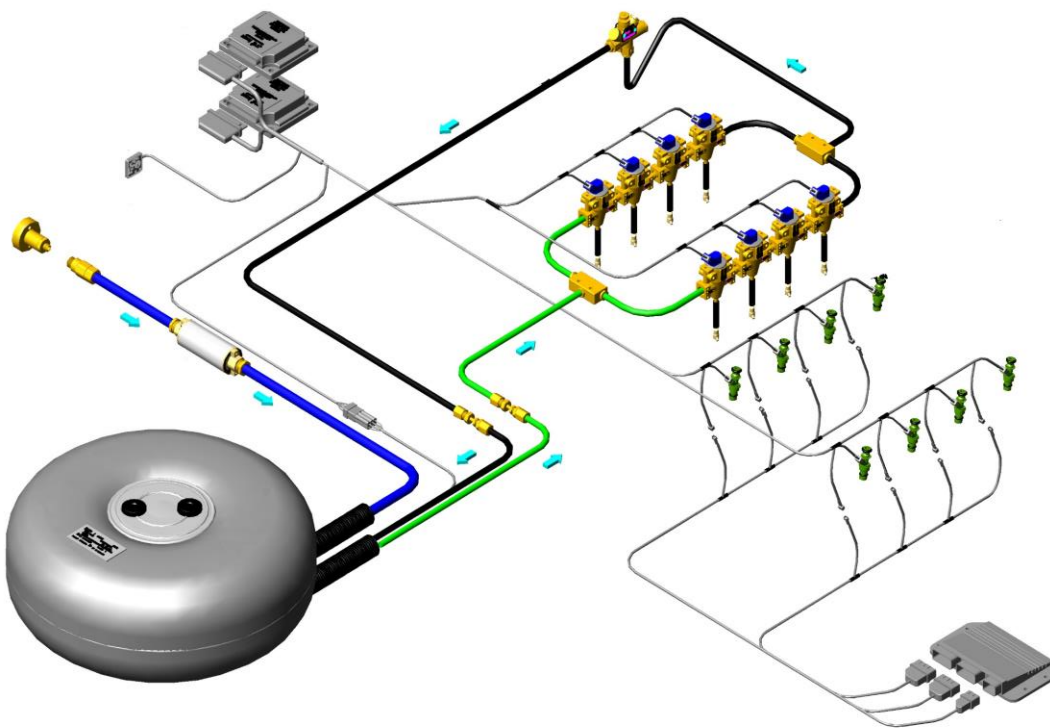




# ICOM PRE-INSTALLATION GUIDE



**P11X4-9220-AC**

Revision: C - Dated 12/16/15

Replaces: B - Dated 9/1/15

ICOM NORTH AMERICA HIGHLY RECOMMENDS THAT ALL INSTALLER TECHNICIANS READ AND ADHERE TO THE CAUTIONS LISTED BELOW BEFORE STARTING THE INSTALLATION OF THE ICOM JTG SYSTEM. IN ADDITION, TECHNICIANS SHOULD BE TRAINED IN THE PROPER STORAGE, HANDLING, TRANSPORTATION AND USE OF LIQUIFIED PETROLEUM GAS (LPG). LOCAL PROPANE SUPPLIERS SUCH AS AMERIGAS AND FERRELGAS, AS WELL AS SOME AGENCIES SUCH AS THE TEXAS RAILROAD COMMISSION AND PERC (PROPANE EDUCATION & RESEARCH COUNCIL) OFFER INFORMATIVE COURSES ON LPG AND IT'S PROPERTIES. ICOM NORTH AMERICA ALSO RECOMMENDS THAT INSTALLERS PURCHASE A COPY OF NFPA 58, A CODE BOOK OF RULES FOR LPG PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)



## CAUTION



PROPANE IS A NONTOXIC, NONPOISONOUS GAS THAT IS EXTREMELY FLAMMABLE. IF SOMETHING IGNITES IT, YOU COULD BE BADLY BURNED. KEEP SPARKS, OPEN FLAMES AND SMOKING MATERIAL AWAY FROM PROPANE. NEVER CUT OR WELD ON THE PROPANE FUEL TANK.



LIQUID PROPANE IS EXTREMELY COLD (-40° F) AND CAUSE SERIOUS BURNS WHEN CONTACTING YOUR SKIN OR EYES. PREVENT CONTACT WHEN HANDLING LPG BY WEARING APPROVED PROTECTIVE GLOVES AND EYE PROTECTION.



PROPANE IS STORED UNDER PRESSURE. THE FUEL SYSTEM OPERATES AT PRESSURES OF UP TO 312 PSI. A SUDDEN RELEASE OF PROPANE CAN CAUSE SERIOUS INJURIES. NEVER FILL A LEAKING OR DAMAGED PROPANE FUEL TANK.



NEVER CONNECT THE PROPANE FILL NOZZLE TO THE REFUELING VALVE IF THE O-RING IS MISSING OR DAMAGED. REPLACE THE O-RING BEFORE CONNECTING THE FILL NOZZLE.

### INSTALLATION



PLEASE REFERENCE THE APPLICABLE STANDARDS WITHIN NFPA 58, FMVSS AND CSA (CANADA ONLY) TO INSURE THE FUEL TANK AND LPG COMPONENTS ARE INSTALLED PROPERLY. IN ADDITION, FOR EXTERNALLY MOUNTED TANKS, PLEASE REFERENCE SAE J689 (CURBSIDE CLEARANCE, APPROACH, DEPARTURE, AND RAMP BREAKOVER ANGLES) AS A GUIDELINE.

### HEAT SHIELDING



EXERCISE CAUTION WHEN ROUTING HOSES AND WIRE HARNESSSES TO AVOID DAMAGE DUE TO CHAFFING, CUTTING OR EXTREME HEAT. USE CORRUGATED CONDUIT OR HEAT SHIELDING MATERIAL AS REQUIRED TO PREVENT ANY POTENTIAL DAMAGE TO THESE COMPONENTS. HEAT SHIELDING MAY ALSO BE REQUIRED BY THE FUEL TANK TO PREVENT EXCESSIVE HEATING OF THE LPG INSIDE THE TANK. (NOTE - INSTALLER TO PROVIDE HEAT SHIELDING IF NECESSARY)

**NFPA 58**

**11.7.1.3**

*CONTAINERS LOCATED LESS THAN 18 IN. (460mm) FROM THE EXHAUST SYSTEM, THE TRANSMISSION, OR A HEAT PRODUCING COMPONENT SHALL BE SHIELDED BY A VEHICLE FRAME MEMBER OR BY A NONCOMBUSTIBLE BAFFLE WITH AN AIR SPACE ON BOTH SIDES OF THE FRAME OR BAFFLE.*

THE ICOM SYSTEM MUST BE INSTALLED PER THE ICOM INSTALLATION MANUAL.

THE ATTACHED FINAL INSPECTION FORM MUST BE COMPLETED AND SUBMITTED TO YOUR AUTHORIZED DISTRIBUTOR EACH TIME A SYSTEM IS INSTALLED TO INSURE ALL COMPONENTS OF THE SYSTEM ARE INSTALLED CORRECTLY AND FUNCTION PROPERLY.

## ICOM JTG II LIQUID PROPANE INJECTION SYSTEM DESCRIPTION

THE ICOM JTG II SYSTEM IS DESIGNED TO USE PROPANE IN A LIQUID STATE AND CONSEQUENTLY HAS THE SAME PERFORMANCE AS GASOLINE.

THE ICOM JTG II SYSTEM IS CONTROLLED DIRECTLY BY THE ORIGINAL GASOLINE MANAGEMENT SYSTEM; THEREFORE THE JTG II SYSTEM DOES NOT REQUIRE AN ADDITIONAL ECU (ENGINE CONTROL UNIT) LIKE OTHER CONVERSION SYSTEMS.

FOR BI-FUEL SYSTEMS, THE ENGINE WILL START ON NORMAL GASOLINE BEFORE AUTOMATICALLY SWITCHING OVER TO LIQUID PROPANE AFTER A PRESET DELAY TIME OF AROUND 40 SECONDS OR THE REQUIRED ENGINE TEMPERATURE HAS BEEN REACHED. SWITCHING BETWEEN GASOLINE AND LIQUID PROPANE IS CONTROLLED BY THE ICU (ICOM CONTROL UNIT), VIA THE PUSH BUTTON / LEVEL INDICATOR (SEE FIG. 1) MOUNTED ON THE INSTRUMENT PANEL. THE SYSTEM WILL AUTOMATICALLY SWITCH TO GASOLINE IF THE LIQUID PROPANE RUNS OUT.

THE LIQUID PROPANE TANK HAS AN INTERNAL FUEL PUMP TO SUPPLY LIQUID PROPANE TO THE FUEL INJECTORS.

THE PRESSURE REGULATOR (SEE FIG. 2) MAINTAINS THE MINIMAL OPERATING PRESSURE IN THE FUEL INJECTOR RAIL TO ENSURE LIQUID PROPANE IS ALWAYS PRESENT IN LIQUID FORM.



FIG. 1

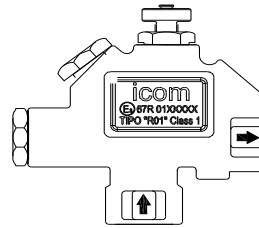


FIG. 2

## PUSH BUTTON / LEVEL INDICATOR SWITCH

THE PUSH BUTTON / LEVEL INDICATOR SWITCH (SEE FIG. 1) FOR THE ICOM JTG II SYSTEM IS COMPACT AND CAN EASILY BE INSTALLED ONTO MOST INSTRUMENT PANELS. THE SWITCH HAS (4) GREEN LED FUEL LEVEL INDICATOR LIGHTS AND A RED LED LIGHT THAT WILL ILLUMINATE WHEN THE FUEL TANK IS NEAR EMPTY. THE ORANGE LED LIGHT ON THE SWITCH WILL ILLUMINATE WHEN THE VEHICLE IS RUNNING ON GASOLINE. DURING ANY SWITCH OVER THE LIGHT WILL FLASH. A BEEPER WILL SOUND FOR 10 SECONDS IF THE SYSTEM RUNS OUT OF LIQUID PROPANE AND WILL AUTOMATICALLY SWITCH OVER TO GASOLINE

## PROPANE MANUAL SHUT-OFF VALVE

THE FUEL TANK IS EQUIPPED WITH A SEPARATE MANUAL SHUT-OFF VALVE ON THE MULTIVALVE TO STOP THE FLOW OF LIQUID PROPANE FROM THE FUEL TANK (SEE FIG. 2 & FIG. 3). TO CLOSE THE VALVE, ROTATE THE SHUT-OFF VALVE KNOB 'CLOCKWISE' UNTIL FULLY CLOSED. TO OPEN THE VALVE, SLOWLY ROTATE THE KNOB 'COUNTER CLOCKWISE'. ALWAYS OPERATE THE SYSTEM WITH THE MANUAL VALVE IN A FULLY OPEN POSITION. EACH MULTIVALVE IS EQUIPPED WITH AN INTERNAL 'EXCESS FLOW' VALVE TO SIGNIFICANTLY REDUCE THE FLOW OF LIQUID PROPANE FROM THE VALVE IN THE EVENT OF A RUPTURE. UNDER CERTAIN CONDITIONS, IF THE FUEL SUPPLY LINE IS EMPTY AND THE VALVE IS OPENED QUICKLY, THE 'EXCESS FLOW' VALVE MAY ACTIVATE AND CAUSE THE FUEL SYSTEM TO OPERATE IMPROPERLY. IF THIS CONDITION OCCURS, TURN THE VEHICLE 'OFF', WAIT 10 SECONDS AND TURN THE VEHICLE BACK ON.

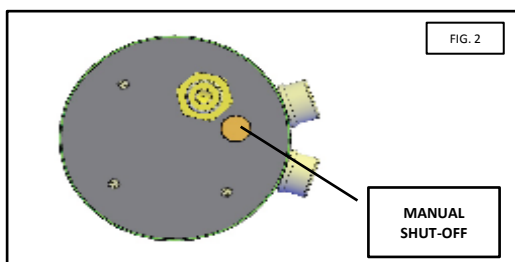


FIG. 2

MANUAL SHUT-OFF

WITH COLLAR COVER

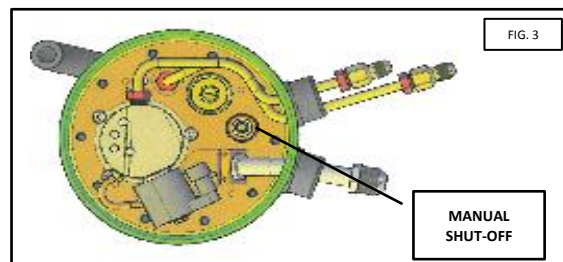


FIG. 3

MANUAL SHUT-OFF

WITHOUT COLLAR COVER



## LPG CONVERSION INSTALLATION / SERVICE INSPECTION FORM

Customer: \_\_\_\_\_ Date: \_\_\_\_\_

Make: \_\_\_\_\_ Model: \_\_\_\_\_ Model Yr. \_\_\_\_\_

VIN # \_\_\_\_\_ W.O. # \_\_\_\_\_

Mileage: \_\_\_\_\_ Engine Family Code: \_\_\_\_\_

### UNDER VEHICLE INSTALLATION / SERVICE INSPECTION

Inspect hose routing and verify proper clearance and shielding by heat sources _____	Verify bleeder valve closed on fuel tank (only for systems that are not equipped with remote bleeder valve hose kit) _____
Verify proper retention of hoses (front to rear) _____	Tank Label Installed _____
Verify proper torque of tank fasteners _____	Manual Supply Shut-Off Operates (leave fully open) _____
Verify proper clearance and shielding of fuel tank by heat sources _____	Tank Serial # _____
Check LPG connections for leaks (use snoop solution) _____	

### ENGINE COMPARTMENT INSTALLATION / SERVICE INSPECTION

Engine hoses protected with corrugate _____	Chassis hose corrugate routed to prevent water ingress _____
Inspect hose routing and verify proper clearance and shielding by heat sources _____	Engine coolant correct level _____
Emission Label installed _____	Verify negative cable secure to battery _____
Inspect wire harness for proper routing _____	
Check LPG connections for leaks (use snoop solution) _____	

### SYSTEM FUNCTION / ROAD TEST INSPECTION

Propane fill complete \_\_\_\_\_

Gallons installed \_\_\_\_\_

Commutator Level Operation (circle one): \_\_\_\_\_

F      3/4      1/2      1/4      E

Commutator LPG/Gasoline Switch    Yes \_\_\_\_\_ No \_\_\_\_\_

Correct Purge Time (45 seconds when engine is at operating temperature)    Yes \_\_\_\_\_ No \_\_\_\_\_

Correct Temp Sensor function    Yes \_\_\_\_\_ No \_\_\_\_\_

LED lamp function (monofuel only)    Yes \_\_\_\_\_ No \_\_\_\_\_

Auxiliary pump function (monofuel only verify pump comes on when driver door is open)    Yes \_\_\_\_\_ No \_\_\_\_\_

### OVERALL DRIVEABILITY

Starting Crank Time - Stalls - Stumbles	Yes _____	No _____
Hesitations - Surging - Stability	Yes _____	No _____
Check Engine Lights	Yes _____	No _____
Short term fuel trims acceptable	Yes _____	No _____
Long term fuel trims acceptable	Yes _____	No _____

### VEHICLE BADGING

Propane diamond installed (Lower rh rear corner of vehicle)	Yes _____	No _____
ICOM nameplate installed	Yes _____	No _____

### COMMENTS

Installed / Service By: \_\_\_\_\_

Labor Hours: \_\_\_\_\_

Approved By: \_\_\_\_\_