

VAPORMAN 125



KIT NAME

PART NUMBER

KIT VAPORMAN 125

20680917

KIT VAPORMAN-CARBOMAX 1000

20749857

KIT VAPORMAN 125 PERMA

20749856

P/N 20749848 REV 0

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SECTION 1

PREFACE

General

The VaporMan 125 operating manual is designed to be used in conjunction with all VaporMan 125 models and kits provided by Chart. This manual contains information regarding the safe operation and handling of liquid carbon dioxide with the cylinder and the vaporizer manifold system. It should be thoroughly read and understood by anyone that operates the equipment. If there are any questions regarding the operation of the VaporMan 125, contact Chart Technical Service at:

Chart
407 Seventh St. NW
New Prague, MN 56071
(800) 400-4MVE

This manual is intended to provide the user with all the necessary information needed to install, operate and maintain the VaporMan 125.

The schematic, piping illustrations and parts list shows a reference number for each component used in the set-up. The reference numbers may refer to the same functional component between the various models. The reference numbers will be used throughout this manual to draw specific attention to a component while describing its function, operation, or repair.

Section 2 discusses the warranty of the VaporMan 125.

Section 3 discusses the general features of the tank and the theory of operation.

The safety requirements for operating the vaporizer manifold including the handling and transporting cryogenic products are shown in Section 3. Use this safety section as a "Safety Check-List" each time the equipment is being used.

Section 4 and 5 shows the schematics and specifications for the VaporMan 125.

Section 6 gives a step by step procedure for the basic operation of the VaporMan 125 and the tanks involved.

Section 7 and 8 indicate how to troubleshoot, maintain and repair the VaporMan 125.

Section 9 provides you with an explosive view of each how to plumb the Carbomax 750s and prepare the VaporMan for utilization.

Terms

Throughout this manual safety precautions will be designated as follows:

WARNING - Description of a condition that can result in personal injury or death.

CAUTION - Description of a condition that can result in equipment or component damage.

NOTE - A statement that contains information that is important enough to emphasize or repeat.

Abbreviations

The following abbreviations and acronyms are used throughout this manual:

CBM	Center Back Mount Gauge
CGA	Compressed Gas Association
FPT	Female Pipe Thread
MPT	Male Pipe Thread
NPT	National Pipe Thread
NR	Not Required
ODT	Outside Diameter Tube Size
PB	Pressure Builder
P/N	Part Number
PPM	Parts per Million
PSI	Pounds per Square Inch
PSIG	Pounds per Square Inch (Gauge)
SCF	Standard Cubic Feet
SCM	Standard Cubic Meters
SS	Stainless Steel
NM ³	Normal Cubic Meters

SECTION 2

WARRANTY

Warranty Policy

Chart Industries ("Chart") warrants to the Purchaser that the MVE Bulk CO₂ Storage Systems equipment (the "Equipment") shall be free from any defects in workmanship and materials; provided, however, that this warranty shall be limited to Equipment found to be defective within a period of one (1) year from initial use or eighteen (18) months from the date of shipment, whichever expires first, except that parts sold as a spare or for replacement are warranted for ninety (90) days from the date of shipment. Chart warrants that its services will be performed in a professional and workmanlike manner. All Chart services are warranted for a period of ninety (90) days from the date of their completion.

Purchaser agrees that as a pre-condition to a Chart liability hereunder, Purchaser or its appointed agents shall fully inspect all Equipment immediately upon delivery and shall give Chart written notice of any claim or purported defect within ten (10) days after discovery of such defect.

As a further pre-condition to any Chart liability hereunder, an approved Chart service company must supply both part replacement and labor and Purchaser must strictly adhere to the Warranty Claims Procedure set forth below. Chart's sole and exclusive liability under this limited warranty is to the original Purchaser only and is, at Chart's sole option: (1) repair or replacement of the defective Equipment or parts thereof; or (2) refund the net purchase price of the defective Equipment or parts thereof paid by the original Purchaser; or (3) in the case of nonconforming services, provide equivalent services or refund the net price paid by the original Purchaser for such services. Chart shall not be responsible for providing working access to the defect, including disassembly and reassembly of Equipment or for providing transportation to and from Chart's repair or factory facility, all of which shall be at Purchaser's risk and expense.

This limited warranty does not apply to Equipment that Chart determines to have been caused by the effects of normal wear and tear, erosion, corrosion, fire, flood, explosion or other excessive external forces, misuse, abuse, negligence or accident. Alterations or repairs by a party other than those designated and approved in writing by Chart, or installation, storage, maintenance or operation of such Equipment in a manner inconsistent with Chart accepted practices, normal operations instructions, specifications and drawings, or outside the specified design conditions, unless pre-authorized in writing by Chart, shall void this limited warranty. Modifications in any way to the Equipment without Chart's prior written approval shall render this warranty void. This limited warranty does not apply to Equipment comprised of material provided or a design stipulated by Purchaser or to Equipment purchased used.

Repairs or replacements made pursuant to warranty shall not renew or extend the applicable original warranty period; provided however, that any such repairs or replacement of Equipment or parts thereof shall be warranted for the time remaining in the original warranty period or thirty days, whichever is longer.

Individual parts replacements under warranty and with a component list price less than \$50.00 will be replaced at no charge. Individual component costs exceeding \$50.00 that are replaced under warranty will be invoiced to the Purchaser and the Purchaser will be issued credit based on results of Chart's evaluation of the returned component(s). The Return Material Authorization (RMA) process must be initiated prior to shipment of any replacement parts.

Chart is not liable for component replacement labor exceeding 2 hours for actual replacement and 2 hours travel time (4 hours @ \$65.00/hour maximum).

CHART SPECIFICALLY MAKES NO WARRANTIES OR GUARANTEES, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, OR WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OR TRADE, WHICH ARE ALL EXPRESSLY DISCLAIMED, OTHER THAN LIMITED WARRANTIES EXPRESSLY SPECIFIED HERIN.

IN NO EVENT SHALL CHART BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS, LOST OPPORTUNITY, LOSS OR USE OF THE EQUIPMENT, CO₂ LOSS, COST OF CAPITAL, COST OF SUBSTITUTE EQUIPMENT, DOWNTIME, COSTS, COSTS OF DELAYS NOR FOR ANY PENALTIES, WHETHER ANY SUCH CLAIM FOR THE SAME IS ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE. CHART'S LIABILITY FOR ANY SUCH CLAIMS WHETHER IN CONTRACT, WARRANTY, NEGLIGENCE, TORT, STRICT LIABILITY, OR OTHERWISE OR FOR ANY LOSS OR DAMAGE ARISING OUT OF, CONNECTED WITH, OR FROM ANY DESIGN, SALE, INSTALLATION, OPERATION OR USE OF THE EQUIPMENT OR PERFORMANCE OF ANY SERVICES RENDERED BY CHART, SHALL IN NO EVENT EXCEED THE PURCHASE PRICE PAID TO CHART BY PURCHASER FOR THE SPECIFIC EQUIPMENT OR PART THEREOF OR FOR THE SERVICES GIVING RISE TO THE CLAIM. PURCHASER AGREES TO DEFEND, INDEMNIFY AND HOLD CHART HARMLESS FROM ANY THIRD PARTY CLAIMS ARISING OUT OF THE USE, SALE, OR LEASE OF THE EQUIPMENT.

This Warranty Policy is not intended to replace or supersede the warranties, limitation, exclusive remedy and disclaimers set forth in Chart's Terms and Conditions of Sale. In the event of a conflict between Chart's Terms and Conditions of Sale and this Warranty Policy, this Warranty Policy shall control.

Warranty Claims Procedure

All warranty claims must be previously authorized by: Chart, Inc.

Telephone, electronic or written approval may be obtained by contacting Chart's Customer Service Department at:

-Telephone: 800-247-4446
800-253-1769

-Facsimile: 952-758-8275

Or write to:

Chart Inc.
MVE Beverage Systems
Storage Systems Division
407 Seventh Street NW
New Prague, MN 56071-1000
USA

SECTION 3

SAFETY

While Chart equipment is designed and built to the most rigid standards, no piece of mechanical equipment can ever be made 100% foolproof. Strict compliance with proper safety and handling practices are necessary when using a cryogenic manifold device or other compressed gas equipment. We recommend that all our customers re-emphasize safety and safe handling practices to all their employees and customers. While every possible safety feature has been designed into the VaporMan 125 and safe operations are anticipated, it is essential that the customer carefully read and fully understand all **WARNING** and **CAUTION** notes listed in the safety summary and enumerated below.

The system described in this manual holds, vaporizes, and dispenses carbon dioxide (CO₂) gas under pressure. All persons using this equipment must read and understand the operation and safety information contained in this manual and must be adequately trained to operate this equipment.

WARNING: CO₂ gas is a colorless, odorless, tasteless gas that displaces oxygen and does not support life. The gas is difficult to detect without assistance of special equipment. Avoid breathing or contacting CO₂ in gas, liquid or solid form.

EXPOSURE TO CONCENTRATIONS OF MORE THAN 3% IN AIR CAN CAUSE UNCONSCIOUSNESS, SERIOUS INJURY, OR DEATH. Even low concentrations of CO₂ can cause:

- Dizziness, headaches, nausea, or disorientation
- Increased respiration or heart rate
- Shortness of breath or rapid asphyxiation

CO₂ is heavier than air and can collect in low areas such as basements, stairwells, and confined spaces. Avoid entry into areas, where CO₂ leaks or high concentrations of CO₂ are suspected. Enter those areas with caution only after they have been thoroughly ventilated.

WARNING: Before removing cylinder parts or fittings, completely empty the liquid cylinder of liquid and release the entire vapor pressure in a safe manner. External valves and fittings can become extremely cold and may cause painful burns to personnel unless properly protected. Personnel must wear protective gloves and eye protection whenever removing parts or loosening fittings. Failure to do so may result in personal injury because of the extreme cold and pressure in the cylinder.

CAUTION: Use only replacement equipment, which is compatible with carbon dioxide and has been cleaned for oxygen use. Do not use regulators, fittings, hoses, etc., which have been previously used in a compressed air environment. Similarly, do not use oxygen equipment for compressed air. Failure to comply with these instructions may result in serious damage to the liquid cylinder.

CAUTION: The VaporMan 125 must be secured to the floor. Failure to comply with this procedure may result in damage to the unit.

Handling the VaporMan 125

The VaporMan 125 is shipped on a pallet. The preferred handling method is a forklift that lifts the pallet and places it. However, the permanent placement of the VaporMan 125 can be done by hand. The VaporMan 125 comes with four holes in the base plate in order to secure the unit to the floor. The VaporMan 125 is rather light and can be moved by two people with ease. Be careful when moving the VaporMan 125, as the vaporizer fins can be sharp.

Inhalation of CO₂ Gas

If exposed to CO₂ gas, remove yourself or the individual to fresh air immediately. If the subject is not breathing, provide a means of artificial respiration. If there is difficulty breathing, an oxygen supply will be beneficial. Call a physician or paramedics for help.

Contact with Dry Ice

If exposed to dry ice, stop exposure at once. Do not pour water on wound. Seek immediate medical attention.

Spill or Leak Procedures

In the event of a CO₂ leak or spill, evacuate all personnel from the affected area. Ventilate the exposed area thoroughly before re-entering. Do not forget to ventilate any low areas, such as a basement or stairwells that may have collected Carbon Dioxide.

Disconnecting Precautions

Always wear gloves and protective eyewear when disconnecting liquid CO₂ fittings and hoses. After using the VaporMan 125 make sure all of the valves supplying the VaporMan 125 are closed. Slowly remove the connection fittings and hoses to relieve pressure from the lines and the VaporMan 125.

SECTION 4

INTRODUCTION

System Objective

The VaporMan 125 is designed to combine two Bulk Carbon Dioxide Tanks or one Carbon Dioxide Perma-Cyl on a reliable, economical basis. The unit is intended to fulfill the high flow requirements of distributors for micro-breweries, stadium applications, industrial applications, and various other high flow applications.

The VaporMan 125 comes with all of the necessary fittings to connect two Carbomax 750s to the unit. A separate kit can be bought along with the VaporMan 125 for two Carbomax 1000s. There is also a specific part number for a VaporMan 125 Perma which is for Perma-Cyl tank applications.

System Overview

The VaporMan 125 consists of two vaporizers, one parallel and one series, and a manifolding sub-assembly. The CO₂ enters the manifolding section and is combined before being routed to the parallel vaporizer. The parallel vaporizer vaporizes the CO₂ into cold gas. The cold gas then enters the series vaporizer, which warms the cold gas to an adequate temperature before being sent downstream to equipment.

The design and construction of the VaporMan 125 is aimed at building the most efficient and affordable vaporizing unit available. Engineered as a complete high flow vaporizing system, the VaporMan 125 can be coupled with a high flow regulator to achieve flow rates of 125 lbs/hr. The manifolding section of the VaporMan 125 makes installation simple and straight forward. The unit is essentially a plug and play assembly.

The vaporizers are connected in a specific order and the vaporizer selection was intentional. The parallel vaporizer is used to vaporize the liquid into cold gas. The gas is then sent through the series vaporizer in order to warm the gas and prepare it to be used downstream.

The VaporMan 125 is protected from over-pressurization by a primary safety relief valve set at 450 psig. This has been included for the time when the VaporMan 125 may get mistakenly isolated or if a blockage occurs.

SECTION 5

GENERAL DESCRIPTION

VaporMan 125 Components

The components on the manifold section can be used in three ways:

- Two Carbomax Tanks
- One Carbomax Tank
- One Perma-Cyl

The manifold section provides 4 connections, a pressure gauge, and an economizer regulator. The manifold section is mounted to a panel that is conveniently located for ease of hook up. The connections are standard 5/8" ODT 45deg flare. This is the fitting needed for the standard fill hoses that are used on all beverage tank installations.

Vaporizing Circuit

The vaporizing circuit includes two vaporizers. One vaporizer is a parallel ambient vaporizer and the other is a series ambient vaporizer. The vaporizers are connected in order to maximize the vaporization of the product. The parallel vaporizer is used to quickly vaporize liquid into gas. The series vaporizer is used to warm the gas, not vaporize liquid. Each of the vaporizers has a 500 psi MAWP.

Safety Pressure Relief Section

The safety relief is a 450 psi pressure relief device. This is to relieve pressure in the event liquid were to be trapped in the vaporizers or in case of fire.

Tank Connections

Multiple fittings and components are included with the VaporMan 125 Kit. All the necessary hoses, check valves, caps, and connections are included for two Carbomax 750 tanks. The check valves included ensure that no water or foreign product compromises the carbon dioxide tanks. The bushings and connectors are required for making the right connections between the tank and the VaporMan 125.

Option Kits

For those who have one or two Carbomax 1000s or who have one Perma, there are two optional kits that will need to be purchased as well. The kit names are KIT CARBOMAX VAPORMAN 1000 and KIT VAPORMAN 125 PERMA. Each of these kits includes the hoses and fittings needed in order to use the VaporMan 125.

High Flow Regulator

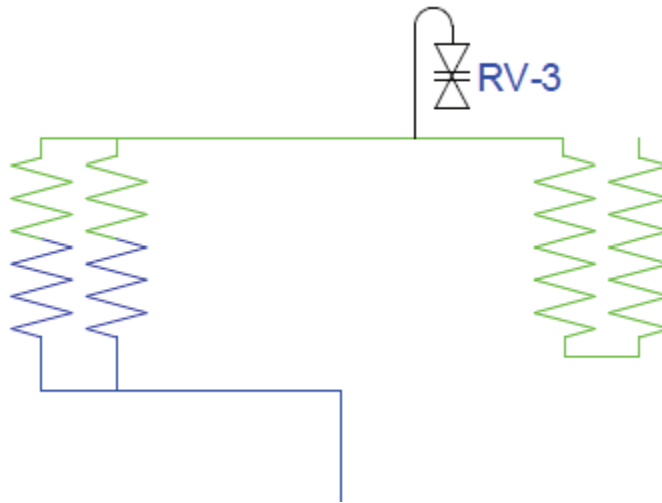
The VaporMan 125 is designed for high flow applications. The final line regulator that is installed on the beverage tanks can be used at flow rates up to 75 lbs/hr. If a higher flow rate is desired- 80 lbs/hr, 100 lbs/hr, or even 125 lbs/hr- the High Flow regulator can be purchased from ChartParts.com, part number 11779806.

SECTION 6

GENERAL ARRANGEMENT and FLOW SCHEMATICS

Flow Schematics and Nomenclature Flow Diagrams

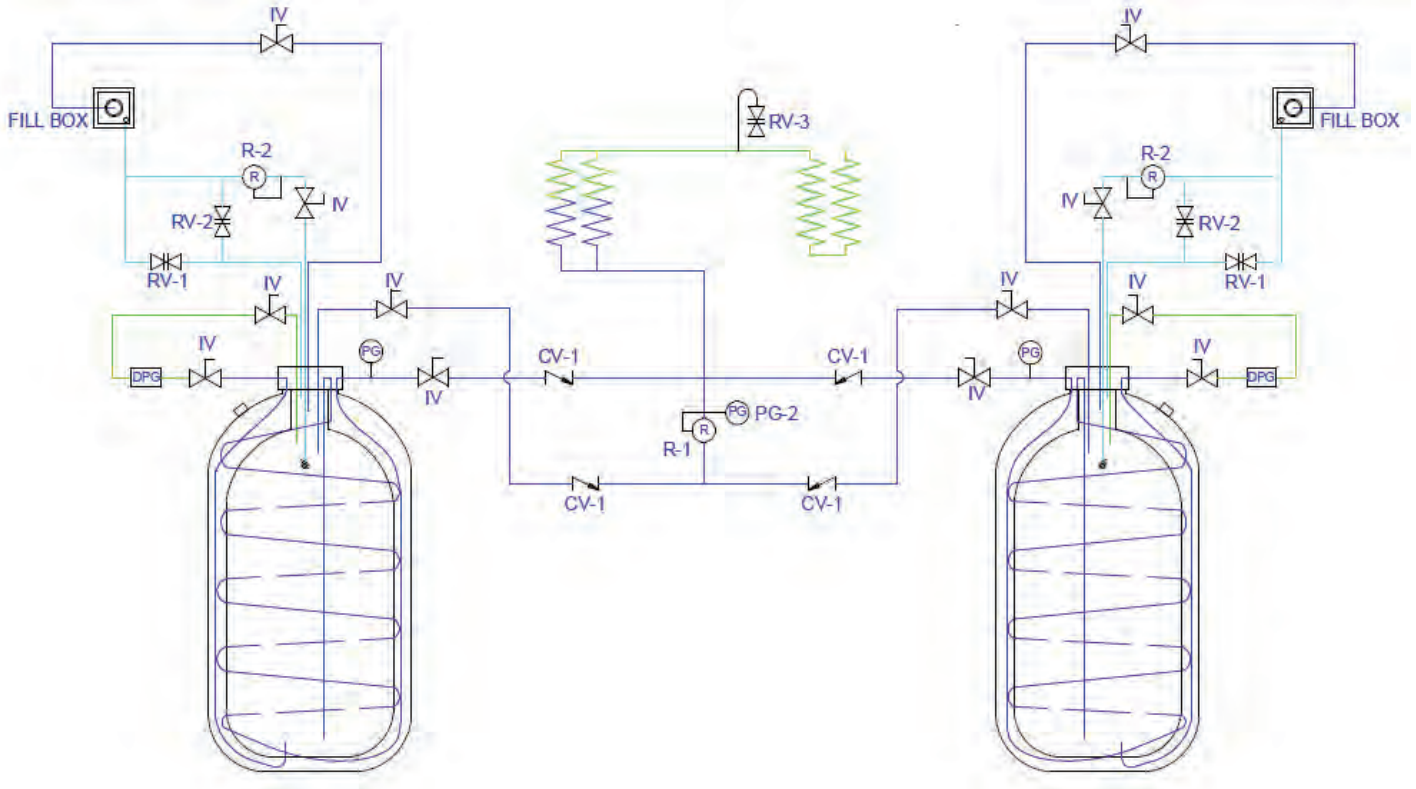
VaporMan 125



Nomenclature (VLCD 950 Single Unit)

NOMENCLATURE		
DESIGNATION	DESCRIPTION	FUNCTION
PG-1	PG 2" DIAL 0-400PSI 1/4" MPT CBM P/N 13321014	PRESSURE GAUGE, TANK PRESSURE, ECON PRESSURE
R-1	REGUALTOR, 250NPT @ 150 PSI ECON P/N 13154842	ECONOMIZER REGULATOR
RV-2	RV BRS 1/2MPT 450PSI P/N 11708451	VAPORIZER RELIEF VALVE

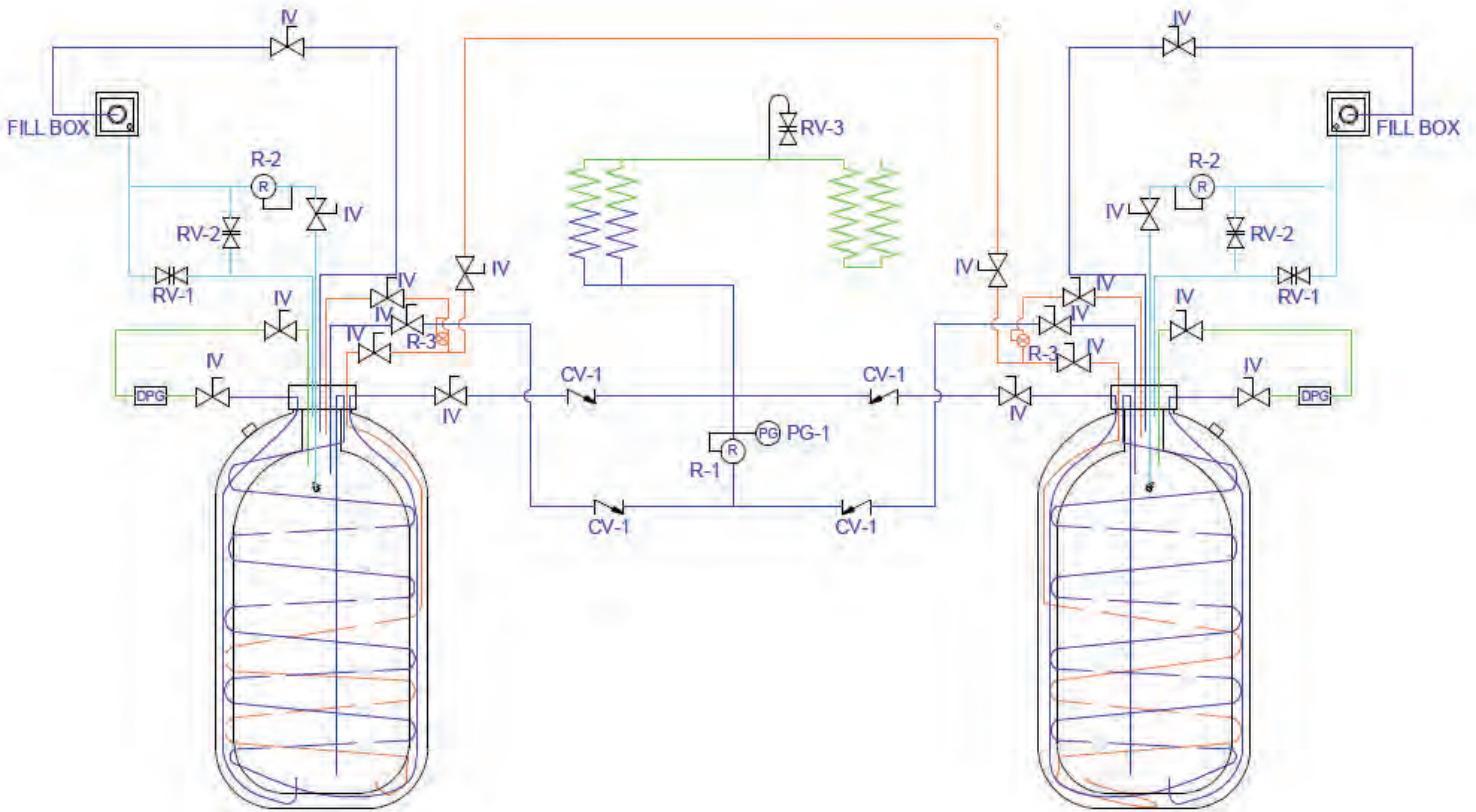
Flow Diagram Carbomax 750s with VaporMan 125



Nomenclature (Carbomax 750 with VaporMan 125)

NOMENCLATURE		
DESIGNATION	DESCRIPTION	FUNCTION
CV-1	VALVE CHECK BRS 1/2FPT*1/2FPT P/N 11051090	CHECH VALVE, PRESENT BACK FLOW
PG-2	PG 2" DIAL 0-400 PSI 1/4" MPT CBM P/N 13321014	PRESSURE GAUGE,PRESSURE AT ECONOMIZER
R-1	REGULATOR , 250NPT @ 150 PSI ECON P/N 13154842	ECONOMIZER REGULATOR
R-2	REGULATOR , 250NPT @200 PSI SF P/N 13154834	SURE FILL REGULATOR
RV-1	RV BRS 1/2MPT 300PSI P/N 11708400	PRIMARY SAFTY RELIEF VALVE
RV-2	RV BRS 1/2MPT 450PSI P/N 11708451	SECONDARY SAFTY RELIEF VALVE
RV-3	RV BRS 1/4MPT 450PSI GENERANT P/N 11193055	VAPORIZER RELIEF VALVE
DPG	DIFF PG 0-50" 1/8"FPT FULL P/N 15096551	DIFF PG,TANK LEVEL GAUGE
IV	VALVE ISOLATION BRS ABCO P/N 20733160	ISOLATION VALVE
PG-1	PG 2" DIAL 0-400 PSI 1/4" MPT CBM P/N 13321014	PRESSURE GAUGE,TANK PRESSURE

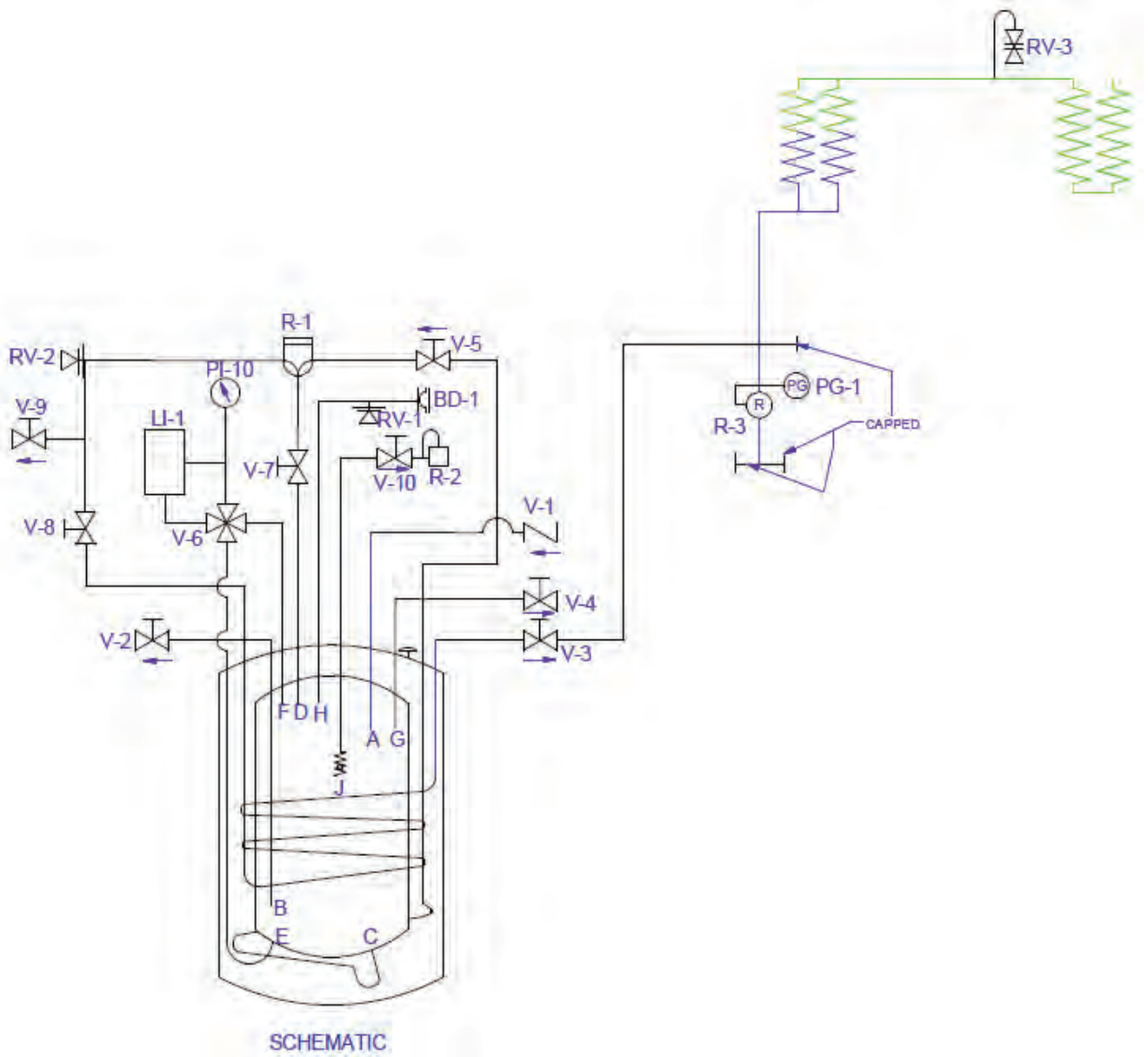
Flow Diagram Carbomax 1000s with VaporMan 125



Nomenclature (Carbomax 1000 with VaporMan 125)

NOMENCLATURE	
DESIGNATION	DESCRIPTION
CV-1	VALVE CHECK BRS 1/2FPT*1/2FPT P/N 11051090
PG-1	PG 2" DIAL 0-400 PSI 1/4" MPT CBM P/N 13321014
R-1	REGULATOR , 250NPT @ 150 PSI ECON P/N 13154842
R-2	REGULATOR , 250NPT @ 200 PSI SF P/N 13154834
R-3	REGULATOR , 250NPT @ 125 PSI PB P/N 14743180
RV-1	RV BRS 1/2MPT 300PSI P/N 11708400
RV-2	RV BRS 1/2MPT 450PSI P/N 11708451
RV-3	RV BRS 1/4MPT 450PSI GENERANT P/N 11193055
DPG	DIFF PG 0-50" 1/8"FPT FULL P/N 15096551
IV	VALVE ISOLATION BRS ABCO P/N 20733160

Flow Diagram Perma-Cyl and VaporMan 125



Nomenclature (Perma-Cyl and VaporMan 125)

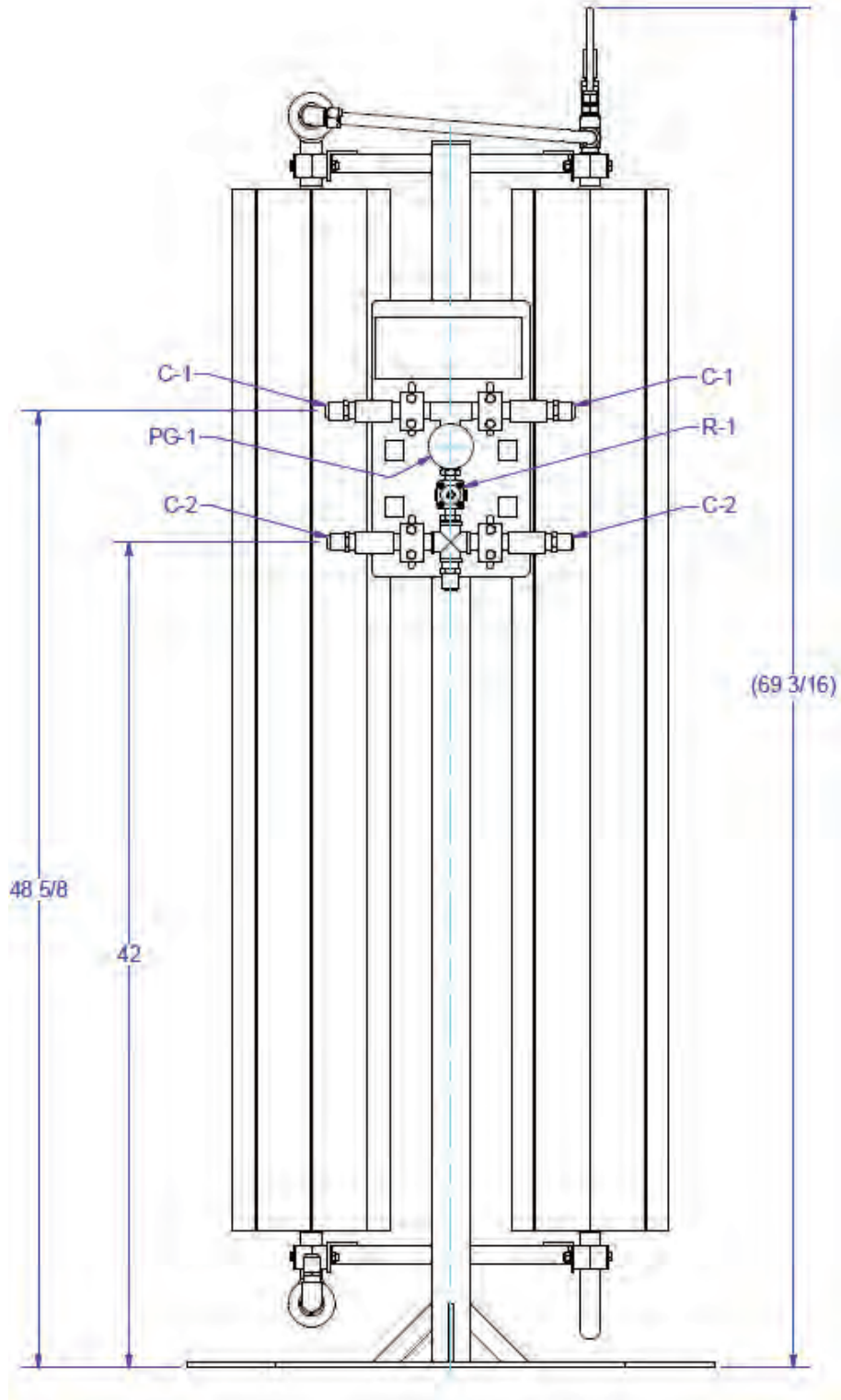
NOMENCLATURE	
Column 1	Column 2
V-1	TOP FILL CHECK VALVE
V-2	LIQUID VALVE
V-3	GAS USE VALVE
V-4	VENT/FULL TRYCOCK VALVE
V-5	PRESS. BLDG. VALVE
V-6	4-WAY VALVE
V-7	REG. ISO VALVE PB
V-8	REG. ISO VALVE ECON
V-9	PB PURGE VALVE
V-10	SUREFILL ISOLATION VALVE
LI-1	LEVEL INDICATOR
PI-1	PRESSURE INDICATOR
R-1	PRESS BUILDING REG.
R-2	SURE FILL REG
RV-1	RELIEF VALVE
RV-2	LINE RELIEF
BD-1	BURST DISC
	PIPING
A	TOP FILL
B	LIQUID W/DRAWAL
C	PRESSURE BUILDING INLET
D	PRESSURE BUILDING OUTLET
E	LIQUID PHASE
F	VAPOR PHASE
G	VENT/FULL TRYCOCK
H	SAFETY CIRCUIT
J	SURE FILL

NOMENCLATURE	
DESIGNATION	DESCRIPTION
PG-1	PG" DIAL 0-400 PSI 1/4" MPT CBM P/N 13321014
RV-3	RV BRS 1/4MPT 450PSI GENERANT P/N 11193055
R-3	REGULATOR .250NPT@150PSI ECON P/N 13154842
R-1	REGULATOR .250NPT@150PSI ECON P/N 13154842

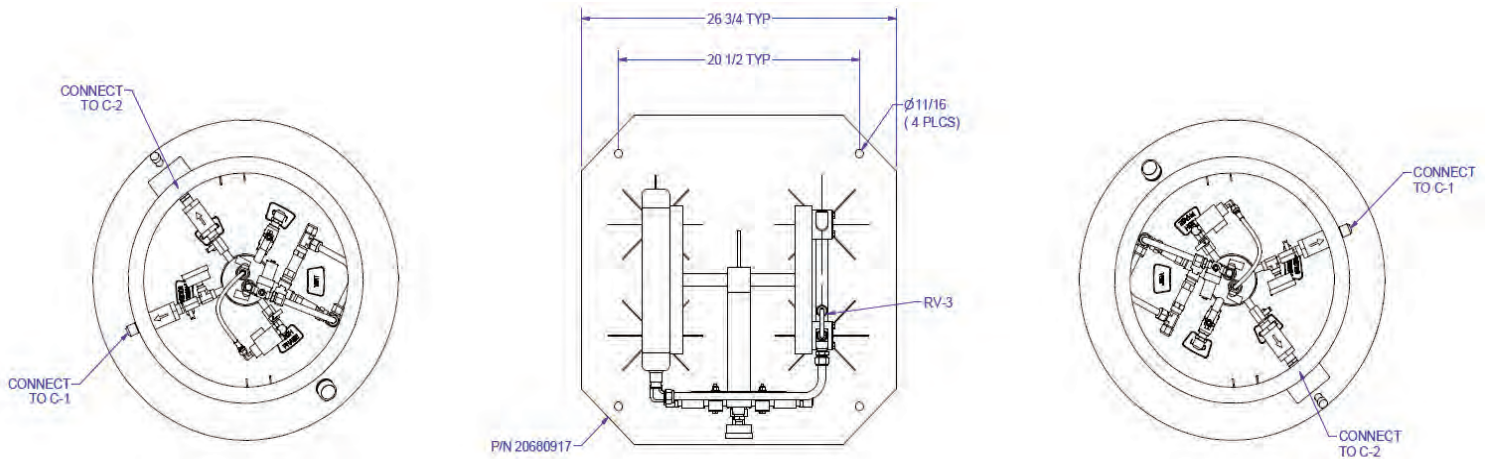
SECTION 7

SET-UP and DIMENSIONS

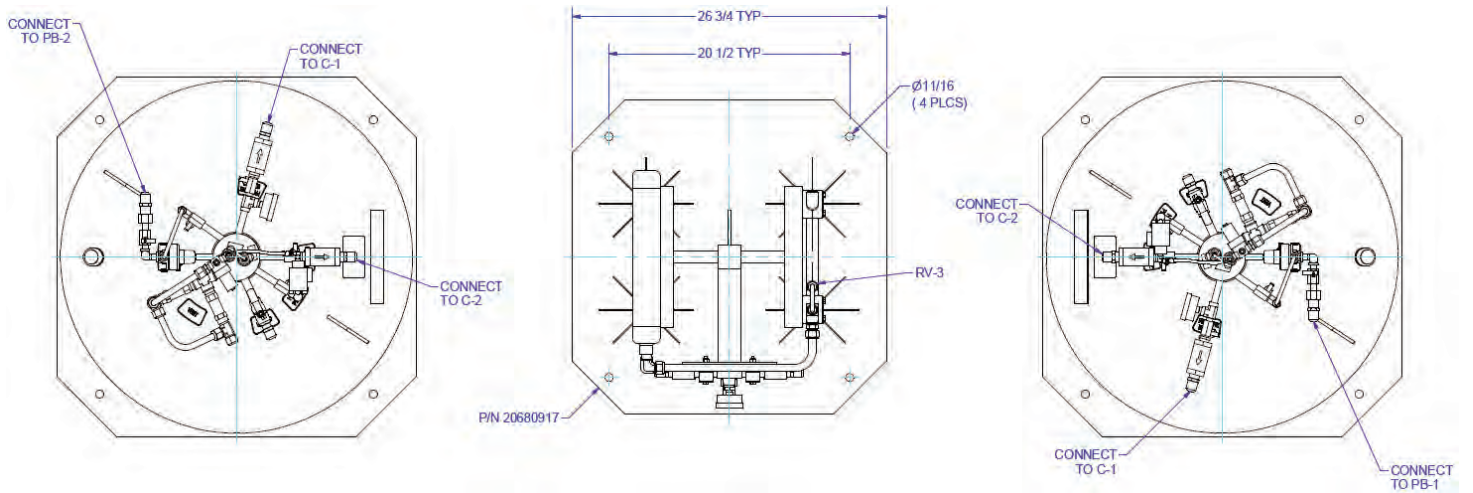
VaporMan 125



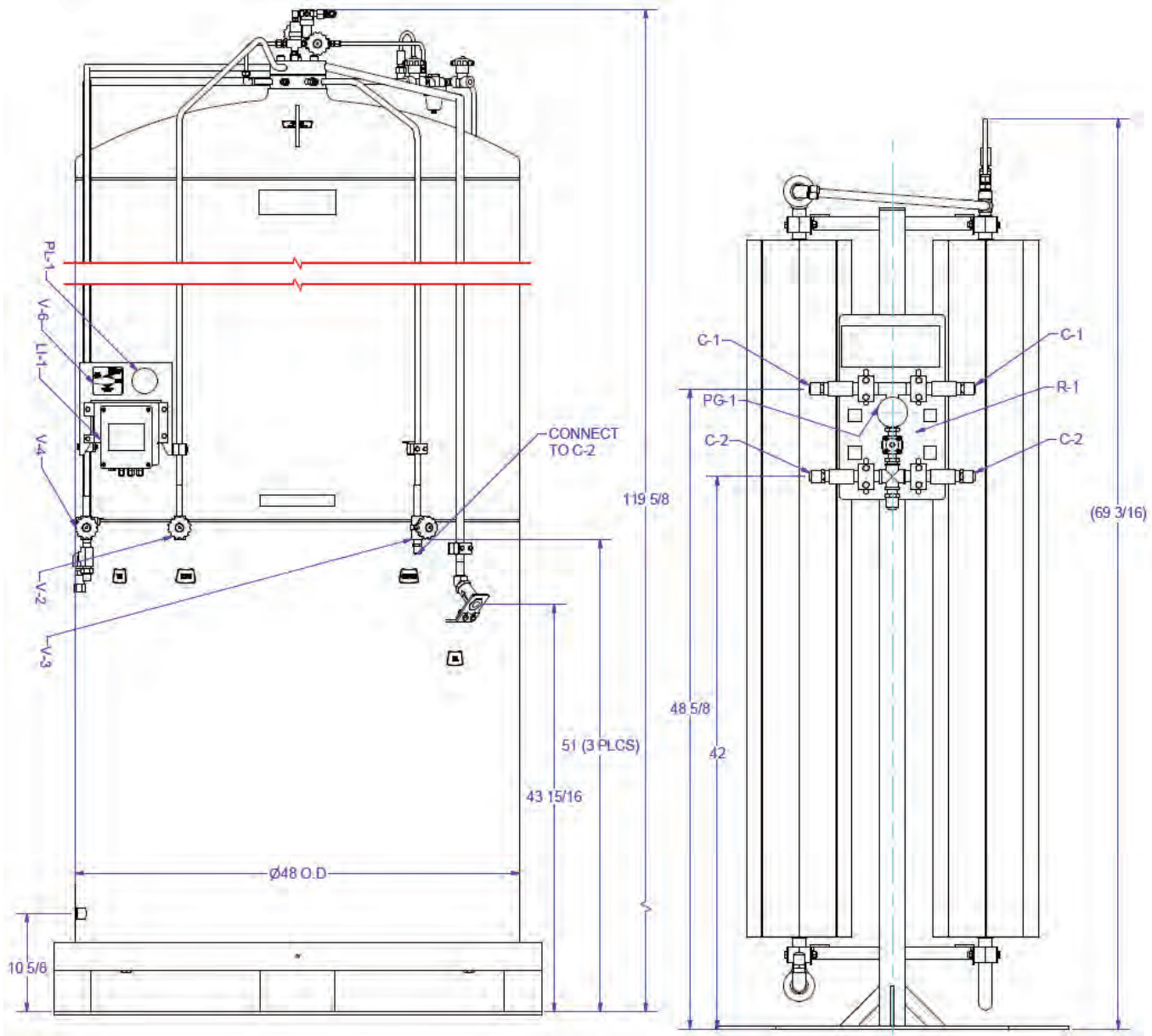
Carbomax 750s with VaporMan 125



Carbomax 1000s and VaporMan 125



Perma-Cyl and VaporMan 125



SECTION 8

OPERATIONS

Initial Inspections

When the tanks and/or VaporMan 125 are first received it should be inspected for shipping damage. Never fill a damaged tank, or use a damaged VaporMan 125.

If the tanks arrive with zero pressure, they should be pressurized and checked for leaks.

Filling Procedures

Before filling the cylinder it should be visually inspected for possible damage or unsuitability for intended use. If damage is detected (e.g., serious dents, loose fittings, etc.), remove the unit from service and conduct the necessary repairs as soon as possible.

It is recommended, that when using two Carbomax 750s or two Carbomax 1000s, that you install two fill boxes. This will help in confirming that both tanks are completely full. If there are no fill boxes, then you can fill the tanks individually. When there are no fill boxes, please make sure you have an adequate way to pipe the vent circuits outdoors in a safe manner.

Installing the VaporMan 125

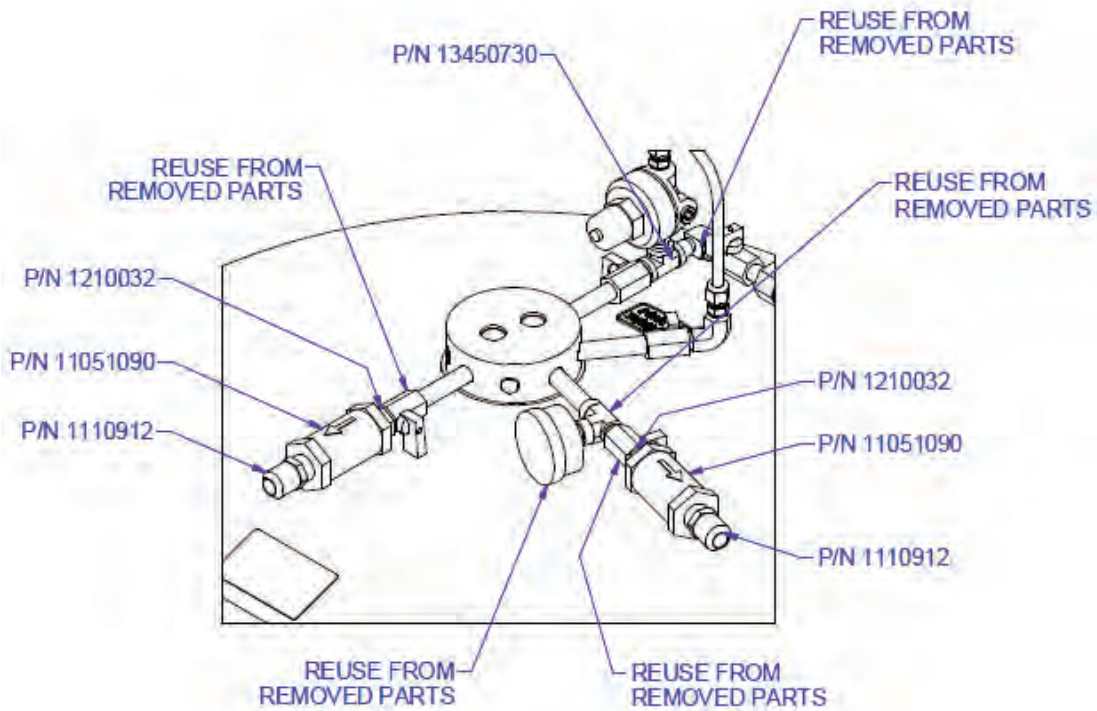
The VaporMan 125 is assembled with a stand and base. The base has a hole in each corner. This will serve as the location for the bolts that will be used to anchor the unit to the floor. The VaporMan 125 should be anchored to the floor in an accessible location and conveniently located for easy connections. A place that has circulation is recommended to aid in melting the ice that might build up on the vaporizers during operation. The VaporMan will then be connected to the tank or tanks in order to be used.

Attention: A video presentation of the installation and instructions for the VaporMan 125 can be found online at <https://www.youtube.com/user/ChartIndustries>

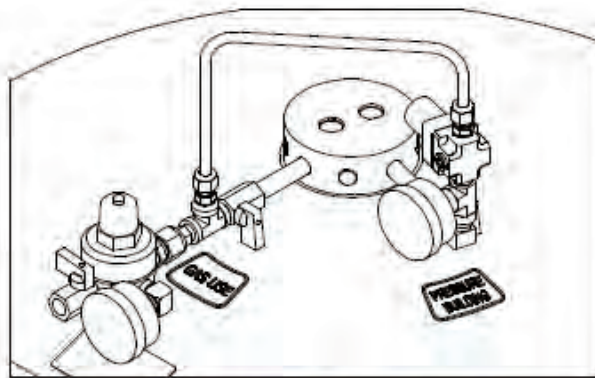
First, there are some parts that must be removed from the two tanks that will be used. Below is a detail of the parts that are to be removed and the parts to be added. The Gas Use and Economizer sections will change on the Carbomax 750s, and the Gas Use, Economizer, and Pressure Building sections will change on the Carbomax 1000s. The parts that are removed may be kept and used in other locations if they are in good condition. Some of the parts to be removed will actually be reused when adding the necessary fittings to connect to the VaporMan 125.

Disclaimer: Please plumb the tanks as we recommend below and do not use any other methods. The plumbing configuration and specific fittings have been tested and proven to work properly. Other methods of plumbing or connecting to the VaporMan 125 must be cleared through Chart before continuing. Chart is not responsible for improperly plumbed tanks or improperly connected VaporMan 125 units. This could lead to issues with the system, damage, or poor performance.

Carbomax 1000



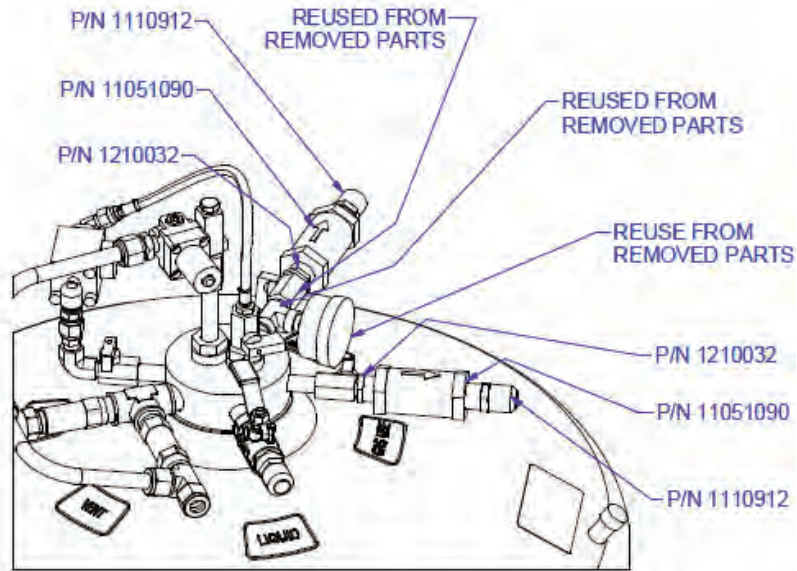
PARTS TO BE ADDED
SCALE 1/4



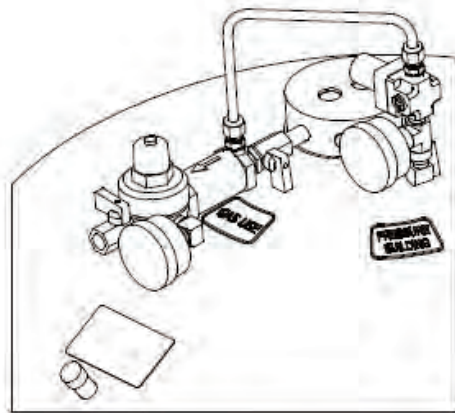
PARTS TO BE REMOVED
SCALE 1/4

As you see above, you will remove the economizing sections, gas use sections, and the pressure building sections. The parts to be reused are shown on top as well as the parts to be added. Below is a picture of the Carbomax 750 tank plumbing.

Carbomax 750



PARTS TO BE ADDED
SCALE 1 / 4



PARTS TO BE REMOVED
SCALE 1 / 4

Connecting to the VaporMan 125

The VaporMan 125 is shipped with caps on the four ports on the manifold. If you are using two tanks, you will need to remove all four caps. If you are only using one tank, only remove the left two caps or the two right caps. The transfer hoses that come with the unit can now be connected to their proper ports. The diagrams on page 14 tell which connection match between the VaporMan 125 and the tanks. The economizing connections on the tanks should be connected to the two top ports on the VaporMan 125. Each of these connections are 5/8" flared fittings that will mate to the transfer hoses. The gas use connections on the tanks should be routed to the bottom two connections on the manifold. Tighten each end of each hose with a wrench. Check for leaks before pressurizing the system.

For a Carbomax 1000, the pressure building circuits must be connected. This allows the tanks to equalize their head spaces. This is an integral part in the success of this set-up. If the head spaces are not connected the tanks may not distribute CO₂ to the VaporMan 125 equally.

The check valves are in place to prevent any back flow into each tank. The check valves also ensure that the tanks equalize and feed the VaporMan 125 equally.

Delivering CO₂ to the VaporMan 125

Once the connections are tightened and the entire unit has been leak checked, the VaporMan 125 can now be used. A regulator should be placed on the downstream side of the VaporMan 125 to reach the desired delivery pressure to your particular application. The regulator can be connected to the VaporMan 125 or placed further downstream to take advantage of more vaporization. The Final Line regulator from one of the tanks may be used, or the high flow regulator P/N 11779806 can be ordered from Chart Parts.

The VaporMan has no isolation valves. Therefore, the VaporMan 125 is operated by opening all of the isolation valves on each tank. The economizing circuit, gas use circuit, and the pressure building circuit (for Carbomax 1000) should all be opened on each tank. The VaporMan 125 will function as an extension of the tanks and will provide vaporized CO₂ for your application.

CAUTION: Once the isolation valves on the tank have been opened pressure should be allowed to escape from transfer hoses before they are completely removed.

SECTION 9

TROUBLESHOOTING

Problem	Probable Cause	Corrective Action
VaporMan pressure is too low or does not build pressure at a sufficient rate	VaporMan 125 or System is leaking	If the pressure does not build and stays at a setting lower than desired, check the VaporMan 125 or downstream for leaks.
	Energy level of liquid in tank is low	The pressure building rate for product stored at a lower pressure will be slower than a product stored at a higher pressure. To achieve best results, maintain the tank pressure at a working pressure above 125psi.
	Pressure building regulator is set improperly or leaks.	If the pressure builds and stays at a pressure higher than desired, adjust the pressure building regulator to a new setting.
	Cylinder is leaking. Vacuum is deteriorating.	Check for frost on lines or on top of head. Listen for hissing, soap test joints for leaks. Isolate leak and call Chart for repair details. This can be accompanied by cold or frost occurring evenly over the cylinder surface. Refer to the troubleshooting section on frost.
	VaporMan 125 has blockage	Check the VaporMan 125 for signs of blockages. Dry Ice or foreign material can prevent flow through VaporMan 125.
Frost occurs on vaporizers	Vaporizers are working properly	This is normal. Ice may remain for the entirety of the use.

SECTION 10

MAINTENANCE

Replacing the Economizing Regulator

The regulator used on the manifold is the same type and part number used in the economizing circuit for the tanks. If the regulator is failing, please replace it with the same regulator.

Miscellaneous Fittings

The remaining pieces on the VaporMan 125 should be inspected for corrosion or fatigue failure over time. All of the various parts can be provided through chartparts.com. The other components of the unit are stainless steel or aluminum and should have great longevity.



- Order parts directly from Chart through a personalized account at www.chartparts.com.
- Simply establish an account password and "log-in."
- Service is available 24 hours a day and provides same-day shipping on all stock parts.
- Chartparts provides access to shipment tracking, transaction history, and personalized account information for convenient account management.

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