

DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

Order:

Project:

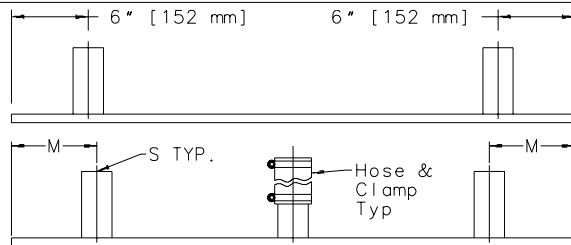
Requirements:

Capacity Required- lb/hr [kg/hr]

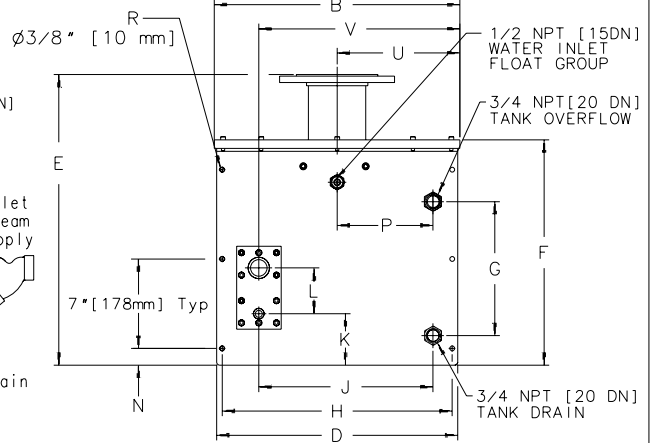
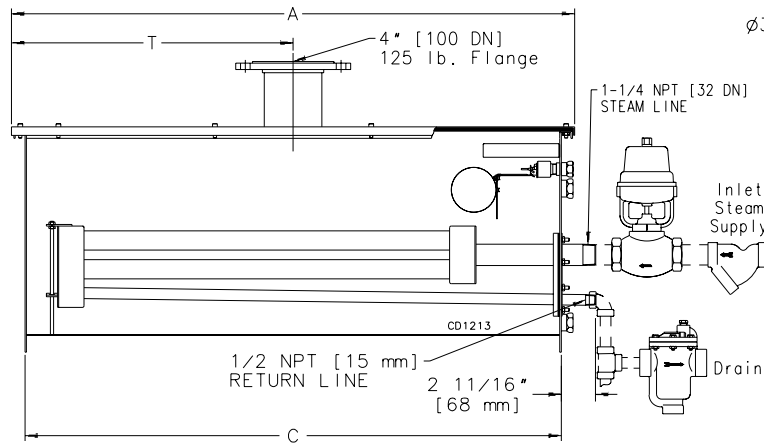
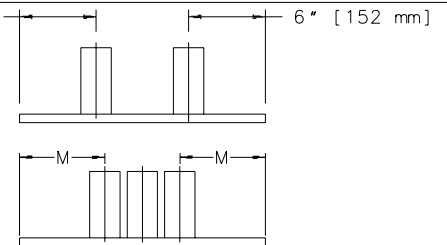
Steam Supply Pressure- psi

By:

Date:



Alternate Lid Styles:



Pipe/Fittings Indicated By Dotted Lines Are Furnished By Contractor.

| DESCRIPTION | MODEL CS | |
|---------------------------------------|---------------|----------|
| | -12DI | -13DI |
| A Length, Overall | 44-1/8 [1121] | |
| B Width, Overall | 19-1/4 [489] | |
| C Length, Bottom Of Tank | 42 [1067] | |
| D Width, Tank | 18-7/8 [479] | |
| E Tank Bottom To Steam Outlet | 22-3/4 [578] | |
| F Tank Bottom To Top Of Lid | 17-1/2 [445] | |
| G C Of Overflow To Drain | 10-1/2 [267] | |
| H Width, C Tank Flange Holes | 18 [457] | |
| J C Of Drain Line To C Cond. Outlet | 13-5/8 [346] | |
| K C Return Line To Tank Bottom | 3-1/32 [77] | |
| L C Return Line To C Steam Inlet | 3-19/32 [91] | |
| M C Steam Outlet To Edge Of Lid | 6-11/16 [170] | |
| N Tank Bottom To 1st Flange Hole | 1-5/16 [33] | |
| P C Water Supply To Tank Overflow | 7-1/2 [190] | |
| R # Of Tank Flange Holes(Both Ends) | 12 Holes | |
| S Dia. Of Steam Outlet | 2-3/8 [60] | |
| T C Steam Outlet To End Of Lid | 22-1/16 [560] | |
| U C Steam Outlet To Edge Of Lid | 9-5/8 [244] | |
| V C Steam Inlet To Edge Of Lid | 15-3/4 [400] | |
| Weight, lbs(kg) | 398[181] | 413[188] |
| (Less Trap, Strainer & Control Valve) | | |
| Max. Operating (W/ Water) | | |
| Shipping | 160[73] | |

| MATERIAL LIST | |
|-------------------------|--------------------------------------|
| Part Name | Material |
| Tank & Lid | 304 Stainless Steel |
| Heat Exchanger | 304 Stainless Steel |
| Cap Screws & Nuts, Tank | Carbon Steel, Zinc Plated |
| Float Assembly | 304 Stainless Steel |
| Dispersion Tube | 304 Stainless Steel |
| Float Valve | EPDM |
| Hose (3) | |
| Clamp, Hose | 18-8 Stainless Steel |
| Gasket, Inlet | NBR (Buna-N) |
| Gasket, Tank | SI (Silicone) |
| Control Valve(Type) | To Be Specified |
| Steam Trap (IB) | ASTM A48 CL. 30 W/ 18-8 SS Internals |
| Strainer, 'Y' | ASTM A48 CL. 30 W/304 SS Screen |


 Armstrong International, Inc.
 Three Rivers Division
 Three Rivers, MI 49093
Armstrong (616) 273-1415 Fax(616) 273-9500
 Posted on Armstrong's homepage www.armstrong-intl.com

| Product | CD No. | Date |
|-------------------------------------------------|----------------|--------------------|
| HUMIDIFIER, STEAM TO STEAM CS-12DI & 13DI | 1213 Sht. 1 | 02/08/02 Rev. D |

Dimensions in inches [mm] unless otherwise shown.

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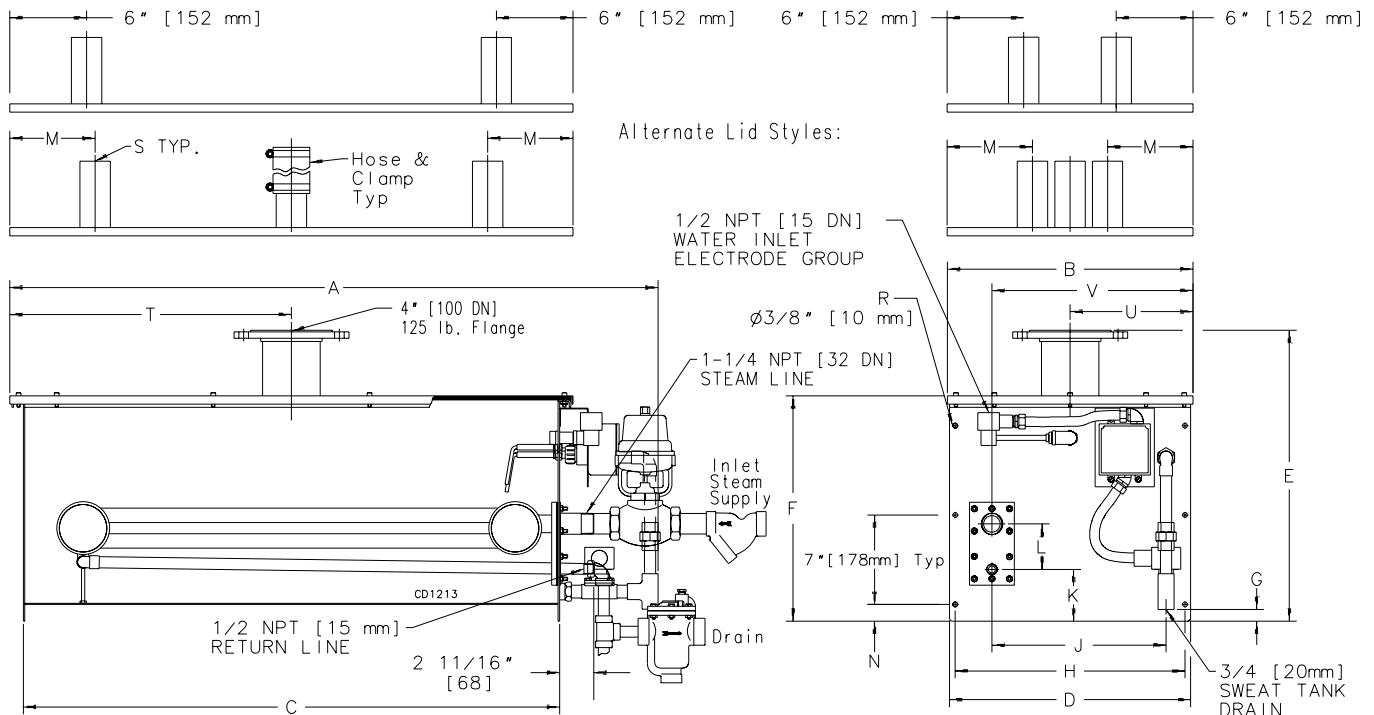
Requirements:

Capacity Required- lb/hr [kg/hr]

Steam Supply Pressure- psi

By:


Date:



Pipe/Fittings Indicated By Phantom Lines Are Furnished By Contractor.

| DESCRIPTION | MODEL CS | |
|-------------------------------------------------------------|---------------|--------------|
| | -12S | -13S -13C |
| A Length, Overall | 50-3/4 [1289] | |
| B Width, Overall | 19-1/4 [489] | |
| C Length, Bottom Of Tank | 42 [1067] | |
| D Width, Tank | 18-7/8 [479] | |
| E Tank Bottom To Steam Outlet | 22-3/4 [578] | |
| F Tank Bottom To Top Of Lid | 17-1/2 [445] | |
| G Drain To Tank Bottom | 15/16 [24] | |
| H Width, \varnothing Tank Flange Holes | 18 [457] | |
| J \varnothing Of Drain To \varnothing Cond. Outlet | 13-5/8 [346] | |
| K \varnothing Return Line To Tank Bottom | 3-1/32 [77] | |
| L \varnothing Return Line To \varnothing Steam Inlet | 3-19/32 [91] | |
| M \varnothing Steam Outlet To Edge Of Lid | 6-11/16 [170] | |
| N Tank Bottom To 1st Flange Hole | 1-5/16 [33] | |
| R # Of Tank Flange Holes(Both Ends) | 12 Holes | |
| S Dia. Of Steam Outlet | 2-3/8 [60] | |
| T \varnothing Steam Outlet To End Of Lid | 22-1/16 [560] | |
| U \varnothing Steam Outlet To Edge Of Lid | 9-5/8 [244] | |
| V \varnothing Steam Inlet To Edge Of Lid | 15-3/4 [400] | |
| Weight, lbs[kg] (Less Trap, Strainer & Control Valve) | 398 [181] | 413 [188] |
| Max. Operating (W/ Water) Shipping | 160 [73] | |

| MATERIAL LIST | |
|--------------------------|--------------------------------------|
| Part Name | Material |
| Tank & Lid | 304 Stainless Steel |
| Heat Exchanger | Electroless Nickel Plated |
| Cap Screws & Nuts, Tank | Carbon Steel, Zinc Plated |
| Dispersion Tube | 304 Stainless Steel |
| Level Control Electrodes | 18-8 SS & Teflon (24VAC) |
| Control Panel(Not Shown) | NEMA 12 Enclosure W/ Timer |
| Hose (3) | EPDM |
| Clamp, Hose | 18-8 Stainless Steel |
| Gasket, Inlet | NBR (Buna-N) |
| Gasket, Tank | SI (Silicone) |
| Control Valve(Type) | To Be Specified |
| Steam Trap (IB) | ASTM A48 CL. 30 W/ 18-8 SS Internals |
| Strainer, 'Y' | ASTM A48 CL. 30 W/304 SS Screen |



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| | | |
|----------------------------------------------------|----------------|----------|
| Product | CD No. | Date |
| HUMIDIFIER, STEAM TO STEAM CS-12S, 13S & 13C | 1213 Sht. 2 | 02/08/02 |
| | | Rev. D |

Dimensions in inches [mm] unless otherwise shown.

| CS Steam Capacity Ratings | | | |
|------------------------------|-----------------------------------|---------------|-----------|
| Steam Pressure psig [bar] | Model CS Output lbs/hr [kg/hr] | | |
| | -12S -12DI | -13S -13DI | -13C |
| 2 [0.14] | 4 [2] | 5 [2.3] | - |
| 5 [0.35] | 30 [14] | 50 [23] | 50 [23] |
| 10 [0.69] | 80 [36] | 100 [45] | 175 [80] |
| 13 [0.90] | 105 [48] | 150 [68] | 210 [95] |
| 15 [1] Maximum | 120 [55] | 180 [82] | 240 [109] |

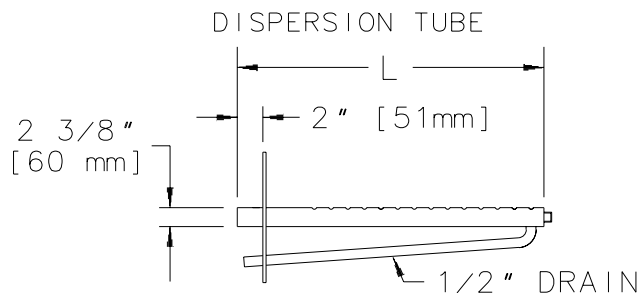
Capacity Based On Steam Pressure
Down Stream Of Control Valve.
Pressure Drop Through Control Valve
Is Approximately 2 psi [.13 bar].


| OPTION LIST | | |
|---------------------------|------------------------------------------------------------------------------------------------|--------------------------|
| Humidistat | Control (Room Or Duct) High Limit | <input type="checkbox"/> |
| Switch, Air Flow | Pressure Soil | <input type="checkbox"/> |
| Heat Exchanger | TFE (Teflon Coated) * Phenolic (DI Water) | <input type="checkbox"/> |
| Lid Type, Steam Outlet | (2) 2-3/8 Dia. <180 lb/hr [82 kg/hr] (3) 2-3/8 Dia. >180 lb/hr [82 kg/hr] (1) 4" RF Flg. | <input type="checkbox"/> |
| Water Inlet Group | Electrode Float | <input type="checkbox"/> |
| Support Legs | | <input type="checkbox"/> |
| Insulation, Tank | | <input type="checkbox"/> |

* Coated Heat Exchanger May Have
Reduced Capacity

| STANDARD OPERATORS | | |
|--------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Type | Model & Manufacturer | Control Signal |
| Pneumatic | AM Armstrong C1801 | Adjustable Start Point, 3-6 psi Standard Range, 10 psi Optional Range, 5 psi |
| | HAM Honeywell MP953D | Operating Range, 4-11 psi Standard 8-13 psi 3-7 psi |
| | HAM Honeywell MP953F | Adjustable Start Point Standard Range, 5 psi (Has Pilot Optional Range, 10 Or 3 psi Positioner) |
| Electric | HEM Honeywell M9182A | 0-135 ohm Standard; 4-20 mA w/A9847 & 2-10 Vdc w/ Optional Module A10024 |
| | BLEM Belimo AF24-SR BNVEM Belimo NVF24 | 2-10 Vdc/4-20Ma |

| SELECTING PROPER DISPERSION TUBE | | | | |
|----------------------------------|-----------------------|------------|------------|-------------------|
| Model CS-11 | Length "L" in [mm] | Duct Width | | Weight lb [kg] |
| | | Min. | Max. | |
| DL-1 | 12 [305] | 11 [279] | 16 [406] | 2.7 [1.2] |
| DL-1.5 | 18 [457] | 17 [432] | 22 [559] | 3.4 [1.5] |
| DL-2 | 24 [610] | 23 [584] | 34 [864] | 4 [1.8] |
| DL-3 | 36 [915] | 35 [889] | 46 [1168] | 6 [2.7] |
| DL-4 | 48 [1219] | 47 [1194] | 58 [1473] | 8 [3.6] |
| DL-5 | 60 [1524] | 59 [1499] | 70 [1778] | 10 [4.5] |
| DL-6 | 72 [1829] | 71 [1803] | 82 [2083] | 12 [5.5] |
| DL-7 | 84 [2134] | 83 [2108] | 94 [2388] | 14 [6.4] |
| DL-8 | 96 [2438] | 95 [2413] | 106 [2692] | 16 [7.3] |
| DL-9 | 108 [2743] | 107 [2718] | 118 [2997] | 18 [8.2] |
| DL-10 | 120 [3048] | 119 [3023] | 130 [3302] | 20 [9.1] |



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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|
|  Armstrong International, Inc. Three Rivers Division Three Rivers, MI 49093 Armstrong (616) 273-1415 Fax(616) 273-9500 Posted on Armstrong's homepage www.armstrong-intl.com | | |
| Product | CD No. | Date |
| HUMIDIFIER, STEAM TO STEAM CS-12 & 13 | 1213 Sht. 3 | 02/08/02 |
| | | Rev. D |

DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

Order:

Project:

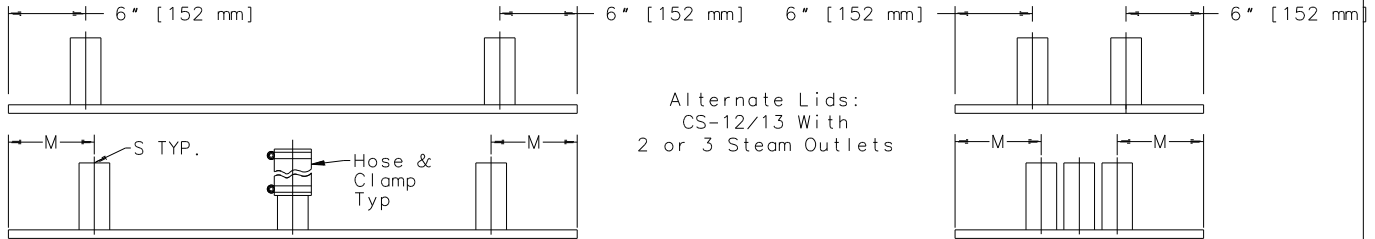
Requirements:

Capacity Required- lb/hr [kg/hr]

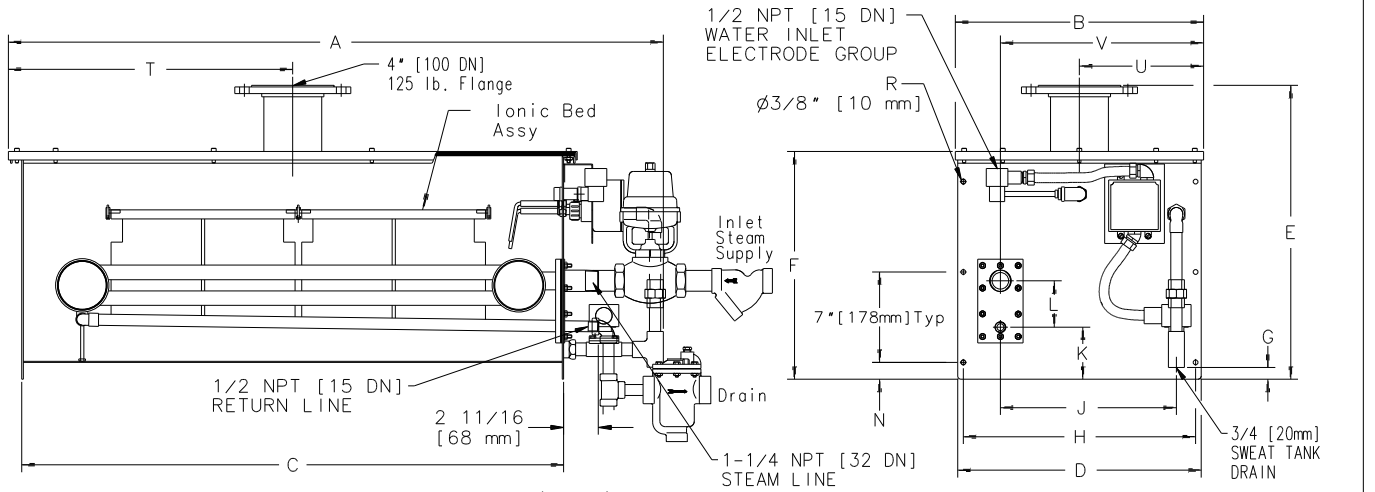
Steam Supply Pressure- psi

By:

Date:



Alternate Lids:
CS-12/13 With
2 or 3 Steam Outlets




CS-12/13 Shown With Single
4" [100 DN] Flanged Steam Outlet

Pipe/Fittings Indicated By Phantom Lines Are Furnished By Contractor.

| DESCRIPTION | MODEL CS | |
|-------------------------------------------------------------|------------------------------------------|---------------------------------|
| | -12SB | -13SB -13CB |
| A Length, Overall | 50-3/4 [1289] | |
| B Width, Overall | 19-1/4 [489] | |
| C Length, Bottom Of Tank | 42 [1067] | |
| D Width, Tank | 18-7/8 [479] | |
| E Tank Bottom To Steam Outlet | 22-3/4 [578] | |
| F Tank Bottom To Top Of Lid | 17-1/2 [445] | |
| G Drain To Tank Bottom | 15/16 [24] | |
| H Width, C Tank Flange Holes | 18 [457] | |
| J C Of Drain To C Cond. Outlet | 13-5/8 [346] | |
| K C Return Line To Tank Bottom | 3-1/32 [77] | |
| L C Return Line To C Steam Inlet | 3-19/32 [91] | |
| M C Steam Outlet To Edge Of Lid | 6-11/16 [170] | |
| N Tank Bottom To 1st Flange Hole | 1-5/16 [33] | |
| R # Of Tank Flange Holes(Both Ends) | 12 Holes | |
| S Dia. Of Steam Outlet | 2-3/8 [60] | |
| T C Steam Outlet To End Of Lid | 22-1/16 [560] | |
| U C Steam Outlet To Edge Of Lid | 9-5/8 [244] | |
| V C Steam Inlet To Edge Of Lid | 15-3/4 [400] | |
| Weight, lbs[kg] (Less Trap, Strainer & Control Valve) | Max. Operating (W/ Water) Shipping | 398 [181] 413 [188] 160 [73] |

| MATERIAL LIST | |
|--------------------------|--------------------------------------|
| Part Name | Material |
| Tank & Lid | 304 Stainless Steel |
| Heat Exchanger | Electroless Nickel Plated |
| Cap Screws & Nuts, Tank | Carbon Steel, Zinc Plated |
| Dispersion Tube | 304 Stainless Steel |
| Level Control Electrodes | 18-8 SS & Teflon (24VAC) |
| Control Panel(Not Shown) | Enclosure W/ PC Board |
| Hose (3) | EPDM |
| Clamp, Hose | 18-8 Stainless Steel |
| Gasket, Inlet | NBR (Buna-N) |
| Gasket, Tank | SI (Silicone) |
| Ionic Bed Assy | Proprietary (CS-13CB Only) |
| Control Valve(Type) | To Be Specified |
| Steam Trap (IB) | ASTM A48 CL. 30 W/ 18-8 SS Internals |
| Strainer, 'Y' | ASTM A48 CL. 30 W/304 SS Screen |



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| | | |
|-------------------------------------------------------|----------------|---------|
| Product | CD No. | Date |
| HUMIDIFIER, STEAM TO STEAM CS-12SB, 13SB & 13CB | 1213 Sht. 4 | 12/8/04 |
| | | Rev. E |

Dimensions in inches [mm] unless otherwise shown.