



## Section 4

### L.P.G. - Liquid Petroleum Gas Systems

# L.P.G. Systems

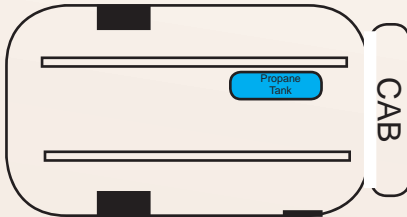
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# L.P.G. Tank (Ford Models)



## Ford Models

The L.P.G. storage tank on the Coach House is located on the driver's side, inboard of the frame on all Ford powered models. Only experienced personnel should fill the tank.



There is a remote fill port located behind the side entrance door on the passenger side of the motor home.



There is a remote fill switch located below the remote fill port. Push the remote fill switch handle in for filling only, and pull out for normal operation.

The remote fill switch requires constant power while pulled to the “out” (on) position. While your vehicle is stored it is recommended to push the remote fill switch “in” (to the off position) so the auxiliary batteries will not be drained. The switch is designed to meet safety requirements which state that the power must be off when filling the tank.

# L.P.G. Regulator

The L.P.G. system uses a two-stage regulator manufactured by Cavagna Group to control the pressure to the L.P.G. appliances to assure the proper functioning and safe operation of the appliances. The regulator is located under the floor of the motor home near the L.P.G. storage tank and is enclosed in a protective shield to prevent damage to the regulator or clogging of the vent. If the motor home is driven through heavy snow or mud, the vent opening should be checked to make sure that it is not clogged by snow, mud or ice. An opening in the bottom of the shelf allows access to the vent.



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# Recreational vehicles

## 1. INTRODUCTION

### 1.1 Pressure Gas Regulators

Two stage gas regulators are designed and manufactured in accordance to UL 144 requirements (NFPA 1192; paragraph 5.2.15.2). Regulators are used with propane gas appliances functioning at 11 inch WC pressure.

Gas pressure regulators, used in recreational vehicle (RV) installations, have two integrated stages of regulation with intermediate pressure of 10 PSI (NFPA 1192; paragraph 5.2.15.1).

Depending on the kind of installation these regulators are used for, they can supply gas for a range of calorific power from 100,000 to 160,000 BTU. See technical description of gas appliances.

The second stage of the regulator is equipped with a safety valve Type 1 as per UL 144.

**WARNING:**

The regulator must be installed with vent hole pointing downwards to allow water to exit.

(See NFPA 1192, paragraph 5.2.15.4).

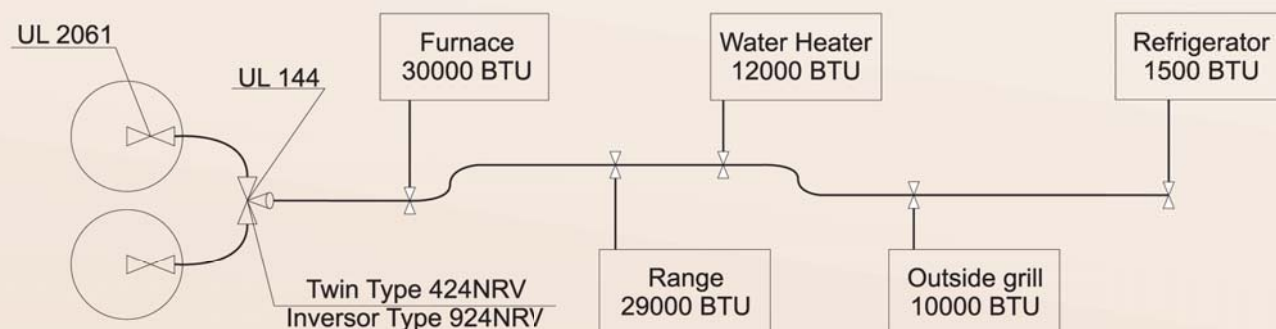
**WARNING:**

100 % inspection at Re.Ca. Italy manufacturing unit of the whole range of regulators is undertaken during manufacturing process as far as:

- setting pressure; see setting point at page 6 and 7 of the present catalogue;
- leakage test at the inlet (high pressure value to be used) and leakage test at the outlet (low and high pressure value to be used).

### 1.2 Installations

RV installations can be made on the basis of the following general diagram:



RV installations are supplied by single or double cylinder systems, or by ASME tanks. The integrated second stage regulator is connected to cylinders through flexible high pressure gas rubber hoses, equipped with fittings in accordance to UL 2061 (NFPA 1192; paragraph 5.2.16.4). Installations of integrated double stage regulators have to be in accordance with requirements expressed in NFPA 1192, paragraph 5.2.15.

Installations generally supply the following gas appliances:

-Furnace	30000 BTU
-Range	29000 BTU
-Water Heater	12000 BTU
-Refrigerator	1500 BTU
-Outside grill	10000 BTU
Total	81000 BTU

**WARNING:**

Inside diameter and length of pipes must be calculated to ensure that supplying pressure is sufficient to run the gas appliances at the same time.

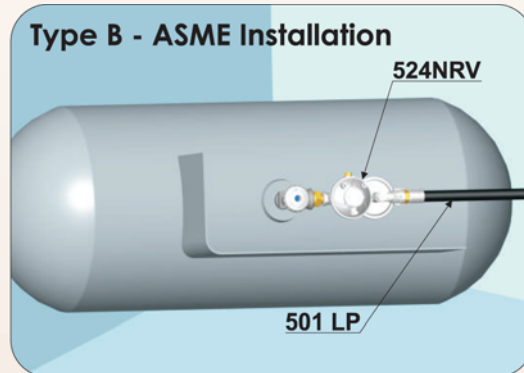
All of the above mentioned gas appliances must run at the same time without any failure.





# Recreational vehicles

Gas cylinder and regulator shall be protected by a shelter or in a cylindrical cage, see following diagram (as per NFPA 1192, paragraphs 5.2.15.6; 5.2.15.7; 5.2.15.8).



## WARNING:

RV gas piping system must be tested for leakage prior to delivering vehicle to dealer network. Therefore, setting pressure test and leakage test have be done by authorized RV OEM. In case of any detected anomalies, the gas regulator kit is not likely to be responsible because the gas regulators are 100% tested while manufacturing.

## 3. ASME Range - Type 524AS

### 524AS Type



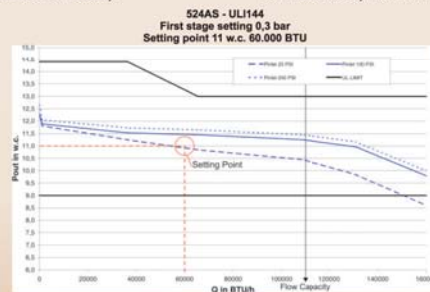
The Two Stage Type 524 AS regulator is mounted directly to tank, connected to the tank valve of ASME container type. It is connected at its outlet to the installation gas pipe net. The regulator inlet POL coupling is equipped with an excess flow valve device.

## WARNING:

The regulator must be mounted with vent holes pointing downward. The cover 211-086 (see page 10) is normally mounted as protection for the regulator. See type C installation.

## Technical features:

Inlet connection:	POL.880
Outlet connection:	3/8 NPT
Test Point:	1/8 NPT
Guaranteed Flow:	103000 BTU/h
Setting Point:	11 WC +/- 1 at 70000 BTU
Adjustable outlet pressure:	from -0.5 WC to +1.5 WC
Paint:	metallic grey
Cover and body:	Zamak Alloy 13 EN 1774



# Regulator Freeze Up

Under some conditions, moisture may be present in the L.P. gas in your tank and this can cause the regulator to freeze up, stopping flow to the appliances. This condition occurs more frequently in cold weather or at higher altitudes and usually can be cured or prevented by having methanol injected into the L.P. G. tank. Only experienced, qualified personnel should do this. Some L.P.G. stations especially at higher altitudes, will already have methanol in the L.P. gas they dispense. It is suggested that if you plan to go to a colder climate or a higher altitude, that you wait until you reach those areas before completely filling your tank. The small cost difference is well worth it to reduce the risk of freeze up.

# Mandatory Consumer Information

The following information is being supplied to conform with the mandates of:

ANSI A119.2 / NFPA 501C-1987

and to ensure the greatest possible degree of safety for our customers. Please study this information carefully and keep it in your vehicle at all times.

Should this information be misplaced, additional copies are available from our corporate office for a nominal charge.

A)

## **WARNING**

L.P. Gas containers shall not be placed or stored inside the vehicle.  
L.P. Gas containers are equipped with safety devices which relieve excessive pressure by discharging gas to the atmosphere.

B)

## **WARNING**

**IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING!  
COOKING APPLIANCES NEED FRESH AIR FOR SAFE OPERATION**

Before Operation:

- 1) Open overhead vent or turn on exhaust fan.
- 2) Open window.

This warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen supply is limited to the size of the recreational vehicle, and proper ventilation when using the cooking appliance(s) will avoid dangers. Cooking appliances should not be used for comfort heating as the danger of asphyxiation is greater when the appliance is used for long periods of time.



- C) A warning label has been located near the L.P. Gas container. This label reads:

**DO NOT FILL LP-GAS CONTAINER(S) TO MORE THAN 80 PERCENT  
OF CAPACITY**

Overfilling the L.P. Gas container can result in uncontrolled flow which can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid L.P. Gas. Safety regulation prevents filling over 80%.

D) **WARNING**

Portable fuel-burning equipment, including wood and charcoal grills and stoves, must not be used inside the recreational vehicle. The use of this equipment inside the recreational vehicle may cause fires or asphyxiation.

E) **WARNING**

Storage of L.P. Gas containers, gasoline or other flammable liquids inside your vehicle - even for short periods of time - presents a risk of fire and/or explosion. All flammable liquids should be stored safely in a well-ventilated area outside your vehicle and in proper containers.

- F) The following label has been placed in the vehicle near the range area.

**IF YOU SMELL GAS**

- 1) Extinguish any open flames, pilot lights and all smoking materials
- 2) Do not touch electrical switches.
- 3) Shut off the gas supply at the tank valve(s) or gas supply connection.
- 4) Open doors and other ventilation openings.
- 5) Leave the area until odor clears.
- 6) Have the gas system checked and leakage source corrected before using again.

- G) L.P. Gas regulators must always be installed with the diaphragm vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that regulator vent faces downward and the cover is kept in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion.