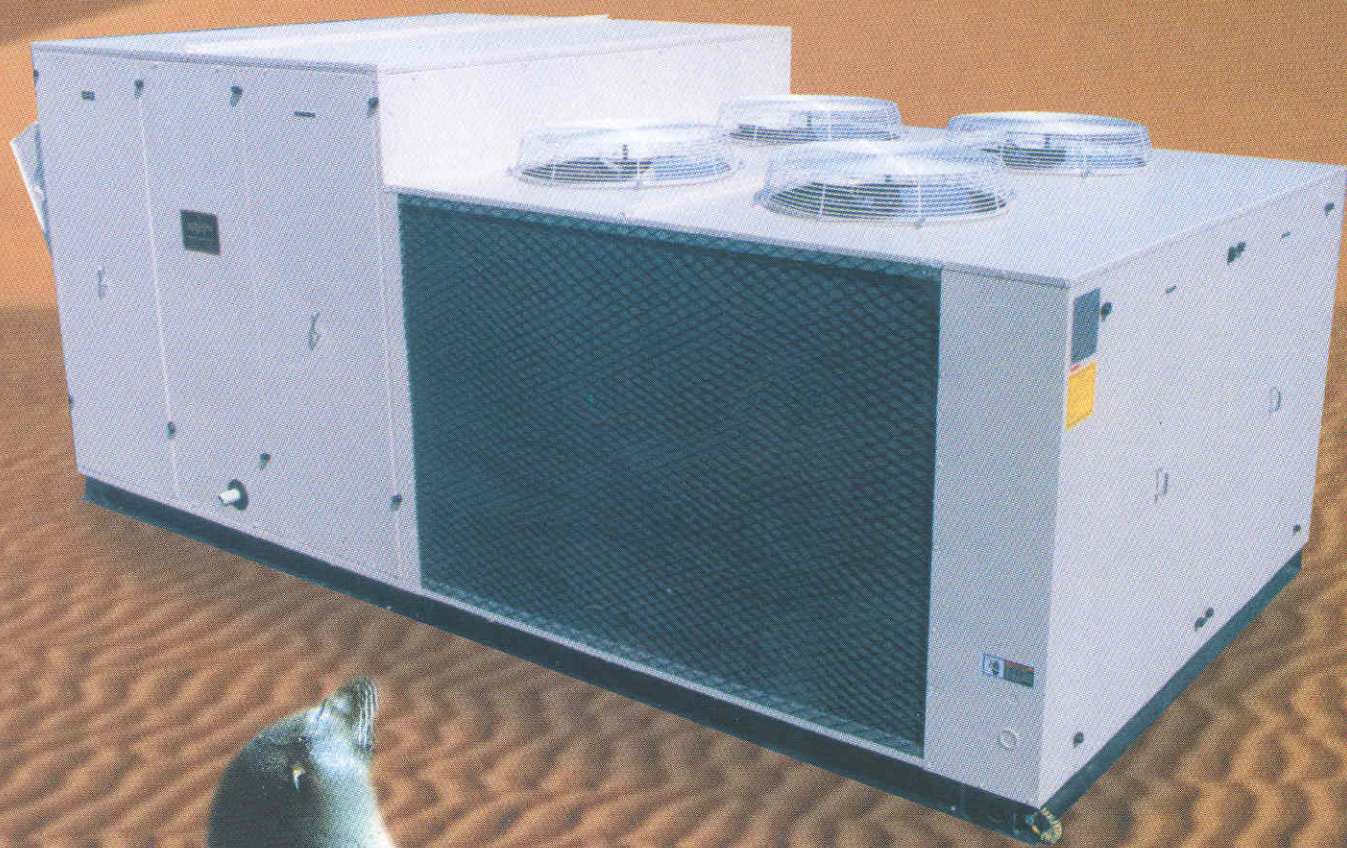




ROYAL TEMP

النجم الذهبية

SELF-CONTAINED
AIR CONDITIONING UNITS
12-58 TONS (50 HZ)



THE SAUDI FACTORY FOR CENTRAL A/C EQUIPMENT

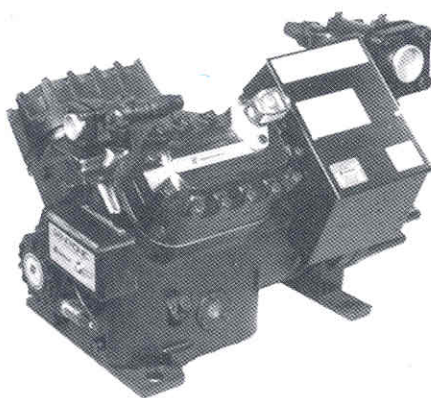
High efficiency...
Low noise...
Custom flexibility...
simple to install and maintain.

Goldenstar 15 thru 60 tons multistage cooling units are designed for energy efficiency, low noise, flexibility and low installation cost with integral electric heater. These packaged roof top air conditioning systems answer the requirement for economical air conditioning in supermarkets, shopping centres, restaurants, official buildings, industrial plants and similar low-rise buildings with large interior areas.

Cabinet

The corrosion resistant galvanized steel cabinet is finished by two coats of attractive enamel. The cabinet is fully insulated and mounted on steel channels to facilitate easy handling and installation.

Compressors



Goldenstar GPU employs the most advanced, energy efficient semi hermetic reciprocating compressors available today. They are precisely matched to specially circuited coils to reduce the compression ratio they must work

against. This reduces both full and part-load energy requirements. Multiple compressors on multiple refrigeration circuits are used to provide the economies of an increased number of unloading steps and provide increased stand by protection.

Coils

The aluminum finned condenser and evaporator coils are formed of multiple rows of seamless copper tubing arranged in a staggered configuration. Fins are die-formed corrugated, high efficient type. Tubes are mechanically expanded to shoulder of each fin to ensure maximum heat transfer. Evaporator coils of multiple refrigerants circuits are arranged in two independent circuit with the latest interlaced refrigerant distribution system for optimum performance even at part-load conditions. All evaporator coils are rated in accordance to ARI standard.

Condenser Fan

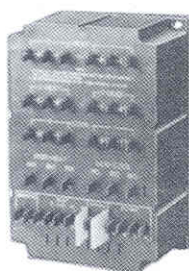
Condenser air fan is of the propeller type, Aluminum blade with a direct driven motor. Motor is of definite purpose air over type with plastic water slinger on shaft for weather protection. Condenser fan is mounted for vertical discharge to keep the sound to a minimum. Condenser fans are cycled by pressure controllers to save energy and to operate the system efficiently on low ambient condition.

Indoor Air Fan

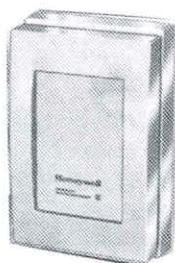
2 nos. forward curved, statically and dynamically balanced centrifugal blowers are used for the evaporator air. The fan is large enough to handle wide range of air volume in stable condition and low noise. The blower is belt driven using an adjustable pitch motor sheave for precise airflow selection.

Controls

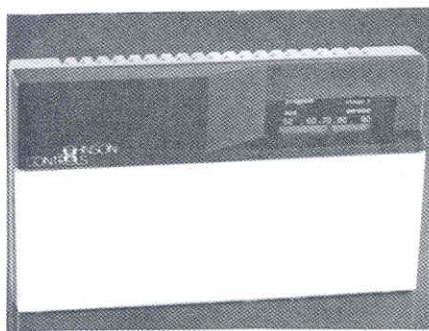
The refrigerant system in each circuit have a high pressure switch, oil pressure switch, solid state motor protection and pump down/low pressure controls as standard.



Logic Board



Sensor



Thermostat

GPU 150 thru 440 models are controlled by purpose made microprocessor based thermostat for 2 stage cooling, two stage heating and system operation switch. GPU-250,350,450,550 and 650 models are controlled by a solid state logic panel along with a space sensor, provide 4 stage cooling and 2 to 4 stage heating control. 5 minute lock out timer is an added feature to all models to prevent compressor re-start against thermostat jiggling.

Accessories

Economizer

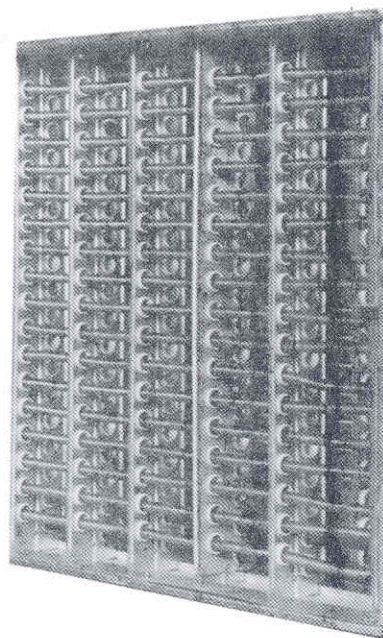
The factory assembled economizer package provides free cooling on mid-season. Automatically control the dampers to admit outside air to satisfy the thermostat cooling demand. Compressors and outdoor fan remains in off position to save energy.

Roof Curb

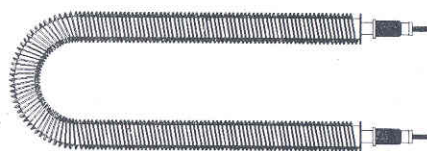
For downblow unit installation, field assembled roof curbs are available on all models.

Electric Heater

Optional electric heaters are factory installed complete with automatic thermal overload contactors and power terminals. Open coil or sheathed type elements are available. Heaters are available in various control steps or SCR controlled for 0-100% stepless modulation.



Open coil heater
(HF)



Sheathed Element
(CHMS)

GPU-250

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																													
	EDB	EWB	85				95				105				115				120				125									
			TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER					
7000	86	72	293	189	23.8	29.8	12.3	277	183	25.5	31.5	10.9	261	178	27.3	33.3	9.6	245	173	29.1	35.1	8.4	236	170	30	36.0	7.9	228	167	30.9	36.9	7.4
	80	67	265	183	22.9	28.9	11.6	251	178	24.5	30.5	10.2	236	171	26.2	32.2	9.0	221	166	27.9	33.9	7.9	213	162	28.7	34.7	7.4	205	160	29.5	35.5	6.9
	74	62	240	177	22.1	28.1	10.9	226	171	23.6	29.6	9.6	212	167	25.1	31.1	8.4	199	159	26.6	32.6	7.5	191	158	27.4	33.4	7.0	184	154	28.2	34.2	6.5
8000	86	72	301	201	24	31.1	12.5	284	198	25.7	32.8	11.1	268	192	27.5	34.6	9.7	251	184	29.4	36.5	8.5	242	182	30.3	37.4	8.0	233	178	31.2	38.3	7.5
	80	67	271	194	23.1	30.2	11.7	257	189	24.7	31.8	10.4	242	186	26.5	33.6	9.1	226	179	28.2	35.3	8.0	218	175	28.9	36	7.5	209	173	29.7	36.8	7.0
	74	62	246	190	22.3	29.4	11.0	232	184	23.8	30.9	9.7	218	176	25.4	32.5	8.6	203	170	26.9	34	7.5	196	168	27.7	34.8	7.1	188	163	28.4	35.5	6.6
9000	86	72	307	215	24.2	32.3	12.7	289	210	25.9	33.8	11.2	273	205	27.7	35.6	9.9	255	197	29.5	37.4	8.8	246	186	31.2	38.3	8.1	236	190	32.1	39.2	7.6
	80	67	278	208	23.3	31.4	11.9	262	200	24.9	32.9	10.5	246	195	26.7	34.6	9.2	230	191	28.4	36.3	8.1	221	187	29.2	36.1	7.6	213	184	30	36.9	7.1
	74	62	252	201	22.5	30.6	11.2	237	196	24	31.9	9.9	222	189	25.6	33.3	8.7	207	181	27.1	35	7.6	200	180	27.9	34.8	7.2	191	177	28.6	35.6	6.7

GPU-280

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																													
	EDB	EWB	85				95				105				115				120				125									
			TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER					
9000	86	72	311	215	21.4	28.2	14.6	297	209	23.5	30.3	12.6	214	204	25.6	32.4	8.4	265	199	27.6	34.4	9.6	256	196	28.7	35.5	8.9	248	193	29.8	36.5	8.3
	80	67	285	209	21	27.8	13.6	271	201	23	29.8	11.8	257	195	25	31.7	10.3	241	190	26.8	33.6	9.0	234	187	27.8	34.6	8.4	226	184	28.8	35.6	7.9
	74	62	259	202	20.5	27.3	12.6	247	197	22.4	29.2	11.0	234	191	24.3	31.0	9.7	220	186	26	32.8	8.5	213	183	26.9	33.7	7.9	206	180	27.9	34.7	7.4
10000	86	72	317	226	21.4	29.2	14.8	301	221	23.6	31.3	12.8	285	216	25.7	33.5	11.1	268	210	27.8	35.5	9.7	260	208	28.8	36.5	9.0	251	205	29.8	37.5	8.4
	80	67	289	219	21.1	28.8	13.7	275	214	23.1	30.8	11.9	260	206	25.1	32.8	10.4	245	200	27	34.7	9.1	237	198	28	35.7	8.5	229	195	29	36.7	7.9
	74	62	264	212	20.6	28.3	12.8	251	206	22.5	30.2	11.1	237	201	24.4	32.1	9.7	224	195	26.2	33.9	8.6	216	193	27	34.7	8.0	209	189	28	35.7	7.5
11000	86	72	321	237	21.5	30.3	14.9	305	231	23.7	32.5	12.9	288	226	25.8	34.6	11.2	271	221	27.9	36.7	9.7	263	218	28.9	37.7	9.1	251	213	30	38.8	8.4
	80	67	293	229	21.1	29.9	13.9	278	224	23.2	32	12.0	264	218	25.2	34	10.5	248	213	27.1	35.9	9.2	240	210	28.1	36.9	8.5	232	207	29.1	37.9	8.0
	74	62	268	221	20.7	29.5	12.9	255	215	22.6	31.4	11.3	241	210	24.5	33.3	9.8	226	204	26.3	35.1	8.6	219	201	27.2	36	8.1	212	198	28.2	37	7.5

GPU-340

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																													
	EDB	EWB	85				95				105				115				120				125									
			TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER	TC	SHC	P.I.	P.I.T	EEER					
10000	86	72	400	263	25.8	33.6	15.5	382	256	28.6	36.4	13.4	305	247	31.3	39.2	9.8	344	241	34	41.9	10.1	334	239	35.4	43.3	9.4	324	236	36.8	44.7	8.8
	80	67	365	255	25.4	33.3	14.3	348	246	28.1	36.0	12.4	331	240	30.6	38.5	10.8	313	233	33.2	41.0	9.4	304	230	34.4	42.3	8.8	295	226	35.8	43.7	8.2
	74	62	332	248	25.1	33.0	13.2	316	236	27.5	35.4	11.5	301	233	29.9	37.7	10.1	285	227	32.2	40.1	8.8	276	221	33.4	41.3	8.3	268	220	34.7	42.6	7.7
12000	86	72	412	286	25.8	34.9	16.0	393	279	28.7	37.8	13.7	373	273	31.5	40.6	11.8	353	266	34.2	43.3	10.3	323	262	35.6	44.7	9.1	331	259	37.1	46.2	8.9
	80	67	376	281	25.5	34.6	14.7	359	274	28.2	37.3	12.7	341	264	30.9	40	11.0	322	257	33.4	42.5	9.6	312	254	34.7	43.8	9.0	302	249	36.1	45.2	8.4
	74	62	343	268	25.1	34.2	13.7	327	262	27.6	36.7	11.8	310	254	30.1	39.2	10.3	293	247	32.5	41.6	9.0	284	244	33.7	42.8	8.4	275	240	35	44.1	7.9
13500	86	72	420	304	25.9	36.1	16.2	400	298	28.8	39	13.9	379	291	31.6	41.8	12.0	358	284	34.3	44.5	10.4	347	280	35.8	46	9.7	337	268	37.3	47.5	9.0
	80	67	383	298	25.6	35.8	15.0	365	291	28.3	38.5	12.9	346	281	30.9	41.1	11.2	327	274	33.5	43.7	9.8	317	270	34.9	45.1	9.1	307	267	36.2	46.4	8.5
	74	62	349	284	25.3	35.5	13.8	333	277	27.8	38	12.0	316	271	30.3	40.5	10.4	298	205	32.6	42.8	9.1	289	259	33.9	44.1	8.5	279	256	35.2	45.4	7.9

COOLING CAPACITIES 50 Hz

GPU-150

Evaporator Air (CFM)		Ent. Air °F		Ambient Temp. (°F)																																	
		EDB	EWB	85						95						105						115						120						125			
		TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER						
4000	86	72	163	105	12.7	15.1	12.9	152	101	13.6	16.1	11.2	143	98	14.5	17	9.8	133	94.8	15.5	18	8.6	127	92.5	16	18.4	8.0	122	90.6	16.4	18.9	7.5					
	80	67	146	101	12.3	14.7	11.9	137	97	13.1	15.6	10.4	128	93.4	14	16.4	9.1	119	90.3	14.8	17.3	8.0	114	89.1	15.2	17.6	7.5	109	87.3	15.6	18.1	7.0					
	74	62	130	97.8	11.9	14.3	11.0	122	94.1	12.6	15.1	9.7	114	89.4	13.4	15.9	8.5	105	86.4	14.1	16.6	7.5	100	83.9	14.4	16.9	7.0	96.7	82.2	14.8	17.2	6.5					
5000	86	72	169	116	12.8	16	13.2	159	113	13.8	16.9	11.5	148	110	14.8	17.9	10.0	137	107	15.7	18.9	8.7	132	105	16.2	19.3	8.2	126	104	16.7	19.8	7.5					
	80	67	152	113	12.4	15.6	12.3	142	110	13.3	16.5	10.7	133	105	14.2	17.3	9.4	123	102	15.1	18.2	8.2	118	100	15.5	18.6	7.6	113	98.3	15.9	19	7.1					
	74	62	137	109	12	15.2	11.4	128	105	12.8	16	10.0	119	102	13.6	16.7	8.7	110	97	14.3	17.5	7.6	105	95.3	14.7	17.8	7.2	101	93.4	15.1	18.2	6.7					
6000	86	72	174	129	12.9	16.9	13.5	163	125	13.9	17.9	11.7	152	121	14.9	18.9	10.2	141	119	15.9	19.9	8.9	135	117	16.4	20.3	8.3	129	115	16.9	20.8	7.7					
	80	67	157	124	12.5	16.5	12.5	147	121	13.5	17.4	10.9	136	116	14.3	18.3	9.5	126	114	15.2	19.2	8.3	122	112	15.6	19.6	7.8	116	110	16.1	20	7.2					
	74	62	141	119	12.1	16.1	11.6	132	116	13	16.9	10.2	122	111	13.7	17.7	8.9	113	107	14.5	18.5	7.8	108	105	14.9	18.9	7.3	104	103	15.3	19.3	6.8					

Physical Data

MODEL GPU		150	180	240	250	280	340	350	440	450	550	650	750
No. of Circuits		2	2	1	2	1	1	2	1	2	2	2	2
Compressor	Compressor Type	Hermetic	Hermetic	Semi-Her.	Hermetic	Semi-Her.	Semi-Her.	Semi-Her.	Semi-Her.	Semi-Her.	Semi-Her.	Semi-Her.	Semi-Her.
	HP@circuit-1	7.5	10	25	12	30	35	15	40	25	30	30	35
	HP@clfcuit-2	7.5	10	-	12		-	15		20	25	30	35
	Crankcase Htr. (watts)	65	100	100	65/65	100	100	65/65	200	100/100	100/100	100/100	100/100
	Oil charge (oz.)	128	120	120	128/128	136	144	128/128	220	120/120	120/136	136/136	144/144
Condenser Coil	Tube diameter	3/8" ENHANCED											
	Rows	2	2	2	2	3	3	3	3	3	2/3	3	3
	Fins/Inch	16	14	12	16	14	16	16	14	14	14	14	14
	Total area (ft ²)	25	27.8	41.6	41.6	37.8	48.9	48.9	55	55	44/44	88.9	118.8
Condenser Fan & Motor	Quantity	2	2	4	4	4	4	4	4	4	4	4	6
	Fan diameter	26	26	24	24	24	26	26	26	26	30	30	30
	Motor HP	1	1 1/2	3/4	3/4	3/4	1	1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2
	Rpm	1140	1140	1075	1075	1075	1140	1140	1140	1140	1140	1140	1140
Indoor Air Fan & Motor	Type	BELT DRIVE, CENTRIFUGAL, FORWARD CURVED											
	Size	AT12/9G2C	AT12/9G2C	AT15/11G2C	AT15/11G2C	AT15/11G2C	AT20/15G2C	AT20/15G2C	AT22/15G2C	AT22/15G2C	AT22/15G2C	AT22/15G2C	AT22/15G2C
	Max. Rpm (standard)	1056	906	958	958	777	735	735	773	773	816	892	914
	Motor HP (standard)	3	5	5	5	7 1/2	7 1/2	7 1/2	10	10	15	20	25
	Max. Rpm (optional)	1347	1308	1135	1135	1167	1024	1024	958	958	1071	1072	1089
	Motor HP (optional)	7 1/2	10	10	10	15	15	15	20	20	30	40	40
	Nominal Airflow (cfm)	5000	6500	8000	8000	10000	12000	12000	14000	14000	17500	20000	22000
Evaporator Coil	Tube diameter	1/2" PLAIN TUBE											
	Rows	3	3	4	4	3	4	4	4	4	4	4	4
	Fins/Inch	14	14	12	12	14	12	12	12	12	12	12	12
	Total Area (ft ²)	13.1	16.25	18.75	18.75	23.43	26.38	26.38	33.3	33.3	41.66	41.66	41.66
Indoor Air filter	Type	2" THICK DISPOSABLE (STANDARD)											
	Qty/Size	4-20x20 4-20x12	8-20x20	8-20x20	8-20x20	8-24x20	4-24x20 4-20x20	4-24x20 4-20x20	12-20x20 3-12x20	12-20x20 20x20	6-24x20 6-24x24	16-20x20	16-20x20
	Type	2" THICK DISPOSABLE PLEATED (OPTIONAL)											
	Qty/Size	4-20x20 4-20x12	8-20x20	8-20x20	8-20x20	8-24x20	4-24x20 4-20x20	4-24x20 4-20x20	12-20x20 3-12x20	12-20x20 20x20	6-24x20 6-24x24	16-20x20	16-20x20
	Type	60-65% EFFICIENCY BAG FILTER, 18" DEEP (OPTIONAL)											
	Qty/Size	4/20x24	4/20x20 4/20x12	8/20x20	6/20x20 2/12x20	8/24x20	4/20x24 4/20x20	4/20x24 4/20x20	12/20x20	12-20x20	6/24x24 14/24x20 8/20x20	6/24x24 14/24x20 8/20x20	6/24x24 14/24x20 8/20x20
Capacity Control Steps	%	0-50-100					0-66-100	0-25-50-100	0-66-100	0-22-44-72-100	0-23-45-73-100	0-25-50-75-100	0-25-50-75-100
Refrigerant	Type	R-22											
	Charge (lbs)	19	24	33	17/17	39	45	24/24	66	35/33	36/49	50/47	58/54
Operating Wt. (approx.)	Lbs (2)	2072	2185	2601	2911	2863	4112	4645	4647	5002	5524	5870	8240

Notes:

1. For R/A fan or power exhaust fan data consult factory.
2. Operating weight only for base unit excluding electric heater.

Accessory Component Pressure Drops (in. Wg.)

ACCESSORY		FACE VELOCITY (FPM)						
		300	350	400	450	500	550	600
2" PLEATED FILTER	CLEAN	0.08	0.12	0.16	0.2	0.22	0.3	0.32
	FINAL	0.3	0.35	0.4	0.5	0.5	0.7	0.75
60-65% EFFICIENCY BAG FILTER	CLEAN	0.15	0.18	0.2	0.22	0.25	0.3	0.35
	FINAL	0.75	0.75	1	1	1	1	1.2
DUAL MIXING BOX		0.05	0.078	0.086	0.11	0.14	0.18	0.2
DISCHARGE PLENUM		0.024	0.032	0.047	0.055	0.067	0.078	0.095

Return air fan

For high external static and or 100% economizer system return air fan is recommended to use with basic units.

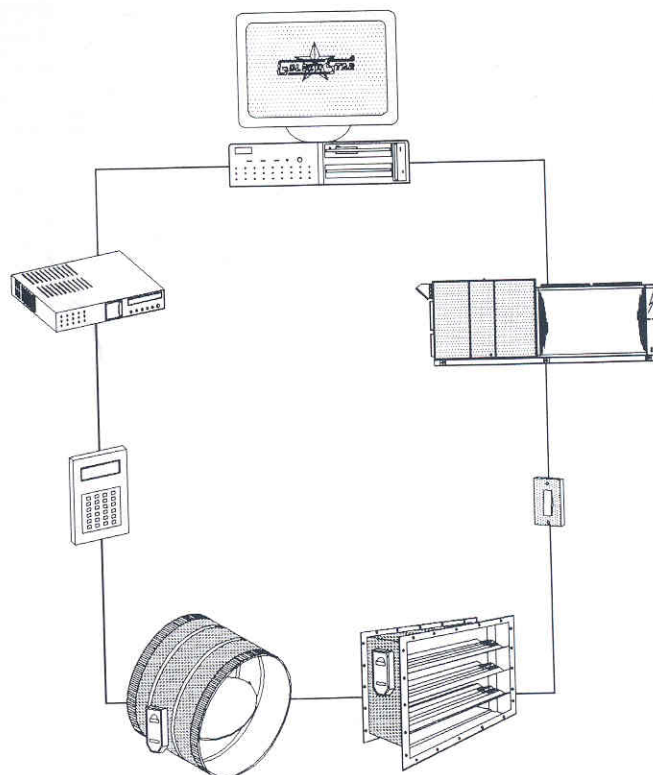
Return fan discharges air within the unit so that all of the air can be reconditioned and return to the building or exhausted when economizer system in operation.

The return fan utilizes 2 forward curved fans driven by its own motor. Return fan energized with the supply fan and continue to run until the supply fan is de energized.

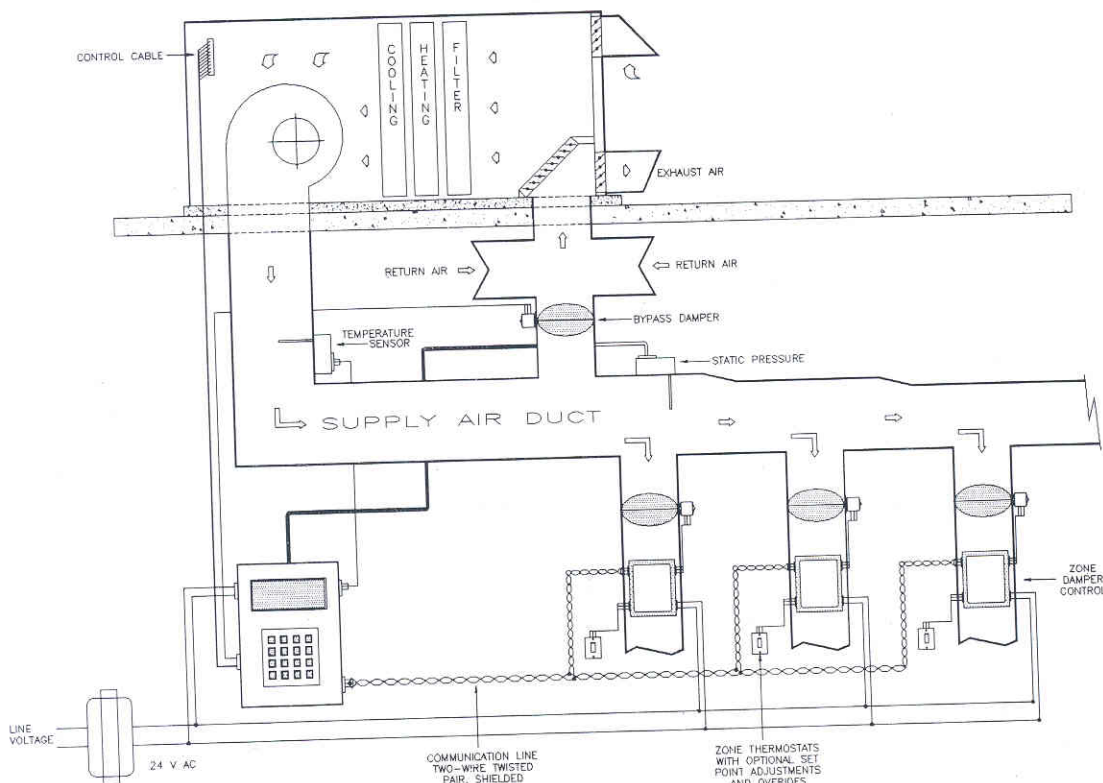
VT-VAV Zone control system

VT-VAV (Variable Temperature / Air) zone control system provides improved comfort through the use of individual area thermostat. Saves energy and money by allowing temperature setback in the unoccupied area while maintaining comfort in the occupied area.

VT-VAV System use the latest generation of solid-state microcomputer multizone system designed to enhance temperature control and energy savings. Powerful computerized logic panel monitors each zone thermostat and automatically selects the proper heating or cooling cycle as well as the correct number of stages. VT-VAV system available from 2 zone up to 16 zone in single machine. System monitor/controls up to 30 nos. machine loop.



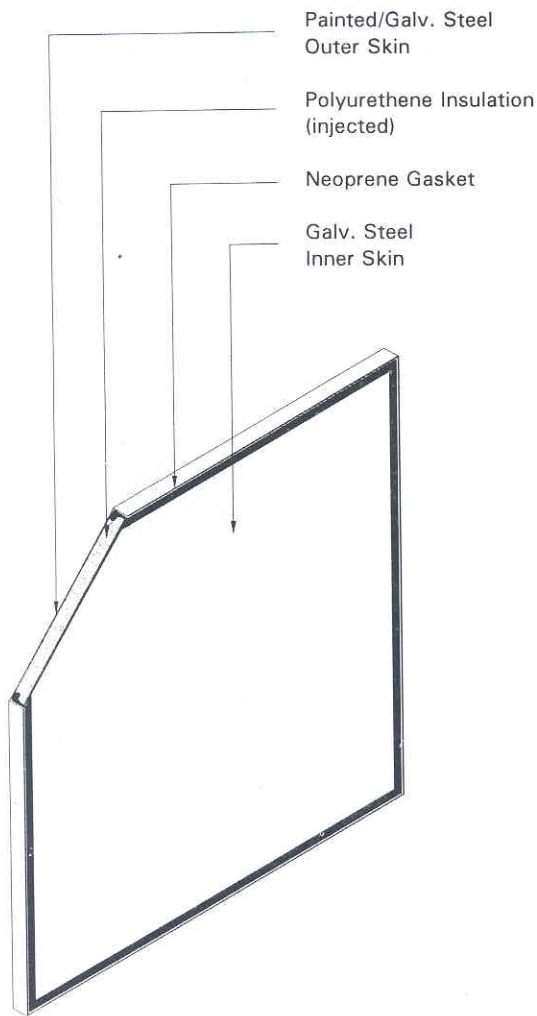
Typical VT-VAV System



Bag filter

Extended surface media provides high Filtration of 60 to 65% efficiency in accordance with ASHRAE standard (52-76). Filter Frame permits use of filter up to 95% efficiency.

Double Skin Casing Construction



For clean room or high ambient applications, Evaporator Section with double skin casing construction is available. The thermal coefficient is 0.81 w/m K.

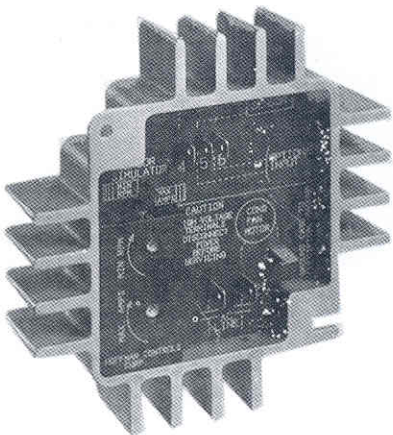
Following are the wall noise attenuation:
Frequency :63 125 250 500 1k 2k 4k 8k (HZ)
TL(dB) :15 18 21 39 38 49 55 49

Power Exhaust

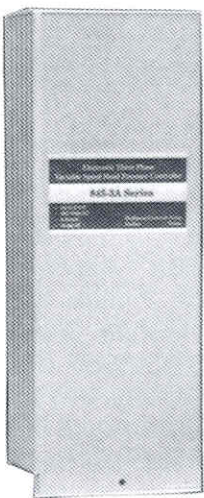
Coupled with the economizer, up to 75% of the return air can be exhausted to eliminates over-pressurization of the building.

Head Pressure Control

The varying speed head pressure control is a solid state controller designed to operate outdoor temperatures down to -20°F. The controller varies the speed of condenser fan motor to keep designed condensing temperature. Minimum and Maximum speed limit adjustment on controller will provide stable fan(s) operation.



For single phase motor
(GPU-240,250,280,340 & 350)



For three phase motor
(GPU-150,180,440,450,550 & 650)

GPU-350

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																													
	EDB	EWB	85				95				105				115				120				125									
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER					
10000	86	72	379	256	23.1	30.9	16.4	362	250	25.8	33.7	14.0	345	243	28.6	36.5	12.1	325	237	31.4	39.3	10.4	316	234	32.8	40.7	9.6	307	230	34.3	42.2	9.0
	80	67	346	250	22.9	30.8	15.1	330	245	25.5	33.4	12.9	314	238	28.1	36.0	11.2	297	229	30.7	38.6	9.7	289	226	32	39.9	9.0	280	223	33.3	41.2	8.4
	74	62	314	240	22.6	30.5	13.9	301	233	25.1	32.9	12.0	286	226	27.5	35.4	10.4	271	221	29.9	37.8	9.1	263	219	31.1	39.0	8.5	255	215	32.3	40.2	7.9
	86	72	390	281	23.1	32.2	16.9	371	278	25.9	35	14.3	352	271	28.8	37.9	12.2	333	265	31.6	40.7	10.5	323	262	33	42.1	9.8	312	257	34.5	43.6	9.0
12000	80	67	356	271	23	32.1	15.5	339	265	25.6	34.7	13.2	312	259	28.2	37.3	11.1	304	255	30.9	40	9.8	295	252	32.2	41.3	9.2	287	247	33.6	42.7	8.5
	74	62	324	265	22.8	31.9	14.2	308	256	25.2	34.3	12.2	294	250	27.6	36.7	10.7	277	242	30.1	39.2	9.2	270	243	31.3	40.4	8.6	262	239	32.6	41.7	8.0
	86	72	396	300	23.1	33.3	17.1	337	296	26	36.2	13.0	357	290	28.8	39	12.4	338	283	31.7	41.9	10.7	327	270	33.2	43.4	9.8	316	275	34.7	44.9	9.1
	80	67	361	290	23	33.2	15.7	344	283	25.7	35.9	13.4	327	277	28.4	38.6	11.5	309	270	31	41.2	10.0	300	267	32.4	42.6	9.3	291	264	33.7	44	8.6
13500	74	62	329	279	22.8	33	14.4	314	272	25.3	35.5	12.4	299	269	27.7	37.9	10.8	282	262	30.2	40.4	9.3	274	258	31.5	41.7	8.7	266	255	32.8	43	8.1
			115				120				125																					
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER
			325	237	31.4	39.3	10.4	316	234	32.8	40.7	9.6	307	230	34.3	42.2	9.0															

GPU-440

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																													
	EDB	EWB	85				95				105				115				120				125									
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER					
12000	86	72	475	313	32.2	42.7	14.7	452	306	35.5	46.0	12.7	428	298	38.7	49.2	11.1	403	288	41.8	52.3	9.6	389	284	43.4	53.9	9.0	376	279	45	55.5	8.4
	80	67	433	305	31.7	42.2	13.6	411	297	34.7	45.2	11.8	389	285	37.7	48.2	10.3	367	275	40.6	51.1	9.0	354	273	42.1	52.6	8.4	343	268	43.7	54.2	7.8
	74	62	393	296	31.5	42.0	12.5	374	288	33.9	44.4	11.0	354	279	36.7	47.2	9.6	333	268	39.4	49.9	8.5	323	266	40.8	51.3	7.9	311	256	42.2	52.7	7.4
	86	72	485	340	32.3	44.2	15.0	461	328	35.7	47.6	12.9	437	320	38.9	50.8	11.2	411	309	42.1	54.0	9.8	398	306	43.7	55.6	9.1	384	297	45.3	57.2	8.5
14000	80	67	445	327	31.8	43.7	14.0	421	319	34.9	46.8	12.1	399	311	38	49.9	10.5	375	303	40.9	52.8	9.2	363	298	42.5	54.4	8.5	348	294	43.9	55.8	7.9
	74	62	405	316	31.2	43.1	13.0	384	308	34.1	46.0	11.3	363	297	39.9	51.8	9.1	341	291	39.7	51.6	8.6	330	283	41.1	53.0	8.0	319	278	42.6	54.5	7.5
	86	72	496	363	32.4	46.1	15.3	470	354	35.8	49.5	13.1	444	341	39.1	52.8	11.4	418	331	42.3	56	9.9	404	325	44	57.7	9.2	390	326	45.6	59.3	8.5
	80	67	453	351	31.9	45.6	14.2	429	343	35.1	48.8	12.2	406	336	38.2	51.9	10.6	382	326	41.2	54.9	9.3	369	322	42.7	56.4	8.7	356	317	44.3	58	8.0
16000	74	62	412	340	31.3	45	13.1	390	330	34.3	48	11.4	370	319	37.2	50.9	10.0	348	309	40	53.7	8.7	336	306	41.4	55.1	8.1	324	300	42.8	56.5	7.6
							115				120				125																	
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER
			403	288	41.8	52.3	9.6	389	284	43.4	53.9	9.0	376	279	45	55.5	8.4															

GPU-450

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																													
	EDB	EWB	85				95				105				115				120				125									
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER					
12000	86	72	494	321	30.1	40.6	16.4	472	312	33.4	43.9	14.1	449	307	36.7	47.2	12.2	425	299	40	50.5	10.6	405	292	41.7	52.2	9.7	383	283	43.5	54.0	8.8
	80	67	450	312	29.7	40.2	15.2	430	304	32.9	43.4	13.1	409	294	36	46.5	11.4	387	286	39	49.5	9.9	368	280	40.6	51.1	9.1	349	274	42.3	52.8	8.3
	74	62	410	304	29.3	39.8	14.0	391	297	32.2	42.7	12.1	372	289	35.1	45.6	10.6	352	280	37.9	48.4	9.3	335	273	39.5	50.0	8.5	317	263	41	51.5	7.7
	86	72	505	341	30.1	42.0	16.8	483	335	33.6	45.5	14.4	459	330	36.9	48.8	12.4	434	322	40.2	52.1	10.8	412	312	41.9	53.8	9.8	390	316	43.7	55.6	8.9
14000	80	67	463	336	29.9	41.8	15.5	441	330	33	44.9	13.4	417	319	36.1	48.0	11.6	396	313	39.2	51.1	10.1	376	305	40.9	52.8	9.2	356	300	42.6	54.5	8.4
	74	62	421	327	29.4	41.3	14.3	402	318	32.4	44.3	12.4	380	309	35.3	47.2	10.8	360	301	38.2	50.1	9.4	343	292	39.7	51.6	8.6	324	285	41.3	53.2	7.8
	86	72	517	373	30.2	43.9	17.1	492	366	33.7	47.4	14.6	467	360	37	50.7	12.6	442	347	40.4	54.1	10.9	419	340	42.1	55.8	10.0	397	336	43.9	57.6	9.0
	80	67	472	362	29.9	43.6	15.8	449	354	33.2	46.9	13.5	427	347	36.3	50	11.8	403	338	39.4	53.1	10.2	383	331	41.1	54.8	9.3	363	325	42.8	56.5	8.5
16000	74	62	430	349	29.5	43.2	14.6	409	338	32.5	46.2	12.6	389	329	35.5	49.2	11.0	368	321	38.4	52.1	9.6	349	314	40	53.7	8.7	331	307	41.6	55.3	8.0
			85				95				105				115				120				125									
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER
			494	321	30.1	40.6	16.4	472	312	33.4	43.9	14.1	449	307	36.7	47.2	12.2	425	299	40	50.5	10.6	405	292	41.7	52.2	9.7	383	283	43.5	54.0	8.8

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																													
			85				95				105				115				120				125									
	EDB	EWB	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER					
15000	86	72	586	391	38.5	50.8	15.2	559	382	42.6	54.9	13.1	529	369	46.6	58.9	11.4	500	358	50.4	62.7	9.9	475	351	52.6	64.9	9.0	448	337	54.7	67.0	8.2
	80	67	534	379	38	50.3	14.1	509	371	41.7	54.0	12.2	484	361	45.5	57.8	10.6	456	346	49.1	61.4	9.3	434	342	51.1	63.4	8.5	409	328	53.1	65.4	7.7
	74	62	487	369	37.2	49.5	13.1	465	358	40.8	53.1	11.4	441	348	44.3	56.6	10.0	416	336	47.7	60.0	8.7	395	327	49.5	61.8	8.0	373	318	51.4	63.7	7.3
17500	86	72	597	415	38.6	53.0	15.5	570	406	42.7	57.1	13.3	542	398	46.7	61.1	11.6	512	385	50.6	65.0	10.1	496	380	52.6	67.0	9.4	479	371	54.6	69.0	8.8
	80	67	547	404	38.1	52.5	14.4	522	398	41.9	56.3	12.4	494	387	45.6	60.0	10.8	467	378	49.3	63.7	9.5	453	372	51.2	65.6	8.8	438	367	53.1	67.5	8.3
	74	62	499	390	37.4	51.8	13.3	476	384	42.7	57.1	11.1	451	372	44.4	58.8	10.2	426	363	47.9	62.3	8.9	413	354	49.6	64.0	8.3	399	349	51.4	65.8	7.8
20000	86	72	612	445	38.7	55.8	15.8	581	437	42.8	59.9	13.6	551	431	46.9	64	11.8	521	411	50.9	68	10.2	504	405	52.9	70	9.5	487	399	55	72.1	8.9
	80	67	559	437	38.2	55.3	14.6	531	427	42.1	59.2	12.6	503	411	45.8	62.9	11.0	476	408	49.6	66.7	9.6	460	402	51.5	63.2	0.9	446	396	53.4	70.5	8.4
	74	62	509	419	37.5	54.6	13.6	484	407	41.2	58.3	11.8	459	401	44.7	61.8	10.3	434	387	48.2	65.3	9.0	420	381	50	67.1	8.4	407	375	51.8	68.9	7.9

GPU-650

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																																			
	EDB	EWB	85						95						105						115						120						125					
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER						
18000	86	72	634	438	42.9	57.3	14.8	603	423	47.4	61.8	12.7	571	417	51.6	66.0	11.1	537	406	55.7	70.1	9.6	521	403	57.9	72.3	9.0	503	387	60.1	74.5	8.4						
	80	67	585	433	42.3	56.7	13.8	551	417	46.3	60.7	11.9	523	409	50.4	64.8	10.4	492	394	54.3	68.7	9.1	476	388	56.2	70.6	8.5	460	382	58.3	72.7	7.9						
	74	62	528	412	41.3	55.7	12.8	502	400	45.2	59.6	11.1	477	390	49	63.4	9.7	449	379	52.6	67.0	8.5	435	373	54.5	68.9	8.0	420	367	56.4	70.8	7.4						
20000	86	72	642	457	43.0	59.5	14.9	613	450	47.4	63.9	12.9	580	440	51.7	68.2	11.2	546	429	55.8	72.3	9.8	528	415	58	74.4	9.1	510	409	60.1	76.6	8.5						
	80	67	589	446	42.3	58.8	13.9	560	437	46.4	62.9	12.1	530	425	50.4	66.9	10.5	499	414	54.3	70.8	9.2	483	408	56.3	72.8	8.6	466	403	58.3	74.8	8.0						
	74	62	538	432	41.4	57.9	13.0	511	421	45.3	61.8	11.3	484	410	49	65.5	9.9	456	397	52.6	69.1	8.7	441	393	54.5	71.0	8.1	426	386	56.4	72.9	7.6						
22000	86	72	650	485	43	61.9	15.1	621	479	47.5	66.4	13.1	587	468	51.8	70.7	11.3	553	443	56	74.9	9.9	534	484	58.2	77.1	9.2	516	414	60.3	79.2	8.6						
	80	67	595	468	42.4	61.3	14.0	568	456	46.5	65.4	12.2	536	445	50.5	69.4	10.6	505	435	54.5	73.4	9.3	489	428	56.5	75.4	8.7	473	326	58.6	77.4	8.1						
	74	62	545	456	41.5	60.4	13.1	519	446	45.4	64.3	11.4	490	434	49.2	68.1	10.0	461	421	52.9	71.8	8.7	447	416	54.8	73.7	8.2	432	409	56.7	75.6	7.6						

GPU-750

Evaporator Air (CFM)	Ent. Air °F		Ambient Temp. (°F)																																			
	EDB	EWB	85						95						105						115						120						125					
			TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER	TC	SHC	P.I.	P.I.T	EER						
20000	86	72	782	512	51.4	66.2	15.2	745	502	57.0	71.7	13.1	710	488	62.5	77.2	11.4	671	474	67.8	82.5	9.9	650	468	70.6	85.3	9.2	631	457	73.3	88.1	8.6						
	80	67	712	498	50.8	65.5	14.0	679	487	56.0	70.7	12.1	647	474	61.1	75.8	10.6	612	465	66.1	80.8	9.3	594	454	68.7	83.4	8.7	575	447	71.3	86.0	8.1						
	74	62	634	479	50.1	64.8	12.7	620	471	54.8	69.5	11.3	590	458	59.6	74.3	9.9	557	443	64.2	78.9	8.7	541	439	66.6	81.4	8.1	524	432	69.1	83.8	7.6						
22000	86	72	794	542	51.5	68.1	15.4	757	524	57.1	73.7	13.3	720	511	62.7	79.3	11.5	680	498	68.1	84.7	10.0	660	492	70.8	87.4	9.3	639	485	73.6	90.2	8.7						
	80	67	724	519	50.9	67.5	14.2	691	508	56.2	72.8	12.3	656	494	61.3	77.9	10.7	620	482	66.3	82.9	9.3	602	476	69.0	85.6	8.7	583	470	71.6	88.2	8.1						
	74	62	659	511	50.1	66.7	13.2	629	498	55.0	71.6	11.4	598	485	59.8	76.4	10.0	565	470	64.5	81.1	8.8	548	463	66.9	83.5	8.2	531	457	69.5	86.1	7.6						
24000	86	72	803	561	51.6	70.1	15.6	766	550	57.2	75.7	13.4	728	539	62.8	81.3	11.6	688	526	68.2	86.7	10.1	667	520	71.0	89.5	9.4	646	516	73.9	92.4	8.7						
	80	67	734	547	51.0	69.5	14.4	700	535	65.3	83.8	10.7	664	515	61.5	79.9	10.8	627	501	66.6	85.1	9.4	609	495	69.2	87.7	8.8	590	490	71.8	90.3	8.2						
	74	62	669	529	50.2	68.7	13.3	638	517	55.2	73.6	11.6	605	503	60.0	78.5	10.1	572	489	64.8	83.2	8.8	555	481	67.2	85.7	8.3	538	475	69.7	88.2	7.7						

TC----- Total capacity in MBH

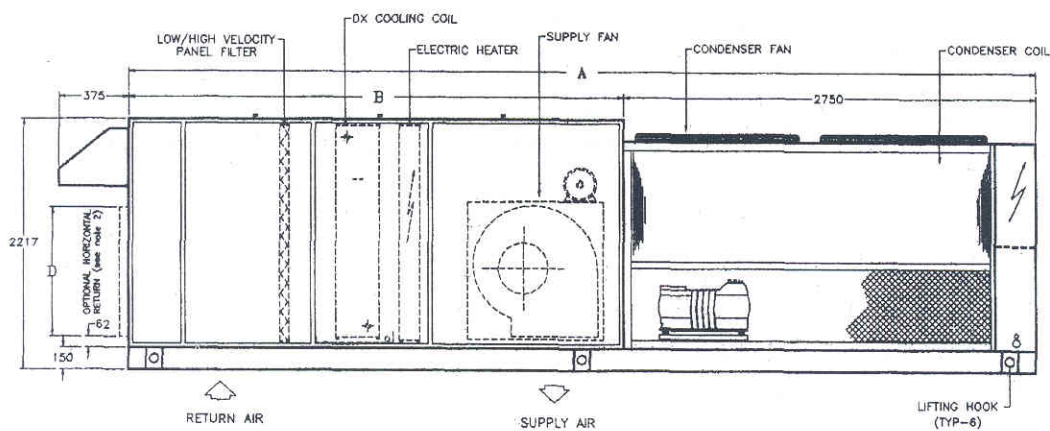
SHC----- Sensible capacity in MBH

P.I.----- Compressor Power input in KW

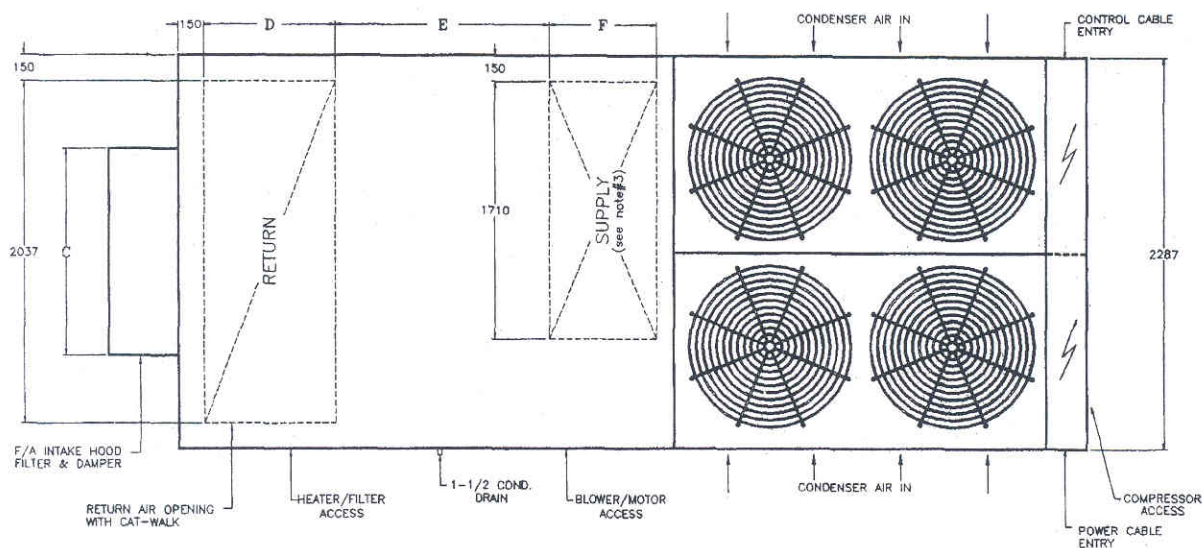
P.I.T.----- Total Power input in KW

EER ----- Energy Efficiency ratio in MBH/Total Power input

Base unit dimensions
Model GPU-550/750



ELEVATION



PLAN

UNIT MODEL	A	B	C	D	E	F
GPU-550	5930	3180	1800	873	1305	750
GPU-650	6260	3510	2000	900	1533	825
GPU-750	7990	3510	2200	990	1368	900

ALL DIMENSIONS ARE IN MILLIMETERS

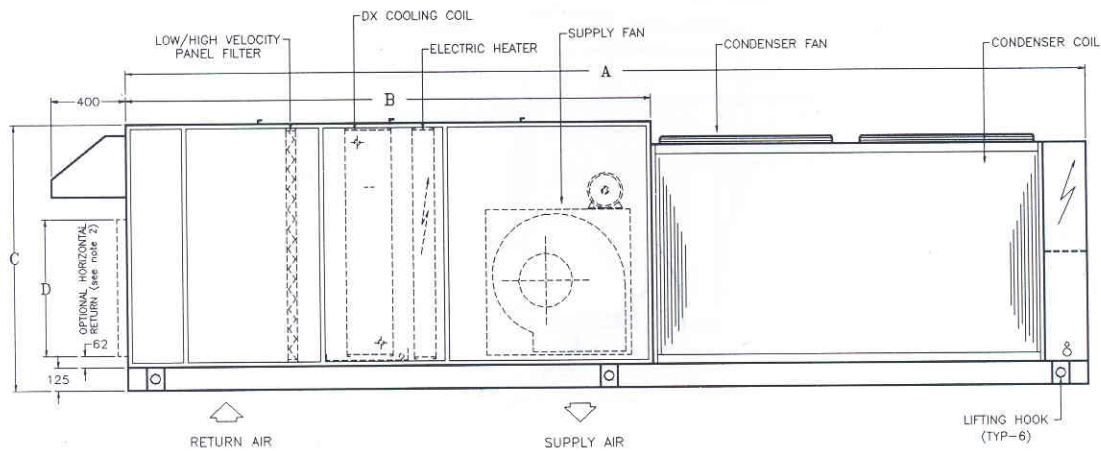
NOTES:

1. FOR ECONOMIZER SYSTEM HOOD SUPPLIED FOR 100% FRESH AIR.
2. FOR ECONOMIZER SYSTEM WITH POWER EXHAUST, HORIZONTAL RETURN NOT AVAILABLE.
3. TOP SUPPLY AIR DISCHARGE POSITION IS AVAILABLE.

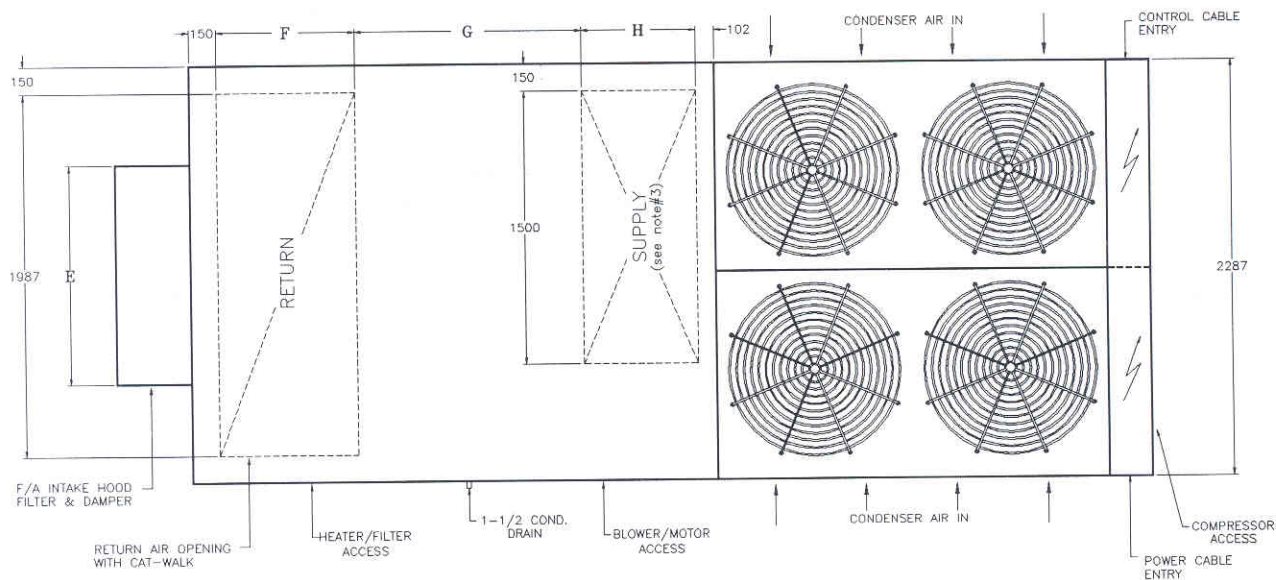
SERVICE CLEARANCE

- a. CONDENSER AIR INTAKE = 1500mm
- b. CONTROL PANEL = 1000mm
- c. F/A INTAKE = 1000mm
- d. TOP = DON'T RESTRICT CONDENSER FANS.

Base unit dimensions
Model GPU-340/350 & 440/450(Down Blow)



ELEVATION



PLAN

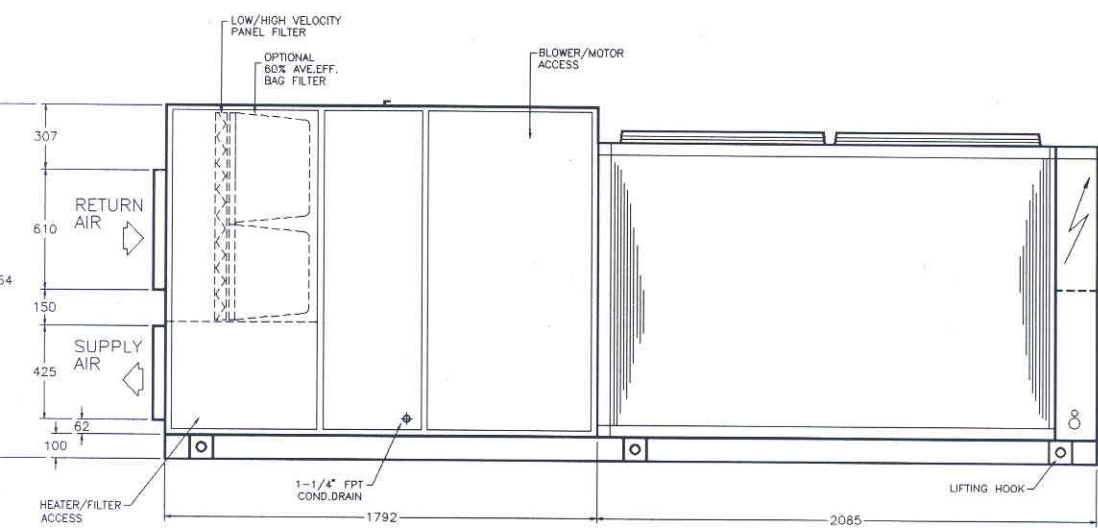
UNIT MODEL	A	B	C	D	E	F	G	H
GPU-340/350	5262	2875	1455	750	1200	750	1244	629
GPU-440/450	6110	3468	1722	850	1500	850	1671	695

ALL DIMENSIONS ARE IN MILLIMETERS

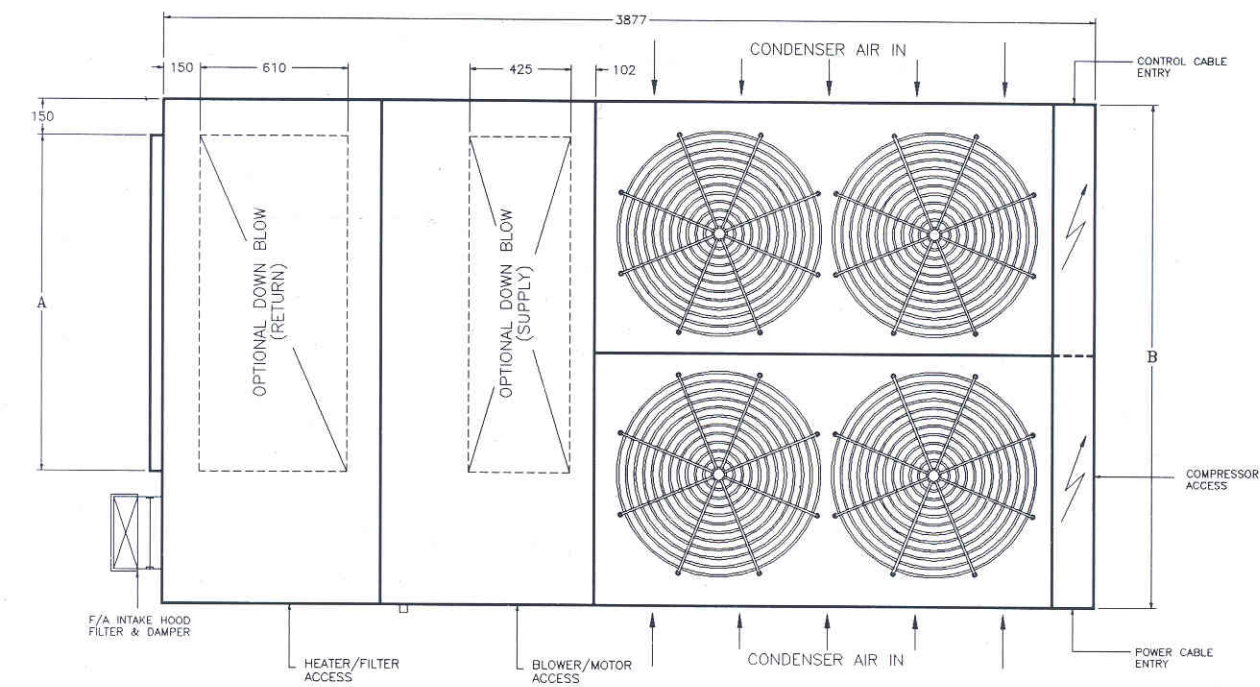
- NOTES:
1. FOR ECONOMIZER SYSTEM HOOD SUPPLIED FOR 100% FRESH AIR.
 2. FOR ECONOMIZER SYSTEM WITH POWER EXHAUST, HORIZONTAL RETURN NOT AVAILABLE.
 3. TOP SUPPLY AIR DISCHARGE POSITION IS AVAILABLE.

- SERVICE CLEARANCE
- a. CONDENSER AIR INTAKE = 1500mm
 - b. CONTROL PANEL = 1000mm
 - c. F/A INTAKE = 1000mm
 - d. TOP = DON'T RESTRICT CONDENSER FANS.

Base unit dimensions Model GPU-240/280



ELEVATION

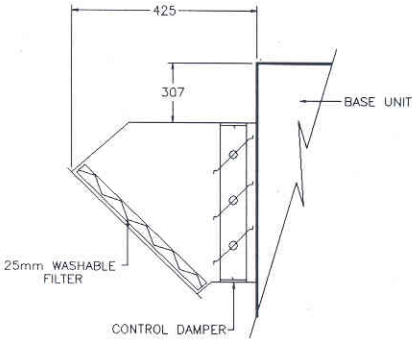


PLAN

UNIT MODEL	A	B	F/A HOOD
GPU-240/250	1400	2100	300Wx610H
GPU-280	1675	2540	400Wx610H

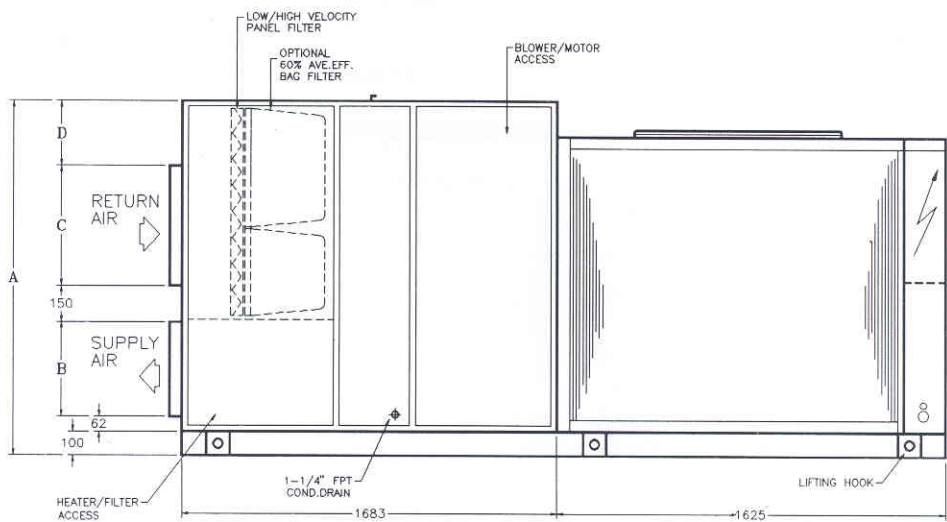
ALL DIMENSIONS ARE IN MILLIMETERS

- SERVICE CLEARANCE
- a. CONDENSER AIR INTAKE = 1500mm
 - b. CONTROL PANEL = 1000mm
 - c. F/A INTAKE = 1000mm
 - d. TOP = DON'T RESTRICT CONDENSER FANS.

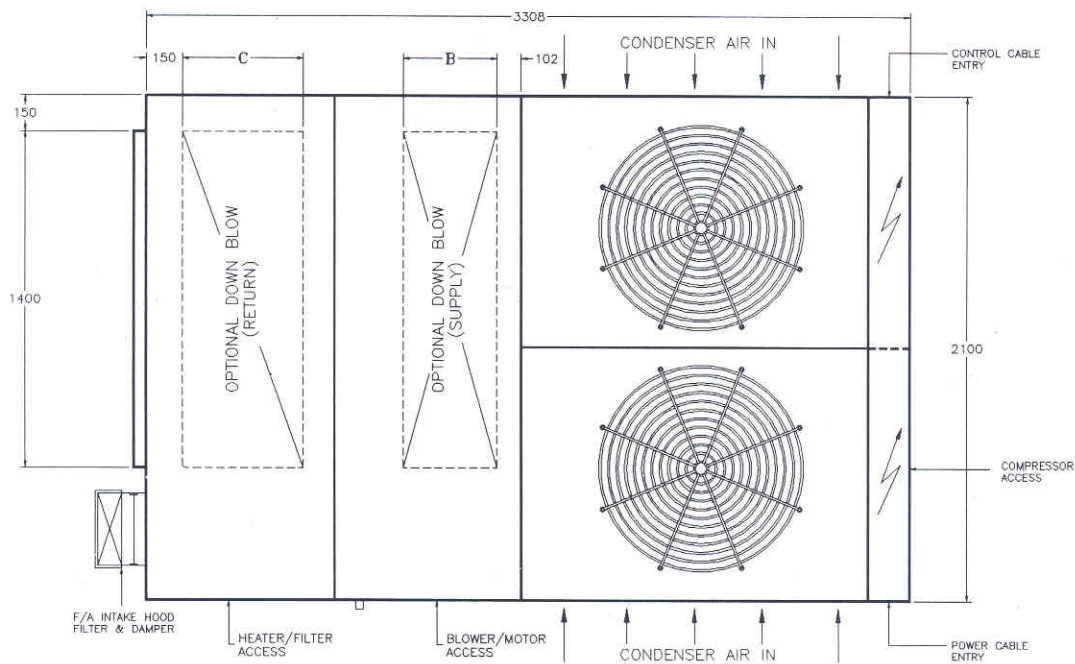


F/A INTAKE DETAIL

Base unit dimensions Model GPU-150/180



ELEVATION

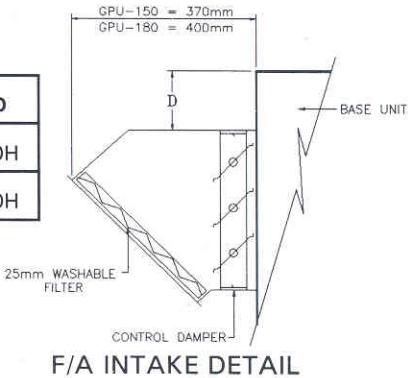


PLAN

UNIT MODEL	A	B	C	D	F/A HOOD
GPU-150	1305	341	450	202	300Wx450H
GPU-180	1465	391	500	262	300Wx500H

ALL DIMENSIONS ARE IN MILLIMETERS

- SERVICE CLEARANCE**
- a. CONDENSER AIR INTAKE = 1500mm
 - b. CONTROL PANEL = 1000mm
 - c. F/A INTAKE = 1000mm
 - d. TOP = DON'T RESTRICT CONDENSER FANS.



F/A INTAKE DETAIL

Fan Performance (cont.)

☐ Optional fan motor and / or drive required.

Notes:

1. Fan performance is based on wet coils, 2inch pre-filter, standard electric heater and casing losses. If any accessories used, add accessories pressure drop to external pressure before using fan performance table.
2. For power exhaust or return air fan performance consult factory.
3. Sound pressure value shown in performance table is the estimated pressure level at 1 meter from fan only. Use spectrum chart and dB correction factor for sound power level at various frequencies.

4. Example:

Calculate the sound power level of packaged unit model GPU-250 operating with 8000 CFM at 1.4 inch.wg. external static pressure.

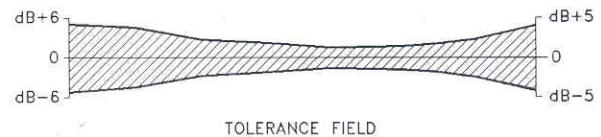
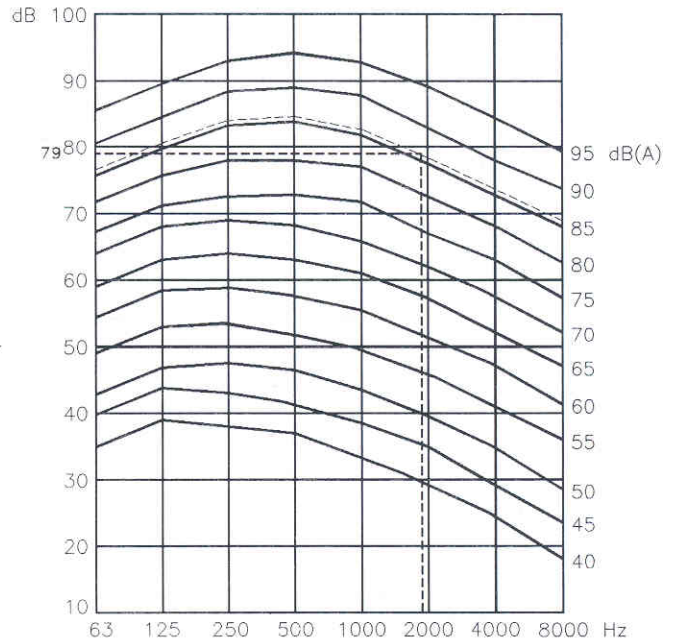
From fan performance table of GPU-250, 8000 CFM, read base sound pressure value as 85.8 dBA.

Convert dBA value to spectrum using spectrum chart and correct for 1.4" external static pressure.

Total sound power (SLw) will be sum of (1) & (2) and accurate to the tolerance value shown in sound spectrum chart.

Frequency (Hz)	63	125	250	500	1K	2K	4K	8K
Spectrum(dB) (1)	76	81	83	84	82	79	74	69
Correction (2)	+3	+3	+3	+3	+3	+3	+3	+3
SLw (1+2)	79	84	86	87	85	82	77	72

SOUND SPECTRUM CHART



dB Correction factor for external static pressure

EXTERNAL STATIC PRESSURE (Inch.Wg)																
0.2	0.4	0.75	0.8	1.0	1.2	1.25	1.4	1.5	1.6	1.75	1.8	2.0	2.5	3.0	3.5	4.0
-14	-8	-2.5	-2.0	0	1.6	2.0	3.0	3.5	4.0	5.0	5.1	6.0	8.0	9.5	11.0	12.0

Altitude correction multipliers

To be applied to rated performance to determine performance at other than sea level

ALTITUDE ABOVE SEA LEVEL-FT	0	2000	3000	4000	5000	6000	7000
Cooling Capacity	1.00	0.98	0.97	0.96	0.95	0.93	0.92
Evaporator Blower RPM	1.00	1.04	1.06	1.09	1.12	1.15	1.19
Evaporator Blower BHP	1.00	1.07	1.12	1.18	1.25	1.33	1.41

FAN PERFORMANCE (Cont.)

GPU - SERIES

		EXTERNAL STATIC PRESSURE (IN. WG)																			
MODEL	CFM	0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.5		3.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
340/350	9000	623	3.31	667	3.82	709	4.35	749	4.91	788	5.49	—	—	—	—	—	—	—	—	—	—
	9500	629	3.55	672	4.07	713	4.61	752	5.18	790	5.77	827	6.38	—	—	—	—	—	—	—	—
	10000	633	3.77	674	4.30	714	4.85	753	5.43	791	6.03	827	6.64	862	7.28	—	—	—	—	—	—
	10500	641	4.06	682	4.60	721	5.16	759	5.75	795	6.36	831	6.99	866	7.64	899	8.30	931	8.98	—	—
	11000	646	4.31	685	4.86	723	5.43	760	6.03	797	6.64	832	7.28	866	7.94	899	8.61	932	9.31	963	10.02
	11500	653	4.60	691	5.15	728	5.74	764	6.34	800	6.97	834	7.62	868	8.28	900	8.97	932	9.67	964	10.39
	12000	662	4.94	699	5.50	735	6.10	771	6.71	805	7.35	839	8.01	872	8.69	904	9.38	935	10.10	966	10.83
	12750	675	5.45	710	6.03	745	6.64	779	7.27	812	7.92	845	8.59	877	9.28	908	10.00	939	10.72	969	11.47
	13500	689	6.01	723	6.61	756	7.24	789	7.88	821	8.55	853	9.23	883	9.94	914	10.66	944	11.41	973	12.17
440/450	12000	584	4.65	625	5.17	662	5.74	697	6.29	732	6.88	766	7.53	799	8.09	829	8.70	860	8.34	887	10.10
	12500	588	4.87	628	5.44	665	6.02	700	6.59	735	7.18	768	7.82	800	8.44	830	9.09	861	8.72	888	10.47
	13000	594	5.17	632	5.73	669	6.32	704	6.92	738	7.54	771	8.17	803	8.82	833	9.49	863	10.18	891	10.87
	13500	599	5.50	636	6.08	672	6.67	707	7.29	740	7.92	773	8.56	804	9.23	834	9.90	864	10.60	892	11.31
	14000	605	5.89	642	6.48	677	7.09	711	7.71	744	8.36	776	9.01	807	9.69	838	10.38	867	11.08	895	11.80
	14500	610	6.26	646	6.86	680	7.48	714	8.12	747	8.77	778	9.44	809	10.13	839	10.83	868	11.54	896	12.27
	15000	616	6.67	651	7.29	685	7.92	718	8.57	750	9.24	782	9.92	812	10.62	842	11.33	870	12.05	898	12.79
	15500	621	7.08	655	7.71	689	8.36	721	9.02	753	9.70	784	10.39	814	11.10	843	11.82	872	12.55	900	13.31
	16000	629	7.54	662	8.19	695	8.85	726	9.52	758	10.21	788	10.92	818	11.64	847	12.37	875	13.12	903	13.88

GPU - SERIES

GPU - SERIES		EXTERNAL STATIC PRESSURE (IN. WG)																			
MODEL	CFM	0.75		1.0		1.25		1.5		1.75		2.0		2.5		3.0		3.5		4.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
550	15000	666	6.82	710	7.50	760	8.49	796	9.40	838	10.57	881	11.63	958	13.84	1030	16.13	1099	19.01	1166	21.40
	15500	670	7.20	715	7.91	766	8.87	799	9.89	840	10.97	882	12.05	959	14.32	1031	16.70	1100	19.50	1166	21.90
	16000	677	7.41	720	8.32	762	9.27	803	10.29	843	11.39	884	12.50	960	14.81	1032	17.26	1100	19.83	1166	22.45
	16500	684	7.81	726	8.74	767	9.72	807	10.74	847	11.83	886	12.95	961	15.29	1033	17.77	1101	20.33	1167	23.01
	17000	691	8.23	732	9.17	772	10.16	811	11.19	850	12.29	888	13.42	962	15.78	1034	18.29	1101	20.88	1167	23.59
	17500	699	8.68	738	9.62	777	10.62	816	11.66	854	12.77	891	13.90	964	16.28	1035	18.82	1102	21.45	1166	24.19
	18000	707	9.17	746	10.13	784	11.13	822	12.19	859	13.30	896	14.45	967	16.85	1037	19.41	1103	22.07	1167	24.85
	18500	715	9.65	753	10.62	790	11.64	827	12.70	864	13.82	899	14.97	970	17.40	1038	19.98	1104	22.66	1168	25.47
	19000	723	10.16	760	11.14	796	12.16	832	13.23	868	14.37	903	15.52	972	17.96	1040	20.57	1105	23.27	1168	26.11
	20000	741	11.28	776	12.28	811	13.33	845	14.42	880	15.57	914	16.75	980	19.22	1046	21.87	1109	24.62	1170	27.52
650	18000	695	8.80	732	9.64	770	10.78	807	11.80	844	12.85	880	14.09	950	16.41	1022	18.87	1088	21.61	1151	24.51
	18500	699	9.22	736	10.17	773	11.18	810	12.22	846	13.30	882	14.47	952	16.86	1022	19.37	1088	22.04	1151	24.96
	19000	704	9.67	741	10.62	777	11.63	814	12.69	850	13.78	885	14.92	955	17.34	1023	19.89	1089	22.59	1152	25.38
	19500	710	10.14	747	11.11	782	12.12	818	13.19	853	14.29	888	15.43	957	17.86	1023	20.43	1088	23.14	1151	25.86
	20000	719	10.68	754	11.66	789	12.68	825	13.76	859	14.87	893	16.02	961	18.47	1026	21.05	1090	23.79	1152	26.63
	20500	728	11.25	762	12.24	797	13.27	831	14.36	865	15.48	898	16.64	964	19.10	1029	21.70	1092	24.45	1153	27.31
	21000	735	11.80	770	12.80	803	13.85	837	14.95	870	16.07	903	17.24	968	19.71	1031	22.32	1093	25.07	1154	27.97
	21500	744	12.41	778	13.43	811	14.48	844	15.59	876	16.73	908	17.90	972	20.39	1034	23.02	1096	25.81	1155	28.70
	22000	754	13.04	786	14.07	819	15.14	851	16.26	883	17.41	914	18.59	977	21.10	1038	23.74	1098	26.54	1157	29.48
	23000	774	14.3	803	15.5	836	16.3	867	17.7	898	18.8	925	20.1	987	22.7	1046	24.2	1105	28.0	1161	30.1
750	19000	704	9.67	741	10.62	777	11.63	814	12.69	850	13.78	885	14.92	955	17.34	1023	19.89	1089	22.59	1152	25.38
	19500	710	10.1	747	11.1	782	12.1	818	13.2	853	14.3	888	15.4	957	17.9	1023	20.4	1088	23.1	1151	25.9
	20000	719	10.7	754	11.7	789	12.7	825	13.8	859	14.9	893	16.0	961	18.5	1026	21.1	1090	23.8	1152	26.6
	20500	728	11.3	762	12.2	797	13.3	831	14.4	865	15.5	898	16.6	964	19.1	1029	21.7	1092	24.5	1153	27.3
	21000	735	11.8	770	12.8	803	13.9	837	15.0	870	16.1	903	17.2	968	19.7	1031	22.3	1093	25.1	1154	28.0
	21500	744	12.4	778	13.4	811	14.5	844	15.6	876	16.7	908	17.9	972	20.4	1034	23.0	1096	25.8	1155	28.7
	22000	754	13.0	786	14.1	819	15.1	851	16.3	883	17.4	914	18.6	977	21.1	1038	23.7	1098	26.5	1157	29.5
	24000	796	15.7	820	17.0	855	17.6	884	19.2	915	20.3	937	21.8	999	24.5	1055	25.9	1113	29.6	1166	31.7

FAN PERFORMANCE
GPU - SERIES

MODEL	CFM	EXTERNAL STATIC PRESSURE (IN. WG)																			
		0.20		0.40		0.60		0.80		1.0		1.20		1.40		1.60		1.80		2.00	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
150	4000	749	1.02	825	1.18	898	1.35	968	1.52	1035	1.70	1100	1.88	1160	2.06	1221	2.26	1280	2.46	1335	2.70
	4250	755	1.130	828	1.30	898	1.47	966	1.65	1030	1.83	1090	2.01	1150	2.20	1214	2.41	1271	2.60	1327	2.82
	4500	761	1.24	832	1.42	900	1.60	966	1.79	1030	1.98	1092	2.17	1152	2.37	1210	2.57	1267	2.78	1322	2.99
	4750	787	1.416	855	1.60	920	1.80	984	1.99	1045	2.19	1105	2.39	1164	2.59	1220	2.80	1275	3.01	1329	3.23
	5000	808	1.58	872	1.79	935	1.99	997	2.19	1056	2.39	1115	2.60	1171	2.81	1227	3.03	1281	3.25	1333	3.47
	5250	837	1.80	899	2.01	960	2.22	1019	2.43	1076	2.65	1133	2.86	1188	3.08	1241	3.30	1294	3.53	1345	3.76
	5500	867	2.03	927	2.25	985	2.47	1042	2.69	1097	2.92	1152	3.14	1205	3.38	1257	3.60	1308	3.84	1358	4.07
	5750	897	2.28	954	2.51	1010	2.74	1065	2.98	1119	3.21	1171	3.44	1223	3.68	1274	3.92	1323	4.16	1372	4.41
	6000	928	2.55	982	2.80	1036	3.04	1089	3.28	1141	3.52	1192	3.76	1242	4.01	1291	4.26	1340	4.51	1387	4.76
180	5500	623	1.41	680	1.65	741	1.83	801	2.11	861	2.32	919	2.67	977	2.88	1033	3.19	1085	3.53	1140	3.86
	5750	639	1.56	696	1.80	753	2.02	812	2.28	870	2.55	927	2.83	982	3.10	1037	3.37	1088	3.73	1142	4.06
	6000	660	1.73	716	1.97	772	2.22	828	2.48	883	2.76	938	3.05	992	3.35	1045	3.67	1096	3.99	1147	4.32
	6250	678	1.92	732	2.16	785	2.41	839	2.68	892	2.97	945	3.26	997	3.57	1048	3.89	1099	4.22	1149	4.55
	6500	700	2.13	752	2.39	809	2.65	855	2.92	906	3.21	957	3.51	1008	3.83	1058	4.15	1107	4.49	1155	4.83
	6750	717	2.34	767	2.60	817	2.87	866	3.15	916	3.44	965	3.75	1014	4.07	1063	4.40	1110	4.74	1158	5.09
	7000	739	2.58	787	2.85	835	3.13	883	3.42	931	3.72	978	4.03	1026	4.35	1073	4.69	1119	5.04	1165	5.39
	7250	755	2.82	802	3.09	849	3.37	895	3.67	941	3.97	987	4.29	1033	4.62	1079	4.96	1124	5.31	1169	5.67
	7500	806	3.27	851	3.56	896	3.85	940	4.16	985	4.48	1024	4.81	1074	5.15	1118	5.51	1161	5.87	1205	6.24

GPU - SERIES

MODEL	CFM	EXTERNAL STATIC PRESSURE (IN. WG)																			
		0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
		Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
240/250	6250	667	1.83	721	2.11	775	2.36	828	2.63	881	2.91	934	3.20	987	3.51	1038	3.82	1089	4.15	1139	4.49
	6500	684	2.06	736	2.31	788	2.57	840	2.84	891	3.12	942	3.42	993	3.73	1043	4.05	1092	4.39	1141	4.73
	6750	699	2.25	749	2.50	799	2.77	849	3.05	898	3.34	947	3.64	997	3.95	1045	4.28	1093	4.61	1141	4.96
	7000	717	2.47	766	2.73	814	3.00	862	3.29	910	3.58	957	3.89	1005	4.21	1052	4.54	1099	4.88	1145	5.23
	7250	736	2.71	784	2.98	830	3.26	877	3.55	923	3.85	969	4.16	1015	4.49	1066	4.82	1106	5.17	1151	5.53
	7500	751	2.94	797	3.22	843	3.50	888	3.80	932	4.11	977	4.42	1021	4.75	1066	5.09	1110	5.44	1154	5.80
	8000	787	3.47	831	3.77	874	4.07	916	4.38	958	4.70	1000	5.03	1042	5.37	1083	5.71	1125	6.08	1166	6.45
	8500	823	4.06	864	4.37	905	4.69	945	5.02	984	5.35	1024	5.69	1063	6.04	1103	6.40	1142	6.77	1181	7.15
	9000	856	4.69	896	5.03	934	5.36	972	5.70	1010	6.04	1047	6.40	1085	6.76	1122	7.13	1159	7.51	1196	7.90
280	8500	546	2.37	597	2.75	646	3.15	693	3.56	737	3.97	778	4.38	818	4.76	856	5.21	892	5.62	926	6.04
	8750	558	2.55	608	2.94	656	3.35	702	3.77	745	4.19	786	4.61	825	5.04	863	5.47	899	5.90	933	6.32
	9000	565	2.70	614	3.10	661	3.52	706	3.95	749	4.38	790	4.81	829	5.25	866	5.69	902	6.13	936	6.57
	8250	571	2.86	619	3.27	666	3.69	710	4.13	753	4.57	793	5.02	832	5.47	869	5.92	905	6.37	939	6.82
	9500	578	3.02	625	3.44	671	3.87	715	4.32	757	4.77	797	5.23	836	5.69	873	6.15	908	6.61	942	7.08
	9750	594	3.28	640	3.71	685	4.15	728	4.60	769	5.07	809	5.54	847	6.01	883	6.48	918	6.96	952	7.43
	10000	605	3.50	650	3.94	694	4.39	736	4.85	777	5.33	816	5.81	854	6.29	890	6.77	925	7.26	958	7.75
	10500	627	3.96	670	4.41	712	4.88	753	5.37	792	5.86	830	6.36	867	6.86	903	7.37	937	7.88	970	8.39
	11000	648	4.46	690	4.93	730	5.42	770	5.92	808	6.43	845	6.95	881	7.48	916	8.01	950	8.54	982	9.07

Selection Procedures (with example)

1. Determine Cooling and heating requirements at design conditions.

Given.

Required Cooling Capacity (TC).... 235,000Btuh
 Sensible Heat Capacity (SHC)..... 170,000Btuh
 Required Electric Heating
 capacity (40kw)..... 136,520Btuh
 Condenser Entering Air Temp..... 95°F
 Indoor Entering Air Temp 80°F edb,
 67°F ewb
 Evaporator air quantity 8000 cfm
 External Static Pressure. 0.6 in.wg
 Altitude See level
 Electrical Characteristics
 (V-Ph-Hz) 240-3-50

2. Select Unit based on required Cooling Capacity
 Enter Cooling Capacities table at condenser entering temperature of 95°F. Unit GPU-240 at 8000 cfm will provide 241,200 total capacity and 181,000 sensible heat capacity at specified 80/67 (edb/ewb)°F entering air.

Correct Cooling Capacity for altitude (for altitude other than sea level) using correction factors shown in altitude correction table.

Notes:

1. Direct interpolation is permissible. Do not extrapolate.
2. The following formulas may be used:

$$tldb = tedb - (\text{sensible capacity (Btuh)} / (1.09 \times \text{cfm}))$$

$$tlwb = \text{Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (hlwb)}$$

$$hlwb = hewb - (\text{Total capacity (Btuh)} / (4.5 \times \text{cfm}))$$

where hewb = Enthalpy of air entering

In the above example application is at sea level and therefore no correction required.

Calculate entering and leaving indoor air temperature, using formulas given under cooling capacity table.

3. Select heating capacity of unit to provide design condition requirement.
 Enter heating capacity table, note that 40kw, 2 step heater is available for selected unit.
4. Determine fan speed and power requirements at design conditions.
 Enter fan performance table. Select fan Rpm and Bhp for 8000 cfm @ 0.6 in.wg. external static pressure. (accessories pressure drop to be added to external if any accessories required with base unit).
 Fan Rpm 874 Bhp 4.07 standard drive and motor will satisfy the requirement.
 Correct fan Rpm and Bhp for altitude if unit application is above sea level.
5. Select unit that corresponds to power source available.
 The Electrical data table shows that a 240-3-50 unit is available.

4. Cooling capacities are gross and do not include deduction for indoor fan motor heat.

Edb - Entering Dry Bulb
 Ewb - Entering Wet Bulb
 KW - Compressor Motor Power input
 SHC - Sensible Heat Cap. (1000 Btuh)
 TC - Total Cap. (1000 Btuh) Gross

 tldb - Air Temperature Leaving Dry Bulb
 tlwb - Air Temperature Leaving Wet Bulb.

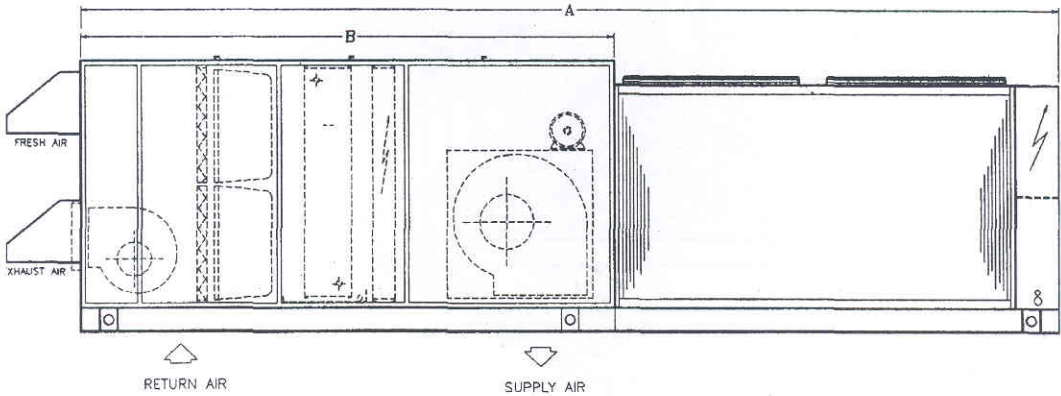
Electric Heater Data

Heater KW	FLA (1)			Unit Model							
	208-230	380	460	150	180	240/250	280	340/350	440/450	550	650
20	56	31	25	X	X	X	X	X	X	X	X
30	84	46	38	X	X	X	X	X	X	X	X
40	111	61	50	X	X	X	X	X	X	X	X
50	139	76	63	X	X	X	X	X	X	X	X
60	167	91	76		X	X	X	X	X	X	X
70	195	106	88	-	X	X	X	X	X	X	X
80	222	122	101	-	-	X	X	X	X	X	X
100	278	152	126	-	-	-	X	X	X	X	X
120	333	183	151	-	-	-	-	X	X	X	X
140	389	213	176	-	-	-	-	-	X	X	X
150	417	228	188	-	-	-	-	-	-	X	X
Capacity steps (std)				2	2	2	2	4	4	4	4

1. FLA - Full Load amps. for heater only.
2. Standard heater availability shown. For other Capacities consult factory.

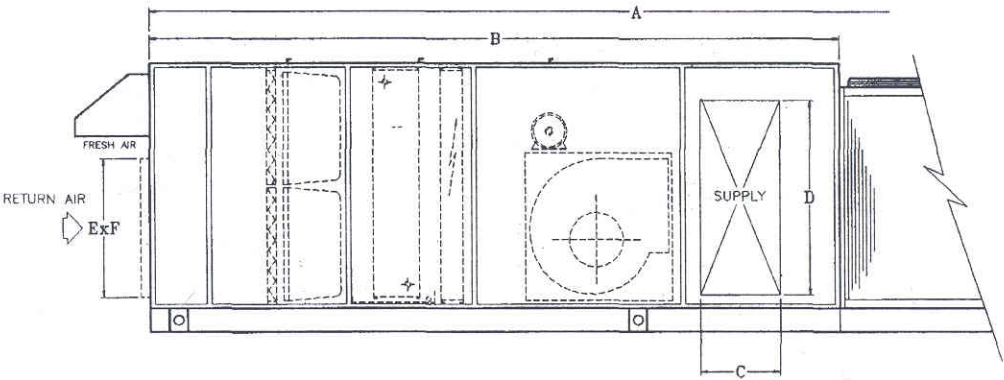
Optional evaporator section arrangement
Model CPU-340 thru GPU-750

○ UNIT WITH 60-65% AVE. EFF. BAG FILTER
AND POWER EXHAUST FAN



UNIT MODEL	GPU-340/350	GPU-440/450	GPU-550	GPU-650
A	5562	6410	6230	6560
B	3175	3768	3480	3810

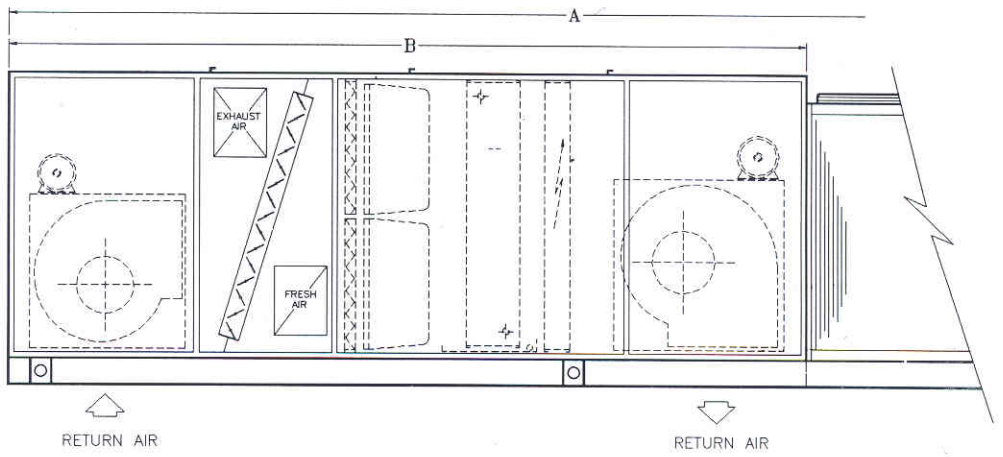
○ UNIT WITH HORIZONTAL RETURN/SIDE DISCHARGE



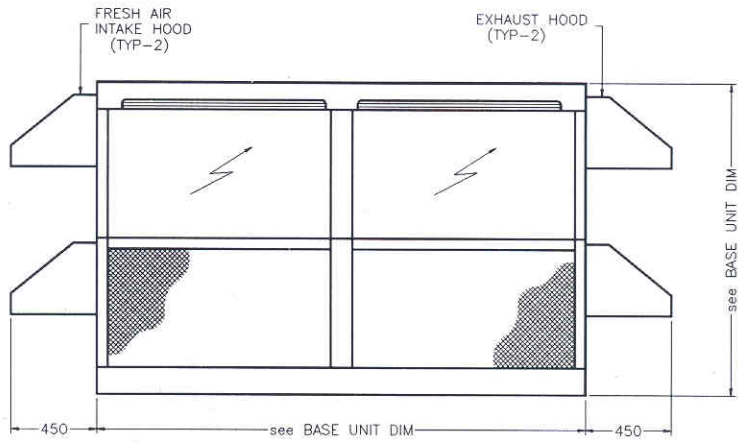
UNIT MODEL	GPU-340/350	GPU-440/450	GPU-550	GPU-650	GPU-750
A	6462	7310	7210	7540	9270
B	4075	4668	4460	4790	4790
C	750	750	825	900	990
D	1200	1400	1750	1750	1750
E	750	850	873	900	990
F	1987	1987	2037	2037	2037

- NOTES;
1. SUPPLY DUCT OPENING AT LH SIDE, REFER TO RETURN DUCT.
 2. SUPPLY AIR POSITION AVAILABLE WITH VERTICAL DISCHARGE, FOR SUCH APPLICATION "A" DIMENSION AS SAME AS BASE UNIT.

UNIT WITH RETURN AIR FAN/100% ECONOMIZER



UNIT MODEL	GPU-340/350	GPU-440/450	GPU-550	GPU-650
A	6762	7910	7810	8140
B	4075	5268	5060	5390

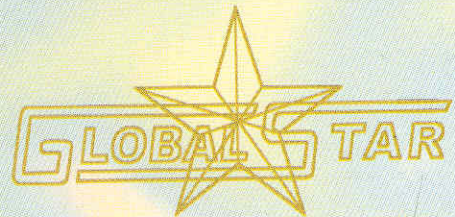


NOTES:

1. OPTIONAL SUPPLY AIR POSITION AVAILABLE IN VERTICAL AND RETURN AIR HORIZONTAL.



ROYAL TEMP
PRIME STAR
TEMP POINT
BROAD KOOL
PRIME TEMP
PRIME COOL



SELF - CONTAINED AIR CONDITIONING UNIT SERIES GPU (12 - 58 TONS)

Guide specifications

Unit shall be a one piece air-cooled cooling and electric heating and shall be mounted on a full perimeter roof curb. Standard unit shall include a manual outdoor air inlet. Unit shall be Goldenstar model GPU____ or approved equal.

Total cooling capacity of unit shall be ____ Btuh or greater and sensible heat capacity shall be ____ Btuh or greater at conditions of ____ cfm evaporator air entering unit at ____ F° wet-bulb, ____ F° dry-bulb and condenser entering air temperature of ____ F° dry-bulb.

Unit compressor(s) shall be serviceable semi-hermetic with crankcase heater(s) and suitable vibration isolators. Compressor(s) shall be of low sound discuss type with solid state motor protection.

Fan and motors - indoor blowers shall be forward-curved, centrifugal, belt-driven type capable of delivering ____ cfm at ____ in wg. external static pressure. Motor pulley shall be adjustable pitch. Indoor blower motor shall be ____ hp with permanently lubricated bearings. Outdoor fan shall be of the propeller type, with direct-driven permanently lubricated motor of ____ hp or less. Outdoor fans shall be discharged upward.

Unit cabinet shall be constructed of galvanized steel, bonderized and coated with baked enamel finish. Cabinet interior shall be insulated with 1" thick neoprene-coated fiberglass/Double skin with polyurethane insulation. Cabinet panels shall be easily removable for service to all operating components. A condensate drain for the indoor coil shall be provided.

Controls - The cooling system shall be protected with high pressurestat, low pressurestat, loss-of-charge protection and current and temperature sensitive overload devices.

Heat exchanger shall be tubular in design and constructed of corrosion-resistant copper tubings and aluminum fins.

Unit electrical connections - Cabinet shall contain suitable openings for routing of all utility connections. The base unit shall contain a terminal strip in the control compartment to allow for terminal-to-terminal connection of room thermostat and field installed accessories.

Unit shall be provided with integral Lock Out Timer

circuit to prevent compressor short cycling as a result of a rapid change in thermostat setting. Also, automatically prevents compressor restart for at least 5 minutes after shutdown.

Maximum dimension - Width ____ in., Depth ____ in., height ____ inches.

Accessories and option

The following factory-installed options(FIOP) or field installed accessories (accessory) shall be provided.

Roof curb shall be of the same manufacturer as unit. Dimensions shall be provided to allow for easy duct location and connection to roof curb prior to unit placement.

Economizer shall include return air (R.A.) and outside air (O.A.) dampers, outdoor air filter and hood, and fully modulating electric control system with adjustable mixed air thermostat. Control shall be capable of introducing up to 100% outdoor air. The control changeover from mechanical cooling to economizer operation shall be fully automatic.

Alternate motor and drive assembly to provide control cfm and static pressure capability.

Remote control panel - The panel shall provide central control of heating, cooling, indoor fan and outdoor air damper. Indicator lights for unit functions shall be provided.

Micro processor based thermostat assembly shall provide staged heating and cooling, automatic changeover and fan control.

Head pressure control - A solid-state outdoor air fan speed control to permit unit to operate down to -20°F shall be provided.

Unit shall be provided with Micro computer control for VT-VAV System. No. of controlled zone to be not less than shown in schedule.

Unit shall be provided with DDC controls for energy management system and where multiple units are installed, the unit must be capable of interworking to facilitate staging and changing operating priority under fault conditions.

Two-position damper - allowing remote closure of 25% outside air opening when unit shuts down shall be provided.

Sequence of Operation

(Base Unit)

System Selection

System thermostat has Cool/Heat/ Automatic and fan On/Auto Selection.

Fan Selection

☐ Place fan selector switch into the ON position. The fan will turn ON and run continuously.

☐ Place fan selector switch to Auto position. Fan will activate whenever the system turns ON for heating or cooling.

System Automatic change over

Thermostat incorporates an automatic change over feature with built in 2° dead band. When the Cool / Automatic / Heat Switch is placed into the Automatic position the thermostat will automatically switch between heating and cooling based on room temperature.

Cool mode

When space temperature increases above thermostat set point, Relay R1 energize (provided the system stopped more than 5 minutes from the last call for cooling, Lockout time) start the compressor together with first stage condenser fan. Crank case heater de-energize. If head pressure reaches to set points of condenser fan cycling pressure switches additional fan start to maintain system discharge pressure.

A further increase in space temperature Relay R2 energize the second stage of cooling. (GPU-250 through 650 has 4 stages of cooling controlled by solid state Logic in the same manner of 2 stage cooling system)

As the space temperature reaches the set point, the Relay R2 de-energize stop the second stage cooling. A further drop in temperature Relay R1 de-energize and stop the compressor. At any time HP/LP/Oil pressure switches trip, system cannot restart until reset them manually.

Heating mode

In heating mode, if space temperature drop below thermostat set point, first stage of heating energize provided safeties such as air pressure switch, thermal cutout(s) etc., in its normal position.

A further decrease in space temperature,

second stage heating energize to maintain thermostat set point. (GPU-250 through 650 has 4 stages of heating controlled by solid state Logic panel)

As space temperature increases, the sequence reverses.

Operating Sequence with Economizer

Cooling

System switch set at AUTO or COOL, indoor air fan runs continually. Thermostat set at desired setting.

When thermostat calls for cooling and outdoor air enthalpy is below setting of enthalpy controller, economizer modulates open. (If outdoor enthalpy is above enthalpy set point, economizer remains at the minimum position.) Economizer acts as first stage of cooling providing "free cooling" with outside air. If outside air alone cannot satisfy the cooling requirements of the conditioned space, economizer cooling is integrated with mechanical cooling.

Compressor(s), working simultaneously with economizer, will be staged on to meet cooling load.

As conditioned space temperature approaches thermostat's cooling set point, stages cycle off, last stage first. After all stages of mechanical cooling are off, economizer modulates to minimum position.

During the cooling cycle a discharge air sensor senses discharge air temperature. If discharge air temperature drops below 62°F, economizer starts to modulate toward the minimum position. At 50°F, economizer will be at the minimum position.

Heating

System switch set at HEAT and AUTO., thermostat set at desired setting. When thermostat calls for heating one or 2-stages of heat energize to satisfy the heating demand.

As space temperature approaches the heating temperature set point, heating stages cycle off.

During heating, economizer is limited to the minimum position to provide minimum outdoor air for ventilation requirements.

Electrical Data

MODEL GPU	VOLTAGE	TYPE OF START	COMPRESSORS				CONDENSER FAN MOTORS			EVAPORATOR MOTOR		MIN. CIRCUIT AMPA- CITY	RECOM- MENDED MAX. FUSE SIZE
			1#		#2		RLA EACH	QTY	FLA TOTAL	HP (STD.)	FLA		
			RLA	LRA	RLA	LRA							
150	200/240	A/L	30.1	183	30.1	183	3.5	2	7	3	9.83	84.6	114.7
	415		15.8	91.1	15.8	91.1	2	2	4	3	5.7	45.3	61.1
180	200/240	A/L	42.1	207	42.1	207	5	2	10	5	15.7	120.4	162.5
	415		21.1	104	21.1	104	2.9	2	5.8	5	9.06	62.3	83.4
240	200/240	A/L	99.3	438	-	-	3	4	12	5	15.7	151.8	251.1
	415		41.1	214	-	-	2	4	8	5	9.06	68.4	109.5
250	200/240	A/L	42	267	42	267	3	4	12	5	15.7	122.2	164.2
	415		42	267	42	267	2	4	8	-	9.06	69.6	153.6
280	200/240	A/L	123.6	500	-	-	3	4	12	7 1/2	22.17	188.7	312.3
	415		45	235	-	-	2	4	8	7 1/2	12.82	77.1	122.1
340	200/240	A/L	146.7	633	-	-	3.5	4	14	7 1/2	22.17	219.5	366.2
	415		55	260	-	-	2	4	8	7 1/2	12.82	89.6	144.6
350	200/240	A/L	57.6	316	59.6	275	3.5	4	14	7 1/2	22.17	167.8	225.4
	415		32.8	180	32.8	180	2	4	8	7 1/2	12.82	94.6	127.4
440	200/240	A/L	164	633	-	-	5	4	20	10	26.83	251.8	415.8
	415		96.9	365	-	-	2.9	4	11.6	10	15.51	148.2	245.1
450	200/240	A/L	165.3	592	82.2	428	5	4	20	10	26.83	335.7	501.0
	415		74.2	379	58.6	251	2.9	4	11.6	10	15.51	178.5	252.7
550	200/240	A/L	99.3	251	123.6	500	5	4	20	15	39	306.7	406.0
	380/420		58.6	251	71.4	289	2.9	4	11.6	15	22.46	178.7	237.3
650	200/240	A/L	123.6	500	123.6	500	5	4	20	20	50.2	348.3	471.9
	380/420		71.4	289	71.4	289	2.9	4	11.6	20	29	201.3	272.7
750	200/240	A/L	146.7	633	146.7	633	3.5	8	28	25	63.5	421.6	568.3
	380/420		55	260	55	260	2	8	16	25	36	175.8	230.8

Notes:

- 1 A/L: Across line start. Optional partwinding start available.
- 2 Rated Load Amps comply with compressor motors continuous current rating and N.E.C. Article 440-52,b,2.
- 3 Minimum circuit ampacity is per N.E.C. Section 430-24.
- 4 Minimum circuit ampacity is based on standard evaporator motor.

TYPICAL POWER/CONTROL WIRING DIAGRAM
 MODEL : G. P. U. 250 TO 650
 FOUR STAGE COOLING / FOUR STAGE HEATING
 POWER SUPPLY : 220-380-460V/3PH/50-60HZ

USE COPPER CONDUCTORS ONLY
 REFER TO UNIT SPEC PLATE
 FOR CORRECT VOLTAGE

LEGEND

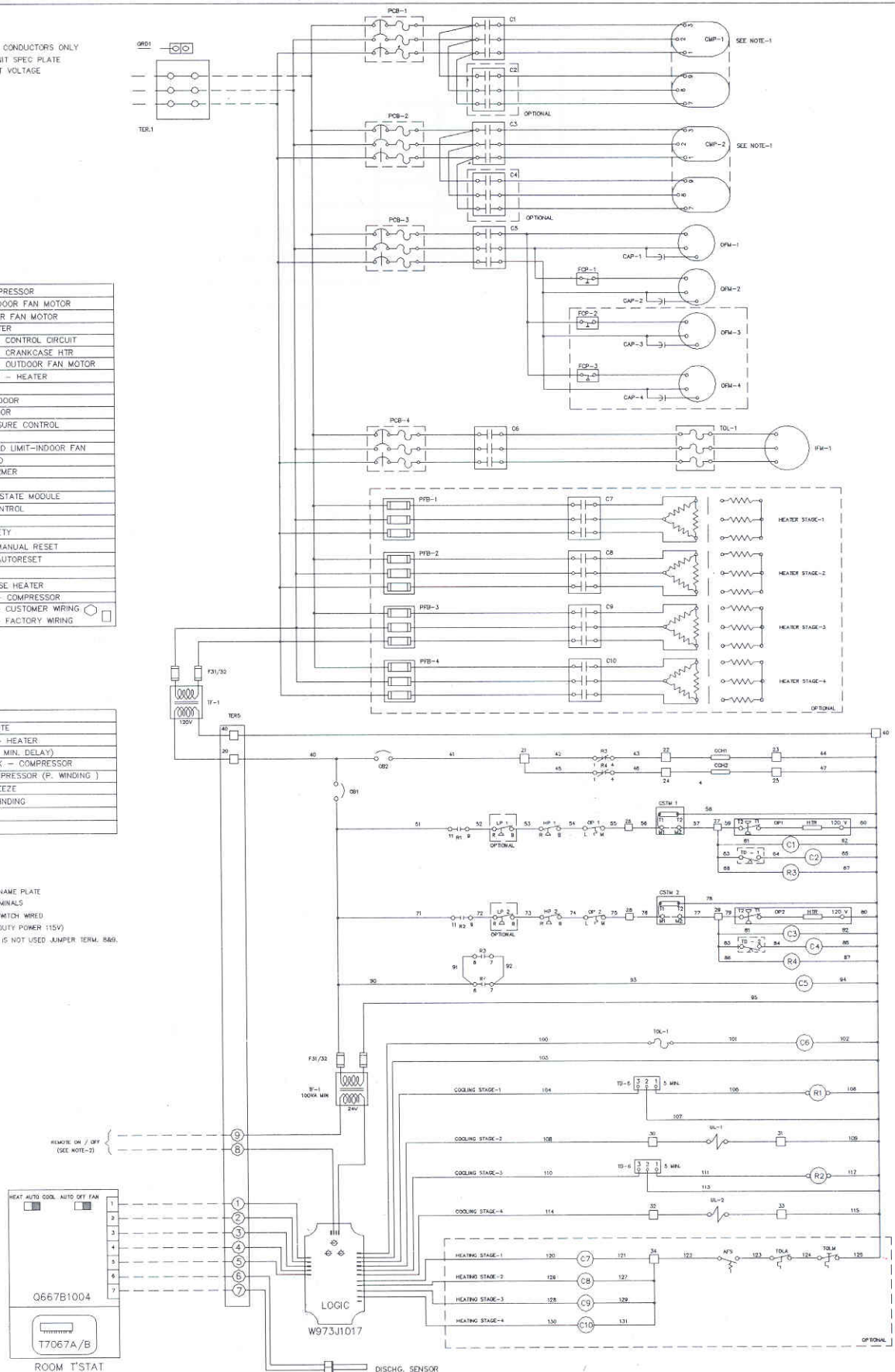
STANDARD

C1-C2	CONTACTOR - COMPRESSOR
C5	CONTACTOR - OUTDOOR FAN MOTOR
C6	CONTACTOR - INDOOR FAN MOTOR
C7-10	CONTACTOR - HEATER
CB1	CIRCUIT BREAKER - CONTROL CIRCUIT
CB2	CIRCUIT BREAKER - CRANKCASE HTR
PCB3	CIRCUIT BREAKER - OUTDOOR FAN MOTOR
PFB1-4	POWER FUSE BLOCK - HEATER
OMP1-2	COMPRESSOR
OFM1-4	FAN MOTOR - OUTDOOR
IFM-1	FAN MOTOR - INDOOR
FCP1-3	FAN CYCLING PRESSURE CONTROL
CAP1-4	FAN CAPACITORS
TOL1	THERMAL OVER LOAD LIMIT-INDOOR FAN
UL1-2	UNLOADER SOLENOID
F31/F32	FUSES - TRANSFORMER
TF1,TF2	TRANSFORMER
CSTM1-2	COMPRESSOR SOLIDSTATE MODULE
HP1-2	HIGH PRESSURE CONTROL
AFS	AIRFLOW SWITCH
OP1-2	OIL PRESSURE SAFETY
TOLM	THERMAL OUTOUT MANUAL RESET
TOLA	THERMAL OUTOUT AUTORESET
R1-2	RELAY - STAGING
R3-4	RELAY - CRANKCASE HEATER
PCB1-2	CIRCUIT BREAKER - COMPRESSOR
TER 5	TERMINAL BOARD - CUSTOMER WIRING
TER 5	TERMINAL BOARD - FACTORY WIRING

OPTIONAL

HGS1	HOT GAS SOLENOID
TD5	TIME DELAY 5 MINUTE
PCB5-8	CIRCUIT BREAKER - HEATER
TD-5/6	TIMER, LOCKOUT (5 MIN. DELAY)
PFB1-2	POWER FUSE BLOCK - COMPRESSOR
C2-C4	CONTACTOR - COMPRESSOR (P. WINDING)
LPF1	LOW PRESSURE FREEZE
TD1-2	TIME DELAY PARTWINDING

- NOTE 1 - 1. SEE COMPRESSOR NAME PLATE
 FOR CORRECT TERMINALS
 2. REMOTE ON/OFF SWITCH WIRED
 IN SERIES (PILOT DUTY POWER 115V)
 IF REMOTE SWITCH IS NOT USED JUMPER TERM. B&G.



TYPICAL POWER/CONTROL WIRING DIAGRAM

MODEL: GPU 150 - 440

220-380-460V/3Ph/50-60Hz

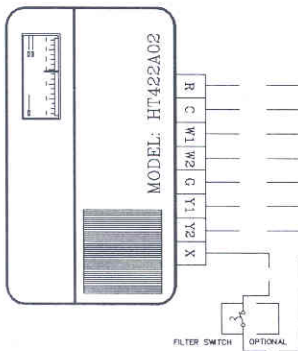
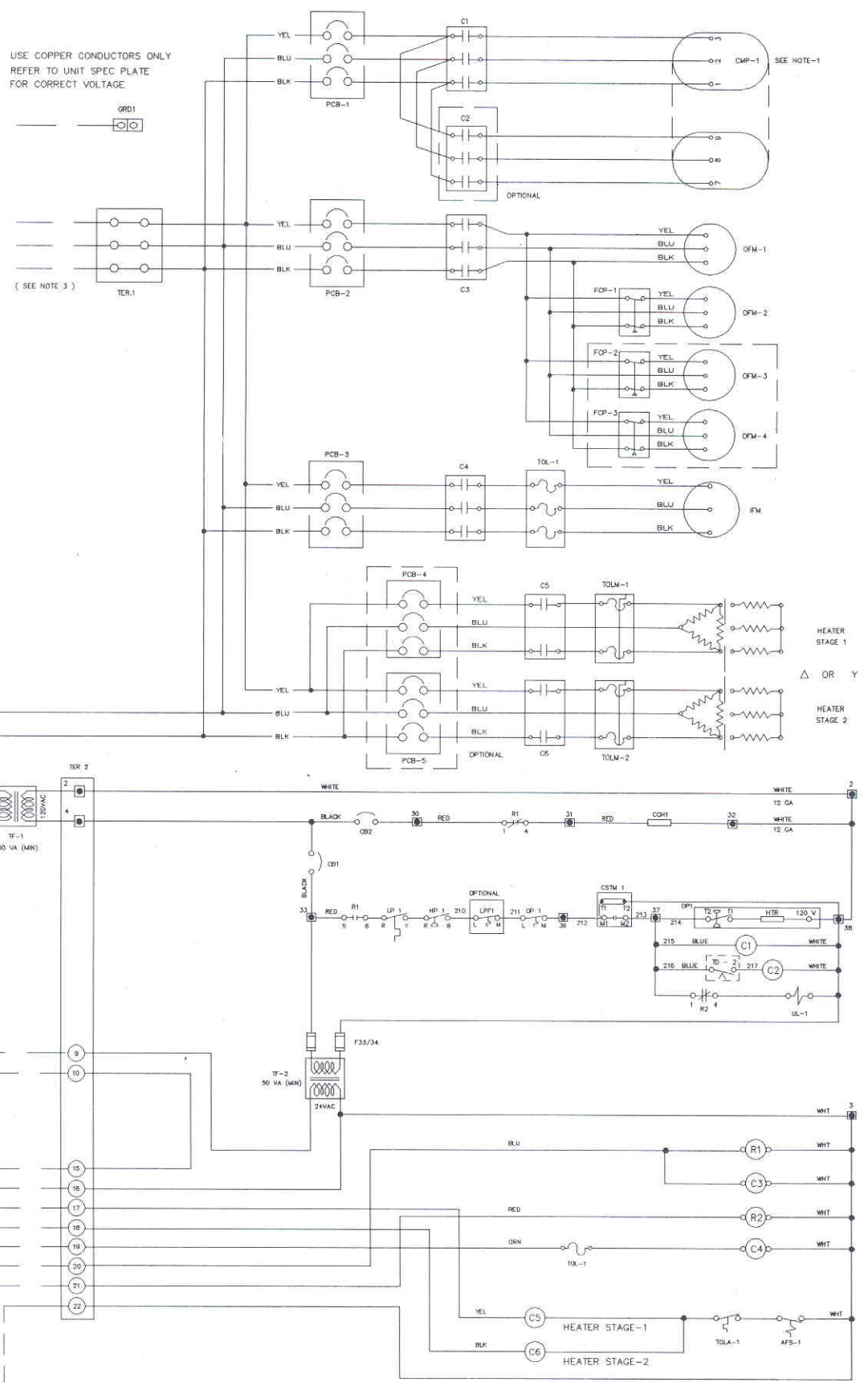
STANDARD LEGEND

C1	CONTACTOR - COMPRESSOR
C3	CONTACTOR - OUTDOOR FAN MOTOR
C4	CONTACTOR - INDOOR FAN MOTOR
C5-C6	CONTACTOR - HEATER
CB1	CIRCUIT BREAKER - CONTROL CIRCUIT
CB2	CIRCUIT BREAKER - CRANKCASE HTR
PCB-1	CIRCUIT BREAKER - COMPRESSOR
PCB-2	CIRCUIT BREAKER - OUTDOOR FAN MOTOR
PCB-3	CIRCUIT BREAKER - INDOOR FAN MOTOR
PCB-4	CIRCUIT BREAKER - HEATER/STEP 1
PCB-5	CIRCUIT BREAKER - HEATER/STEP 2
CMP1	COMPRESSOR
OFM-1	FAN MOTOR - OUTDOOR
IFM	FAN MOTOR - INDOOR
FCP-1	FAN CYCLING PRESSURE CONTROL
TOL-1	THERMAL OVERLOAD LIMIT (INDOOR FAN)
F31-32	FUSES - TRANSFORMER
TF1-2	TRANSFORMER
CSTM1	COMPRESSOR SOLIDSTATE MODULE
HP1	HIGH PRESSURE CONTROL
OP1	OIL PRESSURE SAFETY
R1	RELAY - CRANKCASE HTR/STAGING
R2	RELAY - STAGING
TOLM-1	THERMAL OUTOUT MANUAL RESET(STEP 1)
TOLM-2	THERMAL OUTOUT MANUAL RESET(STEP 2)
TOLA-1	THERMAL OUTOUT AUTORESET
UL1	UNLOADER SOLENOID
TER 1	TERMINAL BOARD - CUSTOMER WIRING
AFS-1	AIR FLOW SWITCH
TER 2	TERMINAL BOARD - CUSTOMER WIRING
	TERMINAL BOARD - FACTORY WIRING

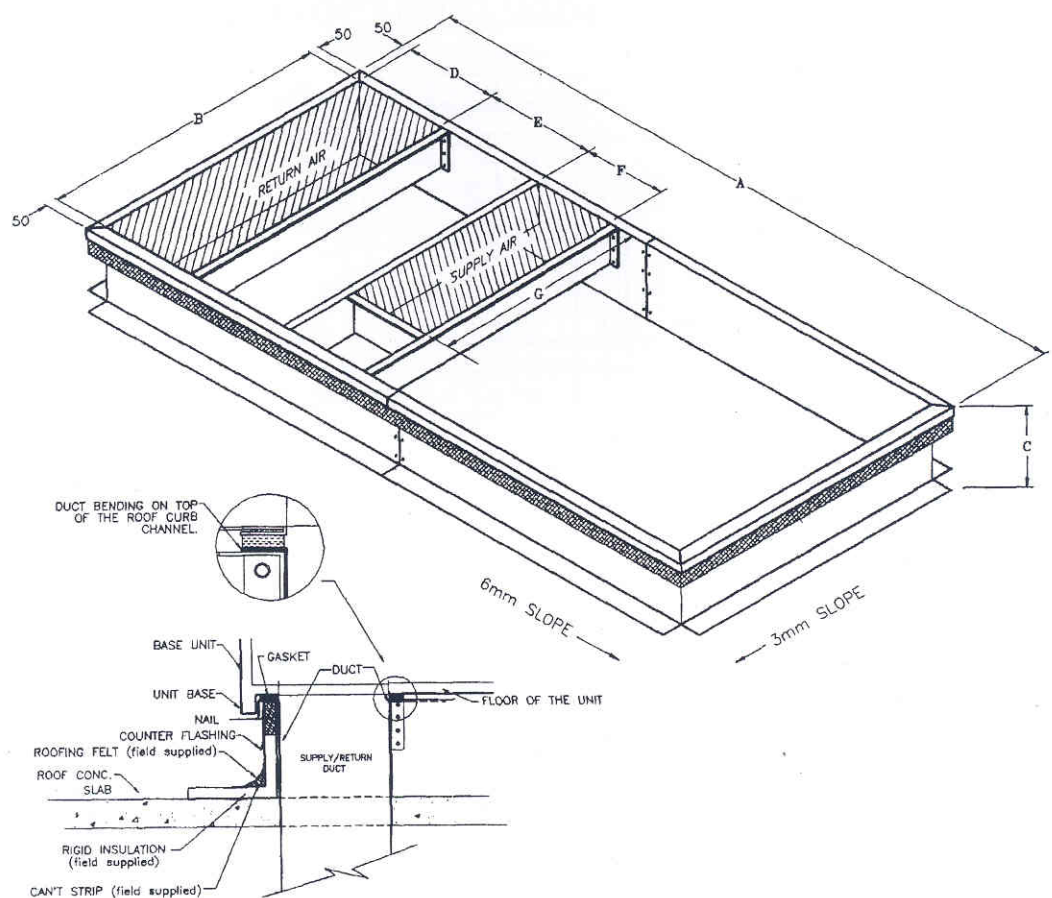
OPTIONAL

PFB1	POWER FUSE BLOCK - COMPRESSOR
PFB2	POWER FUSE BLOCK - INDOOR FAN MOTOR
LPF1	LOW PRESSURE FREEZE
R1	RELAY - REMOTE INDICATION
R3	RELAY-EXHAUST FAN INTERLOCK
C2	CONTACTOR - COMPRESSOR (P. WINDING)
PCB4-5	CIRCUIT BREAKER - HEATER

- NOTE - 1. SEE COMPRESSOR NAMEPLATE FOR CORRECT TERMINAL VOLTAGE.
2. TIME CLOCK AND FIRE ALARM CIRCUIT MUST BE WIRED IN SERIES.
3. PROVIDE MAIN DISCONNECT SWITCH AS PER N.E.C. & LOCAL UTILITY REQUIREMENTS.



Accessory dimensions
Base unit Roof Curb



DETAILS OF ROOF-CURB FIXING

UNIT MODEL	A	B	C	D	E	F	G
150	3008	1800	305	450	640	341	1400
180	3008	1800	305	500	540	391	1400
240/250	3577	1800	305	610	505	425	1400
280	3577	2240	305	610	505	425	1675
340/350	4962	1987	350	750	1244	629	1500
440/450	5810	1987	350	850	1671	695	1500
550	5630	1987	350	873	1305	750	1710
650	5960	1987	350	900	1533	825	1710
750	7690	1987	350	990	1368	900	1710

ALL DIMENSIONS ARE IN MILLIMETERS

NOTES:

1. FOR PROPER CONDENSATE DRAIN, INSTALL ALL ROOF CURB WITH SLOPE AS SHOWN.
2. ROOF CURB SHIPPED LOOSE FOR FIELD ASSEMBLY.
3. CONSULT FACTORY FOR ROOF CURB DIMENSIONS WHEN EVAPORATOR SECTION ACCESSORIES ARE USED.

*The complete line ...
for all your air conditioning needs.*



PACKAGED AIR
CONDITIONING UNITS
2 - 100 TONS



AIR HANDLING UNITS
(SINGLE & DOUBLE SKIN)
300 - 200,000 CFM



AIR COOLED CHILLER 15 - 450 TONS
Screw-Reciprocating
R-134A - 407C



MINI SPLIT UNIT
9,000 - 32,000 Btuh/hr



OUT DOOR SPLIT A/C UNIT



ROOM A/C UNITS
WINDOW SERIES



SLIM BELT DRIVE CABINET
HIGH PRESSURE FAN COIL UNITS



SLIM DUCTED CEILING
FAN COIL UNITS



FAN COIL UNITS
200 - 1,300 CFM



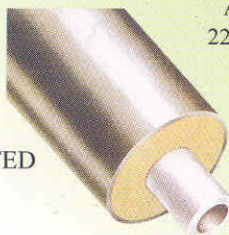
VANE AXIAL FAN
3,000 - 250,000 CFM



AIRFOIL FANS
225 - 340,000 CFM



AIR COOLED CONDENSING UNITS
1.2 - 155 TONS



PRE-INSULATED
PIPES



VAV - VTV - BY PASS
ACOUSTIC TERMINAL UNITS

ROYAL TEMP reserves the right to change any product specifications without notice
YOU CAN CALL US FOR EXPLOSION PROOF AND HAZARD AREAS EQUIPMENT



FACTORY: P.O. BOX 2625, RIYADH 11461 TEL: (01)2651500 FAX: 2651521
E-MAIL: goldenstar@cyberia.net.sa Website: <http://www.hacegoldenstar.com>
AL-KHOBAR Branch: P.O. BOX 20324 AL-KHOBAR 31952 TEL: 8943337 FAX: 8941478
JEDDAH Branch: P.O. BOX 10583, JEDDAH 21443 TEL: 6655595 FAX: 6655642