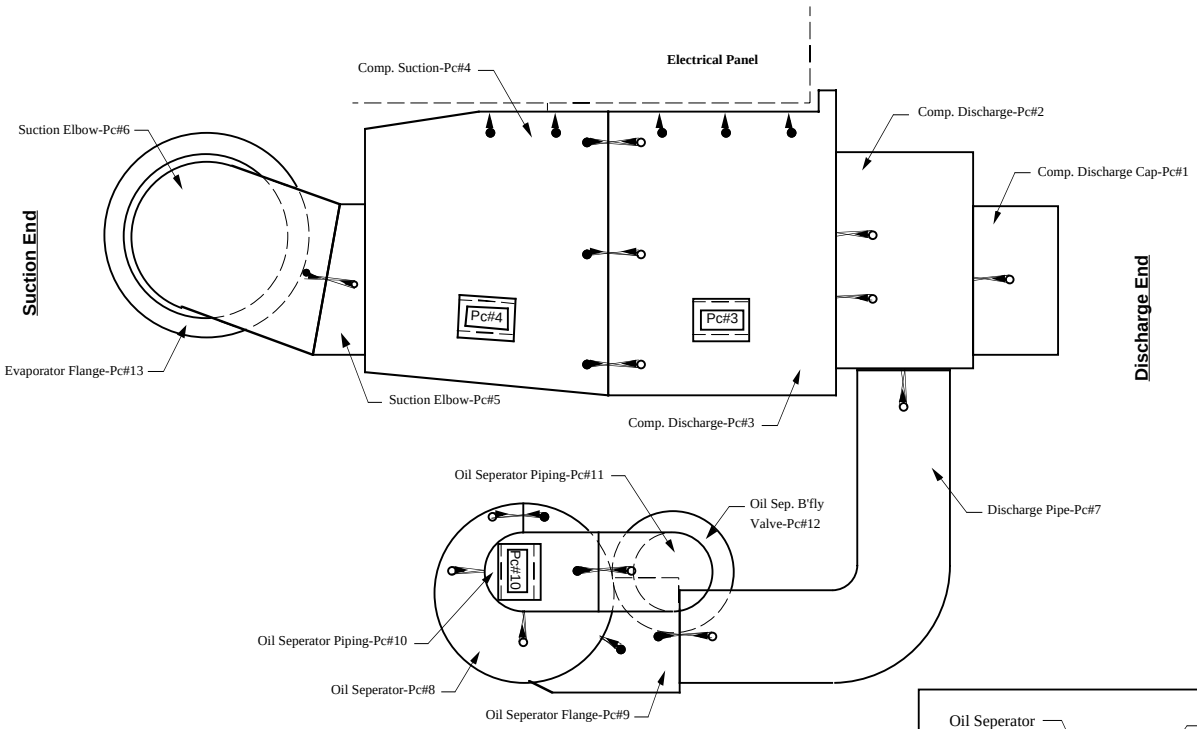
RTHD Series R® Helical Rotary Liquid Chillers

175-200 Tons (60Hz)/200-225 (60Hz)

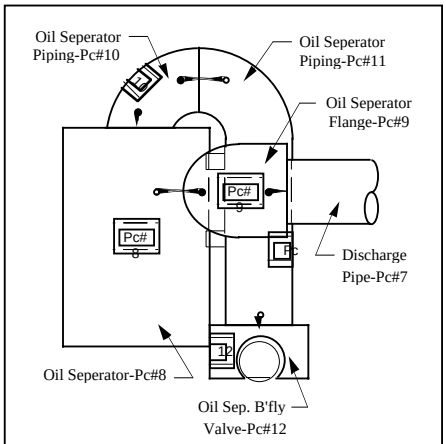
Trane Model #RTHDUB1 & RTHDUB2

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.



PLAN VIEW



SIDE ELEVATION

Scale: N.T.S.
Drawn By: Scott Bruning

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INSULTECH

Trane RTAA
Liquid Chiller Sound Kits
Economy Package - 4 dBA Reduction

Design Specification: **LT250A-VP (See 2.1)**

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04

RTAA Liquid Chiller Sound Kit Price Sheet: **LT250A-VP (See 2.1)**

Item	Trane Model Number/Description	Compressor Match-Ups	List Price	
	***RTAA-Rotary Screw Liquid Chiller**			
	Treatment: Compressor Housings Only			
31	Model: RTAA - 070	35/35	$1,690.00 / Chiller	*
32	Model: RTAA - 080	40/40	$1,690.00 / Chiller	*
33	Model: RTAA - 090	50/40	$1,690.00 / Chiller	*
34	Model: RTAA - 100	50/50	$1,690.00 / Chiller	*
35	Model: RTAA - 110	60/50	$1,690.00 / Chiller	*
36	Model: RTAA - 125	60/60	$1,690.00 / Chiller	*
37	Model: RTAA - 130	70/70	$2,100.00 / Chiller	*
38	Model: RTAA - 140	70/70	$2,100.00 / Chiller	*
39	Model: RTAA - 155	85/70	$2,100.00 / Chiller	*
40	Model: RTAA - 170	100/70	$2,100.00 / Chiller	*
41	Model: RTAA - 185	100/85	$2,100.00 / Chiller	*
42	Model: RTAA - 200	100/100	$2,100.00 / Chiller	*
43	Model: RTAA - 215	100/100	$2,100.00 / Chiller	*
44	Model: RTAA - 240	70-70/100	$3,200.00 / Chiller	*
45	Model: RTAA - 270	100-70/100	$3,200.00 / Chiller	*
46	Model: RTAA - 300	100-100-100	$3,200.00 / Chiller	*
47	Model: RTAA - 340	70-70/100-100	$4,200.00 / Chiller	*
48	Model: RTAA - 370	100-70/100-100	$4,200.00 / Chiller	*
49	Model: RTAA - 400	100-100/100-100	$4,200.00 / Chiller	*

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier
• All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions.
***No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

Trane RTAA
Liquid Chiller Sound Kits
Enhanced Package - 6-8 dDA Reduction

Design Specification: **LT250A-VP (See 2.1)**

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04

RTAA Liquid Chiller Sound Kit Price Sheet: **LT250A-VP (See 2.1)**

Item	Trane Model Number/Description	Compressor Match-Ups	List Price	
	RTAA-Rotary Screw Liquid Chiller			
	Treatment: Compressors, Compressor Piping, Oil Separators			
50	Model: RTAA - 070	35/35	$2,800.00 / Chiller	*
51	Model: RTAA - 080	40/40	$2,800.00 / Chiller	*
52	Model: RTAA - 090	50/40	$2,800.00 / Chiller	*
53	Model: RTAA - 100	50/50	$2,800.00 / Chiller	*
54	Model: RTAA - 110	60/50	$2,800.00 / Chiller	*
55	Model: RTAA - 125	60/60	$2,800.00 / Chiller	*
56	Model: RTAA - 130	70/70	$3,312.00 / Chiller	
57	Model: RTAA - 140	70/70	$3,312.00 / Chiller	
58	Model: RTAA - 155	85/70	$3,361.00 / Chiller	
59	Model: RTAA - 170	100/70	$3,411.00 / Chiller	
60	Model: RTAA - 185	100/85	$3,560.00 / Chiller	
61	Model: RTAA - 200	100/100	$3,710.00 / Chiller	
62	Model: RTAA - 215	100/100	$3,710.00 / Chiller	
63	Model: RTAA - 240	70-70/100	$8,861.00 / Chiller	
64	Model: RTAA - 270	100-70/100	$8,960.00 / Chiller	
65	Model: RTAA - 300	100-100-100	$9,059.00 / Chiller	
66	Model: RTAA - 340	70-70/100-100	$11,424.00 / Chiller	
67	Model: RTAA - 370	100-70/100-100	$12,024.00 / Chiller	
68	Model: RTAA - 400	100-100/100-100	$12,122.00 / Chiller	

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions. • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**
***No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

RTAA Series R®

Rotary Liquid Chillers

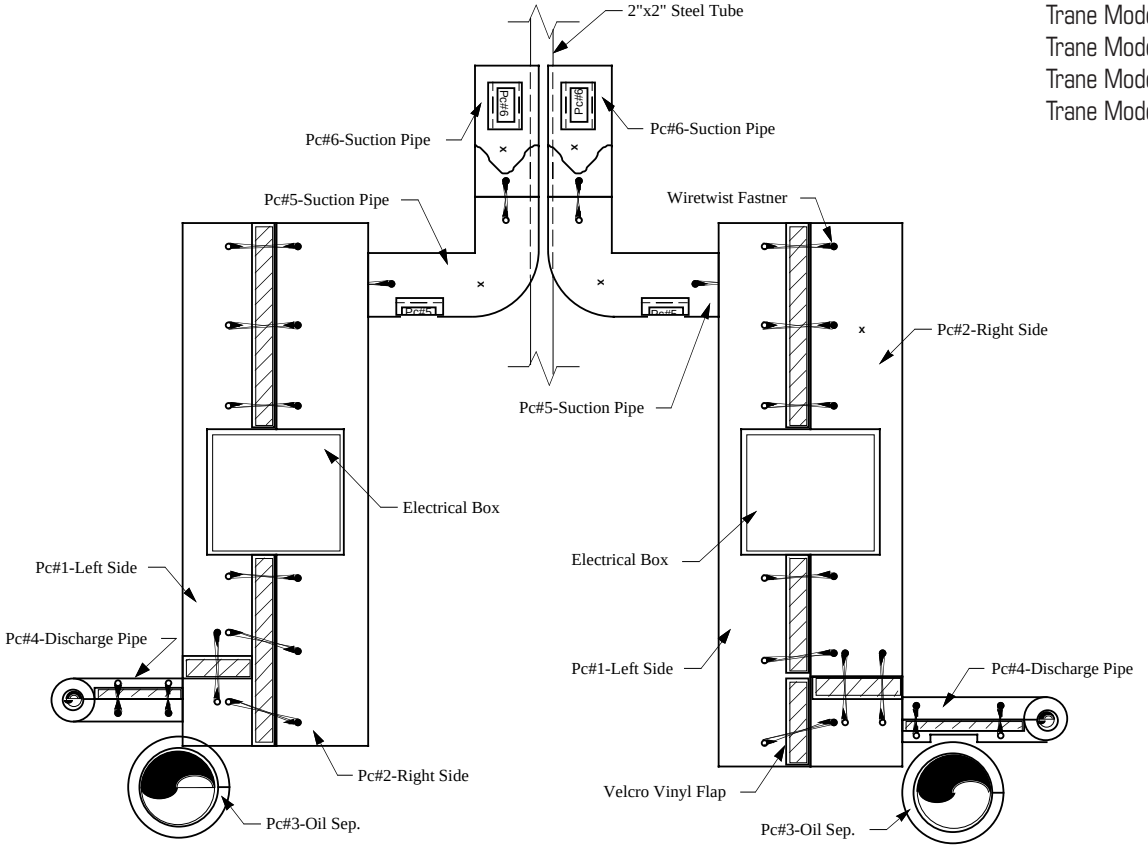
70-125 Tons Air Cooled

Trane Model #RTAA070-RTAA125

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.

Trane Model: RTAA070
Trane Model: RTAA080
Trane Model: RTAA090
Trane Model: RTAA100
Trane Model: RTAA110
Trane Model: RTAA125



CIRCUIT #2 **CIRCUIT #1**

PLAN VIEW

Scale: N.T.S.

Drawn By: Scott Bruning

INSULTECH

RTAA Series R®

Rotary Liquid Chillers

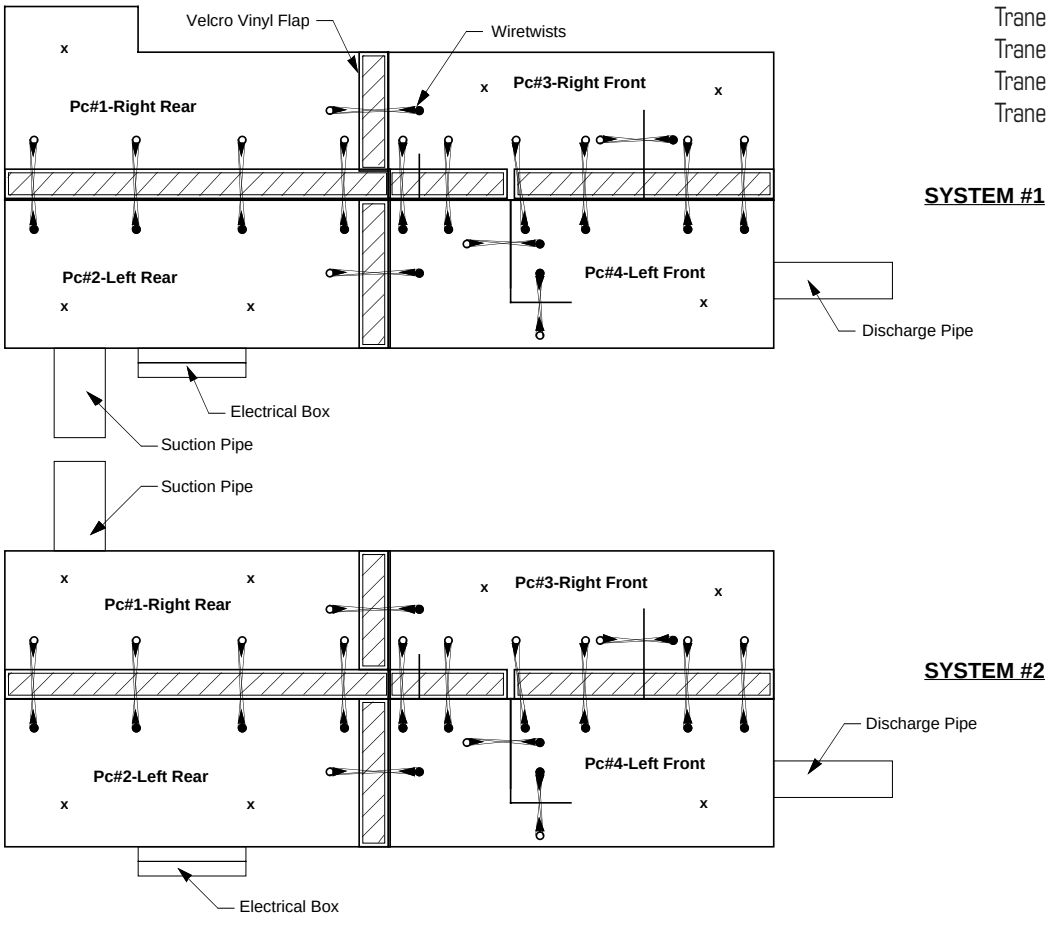
130-125 Tons Air Cooled

Trane Model #RTAA130-RTAA215

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.

Trane Model: RTAA130
Trane Model: RTAA140
Trane Model: RTAA155
Trane Model: RTAA170
Trane Model: RTAA185
Trane Model: RTAA200
Trane Model: RTAA215



SYSTEM #1

SYSTEM #2

Scale: N.T.S.

Drawn By: Scott Bruning

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INSULTECH

RTAA Series R®

Rotary Liquid Chillers

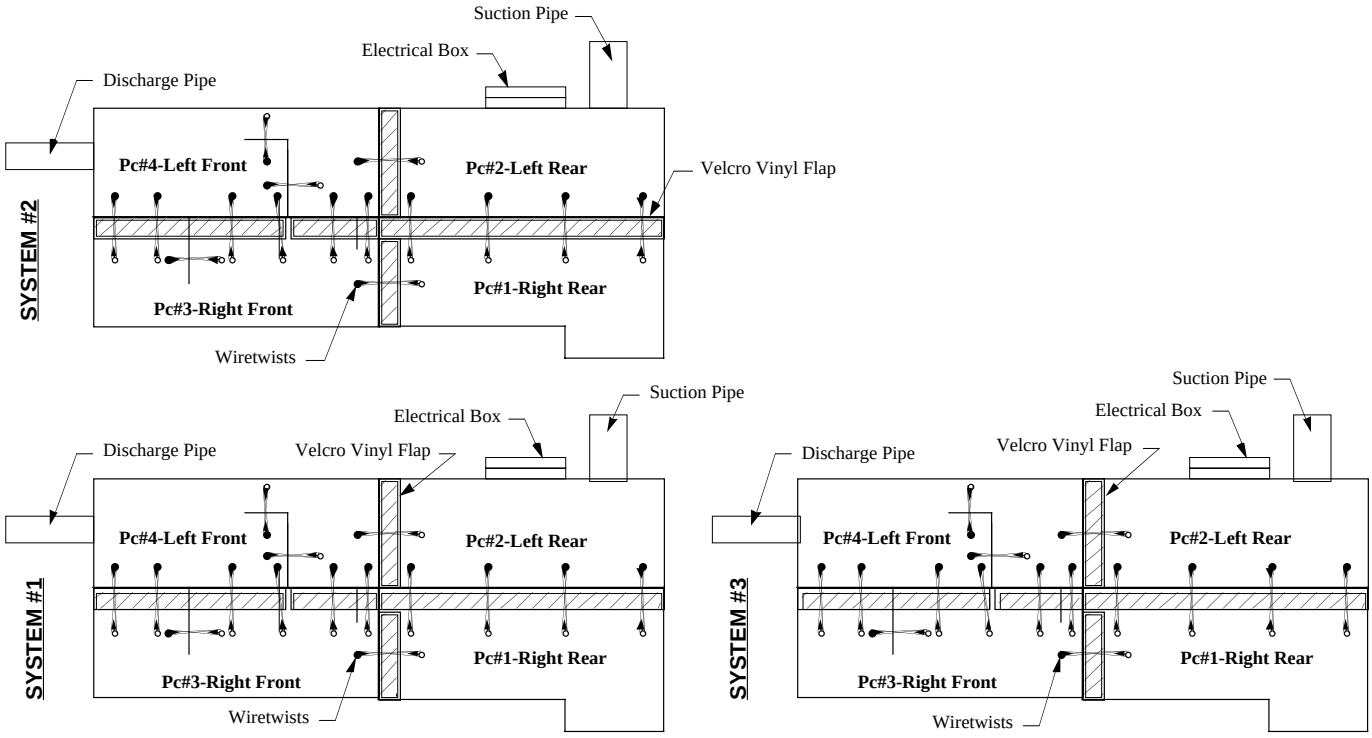
240-300 Tons Air Cooled

Trane Model #RTAA240-RTAA300

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.

Trane Model: RTAA240
Trane Model: RTAA270
Trane Model: RTAA300



PLAN VIEW

Scale: N.T.S.

Drawn By: Scott Bruning

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INSULTECH

RTAA Series R®

Rotary Liquid Chillers

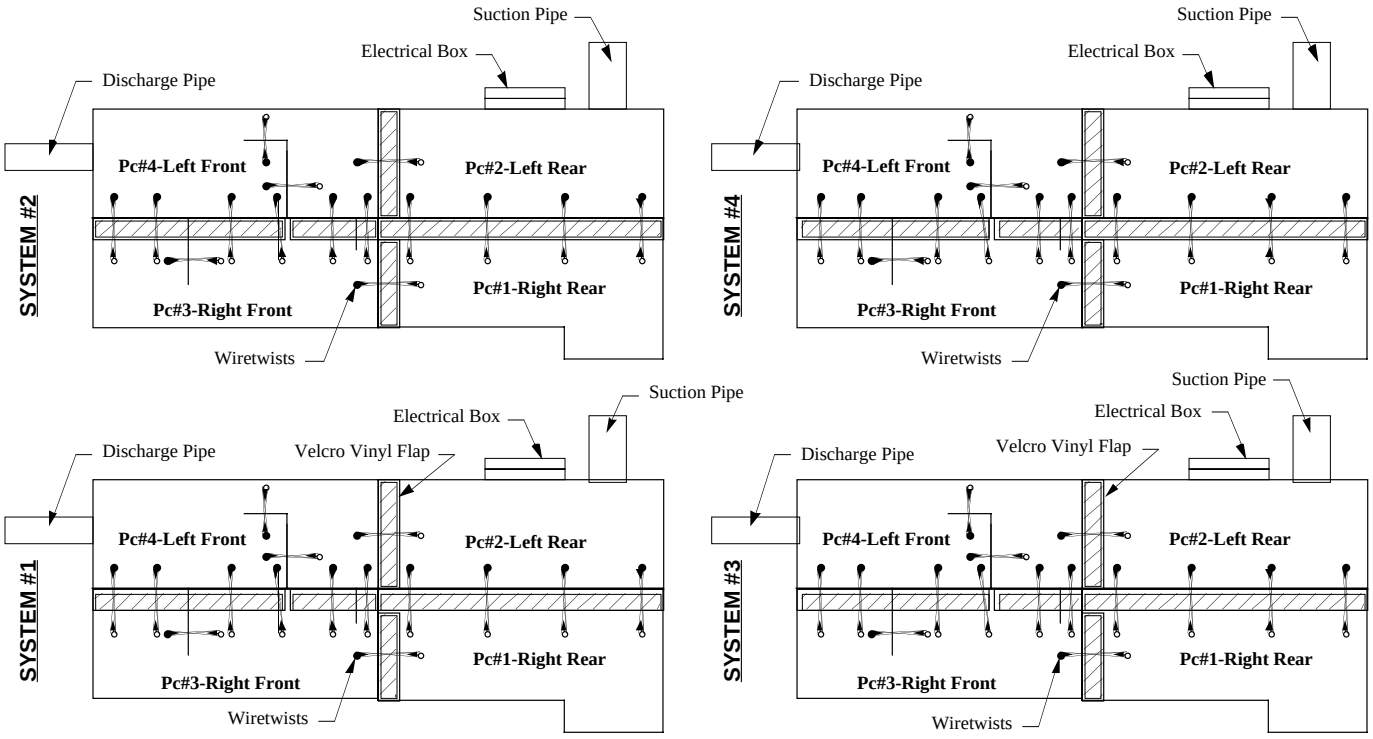
340-400 Tons Air Cooled

Trane Model #RTAA340-RTAA400

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.

Trane Model: RTAA340
Trane Model: RTAA370
Trane Model: RTAA400



PLAN VIEW

Scale: N.T.S.

Drawn By: Scott Bruning

INSULTECH

Price List

Trane RTAC

Liquid Chiller Sound Kits

Economy Package - 4 dBA Reduction

Design Specification: LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04

RTAC Liquid Chiller Sound Kit Price Sheet: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	Compressor Match-Ups	List Price	
	***RTAC-Rotary Screw Liquid Chiller**			
	Treatment: Compressor Housings Only			
69	Model: RTAC - 140	70/70	$2,075.00 / Chiller	*
70	Model: RTAC - 155	85/70	$2,127.00 / Chiller	*
71	Model: RTAC - 170	85/85	$2,180.00 / Chiller	*
72	Model: RTAC - 185	100/85	$2,232.00 / Chiller	*
73	Model: RTAC - 200	100/100	$2,285.00 / Chiller	*
74	Model: RTAC - 225	120/100	$2,411.00 / Chiller	*
75	Model: RTAC - 250	120/120	$2,538.00 / Chiller	*
76	Model: RTAC - 275	85/85-100	$3,586.00 / Chiller	*
77	Model: RTAC - 300	100/100-100	$3,775.00 / Chiller	*
78	Model: RTAC - 350	120/120-100	$3,975.00 / Chiller	*
79	Model: RTAC - 400	100-100/100-100	$4,807.00 / Chiller	
80	Model: RTAC - 450	120-120/100-100	$4,909.00 / Chiller	
81	Model: RTAC - 500	120-120/120-120	$5,262.00 / Chiller	

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions. • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**
***No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

Trane RTAC
Liquid Chiller Sound Kits
Enhanced Package - 6-8 dBA Reduction

Design Specification: **LT250A-VP (See 2.1)**

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04

RTAC Liquid Chiller Sound Kit Price Sheet: **LT250A-VP (See 2.1)**

Item	Trane Model Number/Description	Compressor Match-Ups	List Price	
	***RTAC-Rotary Screw Liquid Chiller**			
	Treatment: Compressors, Compressor Piping, Oil Separators			
82	Model: RTAC - 140	70/70	$3,486.00 / Chiller	*
83	Model: RTAC - 155	85/70	$3,538.00 / Chiller	*
84	Model: RTAC - 170	85/85	$3,591.00 / Chiller	*
85	Model: RTAC - 185	100/85	$3,747.00 / Chiller	*
86	Model: RTAC - 200	100/100	$3,905.00 / Chiller	*
87	Model: RTAC - 225	120/100	$4,075.00 / Chiller	*
88	Model: RTAC - 250	120/120	$4,365.00 / Chiller	*
89	Model: RTAC - 275	85/85-100	$10,182.00 / Chiller	
90	Model: RTAC - 300	100/100-100	$10,718.00 / Chiller	
91	Model: RTAC - 350	120/120-100	$11,282.00 / Chiller	
92	Model: RTAC - 400	100-100/100-100	$12,760.00 / Chiller	
93	Model: RTAC - 450	120-120/100-100	$13,432.00 / Chiller	
94	Model: RTAC - 500	120-120/120-120	$14,139.00 / Chiller	

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions. • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**
***No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

RTAC Series R®

Rotary Liquid Chillers

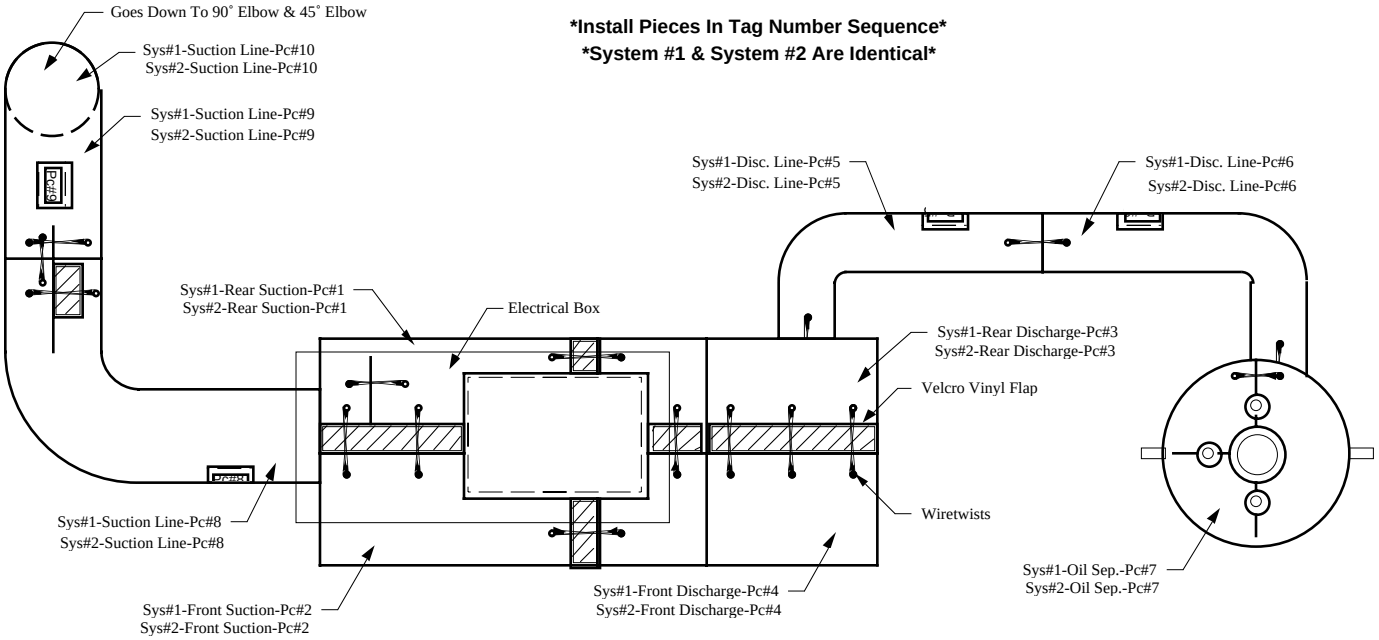
140-250 Tons Air Cooled

Trane Model #RTAC140-RTAC250

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.

Trane Model: RTAC140
Trane Model: RTAC155
Trane Model: RTAC170
Trane Model: RTAC185
Trane Model: RTAC200
Trane Model: RTAC225
Trane Model: RTAC250



PLAN VIEW

Scale: N.T.S.
Drawn By: Scott Bruning

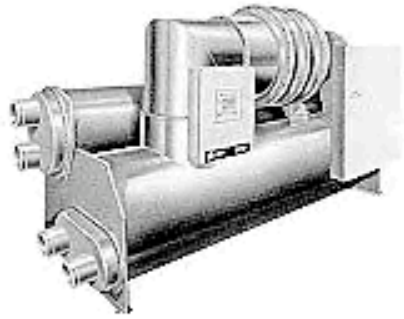
INSULTECH

Trane CVHE Liquid Chiller Sound Kit
Economy Package - 5 dBA Reduction
Enhanced Package - 6-8 dBA Reduction

Design Specification: **LT250A-VP (See 2.1)**

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04



CVHE Liquid Chiller Sound Kit Price Sheet: **LT250A-VP (See 2.1)**

Item	Description	Part Number	List Price
	CVHE-Centrifugal Liquid Chiller		
	Economy Package: Performance: 5 DBA Reduction **Treatment: Condenser Shell & Discharge**		
95	Model: CVHE - 230-320-320-SS		$2,780.00 / Chiller
96	Model: CVHE - 230-320-320-SL & LL		$3,364.00 / Chiller
97	Model: CVHE - 230-320-500-SS		$3,130.00 / Chiller
98	Model: CVHE - 230-320-500-SL &LL		$3,833.00 / Chiller
99	Model: CVHE - 360-500-500-SS		$2,983.00 / Chiller
100	Model: CVHE - 360-500-500-SL & LL		$3,755.00 / Chiller
101	Model: CVHE - 360-500-800-SS		$3,423.00 / Chiller
102	Model: CVHE - 360-500-800-SL & LL		$3,661.00 / Chiller
	CVHE-Centrifugal Liquid Chiller		
	Enhanced Package: Performance: 6 - 8 DBA Reduction **Treatment: Condenser Shell, Discharge, Compressor Housing, Inlet & Motor**		
103	Model: CVHE - 230-320-320-SS		$5,896.00 / Chiller
104	Model: CVHE - 230-320-230-SL & LL		$6,480.00 / Chiller
105	Model: CVHE - 230-320-500-SS		$6,248.00 / Chiller
106	Model: CVHE - 230-320-500-SL &LL		$6,950.00 / Chiller
107	Model: CVHE - 360-500-500-SS		$5,867.00 / Chiller
108	Model: CVHE - 360-500-500-SL & LL		$6,640.00 / Chiller
109	Model: CVHE - 360-500-800-SS		$6,307.00 / Chiller
110	Model: CVHE - 360-500-800-SL & LL		$6,545.00 / Chiller

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

Price List

Trane CVHF

Liquid Chiller Sound Kits

Economy Package - 5 dBA Reduction

Design Specification: LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.3 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04

CVHF Centrifugal Liquid Chiller Sound Kit Price Sheet: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	List Price/Kit
	CVHF-Centrifugal Liquid Chiller	
	Economy Package	
	Treatment: Condenser Shell & Discharge	
111	Model: CVHF - 350-485-500-SS	$3,549.00 / Chiller
112	Model: CVHF - 350-485-500-SL & LL	$4,040.00 / Chiller
113	Model: CVHF - 350-485-800-SS	$3,566.00 / Chiller
114	Model: CVHF - 350-485-800-SL & LL	$4,368.00 / Chiller
115	Model: CVHF - 555-640-500-SS	$3,162.00 / Chiller
116	Model: CVHF - 555-640-500-SL & LL	$3,887.00 / Chiller
117	Model: CVHF - 555-640-800-SS	$3,637.00 / Chiller
118	Model: CVHF - 555-640-800-SL & LL	$4,474.00 / Chiller
119	Model: CVHF - 650-910-800-SS	$3,804.00 / Chiller
120	Model: CVHF - 650-910-800-SL & LL	$4,594.00 / Chiller
121	Model: CVHF - 650-910-1420-ML & LL	$5,604.00 / Chiller
122	Model: CVHF - 1060-1280-1420-ML & LL	$5,658.00 / Chiller
123	Model: CVHF - 1060-1280-1420-EL	$6,242.00 / Chiller
124	Model: CVHF - 1060-1280-2100-LL	$6,151.00 / Chiller
125	Model: CVHF - 1060-1280-2500-EL	$7,166.00 / Chiller
126	Model: CVHF - 1470-2100-LL	$6,247.00 / Chiller
127	Model: CVHF - 1470-2500-EL	$7,288.00 / Chiller

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

Price List

Trane CVHF

Liquid Chiller Sound Kits

Enhanced Package 6-8 dBA Reduction

Design Specification: LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04

Trane CVHF Liquid Chiller Sound Kit Price List: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	List Price/Kit
	CVHF-Centrifugal Liquid Chiller	
	Enhanced Package	
	Treatment: Condenser Shell, Discharge, Compressor Housing, Inlet & Motor	
128	Model: CVHF - 350-485-500-SS	$6,862.00 / Chiller
129	Model: CVHF - 350-485-500-SL & LL	$7,353.00 / Chiller
130	Model: CVHF - 350-485-800-SS	$6,880.00 / Chiller
131	Model: CVHF - 350-485-800-SL & LL	$7,681.00 / Chiller
132	Model: CVHF - 555-640-500-SS	$6,583.00 / Chiller
133	Model: CVHF - 555-640-500-SL & LL	$7,308.00 / Chiller
134	Model: CVHF - 555-640-800-SS	$7,058.00 / Chiller
135	Model: CVHF - 555-640-800-SL & LL	$7,895.00 / Chiller
136	Model: CVHF - 650-910-800-SS	$7,727.00 / Chiller
137	Model: CVHF - 650-910-800-SL & LL	$8,517.00 / Chiller
138	Model: CVHF - 650-910-1420-ML & LL	$9,526.00 / Chiller
139	Model: CVHF - 1060-1280-1420-ML & LL	$9,885.00 / Chiller
140	Model: CVHF - 1060-1280-1420-EL	$10,470.00 / Chiller
141	Model: CVHF - 1060-1280-2100-LL	$10,378.00 / Chiller
142	Model: CVHF - 1060-1280-2500-EL	$11,393.00 / Chiller
143	Model: CVHF - 1470-2100-LL	$10,760.00 / Chiller
144	Model: CVHF - 1470-2500-EL	$11,801.00 / Chiller

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

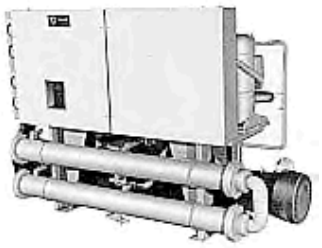
Price List

Trane CGWD/ RAUC
Liquid Chiller Sound Kits
8 dBA Reduction

Design Specification: LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04



CGWD / RAUC Liquid Chiller Sound Kit Price Sheet: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	Compressor Match-Ups	List Price	
	Scroll Liquid Chiller			
	Treatment: Compressor Housings Only			
145	Model: CGWD - 20	(2-10)	$397.00 / Chiller	
146	Model: CGWD - 25	(1-10, 1-15)	$495.00 / Chiller	
147	Model: CGWD - 30	(2-15)	$594.00 / Chiller	
148	Model: CGWD - 40	(4-10)	$794.00 / Chiller	
149	Model: CGWD - 50	(2-10, 2-15)	$991.00 / Chiller	
150	Model: CGWD - 60	(4-15)	$1,188.00 / Chiller	
151	Model: RAUC - 20	(2-10)	$397.00 / Chiller	*
152	Model: RAUC - 25	(1-10, 1-15)	$495.00 / Chiller	*
153	Model: RAUC - 30	(2-15)	$594.00 / Chiller	*
154	Model: RAUC - 40	(4-10)	$794.00 / Chiller	*
155	Model: RAUC - 50	(2-10, 2-15)	$991.00 / Chiller	*
156	Model: RAUC - 60	(4-15)	$1,187.00 / Chiller	*
157	Model: RAUC - 70	(4-10, 2-15)	$1,584.00 / Chiller	*
158	Model: RAUC - 80	(4-15, 2-10)	$1,584.00 / Chiller	*
159	Model: RAUC - 100	(4-10, 4-15)	$1,981.00 / Chiller	*
160	Model: RAUC - 120	(8-15)	$2,376.00 / Chiller	*

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions. • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**
***No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

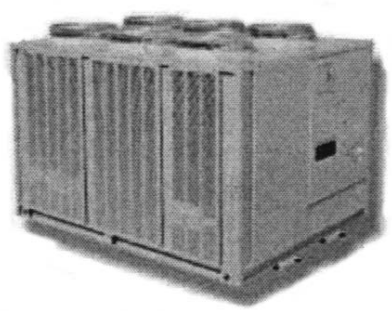
Price List

Trane CGAF / SAHF
Liquid Chiller Sound Kits
8 dBA Reduction

Design Specification: LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04



CGAF / SAHF Liquid Chiller Sound Kit Price Sheet: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	Compressor Match-Ups	List Price	
	Scroll Liquid Chiller			
	Treatment: Compressor Housings Only			
161	Model: CGAF - 20	(2-10)	$550.00 / Chiller	*
162	Model: CGAF - 25	(1-10, 1-15)	$550.00 / Chiller	*
163	Model: CGAF - 30	(2-15)	$550.00 / Chiller	*
164	Model: CGAF - 40	(4-10)	$1,100.00 / Chiller	*
165	Model: CGAF - 50	(2-10, 2-15)	$1,100.00 / Chiller	*
166	Model: CGAF - 60	(4-15)	$1,100.00 / Chiller	*
167	Model: SAHF - 20	(2-10)	$436.00 / Chiller	*
168	Model: SAHF - 25	(1-10, 1-15)	$436.00 / Chiller	*
169	Model: SAHF - 30	(2-15)	$436.00 / Chiller	*
170	Model: SAHF - 40	(4-10)	$872.00 / Chiller	*
171	Model: SAHF - 50	(2-10, 2-15)	$872.00 / Chiller	*
172	Model: SAHF - 55	(4-15)	$872.00 / Chiller	*
173	Model: SAHF - 60	(4-15)	$872.00 / Chiller	*
174	Model: SAHF - 70	(4-10, 2-15)	$1,308.00 / Chiller	*
175	Model: SAHF - 75	(4-10, 2-15)	$1,308.00 / Chiller	*
176	Model: SAHF - 90	(2-10, 4-15)	$1,308.00 / Chiller	*
177	Model: SAHF - 105	(6-15)	$1,308.00 / Chiller	*
178	Model: SAHF - 115	(4-10, 4-15)	$1,744.00 / Chiller	*
179	Model: SAHF - 130	(8-15)	$1,744.00 / Chiller	*

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier
• All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions.
***No Site Visit Required.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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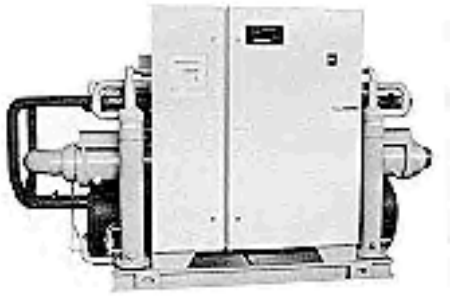
INSULTECH

Trane RTWA & Misc. Units
Liquid Chiller Sound Kits
6 dBA Reduction

Design Specification No.: LT250A-VP (See 2.1)

Features: 1.5" Blanket Thickness (2.5 lbs./sf Finished Surface Mass)
Standard Fastener: Stainless Steel Wiretwist/2.5" Velcro Vinyl Flaps
Double Sewn Construction with Binding

Revised: 01/04



RTWA & Misc. Units Price Sheet: LT250A-VP (See 2.1)

Item	Trane Model Number/Description	Compressor Match-Ups	List Price
	RTWA-Helical Rotary Chillers		
	Treament: Compressor, Discharge Line		
180	Model: RTWA-070	35/35	$1,711.00 / Chiller
181	Model: RTWA-080	40/40	$1,764.00 / Chiller
182	Model: RTWA-090	50/40	$1,800.00 / Chiller
183	Model: RTWA-100	50/50	$1,860.00 / Chiller
184	Model: RTWA-110	60/50	$2,054.00 / Chiller
185	Model: RTWA-125	60/60	$2,140.00 / Chiller
	Heat Pump Enclosures		
	(Acoustic Enclosure)		
186	WHPD-013		$720.00 / Pump
187	WHPD-006		$720.00 / Pump
188	WHPD-019		$895.00 / Pump
	Air Handler Enclosures		
189	AHU (27" x 44" x 94" Long)		$3,323.00 Ea.
190	Super - Q (Unit Size: 44) - (34" x 65" x 47"L)		$5,431.00 Ea.
	Recipricating Compressor		
191	Enclosure (26" x 28" x 39"L)		$1,090.00 Ea.

Quantity Discounts: 1-3 Ea. = Unit • **Cost 4-6** = 0.97 Multiplier • **7 Or More** = 0.95 Multiplier • All Sound Kits Match A Factory Installed Thermal Insulation, No Exceptions • **All Jobs Require A Site Visit Charge** = $400.00 Net Cost. • **All Jobs Require A Site Visit.**

Terms: Net 30 Days • **Typical Lead Time**: 4-6 Weeks • **FOB**: N. Tonawanda, NY • **Quick Ship**: (Call For Pricing Adder) • **Export Crating**: Available on Request

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INSULTECH

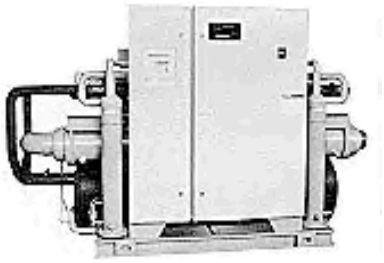
RTWA

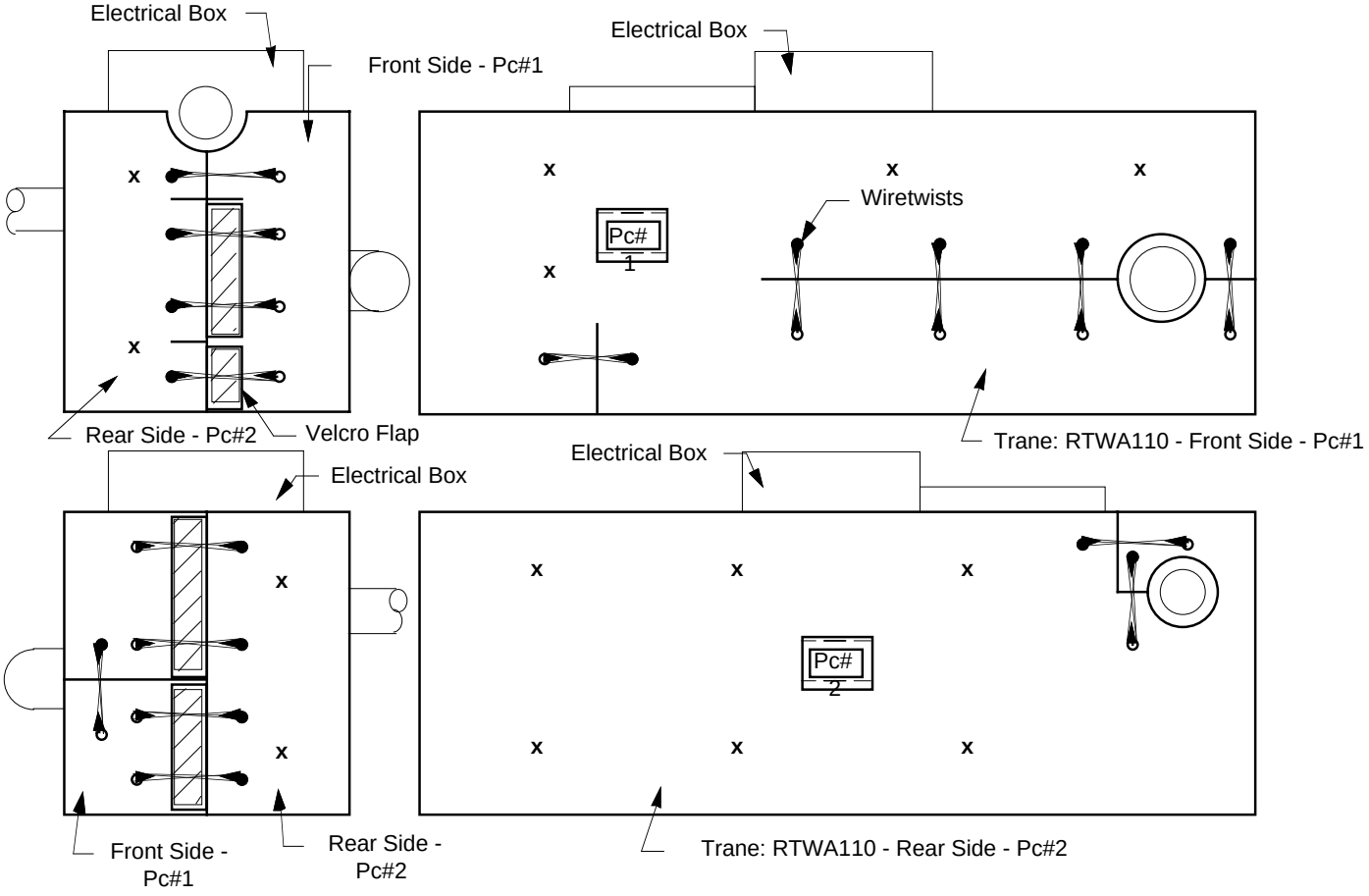
and Miscellaneous Units

Trane Model #RTWA110

Install Highlights

Install Pieces In Tag Number Sequence
Some Hidden Lines Indicate Overlapping Of Pieces.
Installation May Require A Pounding To Position Blanket Pieces Into Place.
Use The Wiretwists To Draw Closing Seams Into Position.
Once Seam Positions Are Correct, Lock Closing Velcro® Flap At Seam & Retie Wiretwist.
Lace Wiretwists Into A Figure-Eight Pattern.
Some Wiring Conduit Is Assembled Into The Blanket Enclosure.





Scale: N.T.S.

Drawn By: Scott Bruning

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