

# DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

Order:

Project:

Requirements:

By:

Date:

## List Of Materials:

Name Of Part	Material
Steam Chamber	ASTM A48 CL. 30 (Cast Iron)
Bonnet Ass'y	ASTM B16 (Brass)
Stem	ASTM A276 T316
Valve & Valve Seat Manifold	18-8 Stainless Steel
Manifold Fittings	Black Iron
Operator	See Specifics
Strainer	ASTM A48 CL. 30(Cast Iron) W/ SS Screen
IB Steam Trap	ASTM A48 CL. 30(Cast Iron) W/ SS Internals

## Technical Information:

MODEL	90	91	92	93	94
B	SEE OPERATOR CHART (SHT. 2 & 4)				
C	SEE E	3-3/8[86]	4-5/8[117]	6-7/8[175]	
D	2-3/8[60]	3-1/16[78]	3-13/16[97]	4-3/4[121]	8[203]
E	2-7/16[62]	6-1/16[154]		9[229]	12-5/8[321]
F	2-13/16[71]	3-13/16[97]		4-3/4[121]	8[203]
N	5-3/8[137]	5-11/16[144]	8-9/16[218]	9-1/16[230]	13-1/2[343]
R	2[51]				
S	3/4[19]	1"[25]		1-5/8[41]	
T	1"[25]				
X	1-7/32[31]	1-3/4[44]		2-1/8[54]	3-1/4[83]
Y	1-7/8[48]		2-9/16[65]	3-1/8[80]	4-1/4[108]
WEIGHT, lbs (LESS OPER. & MANIFOLD)	13-1/2 [6kgs]	24 [11kgs]	30 [14kgs]	52 [24kgs]	145 [66kgs]

## Design Information:

### CONNECTION SIZES (NPT)

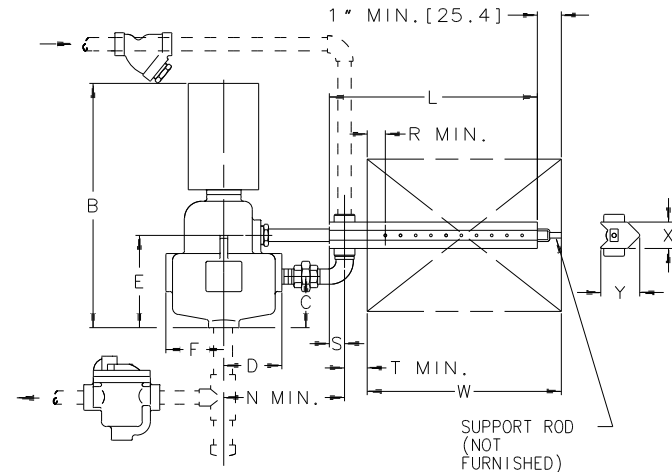
	1/2	1/2	3/4	1-1/4	2
STEAM INLET	1/2	1/2	3/4	1-1/4	2
DRAIN	1"	1"	1"		
DRAIN TRAP	1/2	3/4	3/4	3/4	3/4
BODY MTG. HOLES	0	2	2	2	4

### OPTIONS: OPERATORS (SEE SHT. 2 & 4)

HUMIDISTATS:	PNEUMATIC MODULATING:
<input type="checkbox"/> PNEUMATIC WALL	<input type="checkbox"/> ARMSTRONG C1801 (AM)
<input type="checkbox"/> PNEUMATIC DUCT	<input type="checkbox"/> HONEYWELL MP953D (HAM)
<input type="checkbox"/> PNEUMATIC DUCT HI-LIMIT	<input type="checkbox"/> HONEYWELL MP953F (HAM)
<input type="checkbox"/> ELECTRIC WALL	<input type="checkbox"/> PILOT POSITIONER
<input type="checkbox"/> ELECTRIC DUCT	
<input type="checkbox"/> ELECTRIC DUCT HI-LIMIT	<input type="checkbox"/> ELECTRIC MODULATING:
	<input type="checkbox"/> HONEYWELL M9182A (HEM) / 0-135 ohm 4-20 mA/0-10Vdc CONVERSION BOARD AVAILABLE
TEMPERATURE SWITCH:	<input type="checkbox"/> BELIMO AF24SR (BLEM) *
<input type="checkbox"/> ELECTRIC	<input type="checkbox"/> BELIMO NVF24-MFT-E-US(BNVEM) *
<input type="checkbox"/> PNEUMATIC	* 0-10Vdc & 4-20mA Std.
<input type="checkbox"/> INSULATED MANIFOLD	Operators (see Sht. 2 & 4)

### PACKAGE INCLUDES:

ARMSTRONG HUMIDIFIER
STEAM JACKETED MANIFOLD (S.S.)
ARMSTRONG INVERTED BUCKET STEAM TRAP
ARMSTRONG STRAINER A15C
OPERATOR



SUPPORT ROD  
(NOT  
FURNISHED)

NOTES:  
COMPLETE IDENTIFICATION INCLUDES TYPE OF OPERATOR  
(AM, AMA, HAM, HEM, BLEM & BNVEM) MODEL NO.(90, 91, 92, 93, 94) &  
LENGTH OF STEAM DISTRIBUTION MANIFOLD. (i.e., AM-92M-4)

Units:  
Inches [mm]



Product  
HUMIDIFIERS  
9000 SERIES  
AM-AMA-HAM-HEM-BLEM-BNVEM

ENGLISH  
WEB  
Y | N  
CN22023

CD No.  
1036  
Rev; H

Date  
7/17/09  
By; paulg

PHYSICAL DATA - OPERATORS						
MODEL OF CONTROL	PNEUMATIC MODULATING			ELECTRIC MODULATING		
	ARMSTRONG C1801*	HONEYWELL MP953D	HONEYWELL MP953F	HONEYWELL M9182A	BEL IMO AF24-SR	BEL IMO NVF24-MFT-EUS
*B* HEIGHT 90 SIZE	11-7/8	10-3/8	15-1/4	14-7/8	18-1/2	15
91 SIZE	16	14-1/2	19-3/8	18-7/8	22-11/16	18-15/16
92 SIZE						
93 SIZE	19-1/2	17-7/8	22-3/4	22-1/8	26-3/16	22-1/4
94 SIZE	—	24-1/2	29-3/8	27-7/8	31-1/16	27-7/16
WT. OF OPER. (lbs)	7-3/4	6	6	12	13	4.2
*ARMSTRONG C1801-STANDARD /ALL DIMENSIONS ±1/4 /HONEYWELL MP953D-OPTIONAL (STD. ON 94)						

OPERATOR SPRING RANGES FOR PNEUMATICALLY CONTROLLED HUMIDIFIERS					
ARMSTRONG C1801		HONEYWELL MP953D		HONEYWELL MP953F	
OPERATING RANGE	ADJUSTABLE START POINTS	OPERATING RANGE	NON-ADJUSTABLE START POINTS	OPERATING RANGE	ADJUSTABLE START POINTS
5 lbs	3 psig Min.	4 lbs	3 psig	4 lbs	3 psig Min.
*10 lbs		5 lbs	8 psig	5 lbs	
—	—	*7 lbs	4 psig	*7 lbs	
*STANDARD SPRING FURNISHED WHEN NO SPRING RANGE IS SPECIFIED					

MODEL 90 MANIFOLD LENGTHS AND DUCT WIDTHS WITH WHICH THEY MAY BE USED.														
VERTICAL MANIFOLD MODEL NO.	MV-1	MV-1.5	MV-2	MV-3	MV-4	MV-5	MV-6	MV-7	MV-8	MV-9	MV-10	MV-11	MV-12	
HORIZONTAL MANIFOLD MODEL NO.	MH-1	MH-1.5	MH-2	MH-3	MH-4	MH-5	MH-6	MH-7	MH-8	MH-9	MH-10	MH-11	MH-12	
*L* (LENGTH-INCHES)	12	18	24	36	48	60	72	84	96	108	120	132	144	
W-DUCT (WIDTH)	(MIN.)	8	15	21	31	43	53	65	77	89	101	113	125	137
	(MAX.)	14	20	30	42	52	64	76	88	100	112	124	136	148
SHIPPING WEIGHT (lbs) APPROX.	4	5	6	9	11	13	16	18	21	22	25	26	30	

MANIFOLD LENGTHS AND DUCT WIDTHS WITH WHICH THEY MAY BE USED.														
MANIFOLD MODEL NO.	M-1	M-1.5	M-2	M-3	M-4	M-5	M-6	M-7	M-8	M-9	M-10	M-11	M-12	
*L* (LENGTH-INCHES)	12	18	24	36	48	60	72	84	96	108	120	132	144	
W-DUCT (WIDTH)	(MIN.)	8	15	21	31	43	53	65	77	89	101	113	125	137
	(MAX.)	14	20	30	42	52	64	76	88	100	112	124	136	148
SHIPPING WEIGHT (lbs) APPROX.	<input type="checkbox"/> 91 SIZE	3	4	5	6	8	10	12	14	15	17	19	21	23
	<input type="checkbox"/> 92 SIZE	4	5	6	9	11	13	16	18	21	22	25	26	30
	<input type="checkbox"/> 93 SIZE	6	8	10	13	17	21	24	29	32	37	41	43	46
	<input type="checkbox"/> 94 SIZE	CONSULT FACTORY				24	30	34	40	45	51	55	60	64
NOTE: INSULATED MANIFOLDS ARE AVAILABLE. CONSULT FACTORY														

HEADER SIZE OF MANIFOLD PIPING OUT OF HUMIDIFIER		
HUMIDIFIER SIZE	MINIMUM PIPE SIZE	SUGGESTED HEADER SIZE
90	1/2	3/4
91		2
92	3/4	2-1/2
93	1	3
94	2	5

Humidifier discharge piping, even with reduced sized manifolds must be as shown.



Product		ENGLISH	CD No.	Date
9000 SERIES HUMIDIFIERS		WEB Y N ✓	1036	7/17/09
AM-HAM-HEM-BLEM-BNVEM			Rev; G	Sht. 2
		CN22023		

# CAPACITIES FOR SERIES 9000 STEAM HUMIDIFIERS FOR AIR HANDLING SYSTEMS

THE TABLES SHOW MAXIMUM CONTINUOUS DISCHARGE CAPACITIES FOR SERIES 9000 HUMIDIFIERS IN POUNDS OF STEAM PER HOUR AT THE STEAM SUPPLY PRESSURE INDICATED AT THE HUMIDIFIERS

SIZE 90 AND 91, CONTINUOUS DISCHARGE CAPACITIES IN lbs. OF STEAM PER HOUR.																							
ORIFICE SIZE, IN.	STEAM PRESSURE, psig																						
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40	45	50	55	60
1/16	1.3	1.7	2	2.3	2.6	2.8	3	3.2	3.4	3.6	3.8	4	4.2	4.4	5.6	6.5	7.7	8.4	9.2	10	11	11.8	12.3
5/64	2.1	2.7	3.2	3.7	4.1	4.4	4.8	5.1	5.4	5.7	6	6.2	6.4	6.7	8.4	10.6	11.2	12.4	13	14.8	16	17.8	19
3/32	3	3.9	4.6	5.2	5.8	6.3	6.8	7.3	7.8	8.2	8.6	9	9.3	9.6	11.9	13.4	14.3	17.2	19.2	21.2	22.8	23.7	24.4
7/64	4	5	6	7	8	8	9	10	10	11	11	12	12	13	16	18	19	21	24	26	28	31	33
1/8	5	7	8	9	10	11	12	13	14	14	15	16	17	18	23	25	28	30	33	35	37	40	44
5/32	8	10	12	14	16	17	19	20	21	22	23	25	26	27	31	36	40	44	48	52	56	60	65
3/16	12	15	18	21	23	26	27	29	31	32	35	36	37	40	47	52	59	65	70	77	83	88	93
7/32	16	21	25	29	32	35	37	40	42	44	47	49	51	53	62	70	84	90	98	103	113	126	135
1/4	22	28	33	38	42	46	49	53	55	59	62	64	67	69	82	91	102	115	125	135	150	160	170
9/32	26	32	38	43	47	50	54	58	61	64	67	70	72	75	89	102	115	125	140	150	160	175	185
5/16	32	38	44	50	55	60	64	68	73	77	82	85	88	92	105	123	134	148	167	198	216	234	251
11/32	36	43	50	55	66	72	76	81	85	90	94	97	103	108	127	147	172	190	209	230	248	267	277
3/8	42	50	56	65	70	76	82	93	97	105	110	115	121	126	150	171	191	212	233	255	272	303	316

NOTE: CAPACITIES BELOW DARKENED LINE PERTAIN TO SIZE 91 ONLY.

SIZE 92, CONTINUOUS DISCHARGE CAPACITIES IN lbs. OF STEAM PER HOUR.																							
ORIFICE SIZE, IN.	STEAM PRESSURE, psig																						
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40	45	50	55	60
1/8	5	7	8	9	10	11	12	13	15	16	17	18	19	20	23	25	28	31	33	36	38	41	44
5/32	8	10	12	14	16	17	19	20	21	22	23	25	26	27	31	36	40	44	48	52	56	60	65
3/16	12	15	18	21	23	26	27	29	31	32	35	36	37	40	47	52	59	65	70	77	83	88	93
7/32	16	21	25	29	32	35	37	40	42	44	47	49	51	53	62	70	84	90	98	103	113	126	135
1/4	22	28	33	38	42	46	49	53	55	59	62	64	67	69	82	91	102	115	125	135	150	160	170
9/32	27	35	42	48	53	58	63	67	71	75	79	81	85	88	103	117	129	140	159	177	190	199	213
5/16	33	43	51	59	65	71	77	82	87	92	97	100	104	108	127	144	159	172	197	212	228	243	261
11/32	40	52	62	70	78	84	91	97	102	109	114	119	124	129	152	172	192	206	236	252	270	297	313
3/8	53	59	65	78	84	92	99	104	115	119	123	128	133	138	162	183	205	226	246	269	290	314	334
7/16	74	84	90	99	108	117	123	131	136	143	150	158	164	170	197	224	250	277	316	346	370	400	423
1/2	88	95	100	105	112	121	133	142	150	159	166	173	182	194	230	268	300	334	367	399	428	462	486

SIZE 93, CONTINUOUS DISCHARGE CAPACITIES IN lbs. OF STEAM PER HOUR.																							
ORIFICE SIZE, IN.	STEAM PRESSURE, psig																						
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40	45	50	55	60
13/32	70	84	100	110	121	132	139	148	153	160	169	173	180	185	212	246	270	297	330	356	384	412	441
7/16	77	95	108	125	129	138	146	155	169	176	189	196	204	213	246	286	312	336	363	401	432	464	497
15/32	83	122	130	145	150	157	167	180	193	202	211	225	230	238	282	319	356	385	416	447	480	517	546
1/2	99	128	145	160	172	185	198	202	217	228	242	253	264	272	321	364	407	435	460	500	540	581	621
9/16	103	137	159	185	196	208	225	238	258	266	271	283	291	310	360	408	456	515	562	614	661	719	753
5/8	117	147	175	202	213	234	252	274	289	296	317	338	347	269	428	488	547	607	664	726	785	847	900
3/4	127	174	203	232	255	287	300	338	361	374	382	409	436	459	548	637	745	848	924	996	1082	1179	1270

SIZE 94, CONTINUOUS DISCHARGE CAPACITIES IN lbs. OF STEAM PER HOUR.																	
ORIFICE SIZE, IN.	STEAM PRESSURE, psig																
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30
5/8	137	167	190	213	225	251	266	289	312	327	350	372	388	414	478	541	606
3/4	185	227	258	290	309	340	361	391	425	443	474	505	525	556	684	772	859
7/8	243	297	338	378	405	446	473	513	553	581	621	662	689	758	873	996	1109
1	278	343	390	437	468	515	546	593	639	671	718	764	796	850	991	1134	1268
1-1/8	320	496	450	508	540	594	630	684	748	774	828	882	918	1117	1304	1469	
1-1/4	344	418	475	553	570	627	665	722	795	817	874	931	969	988	1182	1391	1567
1-1/2	390	490	558	621	669	736	781	847	919	959	1026	1093	1137	1153	1396	1607	1816



Product  
9000 SERIES  
HUMIDIFIERS  
AM-HAM-HEM-BLEM-BNDEM

ENGLISH  
WEB  
YIN  
✓  
CN22023

CD No.  
1036  
Rev; E

Date  
7/17/09  
Sht. 3  
By; paulg

PHYSICAL DATA - OPERATORS

CONTROL MODEL		PNEUMATIC MODULATING			ELECTRIC MODULATING		
		ARMSTRONG C1801*	HONEYWELL MP953D	HONEYWELL MP953F	HONEYWELL M9182A	BELIMO AF24-SR	BELIMO NWF24-MFT-EUS
*B*(HEIGHT) mm	90 SIZE	302	264	388	378	470	381
	91 SIZE	406	368	492	479	576	481
	92 SIZE						
	93 SIZE	495	454	578	562	665	565
	94 SIZE	—	622	746	708	789	697
OPERATOR WEIGHT		4 kgs	3 kgs	3 kgs	5 kgs	6 kgs	9 kgs

\*ARMSTRONG C1801-Std; Dimensions ±6, HONEYWELL MP953D-Optional (Std. On 94)

OPERATOR SPRING RANGES;  
PNEUMATICALLY CONTROLLED HUMIDIFIERS kPa

ARMSTRONG C1801		HONEYWELL MP953D		HONEYWELL MP953F	
OPERATING RANGE	ADJUSTABLE START POINTS	OPERATING RANGE	NON-ADJUSTABLE START POINTS	OPERATING RANGE	ADJUSTABLE START POINTS
34	21 MIN.	28	20	28	21 MIN.
*69		34	55	34	
—	—	*48	28	*48	

\*Standard Spring Furnished When No Spring Range Is Specified

MODEL 90 Manifold Lengths & Duct Widths With Which They May Be Used.

MODEL NO.	VERTICAL MANIFOLD	MV-1	MV-1.5	MV-2	MV-3	MV-4	MV-5	MV-6	MV-7	MV-8	MV-9	MV-10	MV-11	MV-12
	HORIZONTAL MANIFOLD	MH-1	MH-1.5	MH-2	MH-3	MH-4	MH-5	MH-6	MH-7	MH-8	MH-9	MH-10	MH-11	MH-12
*L* (LENGTH) mm		305	457	610	914	1219	1524	1829	2134	2438	2743	3048	3353	3658
W-DUCT (WIDTH)	(MIN.)	203	381	533	787	1092	1346	1651	1956	2261	2565	2870	3175	3480
	(MAX.)	356	508	762	1067	1321	1626	1930	2235	2540	2845	3150	3454	3759
WEIGHT, kgs APPROX.		2	2.3	3	4	5	6	7	8	9.5	10	11	12	14

Manifold Lengths & Duct Widths With Which They May Be Used.

MANIFOLD MODEL NO.		MH-1	MH-1.5	MH-2	MH-3	MH-4	MH-5	MH-6	MH-7	MH-8	MH-9	MH-10	MH-11	MH-12
*L* (LENGTH) mm		305	457	610	914	1219	1524	1829	2134	2438	2743	3048	3353	3658
W-DUCT (WIDTH)	(MIN.)	203	381	533	787	1092	1346	1651	1956	2261	2565	2870	3175	3480
	(MAX.)	356	508	762	1067	1321	1626	1930	2235	2540	2845	3150	3454	3759
SHIPPING WEIGHT kgs APPROX.	<input type="checkbox"/> 91 SIZE	1.4	2	2.3	3	4	4.5	5	6	7	8	9	10	11
	<input type="checkbox"/> 92 SIZE	2	2.3	3	4	5	6	7	8	10	10	11	12	14
	<input type="checkbox"/> 93 SIZE	3	4	5	6	8	10	11	13	15	17	19	20	21
	<input type="checkbox"/> 94 SIZE	CONSULT FACTORY					11	14	16	18	20	23	25	27

NOTE: Insulated Manifolds Are Available, Consult Factory

Units:  
Metric

 <b>Armstrong</b> www.armstronginternational.com	Product		ENGLISH	CD No.	Date
	9000 SERIES HUMIDIFIERS AM-HAM-HEM-BLEM-BNVEM		WEB Y   N ✓	1036	7/17/09
	CN22023		Rev; F	sht. 4	By; paulg

# CAPACITIES FOR SERIES 9000 STEAM HUMIDIFIERS FOR AIR HANDLING SYSTEMS

Tables Show Maximum Continuous Discharge Capacities For Series 9000 Humidifiers In  
kgs Of Steam Per Hour At The Steam Supply Pressure Indicated At The Humidifiers.

Size 90 & 91, Continuous Discharge Capacities In kgs Of Steam Per Hour.

ORIFICE SIZE (IN.)	STEAM PRESSURE, kPa																			
	15	20	25	35	40	50	55	60	70	75	80	90	100	140	170	200	250	300	400	
1/16	.6	.7	.8	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2	2.5	2.9	3.5	3.8	4.5	5.6	
5/64	1	1.2	1.4	1.6	1.8	2	2.1	2.3	2.4	2.5	2.7	2.8	3.0	3.8	4.8	5	5.6	6.7	8.6	
3/32	1.4	1.7	1.9	2.3	2.6	2.8	3	3.3	3.5	3.7	3.9	4	4.3	5.4	6	6.5	7.8	9.6	11	
7/64	1.9	2.2	2.6	3.1	3.6	4	4.1	4.5	4.6	5	5.2	5.4	6	7.2	8	8.6	9.5	12	15	
1/8	2.5	3.1	3.3	4	4.5	5	5.5	5.9	6.3	6.3	6.8	7.2	8	10	11	13	14	16	20	
5/32	3.6	4.5	5.1	6.3	7.2	7.7	8.6	9	9.5	10	11	12	13	14	16	18	20	24	29	
3/16	5.5	6.8	7.7	10	11	12	12	13	14	15	16	17	18	22	24	27	29	35	42	
7/32	7.5	10	11	13	15	16	17	18	19	20	21	22	24	28	32	35	38	44	64	
1/4	10	13	14	17	19	21	22	24	25	27	28	29	31	37	41	46	52	61	77	
9/32	12	15	16	20	21	23	25	26	28	29	30	32	34	40	48	52	57	68	84	
5/16	15	17	16	23	25	27	29	31	33	35	37	39	42	48	56	61	67	90	114	
11/32	16	20	22	25	30	33	35	37	39	41	43	44	49	58	67	78	86	104	126	
3/8	19	23	25	30	32	35	37	42	44	48	50	52	57	68	77	86	96	115	143	

NOTE: Capacities Below Darkened Line Pertain To Size 91 Only.

Size 92, Continuous Discharge Capacities In kgs Of Steam Per Hour.

ORIFICE SIZE (IN.)	STEAM PRESSURE, kPa																			
	15	20	25	35	40	50	55	60	70	75	80	90	100	140	170	200	250	300	400	
1/8	2.2	3.2	3.6	4	4.5	5	5.5	6	6.8	7	8	9	10	11	12	13	14	16	20	
5/32	3.6	4.5	5.5	6.3	7.3	7.7	8.6	9	9.5	10	11	12	13	14	16	18	20	24	29	
3/16	5.4	6.8	8.2	9.5	10	11	12	13	14	15	16	17	18	21	24	27	29	35	42	
7/32	7.2	9.5	11	13	15	16	17	18	19	20	21	22	24	28	32	38	41	47	61	
1/4	10	11	15	17	19	21	22	24	25	27	28	29	31	37	41	46	52	61	77	
9/32	12	16	19	22	24	26	29	30	32	34	36	37	40	47	53	59	69	80	97	
5/16	15	20	23	27	30	32	35	37	39	42	44	45	49	57	65	72	85	96	118	
11/32	18	24	28	32	35	38	41	44	46	49	52	54	59	69	78	87	101	114	142	
3/8	24	27	29	35	38	42	45	47	52	54	56	58	63	74	83	93	103	122	151	
7/16	34	38	41	45	49	53	56	60	62	65	68	72	77	89	102	114	126	157	190	
1/2	40	43	45	47	51	55	60	64	68	72	76	79	88	104	121	136	151	181	220	

Size 93, Continuous Discharge Capacities In kgs Of Steam Per Hour.

ORIFICE SIZE (IN.)	STEAM PRESSURE, kPa																			
	15	20	25	35	40	50	55	60	70	75	80	90	100	140	170	200	250	300	400	
13/32	32	38	45	50	55	60	63	67	69	73	77	78	84	96	112	122	135	161	200	
7/16	35	43	49	57	59	63	66	70	77	80	86	89	97	112	129	142	152	182	225	
15/32	38	55	59	66	68	71	76	82	88	92	96	102	108	128	145	161	175	203	248	
1/2	45	58	66	73	78	84	90	92	98	103	110	115	123	146	165	185	197	227	282	
9/16	47	62	72	84	89	94	102	108	117	121	123	128	141	163	185	207	234	279	342	
5/8	53	67	79	92	97	106	114	124	131	134	144	153	167	194	221	248	275	328	408	
3/4	58	79	92	105	116	130	140	153	164	170	173	186	208	249	289	338	385	452	576	

Size 94, Continuous Discharge Capacities In kgs Of Steam Per Hour.

ORIFICE SIZE (IN.)	STEAM PRESSURE, kPa															
	15	20	25	35	40	50	55	60	70	75	80	90	100	140	170	200
5/8	62	76	86	97	102	114	121	131	142	148	159	169	188	217	245	275
3/4	84	103	117	132	140	154	164	177	193	201	215	229	252	310	350	390
7/8	110	135	153	171	184	202	215	232	251	264	282	300	344	396	452	503
1	126	156	177	198	212	234	248	269	290	304	326	347	386	450	514	575
1-1/8	145	180	204	230	245	269	286	310	339	351	376	400	422	507	591	666
1-1/4	156	190	215	251	259	284	302	327	361	371	396	422	448	536	631	711
1-1/2	177	222	253	282	303	334	354	384	417	435	465	496	523	633	729	824

UNITS:  
METRIC



Product	ENGLISH	CD No.	Date
9000 SERIES HUMIDIFIERS AM-HAM-HEM-BLEM-BNVEM	WEB Y   N ✓	1036	7/17/09
CN22023	Rev; E	sht. 5	By; paulg

# DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

Order:

Project:

Requirements:

By:

Date:

## List Of Materials:

Name Of Part	Material
Steam Chamber	ASTM A48 CL. 30 (Cast Iron)
Bonnet Ass'y	ASTM B16 (Brass)
Stem	ASTM A276 T316
Valve & Valve Seat Manifold	18-8 Stainless Steel
Compression Fittings	Brass
Operator	See Specifics
Strainer	ASTM A48 CL. 30(Cast Iron) W/ SS Screen
IB Steam Trap	ASTM A48 CL. 30(Cast Iron) W/ SS Internals

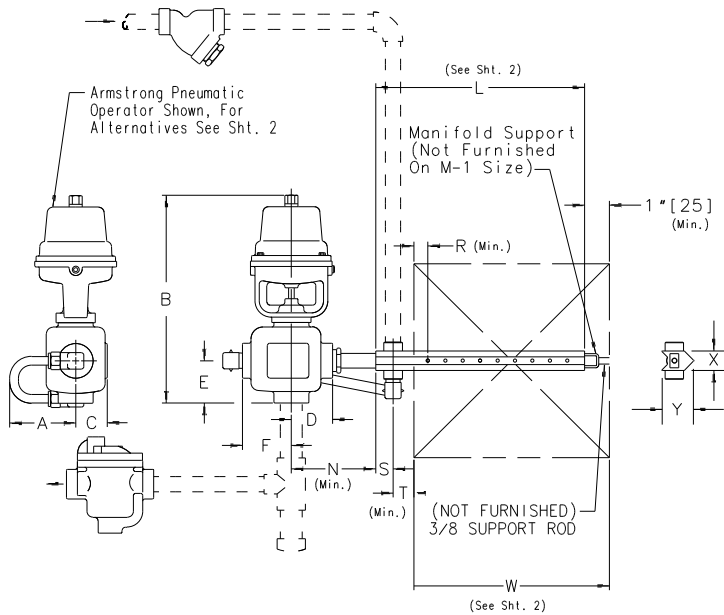
## Technical Information:

MODEL	90
A	4-1/8 [105]
B	See Sht. 2
C	1-7/8 [48]
D	2-3/8 [60]
E	2-7/16 [62]
F	2-13/16 [71]
N	5-3/8 [137]
R	2 [51]
S	
T	1" [25]
X	1-1/4 [32]
Y	1-7/8 [48]
WEIGHT, lbs (LESS OPER. & MANIFOLD)	13-1/2 [6kgs]

## Design Information:

CONN. SIZES (NPT)	
STEAM INLET	1/2
DRAIN	1
TRAP DRAIN	1/2

Units:  
Inches [mm]



Product

ENGLISH

CD No.

Date

HUMIDIFIER  
AMA 90

WEB  
Y | N  
✓

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Sht. 6

By; paulg

# DIMENSIONS & DATA CERTIFIED FOR:

Representative:

Order:

Customer:

Order:

Project:

Requirements:

By:

Date:

## List Of Materials:

Name Of Part	Material
Steam Chamber	ASTM A48 CL. 30 (Cast Iron)
Bonnet Ass'y	ASTM B16 (Brass)
Stem	ASTM A276 T316
Valve & Valve Seat	18-8 Stainless Steel
Manifold	
Manifold Fittings	Black Iron
Operator	See Specifics
Strainer	ASTM A48 CL. 30 W/ SS Screen
IB Steam Trap	ASTM A48 CL. 30 W/ SS Internals

## Technical Information:

MODEL	90	91	92	93	94
B	SEE OPERATOR CHART (Sht. 2 & 4)				
D	2-3/8[60]	3-1/16[78]	3-13/16[97]	4-3/4[121]	8*[203]
E	2-7/16[62]	6-1/16[154]		9*[229]	12-5/8[321]
F	2-13/16[71]	3-13/16[97]		4-3/4[121]	8*[203]
R	2*[51]				
S	3/4[19]	1*[25]	1-5/8[41]		
T	1*[25]				
X	1-7/32[31]	1-3/4[44]	2-1/8[54]	3-1/4[83]	
Y	1-7/8[48]	2-9/16[65]	3-1/8[80]	4-1/4[108]	
WEIGHT, LBS (LESS OPER. & MANIFOLD)	13-1/2 [6kgs]	24 [11kgs]	30 [14kgs]	52 [24kgs]	145 [66kgs]

## Design Information:

### CONNECTION SIZES (NPT)

	1/2	1/2	3/4	1-1/4	2
STEAM INLET	1/2	1/2	3/4	1-1/4	2
DRAIN	1"	1"	1"	1-1/4	2
DRAIN TRAP	1/2	3/4	3/4	3/4	3/4
BODY MTC. HOLES	0	2	2	2	4

### OPTIONS:

HUMIDISTATS:	PNEUMATIC MODULATING:
<input type="checkbox"/> PNEUMATIC WALL	<input type="checkbox"/> ARMSTRONG C1801 (AM)
<input type="checkbox"/> PNEUMATIC DUCT	<input type="checkbox"/> HONEYWELL MP953D (HAM)
<input type="checkbox"/> PNEUMATIC DUCT HI-LIMIT	<input type="checkbox"/> HONEYWELL MP953F (HAM) PILOT POSITIONER
<input type="checkbox"/> ELECTRIC WALL	
<input type="checkbox"/> ELECTRIC DUCT	
<input type="checkbox"/> ELECTRIC DUCT HI-LIMIT	ELECTRIC MODULATING:
<input type="checkbox"/> TEMPERATURE SWITCH:	<input type="checkbox"/> HONEYWELL M9182A (HEM) 4-20 mA CONVERSION BOARD AVAILABLE
<input type="checkbox"/> ELECTRIC	<input type="checkbox"/> BELIMO AF24SR (BLEM)
<input type="checkbox"/> PNEUMATIC	<input type="checkbox"/> BELIMO NVF24-MFT-E-US (BNVEM)
<input type="checkbox"/> INSULATED MANIFOLD	<input type="checkbox"/> BELIMO NVF24-MFT-E-US (BNVEM) *0-10Vdc/4-20ma Std.

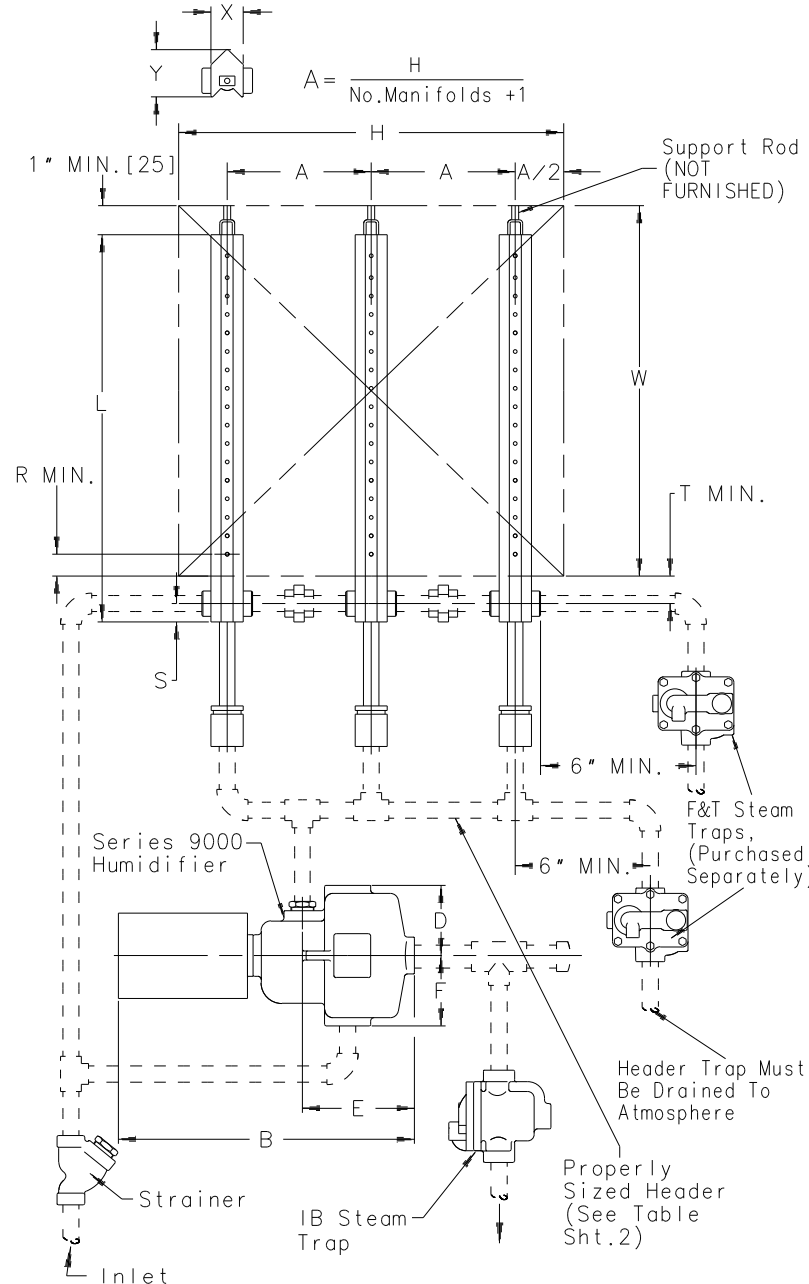
OPERATORS (SEE Sht. 2 & 4)

### PACKAGE INCLUDES:

ARMSTRONG HUMIDIFIER
STEAM JACKETED MANIFOLD (S.S.)
ARMSTRONG INVERTED BUCKET STEAM TRAP
ARMSTRONG STRAINER A1SC
OPERATOR

### NOTES:

COMPLETE IDENTIFICATION INCLUDES TYPE OF OPERATOR (AM, AMA, HAM, HEM, BEM) MODEL NO. (90, 91, 92, 93, 94) & LENGTH OF STEAM DISTRIBUTION MANIFOLD. (i.e., AM-92M-4)



Units:  
Inches [mm]



Product

HUMIDIFIERS 9000 SERIES  
AM-AMA-HAM-BLEM-BNVEM

ENGLISH

CD No.

Date

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By; paulg

## CAPACITIES FOR SERIES 9000 STEAM HUMIDIFIERS FOR AIR HANDLING SYSTEMS

THE TABLES SHOW MAXIMUM CONTINUOUS DISCHARGE CAPACITIES FOR SERIES 9000 HUMIDIFIERS IN POUNDS OF STEAM PER HOUR AT THE STEAM SUPPLY PRESSURE INDICATED AT THE HUMIDIFIERS.

SIZE 93, CONTINUOUS DISCHARGE CAPACITIES IN LBS. OF STEAM PER HOUR. (Steam Supply Is Direct To Separator)																							
ORIFICE SIZE, IN.	STEAM PRESSURE, psig																						
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40	45	50	55	60
13/32	70	84	100	110	121	132	139	148	153	160	169	173	180	185	212	246	270	297	330	356	384	412	441
7/16	77	95	108	125	129	138	146	155	169	176	189	196	204	213	246	286	312	336	363	401	432	464	497
15/32	83	122	130	145	150	157	167	180	193	202	211	225	230	238	282	319	356	385	416	447	480	517	546
1/2	99	128	145	160	172	185	198	202	217	228	242	253	264	272	321	364	407	435	460	500	540	581	621
9/16	103	137	159	185	196	208	225	238	258	266	271	283	291	310	360	408	456	515	562	614	661	719	753
5/8	125	160	183	209	225	248	263	285	307	314	336	358	372	381	460	512	575	641	696	757	831	924	977
3/4	136	187	220	263	270	300	336	376	409	430	464	495	510	524	635	740	827	931	1017	1103	1195	1281	1366

SIZE 94, CONTINUOUS DISCHARGE CAPACITIES IN LBS. OF STEAM PER HOUR. (Steam Supply Is Direct To Separator)																							
ORIFICE SIZE, IN.	STEAM PRESSURE, psig																						
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	20	25	30	35	40	45	50	55	60
5/8	137	167	190	213	225	251	266	289	312	327	350	372	388	414	478	541	606	668	733	798	881	954	1017
3/4	198	242	275	308	330	363	385	418	451	473	506	539	561	607	707	790	890	982	1073	1175	1264	1357	1446
7/8	252	308	350	392	420	462	490	532	574	602	644	686	714	790	908	1017	1147	1270	1399	1537	1650	1781	1867
1	299	374	425	489	510	561	595	646	718	731	782	833	867	938	1075	1233	1393	1528	1688	1835	1978	2118	2289
1-1/8	370	462	525	588	630	693	735	798	834	903	966	1029	1071	1114	1334	1539	1695	1895	2105	2262	2468	2644	2822
1-1/4	413	517	588	661	705	776	823	893	960	1011	1081	1152	1199	1214	1487	1729	1946	2158	2386	2607	2800	3053	3205
1-1/2	540	660	750	840	900	990	1050	1140	1206	1290	1380	1470	1530	1541	1858	2118	2416	2648	2925	3193	3600	3870	4020

**NOTES:**

Steam pressure used to jacket 94 size manifold must not exceed 30 psig.

Steam pressure up to 60 psig can be used if multiple 93 size manifolds are used.



Product	ENGLISH	CD No.	Date
9000 SERIES HUMIDIFIERS AM-HAM-HEM-BLEM-BNVEM	WEB Y N ✓	1036	7/17/09
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## CAPACITIES FOR SERIES 9000 STEAM HUMIDIFIERS FOR AIR HANDLING SYSTEMS

THE TABLES SHOW MAXIMUM CONTINUOUS DISCHARGE CAPACITIES FOR SERIES 9000 HUMIDIFIERS IN POUNDS OF STEAM PER HOUR AT THE STEAM SUPPLY PRESSURE INDICATED AT THE HUMIDIFIERS.

SIZE 93, CONTINUOUS DISCHARGE CAPACITIES IN kgs. OF STEAM PER HOUR (Steam Supply Is Direct To Separator)																			
ORIFICE SIZE, IN.	STEAM PRESSURE, kPa																		
	15	20	25	35	40	50	55	60	70	75	80	90	100	140	170	200	250	300	400
13/32	32	38	45	50	55	60	63	67	69	73	77	78	84	96	112	122	135	161	200
7/16	35	43	49	57	59	63	66	70	77	80	86	89	97	112	130	142	152	182	225
15/32	38	55	59	66	68	71	76	82	88	92	96	102	108	128	145	161	175	203	248
1/2	45	58	66	73	78	84	90	92	98	103	110	115	123	146	165	185	197	227	282
9/16	47	62	72	84	89	94	102	108	117	121	123	128	141	163	185	207	234	279	342
5/8	57	73	83	95	102	112	119	129	139	142	152	162	173	209	232	261	291	343	443
3/4	62	85	100	119	122	136	152	171	186	195	210	225	238	288	336	375	422	500	620

SIZE 94, CONTINUOUS DISCHARGE CAPACITIES IN kgs. OF STEAM PER HOUR (Steam Supply Is Direct To Separator)																			
ORIFICE SIZE, IN.	STEAM PRESSURE, kPa																		
	15	20	25	35	40	50	55	60	70	75	80	90	100	140	170	200	250	300	400
5/8	62	76	86	97	102	114	121	131	142	148	159	169	188	217	245	275	303	357	461
3/4	90	110	125	140	150	165	175	190	205	215	230	244	275	321	358	404	445	533	656
7/8	114	140	159	178	191	210	222	241	260	273	292	311	358	412	461	520	576	697	847
1	136	170	193	222	231	254	270	293	326	332	355	378	425	488	559	632	693	832	1038
1-1/8	168	210	238	267	286	314	333	362	378	410	438	467	505	605	698	769	859	1026	1280
1-1/4	187	235	267	300	320	352	373	405	435	459	490	523	551	674	784	883	979	1182	1454
1-1/2	245	299	340	381	408	449	476	517	547	585	626	667	699	843	961	1096	1201	1448	1823

UNITS:  
METRIC

NOTES:

Steam pressure used to jacket 94 size manifold must not exceed [2 kPa].  
Steam pressure up to [4 kPa] can be used if multiple 93 size manifolds are used.

 <b>Armstrong</b> <small>www.armstronginternational.com</small>	Product	ENGLISH	CD No.	Date
	9000 SERIES HUMIDIFIERS AM-HAM-HEM-BLEM-BNVEM	WEB Y   N ✓	1036	7/17/09
	<small>cn22023</small>	Rev; B	Sht. 9	By; paulg