

# STEAM UNIT HEATERS



- Steam pressures to 200 psi
- Steam temperatures to 600°F.
- Heating capacity to 613,000 Btu/hr.



**THE NEW YORK BLOWER COMPANY®**

Designed for  
continuous operation  
in the industrial  
environment . . .



with hot-dip galvanized  
**STEELfin** heating cores  
for long service life.

7660 QUINCY STREET—WILLOWBROOK, ILLINOIS 60527-5530  
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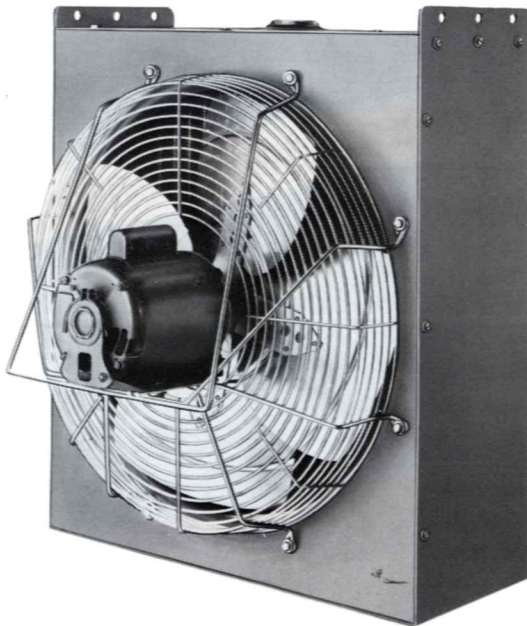


Dependable steam Unit Heaters feature hot-dip galvanized STEEL fin cores for long service life . . .

#### DESIGN FEATURES

- Steam pressures to 200 psi.
- Steam temperatures to 600°F.
- Heating capabilities to 613,100 Btu/hr.
- Direct drive for minimum maintenance.
- All-steel core and case construction.
- Choice of two heating surfaces . . . Type A for maximum heating capabilities . . . Type B for controlled heating in high-pressure steam applications.

# INDUSTRIAL UNIT HEATERS



NOTE: The safe operation of air moving equipment is dependent on proper installation and maintenance. Improper application, installation, or maintenance can create danger to life and limb of personnel. Users and/or installers should read "Recommended Safety Practices for Air Moving Devices" as published by the Air Movement and Control Association, 30 West University Drive, Arlington Heights, Illinois 60004, which is included with the packing slips for all nyb shipments and also available upon request.

#### CONSTRUCTION FEATURES

- Heavy-duty steel casing . . . ample internal clearances to compensate for heat expansion . . . integral mounting brackets for easy installation . . . venturi section die-formed for efficient airflow characteristics.
- Adjustable front louvers . . . for variable discharge angles .
- Baked machinery enamel finish . . . standard on casing and louvers.
- Welded-wire motor mount . . . zinc-plated heavy-gauge wire provides rigid motor support and enclosure of rotating propeller.
- High-efficiency propeller . . . designed for smooth efficient flow directly into heating surface . . . steel hub and aluminum blades for strength and durability.
- Totally enclosed motors . . . for the industrial environment . . . explosion-proof motors also available.

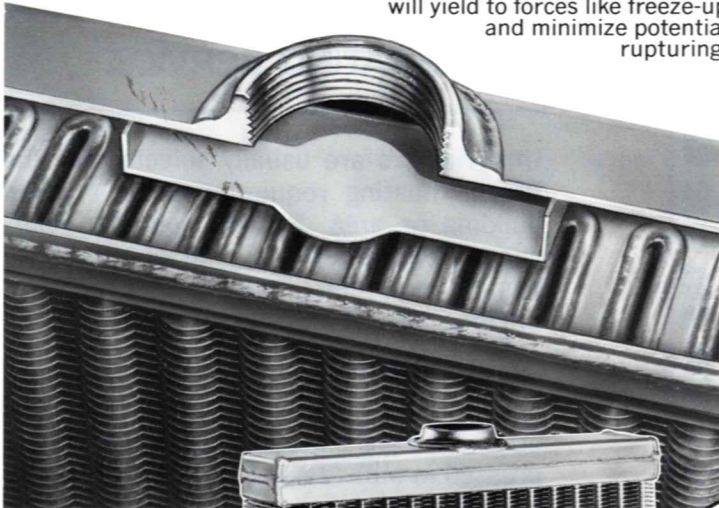
#### MATERIAL SPECIFICATIONS

Material specifications shown below apply to all sizes.

- Tube wall thickness: .060".
- Header wall thickness: 10 gauge.
- Fins: 26 gauge.
- Casings: 16 gauge.
- Louvers: 18 gauge.
- Wire guard: .250".



Cutaway view shows the steam spreader located in the supply header for even steam distribution. Also, the oval tube shape is clearly shown. Unlike thin-walled round copper tubes, the heavy-gauge oval tubes will yield to forces like freeze-up and minimize potential rupturing.



### STEELFIN DESIGN

The STEELfin heating surface was originally designed with the industrial application in mind. The all-steel core is comparable to the steam piping system in resilience and resistance to strains caused by temperature expansion and contraction [a common cause of failure with nonferrous steam coils]. The vertical tube configuration allows for positive condensate drainage and the corrosion-resistant features detailed below ensure durability in the industrial environment. Wide-fin spacing and the rigidity of steel fins provide for simple cleaning methods. This primary design has stood the test of time for more than 50 years and has become the standard for space heating in some of the nation's largest manufacturing facilities.

# WITH CORROSION-RESISTANT STEELFIN CORE



### CONSTRUCTION FEATURES

Rugged, all-steel heating cores . . . resist corrosion and material build-up . . . vertical tubes allow positive condensate drainage.

Headers . . . heavy-gauge steel with all seams continuously welded.

Pipe connections . . . tank flanges continuously welded to supply and return headers.

Vertical tubes . . . continuously welded to supply and return headers . . . SAE 950 alloy steel adds strength and resists corrosion.

Fins . . . five fins per inch give large openings to minimize material build-up and facilitate cleaning . . . can be cleaned with high-pressure hose or caustic solution.

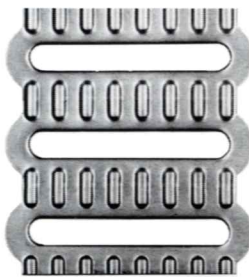
Hot-dip galvanized . . . all STEELfin heating cores are hot-dip galvanized after assembly to further enhance fin/tube heat transfer characteristics . . . also provides excellent resistance to atmospheric corrosion.

Quality control . . . all cores are subjected to leakage testing before shipment.

### CHOICE OF TWO FIN TYPES

#### TYPE A

Corrugated-fin surface provides maximum heating capabilities by causing a mixing airflow effect in the fin/tube channels.



#### TYPE B

Flat-fin surface is recommended for high-pressure steam applications where a moderate temperature rise is more desirable.





## CORRECTION FACTORS

CHART I— Type A steam ratings [see page 5].  
Apply to 2 lbs. steam and 60°F. entering air ratings.

Steam pressure [psi]	Mbh correction factors								
	Entering air temperatures [°F.]								
	0°	10°	20°	30°	40°	50°	60°	70°	80°
2	1.50	1.41	1.32	1.24	1.16	1.08	1.00	.93	.85
5	1.55	1.46	1.37	1.29	1.21	1.13	1.05	.97	.90
10	1.64	1.55	1.46	1.38	1.29	1.21	1.13	1.06	.98
15	1.71	1.61	1.53	1.44	1.34	1.28	1.19	1.12	1.04
20	1.77	1.68	1.58	1.50	1.42	1.33	1.25	1.17	1.10
30	1.87	1.78	1.68	1.60	1.51	1.43	1.35	1.27	1.19
60	2.09	2.00	1.90	1.81	1.73	1.64	1.56	1.47	1.39
75	2.18	2.09	1.99	1.90	1.81	1.72	1.64	1.55	1.47
100	2.31	2.20	2.11	2.02	1.93	1.84	1.75	1.66	1.58
125	2.41	2.31	2.21	2.11	2.02	1.93	1.84	1.76	1.68
150	2.50	2.40	2.30	2.20	2.11	2.02	1.93	1.84	1.76
200	2.65	2.54	2.43	2.34	2.25	2.14	2.07	1.98	1.89

Steam pressure [psi]	Temperature rise correction factors								
	Entering air temperatures [°F.]								
	0°	10°	20°	30°	40°	50°	60°	70°	80°
2	1.33	1.27	1.22	1.17	1.11	1.06	1.00	.94	.88
5	1.38	1.33	1.27	1.21	1.16	1.11	1.05	1.00	.93
10	1.45	1.40	1.35	1.29	1.24	1.19	1.13	1.07	1.02
15	1.51	1.46	1.42	1.36	1.31	1.24	1.19	1.14	1.08
20	1.56	1.52	1.46	1.41	1.36	1.30	1.25	1.19	1.14
30	1.65	1.61	1.55	1.51	1.46	1.40	1.35	1.29	1.24
60	1.86	1.81	1.75	1.71	1.66	1.61	1.56	1.50	1.45
75	1.93	1.89	1.84	1.79	1.74	1.69	1.64	1.58	1.53
100	2.04	1.99	1.95	1.89	1.85	1.79	1.75	1.69	1.64
125	2.13	2.09	2.04	1.99	1.94	1.89	1.84	1.79	1.74
150	2.21	2.17	2.12	2.07	2.03	1.98	1.93	1.87	1.83
200	2.34	2.30	2.24	2.20	2.16	2.10	2.07	2.02	1.97

CHART II— Type B steam ratings [see page 6].  
Apply to 30 lbs. steam and 60°F. entering air ratings.

Steam pressure [psi]	Mbh correction factors								
	Entering air temperatures [°F.]								
	0°	10°	20°	30°	40°	50°	60°	70°	80°
2	1.11	1.04	.98	.92	.86	.80	.74	.68	.63
5	1.15	1.08	1.02	.96	.90	.84	.78	.72	.70
10	1.22	1.15	1.08	1.02	.96	.90	.84	.78	.73
15	1.27	1.20	1.13	1.07	.99	.95	.89	.83	.77
20	1.31	1.24	1.18	1.11	1.05	.99	.93	.87	.81
30	1.39	1.32	1.25	1.19	1.12	1.06	1.00	.94	.88
60	1.56	1.48	1.41	1.35	1.28	1.22	1.15	1.09	1.03
75	1.62	1.55	1.48	1.41	1.34	1.28	1.21	1.15	1.09
100	1.71	1.64	1.57	1.50	1.43	1.36	1.30	1.24	1.17
125	1.79	1.72	1.64	1.58	1.50	1.44	1.37	1.31	1.24
150	1.86	1.78	1.70	1.63	1.56	1.50	1.43	1.37	1.31
200	1.97	1.88	1.81	1.74	1.67	1.59	1.54	1.47	1.41

Steam pressure [psi]	Temperature rise correction factors								
	Entering air temperatures [°F.]								
	0°	10°	20°	30°	40°	50°	60°	70°	80°
2	.98	.94	.90	.87	.82	.78	.74	.69	.65
5	1.02	.98	.94	.90	.86	.82	.78	.74	.69
10	1.07	1.04	1.00	.95	.92	.88	.84	.79	.75
15	1.12	1.08	1.05	1.01	.97	.92	.88	.84	.80
20	1.15	1.12	1.08	1.04	1.01	.96	.93	.88	.84
30	1.22	1.19	1.15	1.12	1.08	1.04	1.00	.95	.92
60	1.38	1.34	1.30	1.27	1.23	1.19	1.15	1.11	1.07
75	1.43	1.40	1.36	1.32	1.29	1.25	1.21	1.17	1.13
100	1.51	1.47	1.44	1.40	1.37	1.32	1.30	1.25	1.21
125	1.58	1.55	1.51	1.47	1.44	1.40	1.36	1.32	1.29
150	1.63	1.61	1.57	1.53	1.50	1.47	1.43	1.38	1.35
200	1.73	1.70	1.67	1.63	1.61	1.56	1.54	1.48	1.45

## HOW TO SELECT UNIT HEATERS FOR STEAM HEATING SERVICE

Unit Heaters are usually selected for the Btu/hr. heating requirements in a given building or area. Several common references are generally available for estimating heating requirements . . . see separate **nyb** Engineering Letter.

The steam rating tables shown on pages 5 and 6 provide final temperatures based on 60°F. entering air, and Btu/hr. ratings expressed in Mbh [1000 Btu/hr.]. The factors in Charts I and II should be used to correct for alternate steam pressures or entering air temperatures.

Select heater size and quantity for reasonable temperature rise. Unnecessarily high final temperatures result in ineffective comfort heating as hot air rises away from the desired heating area.

- Position heaters for circulatory air movement within the heated area.
- Position heaters away from obstructions to allow even supply air distribution and adequate motor ventilation.
- Position heaters for good heat projection at heat-loss points.
- Position heaters for maximum effectiveness . . . refer to Chart III for the heat-throw capabilities based on the maximum recommended mounting height shown.

CHART III

Heat throw and mounting height		
Size A or B	Maximum* mounting height	Heat throw
25	9'	20'
45	10'	27'
70	12'	42'
105	13'	55'
120	13'	45'
135	14'	50'
155	14'	66'
200	15'	55'
240	15'	65'
270	15'	70'
300	16'	80'

\*Floor to bottom of unit.

# STEAM RATING TABLES

## TYPE **A** UNIT HEATERS WITH CORRUGATED FINNS



Size	Steam pressure [psi]	Capacity at 60°F. entering air temperature		CFM at 70°F.	Motor		Outlet velocity at final temp. [FPM]
		Final temp. °F.	Mbh		HP	RPM	
A-25*	2	<b>121/123/125</b>	<b>24.5/21.1/18.3</b>	365/306/259	1/20	1550/1300/1100	572/481/408 580/488/414 583/491/417 587/494/419
	10	129/131/133	27.6/23.9/20.7				
	15	133/135/137	29.1/25.1/21.8				
	20	137/139/141	30.6/26.5/22.9				
A-45*	2	<b>116/119/121</b>	<b>44.7/39.2/34.3</b>	730/610/515	1/20	1550/1300/1100	827/694/588 837/703/596 842/707/600 847/712/604
	10	123/126/129	50.4/44.2/38.8				
	15	127/130/133	53.1/46.6/40.8				
	20	130/134/136	55.8/49.0/42.9				
A-70①	2	<b>111/118</b>	<b>70.6/53.4</b>	1265/835	1/4	1725/1140	1057/707 1069/716 1075/720 1081/725
	10	118/126	79.9/60.3				
	15	121/130	84.1/63.6				
	20	124/133	88.3/66.8				
A-105①	2	<b>110/118</b>	<b>106.0/80.9</b>	1940/1282	1/4	1725/1140	1110/743 1123/753 1129/758 1134/762
	10	116/125	119.8/91.4				
	15	119/129	126.1/96.2				
	20	122/132	132.5/101.1				
A-120	2	<b>118</b>	<b>120.3</b>	1910	1/4	1140	749 759 763 768
	10	125	136.0				
	15	129	143.2				
	20	132	150.4				
A-135	2	<b>115</b>	<b>136.3</b>	2280	1/4	1140	889 900 906 911
	10	122	154.0				
	15	125	162.1				
	20	128	170.3				
A-155②	2	<b>110/118</b>	<b>157.3/120.3</b>	2890/1910	1/2	1725/1140	1118/749 1131/759 1137/763 1142/768
	10	116/125	177.7/136.0				
	15	119/129	187.2/143.2				
	20	122/132	196.6/150.4				
A-200	2	<b>118</b>	<b>204.4</b>	3200	1/4	1140	710 719 724 728
	10	126	230.9				
	15	130	243.2				
	20	133	255.5				
A-240	2	<b>115</b>	<b>239.7</b>	4000	1/4	1140	882 893 893 903
	10	122	270.9				
	15	125	285.3				
	20	129	299.7				
A-270	2	<b>111</b>	<b>267.8</b>	4770	1/2	1140	1045 1058 1063 1069
	10	118	302.6				
	15	121	318.6				
	20	124	334.7				
A-300	2	<b>107</b>	<b>296.2</b>	5800	3/4	1140	1261 1274 1281 1287
	10	113	334.6				
	15	115	352.4				
	20	118	370.2				

Mbh—1000 Btu/hr. \*Shaded pole motor—performance in italics available by adding 3-speed switch.

① Performance in italics available by ordering with 2-speed motor and switch. ② Performance in italics available by ordering with 1/3 HP 2-speed motor and switch.

### RATINGS FOR ALTERNATE STEAM PRESSURES AND ENTERING AIR TEMPERATURES

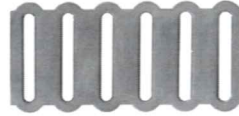
Chart I on page 4 gives correction factors for various entering air temperatures and steam pressures not listed above. The correction factors apply to the 2 psi steam ratings shown above [bold face] at 60°F. entering air.

EXAMPLE		
Determine the heating capabilities of an A-105 Unit Heater at 50°F. entering air and 60 psi steam pressure.	1. Determine factors for temperature rise and Mbh from Chart I.	1. TR=1.61. Mbh=1.64.
	2. Subtract 60° from the final temperature for 2 psi steam above.	2. 110°-60°=50° TR.
	3. Multiply the temperature rise factor from Step 1 by the temperature rise from Step 2, then add the actual entering air temperature to determine final temperature.	3. 1.61×50°=80° TR. 50°+80°=130° final temp.
	4. Multiply the Mbh for 2 psi above by the correction factor from Step 1 to determine Mbh at 50°F. entering air and 60 psi steam.	4. 106.0×1.64=173.8 Mbh.



# STEAM RATING TABLES

## TYPE B UNIT HEATERS WITH FLAT FINS



Size	Steam pressure [psi]	Capacity at 60°F. entering air temperature		CFM at 70°F.	Motor		Outlet velocity at final temp. [FPM]
		Final temp. °F.	Mbh		HP	RPM	
B-25*	30	<b>121/124/126</b>	<b>26.6/23.4/20.5</b>	400/335/283	1/20	1550/1300/1100	626/527/447 636/536/455 646/545/462 655/552/469
	60	130/134/136	30.6/26.9/23.6				
	100	139/143/146	34.6/30.4/26.7				
	150	147/152/155	38.1/33.5/29.3				
B-45*	30	<b>113/117/121</b>	<b>45.4/41.2/36.6</b>	785/660/550	1/20	1550/1300/1100	884/749/628 896/760/638 909/771/648 919/781/656
	60	121/126/130	52.2/47.4/42.0				
	100	129/134/139	59.0/53.6/47.6				
	150	136/142/147	64.9/58.9/52.3				
B-70①	30	<b>101/114</b>	<b>68.6/59.2</b>	1505/995	1/4	1725/1140	1237/836 1250/848 1264/860 1276/870
	60	108/123	78.8/68.1				
	100	114/131	89.1/77.0				
	150	119/138	98.0/84.7				
B-105①	30	<b>104/116</b>	<b>99.0/83.2</b>	2060/1360	1/4	1725/1140	1166/786 1180/798 1194/809 1205/819
	60	110/124	113.8/95.7				
	100	117/133	128.6/108.2				
	150	123/140	141.5/119.0				
B-120	30	<b>117</b>	<b>120.8</b>	1950	1/4	1140	763 775 786 796
	60	125	138.9				
	100	134	157.1				
	150	141	172.8				
B-135	30	<b>111</b>	<b>136.2</b>	2450	1/4	1140	949 962 975 986
	60	118	156.7				
	100	126	177.1				
	150	133	194.8				
B-155②	30	<b>105/117</b>	<b>145.4/120.8</b>	2958/1950	1/2	1725/1140	1134/763 1148/775 1162/786 1173/796
	60	112/125	167.2/138.9				
	100	118/134	189.0/157.1				
	150	124/141	207.9/172.8				
B-200	30	<b>117</b>	<b>212.0</b>	3400	1/4	1140	752 764 775 785
	60	126	243.7				
	100	134	275.5				
	150	142	303.1				
B-240	30	<b>112</b>	<b>236.3</b>	4150	1/4	1140	911 923 936 947
	60	120	271.7				
	100	128	307.2				
	150	135	337.8				
B-270	30	<b>108</b>	<b>250.5</b>	4780	1/2	1140	1041 1055 1068 1079
	60	115	288.1				
	100	122	325.7				
	150	129	358.3				
B-300	30	<b>101</b>	<b>261.7</b>	5850	3/4	1140	1259 1272 1286 1298
	60	107	301.0				
	100	113	340.2				
	150	118	374.2				

Mbh – 1000 Btu/hr. \*Shaded pole motor – performance in italics available by adding 3-speed switch.

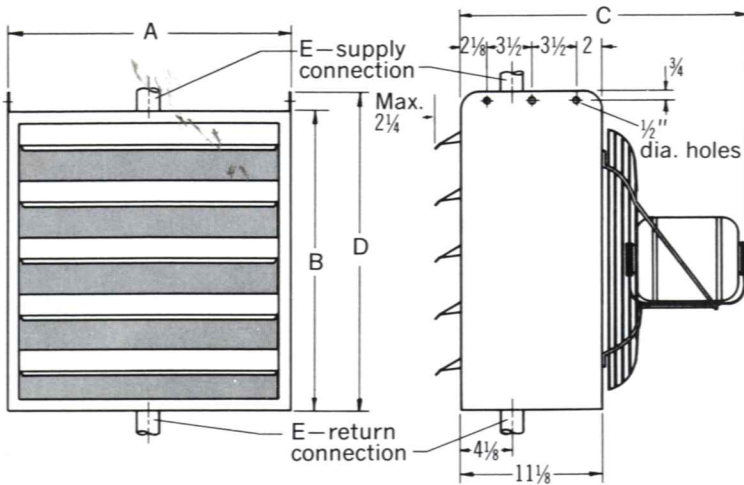
① Performance in italics available by ordering with 2-speed motor and switch. ② Performance in italics available by ordering with 1/3 HP 2-speed motor and switch.

### RATINGS FOR ALTERNATE STEAM PRESSURES AND ENTERING AIR TEMPERATURES

Chart II on page 4 gives correction factors for various entering air temperatures and steam pressures not listed above. The correction factors apply to the 30 psi steam ratings shown above [bold face] at 60°F. entering air.

<b>EXAMPLE</b> Determine the heating capabilities of a B-105 Unit Heater at 70°F. entering air and 100 psi steam pressure.	1. Determine factors for temperature rise and Mbh from Chart II.	1. TR=1.25. Mbh=1.24.
	2. Subtract 60° from the final temperature for 30 psi steam above.	2. 104° – 60° = 44° TR.
	3. Multiply the temperature rise factor from Step 1 by the temperature rise from Step 2, then add the actual entering air temperature to determine final temperature.	3. 1.25 × 44° = 55° TR. 70° + 55° = 125° final temp.
	4. Multiply the Mbh for 30 psi above by the correction factor from Step 1 to determine Mbh at 70°F. entering air and 100 psi steam.	4. 99.0 × 1.24 = 122.8 Mbh.

## DIMENSIONS [INCHES]



Size A or B	A	B	C max.	D	E [FPT]	Wheel dia.	Approx. weight [lbs.]
25	12	13 3/4	20 3/8	14 3/4	1 1/2	8	65
45	13 3/4	13 3/8	20 3/8	15 3/8	1 1/2	10	75
70	15 3/4	16 3/8	20 1/2	17 3/8	1 1/2	12	115
105	18 3/4	19 1/2	20 1/2	21	2	14	145
120	22	23 3/8	24 1/4	24 3/8	2	18	180
135							180
155							200
200	28 3/4	31 1/4	24 3/8	32 3/4	2 1/2	24	305
240							305
270							305
300							310

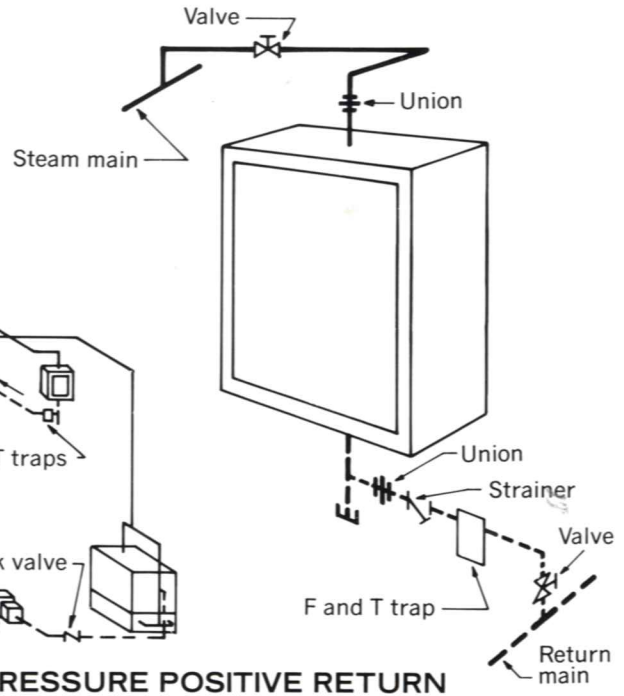
\*Weights will vary with motor specifications. Tolerance:  $\pm 1/8$ "

### TYPICAL STEAM PIPING CONNECTIONS

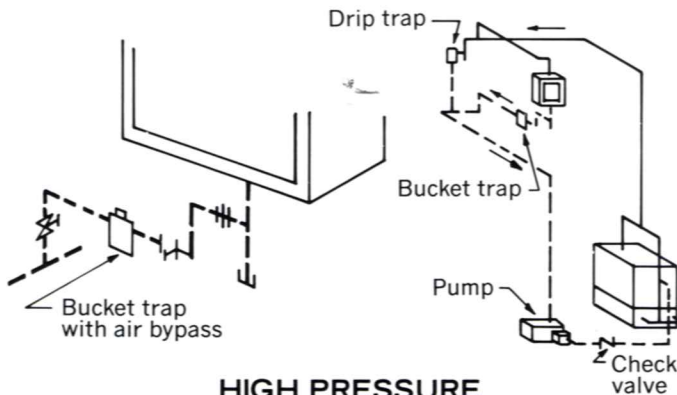
Refer to separate **nyb** Engineering Letter for information regarding typical pipe sizing and heating system hook-ups.

#### FOR MOST EFFICIENT TRAPPING AND CONDENSATE DRAINAGE

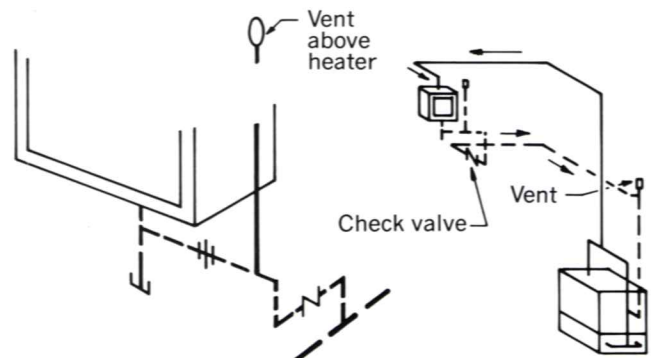
New York Blower Unit Heaters are guaranteed to deliver their rated Btu capacities when steam is supplied at the specific pressure with rapid and complete removal of condensation. As the STEELfin heat surface condenses steam very rapidly, particularly when starting up cold, it is important to properly install piping of ample size and traps of large capacity. Thus, to allow for intermittent trap operation and proper elimination of air and CO<sub>2</sub>, traps should be sized from **three to five times** trap catalog flow capacity.



**LOW PRESSURE POSITIVE RETURN**



**HIGH PRESSURE**

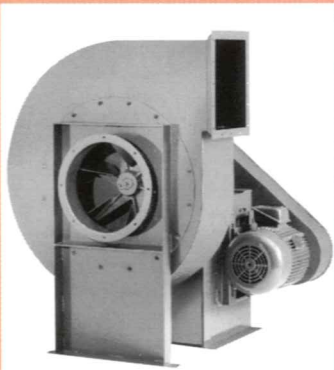


**LOW PRESSURE GRAVITY**



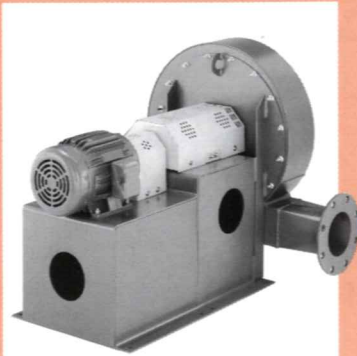
# COMPLETE SELECTION OF AIR-MOVING EQUIPMENT

The New York Blower Company offers thousands of different types, models, and sizes of air-moving equipment. Contact your nyb representative for assistance in identifying the best fan for your application.



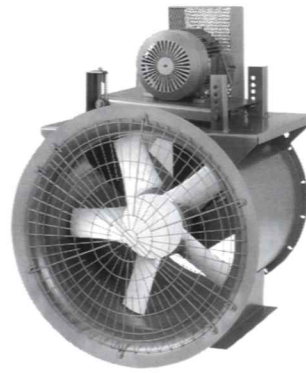
## DUST/MATERIAL HANDLING

Wide range of duty available with unique fan lines capable of handling light dust to heavy material. Typical applications include dust-collection and high-pressure process along with material-conveying.



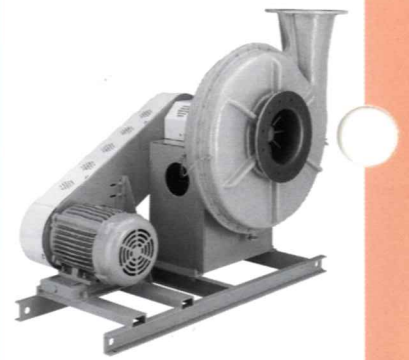
## AIR-HANDLING [CENTRIFUGAL]

Designed for clean to moderately dirty gas streams. Commercial and industrial HVAC, process cooling, light material-conveying, heat removal, and dryer exhaust are just a few of the numerous sample applications.



## AIR-HANDLING [AXIAL]

For the ideal handling of clean to moderately dirty airstreams. Commercial and industrial HVAC, drying and cooling systems, fume extraction, and process-heat removal are typical applications.

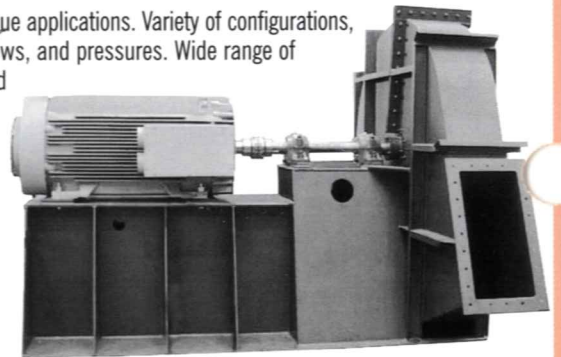


## FIBERGLASS REINFORCED PLASTIC [FRP]

Choice of performance and duty for corrosive gas streams. Applications include chemical process, wastewater treatment, laboratory hood exhaust, and tank aeration.

## CUSTOM PRODUCTS

Designed for unique applications. Variety of configurations, temperatures, flows, and pressures. Wide range of modifications and accessories are available to meet the most demanding specifications.

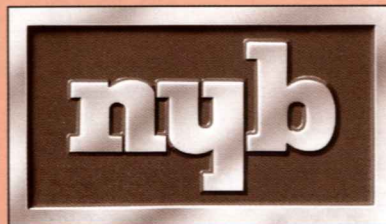


# The best fans still keep coming from New York Blower!



## ROOF VENTILATORS

Including both hooded and upblast ventilators, propeller fans, and centrifugal roof exhausters. These units are ideal for industrial, commercial, and institutional applications.



## HEATING PRODUCTS

Industrial-duty steam unit heaters with steam heating coils are available for facility heating and process-heat transfer.



## PROCESS/FAN COMPONENTS

Plug fans, plenum fans, wheels, inlet cones, and housings for a wide variety of OEM applications. Process/fan components are used in air-handling units, ovens, dryers, freezer tunnels, and filtration systems.