



GENERAL INSTRUCTIONS STRAIGHT PROPANE CONVERSION KIT

The following instructions give a general outline on installation procedures for adapting gasoline engines to also run on propane and natural gas. These instructions are kept brief for simplicity and we recommend that the installation should be done by a service personnel. Please be aware of the safety regulations as outlined in the National Fire protection Association pamphlets 58, 37 and 5050. There may be additional government recommendations and safety rules in your locality which must be met with those listed above.

Equipment must be installed, operated and maintained in accordance with federal, state and local codes. The installation in most states must also comply with NFPA 54 and NFPA 58 standards. Only personnel trained in the proper procedures, codes, standards and regulations of the LP-Gas industry shall install and service this equipment

REMEMBER SAFETY FIRST!
IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT US FIRST

Phone: 859-881-0509 (call or text)

Email: jerry@nashfuel.com

www.nashfuel.com

UNIVERSAL KIT CONTENTS:

Please be sure to check that all items listed below are included in your kit. If any parts are missing please contact us as soon as possible.

HOSE

PART NUMBER: PR-6
5/16" LIQUID LPG HOSE
QTY: 12FT



PART NUMBER: VAP-5/8
5/8" VAPOR HOSE
QTY: 3FT



PART NUMBER: 1725BX
1/2" COOLANT HOSE
QTY: 4FT



NUTS AND BOLTS

PART NUMBER:
C5C06X0012Z
3/8" BOLT
QTY: 2



PART NUMBER:
LW2060Z
3/8" LOCK WASHER
QTY: 2



PART NUMBER:
FW06SZ
3/8" FLAT WASHER
QTY: 2



PART NUMBER:
N5C06Z
3/8" NUT
QTY: 2



PART NUMBER:
C5C05X0100Z
5/16" BOLT
QTY: 2



PART NUMBER:
LW2050Z
5/16" LOCK WASHER
QTY: 2



PART NUMBER:
FW05SZ
5/16" FLAT WASHER
QTY: 2



PART NUMBER:
N5C05Z
5/16" NUT
QTY: 2



FITTINGS

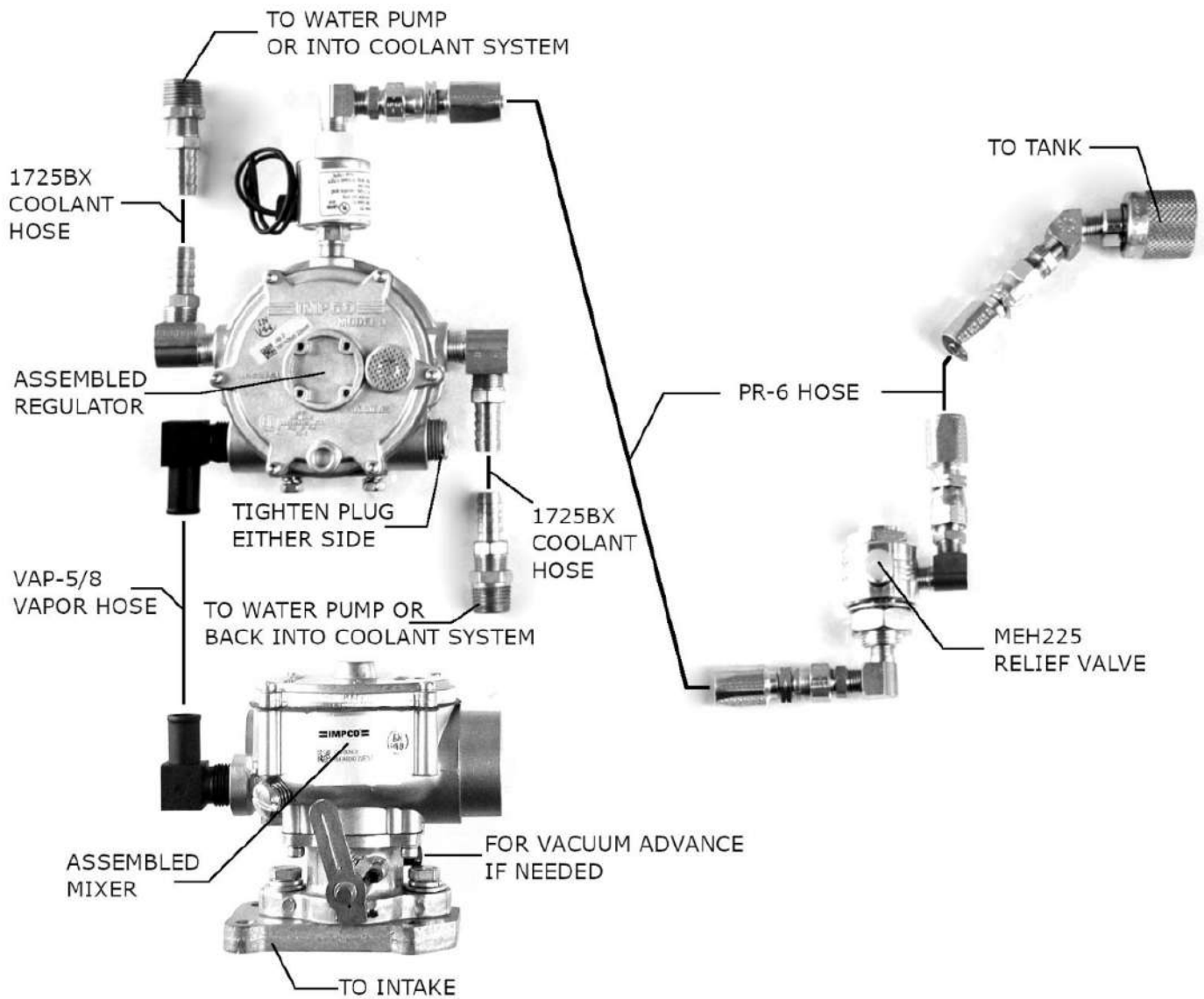
PART NUMBER: 7141F TANK CONNECTION QTY: 1 	PART NUMBER: 48-64 1/4" MPT TO 3/8" M. FLARE 180° QTY: 4 	PART NUMBER: 124-4 1/4" MPT TO 1/4" FPT 45° QTY: 1 	PART NUMBER: MEH225 RELIEF VALVE QTY: 1 	PART NUMBER: 116-6 3/8" MPT TO 3/8" FPT 90° QTY: 2 
PART NUMBER: 116-4 1/4" MPT TO 1/4" FPT 90° QTY: 3 	PART NUMBER: 4401-6 HOSE ENDS FOR PR-6 HOSE QTY: 4 	PART NUMBER: F4-17 1/2" MPT TO 5/8" BARB 90° QTY: 2 	PART NUMBER: 139-86 3/8" MPT TO 1/2" BARB 180° QTY: 4 	PART NUMBER: 110-86 1/2" MPT TO 3/8" FPT BUSHING QTY: 2 

ACCESSORIES

PART NUMBER: HK1513 HOSE SUPPORT QTY: 2 	PART NUMBER: AFC-156 FILTER/BULKHEAD QTY: 1 	PART NUMBER: ACC1-01 FUEL PUMP COVER QTY: 1 	PART NUMBER: ACC1-02 FUEL PUMP GASKET QTY: 1 	PART NUMBER: ACC3-03 1/2-3/4" HOSE CLAMP QTY: 6 
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BASIC LAYOUT

This is a general layout of the included kit contents



All hoses will need to be cut to fit depending on your application

STRAIGHT PROPANE CONVERSION KIT INSTALLATION INSTRUCTIONS

The following instructions give a general outline on installation procedures for converting gasoline engines to straight propane. These instructions are kept brief for simplicity and we recommend that the installation should be done by a service personnel. Please be aware of the safety regulations as outlined in the National Fire protection Association pamphlets 58, 37 and 5050. There may be additional government recommendations and safety rules in your locality which must be met with those listed above.

Equipment must be installed, operated and maintained in accordance with federal, state and local codes. The installation in most states must also comply with NFPA 54 and NFPA 58 standards. Only personnel trained in the proper procedures, codes, standards and regulations of the LP-Gas industry shall install and service this equipment

REMEMBER SAFETY FIRST! **IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT US FIRST**

A. PRELIMINARY STEPS:

1. Disconnect battery cables.
2. Drain radiator and check the general condition of the vehicle.

B. REMOVE THE FOLLOWING:

1. Gas lines, carburetor and fuel pump.

C. INSTALL THE FOLLOWING:

1. Gasoline fuel pump cover if applicable
2. Tank brackets if included in kit
3. Bulkhead (relief valve is installed in bulkhead, must point away from vehicle)
4. Regulator (regulator must not be mounted above radiator, this will cause freezing)
5. Lockoff (polarity does not matter on 12v lockoff, one wire ground, one wire to 12v while running)
6. Mixer (linkage/lever modification and spring return modification may be required)
7. Make sure that all hoses are not rubbing against any surface (see page 5 for proper hose installation)
8. Tighten all fittings and use thread seal on all NPT fittings (do not use thread seal on flare fittings)
9. Install coolant lines (coolant must be able to flow through the regulator)

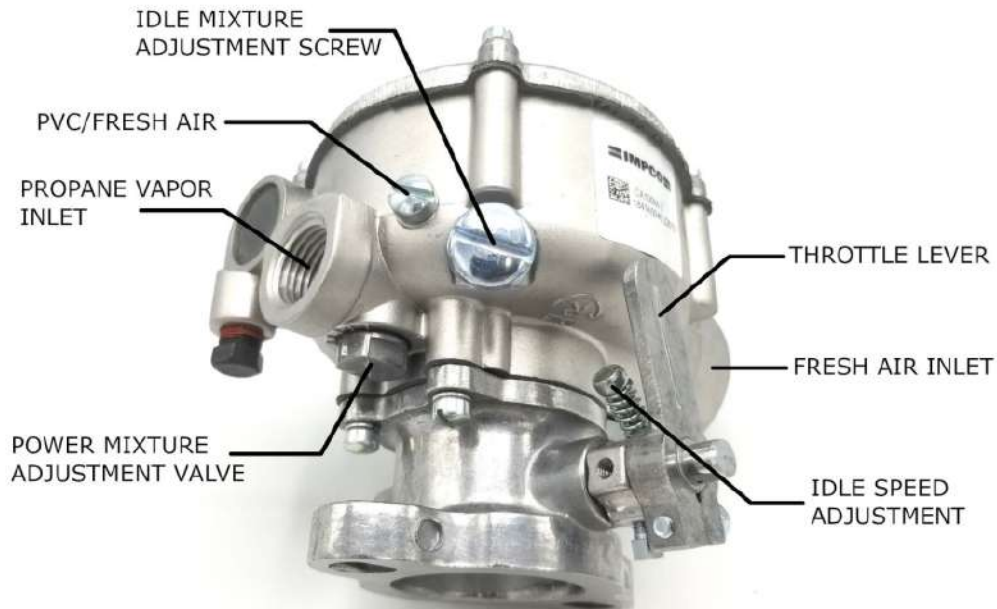
PRE-START PROCEDURES

1. First, double check all work before the initial start
2. Install the propane tank, install the tank connection and turn the tank on slowly
3. Use soapy solution on all high pressure fittings and hose ends to check for leaks.

ADDITIONAL INFORMATION

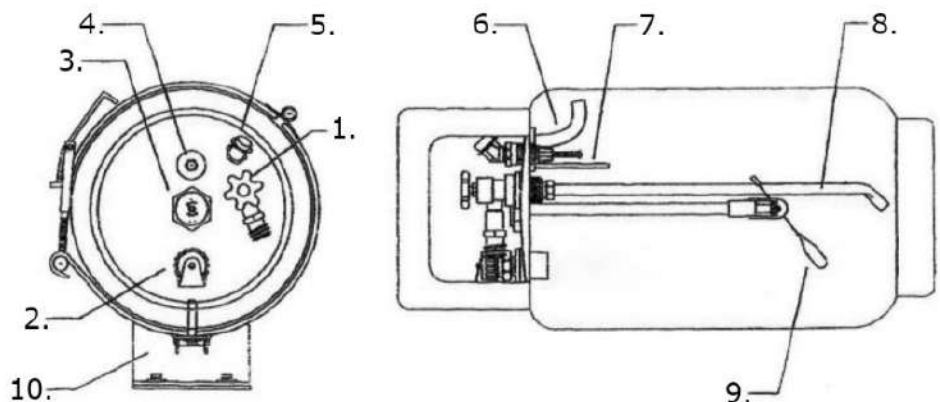
Mixer information and general tank design

MIXER INFORMATION



TANK INFORMATION

1. SERVICE VALVE
2. FILLER VALVE
3. FUEL GAUGE
4. 80% BLEEDER VALVE
5. RELIEF VALVE
6. VAPOR WITHDRAW
7. 80% BLEEDER TUBE
8. LIQUID WITHDRAW
9. FUEL LEVEL FLOAT
10. TANK BRACKET



PROPANE MIXER ADJUSTMENT

Please see page 6 for pictures of the mixer included with this kit to identify the idle speed adjustment screw and power mixture adjustment valve.

Before making any fuel adjustments the air cleaner should be installed. Ignition timing must be checked and adjusted per the engine manufacturers specifications. Propane burns slower than gasoline, retarded timing will reduce horsepower and increase emissions. Most manufactures recommend advancing the timing 3 to 5 degrees, this will increase lower end torque horsepower.

Do not advance timing beyond the manufacturer's recommendation.

A. IDLE MIXTURE ADJUSTMENT:

- Turning the screw clockwise will make the mixture RICH
- Turning the screw counter clockwise will make the mixture LEAN
- The idle mixture adjustment screw is adjusted correctly with an exhaust gas analyzer
- Mixture should be adjusted to **.50% - .75% CO** (Carbon Monoxide) or **14.5 to 1** using an air fuel ratio analyzer
- Without an exhaust gas analyzer:
Turn the idle mixture screw clockwise until the engine starts to run rough or loses RPM. Then, turn the idle screw counterclockwise approximately ½ turn or until the engine begins to run smooth. This will ensure you are not running lean so the engine will not burn up valves.

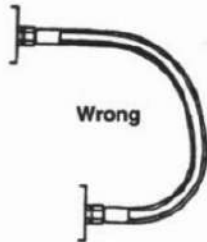
B. IDLE SPEED ADJUSTMENT SCREW:

- Idle speed should be set to the manufacturer's specifications
- Most engines idle between 650-750 RPM

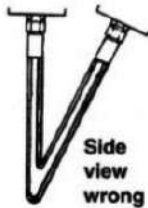
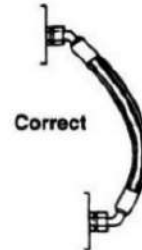
C. POWER MIXTURE ADJUSTMENT VALVE:

- This adjustment is only effective when the engine is near full load condition
 - The power mixture valve is marked with an arrow and R for RICH and L for LEAN
 - Can ONLY be adjusted with engine loaded or close to full load
 - For adjustment, follow these steps:
 1. Set parking brake, block drive wheels
 2. Connect a tachometer to the engine
 3. Accelerate engine to full rated RPM level
 4. Pull back on the tilt lever until the pump reaches hydraulics relief bypass (this simulates a full load on the engine, for automotive applications a full load must be simulated on the engine for proper power mixture adjustment). The RPM should drop according to the specifications of the hydraulic bypass (typically 250-500 RPM). If the RPM does not drop, check and adjust your hydraulic pressure to the manufacturer's specifications before continuing.
 5. Turn the power adjustment valve until the highest engine RPM is reached.
- NOTE: Using an exhaust gas analyzer your percentage of CO should be **(0.50% - 1.0%)** or **15.5 - 16 to 1** using an air fuel ratio analyzer

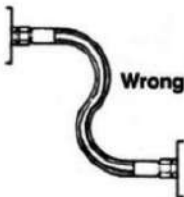
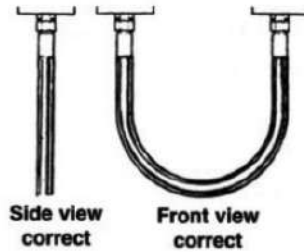
Right and Wrong Way of Hose Installation



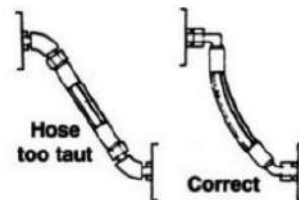
Do not use excessive lengths of hose. Bends below the design bend radii weaken the hose by distorting the wire braid.



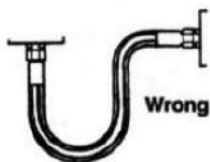
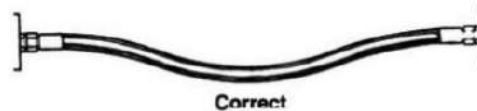
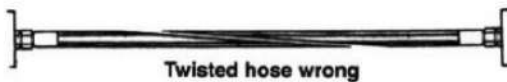
The movement shown in the incorrect side view exerts torsion on the end fittings.



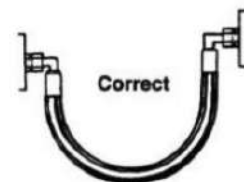
Obtain direct routing of the hose through the use of 90° and 135° Elbow fitting. Improve performance by using less hose and greater bend radius.



Do not fit hose assembly in twisted condition. This puts tension on the hose and reduces the working life of the assembly. Provide slack or bend in the hose to allow for changes in length that will occur when pressure is applied.



Sharp bends can be avoided by using elbow fittings instead of straights. Avoid the use of bends in hose too close to the fittings.



IMPORTANT !

Carbon Monoxide - What service personal should know

OSHA Requirement

The CO level shall NOT EXCEED 50 PPM measured over an 8 hour period in the work environment.

How does parts per million (PPM) relate to percentage numbers?

One million parts per million equals one hundred percent of the engines exhaust gases.

10% CO	EQUALS	100,000 PPM
1% CO	EQUALS	10,000 PPM
.1% CO	EQUALS	1,000 PPM
.01% CO	EQUALS	100 PPM

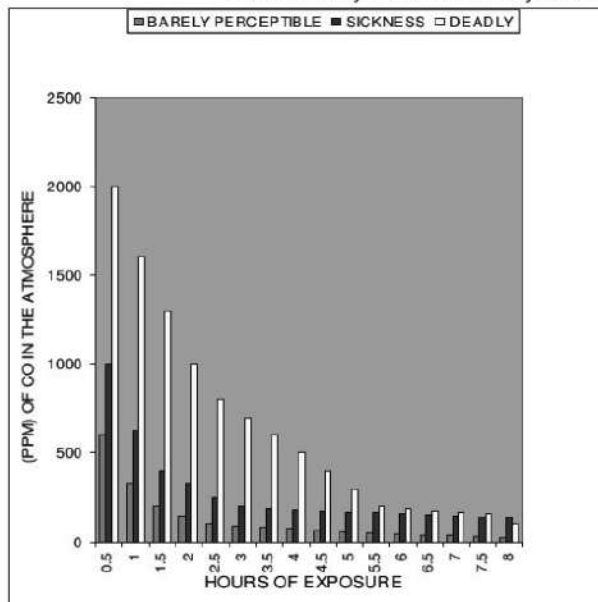
For each one hundredth of one percent you will have 100 PPM

Example: $.01\% \times 1000000 \text{ PPM CO} = 100 \text{ PPM CO}$.

With adequate ventilation and following the adjustment instructions on page 29 , you should be able to keep the carbon monoxide level below the OSHA requirement.

WE STRONGLY RECOMMEND THE USE OF A CARBON MONOXIDE ANALYZER

INVISIBLE, ODORLESS, DEADLY CARBON MONOXIDE



A LITTLE WILL HARM, A LOT WILL KILL

How much is too much? The harmful effects of CO exposure depend on the concentration of the gas in the air, exposure time, and factors such as age, health, size and sex.

Many of us encounter CO regularly and never know it because it's invisible and odorless. That's why victims of CO poisoning often have no warning that they are in danger... until it's too late. Symptoms include headache, nausea, chronic fatigue, confusion and dizziness. Extreme exposure can even cause a coma or death.

HOW CARBON MONOXIDE AFFECTS US

Carbon monoxide is a product of incomplete (poor) combustion. It's a direct and cumulative poison. When combined with blood hemoglobin, CO replaces oxygen in the blood until it completely overcomes the body. Death from CO occurs suddenly. The victim inhaling the toxic concentration of the gas becomes helpless before realizing that danger exists.

Concentration of CO in air	Inhalation time and toxic symptoms developed
9 ppm (0.0009%)	The maximum allowable concentration for continuous exposure in any 8-hour period, according to federal workplace standards.
50 ppm (0.005%)	The maximum 8 hour average for outdoor air as recommended by US EPA. ASHRAE standard 62-89 states the ventilation air shall meet the outdoor air quality (as standard).
200 ppm* (0.02%)	Slight headache, tiredness, dizziness, nausea after 2-3 hours.
400 ppm (0.04%)	Frontal headaches within 1-2 hours, life-threatening after 3 hours.
800 ppm (0.08%)	Dizziness, nausea and convulsions within 45 minutes. Unconsciousness within 2 hours. Death within 2-3 hours.
1,600 ppm (0.16%)	Headache, dizziness and nausea within 20 minutes. Death within 1 hour.
3,200 ppm (0.32%)	Headache, dizziness and nausea within 5-10 minutes. Death within 30 minutes.
6,400 ppm (0.64%)	Headache, dizziness and nausea within 1-2 minutes. Death within 10-15 minutes.
12,800 ppm (1.28%)	Death within 1-3 minutes.

10,000 PPM (PARTS PER MILLION) = 1% BY VOLUME

All effects can vary significantly based on age, sex, weight, and overall state of health.

HOW MUCH CARBON MONOXIDE IS PERMISSIBLE?

According to the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) (Ventilation Standard 62-89), a concentration of no more than 9 parts per million (ppm) (0.0009%), of CO is permissible ventilation air when averaged over 8 hours.

In addition, the Occupational Safety and Health Administration (OSHA) has set an eight-hour work place maximum of 50 ppm. ANSI has established the maximum allowable concentration of CO (when measured on an air free basis) of 400 PPM, for vented gas appliances.