

Submittal Data

GA Line ACF Series Commercial and Specialty Chillers

Small Tonnage Gas Fired Absorption Chillers With Modular Capability Cooling

The High Efficiency Chillers ACF60-00 series are water chillers, equipped with an air-cooled condenser and designed for outdoor installation. The absorption cooling cycle is based upon a solution of water and

ammonia for the production of chilled water. The chilling system is fed by thermal energy provided by a gas burner, therefore the required electric energy is limited to driving the fan and pump motors.

The evacuation of combustion gases occurs by mixing them with condenser air using the axial fan of the appliance; no flue is needed. The combustion fuel is natural gas or LPG.



Versions

The ACF series is available in four versions:

ST - Designed for comfort conditioning in standard applications with design ambient temperatures of 104 °F or lower.

HT - Designed for applications in which the design ambient temperatures are expected to exceed 104 °F.

TK - Designed for Industrial and commercial applications requiring heavy use on a year round basis.

LB - Designed for applications requiring chilled water temperatures down to 14 °F. ACF units are natural gas or LPG fired and require 208 - 230V 60Hz SINGLE PHASE electrical power.

Control and safety devices

The ACF series units are equipped with the following components and safety devices:

- steel sealed circuit, painted with external epoxy paint;
- steel tube air exchanger with single-row coil and aluminum fins;
- titanium stainless steel tube bundle water heat exchanger, with external insulation;
- variable speed condenser fan, microprocessor controlled;
- S60 Electronic Control Board with integrated microprocessor, LCD display and encoder located inside the electric box; it is programmable and it controls and monitors the operation of the chiller;
- sealed circuit high temperature limit; located on the external wall of the

- generator; helps prevent overheating of the generator;
- flue gas temperature limit switch; located inside the rear portion of the combustion chamber; helps prevent overheating of the generator;
- sealed circuit safety relief valve;
- premixed multigas burner with ignition and flame sensing device managed by an electronic control box;
- differential air pressure switch; located inside the electric box; it helps manage the combustion system by monitoring the air flowing into the air-gas mixing chamber and stopping the burner if the air flow is too low;
- ignition control box; located inside the electric box; it manages the combustion system controlling the burner ignition, the gas

- valve, the air pressure switch, the air blower and the flame sensor;
- dual gas valve;
- chilled water flow sensor; located on the return chilled water line; it monitors the water flow and helps prevent freezing of the evaporator;
- safety by-pass valve; located inside the sealed system; prevents over pressurizing the sealed system;
- antifreeze function for hydronic system; together with the flow switch, this electronic function, programmed into the microprocessor, helps prevent freezing of the evaporator;
- temperature probes; located both on the sealed system and on the water lines; they monitor functional parameters of the unit.

PERFORMANCE RATINGS ⁽¹⁾			ACF60 ST	ACF60 HT	ACF60 TK	ACF60 LB
Cooling capacity ⁽²⁾		BTU/h	60,500	58,400	60,500	45,400
Gas input		BTU/h	94,900	94,900	94,900	94,900
Ambient operating temperature	maximum	°F	120	131	120	120
	minimum	°F	32	32	10.4	10.4
Chilled water temperature	minimum outlet	°F	37.4	41	37.4	14
	maximum inlet (to unit)	°F	113	113	113	113
Chilled water flow	nominal	GPM	12.2	11.8	12.2	11.4
	maximum	GPM	14.0	14.1	14.1	12.8
	minimum	GPM	11.0	11.0	11.0	10.1
Internal pressure drop at nominal chilled water flow		Feet of Head	9.7	9.1	9.7	14.1
		psig	4.2	3.9	4.2	6.1

ELECTRICAL RATINGS ⁽¹⁾		
Required voltage, 60 Hz, single phase ⁽³⁾	V	208 - 230
Operating consumption ⁽⁴⁾	kW	0.75
MCA (Minimum Circuit Ampacity)	A	8.0
MOP (Maximum Overcurrent Protection)	A	10.9

PHYSICAL DATA ⁽¹⁾			
Operating weight	pounds	750 816 816 816	
Chilled water entering and leaving connections	FPT	1 1/4"	
Gas inlet connections	FPT	1/2"	
Dimensions	width	inches	33 1/2
	length	inches	48 1/2
	height	inches	50 3/4

⁽¹⁾ All illustrations and specifications contained herein are based on the latest information available at the time of publication.
⁽²⁾ Cooling capacity at standard conditions of 95 °F ambient temperature. ST, TK, HT: chilled water outlet temperature 45 °F, chilled water inlet temperature 55 °F. LB: chilled water outlet temperature 23 °F, chilled water inlet temperature 32 °F.

⁽³⁾ Units are factory-wired for 208-230 volts operation.
⁽⁴⁾ May vary by ± 10% as function of both power supply and electrical motor input tolerance.

Due to continuous product innovation and development, Robur reserves the right to change product specifications without prior notice.

STANDARD VERSION - COOLING CAPACITY (BTU/h)

External ambient operating temperature	Outlet chilled water temperature			
	37.4 °F	41.0 °F	44.6 °F	48.2 °F
32 °F	59,307	59,912	61,123	62,323
41 °F	59,307	59,912	61,123	62,333
50 °F	59,307	59,912	61,123	62,323
59 °F	59,307	59,912	61,123	62,333
68 °F	59,307	59,912	61,123	62,323
77 °F	58,701	59,912	61,123	62,333
86 °F	54,465	59,307	61,123	62,333
95 °F	40,546	52,650	60,517	61,727
104 °F	--	--	53,255	56,281
113 °F	--	--	40,546	47,203
120 °F	--	--	--	39,336

HT VERSION - COOLING CAPACITY (BTU/h)

External ambient operating temperature	Outlet chilled water temperature				
	41.0 °F	44.6 °F	50.0 °F	54.5 °F	57.2 °F
32.0 °F	59,637	59,637	59,637	59,637	60,222
35.6 °F	59,637	59,637	59,637	59,637	60,222
39.2 °F	59,637	59,637	59,637	59,637	60,222
42.8 °F	59,637	59,637	59,637	59,637	60,222
46.4 °F	59,637	59,637	59,637	59,637	60,222
50.0 °F	59,637	59,637	59,637	59,637	60,222
53.6 °F	59,637	59,637	59,637	59,637	60,222
57.2 °F	59,637	59,637	59,637	59,637	60,222
60.8 °F	59,637	59,637	59,637	59,637	60,222
64.4 °F	59,637	59,637	59,637	59,637	60,222
68.0 °F	59,637	59,637	59,637	59,637	60,222
71.6 °F	59,637	59,637	59,637	59,637	60,222
75.2 °F	59,637	59,637	59,637	59,637	60,222
78.8 °F	59,053	59,637	59,637	59,637	60,222
82.4 °F	59,053	59,637	59,637	59,637	60,222
86.0 °F	59,053	59,637	59,637	59,637	60,222
89.6 °F	57,883	59,637	59,637	59,637	60,222
93.2 °F	56,129	59,053	59,053	59,053	59,637
95.0 °F	54,960	58,368	58,468	59,053	59,637
96.8 °F	53,791	57,883	58,468	58,468	59,637
100.4 °F	50,867	56,714	57,883	57,883	59,053
104.0 °F	47,944	54,375	56,714	57,299	58,468
107.6 °F	--	51,452	54,960	56,714	57,883
111.2 °F	--	47,944	53,206	55,545	56,714
114.8 °F	--	--	50,282	53,791	55,545
118.4 °F	--	--	46,774	50,867	53,206
131.0 °F	--	--	--	47,359	50,282

TK VERSION - COOLING CAPACITY (BTU/h)

External ambient operating temperature	Outlet chilled water temperature			
	37.4 °F	41.0 °F	44.6 °F	48.2 °F
10.4 °F	71,410	71,410	72,015	72,620
17.6 °F	70,805	70,805	71,410	72,015
24.8 °F	70,200	70,200	70,200	71,410
32.0 °F	69,595	69,595	69,595	70,200
39.2 °F	68,989	68,989	68,989	69,595
46.4 °F	67,779	68,384	68,384	68,989
53.6 °F	67,779	67,779	67,779	68,384
60.8 °F	67,174	67,174	67,779	67,779
68.0 °F	65,964	65,964	67,174	67,174
75.2 °F	64,148	64,148	66,569	66,569
82.4 °F	59,307	61,727	65,358	65,358
89.6 °F	51,439	57,491	62,938	64,148
95.0 °F	41,757	52,650	60,517	62,333
100.4 °F	--	--	56,886	59,912
107.6 °F	--	--	50,229	55,070
113.0 °F	--	--	--	49,624
120.0 °F	--	--	--	42,057

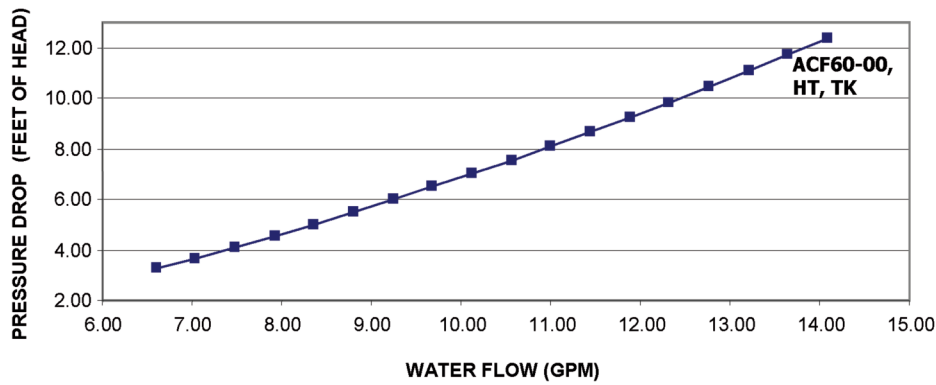
LB VERSION - COOLING CAPACITY (BTU/h)

External ambient operating temperature	Outlet chilled water temperature				
	14.0 °F	19.4 °F	23.0 °F	28.4 °F	32.0 °F
10.4 °F	52,007	52,217	52,426	52,801	53,176
17.6 °F	52,007	52,217	52,426	52,801	53,176
24.8 °F	52,007	52,217	52,426	52,801	53,176
32.0 °F	52,007	52,217	52,426	52,801	53,176
33.8 °F	52,007	52,217	52,426	52,801	53,176
35.6 °F	52,007	52,217	52,426	52,801	53,176
37.4 °F	52,007	52,217	52,426	52,801	53,176
39.2 °F	52,007	52,217	52,426	52,801	53,176
41.0 °F	52,007	52,217	52,426	52,801	53,176
42.8 °F	52,007	52,217	52,426	52,801	53,176
44.6 °F	52,007	52,217	52,426	52,801	53,176
46.4 °F	52,007	52,200	52,392	52,784	53,176
48.2 °F	52,007	52,183	52,358	52,767	53,176
50.0 °F	52,007	52,166	52,324	52,750	53,176
51.8 °F	51,965	52,127	52,290	52,733	53,176
53.6 °F	51,904	52,080	52,256	52,716	53,176
55.4 °F	51,822	52,022	52,221	52,699	53,176
57.2 °F	51,718	51,952	52,187	52,681	53,176
59.0 °F	51,588	51,884	52,181	52,678	53,176
60.8 °F	51,430	51,793	52,157	52,666	53,176
62.6 °F	51,241	51,677	52,113	52,644	53,176
64.4 °F	51,020	51,533	52,047	52,610	53,172
66.2 °F	50,763	51,360	51,957	52,563	53,169
68.0 °F	50,469	51,155	51,841	52,503	53,166
69.8 °F	50,134	50,915	51,696	52,423	53,149
71.6 °F	49,757	50,638	51,520	52,314	53,107
73.4 °F	49,334	50,322	51,311	52,174	53,038
75.2 °F	48,864	49,965	51,067	52,002	52,937
77.0 °F	48,343	49,564	50,785	51,795	52,805
78.8 °F	47,771	49,117	50,464	51,551	52,637
80.6 °F	47,143	48,622	50,101	51,267	52,432
82.4 °F	46,458	48,076	49,694	50,941	52,188
84.2 °F	45,713	47,476	49,240	50,571	51,901
86.0 °F	44,905	46,822	48,738	50,155	51,571
87.8 °F	44,033	46,109	48,186	49,690	51,194
89.6 °F	43,093	45,337	47,580	49,174	50,768
91.4 °F	42,084	44,502	46,919	48,605	50,291
93.2 °F	41,003	43,602	46,201	47,981	49,760
95.0 °F	39,847	42,635	45,400	47,299	49,174
96.8 °F	38,614	41,599	44,584	46,557	48,530
98.6 °F	37,302	40,491	43,681	45,753	47,825
100.4 °F	35,907	39,309	42,711	44,884	47,057
102.2 °F	34,428	38,051	41,673	43,949	46,225
104.0 °F	32,863	36,713	40,564	42,945	45,325
105.8 °F	31,208	35,295	39,383	41,869	44,356
107.6 °F	29,461	33,794	38,126	40,720	43,314

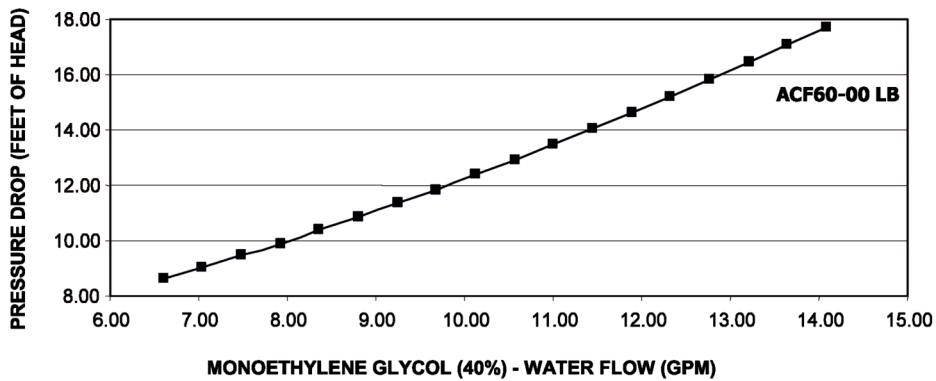
LB VERSION - COOLING CAPACITY (BTU/h) - continued

External ambient operating temperature	Outlet chilled water temperature				
	14.0 °F	19.4 °F	23.0 °F	28.4 °F	32.0 °F
109.4 °F	27,620	32,206	36,793	39,496	42,198
111.2 °F	25,682	30,531	35,379	38,193	41,006
113.0 °F	23,645	28,765	33,885	36,810	39,735
120.0 °F	--	--	28,004	31,587	35,176

STANDARD, HT, TK VERSION PRESSURE DROP



LB VERSION PRESSURE DROP

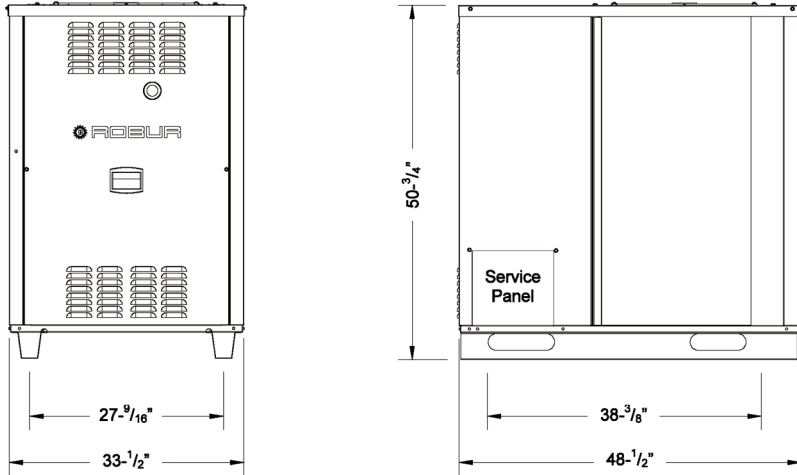


APPROXIMATE WATER FREEZING POINT TEMPERATURE

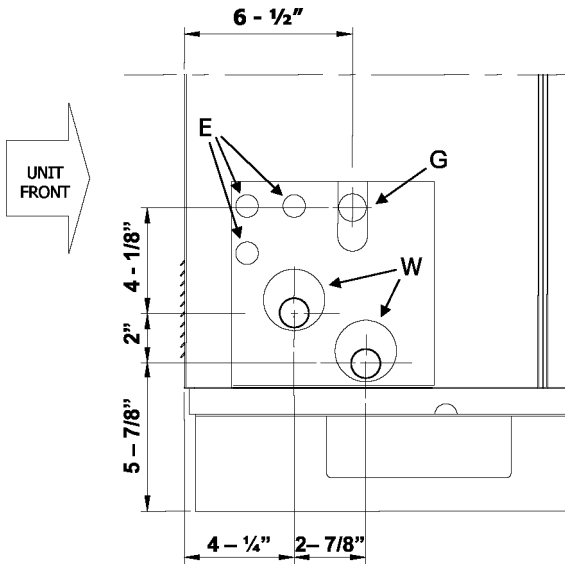
Percentage of monoethylene glycol	10	15	20	25	30	35	40
Water freezing point temperature (°F)	26.6	23.0	17.6	10.4	5.0	-4.0	-13.0
Percentage of increase in pressure drop	--	6	8	10	12	14	16
Loss of efficiency of unit	--	0.5	1	2	2.5	3	4

The numbers provided in this table are approximate and you must refer to the glycol manufacturer's instructions for additional instructions and amount of glycol required based on expected ambient conditions.

ACF DIMENSIONS (ALL VERSIONS)

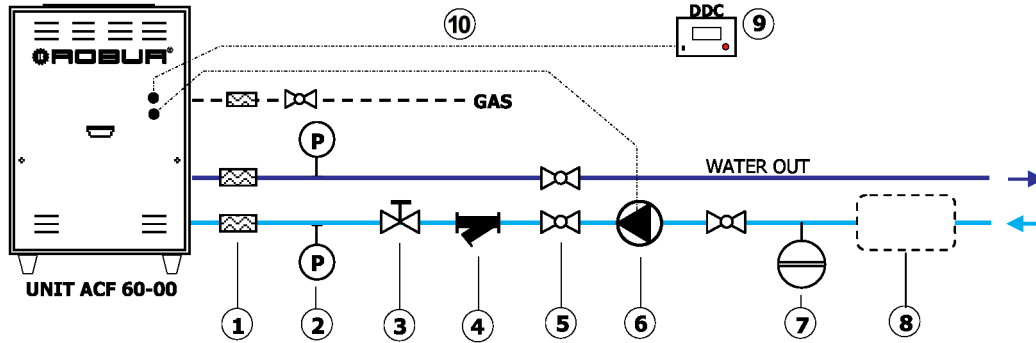


ACF SERVICE PLATE DIMENSIONS (ALL VERSIONS)



- G Gas connection \varnothing 1/2" FPT
- W Water connection \varnothing 1 1/4" FPT
- E Electrical knockouts \varnothing 7/8" FPT

ACF HYDRONIC SYSTEM: Typical Installation Arrangement (External Components not included with Robur Unit)



- 1 Antivibration flexible hoses
- 2 Pressure gauge
- 3 Flow regulating valve
- 4 Water filter
- 5 Shut-off valve
- 6 Circulating water pump
- 7 Expansion tank
- 8 Water storage
- 9 DDC (optional from Robur)
- 10 Can Bus cable (optional from Robur)

Location

The ACF60-00 series must be installed outdoors in an area of free natural air circulation. The installation inside a room or a building is not allowed. There must be a minimum clearance of 4 feet horizontally from electric meters, gas meters, regulators and relief

equipment and in no case located above or below these items unless a 4 foot horizontal distance is maintained. The noise generated by the condenser fan during unit operation is not excessive. However, avoid locating the unit in an area adjacent to bedrooms

or neighboring buildings. Also, avoid installing the unit in building corners, where air turbulence can take place or the unit noise (reverberation) can be amplified.

Clearances

A free space is to be provided around the unit to allow for

proper unit operation and for servicing.

The minimum clearance from walls, obstructions and other units must be as follows:

- right / left side: 18 inches;
- rear side: 24 inches;
- front side: 36 inches.

Observe all local and State codes.

