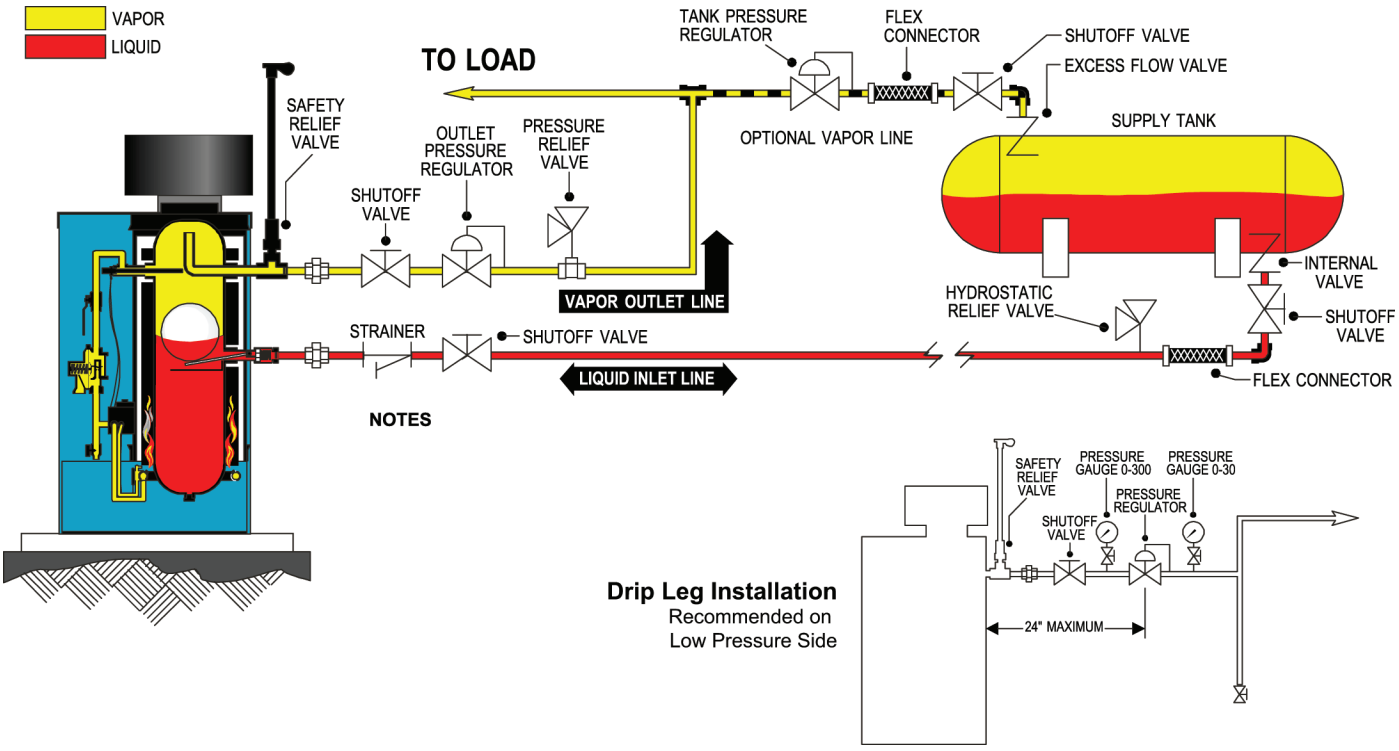
Typical Vaporizer Installation - Principal Features



Drip Leg Installation
Recommended on Low Pressure Side

Direct-Fired LPG Vaporizer

Dragon Shield

- Protective coating on anti-corrosive cabinet
- Chimney with wind trap for extreme climates
- ASME certified heat exchanger
- Auto ignition system for guaranteed autonomy
- Does not require electricity
- Protective Insulation on cabinet floor & walls
- Thermal box to protect the electronic ignition system from extreme weather
- The most advanced, reliable, and safest system for the operation of your business
- Every vaporizer includes a cage for easy transportation and installation
- Lowest maintenance costs in the market

Part #	GPH Propane	Millions of BTU/hr.	Shipping Weight (lbs.)	Inlet	Outlet
DS-80 WG	80	7	445	1-1/4"	1"
DS-120 WG	120	9.4	503	1-1/4"	1"

Common Repair Parts - Dragon Shield

Part #	Description
GA51477121	Cavagna Regulator 998TW-15
GA51484062	RegO Pressure Relief Valve 250 PSI 3131-G
GA51214157-U	Dragon Shield Electronic Ignition System 80 WG
GA51214158-U	Dragon Shield Electronic Ignition System 120 WG
1890906996-U	Energizer Lithium Battery 9vts
1890907024	Dragon Shield Thermostat 600 AC2 0.600.187 SPA
GA51193159-U	Dragon Shield Welded Burner Assy Cadmized
3540907045-U	Dragon Shield Thermostat Line Pilot 80 WG
3540907049-U	Dragon Shield Thermostat Line Pilot 120 WG
3540907043-U	Dragon Shield Thermocouple Line 80 WG
3540907047-U	Dragon Shield Thermocouple Line 120 WG
GA51193120-U	Dragon Shield Liquid Inlet Valve
GA51193128-U	Dragon Shield Capacity Control Valve

Direct-Fired LPG Vaporizer

RH Series

- Mechanical liquid inlet valve provides positive control of LP Gas liquid level on all RH 50, 80, and RH 120 sizes. Larger sizes use reliable float switch and electronic inlet valve to prevent liquid carryover.
- Millivolt-powered gas control system maintains consistent vapor temperature under changing load conditions.
- Modular design provides maximum capacity in a compact, rectangular unit.
- All sizes are capable of infinite turndown and maintain a ready supply of vapor from zero load to full capacity. At no load, only enough heat will be generated to maintain vapor temperature and prevent condensation.
- "E" option available for electronic ignition.

Models are available in a complete range of sizes from 50 GPH to 1,000 GPH propane capacity.

Part #	GPH Propane	CF/hr.	Millions of BTU/hr.	Shipping Weight (lbs.)	Inlet Connection	Outlet Connection
RH50	50	1,823	4.58	205	3/4" FNPT	1" FNPT
RH80	80	2,916	7.32	245	3/4" FNPT	1" FNPT
RH120	120	4,374	10.98	285	3/4" FNPT	1" FNPT
RH200	200	7,290	18.30	380	1" FNPT	1" FNPT
RH400	400	14,580	36.60	920	1" FNPT	2" FNPT
RH600	600	21,870	54.90	1,380	1" FNPT	2" FNPT
RH800	800	29,160	73.20	1,820	1" FNPT	2" FNPT
RH1000	1000	36,450	91.50	2,300	1" FNPT	2" FNPT

Common Repair Parts - RH Series

Part #	Description
HW-Q313A	Thermal Generator
HW-VS820A	Burner Gas Control Valve
JC-KIT	Pilot Assembly Complete
KF-PRLW*	Lead Wire for Relighter
KF-120F	Vapor Temperature Switch
CP-PR120V*	Pilot Relighter

*For units equipped with and "E" option only.

Direct-Fired LPG Vaporizer

RH Series - 240 Gallon

- Introducing the Newly Designed Ransome RH240 Direct-Fired LP-Gas Vaporizer.
- Ransome's RH240 Series provides an economical, dependable source of Liquefied Petroleum (LP) gas vapor for a wide range of applications up to 240 gallons per hour.
- The RH240 (240 gallon capacity) is one of the nine different size options to choose from in our Direct-Fired Series line of Vaporizers.
- RH240 units are completely self-contained and require no outside power source.
- Installed optionally, the Ransome 9V Relight System protects against pilot outage to unusually turbulent atmospheric conditions. Unit operated by four 9V batteries and two Solar Panels.
- The 9V Relight System option is for use in the field where 110V line power is unavailable.

Part #	GPH Propane	CF/hr.	Millions of BTU/hr.	Shipping Weight (lbs.)	Inlet	Outlet
RH240	240	8748	21.96	640	1" FNPT	1" FNPT

Direct-Fired LPG Vaporizer-Mixers

PAM Series - Ransome

PAM Series Direct-Fired Vaporizer-Mixers provide an economical, dependable source of propane-air mixture to replace natural gas for any industrial or commercial use up to 73,500 SCFH at as high as 30 PSI.

Applications include factories, hospitals, schools, office buildings, small utilities and many others. They are individually factory-tested and calibrated on propane and shipped ready for use.

Why a Mixer?
LP-Gas is a highly concentrated source of energy, with 2516 BTU's per cubic foot gross heat content. It is too rich to use as a substitute for natural gas without dilution. The Ransome mixer blends in just the right amount of air for an equivalent mixture. A mixture with specific gravity of 1.31 (1480 BTU/Cu. Ft.) will approximately match 0.6 specific gravity natural gas with 1000 BTU/Cu. Ft. gross heat content.

Part #	Mixer Only	If your Peak Load Requirements are up to [1]			Air Required SCFM (for 10 - 30 PSI Only	Vaporization Capacity Required (for M Series Only) GPM Propane
		Millions of BTU/hr.	Thousands of SCFH Natural Gas[2]	Thousands of SCFH Mixed Gas[3]		
PAM200-10	M10	14.75	14.75	10	75	180
PAM400-20	M20	29.50	29.50	20	150	360
PAM600-30	M30	44.25	44.25	30	225	540
PAM800-40	M40	59.00	59.00	40	300	720
PAM1000-50	M50	73.75	73.75	50	375	500

1. Units maybe paralleled to achieve greater capacities.
2. Natural Gas; S.G.U. = .6 Gross Heat content 1000 BTU/Cu.Ft.
3. Mixed Gas; Propane-Air, S.G.U. = Gross Heat content 1450 BTU/Cu.Ft.

Waterbath Vaporizer

RW Series - Ransome

The RW Series vaporizer consists of a vertical ASME rated pressure vessel which is submerged in a water bath. The water is heated by a gas fired burner which consumes a small amount of vapor from the vessel to develop the heat required for vaporization.

As liquid enters the vessel, it begins to vaporize, absorbing the heat stored in the water causing its temperature to decrease.

The operating temperature switch monitors water temperature and signals the gas control valve to fire the burner when water temperature drops below set point (175° F).

The circulating pump keeps the water and glycol properly mixed and assists in heat transfer by circulating the water throughout the tube, eliminating hot spots.

Ransome Model RW100 uses a mechanical liquid inlet valve that is actuated by a stainless steel ball located inside the vessel. If the liquid level rises above the inlet connection, the float will lift off the inlet valve allowing it to close, stopping the liquid flow. Once the liquid drops, the valve will re-open.

Ransome Models RW180 thru RW900 use an external float switch and electrically operated solenoid valve to stop the liquid flow. Once the liquid drops to a safe level, the float switch will reopen the valve.

Part #	Gallon/hr	CF/hr.	Millions of BTU/hr.	Shipping Weight (lbs.)
RW100	100	3645	9.16	450
RW180	180	6561	16.49	750
RW360	350	13122	32.98	1390
RW540	540	19683	49.46	1950
RW720	720	26244	65.95	2510
RW900	900	32805	82.44	3070

Units maybe paralleled to achieve greater capacities.

Waterbath Vaporizer - Horizontal

ID Series - Ransome

The industry's most complete line of large-capacity LP-Gas vaporizers combine safely and reliability. Ransome ID Series water-bath immersion tube vaporizers range in size from 500 to 10,000 gallons per hour propane capacity to produce the precise amount of vapor for your industrial or commercial LP-Gas requirement.

Ransome ID Series vaporizers are ideally suited for lumber kilns, aggregate and gravel or grain dryers, heat treating furnaces, industrial boilers and heating equipment, stand-by fuel systems, peak shaving plants, food drying and processing plants, and any operation requiring an uninterrupted, reliable supply of LP-Gas vapor. All models are fully automatic, designed for unattended use in all climates.

Part #	Gallon/hr	CF/hr.	Millions of BTU/hr.	Shipping Weight (lbs.)
ID500	500	18.3	45.8	4,500
ID750	750	27.5	68.8	5,800
ID1000	1,000	36.6	91.7	6,450
ID1500	1,500	54.9	138	9,200
ID2000	2,000	73.3	183	15,000
ID2500	2,500	91.6	229	17,000

Direct-Fired LPG Vaporizer

DF Series - Algas-SDI

- Simple to Install - small & lightweight with only two piping connections required for installation.
- No electricity required.
- Steady gas supply over a broad temperature range.
- Sturdy all weather construction provides for maximum durability and resistance to the elements and eliminates the need for a shelter.
- Easy access to operating controls.
- Capacity control valve included on standard unit.
- Versatile modular construction allows additional vaporizers to be added to the system as demand grows.
- Operates at low temperatures.
- Capacity remains the same for propane or any LPG Supply.
- Complete with all operating and safety controls.
- Includes 3/4" inlet strainer with all models.
- Design pressure 250 psig.

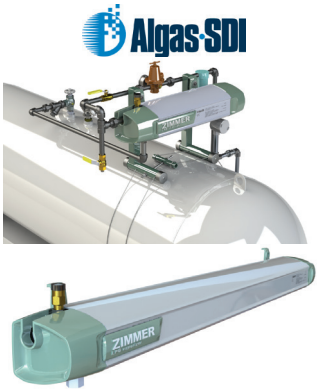
Part #	GPH Propane	Millions of BTU/ hr.	Shipping Weight (lbs.)	Inlet Connection	Outlet Connection
40/40H	40	3.6	170	3/4" FNPT	1" FNPT
80/40H	80	7.2	250	3/4" FNPT	1" FNPT

Common Repair Parts - Algas Direct Gas-Fired LP Gas Vaporizer

Part #	Description
ALG-41073	Thermostat Control Valve 9 Volt
60681	Knurled Screw 6-32 x 1/2"
40449	Pilot Assembly Kit for 160H
ALG-3-0013	Pilot Orifice and Thermocouple Kit
37503	Re-Igniter 9 Volt Module
ALG-41021	Pilot Assembly 80/40H New Style Post

Small Electric Vaporizer

Zimmer Series - Algas-SDI



Features:

- Simple, wall mount installation or tank mount with optional tank mounting kit.
- One model tolerates 100-240 volts AC or DC.
- Explosion-proof design allows for limited space installation.
- Self limiting heating elements require no additional electrical controls or thermostats.
- Metal to metal inverted valve seat prevents clogging.
- Light weight and easy to handle.
- Easy, low cost installation.
- Injection molded outer plastic shell with anti-static ground.
- Thermodynamic control valve modulates LPG or propane flow to ensure a minimum level of superheat.
- Reliable, very few parts to maintain or fail.
- Lower maintenance requirements than any other vaporizer.
- Replaceable heaters.
- Add more Zimmer vaporizers with no special parts needed.
- Non UL/CE marked units are supplied standard with factory explosion-proof electrical seal.
- UL/CUL/Demko Approved. CE and ATEX marked. Pressure Equipment Directive - SEP.

Part #	GPH Propane	Millions of BTU/hr.	Shipping Weight (lbs.)
Z40P	20	1.82	55
Z100P	50	4.5	145
Z150P	75	6.8	145

Waterbath Vaporizer - Vertical

Aquavaire Series - Algas-SDI

- Meets the design requirements of NFPA Pamphlet 58 for gas fired waterbath vaporizers.
- The LPG heat exchanger is designed and constructed to conform with ASME Pressure Vessel Code, Section VIII, Division 1.
- All wiring, controls, electrical components, and their installation comply with recognized standards defined in NFPA 58 and 70.
- Industrial duty fixed air forced draft power burner provides optimum exhaust stack temperatures and fast response to load changes.
- Float activated high LPG liquid level shutdown switch.
- LPG heat exchanger design pressure rating: 250 psig at 650°F (17.6 kg/cm2 at 343°C).
- Minimum 15°F 8.4°C!. Superheat @ 100% capacity.
- Water level sight gauge.
- Powder coated enclosure for durability with fully insulated waterbath for greater efficiency.
- Lifting lugs provided for ease of field installation.
- Water circulation pump standard on all models to eliminate thermal stratification and increase vaporizer efficiency.
- Electronic flame safeguard assures positive and safe ignition.
- Two electronically operated main fuel safety shutoff valves in gas train.

Part #	Gallon/hr	Millions of BTU/hr.	Shipping Weight (lbs.)
Q320V	320	29.1	1,770
Q480V	480	43.7	2,025
Q640V	640	58.2	2,690
Q800V	800	72.8	2,900
Q960V	960	87.4	2,900

Single Core Electric Vaporizer

Torrexx Series - Algas-SDI

The standard Torrexx is a single core, dry, electric vaporizer. No start/stop switches are used. When power is applied, the vaporizer is ON and ready for operation within seconds!

Heating elements are cast “in-situ” in the aluminum core. Two thermocouples housed in a common sheath, directly control normal operation and provide over-temperature protection. Operational set-points are factory set, however, field adjustments can be performed. Fusible links installed in the Control System Housing provide additional over-temperature protection.

Torrexx is available in all common voltages. Explosion proof designs are available to meet either Class I, Division 1, Group D (per NFPA Pamphlet 70) or, ATEX marked to comply with CE type Zone I applications. Either design allows Torrexx to be installed adjacent to a tank or building with no minimum separation requirement.

- 98% thermal efficiency
- Corrosion-free
- Simple and compact
- No water-glycol
- Liqui-SAFE™ Valve
- Heavy-duty contractor or hermetic relay
- Temperature controller is simple to replace
- Easily fits inside cabinet
- Thermocouple temperature sensor
- Auto-restart after power interruption

Part #	Gallon/hr	Millions of BTU/hr.	Shipping Weight (lbs.)
TX25	12.5	1.1	130
TX50	25	2.2	130
TX100	50	4.5	135
TX160	80	7.2	145
TX240	120	10.9	170
TX320	160	14.5	180

Packaged Natural Gas Replacement System

QM Series

The Algas-SDI QM natural gas replacement system is a combination gas fired waterbath LPG vaporizer and atmospheric venturi LPG/air mixer. All QM models feature an Eclipse Combustion ThermAir forced draft burner and Algas-SDI optimized venturi mixers. Operation of these units has been proven in -40 F climates. PLC controls with an easy to use operator interface are provided in a temperature controlled enclosure to ensure long-term reliable operation. A “Smart-Start” cold start feature automatically senses and controls the inlet propane pressure to make sure only vapor is fed to the burner until the bath is warm enough for full vaporization. When the bath has reached operating temperature an output is switched by the PLC that turns on the LPG pump (STABI-LAIRE). A maintenance program tracks the hours used, venturi cycles, and burner cycles to allow the user to schedule service accordingly. Flow totalization is also provided for convenience.

Part #	Mixed Gas Pressure	Min. LPG Pressure	Number of Venturi’s	Vaporizer Model	Shipping Weight (lbs.)	Required Accumulator Tank Capacity (gallons)
QM84-8	8	90	6	Q960V	3,100	240
QM100-8	8	73	4	Q1120V	3,900	500
QM125-8	8	73	5	Q1375V	3,900	500

1. Other models and configurations available.
2. Capacity is based on a nominal mixed gas gross heating value of 1450 BTU/SCF ± 5% with commercial grade propane. Actual capacity and mixed gas heating value may vary slightly base on installation and operating conditions.
3. Delivery pressures shown are valid up to 2,000 ft elevation. Contact Gas Equipment Company for information regarding applications at higher elevations.
4. Various voltage available on request. Contact factory for additional information.
5. Capacities are based on 100% propane. For butane models, contact Gas Equipment Company.

Flameless Catalytic Tank Heater

Second Sun Series - Algas-SDI

Second Sun™ is a flameless catalytic tank heater designed to safely and efficiently augment natural vaporization in propane, LPG and anhydrous ammonia storage tanks.

Key Points.
- Safe.
- No flame.
- Simple to install.
- No AC power.
- Self-contained. Meets hazardous location requirements

Catalytic heating is a flameless process that involves chemical reactions aided by a catalyst. The primary byproduct of this catalytic process is heat. Second Sun emits this heat against the surface of the tank as infrared waves similar to a radiant heater. This warm, low intensity heat mimics the energy from the sun. Since catalytic heating is flameless, Second Sun meets hazardous location requirements.

Part #	Heat Input	Added Vaporization to Tank	Mounts to	Tank Diameters	Unit Weight (lbs.)	Shipping Weight (lbs.)
SS-30	30,000 BTU/hr	2.2 MMBTU/h @ -20°F	1,000-12,000 US Gal Tanks	41” - 84”	114	141
SS-10	10.000 BTU/h	0.5 MMBTU/h @ -20°F	500-3,900 US Gal. Tanks	37” - 41”	42	60

Maintenance Checklist

Basic Vaporizer Maintenance Checklist Items

A clean and tested vaporizer will operate more efficiently, SAFELY and with longer life.

Thermostat Operation:
- Did burner(s) cycle on?
- Did the burner(s) & pilot extinguish after a short period of time when turned off?

Thermocouple:
- Clean and operating correctly

Pilot Assembly:
- Pilot assembly inspected for corrosion?
- Pilot orifice cleaned?

Burner Assembly:
- Burner tips and orifices cleaned?

Relief Valve:
- Inspected for corrosion?
- Is rain cap present?
- Manufacture date checked for replacement?

Drip Leg:
- Drained of all contaminants and oils?

Vaporizer Tubing:
- All tubing checked for pitting or flaking and blown free of debris?
- All Fittings tightened?

Heat Exchanger:
- Flue inspected?
- Debris removed from and around heat exchanger?
- Heat exchanger head thickness tested?
- Heat exchanger drained of heavy ends?

Vaporizer Cabinet:
- Are door, enclosure, inlet louvers and rain caps cleared of debris such as grain chaff, bird nests and other combustible materials?

Line Sizing Chart for Liquid Propane

Based on Pressure Drop of 1 PSI

To Use Chart
1. Having determined the required flow at point of use, locate this flow in the left hand column. It this fall between two figures, use the larger of the two.
2. Determine total length of piping required from source to point of use.
3. Read across chart from left (required flow) to right to find the total length which is equal to or exceeds the distance from source to use.
4. From this point red up to find the correct size of pipe required.

Liquid Propane Flow GPH	Iron Pipe (Feet)															
	1/4"		3/8"		1/2"		3/4"		1"		1-1/4"		1-1/2"		2"	
	Schedule		Schedule		Schedule		Schedule		Schedule		Schedule		Schedule		Schedule	
	40	80	40	80	40	80	40	80	40	80	40	80	40	80	40	80
10	729	416														
15	324	185														
20	182	104	825	521												
40	46	26	205	129	745	504										
60	20	11	92	58	331	224										
80	11	6	51	32	187	127	735	537								
100	7	4	33	21	119	81	470	343								
120			23	15	83	56	326	238								
140			15	9	61	41	240	175	813	618						
160			13	8	47	32	184	134	623	473						
180					37	25	145	106	491	373						
200					30	20	118	86	399	303						
240					21	14	81	59	277	211						
280					15	10	60	44	204	155						
300					13	9	52	38	177	135	785	623				
350							38	28	130	99	578	459				
400							30	22	99	75	433	344	980	794		
500							19	14	64	49	283	225	627	508		
600									44	33	197	156	435	352		
700									32	24	144	114	320	259		
800									25	19	110	87	245	198	965	795
900									19	14	87	69	194	157	764	630
1000									16	12	71	56	157	127	618	509
1500											31	25	70	57	275	227
2000											18	14	39	32	154	127
3000											8	6	17	14	69	57
4000													10	8	39	32
5000															25	21
10000															6	5