TRANE

HEATING SPECIALTIES FOR VAPOR AND VACUUM SYSTEMS

THE TRANE COMPANY
LA CROSSE, WISCONSIN

TRANE HEATING SPECIALTIES

FOR VAPOR AND VACUUM SYSTEMS

Bulletin 14

THE TRANE COMPANY

LA CROSSE, WISCONSIN

Branches in all Principal Cities

TRANE COMPANY OF CANADA, LTD.
TORONTO, ONTARIO

BRITISH TRANE COMPANY
LONDON, ENGLAND

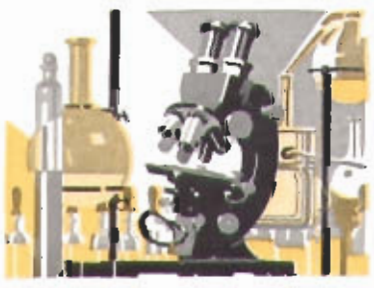
TRANE RESEARCH

THE REALIZATION OF AN IDEAL

ONE of the first ideals of The Trane Company at its inception in 1885 was the realization that if the company was to grow and to be of service to the public, it must operate a Research Laboratory for learning the truth about its products and for the development of future ideas. This ideal has been carried on continuously, so that today this department is finding out things that have not been known previously about heating. New products are continually in all stages of development and test; and whenever a new product is introduced, the public can be absolutely assured that it has been thoroughly developed, perfected, and applied in actual installations. We must know ABSOLUTELY that it will do exactly what is claimed.

As a result of this policy, it is with considerable pride that we offer the complete line of heating specialties listed in this bulletin.

A successful operation history over a period of years in practically every type of building, including multi-story structures, major industrial plants, all types of residences, and inclusion in the specifications as base by the leading architects and engineers, is actual assurance to you of the thoroughness of the research that has developed these products.



TRANE THERMOSTATIC BELLOWS

THE life and efficiency of a thermostatically controlled heating specialty is dependent upon the thermostat. Realizing this, Trane has used precision methods in every step of the manufacture of the bellows used in equipment described in this booklet. Those precision methods extend from the selection of the raw material to the final steam and water operating tests.

Reasons for Long Life of Trane Bellows Products

1. *Laboratory Methods in Selection of Raw Material.*
2. *Precision Manufacturing Methods.*
3. *Absolute Regularity of Thermostat Charge.*
4. *Balanced Pressure.*
5. *Seasoning.*
6. *Micrometer Tension Test.*
7. *Steam and Water Test.*
8. *Equivalent Bureau of Standards Test.*

The result of this precision is that Trane Bellows will operate satisfactorily under conditions that are far beyond our recommendations. Trane low pressure traps for instance are guaranteed for pressures up to twenty-five pounds. Numerous instances are on record in which Trane traps have been forced by inefficient reducing valves to operate on pressures up to one hundred pounds for a considerable length of time without injury. This is possible because of the balanced pressure. You ask, "What is balanced pressure?" Simply, balanced pressure is a condition which exists because of the method of charging bellows, whereby the pressure inside the bellows is never more than 6.3 lbs. greater than the steam pressure in the trap. Under such conditions, it is practically impossible to rupture a Trane bellows. The curves and explanatory matter on page 4 show you how this continuous margin of operative power is maintained through a wide variation of steam pressures.

The first step in the manufacture of Trane Bellows is the selection of the sheet brass. This is predicated on a microscopic photograph to insure the presence of a certain molecular texture necessary for the extreme sensitiveness of the bellows.

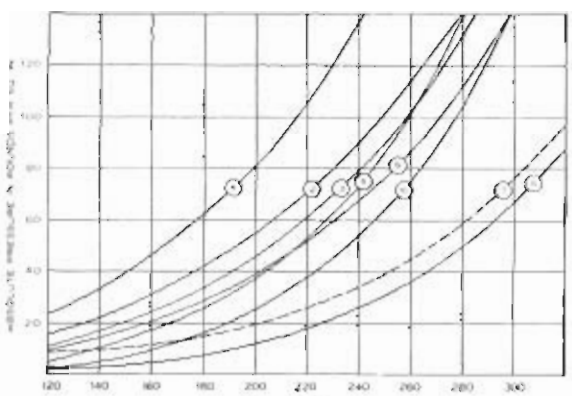
Then the sheet brass is inserted in giant punch presses and in fourteen oper-

ations is drawn into a long thin-walled tube. Micrometer readings are taken on the tube walls between each drawing to insure the proper thickness.

Then the tube is rolled through corrugating machines, the bellows formed, the bottom plunger and bellows top attached with high temperature solder. Next, the bellows is charged, and prepared for operation. This process is the most important in the manufacture of the bellows. Specially designed temperature regulators keep the sealing tanks under a constant temperature. Sealed off, the bellows are placed in the seasoning room where the temperatures change constantly. After sixty days, they are placed on the tension machine. Here they must register accuracy within .015 of an inch. Then they are placed in the product. Next, to the steam table for the steam and water test. Here they must respond to tests that are more exacting than the average system will ever subject them to, even under abnormal conditions, before the product receives the inspector's approval and is ready for shipment.

As a further check on the accuracy of the completed products, one of every five hundred lot of bellows traps is given the equivalent of the Bureau of Srandards Trap Test on equipment in the Trane laboratory, which duplicates the set-up in the government research building.

Vapor Pressure Curves

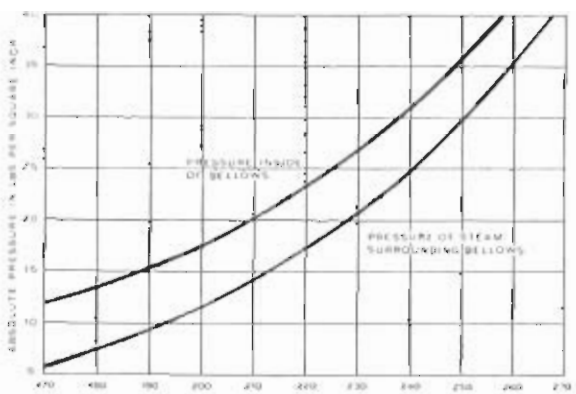


Plot "A"

Curves showing the amount of pressure inside a sealed bellows with a given amount of outside pressure. Curve No. 8 is the steam curve, and is used for purposes of comparison. Curve No. 7 is the Trane Balanced Pressure Curve. Curve No. 6 is Ethyl Alcohol, a liquid commonly used in traps. By noting the sharp upward turn of curve No. 6, and those that precede it, it is easy to see why traps that are filled with any of these liquids cannot stand high pressures.

The curves in plot "B" correspond to No. 7 and No. 8 in plot "A", drawn to different scale. They can be used for conveniently determining the temperature at which a Trane

Trane Bellows Curves



Plot "B"

trap will be fully open. As an example, to determine this point with the system operating at practically atmospheric pressure, draw a vertical line from the system temperature (i.e., 212 degrees with atmospheric pressure) to the steam curve, as shown. From this point draw a horizontal line to intersect the Balanced Pressure Curve. From this point, drop down and read the answer, which in this case is 190 degrees. The same method holds true for any given set of conditions within the operating range of this low pressure trap. Note that the operating characteristics of Trane high pressure traps cannot be read from these curves.

OPERATION OF THE TRANE BELLOWS

BALANCED PRESSURE — RESERVE POWER

THE last operation in the manufacture of a Trane Bellows is the charging and sealing, which is done under conditions that leave a few drops of water in the bellows. When steam enters the trap and surrounds the bellows, this water vaporizes and naturally results in a greater pressure inside the bellows than on the outside, which provides the operative force that moves the plunger down onto the seat. When the radiator condenses steam, and water surrounds the bellows, the vapor on the inside condenses and the bellows returns to its original position to permit water and air to enter the return lines.

Trane Bellows have what is known as balanced pressure and constant reserve power exclusive features. As shown in the graph, page 4, the pressure inside a Trane Bellows never exceeds the pressure outside the bellows by more than 5.36 lbs. That is why they are not ruptured should a reducing valve fail to function and subject the traps to a high pressure. Ordinary bellows or diaphragms are charged with a highly expansive liquid such as ethyl chloride or alcohol. With such liquids, an increase in steam pressure on the outside of the bellows means an immensely greater increase on the inside. As an example, with ethyl chloride, a steam pressure of 5 lbs. per sq. inch would result in a vapor pressure exceeding 100 lbs. per sq. inch inside the bellows. With a steam pressure of 20 lbs. per sq. inch the vapor pressure would exceed 150 lbs. per sq. inch. It is this complete unbalancing that causes bellows to rupture under high pressures.

This same method of charging also gives the Trane Bellows what is known as constant reserve power. Reserve power is the amount of force that is in store to push the plunger to the seat, should scale or sediment gather in the trap. By having a constant pressure available regardless of steam pressures, adjustments of the bellows products on the job are unnecessary.

Another indication of the precision with which these bellows are designed and manufactured is the elasticity. The bellows member has a normal expansion of ¼" without metal strain. In actual practice, it need expand only ⅛" to close completely the port of the product in which it is installed.

TRANE BELLOWS TRAP

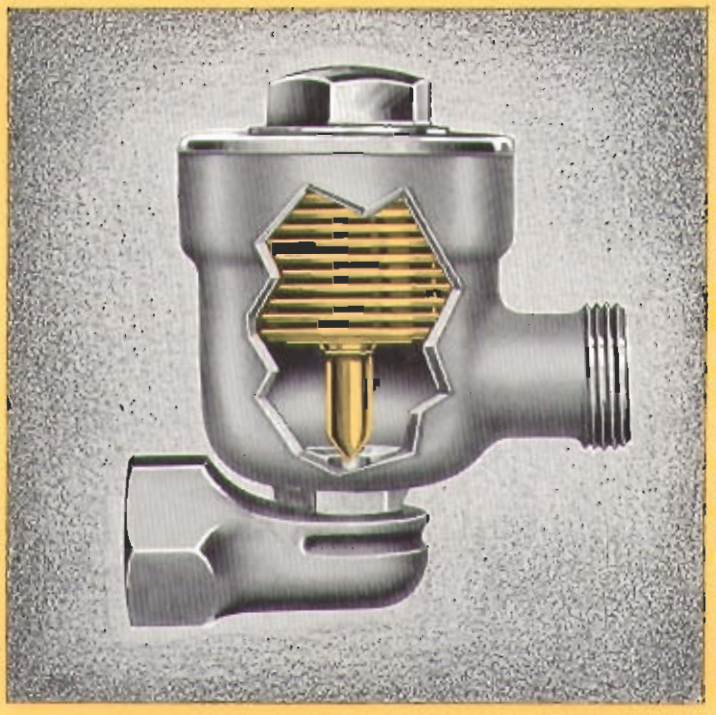
Trane Bellows Trap with 14 corrugation, 1¾" diameter bellows thermostat.

TRANE Bellows Traps are made in two patterns - angle and offset. The offset pattern is fitted with an adjustable offset outlet which makes possible a connection into the return lines at any angle of a complete circle desired. Both styles of traps are fitted with the standard Trane 14-corrugation bellows, and have an operating range from any vacuum to 25 pounds steam pressure. Angle pattern is also available for high pressure installations. High pressure traps are fitted with nitralloy plungers and removable nitralloy seats and have an operating range from 25-100 pounds steam pressure.

Trane Traps require no adjustment. The uniformity of the standards maintained in the manufacture of the bellows insures that the trap will perform without adjustment when it is installed.

Trap bodies are heavy steam brass. Covers are forged brass. Seats are not removable on low pressure models. They

TRANE BELLOWS TRAP



Cutaway View of Trane Offset Pattern Bellows Trap.

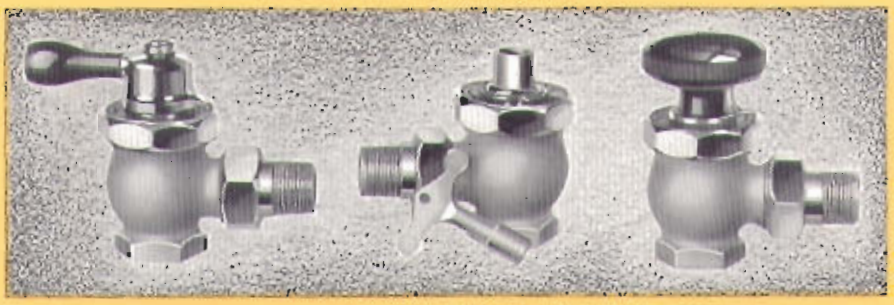
are machined in body of trap which removes possibility of dirt collecting.

Trane B-1 Trap

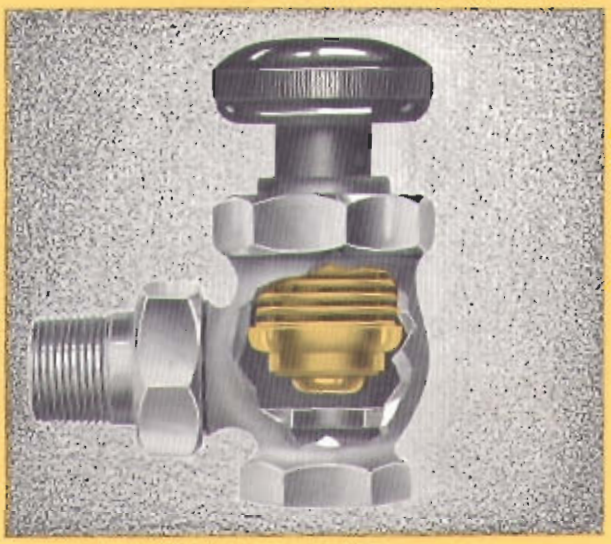
A large percentage of traps required for residential or commercial buildings is used on radiators with a capacity of less than 100 square feet. For installations of this type and for installations on convection heaters where space is at a premium, Trane has designed a small body trap which has an actuating thermostat with 12 instead of 14 corrugations. This bellows and trap have all the operating characteristics of the 14-corrugation bellows and trap within the capacity range and are subject to the same guarantee as the standard size traps.

Trane Traps are approved by Bureau of Standards and Navy Department. For dimensions and capacities, see page 22.

TRANE BELLOWS PACKLESS VALVE



Trane valves are available with lever handle, wheel handle or lock and shield type. Wheel handle furnished as standard.

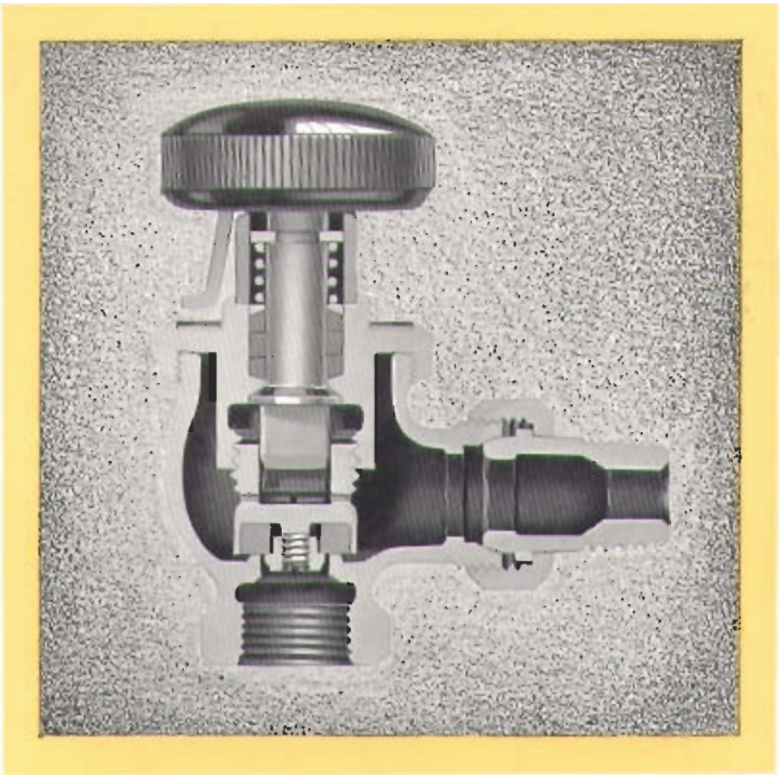


Cutaway View of Trane Bellows Packless Valve.

A SPECIALLY designed and manufactured bellows member entirely eliminates the necessity for packing in the steam chamber. One end of the bellows connects to the removable Jenkins disc on the bottom of the stem, the other forms a tight metal to metal contact between the valve cover and the valve body shoulder. Steam cannot come in contact with valve stem. The inherent flexibility of the bellows allows the valve to be opened and closed millions of times without strain or injury to the bellows. Guide cast in body prevents bellows being twisted.

Valve body is steam brass. Nickeled. Brass forged cover. Bakelite wheel handle. Spring tension holds handle in any position for which modulation indicator is set. Valve is completely opened or closed with one turn of handle. Valve is available in angle, right or left hand, and straightway patterns. Sizes and capacities on page 20.

TRANE No. 30 PACKLESS VALVE



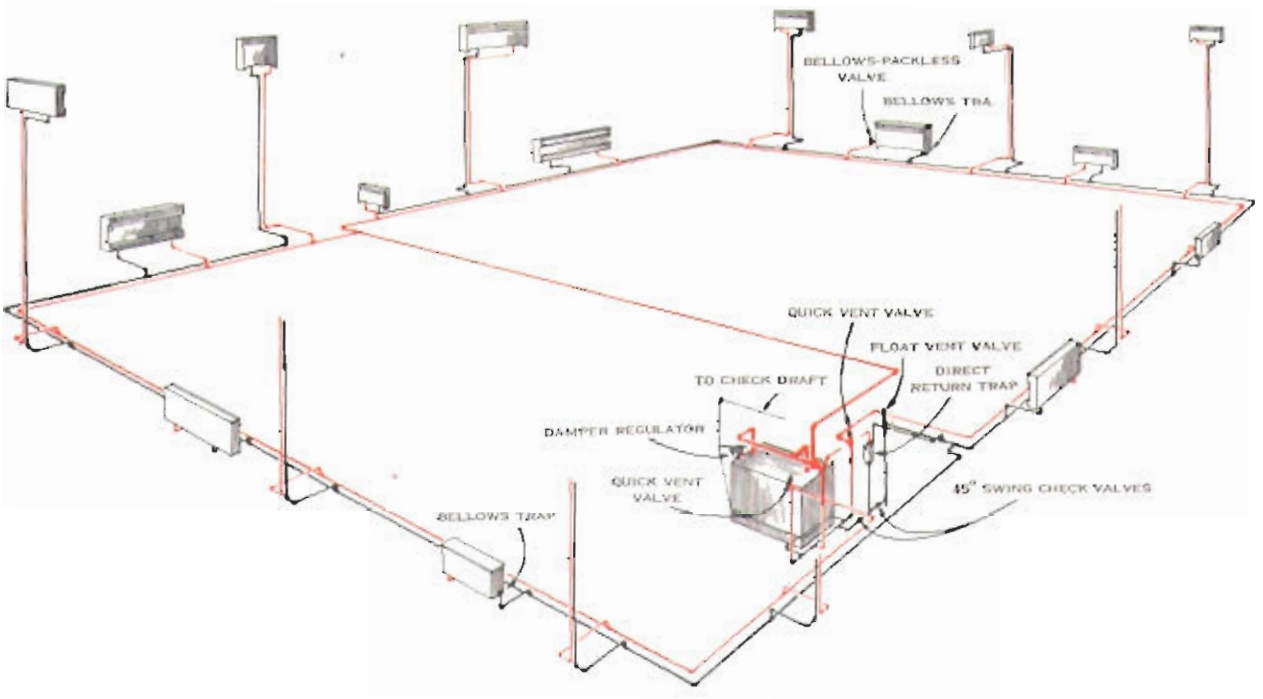
Cutaway view of No. 30 Trane Packless Valve.

THE Trane No. 30 Packless Valve is constructed without the bellows feature. Two carefully machined metal to metal shoulders insure valve against steam leakage. As an added precaution to prevent leakage should valve be damaged by rough handling, three moulded graphited asbestos rings are placed in the stem chamber.

This valve, while a considerably lower priced product than the bellows packless valve is in use on many large installations and specified by leading architects. It carries the standard Trane one-year guarantee.

It has in common with the bellows type valve such features as renewable Jenkins disc — non-rising stem — bakelite handle — spring handle tension — modulation indicator — complete opening and closing with one turn of the handle. Steam brass nickeled body and forged brass cover. Dimensions and capacities on page 20.

TRANE SYSTEM OF



— *Vapor Main.*

— *Air and Water Return Mains.*

THE layout above illustrates some of the basic engineering principles applied to the design of every Trane System, whether for residences or larger buildings of any kind. Note the two perfectly balanced circuits as shown by the colored piping which illustrates the vapor main through which vapor is supplied to the convection heaters or radiators. The air and water return shown by the black piping runs in the same direction and is practically the same length as the supply main. When properly worked out, this feature gives the same effect as though each convection heater or radiator were placed at an equal distance from the boiler and is one of the big reasons why Trane Vapor Systems heat so quickly and evenly, warming all parts of the building uniformly and at practically the same time.

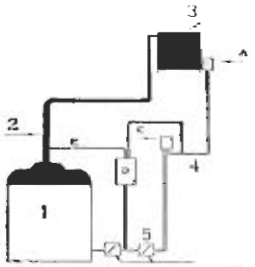
When fire is started in the boiler, the small amount of water soon becomes heated and the vapor rises through the pipes and enters the convection heaters or radiators, displacing the air which is heavier than the vapor. The air, together with the water of condensation, flows quickly and naturally by gravity through the radiator traps and return piping to a point near the boiler where the air is exhausted through the vents and the water returned to the boiler by the Direct Return Trap.

As soon as the rooms become warm, less vapor is condensed and the pressure in the boiler begins to rise. It is then that the sensitive vapor regulator starts to work, closing and opening the drafts, preventing fuel waste and insuring just the amount of pressure necessary for perfect comfort under all weather conditions.

VAPOR HEATING

HOW THE TRANE DIRECT RETURN TRAP OPERATES

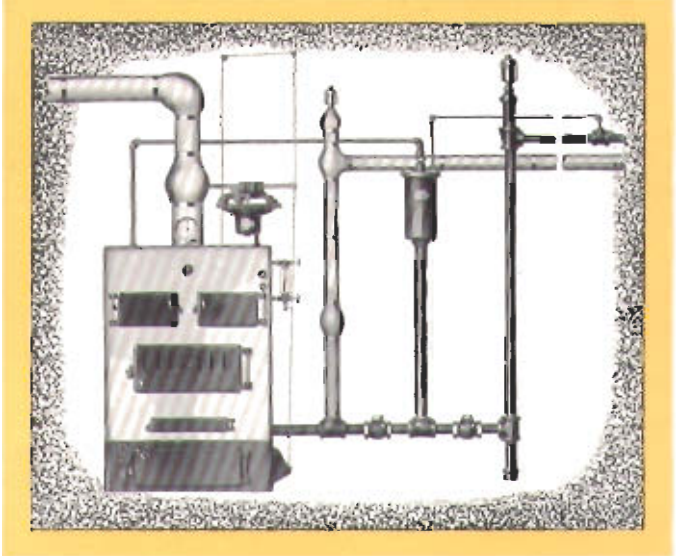
ON ANY radiator trap heating system where the traps function properly and do not leak steam, it is possible to have two pressures on the system. One pressure will be on the supply side and the other will be on the return. Without a Direct Return Trap this difference in pressure might be enough to prevent the return of condensation by gravity and trouble would result.



Illustrating Operation of the Direct Return Trap, as described in the text.

The illustration above shows the cycle of operation of a Trane Direct Return Trap which becomes operative in such instances. In case the fire is handled so that there is steam generated in excess of requirements, steam will fill the boiler, supply pipe and radiators up to the point A. Point A represents the radiator trap. Since good radiator traps pass only air, condensation and gases, it is easy to secure a higher pressure in the boiler than in the return line.

Notice in the figure that air is vented through a Float Vent Valve, C, and during the high pressure periods water of condensation will flow through the check valve, No. 5, into the Direct Return Trap, D. This Direct Return Trap is at the same pressure as the return line, 4, because it is connected through the vent opening in the top of the body into the return line. Consequently the water will rise up into the body of the Direct Return Trap, lifting the float until it reaches the top, snapping the mechanism which opens the steam supply, E, and closing the vent connection. There will then be the same pressure in the Direct Return Trap body as in the boiler and the water will be lowered, due to gravity, since the top of the Direct Return Trap is a minimum of 22" above the water line of the boiler, back into the boiler through the second check valve. When the water has lowered to the bottom of the Direct Return Trap, the mechanism closes the steam valve and opens the vent valve so that the water in the returns will again flow into the Direct Return Trap, and the operation be repeated.


Typical Installation of Boiler Specialties — Direct Return Trap, Vents, Gauge, and Damper Regulator.

TRANE VENT VALVES

Left, Trane Float Vent.

Center, Trane Quick Vent.

Right, Trane No. 9 Heavy Duty Vent.

TRANE Vents are widely used for releasing air from heating systems, commercial drying equipment, pipe coil and one-pipe steam installations, and in fact, wherever the presence of air retards the flow of steam.

On heating systems, Trane Vent Valves are installed in the basement on return lines and ends of steam mains. This method of venting makes the use of radiator air valves with their constant hissing and spitting unnecessary.

Trane Vents are made in three types. Quick Vents for ends of steam mains and equipment on which steam only comes in contact with the vent. Float Vents for return lines and equipment where vent must pass air but prevent steam or water from escaping out of the system. No. 9 or Heavy Duty Vent for installation instead of a battery of Quick or Float Vents on a large heating system or for use on dryers and other equipment, from which a large volume of air must be vented quickly and intermittently.

All vents are equipped with vacuum check over port hole which prevents air from entering the system through the vent regardless of the amount of vacuum being carried on the lines.

Float Vents

Close against steam and water. 14-corrugation standard Trane Bellows closes vent against steam. Seamless copper float closes vent against water. Nickel finish. Full ¼" venting port. Positive vacuum check. See page 23 for dimensions.

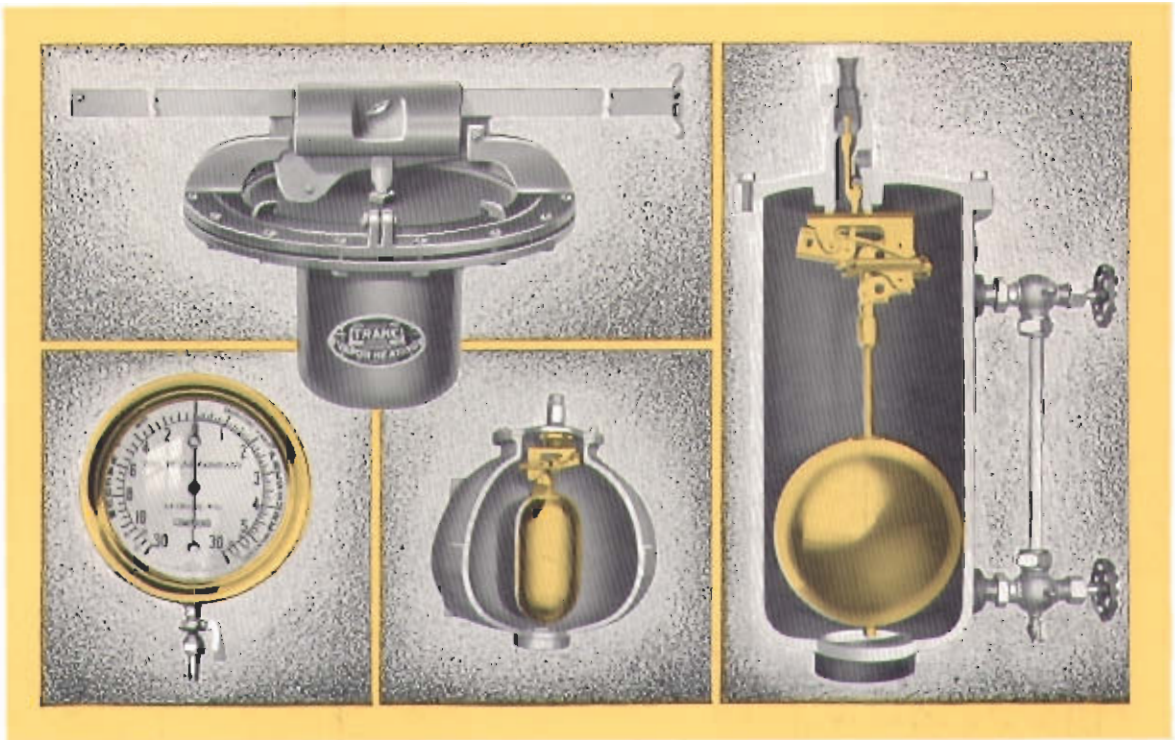
Quick Vents

Close against steam only. Nickel finish. Equipped with Trane 14-corrugation bellows for closing vent against steam. Full ¼" venting port. Positive vacuum check. See page 23 for dimensions.

No. 9 Vent Trap

The Trane No. 9 Vent is non-thermostatic. Capacity 10,000 square feet of radiation. This trap is designed for systems and equipment from which large volumes of air must be vented quickly. Black cast iron body. Float control. Brass vacuum check prevents air entering system. See page 23 for dimensions.

TRANE BOILER SPECIALTIES



Above: Trane Damper Regulator. Lower Left: Trane Gauge. Center: Cutaway View of Industrial Type Direct Return Trap. Right: Cutaway View of Residence Type Direct Return Trap.

TRANE Boiler Specialties play an important part in the operation of the vapor heating system. They are made with the same degree of precision as the bellows products, for upon them depends the safety of the operation of the system.

DAMPER REGULATOR. The Trane Damper Regulator is extremely sensitive, operative on one ounce change of pressure at the boiler. Because of this sensitiveness, it is recommended for use in place of the ordinary regulators furnished as standard equipment by boiler manufacturers. Body is cast iron. Boiler pressures easily changed by shifting of weights on steel balance bar. Actuating diaphragm is rubber, 13" in diameter.

GAUGE. Trane Gauges are 4½" in diameter; ¼" pipe connection only. They are furnished compound vapor-vacuum with scale reading from 18 inches of vacuum to 30 pounds pressure, and vacuum only with scale reading from zero to 30 inches vacuum. Oversize gauges (illustrated) read from 30 inches vacuum to 30 pounds pressure. These gauges are strictly precision articles, and, like all Trane products, are guaranteed for one year.

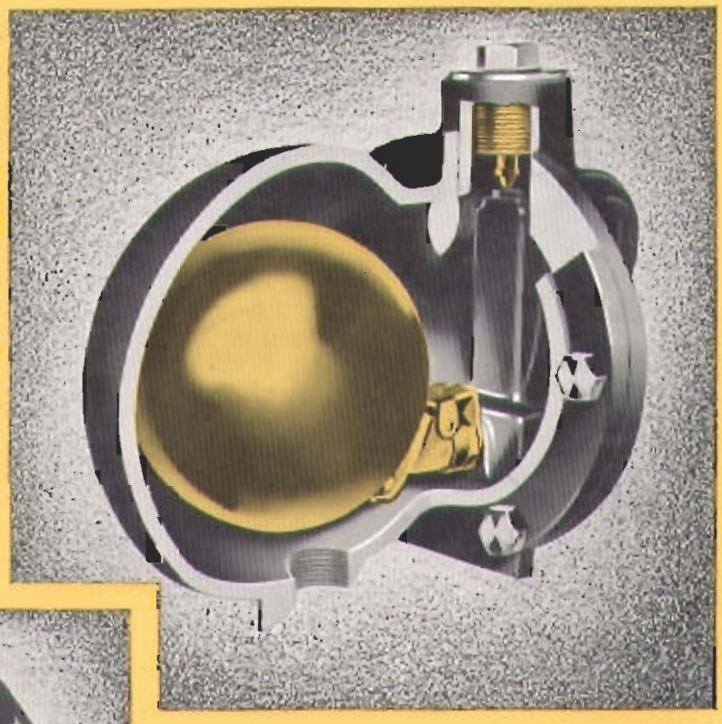
DIRECT RETURN TRAPS. Two types illustrated — center, industrial type; right, residential type.

The function of the direct return trap is to return water to the boiler under conditions that prevent return by gravity. Diagram page 11 graphically illustrates operation.

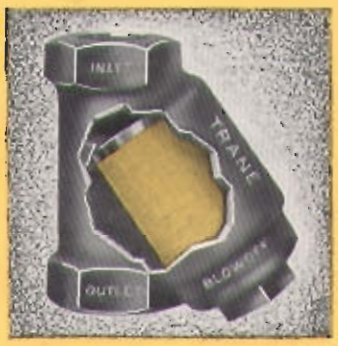
These traps are noiseless and positive in operation and will return water against boiler pressures up to 20 lbs. The unique arrangement for equalizing the pressure between the boiler and the direct return trap, thus allowing water to return by gravity, prevents cracked boilers should the draft doors ever be accidentally blocked open.

Bodies are cast iron. Inner mechanism is carefully machined brass. Large buoyant copper floats. Spring cushioners eliminate noise on sliding float type. Sizes and capacities page 23.

TRANE DRIP TRAPS FLOAT TYPE



Cutaway View of Trane Float Drip Trap.



Cutaway View of Trane Dirt Strainer.

Trane Strainers

The Trane Dirt Strainer should be installed at strategic places in the pipe line to prevent dirt and scale reaching movable parts of the heating system, such as traps and valves.

The strainer body is Meck cast iron with female pipe threads. Strainer screen is heavy perforated brass, open at both ends — one end toward the inlet port and one toward the blow-off plug which makes it convenient to clean the strainer without removing the screen.

Strainers are available in five sizes ½", ¾", 1", and 1¼" and 1½". See page 22 for dimensions.

This trap is a heavy duty product for venting air and water from blast heaters, unit heaters, ventilating coils, dryers and other equipment which condense large quantities of steam.

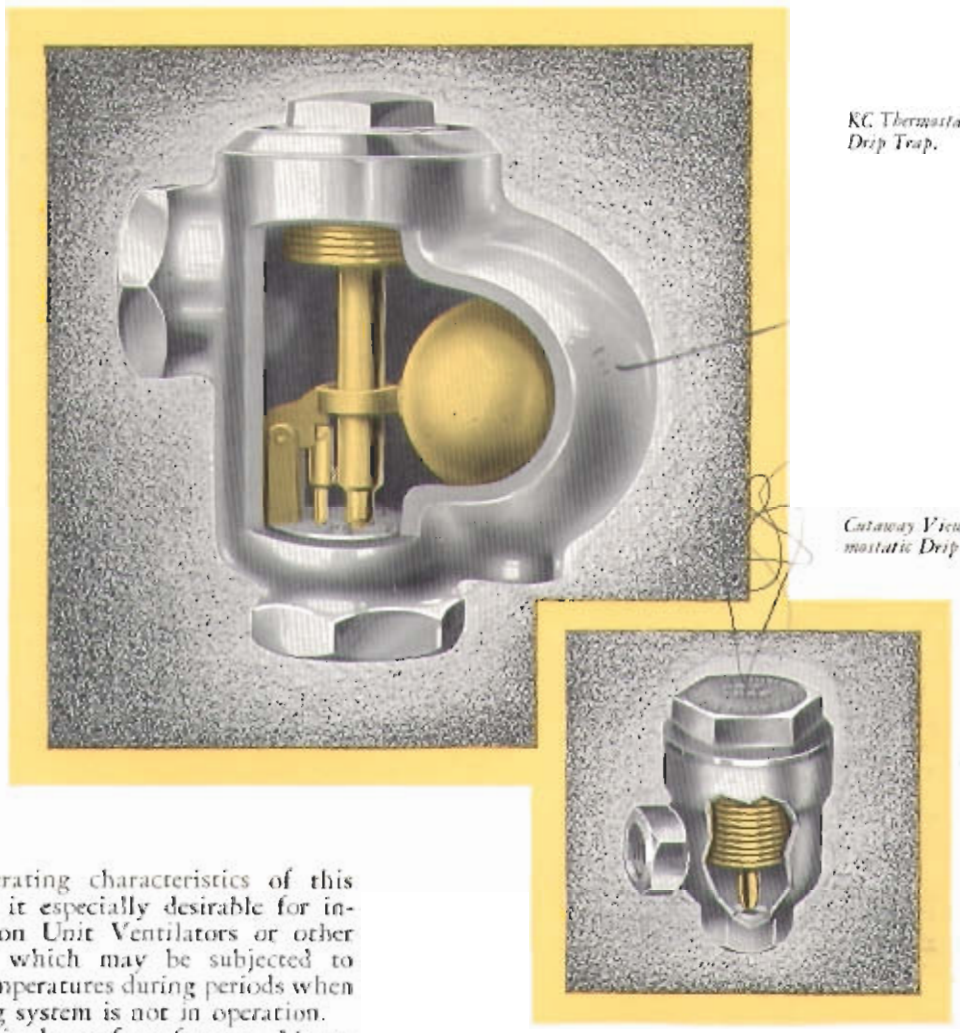
Air vent is controlled by standard bellows thermostat. This thermostat closes only against steam and is not influenced by temperature of water in trap — an important feature which prevents air binding of equipment.

Seamless copper float actuates heavy duty, carefully machined, brass mechanism of condensate valve. Mechanism is double acting and stick proof. Carefully machined guides keep valve mechanism always in alignment.

Body is heavy cast iron. Two inlet and outlet connections each on No. 0, 1, 2 and 3 traps. One inlet and one outlet only on No. 4 size. Cleanout plug in base. Body of trap may be removed for inspection without disturbing pipe lines.

See pages 22 and 23 for capacities and dimensions.

KC Thermostatic-Float Type Trap



KC Thermostatic Float Drip Trap.

Cutaway View of Thermostatic Drip Trap.

The operating characteristics of this trap make it especially desirable for installation on Unit Ventilators or other equipment which may be subjected to freezing temperatures during periods when the heating system is not in operation.

The trap is always free of water. 14-corrugation standard bellows thermostat provides positive elimination during the heating-up periods and cooling periods when there is not enough condensate entering the trap to operate the float. Large seamless float with carefully machined brass operating mechanism releases the condensate during regular heating periods when the steam from the equipment closes the bellows. No possibility of freezing or air binding.

Body is nickel plated cast iron. Available in ½", ¾", 1", 1¼", sizes and for pressures up to 15 lbs. One inlet and one outlet connection.

See page 23 for capacities and dimensions.

Thermostatic Drip Traps

The Thermostatic Drip Trap is especially designed for equipment on systems carrying a high vacuum on the return line to the boiler. To prevent re-evaporation in the return lines, such systems usually require a drop in the temperature of the condensate after it leaves the steam utilizing units such as urns, sterilizing cabinets, et cetera. The 14-corrugation bellows thermostat allows for such a drop before it opens the trap. These traps are also frequently used where size is a factor as they require only ¼ the space of a float type trap. Steam brass nickeled bodies. Available for either high or low pressure. Available in ½", ¾", and 1". See page 22 for roughing-in dimensions and capacities.

A FEW TRANE HEATING

UPPER LEFT
View of Capital District, Washington, D. C., with new Department of Commerce Building in foreground. This building is equipped with 6,000 Trane Traps.

LEFT CENTER
U.S.S. Salt Lake City, one of 11 recently built cruisers, equipped with Trane Traps.

LOWER LEFT
Nurses Home, Stanford University Hospital, San Francisco, Calif.

ABOVE
Men's Dormitory Building, University of Wisconsin, Madison, Wis.

BELOW
Terminal Commerce Building, Philadelphia, Pa., in which 900 Trane Traps are installed.

SPECIALTY INSTALLATIONS

Sir Francis Drake Hotel,
San Francisco, Calif.

National Savings Bank, Albany, N. Y.

Marunouchi Building, Tokyo, Japan.

Sherman Square Apartments, New York, N. Y.

A FEW TRANE HEATING

Universalist National Memorial Church, Washington, D. C.
Architects: Allen & Collens, Boston, Mass.

Court Square Office Building,
Lexington and Calvert Streets, Baltimore, Md.

Marrowfield Apartment Building
Part of Watkins Speculative Development, Pittsburgh, Pa.,
Using 6000 Trane Traps and Valves.

Union Memorial Building, University of Wisconsin,
Madison, Wisconsin

Fox Theatre, and Shrine Mosque, Atlanta, Ga.

SPECIALTY INSTALLATIONS

Huntington Apartments, Atlanta, Ga.

Dayton-Biltmore Hotel
Dayton, Ohio

Pasadena Public Library, Pasadena, Calif.

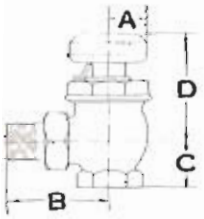
Lists of Installations

Space permits a listing of only a few heating specialty installations in this bulletin. Lists of installations in any type of building will be supplied on request.

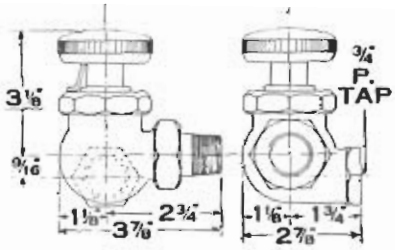
Olney High School, Philadelphia, Pa.

Jefferson Apartments, Niagara Falls, N. Y.

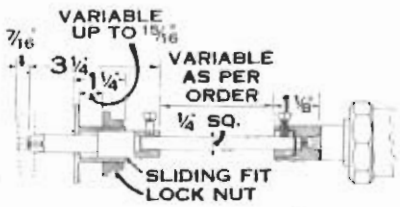
CAPACITIES AND DIMENSIONS



Angle Pattern



Right and Left Hand Pattern



Standard Adjustable Valve Extension

Sizes, Capacities, Etc., of Trane Packless Valves

Size Inches	Cap. in sq. ft. at various Pressure Differences				Dimensions Inches					Wt. Lbs.	In Box
	Vapor System	Vac. System									
	4 oz.	8 oz.	1 lb.	2 lb.	A	B	C	D No. 30	D ‡		
¾	45	60	90	120	1	2¾	1⅞	2¾	3	4½	2
¾	90	120	180	250	1	2¾	1⅞	2¾	3	4½	2
1	150	200	300	450	1	3	1⅜	3	3	5	2
1¼	250	350	500	700	1	3½	1¾		3½	3	1
1½	375	500	700	1000	1⅜	3¾	2⅛		3½	4	1
2	500	560	900	1300	1⅜	4¼	2¼			5¼	1

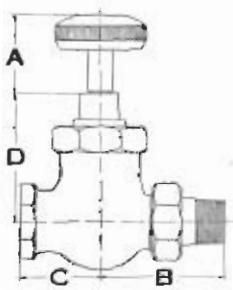
‡ Bellows Packless

Dimensions of Bellows Packless Valves

Straightway Pattern

Size Valve	¾"	1"	1¼"
B	2¾"	3"	3"
C	1¾"	1¾"	1⅜"
D	2⅞"	2⅞"	4½"

See Valve Extension Schedules for Dimension A



Bellows Packless Straightway Pattern

Valve Extension Schedule

No. 30 Packless — **Straightway Pattern**

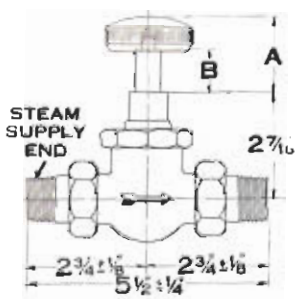
PLASTER FRONT WITH INLET GRILLE

Size of Heater	3C	5C	7C
A	1¾"	2¾"	3¾"
B	1"	2"	3"
Extension No.	4	5	6

PANEL FRONT AND WALL TYPE

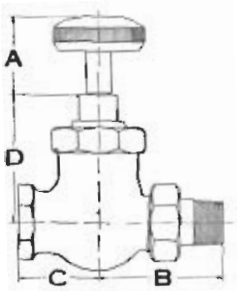
Size of Heater	3C	5C	7C
A	¾"	1¾"	2¾"
B	0"	1"	2"
Extension No.	None	4	5

Use No. 5 Extension on No. 30-¾" Straightway Valve for 10C Concealed Heaters.
Use No. 6 Extension on No. 30-¾" Straightway Valve for 14C Concealed Heaters.



No. 30 (¾") Straightway Pattern

CAPACITIES AND DIMENSIONS



Valve Extension Schedule for Trane Concealed Heaters on Hot Water Systems

1" Bellows and 1¼" Gate Valve
(Straightway Pattern)

PANEL FRONT AND WALL TYPE

Size Heater	3C	5C	7C
Size Valve	*	1"	1¼"
A	*	1 1/16"	None
Extension No.	*	1	None

PLASTER FRONT WITH INLET GRILLE

Size Heater	3C	5C	7C
Size Valve	1"	1"	1¼"
A	1 1/16"	2 1/16"	None
Extension No.	1	2	None

PLASTER FRONT WITH ¾" BASE-BOARD

Size Heater	3C	5C	7C
Size Valve	1"	1"	1¼"
A	1¾"	2¾"	2 1/16"
Extension No.	4	5	1

Valve Extension Schedule for Trane Concealed Heaters on Vapor Systems

¾" and 1" Bellows Valve (Straightway Pattern)

PANEL FRONT AND WALL TYPE

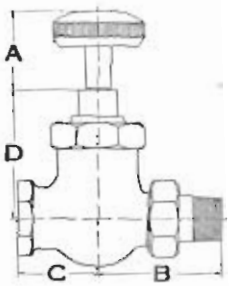
Size Heater	3C	5C	7C
A	*	1 1/16"	2 1/16"
Extension No.	*	1	2

PLASTER FRONT WITH INLET GRILLE

Size Heater	3C	5C	7C
A	1 1/16"	2 1/16"	3 1/16"
Extension No.	1	2	3

PLASTER FRONT WITH ¾" BASE-BOARD

Size Heater	3C	5C	7C
A	1¾"	2¾"	3¾"
Extension No.	4	5	6

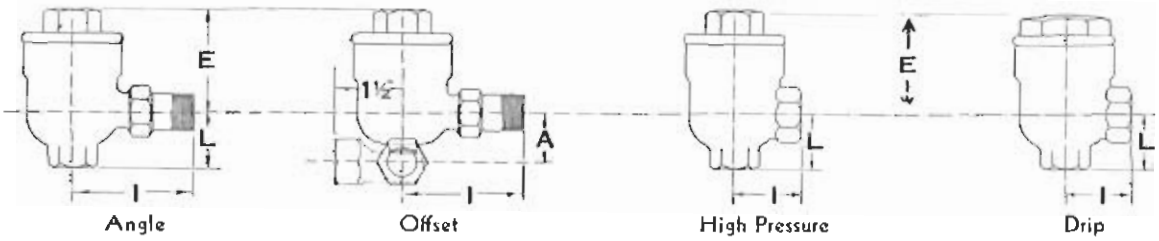


Bellows Packless
Straightway Pattern

*Bellows Type Valve can not be used on this size. Use No. 30-¾" Straightway Pattern.
Use No. 2 Extension on ¾" and 1" Bellows Valve for 10C Concealed Heaters.
Use No. 5 Extension on No. 30-¾" Valve for 10C Concealed Heaters.
Use No. 6 Extension on ¾" and 1" Bellows Valve and No. 30-¾" Valve for 14C Concealed Heaters.
Use No. 1 Extension on 1¼" Valve for 14C Concealed Heaters.

CAPACITIES AND DIMENSIONS

Sizes, Capacities, Etc., of Trane Bellows Traps



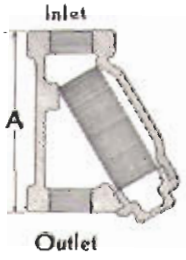
Angle — Offset — High Pressure — Drip

ROUGHING-IN DIMENSIONS

Style	Size	A	L	I	E
B-1 (angle)	½"		1 7/16"	3¼"	1 55/64"
B-1 (offset)	½"	1 7/16"	1 7/16"	3¼"	2 23/32"
B-2 (angle)	½"		1 7/16"	3¼"	2 23/32"
B-2 (offset)	½"	1 7/16"	1 7/16"	3¼"	
B-3 (angle)	¾"		1 7/16"	3¼"	2 23/32"
B-3 (offset)	¾"	1 7/16"	1 7/16"	3¼"	2 23/32"
B-4 (angle)	1"		1¾"	3⅜"	2 43/64"
B-5 (angle)	1¼"		2"	4½"	
High Pressure and Drip	½" and ¾"		1 7/16"	1 11/16"	
High Pressure and Drip	1"		1¾"	2"	

Note: B-1 Trap Capacity 100 square feet.

Trane Strainers



LENGTHS AND WEIGHTS OF STRAINERS

Size	Length A	Weights
½"	3⅜"	1¼ lbs.
¾"	3 7/8"	1¾ lbs.
1"	4¾"	2¾ lbs.
1¼"	4⅝"	3¼ lbs.
1½"	5¾"	5½ lbs.

Capacities of Trane Bellows Traps in Square Feet at Various Pressure Differences

Size	4 oz.	8 oz.	1 lb.	2 lb.	5 lb.	10 lb.	15 lb.	20 lb.	25 lb.
½"	200	375	395	560	880	1240	1520	1760	1960
¾"	400	585	770	1080	1720	2420	2980	3440	3850
1"	800	1125	1600	2250	3560	5050	6180	7120	7950

Drip Trap Capacities in Pounds of Water Per Hour

Size	4 oz.	8 oz.	1 lb.	2 lb.	5 lb.	10 lb.	15 lb.	20 lb.	25 lb.
½"	134	204	270	483	601	851	1043	1205	1345
¾"	183	258	376	516	817	1160	1420	1637	1830
1"	237	337	478	677	1070	1512	1850	2137	2387

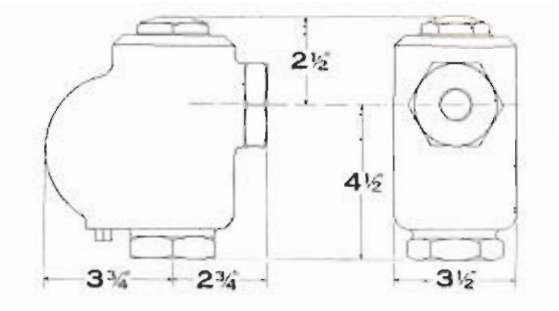
Float Drip Trap Capacities

No. 0		No. 1 and No. 2				No. 3 and No. 4	
Low Pressure		Low Pressure		High Pressure		Low Pressure	
Pres. Diff., lbs. per sq. in.	Rating, lbs. per hr., Condensate	Pres. Diff., lbs. per sq. in.	Rating, lbs. per hr., Condensate	Pres. Diff., lbs. per sq. in.	Rating, lbs. per hr., Condensate	Pres. Diff., lbs. per sq. in.	Rating, lbs. per hr., Condensate
¼	185	¼	525	30	1250	¼	1170
½	275	½	625	60	1520	½	1440
1	400	1	950	90	1775	1	1800
2	575	2	1200	125	2575	2	2600
5	800	5	1500			5	3800
10	1020	10	1900			10	5400
15	1175	15	2250			15	6200
		20	2600			20	6650
		25	3000			25	7100

Note: No. 0 limited to 15 lbs. pressure.

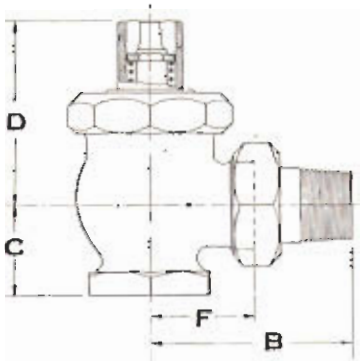
CAPACITIES AND DIMENSIONS

K-C Thermostatic Float Drip Trap



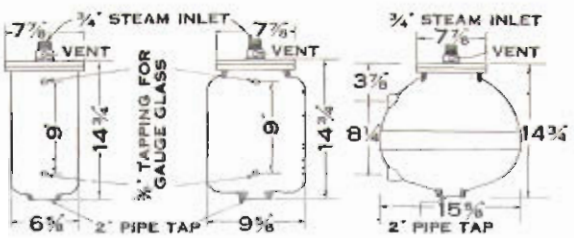
Pressure differences Lbs. per Sq. In.	Capacities in Sq. Ft. KC-1 (½")	KC-2 (¾")	KC-3 (1")	KC-4 (1¼")
¼	275	390	510	650
½	325	435	545	750
1	360	480	615	810
2	400	530	660	875
5	450	580	710	930
10	525	650	760	980
15	610	725	820	1050

Angle Pattern With Lock and Shield Bonnet



Size	B	C	D	F
½"	2¾"	1 5/16"	2⅜"	1½"
¾"	2¾"	1 5/16"	2⅜"	1½"
1"	3"	1⅜"	2⅝"	1 9/16"
1¼"	3¼"	1¾"	3⅜"	1⅞"
1½"	3¾"	2⅜"	3⅜"	2⅛"
2"	4¾"	2¾"	3 3/16"	2¾"

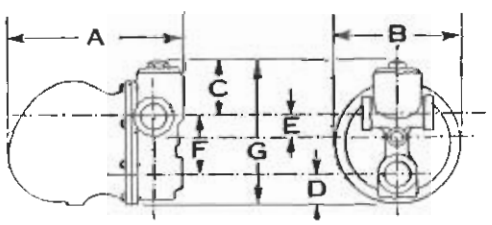
Measurements and Capacities of Direct Return Traps



Trap	Hgt. Above Water Line	Cap Sq. Ft.
No. 210	22"	2000
No. 210	28"	3000
No. 310	22"	4000
No. 310	28"	5000
No. 10	22"	10000
No. 10	28"	11000
No. 10	40"	13000

Information on Direct Return Traps of larger capacity than those listed here will be supplied on request.

Trane Float Drip Trap

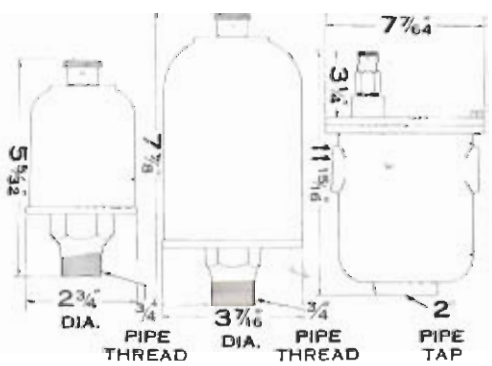


DIMENSIONS

Size	A	B	C	D	E	F	G	Pipe Tap
No. 0	7 13/32"	5⅞"	2 5/16"	1 13/16"	⅞"	2⅜"	6¾"	¾"
No. 1	8½"	6¼"	3"	1¾"	1"	3½"	8¼"	1"
No. 2	8½"	6¼"	3"	1¾"	1"	3½"	8¼"	1¼"
No. 3	11"	8"	3¼"	2½"	½"	3½"	9¼"	1½"
No. 4*	11¼"	8"	3¼"	1¾"	½"	4¼"	9¼"	2"

*One inlet and one outlet only.

Trane Vents



Quick Float No. 9

TRANE ENGINEERING SERVICE

The Trane Company has specialized for more than forty-five years in the manufacture of heating equipment. By a series of original contributions to various heating methods, it has built up a group of complete heating systems entirely of Trane manufacture, with the exception of boiler and piping, for every heating requirement.

From the standpoint of heat-distributing units, these systems are known as Unit Heating Systems, Blast Heating Systems, and Concealed Heating Systems respectively. From the standpoint of operating pressure, Trane systems include the well-known Trane Vapor System for high-grade residences and the smaller apartments and business buildings, and Trane Return Line Systems for larger installations requiring a pump or pumps to return condensation to the boiler.

The pumps also are manufactured by The Trane Company, which offers a complete line of small centrifugal units for condensation return, boiler feed, and for circulating service on hot water heating systems, as well as for general service in pumping water and process liquors in various industries.

Hundreds of thousands of units of Trane manufacture are in use throughout the civilized world. Trane Engineering Service is available throughout the United States, and in Canada, England, Japan, and China. When you bring your heating problem to Trane, you are sure to obtain competent advice from the broad viewpoint of men who are accustomed to thinking only in terms of complete systems, for the benefit of owner, engineer, and heating contractor.

THE TRANE COMPANY

(Established 1885)

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BRITISH TRANE CO., London

In Canada:
TRANE COMPANY OF CANADA, Limited; Offices and Factory: Toronto, Ontario

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