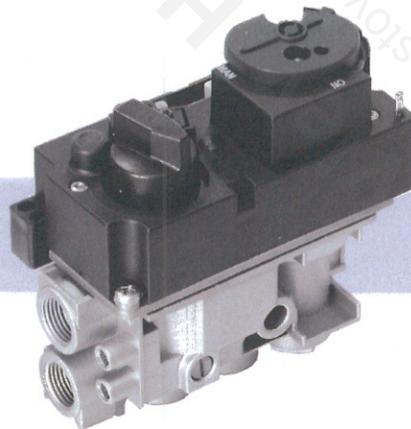


MAXITROL

Advanced Troubleshooting Mertik Maxitrol GV60 Gas Valve



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GV60 System Features

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GV60 System Features

- The Mertik Maxitrol GV60 system is a motorized modulating gas valve.
- It is controlled by: remote handset, wall switch, touchpad.



GV60 System Features

- Battery Operated System.
- Electronic Ignition System – “On Demand Pilot” system.
- Defaults to Manual Mode after ignition.
- Controls flame height by changing gas pressure.
- Minimum rate determined by the manufacturer.
- “Learns the Room System” measures room temperature and compares it to set-point temperature.
- Remote handset sends a signal every 4 minutes to the receiver.

MAXITROL

GV60 System Features



Standard Remote Handset



Display Remote Handset



Timer/Thermostat Remote Handset



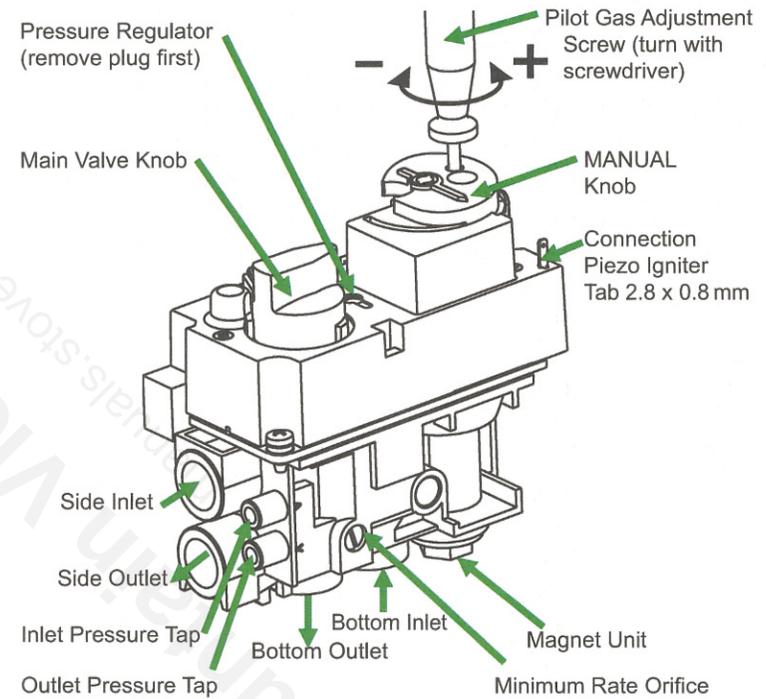
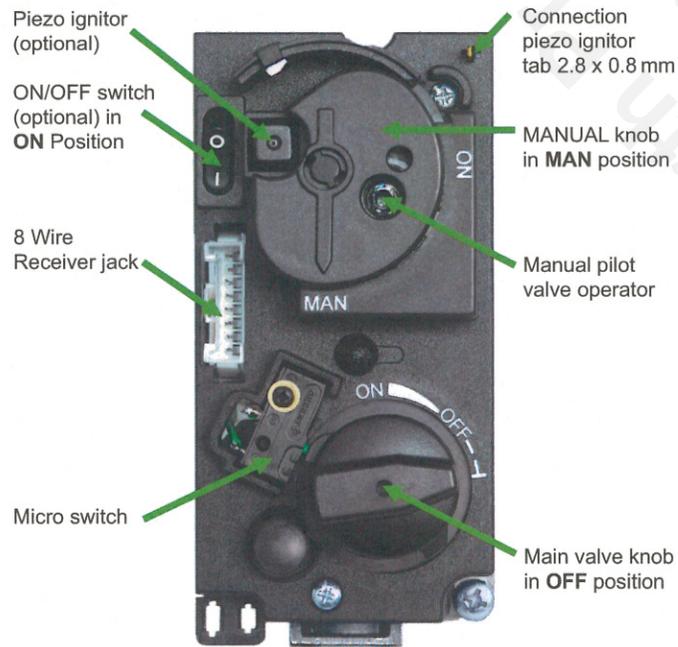
Full Variable Remote Handset (with light and fan)



Receiver

GV60 System Features

Connections



GV60 System Features

Components and Accessories



Wall Switch



Switch Panel



Interrupter Block



Ignition Cable



Thermo Current Cable with ON/OFF switch



Thermo Current Cable without ON/OFF switch



Touch Pad



Mains Adaptor with connections for EU, UK, and U.S.



Thermo Current Cable



8 Wire Cable GV-Receiver

GV60 System Features

Low Battery Receiver

- When the receiver battery power is low, the GV60 system shuts off the fire and pilot. * will beep

Five Day Shut Off (CSA version)

- The system shuts off the fire and pilot if there is no change in flame height for 5 days.

• Backup Batteries

- If the mains power should fail, the receiver automatically goes to battery power for all functions except the light and fan.

Second Thermocouple Shut Off

- Second Thermocouple Option: The system shuts off the fire when the main burner does not completely ignite approximately 20 seconds after ignition or after pushing the **large flame** button.

NOTE: If there is a failure due to the second thermocouple not receiving a signal, there is a 2-minute waiting period prior to the next ignition sequence. This is to allow for the gas in the system to dissipate.

GV60 System Features

Advanced Features - Standard

Display

- Large temperature indicator
- Multilevel energy indicator (4 bars)

6-hour No Communication Turn Down (CE, CSA)

- Manual Mode/Temperature/Timer Mode: The valve will turn to pilot flame if the batteries in the handset are low or if the handset is out of communication range for a 6-hour period.

6-hour No Motor Movement (CSA)

- Manual Mode/Temperature/Timer Mode: The valve will turn to pilot flame if there is no change in burner flame height for a 6-hour period. In Temperature/Timer Mode, if the ambient room temperature changes, the burner flame height will adjust automatically to maintain set temperature, and the fire will continue to function normally.



GV60 System Features

Advanced Features - Optional

Light/Dimmer

- Turns light on and off and adjusts brightness.

Circulating Fan

- The fan has 4 speed levels from low (1 bar) to high (4 bars) and can be turned off.

Latching Solenoid

- The main burner can be switched off while the decorative burner remains on, or vice versa.



GV60 System Features

Advanced Features - Optional

Receiver Overheating Turn Down (only available on fan and light option)

- System with circulating fan and light/dimmer turns the valve to pilot flame if the temperature reading of the receiver is higher than 140°F (60°C). The main burner will come back on only when the temperature is below 140°F (60°C).

1-hour Turn Down for Bedroom Fires

- Valve turns to pilot flame if there is no change in burner flame height over a 1-hour period.



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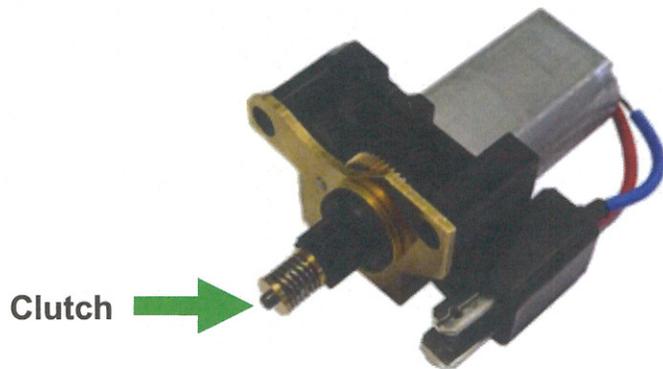
GV60 Control Valve Components

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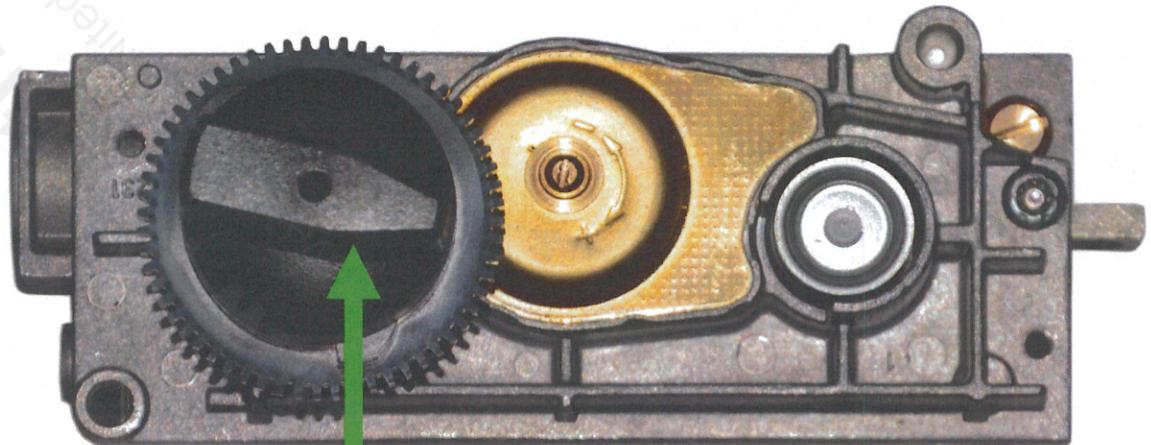
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Control Valve Components Inside the Valve Head

6 VDC Motor with Clutch
for Manual Operation



Clutch

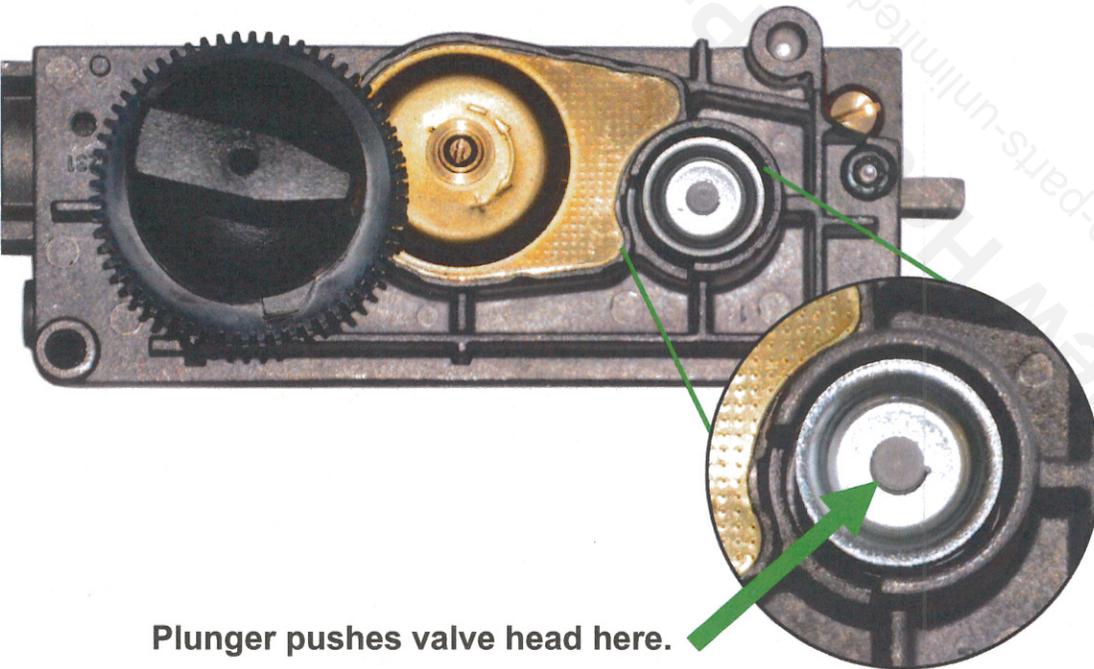


Flame Height Knob
Driven by Motor

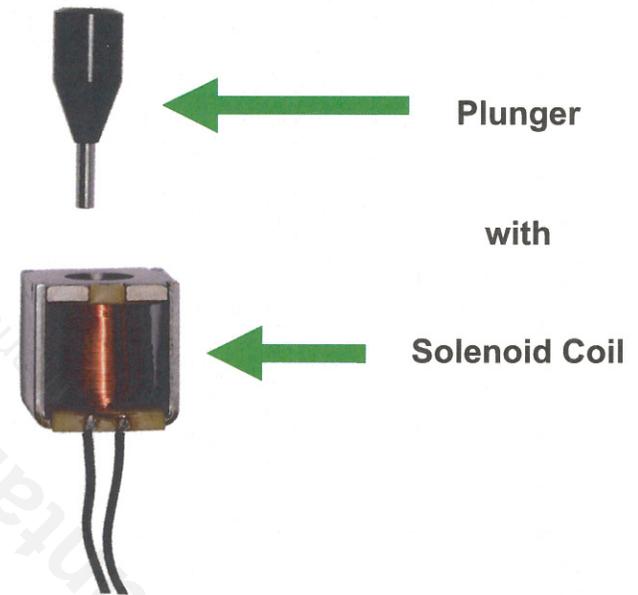
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Control Valve Components Inside the Valve Head

Solenoid gets a burst of power from the receiver.



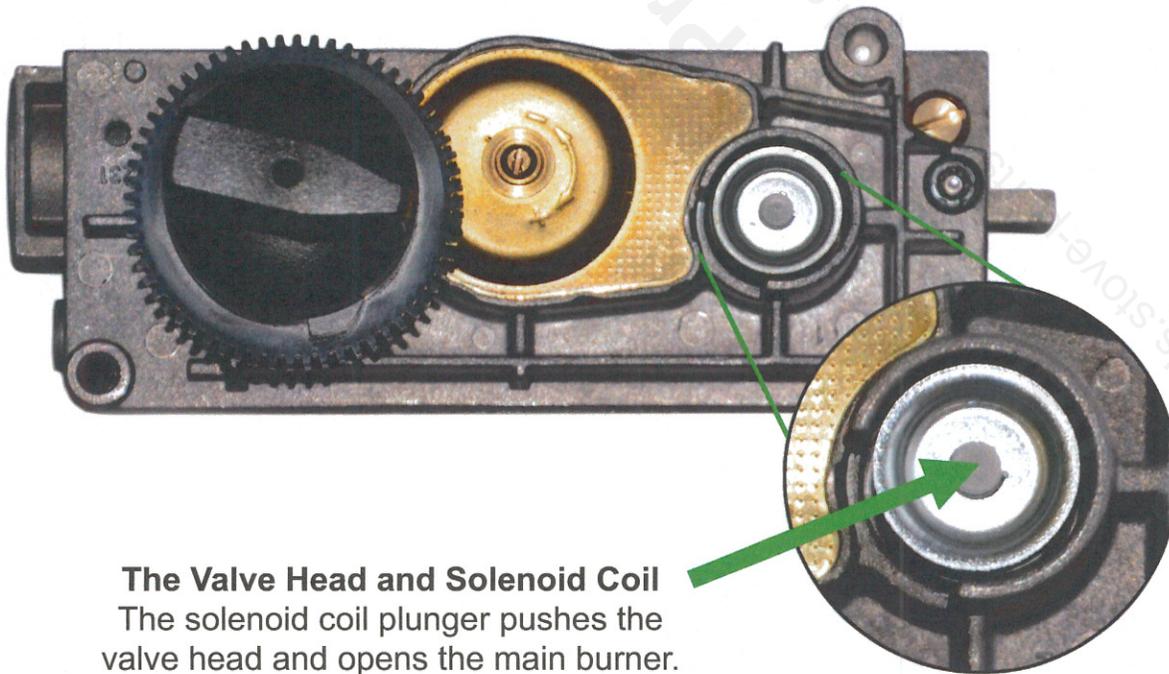
Plunger pushes valve head here.



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Control Valve Components Inside the Valve Head

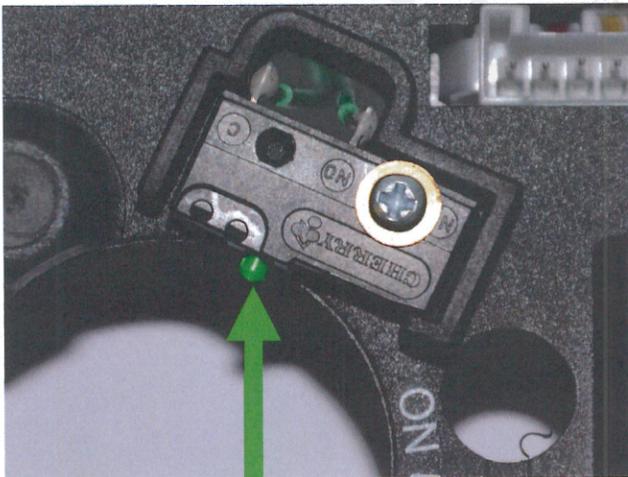


Electromagnet

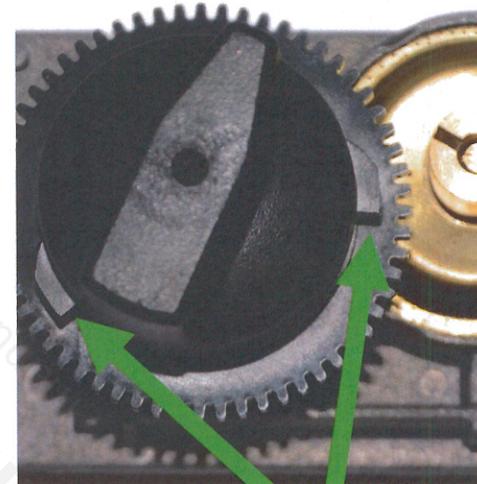
The Valve Head and Solenoid Coil
The solenoid coil plunger pushes the valve head and opens the main burner.

Control Valve Components Inside the Valve Head

Micro Switch to limit rotation.



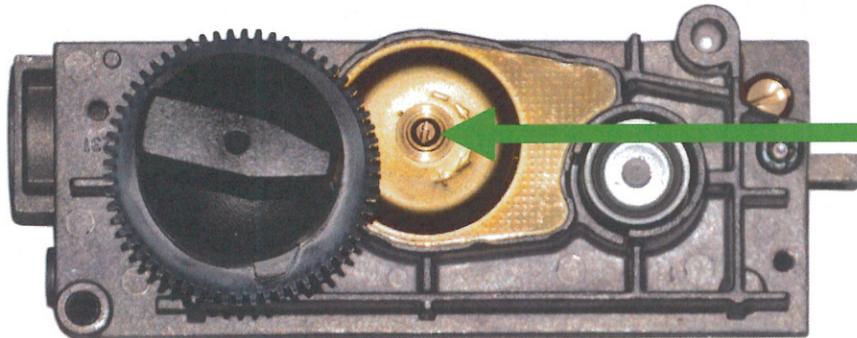
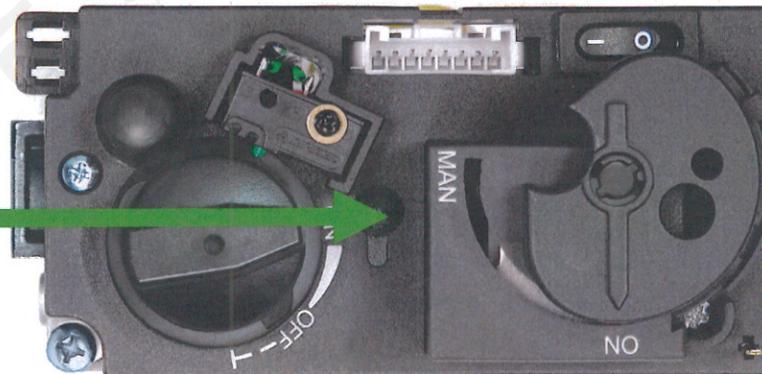
Micro Switch



Cams control high, low fire and
OFF position.

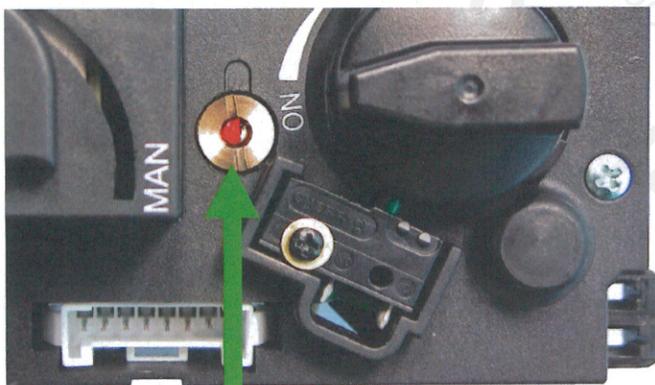
Control Valve Components Adjusting the Pressure Regulator (for Vented Units Only)

Remove small plug to access the adjustment screw.

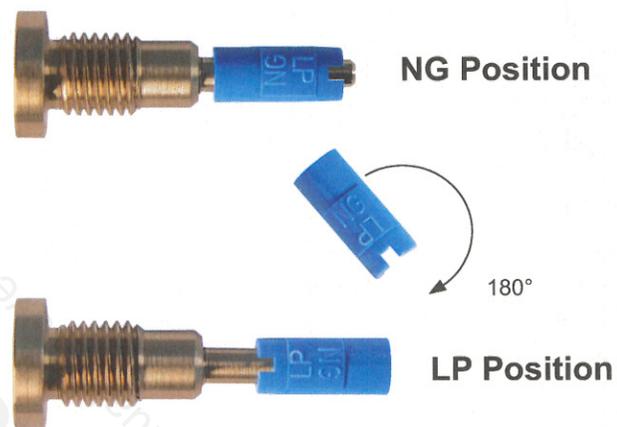


Turn the adjustment screw to set required burner pressure (high fire). Pressure is increased by turning clockwise or decreased by turning counterclockwise. This adjustment is required for fuel conversions.

Control Valve Components Converting the Pressure Regulator



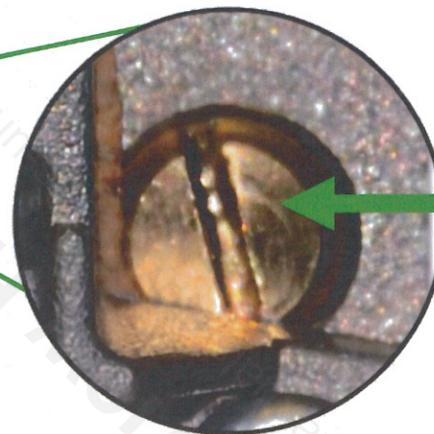
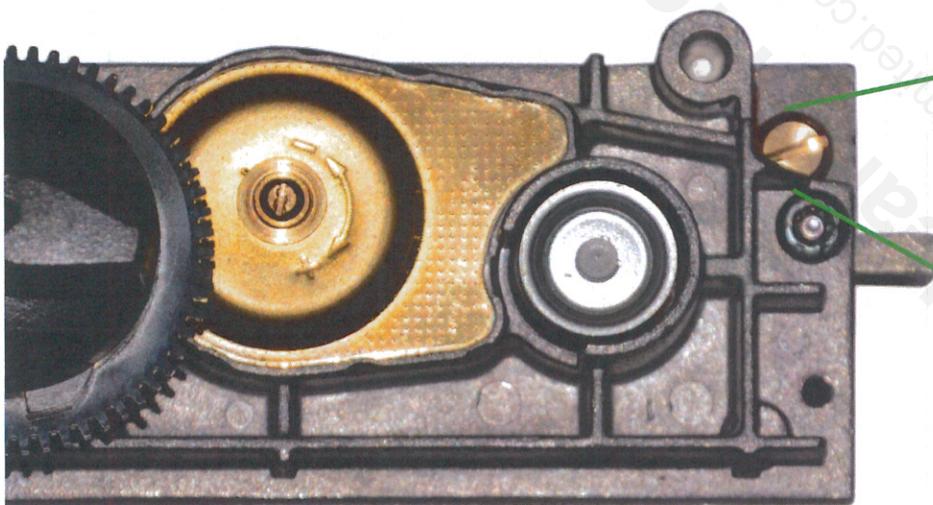
Conversion Plug



Convertible regulators are designed to deliver either of two fixed outlet pressures for Natural Gas (NG) or LP Gas. To change from one gas to the other, turn the conversion plug counter clockwise and remove it from the valve. Unsnap and remove the plastic part of the conversion plug, rotate it 180°, and then slide it back onto the conversion plug until it snaps. Insert the conversion plug into the valve and turn it clockwise until it bottoms out.

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Control Valve Components Inside the Valve Head



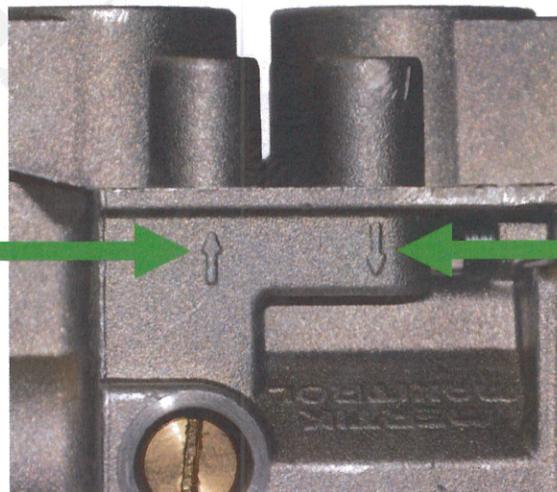
**Pilot Adjustment Screw
(for vented units only)**

Clockwise = Decrease
Counterclockwise = Increase

NOTE: The default setting of the pilot adjustment screw is preset to the maximum. Therefore, it is only possible to decrease the pilot.

Control Valve Components Gas Pressure Test Ports

Manifold or
Burner Pressure

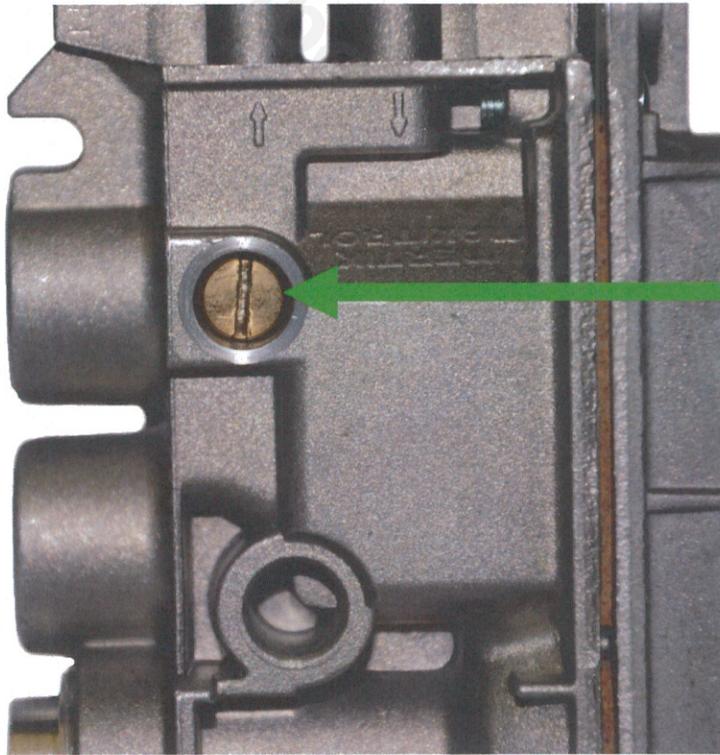


Inlet or System Pressure

WARNING: The pressure test ports use a captured screw. It will not fall out but it must be retightened after checking both inlet and manifold pressure.

IMPORTANT! Check pressure test ports for leaks after test is complete.

Control Valve Components Minimum Rate Screw



Fuel Conversion: This minimum rate screw should be changed when converting from one fuel to another. Unless the appliance manufacturer does not recommend the change. Always follow the OEM's instructions.

Control Valve Components Thermocouple Circuit Interrupter

Installation:

1. Tighten brass part of interrupter block into valve. Hand tight plus $\frac{1}{4}$ turn.



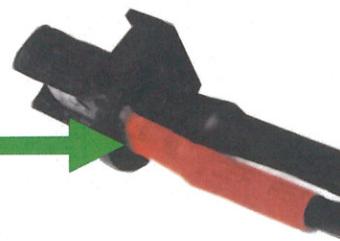
Thermocouple Circuit
Interrupter Block



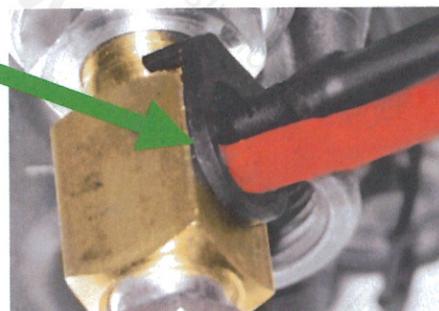
Control Valve Components Thermocouple Circuit Interrupter

Installation:

2. Insert spade connectors into plastic spacer.



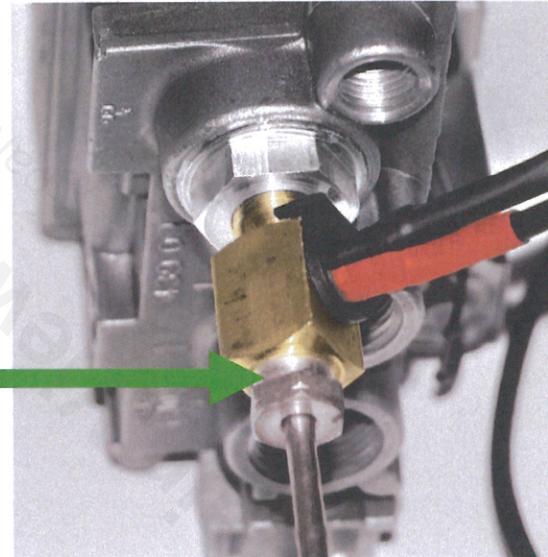
3. Insert plastic spacer into the interrupter block.



Control Valve Components Thermocouple Circuit Interrupter

Installation:

4. Thread thermocouple into female end of interrupter block. Hand tight plus $\frac{1}{4}$ turn.



Control Valve Components Thermocouple Installation

Threading the female end of the thermocouple into the interrupter block as recommended results in a smooth surface contact area as seen in Figure 1.

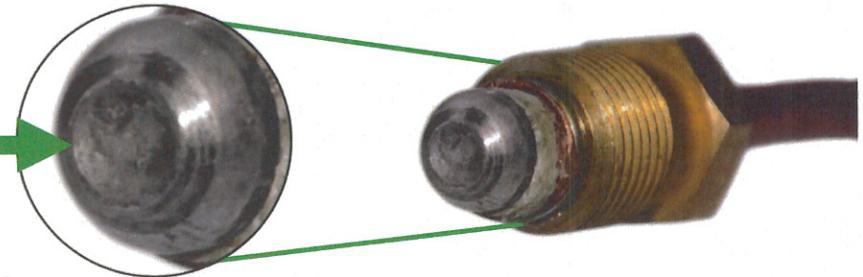


Figure 1

Over tightening of the thermocouple can cause damage as seen in Figure 2. Damage to the thermocouple decreases the available surface contact area and results in much higher resistance.

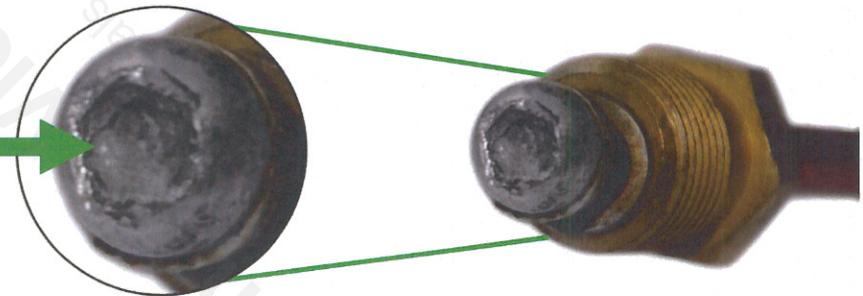


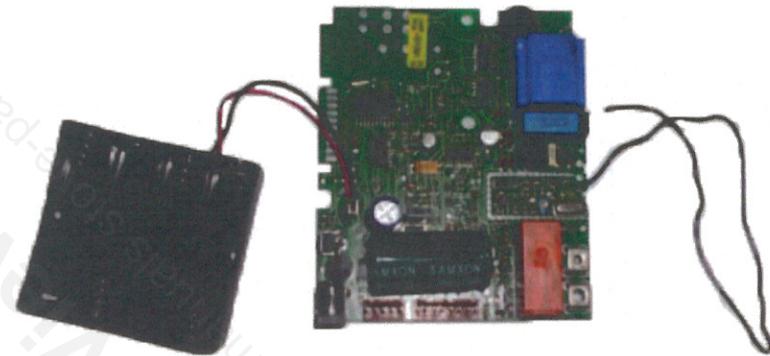
Figure 2

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GV60 Receiver Components

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Receiver Components



The receiver module is the brain. It is not just a battery box!

Receiver Components

Setting the Electronics Code Synchronizing the Receiver and Handset.



Receiver Reset Button

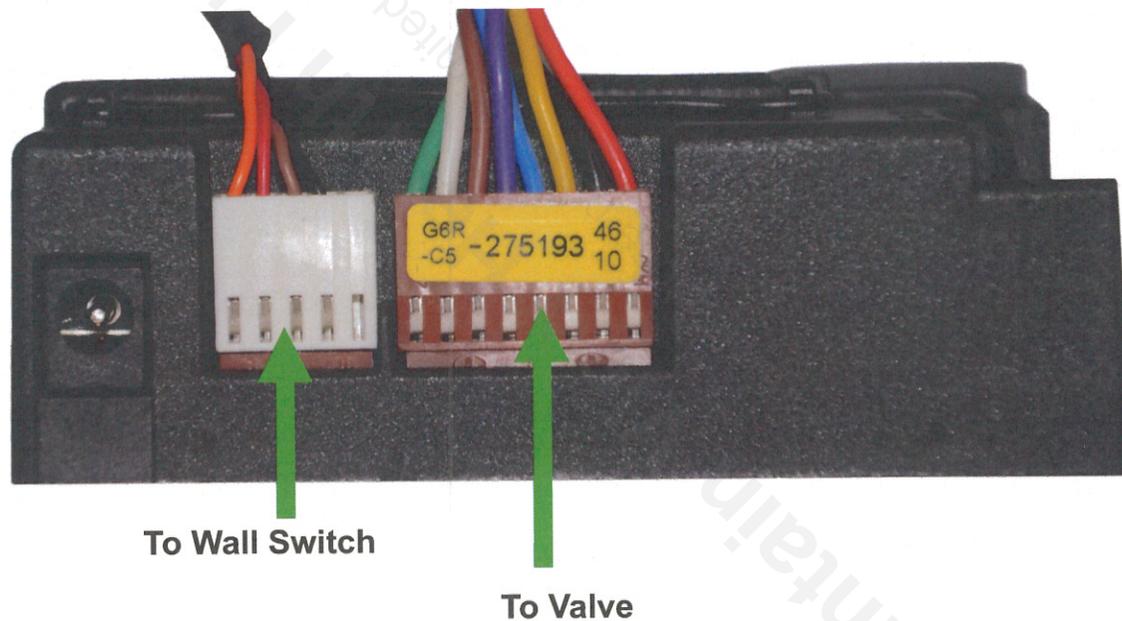


Small Flame Button on Handset

- Press and hold the receiver's reset button until you hear one short beep and one long beep. After the second beep, release the reset button.
- Within the subsequent 20 seconds press the small flame button on the handset until you hear two additional short beeps coming from the receiver confirming the code is set. If you hear one long beep, this indicates the code learning sequence has failed or the wiring is incorrect. There are 65,000 random codes to select from.

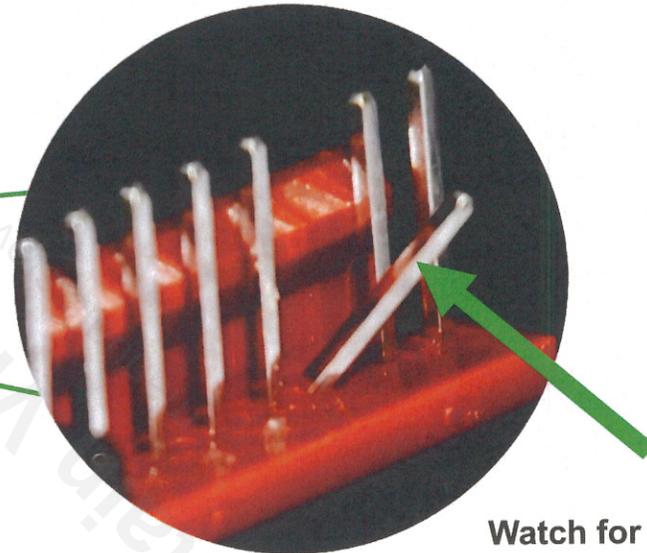
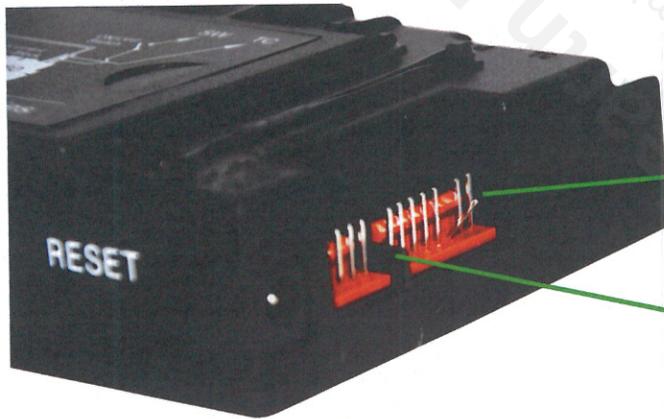
NOTE: This is a one time setting only, and is not required after mains power failure or changing the batteries of the handset or receiver.

Receiver Components Wire Harness Connections



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Receiver Components Wire Harness Connections

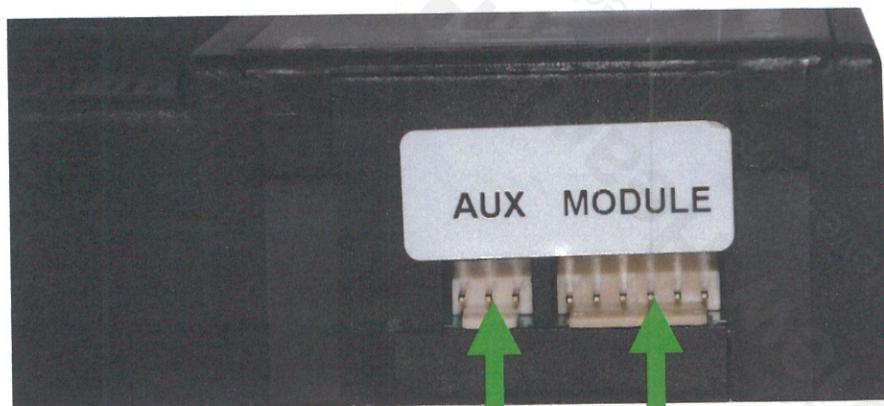


Watch for bent pins

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Receiver Components Wire Harness Connections

Universal Receiver



Auxiliary and/or Latching
Solenoid Connection

V Module Connection

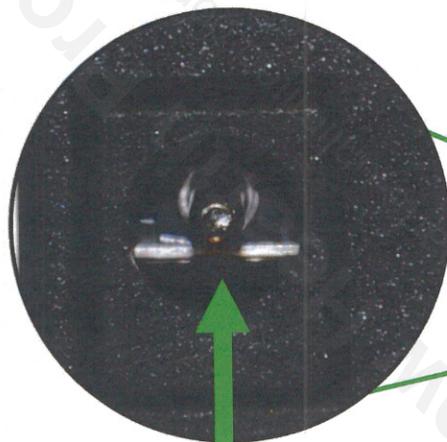
Receiver Components Power Connection



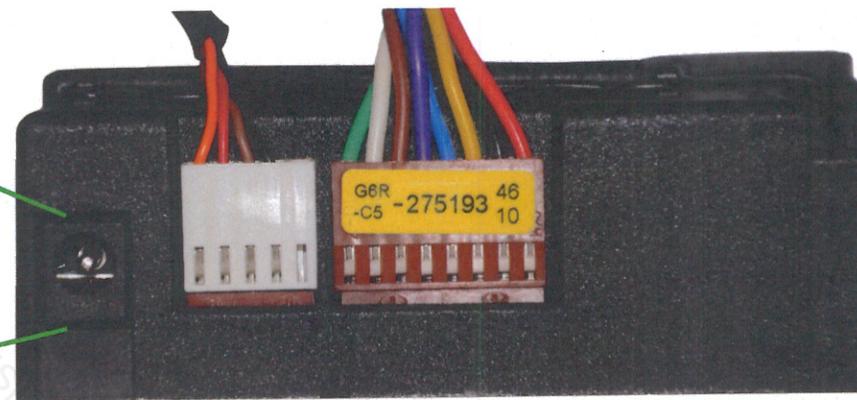
AC Mains Adapter



Remote Battery Box



AC Mains Adapter or Remote Battery Box Connection



Receiver Components Power Connection



Remote Battery Box



WARNING: NEVER connect a 9-Volt battery directly to the cable of the remote battery box. This connection is only to be used to connect the receiver to the remote battery box.

Receiver Battery Compartment



Battery Removal Ribbon

Make certain that the ribbon is positioned under the batteries and that the tab is exposed.

Batteries: 4 x 1.5V "AA"
(quality alkaline recommended)

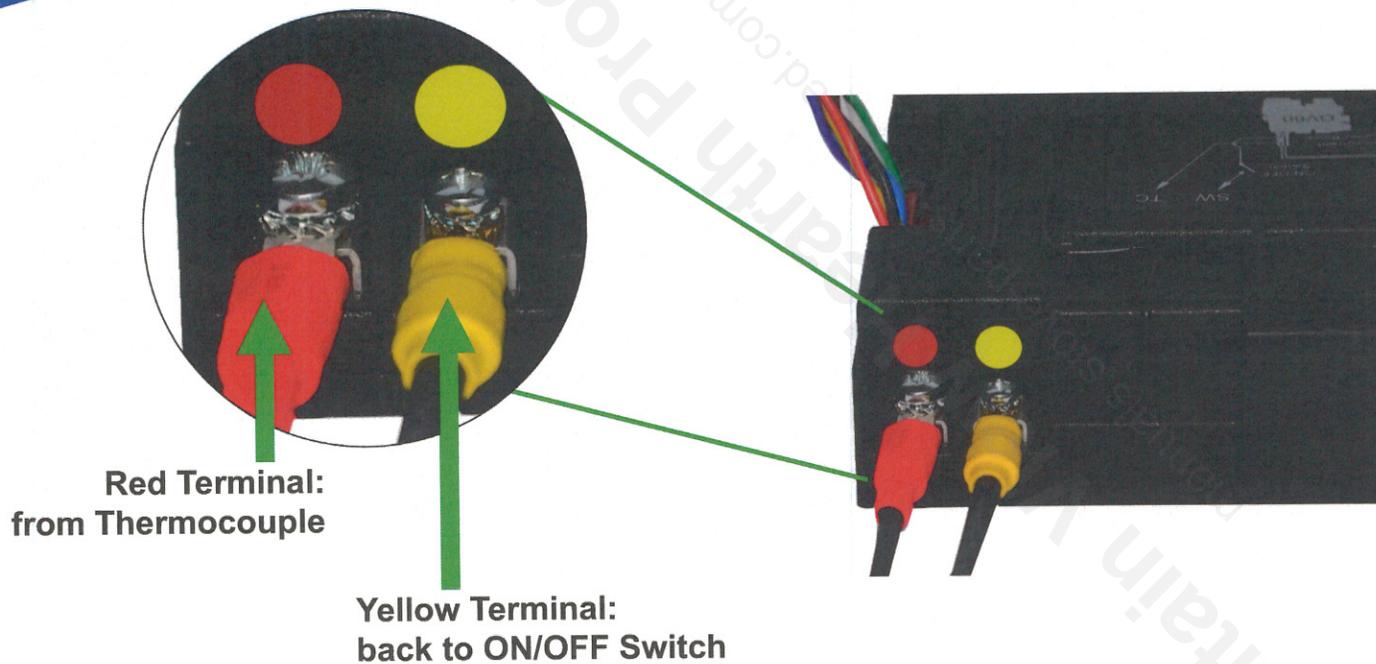
NOTE: Always check for proper battery installation.

WARNING:

- Do not use metal objects (screwdrivers, knives) to remove batteries. This could cause damage to the receiver battery compartment. Use the battery removal ribbon.
- Battery replacement is recommended at the beginning of each heating season.
- Dead or old batteries should be removed immediately. If left in the unit the batteries can overheat, leak and/or explode.
- New and old batteries and different brands of batteries should not be used together. Mixing of various batteries can cause the batteries to overheat, leak and/or explode.

Receiver Components

Thermocouple Interrupter Circuit Connections

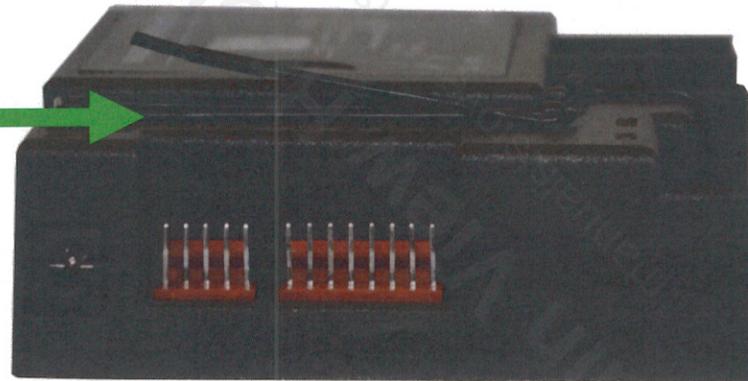


WARNING: The thermocouple interrupter circuit is polarity sensitive. Make certain the red cable (1/4") is connected to the red terminal, and the yellow cable (3/16") is connected to the yellow terminal. Verify that the connections are tight.

Receiver Components

Receiver Antenna

Antenna Wire

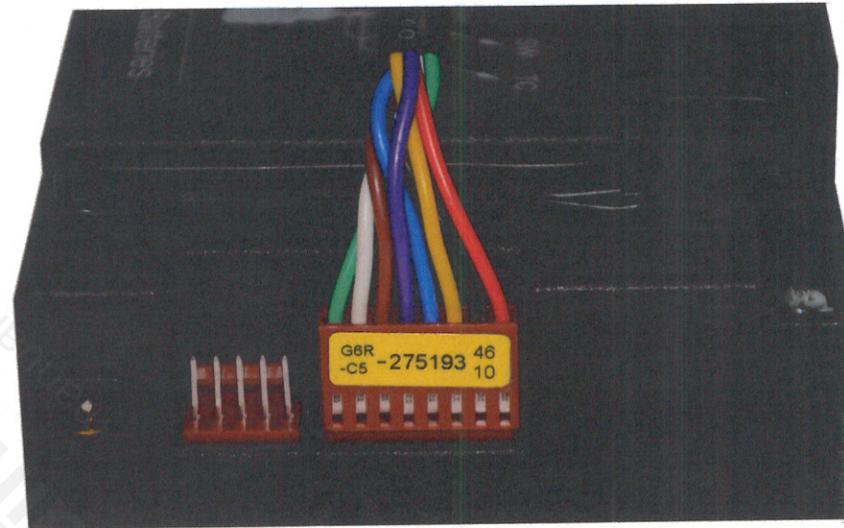
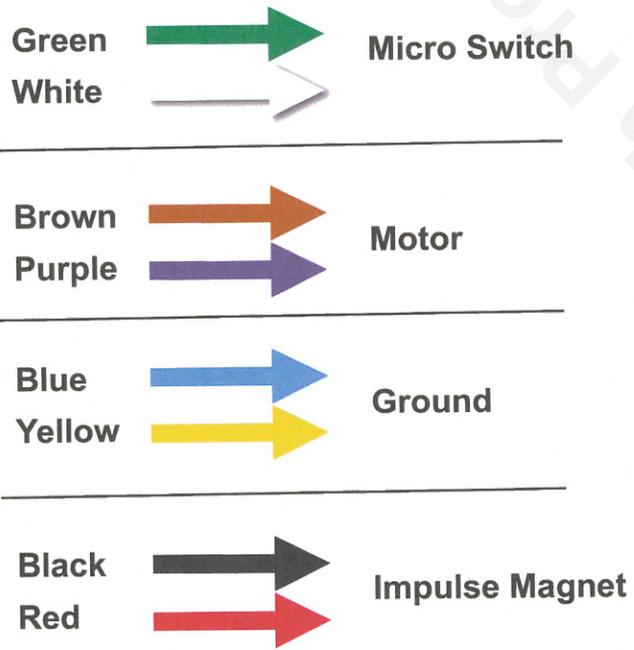


NOTE: Antenna wire can be moved for better reception.

WARNING: Never allow the antenna wire to come in contact with, or too close to, the igniter cable. Remember it is an antenna after all...

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Receiver Components Receiver to Valve Control Cable



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GV60

Troubleshooting

Potential Problem:
Customer calls and says
“Why is my fireplace not working the way it should?”

QUESTIONS FOR TECHNICIAN TO ASK

Troubleshooting the GV60

QUESTIONS TO ASK	POSSIBLE CAUSE
1. Is the room temperature and the time showing on the remote display?	A blank display could indicate that the 9Volt battery in the handset needs to be replaced.
2. Does the motor turn the knob when the UP & DOWN flame buttons on the handset are pushed?	Dead receiver batteries or the handset is not synced. (See slide 25)
3. Is the handset in the SUN TEMP, MOON TEMP, or TIMER mode?	Unit may be OFF because the set temperature is lower than the room temperature.
4. Has the handset been out of range for 6 hours?	No communication for 6 hours will cause the fireplace to go to STANDBY mode.
5. Have you verified transmission of signal?	Handset – radio signal flashes when pressing UP & DOWN flame button. Receiver – beeps to confirm receipt of signal.

Troubleshooting the GV60

QUESTIONS TO ASK	POSSIBLE CAUSE
6. Has the knob not moved in 5 days?	After 5 days of no movement the pilot will shut off.
7. Is the ON/OFF switch, located on the valve, in the ON position?	“O” = OFF; “—” = ON
8. Is the ON/MANUAL dial, located on the valve, in the ON position?	The dial must be fully turned to the ON position.
9. Does it have a Voltage Module? If yes, did the receiver overheat?	The fireplace goes to pilot if the receiver reaches 140°F.

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GV60 Troubleshooting

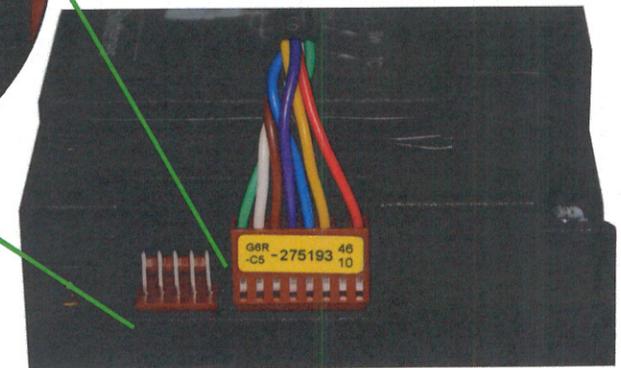
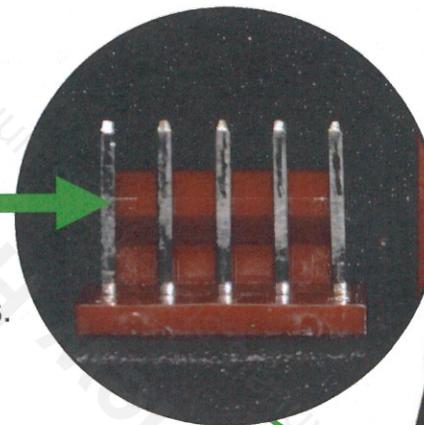
TEST THE BATTERIES

Troubleshooting the GV60 Testing the Batteries

TEST: Check batteries for proper voltage.

PROCEDURE: Connect “+” test probe on last pin.
Connect “-” test probe to ground,
e.g. valve body or appliance chassis.

RESULT: The reading should be 5 – 6VDC.



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GV60 Troubleshooting

TEST THE INITIAL RECEIVER OUTPUT

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Troubleshooting the GV60 Testing Initial Receiver Output

TEST: Do you hear the “clunk” when the solenoid coil engages?

PROCEDURE: Connect “+” test probe on yellow wire.
Connect “-” test probe to ground,
e.g. valve body or appliance chassis.

RESULT: The reading should be 5+ mV at the yellow wire
as the batteries power the electromagnet.



Connect “+” test probe on yellow wire

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GV60

Troubleshooting

Potential Problem:
The appliance will not light with the handset.

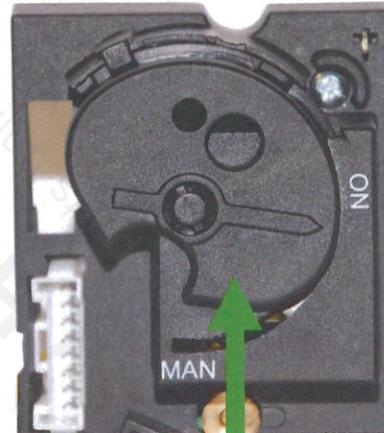
TEST THE VALVE

Troubleshooting the GV60 Testing the Valve

TEST: Verify that the MANUAL knob is in the ON position.

PROCEDURE: Visually inspect MANUAL knob position.

RESULT: MANUAL knob should be rotated into, the ON position. The knob will “click” when it is engaged correctly.



INCORRECT.

MANUAL knob is not fully in the ON position. The GV60 will not operate properly with the knob in this position.



CORRECT.

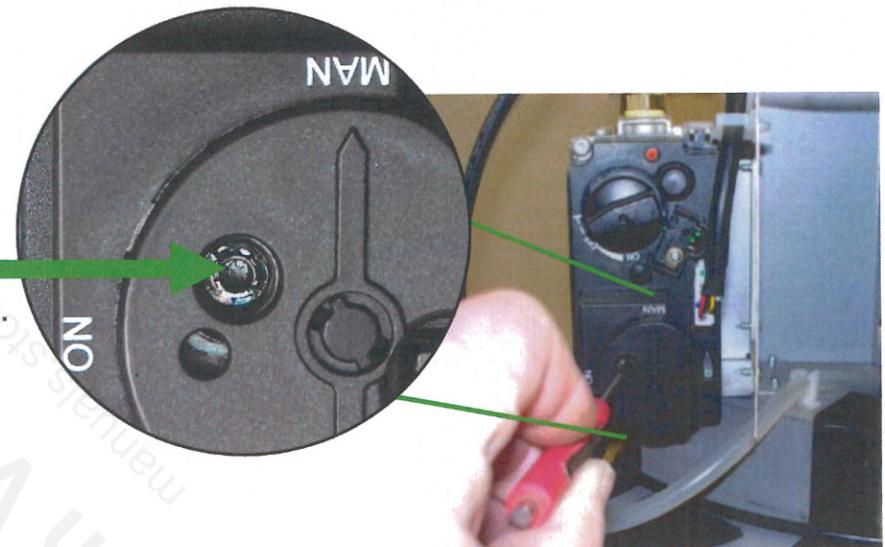
MANUAL knob should be fully in the ON position.

Troubleshooting the GV60 Testing the Valve

TEST: Manually light the fireplace to verify the gas supply is sufficient.

PROCEDURE: Turn MANUAL knob to MAN.
Insert small tool and depress the plunger.
Light pilot and hold the plunger for 10 seconds.
Turn knob back to ON.

RESULT: If the manual light is successful, test the electronics.



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GV60

Troubleshooting

Potential Problem:
The appliance will not light with the handset.

TEST THE ELECTRONICS

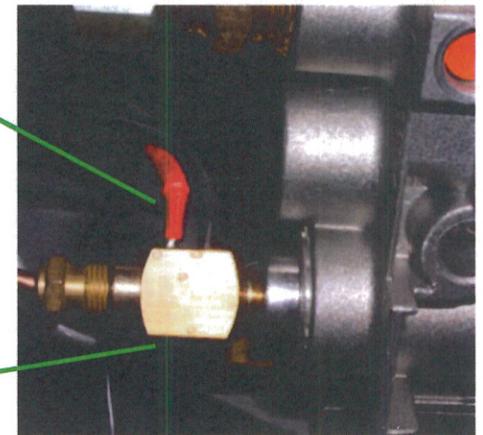
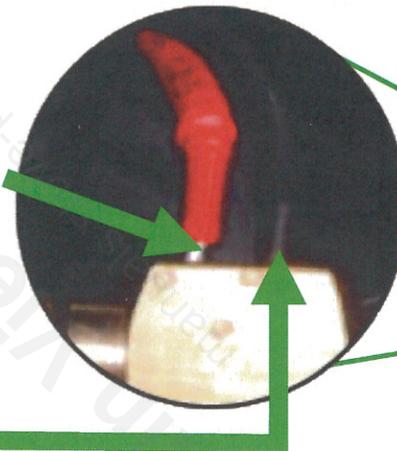
Troubleshooting the GV60 Testing the Electronics

TEST: Test the thermocouple circuit voltage by measuring the mV at the red and black connections at the thermocouple interrupter block.

PROCEDURE: (a) Connect “+” test probe on the red wire. Connect “-” test probe to ground, e.g. valve body or appliance chassis.

(b) Repeat with the black wire. Subtract black reading from red.

RESULT: The result should be about a 4 – 6 mV drop.

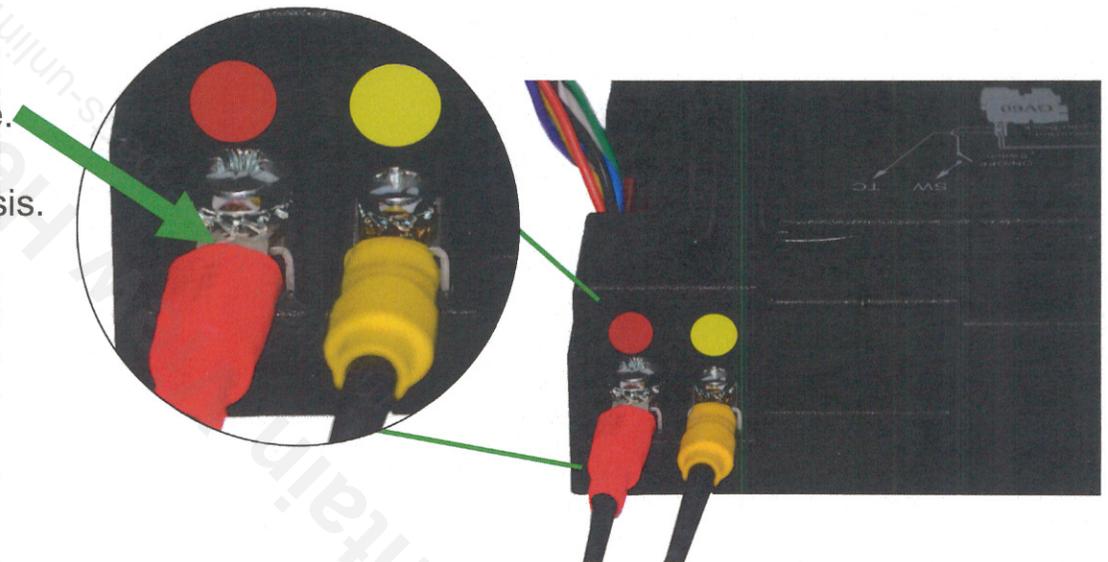


Troubleshooting the GV60 Testing the Electronics

TEST: Take a mV reading at the red terminal.

PROCEDURE: Connect “+” test probe on red wire.
Connect “-” test probe to ground,
e.g. valve body or appliance chassis.

RESULT: The reading should be 10 – 15 mV.



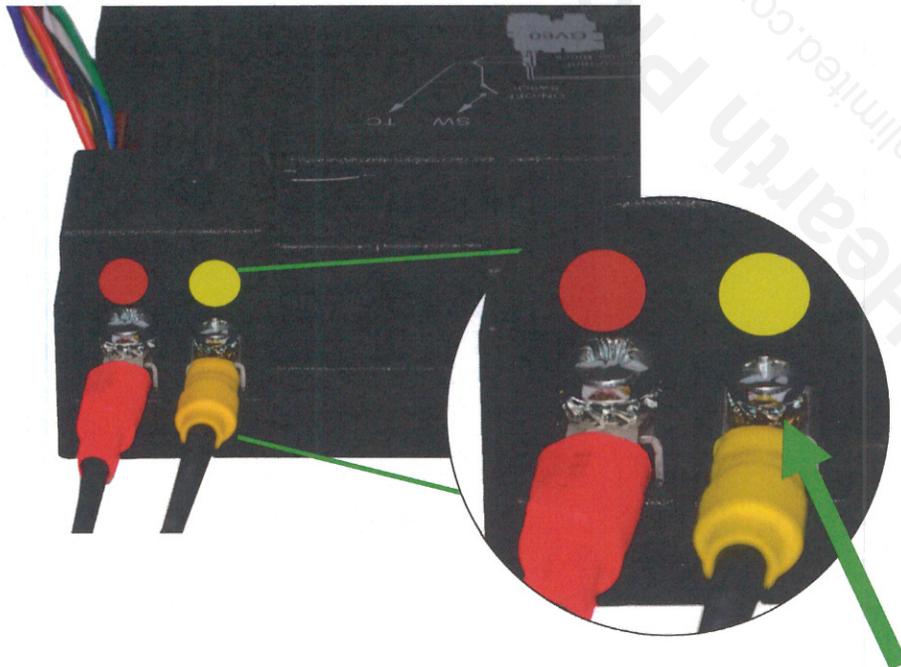
Troubleshooting the GV60 Testing the Electronics

TEST: Take a mV reading at the yellow terminal.

PROCEDURE: Connect “+” test probe on yellow wire.
Connect “-” test probe to ground,
e.g. valve body or appliance chassis.
Subtract mV reading from test on the
red wire (see previous slide) from current
reading on the yellow wire.

RESULT: The difference is the power being consumed
by the receiver.

Connect “+” test probe on yellow wire



Troubleshooting the GV60 Testing the Electronics

TEST: Test the drop-out voltage by taking a mV reading at the yellow terminal.

PROCEDURE: Connect “+” test probe on yellow wire. Connect “-” test probe to ground, e.g. valve body or appliance chassis. Monitor voltage after you extinguish pilot. Note the voltage at the time you hear the electromagnet drop out. You will hear a “clunk”. Simultaneously count the number of seconds from the time when the pilot is extinguished until the electromagnet drops out.

RESULT: The pilot should drop out at 1.5 – 3 mV.

MAXITROL

GV60

Troubleshooting

**Potential Problem:
The flame height will not change.**

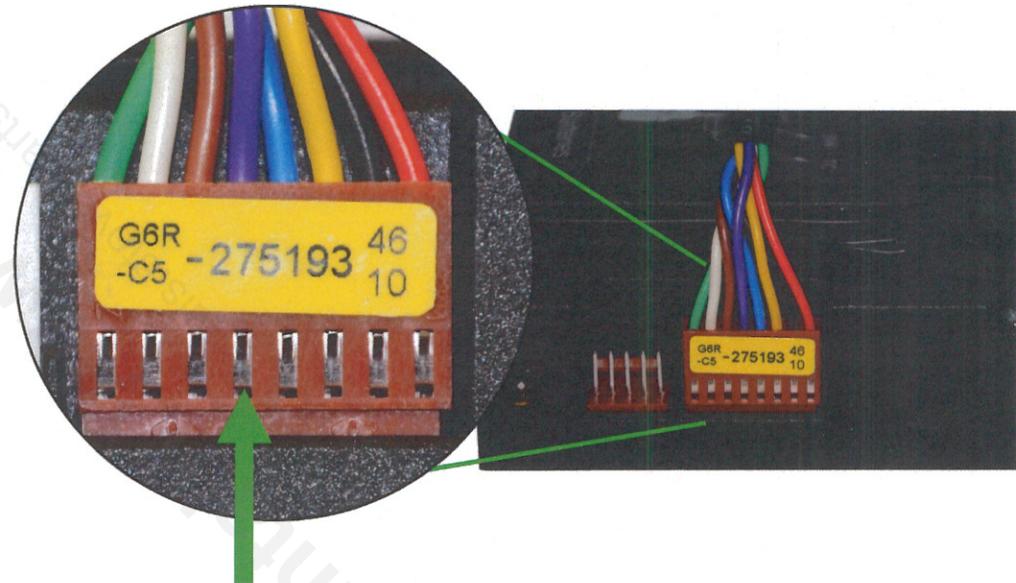
VERIFY MOTOR OPERATION

Troubleshooting the GV60 Verifying Motor Operation

TEST: Verify that the motor is receiving power.

PROCEDURE: Connect “+” test probe on the purple wire.
Connect “-” test probe to ground, e.g. valve
body or appliance chassis.
Push DOWN FLAME button on the handset.

RESULT: The reading should be 5-6 Volts and motor
should move. If there is no motor movement,
the motor may be damaged. Replace motor
(motor kits available).



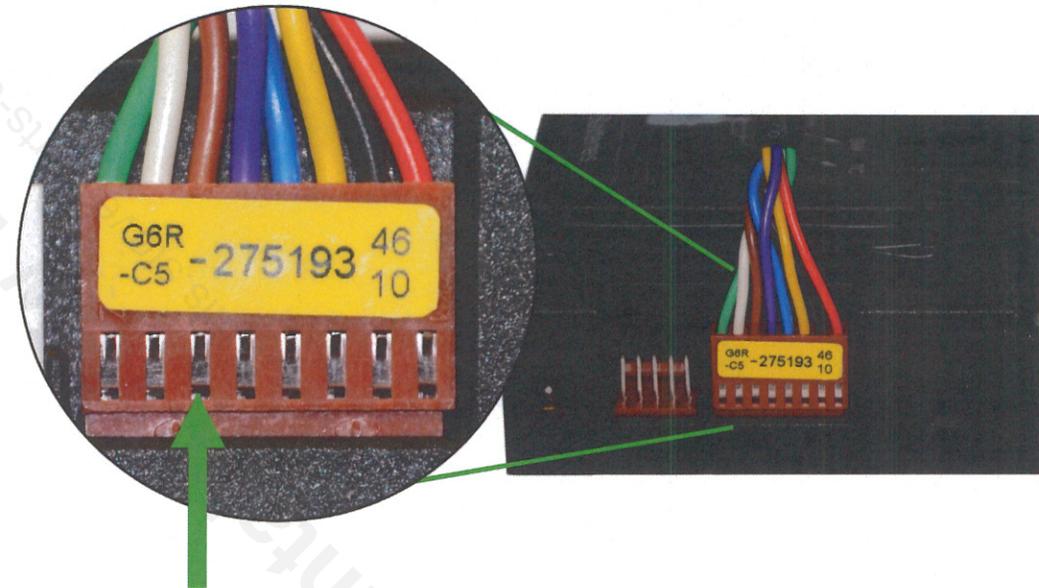
Connect “+” test probe on the purple wire.

Troubleshooting the GV60 Verifying Motor Operation

TEST: Verify that the motor is getting power.

PROCEDURE: Connect “+” test probe on brown wire.
Connect “-” test probe to ground, e.g. valve
body or appliance chassis.
Push UP FLAME button on the handset.

RESULT: The reading should be 5-6 Volts and motor
should move. If there is no motor movement,
the motor may be damaged. Replace motor
(motor kits available).



Connect “+” test probe on the brown wire.

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GV60

Troubleshooting

**Potential Problem:
Intermittent Operation**

TEST GAS PRESSURE

Troubleshooting the GV60 Testing Gas Pressure

TEST: Check gas pressure at pressure test ports on valve.

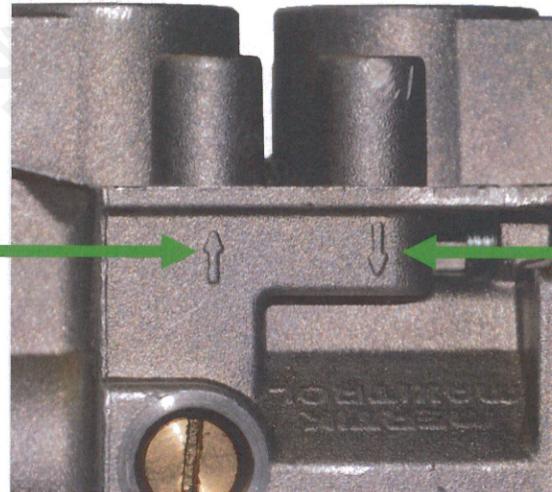
PROCEDURE: The pressure test ports use a captured screw.

It will not fall out but it must be retightened after checking both inlet and manifold pressure.

IMPORTANT: Check pressure test ports for leaks after test is complete.

RESULT: Gas pressures should match those below.

Manifold or Burner pressure
3.5 – 4" NG
9.5 – 10" LP



Inlet or System pressure
5 – 7" NG
11 – 14" LP

NOTE: Always check gas pressure at full flow.

MAXITROL

COMING SOON!

GV60 SYMAX™ Handsets

The SYMAX™ remote control system eliminates scrolling through confusing menus. Each function is activated by touching a symbol.

