

4900 Series Air Separators
— **Standard & High Velocity**

Save money and lengthen the life of system pumps, piping, and components with the Taco 4900 Series air and dirt removal separators. The 4900 Series scrubber system is designed and constructed to ASME code, with technology proven in the field, around the world. Built with the quality and dependability that's made Taco famous for its performance and reliability. 4900 Series' internal PALL Ring basket assemblies have been developed with safety and ease of maintenance in mind.



Patent# 5, 123, 938



Available with and without removable cover



Features & Benefits

Eliminate bubbles and dirt in the system before they cause trouble.

Air and dirt trapped in the system can produce major problems such as reduced heat transfer, loss of efficiency, pipe corrosion, pump damage, increased energy consumption, and irritating noise. The highly efficient Taco 4900 Series separator, now with optional removable covers, clears the system of microbubbles, sand, dirt, and rust to save money, energy, and component wear. 4900 Series' stainless steel PALL Ring baskets can be removed by one person. Unlike many competitive models each 4900 unit is designed and constructed to the requirements of Section VIII of the ASME code as standard.

European PALL Ring technology. Taco ingenuity.

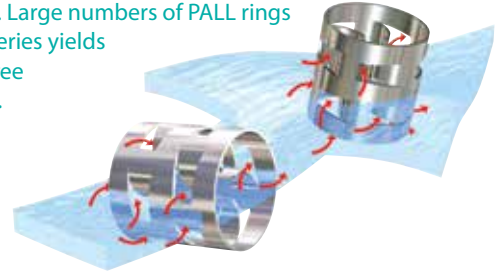
The 4900 Series' integral PALL ring technology has been proven in countless European installations. PALL rings are used in the processing industry to mix gases with, or separate gases from liquids. The use of PALL rings in hydronic air separation is so unique, it's patented. By applying PALL ring technology to air and dirt separation, the 4900 Series will:

- Remove microbubbles as small as $18 \times 10^{-6}m$ (18 microns) from the system
- Remove air which has dissolved in the system's water
- Remove air from places where an air vent cannot be installed
- Remove and separate solid particles from the flow
- **2 PSI or less pressure drop at optimal flow rate***

High efficiency cleaning of air and dirt.

PALL ring technology has been used for many years in the processing industry. Taco's application of PALL rings to hydronic air and dirt separation is new to the HVAC industry. While air bubbles are separated by the PALL rings through a process known as coalescence, dirt particles are actually caught and sifted to the bottom of the tank, where they can be removed through a blowdown valve. The 4900 Series provides higher efficiency, with reduced pressure drops, so a somewhat smaller pump may be used for maximum efficiency.

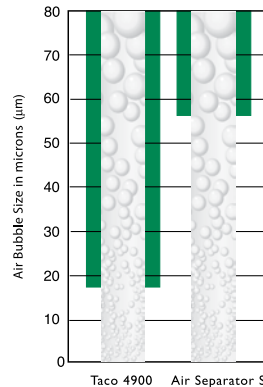
When water is brought into contact with a PALL RING, the stream is deflected in many directions. Microbubbles attach to the ring surface, by coalescence growing large enough to be separated. Large numbers of PALL rings in the 4900 Series yields virtually air-free system water.



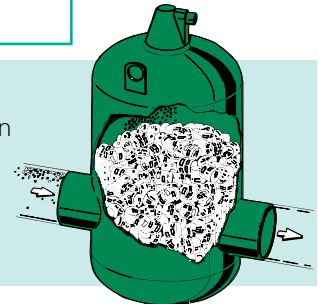
Removable Cover and Stainless Steel Pall Ring Basket Assembly



Superior air bubble removal



Series 4900-A models clean the system of free air and microbubbles; Series 4900-AD models remove both air AND dirt from the hydronic system. 304 stainless steel screens are provided on the inlet/outlet of each separator to isolate the separator's internals from the hydronic system. A flushing cock allows for the cleaning of the PALL rings. A full port ball valve is provided at the bottom of the unit to permit blowdown of accumulated particles. While construction of both models differs somewhat, the PALL ring operating principle is the same.



* See pages 13 & 14 for optimal flow rates.

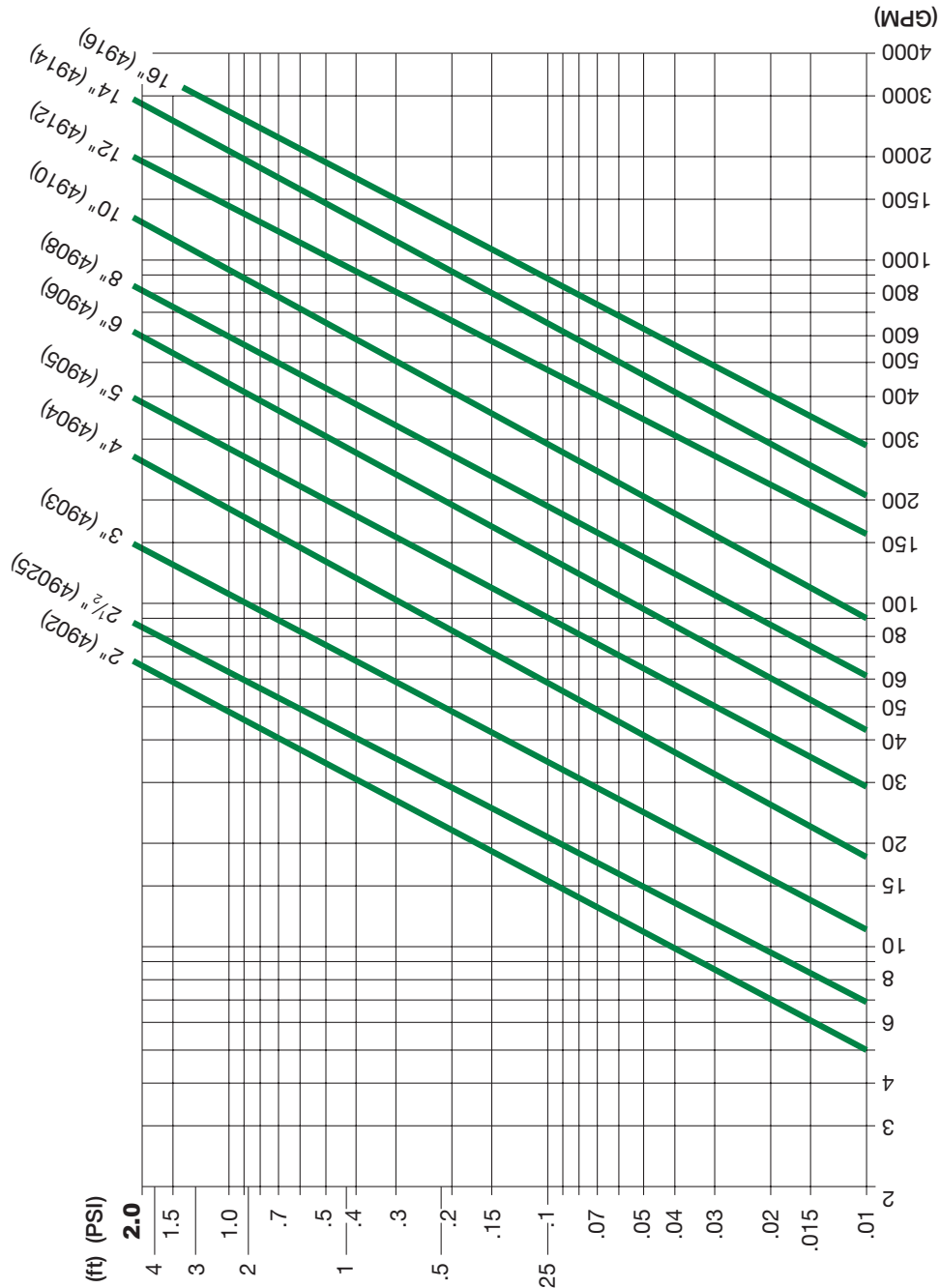
Standard Velocity Pressure Drops

Standard Velocity 4900 Series Pressure Drops

Consult Factory for Models 4918 through 4936

401-074 US-STD

EFFECTIVE: MAY 12, 2014

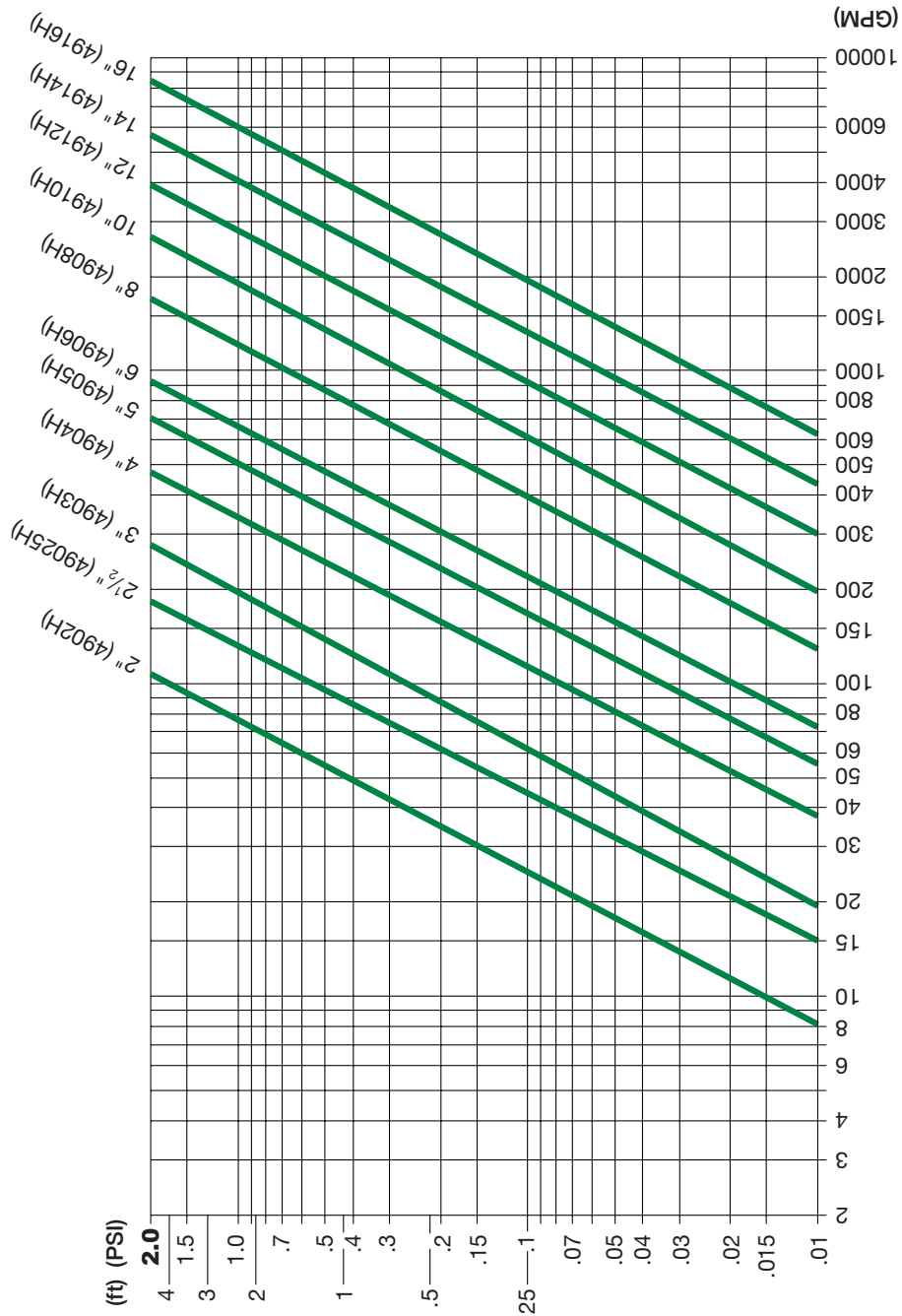


MODEL	GPM @ 4.9 Per./Sec.
4902	51
49025	73
4903	113
4904	204
4905	306
4906	469
4908	816
4910	1,291
4912	1,837
4914	2,106
4916	2,790
4918	3,673
4920	4,561
4922	5,300
4924	6,346
4926	7,647
4930	10,262
4936	14,905

High Velocity 4900 Series Pressure Drops

Consult Factory for Models 4918 through 4936

401-074 US-HIGH
EFFECTIVE: MAY 12, 2014



MODEL	GPM @ 11 Ft./Sec.
4902H	115
49025H	165
4903H	253
4904H	438
4905H	686
4906H	1,015
4908H	1,730
4910H	2,718
4912H	4,124
4914H	4,727
4916H	6,262
4918H	8,246
4920H	10,238
4922H	11,874
4924H	14,245
4926H	17,167
4930H	23,037
4936H	33,457

4900 Series Air Separators, Non-Removable Cover

(Submittal 401-137)

Pipe Size	Model Number ⁽¹⁾	A Dia. (Inch)	B Max. (Inch)	C (Inch)	D (Inch)	E (Inch)	F Dia. (Inch)	G (Inch)	Surface Area ⁽²⁾ (Sq.Ft)	GPM @ 4.9 Ft./Sec.	Approx. Wt. (LBS.)
2	4902AT-125	10	16-1/2	12*	7-1/2	3-7/8	---	---	12.7	51	30
2	4902A-125	10	16-1/2	20	7-1/2	3-7/8	---	---	12.7	51	45
2-1/2	49025AT-125	10	16-1/2	12*	7-1/2	3-7/8	---	---	12.7	73	40
2-1/2	49025A-125	10	16-1/2	20	7-1/2	3-7/8	---	---	12.7	73	50
3	4903AT-125	12	22-1/8	14-1/2*	8-1/2	7-1/2	---	---	22	113	65
3	4903A-125	12	22-1/8	22	8-1/2	7-1/2	---	---	22	113	75
4	4904A-125	12	22-1/8	22	8-1/2	7-1/2	---	---	22	204	80
5	4905A-125	14	28-3/8	24	10-1/2	12	12	6-3/4	36.8	306	200
6	4906A-125	14	28-3/8	24	10-1/2	12	12	6-3/4	36.8	469	215
8	4908A-125	18	36--5/8	28	13-1/4	16	16	7	77.2	816	290
10	4910A-125	24	47-3/4	36	16-7/8	22	22	6-3/4	132.8	1291	565
12	4912A-125	24	54-3/4	36	17-7/8	28	28	6-3/4	147.2	1837	645
14	4914A-125	30	62	42	22	29-1/2	29-1/2	8	293.5	2106	910
16	4916A-125	30	67-3/4	42	22	35-1/4	35-1/4	8	330.3	2790	965

All dimensions shown are subject to change and should not be used for prepping. Contact your local Taco representative should certified dimensional drawings be required.

(1) For 150 psi models, replace - 125 with -150
 (2) COALESCENCE (PALL RING) SURFACE AREA
 * Dimension for 'T' option only

Designed and constructed per ASME Section VIII, Div. 1

Registered with the National Board of Pressure Vessel Manufacturers

Standard Design Pressure and Temperature: 125 PSI @ 240°F

Optional Design Pressure and Temperature: (150 PSI @240°F Option Available)

Particle removal down to 5 microns

Construction: Carbon Steel with exterior red oxide primer finish

304 Stainless Steel Coalescence Pall Rings

Taco 4900 units are designed to be self-supporting in the piping system. Factory review is necessary should any piping loads be present.

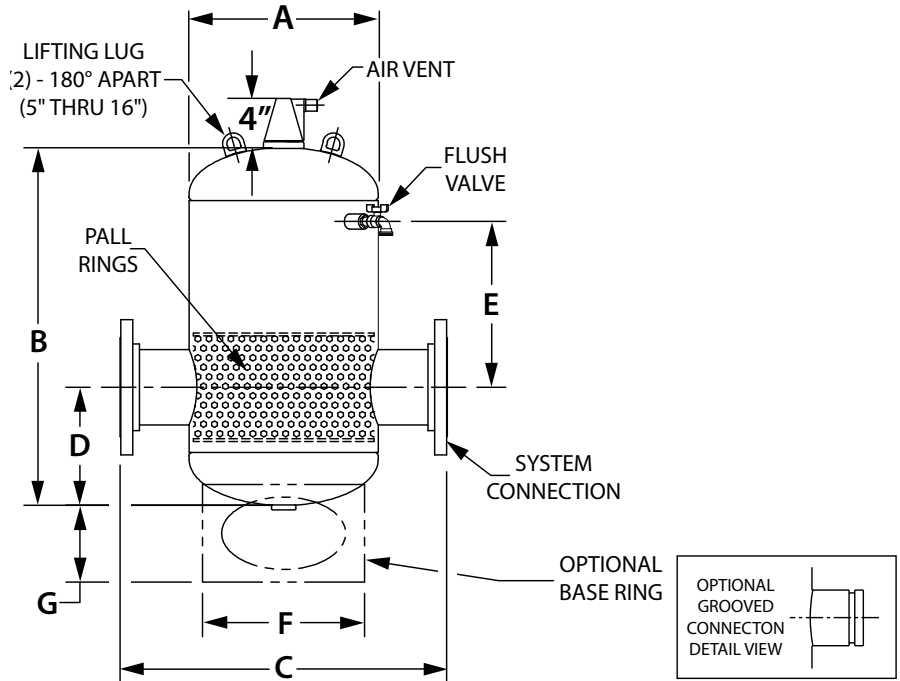
CAUTION: LIFTING LUGS FOR RIGGING AND LIFTING USE ONLY, NOT FOR ANCHORING OR HANGING.

FACTORY INSTALLED

- Air Vent is suitable for water, max. 50% glycol
- Flush Valve (125 psi @ 240°F, Standard)

OPTIONS

- Higher Design Pressures and Temperatures than 150 psi @ 240°F are available
- Optional System Connection Sizes available
- Optional Connection Types
 - 'G' Grooved Pipe Connections up to 21/2"
- Optional Base Ring
 - Add Suffix 'R' (4905 thru 4916)



4900 Series Air Separators, Non-Removable Cover

(Submittal 401-091)

Pipe Size	Model Number	A Dia. (Inch)	B Max. (Inch)	C (Inch)	D (Inch)	E (Inch)	F Dia. (Inch)	G (Inch)	Surface Area* (Sq.Ft)	GPM @ 4.9 Ft./Sec.	Approx. Wt. (LBS.)
18	4918A-150	36	72-1/2	48	26-7/8	9	30	7-11/16	571.4	3673	1450
20	4920A-150	42	84	54	29-7/8	10-1/2	35	7-5/8	839.4	4561	2130
22	4922A-150	48	91	60	33-3/8	12	40	8-7/16	1215.5	5300	2820
24	4924A-150	48	98	60	33-3/8	12	40	8-7/16	1295.7	6346	3045
26	4926A-150	54	106-1/2	67	37-1/4	13-1/2	44	9-1/2	1687.0	7647	4170
30	4930A-150	60	122-1/2	74	40-7/8	15	50	9-7/8	2336.5	10262	6190
36	4936A-150	72	146	90	50-5/8	15	64	12-3/4	3993.1	14905	10610

All dimensions shown are subject to change and should not be used for prepping. Contact your local Taco representative should certified dimensional drawings be required.

*COALESCENCE (PALL RING) SURFACE AREA

Designed and constructed per ASME Section VIII, Div. 1

Registered with the National Board of Pressure Vessel Manufacturers

Standard Design Pressure and Temperature: 150 PSI @ 240°F

Particle removal down to 5 microns

Construction: Carbon Steel with exterior red oxide primer finish

304 Stainless Steel Coalescence Pall Rings

Taco 4900 units are designed to be self-supporting in the piping system. Factory review is necessary should any piping loads be present.

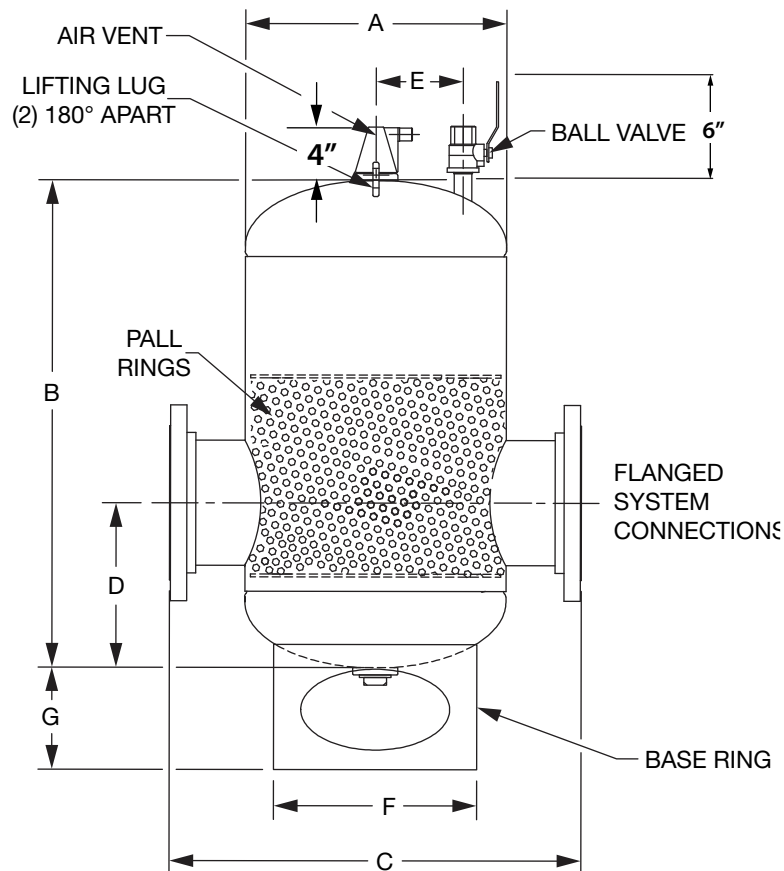
CAUTION: LIFTING LUGS FOR RIGGING AND LIFTING USE ONLY, NOT FOR ANCHORING OR HANGING.

FACTORY INSTALLED

- Air Vent is suitable for water, max. 50% glycol
- Blowdown Valve
- Flush Valve

OPTIONS

- Higher design pressures and temperatures -Consult factory
- Base Ring Standard on (4918 thru 4936)





Submittal Data Information

"4900" Series Air Separator

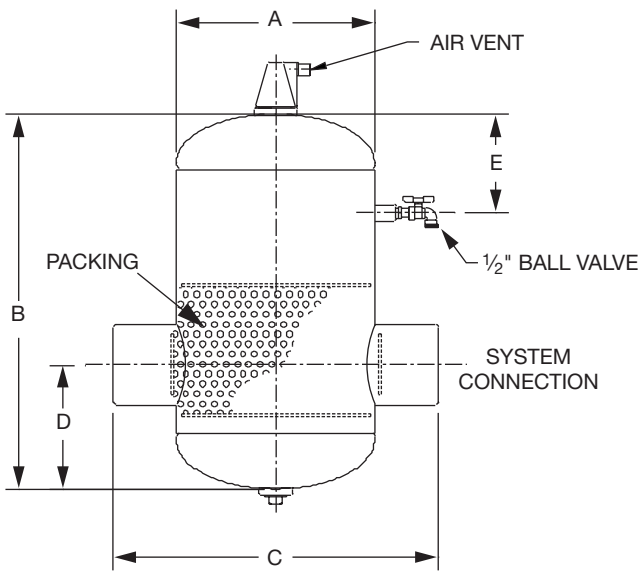
401-072

EFFECTIVE: DECEMBER 15, 2005

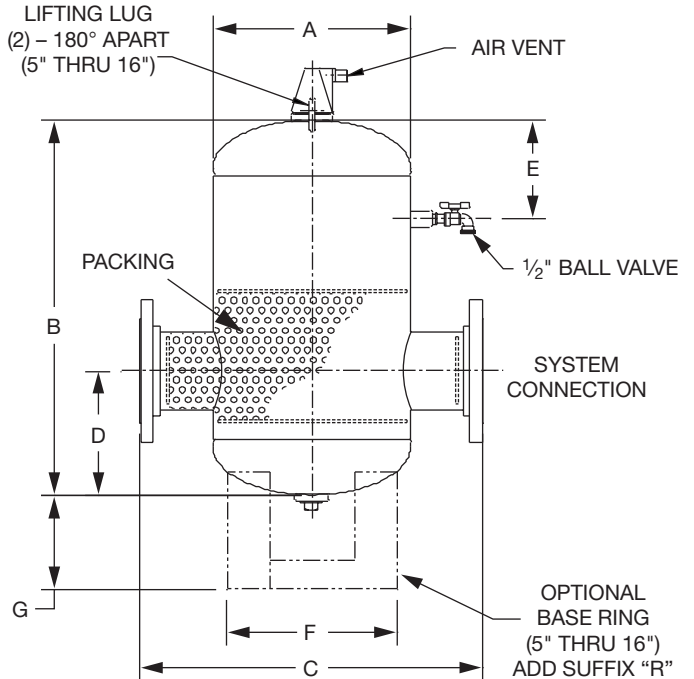
SUPERSEDES: OCTOBER 1, 2003

JOB _____ ENGINEER _____ CONTRACTOR _____ REP. _____

ITEM	QUANTITY	MODEL NUMBER	SIZE
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THREADED CONNECTIONS
4902AT THROUGH 4903AT



FLANGED CONNECTIONS
4902A THROUGH 4916A

WORKING PRESSURE: 125 PSI @ 270°F (150 PSI @ 270°F OPTION AVAILABLE)

PIPE SIZE	MODEL NUMBER	A DIA. (INCH)	B MAX. (INCH)	C (INCH)	D (INCH)	E (INCH)	F DIA. (INCH)	G (INCH)	APPROX. WGT. (LBS)
2	4902AT	6 ⁵ / ₈	14	11 ⁹ / ₁₆	5 ³ / ₈	4 ⁵ / ₁₆	-	-	30
2	4902A	6 ⁵ / ₈	14	13 ³ / ₄	5 ³ / ₈	4 ⁵ / ₁₆	-	-	34
2½	49025AT	6 ⁵ / ₈	14	11 ¹¹ / ₁₆	5 ⁹ / ₁₆	4 ⁵ / ₁₆	-	-	38
2½	49025A	6 ⁵ / ₈	14	13 ³ / ₄	5 ³ / ₁₆	4 ⁵ / ₁₆	-	-	47
3	4903AT	10 ³ / ₄	20	17 ¹⁵ / ₁₆	7¼	6	-	-	74
3	4903A	10 ³ / ₄	20	18	7¼	6	-	-	83
4	4904A	10 ³ / ₄	20	20½	7¼	6	-	-	114
5	4905A	14	26½	24¼	8¾	7	12	6 ¹¹ / ₁₆	196
6	4906A	14	26½	23¾	8¾	7	12	6 ¹¹ / ₁₆	204
8	4908A	18	33 ⁵ / ₈	28¾	11¾	8½	14	7	288
10	4910A	24	45	35¼	13½	9¼	20	7¼	563
12	4912A	24	51½	36¾	14½	9¼	20	7¼	582
14	4914A	30	57¼	43¾	17¼	11 ⁵ / ₁₆	24	7 ¹⁵ / ₁₆	908
16	4916A	30	64	44½	18½	11 ⁵ / ₁₆	24	7 ¹⁵ / ₁₆	920

Designed and constructed per ASME Section VIII Div. 1.

All dimensions shown are subject to change and should not be used for pre-piping. Contact your local Taco representative should certified dimensional drawings be required.

Do it Once. Do it Right.

Taco Inc., 1160 Cranston Street, Cranston, RI 02920 Telephone: (401) 942-8000 Fax: 942-2360

Taco (Canada), Ltd., 6180 Ordan Drive, Mississauga, Ontario L5T 2B3 Telephone: (905) 564-9422 Fax: (905) 564-9436

Visit our website at: www.taco-hvac.com

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TACO, Inc.

Installation, Operation & Maintenance Manual

SUPERCEDES: December 8, 2014

EFFECTIVE: September 15, 2015



WARNING: FAILURE TO COMPLY WITH THESE INSTRUCTIONS REGARDING THIS PRODUCT CAN RESULT IN SERIOUS PERSONAL INJURY OR DEATH AND/OR SEVERE PROPERTY DAMAGE.

GENERAL

All Taco 4900 series separators are designed and fabricated in accordance with the ASME Code for Unfired Pressure Vessels, Sect. VIII Div. 1.

Prior to shipment all separators are hydrostatically tested to 1.3 times their rated working pressure and accepted by an independent insurance inspector.

Upon receipt of each separator, the shipping container should be examined for external damage. If the shipping container has been damaged in transit, the contents of the packaging should also be examined prior to acceptance of the shipment. If the separator



appears to be damaged the shipment should be refused and or signed for as damaged. If the separator is damaged, the local Taco representative should be contacted for further instructions.

WARNING: DO NOT BRAZE PIPING TO THE NOSE OF THE VENT; PERMANENT DAMAGE WILL OCCUR TO THE AIR VENT INTERNAL PARTS.

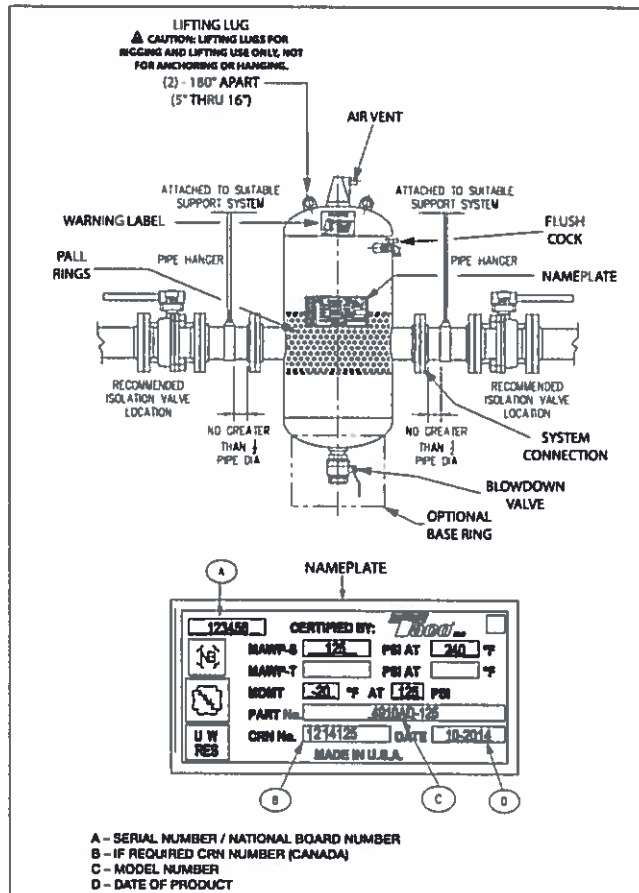
INSTALLATION TO BE INSTALLED BY PROFESSIONAL INSTALLERS ONLY

4900A – Air Separators

Taco 4900A series separators are designed for installation in hydronic systems. The purpose of the 4900A separator is the removal of air from the heating or chilled water system. In a heating system application the separator should be mounted in the piping as close as possible to the exit of the boiler and upstream of the pumps in the system. These units are not designed to withstand external piping loads which may be transmitted to the nozzles from the piping system. Should external piping loading requirements be present, confirmation from Taco's Design Engineering department regarding the suitability of the separator's design should be obtained prior to installing this product. **External piping must be supported within the design of the external piping system.**

When separators are installed, care should be taken to allow access to the ASME name plates, air vent (located at the top of each separator), flushing cock (located at the side of each unit) and drain plug (installed in the bottom of each unit).

All piping to each separator should be installed full size, to match the vessel's connections, isolation valves on each side of the unit should be installed for future maintenance. The isolation valves are used during maintenance to reduce the loss of system fluid. **See Warning under General section.**



4900AD – Air and Dirt or Dirt (D) Separators

Taco 4900AD series separators are designed for installation in hydronic systems. The purpose of the 4900AD separator is the removal of air and dirt from the heating or chilled water system. In a heating system application, the separator should be mounted in the piping as close as possible to the exit of the boiler and upstream of the pumps in the system. These units are not designed to withstand external piping loads which may be transmitted to the nozzles from the piping system. Should external piping loading requirements be present, confirmation from Taco's Design Engineering department regarding the suitability of the separator's design should be obtained prior to installing this product.

When separators are installed, care should be taken to allow access to the ASME name plates, air vent (located at the top of each separator), and flushing cock (located at the side of each unit). On 4900AD air and dirt separators the drain/blowdown valve located at the bottom of the unit should be piped to drain. This connection should be piped with a full port shutoff valve to a nearby drain during installation.

All piping to each separator should be installed full size, to match the vessel's connections, isolation valves on each side of the unit should be installed for future maintenance. The isolation valves are used during maintenance to reduce the loss of system fluid. **See Warning under General section.**

INITIAL SYSTEM FILL

WARNING: Prior to the initial filling of the system the automatic air vent installed in the top of the separator should be closed to prevent system debris from fouling the venting mechanism. The automatic air vent may be manually closed by turning the orifice screw located in vent face clockwise until seated. Additionally, the flushing cock installed on the side of the separator should be opened to allow the air within the system to exit during the system filling process. The flushing cock should be closed when system fluid first appears to exit the separator from the flushing cock. Upon the completion of the system filling process the orifice of the automatic vent should be re-opened by turning the screw 1 to 1½ turns counter-clockwise. Do not overturn the screw beyond 1 to 1½ turns.

MAINTENANCE

A regular inspection schedule should be adopted and carried out by competent personnel to examine the pressure vessel for corrosion and its cause, extent and possible arrest, to determine minimum metal thicknesses, maximum metal temperatures, calculation of reduction in allowable working pressure and to conduct hydrostatic tests. Also, defects such as cracks, laminations and distortion of shell, heads or connections should be noted and repaired if possible, after consultation with and acceptance by a commissioned authorized inspector who shall be involved at all stages of any repairs or alterations of the ASME vessel.

In addition, the operation of the air vent, flush cock and drain valves (if installed) should be checked for proper operation. **CAUTION: MAINTENANCE SHOULD ONLY BE UNDERTAKEN BY PROPERLY TRAINED AND QUALIFIED PERSONNEL. NEVER OPEN A VESSEL UNTIL THE SYSTEM PRESSURE IS OFF AND THE VESSEL HAS BEEN ISOLATED AND DRAINED. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.**

The Taco automatic air vent located in the top of the air separator is designed to prevent system fluid or debris from fouling the vent-

ing mechanism. Periodically the flushing cock on the side of the separator should be opened by qualified personnel in order to clean any system debris which may have accumulated at the air/system fluid interface beneath the vent. **CAUTION: MAINTENANCE SHOULD ONLY BE UNDERTAKEN BY PROPERLY TRAINED AND QUALIFIED PERSONNEL. CARE SHOULD BE UNDERTAKEN WHEN OPENING THE FLUSHING COCK AS SYSTEM FLUIDS MAY BE UNDER HIGH TEMPERATURE AND OR PRESSURE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.** This procedure should only be performed by properly trained personnel.

Systems where Air/Dirt or Dirt separators are installed should be periodically blowdown by properly trained personnel to remove sand, dirt or other system debris. The frequency of this cleaning is dependent upon the nature of the system fluid. Initially the system is blowdown after the first 12 hours of operation. Dependent upon the amount of debris removed during the blowdown process, subsequent blowdown should be scheduled at a minimum of every three months for a minimum of three minutes.

The blowdown process should be undertaken by trained personnel only. **CAUTION: MAINTENANCE SHOULD ONLY BE UNDERTAKEN BY PROPERLY TRAINED AND QUALIFIED PERSONNEL. CARE SHOULD BE UNDERTAKEN DURING SYSTEM BLOWDOWN AS SYSTEM FLUIDS MAY BE UNDER HIGH TEMPERATURE AND PRESSURE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.**

The separator should be isolated from the system by closing the adjacent valves as needed. Residual pressure within the separator should be reduced by slowly opening the factory installed blowdown valve. Make-up water may be introduced through the flushing cock located on the side of the separator to promote further rinsing of the internals of the separator without wasting system fluids.

Any questions, contact your local representative at www.TacoComfort.com

For factory contact on Taco Fall River heat transfer products, please call 508-674-5353.

See Related Documents: 400-1.4 Catalog, 401-091, 092, 093, 094, 109, 135, 136, 137, 138, 401-175, 401-176, 401-177, 401-178 Submittals, and 4900 SPEC 05/08/08 Specification



Limited Warranty

Taco, Inc. will repair or replace without charge (at the company's option) any product or part which is proven defective under normal use within one (1) year from the date of start-up or one (1) year and six (6) months from date of shipment (whichever occurs first).

In order to obtain service under this warranty, it is the responsibility of the purchaser to promptly notify the local Taco stocking distributor or Taco in writing and promptly deliver the subject product or part, delivery prepaid, to the stocking distributor. For assistance on warranty returns, the purchaser may either contact the local Taco stocking distributor or Taco. If the subject product or part contains no defect as covered in this warranty, the purchaser will be billed for parts and labor charges

in effect at time of factory examination and repair.

Any Taco product or part not installed or operated in conformity with Taco instructions or which has been subject to misuse, misapplication, the addition of petroleum-based fluids or certain chemical additives to the systems, or other abuse, will not be covered by this warranty.

If in doubt as to whether a particular substance is suitable for use with a Taco product or part, or for any application restrictions, consult the applicable Taco instruction sheets or contact Taco at [401-942-8000].

Taco reserves the right to provide replacement products and parts which are substantially similar in design and functionally equivalent to the defective product or part. Taco reserves the right to make changes in details of design, construction, or arrangement of materials of its products without notification.

TACO OFFERS THIS WARRANTY IN LIEU OF ALL OTHER EXPRESS WARRANTIES. ANY WARRANTY IMPLIED BY LAW INCLUDING WARRANTIES OF

MERCHANTABILITY OR FITNESS IS IN EFFECT ONLY FOR THE DURATION OF THE EXPRESS WARRANTY SET FORTH IN THE FIRST PARAGRAPH ABOVE.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR STATUTORY, OR ANY OTHER WARRANTY OBLIGATION ON THE PART OF TACO.

TACO WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF ITS PRODUCTS OR ANY INCIDENTAL COSTS OF REMOVING OR REPLACING DEFECTIVE PRODUCTS.

This warranty gives the purchaser specific rights, and the purchaser may have other rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts or on the exclusion of incidental or consequential damages, so these limitations or exclusions may not apply to you.



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