

CONVERSION INSTRUCTIONS FOR GAS GUN CONVERSION KIT MKIII & MKIV

Items required:-

Old Propane Gas Gun, High Pressure regulator, High pressure gas pipe and pipe clips, 12V battery, Propane gas, Tools Etc.

- (1) Remove all old control gear from gas gun. Leave the jet, it is the correct one for the gun.
- (2) Enlarge the spark hole in the rear of the gun, to allow the spark plug into the combustion chamber
- (3) Mount the plug mounting plate (supplied) over this hole.
- (4) Fabricate a support for the weatherproof housing on the gun frame. Remember that it must be easy to remove the weatherproof housing cover to adjust the firing of the gun. Some guns become top heavy when the control gear is removed, it is sometimes a good idea to widen the stand to make it more stable at this stage.
- (5) Make sure there is no dirt in the gas pipes, (blow out) and connect to control box, (inlet marked IN) and gas gun.
- (6) Screw plug into plate, Trapping the GREEN EARTH WIRE under the washer, or onto a good earth on the barrel of the gun. Connect HT lead to plug. Spray both these joints with WD40 or equivalent to inhibit corrosion.
- (7) Check your gas regulator is giving about 1 bar.
- (8) Turn to the GAS BANGER TESTING AND OPERATING INSTRUCTIONS, for details on how to set up and run the gun.
- (9) The jets on some old guns tend to grow larger. (corrosion) If the gun seems impossible to set up, try a new jet.

WARNING LP GAS IS DANGEROUS !!

SUTCLIFFE ELECTRONICS CANNOT TAKE RESPONSIBILITY FOR ANY INCORRECT CONNECTION. CHECK ANY GAS ASSEMBLY CAREFULLY TO MAKE SURE THERE IS NO LEAK BEFORE CONNECTING THE BATTERY.

Fig 1

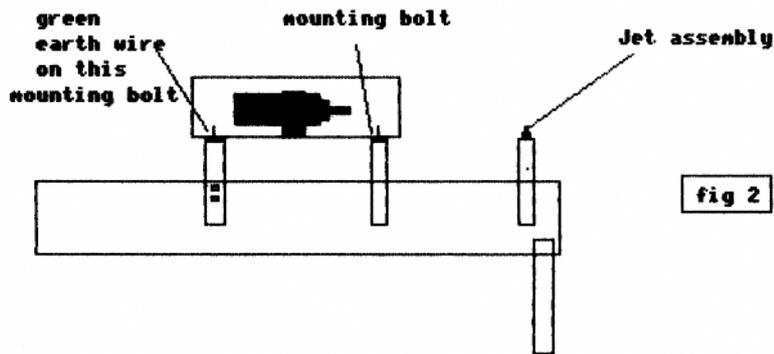
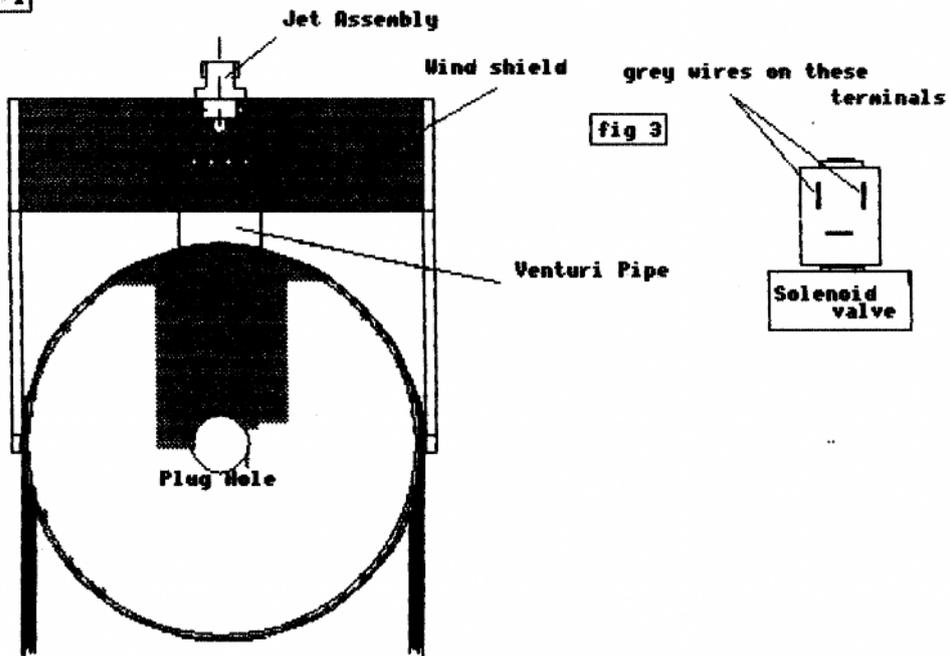
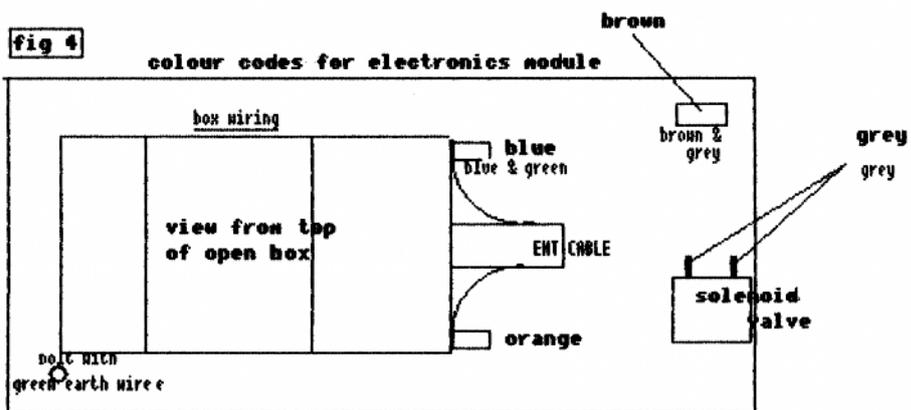


fig 4



Instructions for the Kitgun

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Open the box, and lay out the parts. Check there are no shortages.

- (1) COMBUSTION TUBE
- (2) 2 X LEGS + CROSS STRUT
- (3) WEATHERPROOF HOUSING WITH ELECTRONICS MODULE, PIPE & GAS REGULATOR
- (4) 6 ROOFING NUTS, 8 BOLTS + 2 PLAIN WASHERS
- (5) SPARK PLUG (LONG REACH)
- (6) GAS JET ASSEMBLY

Assembly

- (1) Fit front legs and cross strut to barrel. (6 nuts and bolts)
- (2) Open the weatherproof housing, (two 1/4 turn screws) locate on top of the barrel. Mount with the end with all the wires to the rear of the gun. Inside there is a loose GREEN EARTH WIRE with an eyelet on it. Place first a plain washer then this eyelet over a mounting bolt, from the inside, into the threaded plate to mount and make electrical contact to the body of the gun. Tighten firmly. (fig 2). Use the other plain washer on the other bolt.
- (3) Fit the gas jet assembly into the threaded hole at the rear of the gun. Loosen the collar of this fitting, and slip it onto the black pipe which comes out of the electronics housing. Push this pipe onto the nipple of the fitting, refit and tighten the collar. (just a few turns more than hand tight)
- (4) Fit the spark plug into the threaded hole in the back plate. (the plug gap is supposed to be wide open, as wide as a match head, not like on a car.) Fit the plug lead, spray with WD40 or equivalent to prevent corrosion.
- (5) MAKE SURE THAT YOU HAVE AN EARTH RETURN BETWEEN SPARK PLUG BODY AND THE GREEN EARTH WIRE IN THE WEATHERPROOF HOUSING. LACK OF A GOOD EARTH WILL PREVENT THE GUN FROM FIRING AND EVENTUALLY DAMAGE THE ELECTRONICS.
- (6) The gun should now look like the picture, and is ready for initial testing.

GAS BANGER Mk IV TESTING AND OPERATING INSTRUCTIONS S.E.09.94

Operating instructions for all GGKIV electronics modules

WARNING WEAR EAR PROTECTION

GAS BANGERS SHOULD BE TESTED AWAY FROM BUILDINGS AND IMFLAMABLE MATERIALS

SETTING UP

- (1) Undo the two 1/4 turn screws and remove the clear cover.
- (2) Turn all three knobs fully anticlockwise, fixed random switch to fixed, 1 - 4 - 2 switch to 1. LEAVE GAS OFF.
- (3) Connect the crock clips to a 12V battery (brown + blue No damage is ocured by connecting the battery the wrong way round.
- (4) Press the RED TEST button. You should hear the solenoid valve pull in, then drop out with a crack from the spark plug. NO GAS AT THIS STAGE. With a KITGUN, the spark can be seen by looking down the barrel.
- (5) DISCONNECT the battery, and connect the gas. Check for leaks.

RECTIFY ANY LEAK BEFORE RECONNECTING THE BATTERY.

- (6) Point the gun away from any buildings or imflamable materials, put on ear defenders, connect battery.
- (7) Press the red test button. a) The gas will flow into the gun. b) It will stop, but probably not fire. c) Turn gas knob clockwise by about 1/8 inch and try again. d) Repeat until there is a good bang every time. e) In high winds it may be necessary to turn the gas a little more to obtain consistent results, but there is little use in going too far as the bangs become worse not better.
- (8) TIMING. With the interval knob set to MIN, randomise switch to FIX, and the bang switch to 1, bangs will occur at roughly 10 minute intervals. This will not alter for 2 or 4 bangs. With the control set to MAX, roughly 40 minutes.
- (9) The RANDOM switch will alter the timings to be longer and shorter by about 50%. This will not change the average number of bangs in a day. with the electronics set to four bangs, there could be six bangs once, and only two the next.
- (10) MORNING DELAY TIMER. This part of the circuit allows you to delay the start time of the gun from dawn when the photocell switches on, by upto four hours. The red light on the side of the control box indicates when a delay is taking place, preventing you from thinking that the electronics have gone wrong.

Adjust the morning delay knob for the required starting time. the dots round the rim of the knob are not accurate. Please note:- the delay timer is upset by removing and replacing the battery lead. If this happens, turn to minimum, wait 20 seconds, and then reset to the required delay. If left it will correct itself after the delay period has elapsed.

TROUBLE SHOOTING MKIII & IV S.E.01.98

(1) Battery:-- Warning, the electronics are still able to function at 8 volts. The valve will no longer work. A car battery will go into deep discharge which will prevent recharge, causing it to become scrap. Recharge every two weeks for maximum battery life.

(2) Plug:-- The plug gap is set wide open, about a match head. A plug with a closed up gap will not ignite the gas reliably. If your plug has become damaged, use a long reach unsuppressed plug as replacement. (Unipart BCP6ES) Sutcliffe Electronics can supply replacement plugs by return of post.

(3) Checking spark:-- Remove the plug lead and hold about 1/4 inch from the end of the plug. Making sure the gas is not switched on, press the test button. Replace the plug lead. Never leave the lead off and fire the gun without somewhere for the spark to go. The energy has to go somewhere, and can destroy the electronics.

(4) Gas:-- Make sure there is liquid gas in the cylinder (You can hear the hiss when the test button is pressed). It is possible for the jet to be partially blocked (gas knob has to be turned up a lot more to get any sort of bang), or to grow with corrosion (gas knob cannot be turned down enough). Different makes of gas sometimes require the gas knob to be adjusted slightly. The gun will require a little more gas when the weather is very cold. Gas regulators can decide they will no longer regulate. It is quite easy to check the pressure by using an ordinary tyre pressure gauge. This should show between 1 and 1.5 Bar. If your gas regulator needs replacing, use a regulator capable of providing 1 bar. Replacement regulators are available from Sutcliffe Electronics.

(5) Photocell operation:-- If the Green Photocell in the side of the box, next to the red indicator is covered, or you are testing the gun in artificial light of insufficient strength, the gun will switch off or fail to switch on. The morning delay timer will start to work when the gun switches on again (red indicator glows brightly). The gun can however still be tested with the test button even though normal function is being inhibited. (Not with older MKIII modules, wait for the delay timer to time out.) To test that the photocell is working, cover it with your whole hand for about 60 seconds. If the photocell is not working, the red morning delay indicator will not glow brightly, when the hand is removed. Also if the electronics are staying on, it will still be possible to get the gun to work with the press button even though the photocell is covered up

(6) Testing the gun by removing the battery lead and then replacing it:-- This does no damage but upsets the morning delay timer. Turn the knob to minimum to allow it to time out quickly, then re-set.

(7) Unsure of operation:-- When unsure that your gun is working properly, turn OFF the gas. NEVER TRY TO FIND A FAULT WITH THE ELECTRONICS WITH THE GAS CONNECTED. YOU CAN CHECK FOR SOLENOID VALVE OPERATION BY BLOWING DOWN THE PIPE. When the valve does not operate on test, check it by removing its leads and connecting it directly to the 12V battery. Valves can sometimes fail to operate correctly because the gas bottle has oil in it which has gone up the pipe (Clean out with an air line). Valves can also cause problems if the end of the gas pipe has been dropped in the mud. (There is a filter in the gas line to remove large lumps, but sometimes a mixture of mud and oil will require the valve to be dismantled and cleaned. Do this in a clean environment, where the parts will not be lost). A common electrical cause of failure to operate is that the battery leads have become damaged, or the crock clips are too corroded to make contact to the battery posts.

(8) Burnt out battery leads:-- The metal of the gun has somehow touched the battery terminals. (Replace as necessary)

(9) End of season:-- When the gun is no longer in use, do not leave in the field. A build up of moisture will prevent it operating next time, and require the electronics to be returned for servicing. Wipe condensation out of the electronics housing, wind up the battery leads and gas pipe so that they are not damaged, and store in a dry place. When taking out your gun after storage, empty the mouse nest out of the barrel. If the gun does fire, the contents could be turned into a projectile and hurt someone, or cause a fire.