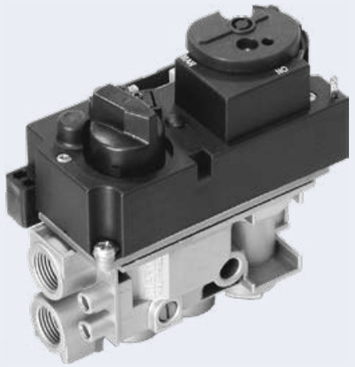
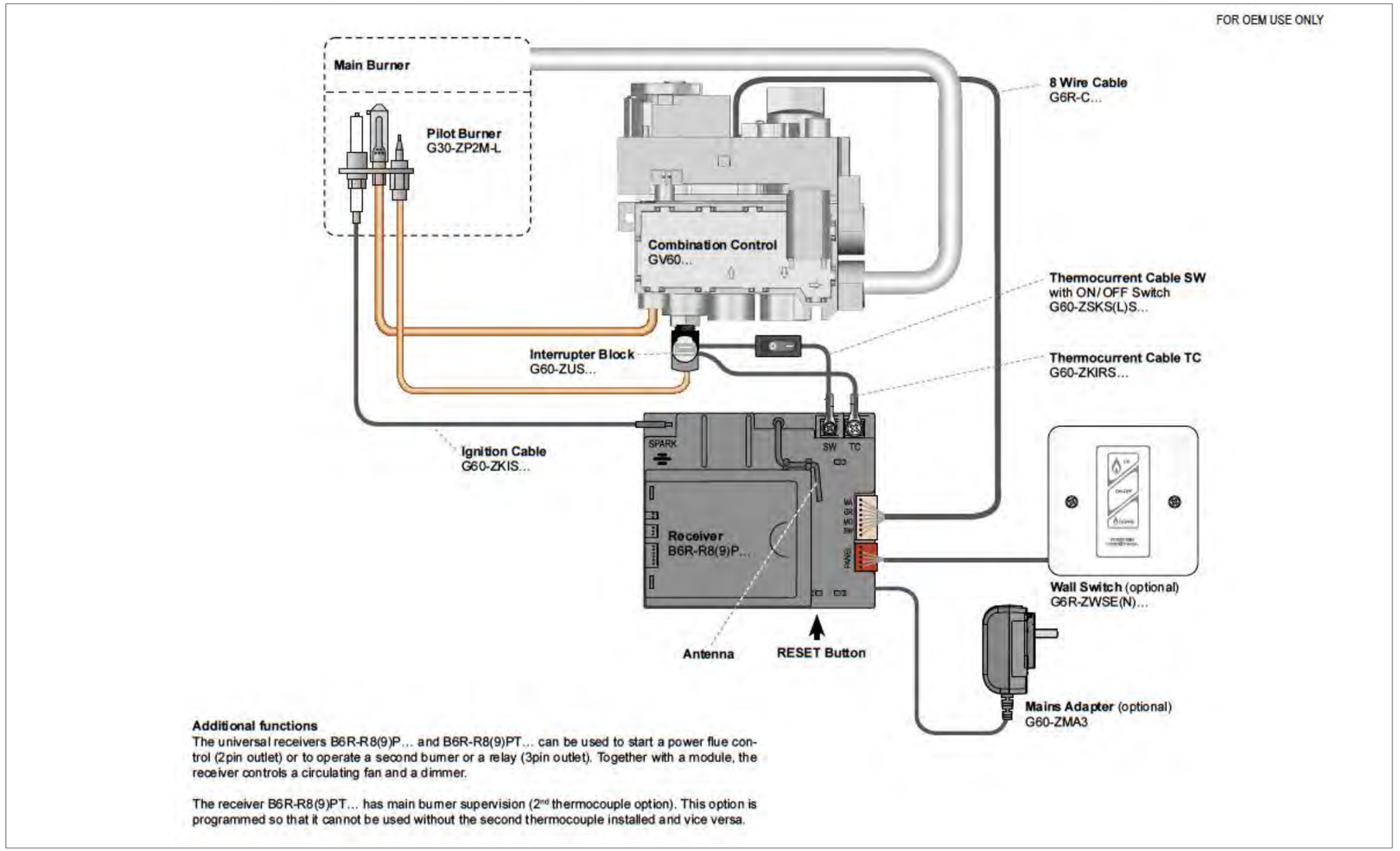
Advanced Technical Training Mertik Maxitrol GV60 Gas Control System



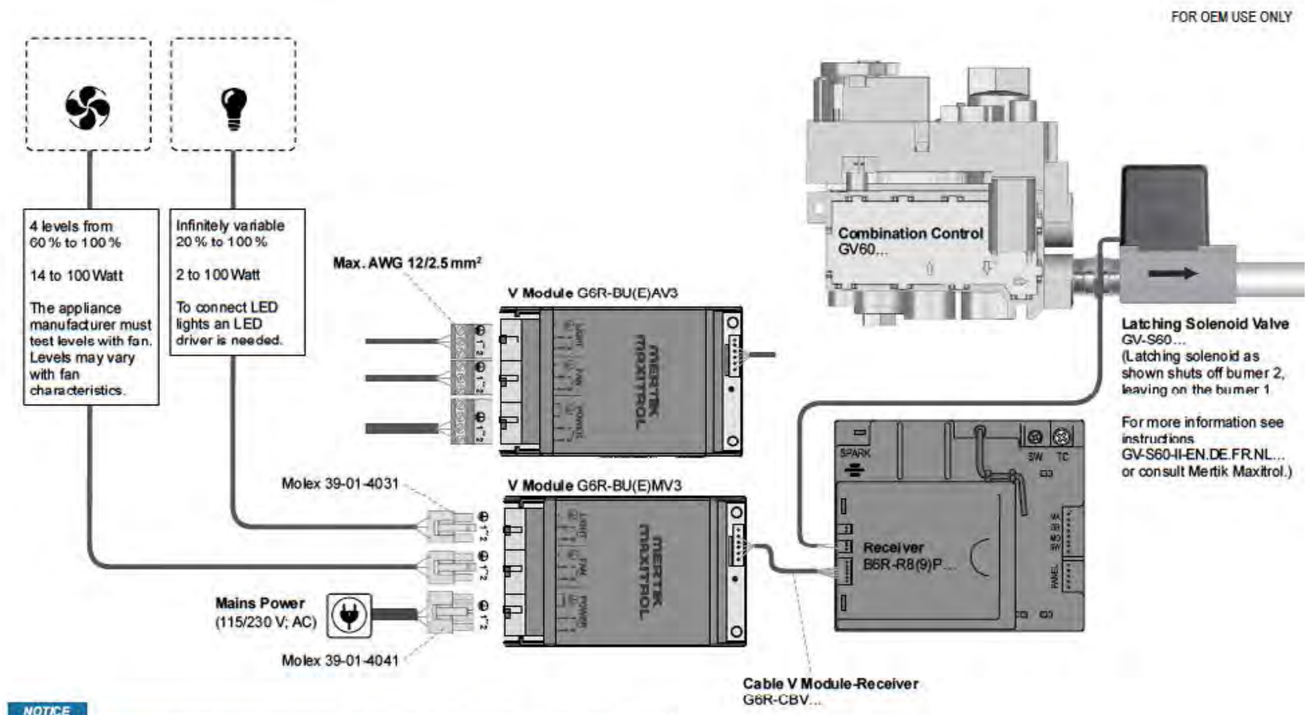
- Battery Operated System.
- Electronic Ignition System – “On Demand Pilot” system.
- Defaults to Manual Mode after ignition.
- Controls flame height by changing gas pressure.
- Minimum gas flow rate is determined by the manufacturer.
- “Learns the Room System” measures room temperature and compares it to set-point temperature.
- Remote handset senses the room temperature constantly. If there is a need for change in valve position, a signal is sent.

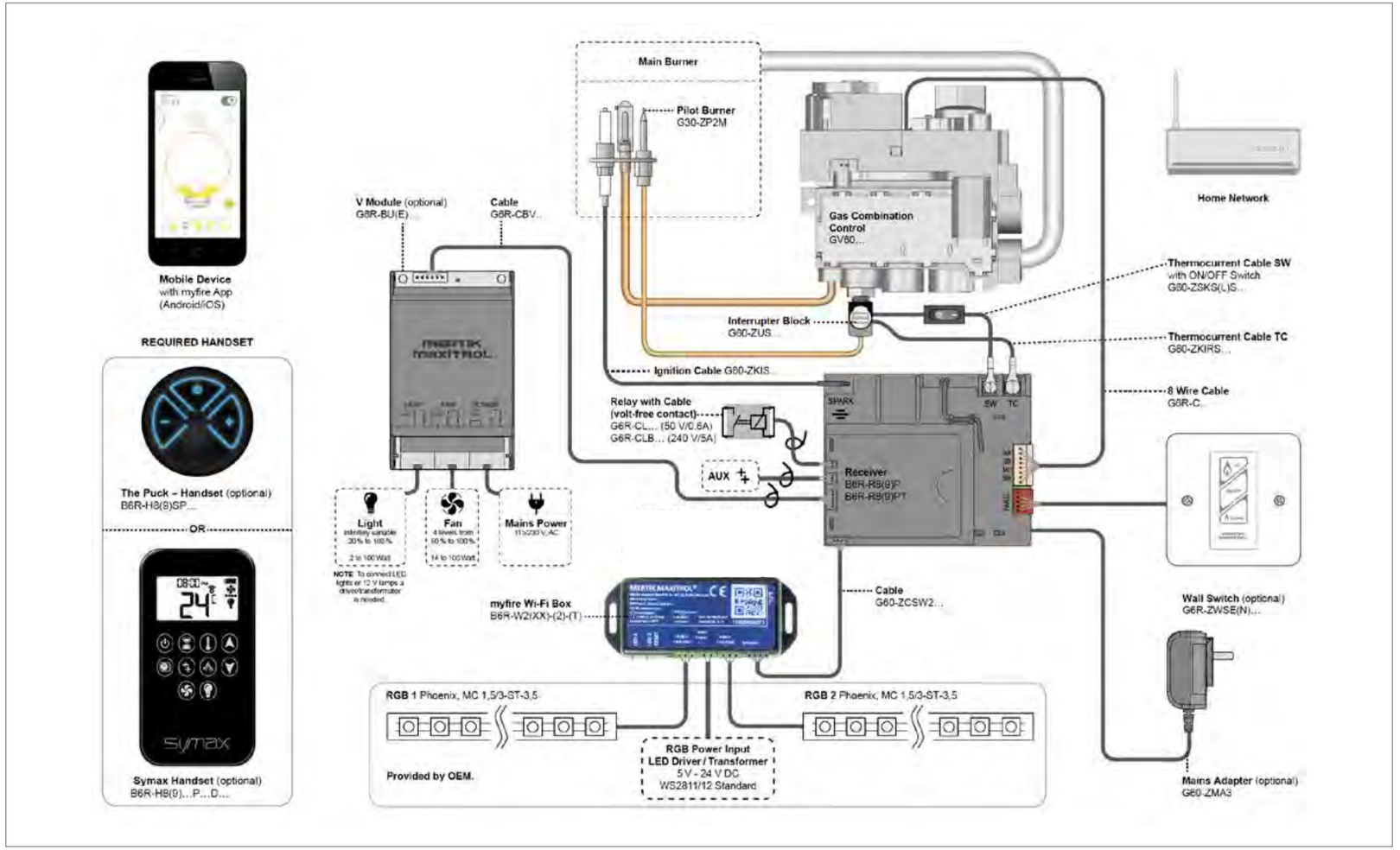


Additional functions
The universal receivers B6R-R8(9)P... and B6R-R8(9)PT... can be used to start a power flue control (2pin outlet) or to operate a second burner or a relay (3pin outlet). Together with a module, the receiver controls a circulating fan and a dimmer.

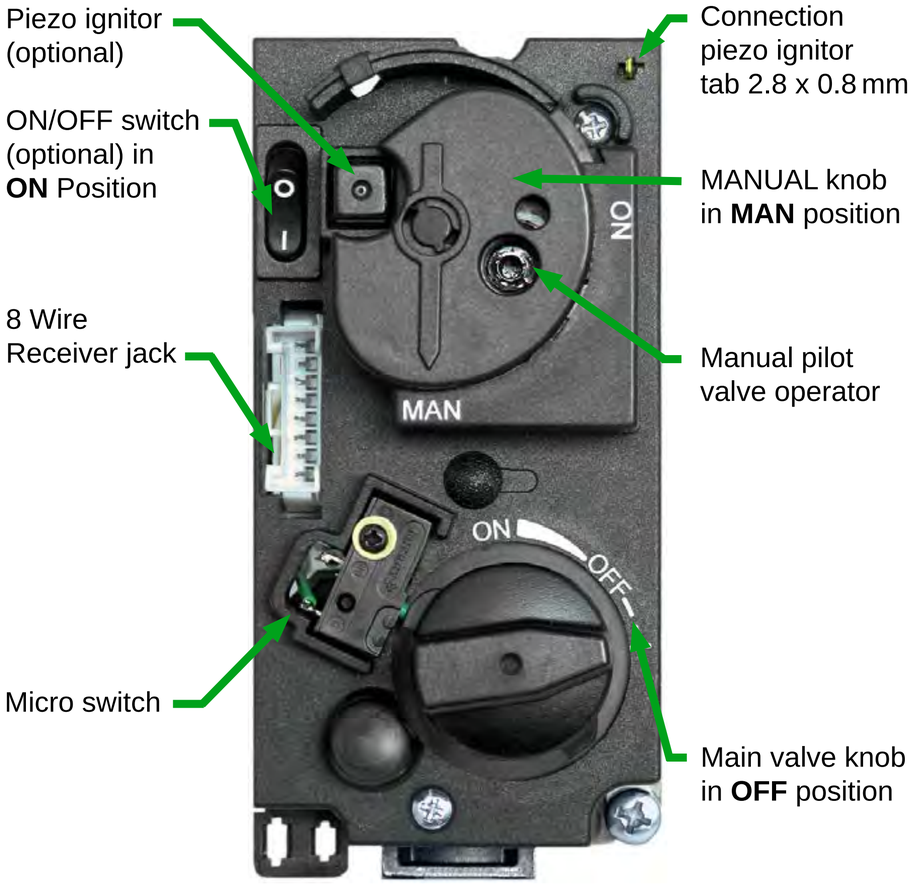
The receiver B6R-R8(9)PT... has main burner supervision (2nd thermocouple option). This option is programmed so that it cannot be used without the second thermocouple installed and vice versa.

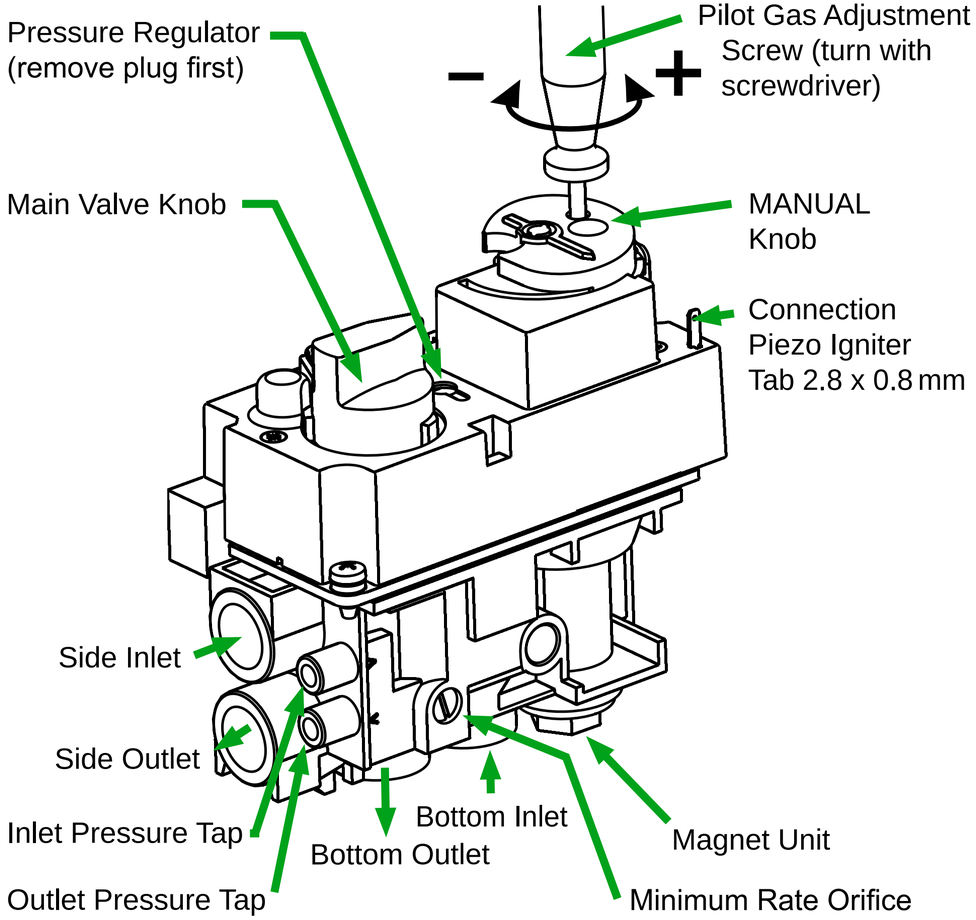
Additional Function RF, Fan, Light/ Dimmer, Latching Solenoid



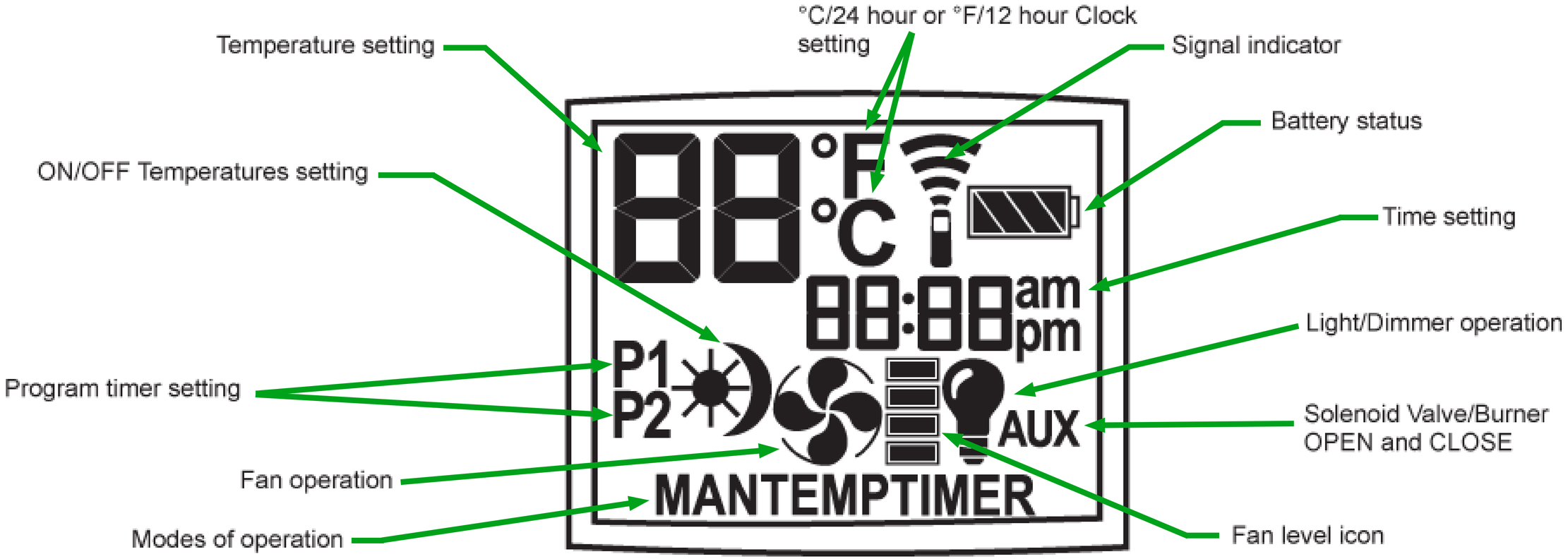


GV60 Combination Control Valve





GV60 G6R Handset Display



FEATURES

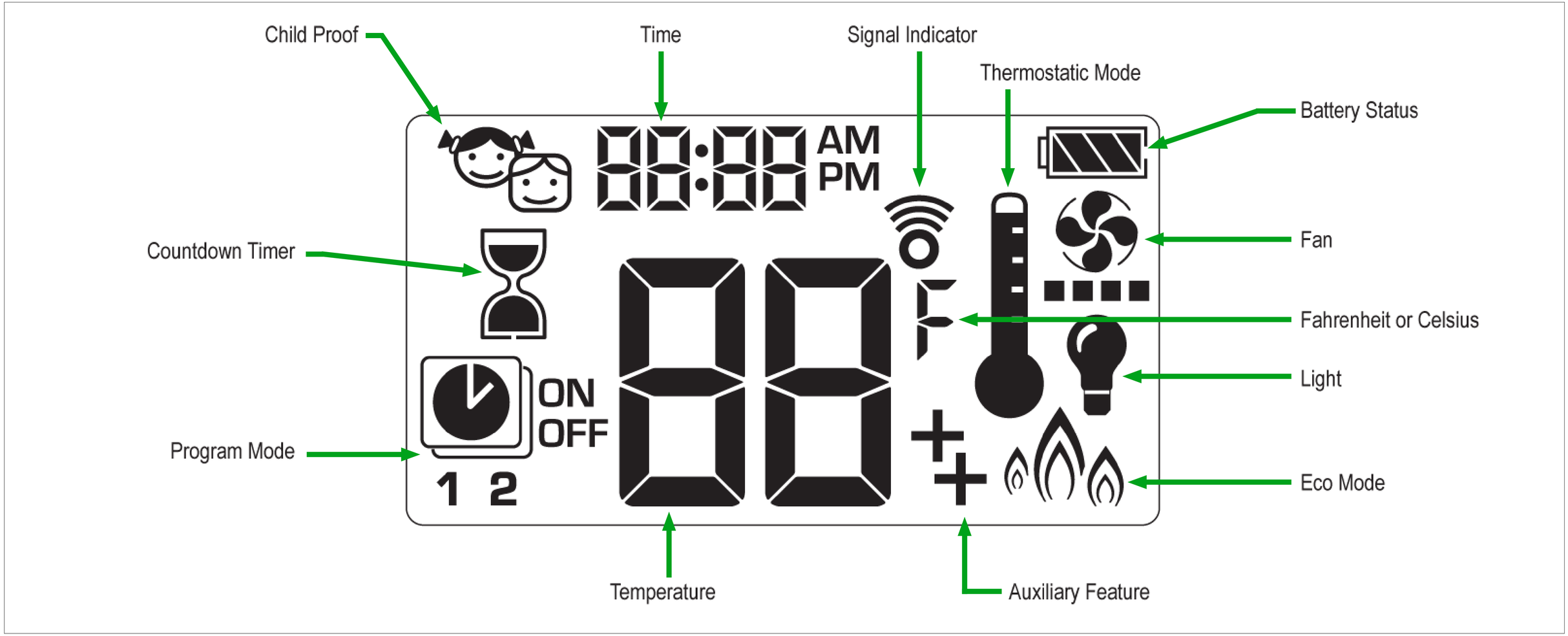
- Easy programming and selection of features through a menu
- GV60 is battery powered (or mains powered)
- Double-click for instant high and low fire
- Two-button ignition
- Tactile buttons for user feedback

FUNCTIONS

Thermostatic Mode, Program Mode, Timer, Manual Mode,

Circulating Fan, Light Operation, Auxiliary functions

10-Symbol Display



FEATURES

- Easy programming and selection of features
- Symax and GV60 are battery powered (or mains powered)
- Double-click for instant high and low fire
- 8 or 10 symbol handsets
- One-button or two-button ignition options
- Activate and deactivate individual functions
- Tactile buttons for user feedback

FUNCTIONS

Countdown Timer, Child Safety Lock, Thermostatic Mode, Program Mode, Eco Mode, Circulating Fan, Light Operation, Auxiliary Feature

Symax Overview Video

1. Both the receiver and the handset transmit and receive signals (2-way).
2. During sync between the handset and the receiver “conn” is shown in the handset display.
3. Handset shows the actual, real-time status of system (e.g. it shows “ON” only when the pilot is lit).
4. System interacts with the myfire® App, showing when the app is active and what mode or function is currently ON.
5. Handset and myfire® App are synchronized every 10 sec during the first 2 minutes – after that they are synched every 4 to 6 minutes up to 1 hour.
6. Touching the handset causes an immediate sync.
7. Self Diagnostic Function (Fault Codes)

Low Battery Receiver

- With low battery power in the receiver, the system shuts off the fire completely. This will not happen if the power supply is interrupted.

On-Demand Pilot

- This green feature eliminates energy consumption by automatically extinguishing the pilot when the appliance is inactive for an extended period of time. CSA certified: 7 days. CE certified: 5 days.

Backup Batteries

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

Second Thermocouple Shut Off

- Second Thermocouple Option: The system shuts off the fire when the main burner does not completely ignite in approximately 22-29 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.

8-hour No Motor Movement (CSA) – G6R 2010 Electronics

- Manual Mode/Temperature/Timer Mode: The valve will turn to pilot if there is no change in flame height for a 8-hour period.
- In Temperature/Timer Mode, if the ambient room temperature changes, the flame height will adjust automatically to maintain set temperature, and the fire will continue to function normally. The valve will turn to pilot flame if the set temperature and the ambient temperature remain the same over a 8-hour period.

3-hour No Communication Function – SYMAX Electronics

- The valve will turn to pilot flame if there is no communication between handset and receiver for a 3 hour period. The fire will continue to function normally when communication is restored.

Receiver Overheating Turn Down

- Receiver recognizes that there are batteries installed with in the receiver itself. If the receiver temperature rises above 60°C then it will shutdown to pilot.
- If the application uses a remote battery pack or AC Mains adapter the system will shut down at 80°C.
- The product will start operating normally once the temperature has reduced below the activation temperature.

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.

GV60 Control Valve Components

Inside the Valve Body

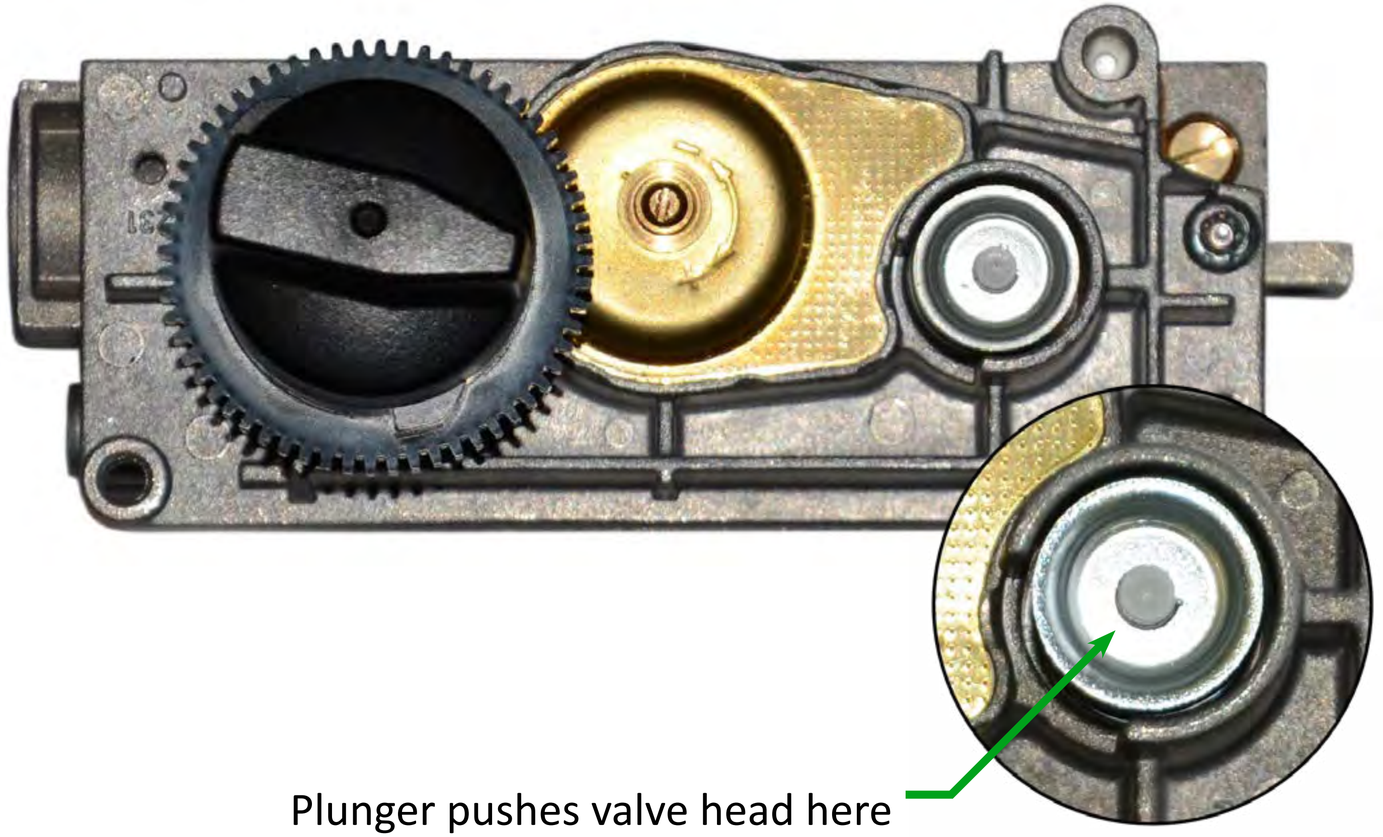
6 VDC Motor with Clutch
for Manual Operation

Clutch

Flame Height Knob
Driven by Motor

Inside the Valve Body

Impulse magnet gets a burst of power from the receiver.



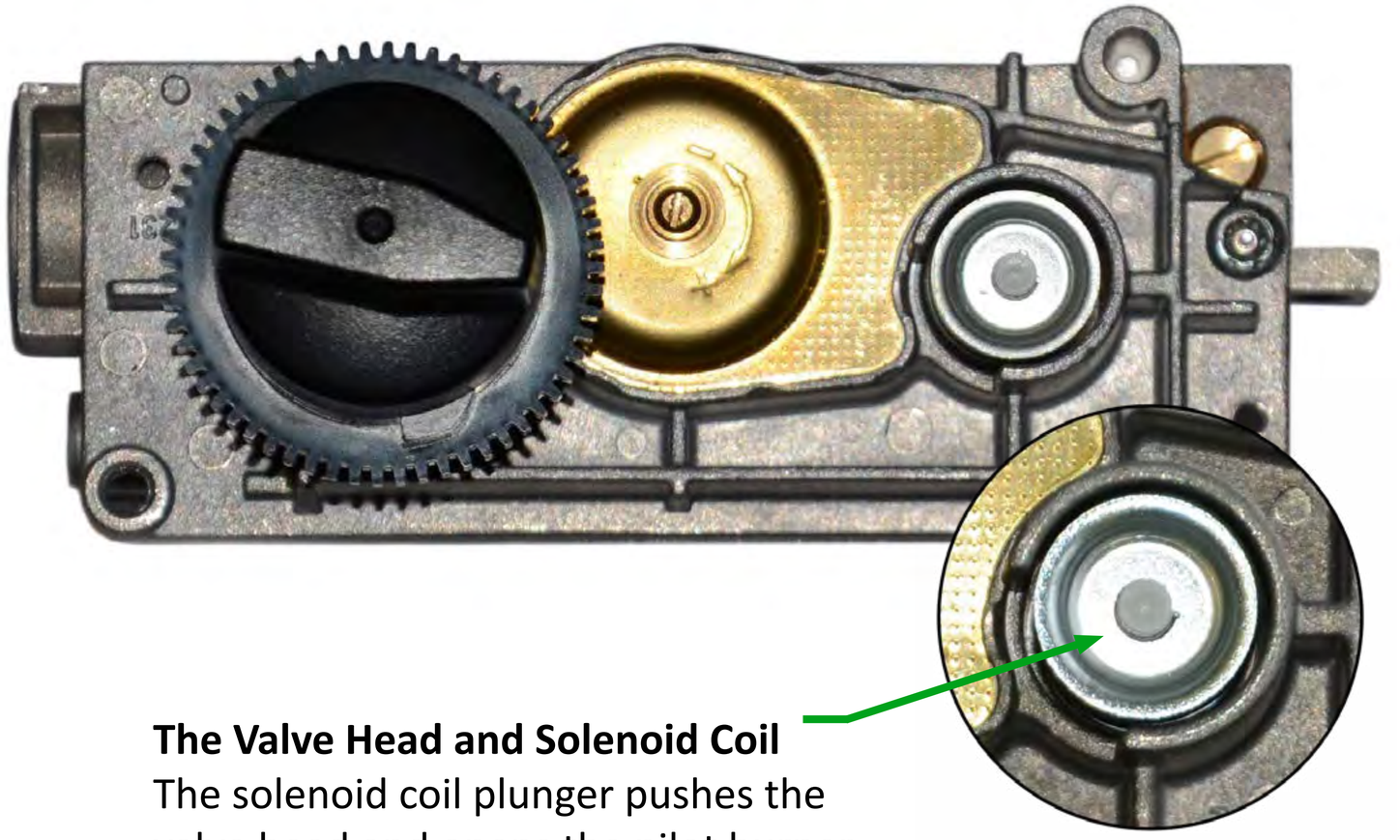
Plunger pushes valve head here

Plunger

with

Solenoid Coil

Inside the Valve Body



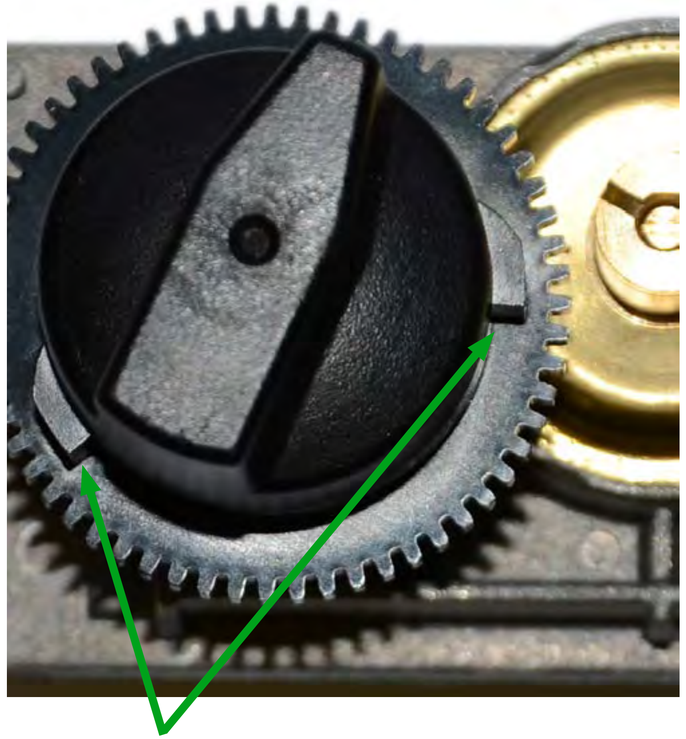
The Valve Head and Solenoid Coil
The solenoid coil plunger pushes the valve head and opens the pilot burner.

Electromagnet

Inside the Valve Body

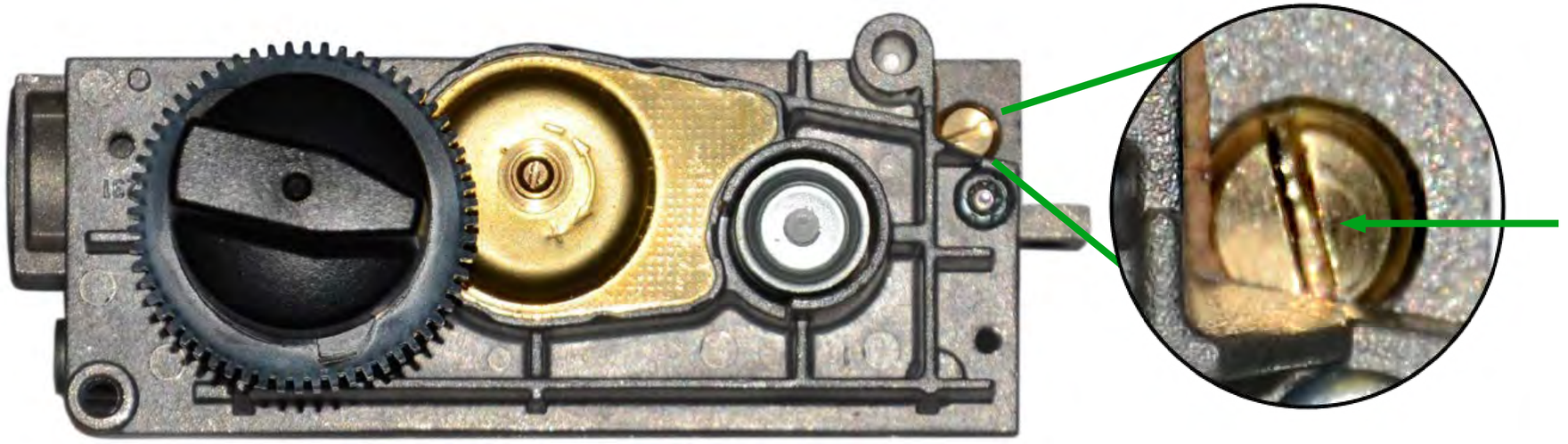
Micro Switch to limit rotation.

Micro Switch



Cams control high fire, low fire and OFF position

Inside the Valve Body

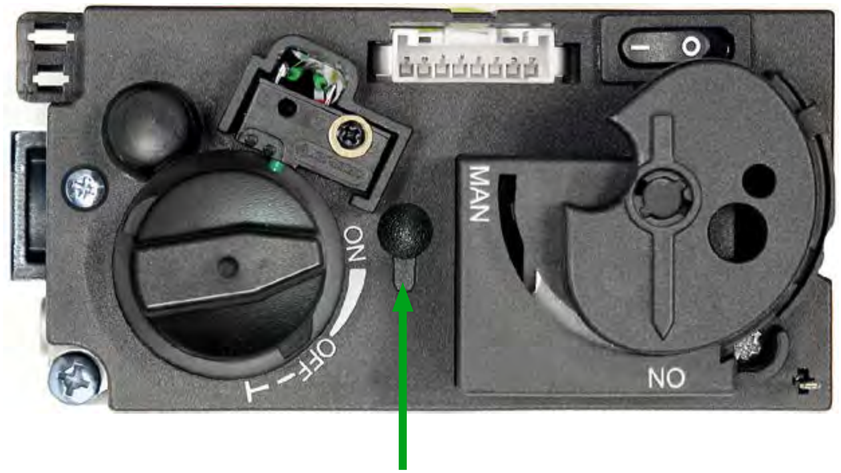


Pilot Adjustment Screw
(for vented units only)

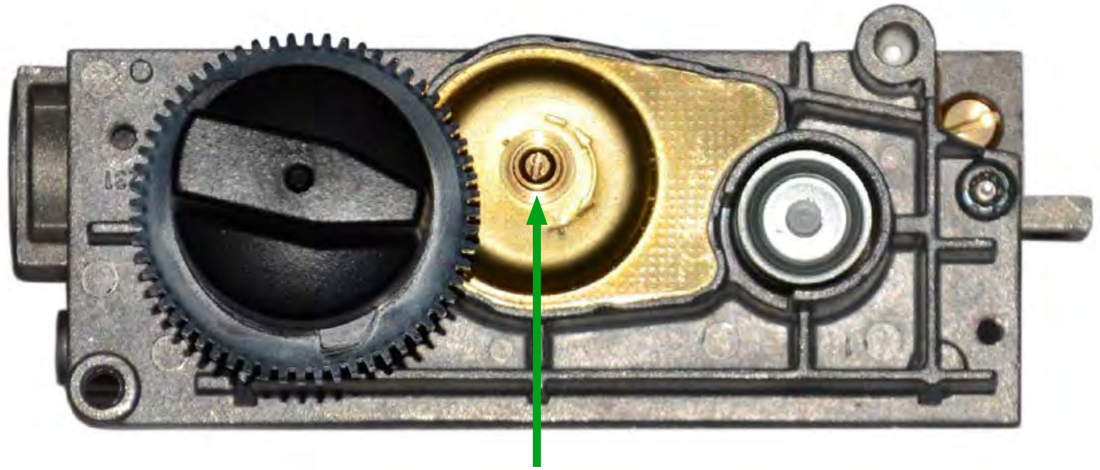
Clockwise = Decrease
Counterclockwise = Increase

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

Adjusting the Pressure Regulator (for Vented Units Only)

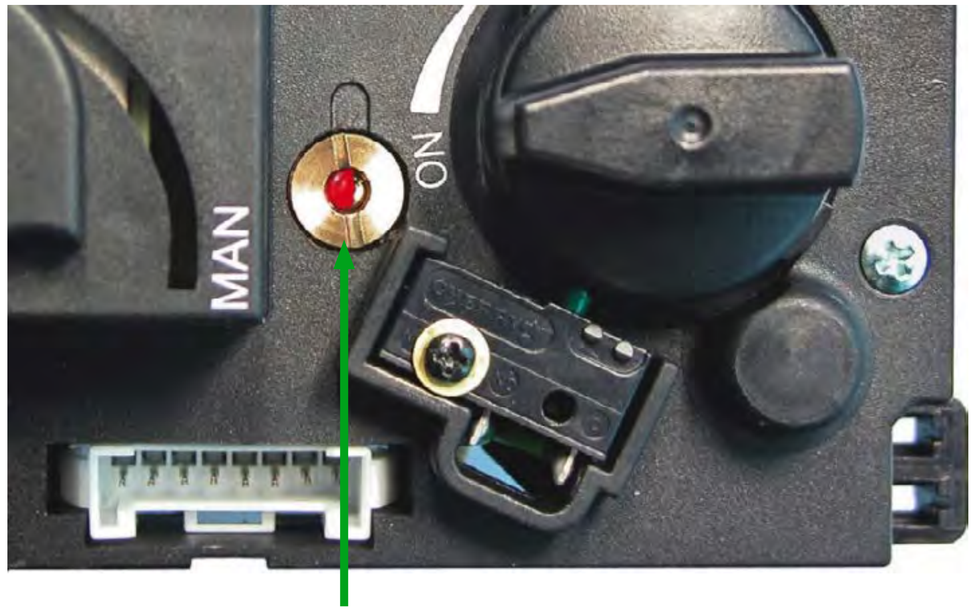


Remove small plug to access the adjustment screw.

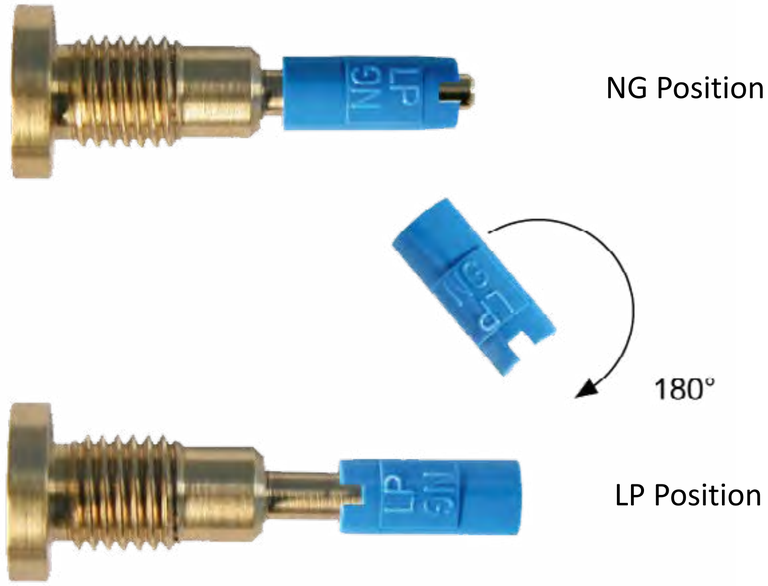


Turn the adjustment screw to set required burner pressure (high fire). Pressure is increased by turning clockwise or decreased by turning counterclockwise.
This adjustment is required for fuel conversions.

Converting the Pressure Regulator

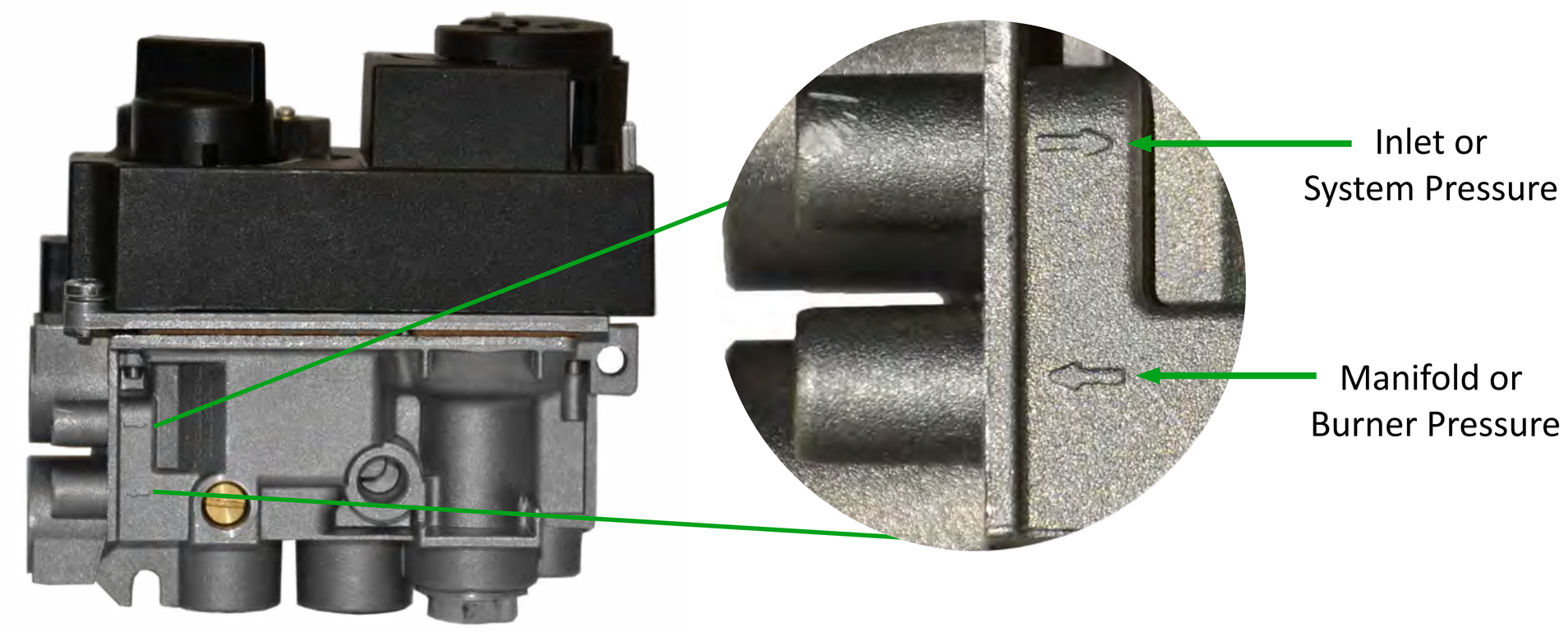


Conversion Plug



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.

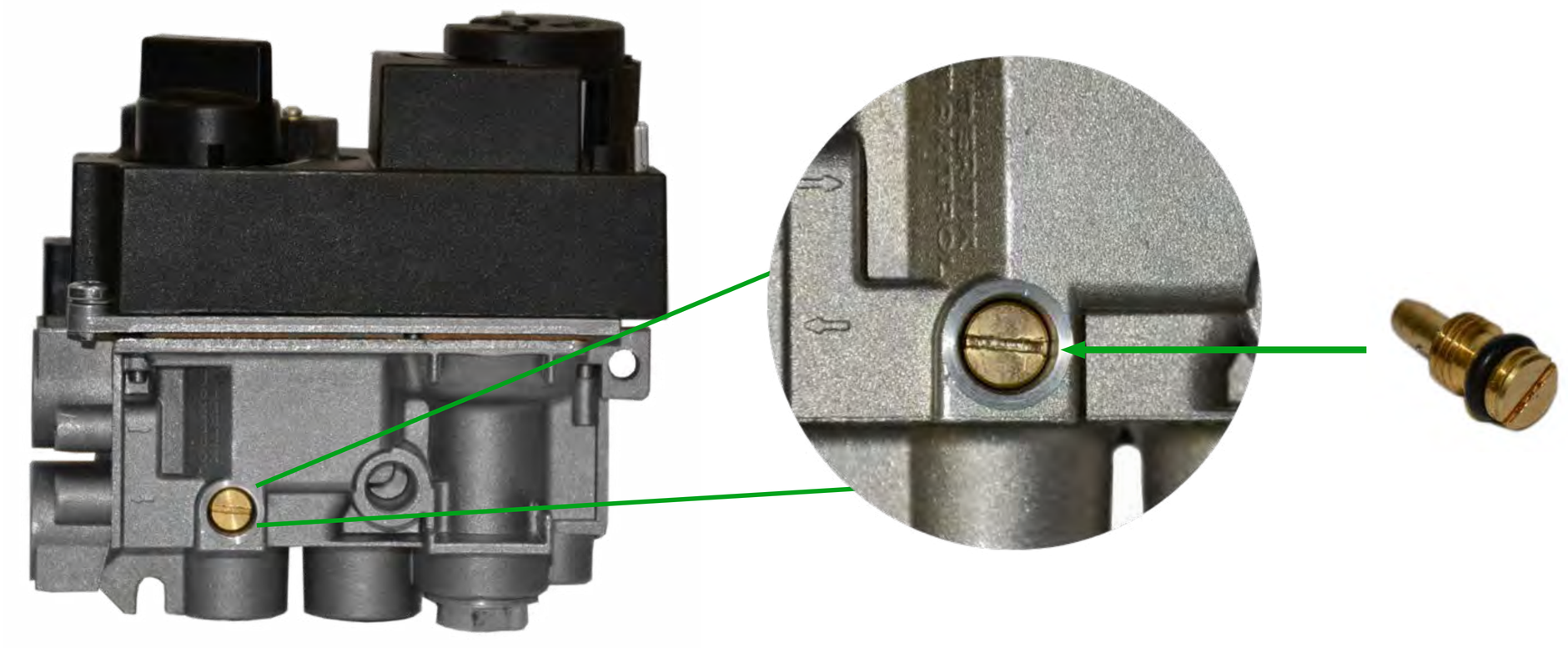
Gas Pressure Test Ports



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.

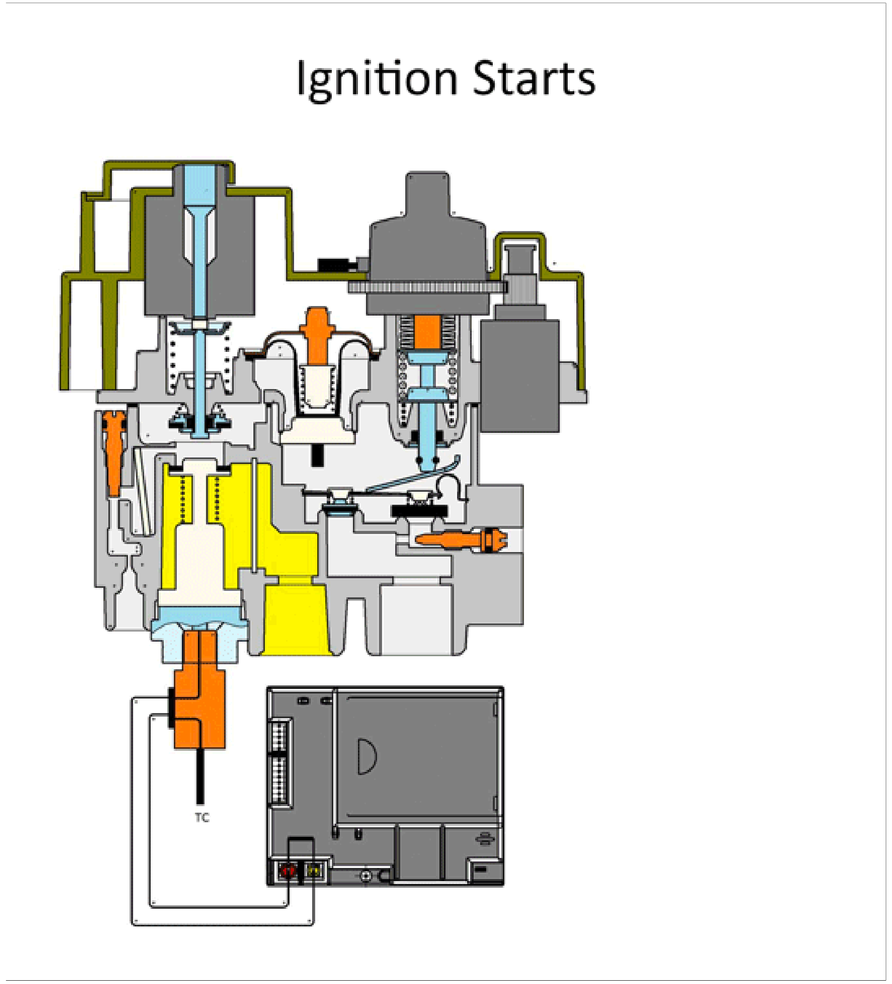
IMPORTANT! Check pressure test ports for leaks after test is complete.

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.

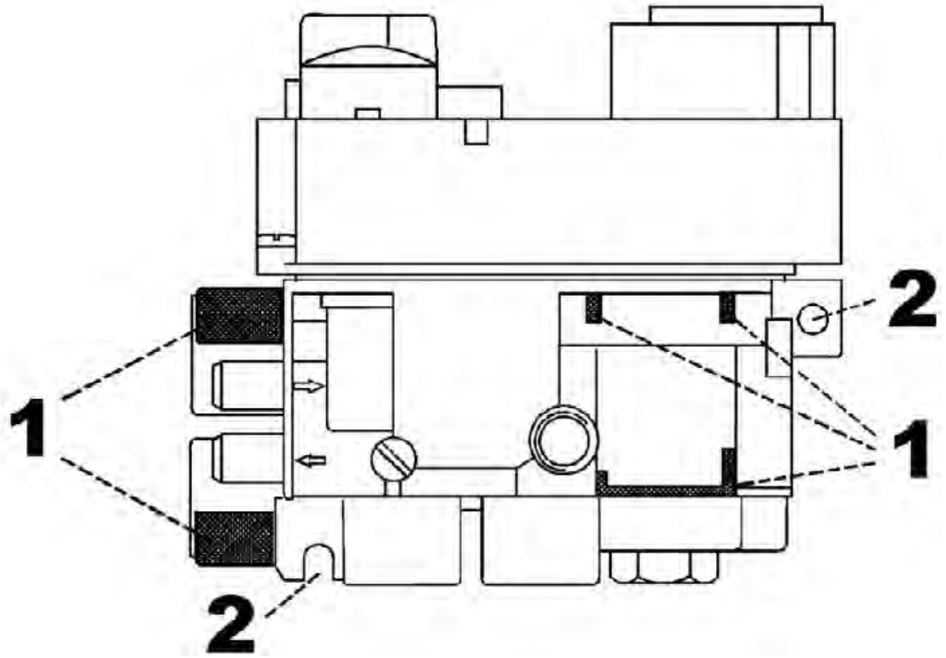
Gas Flow Through Valve



Proper Handling of GV60 Valve

When threads are tightened, the valve must be held at the designated clamping points.

WARNING: Never clamp the valve across the stepper motor. Permanent damage to the motor will result and the valve will not function properly.

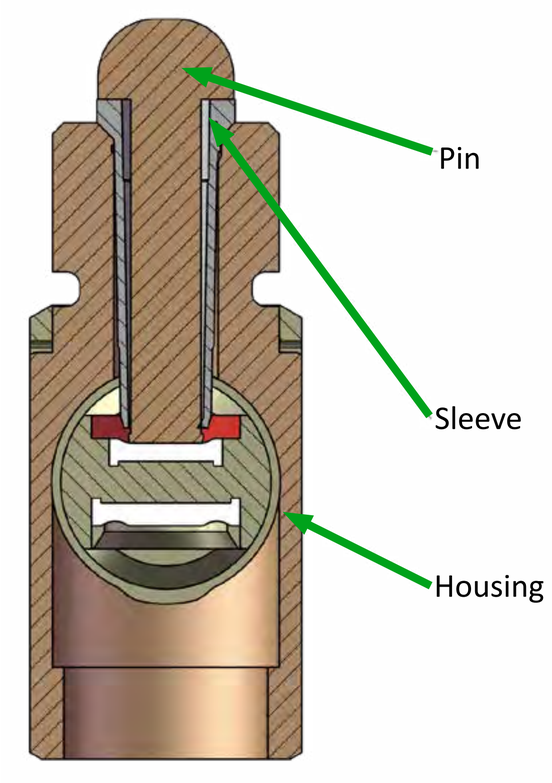


1 = Clamp Areas

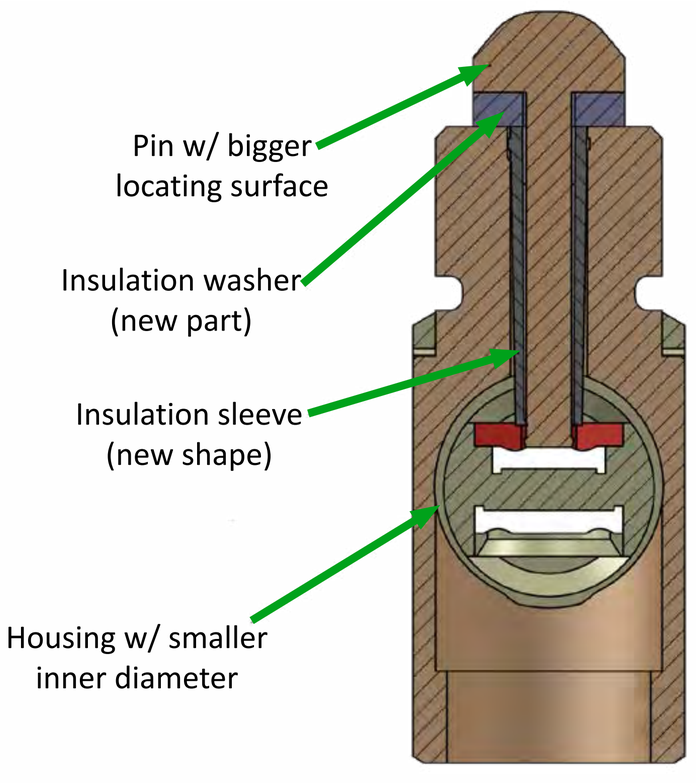
2 = Mounting Points

Thermocouple Circuit Interrupter

Old Version



New Version



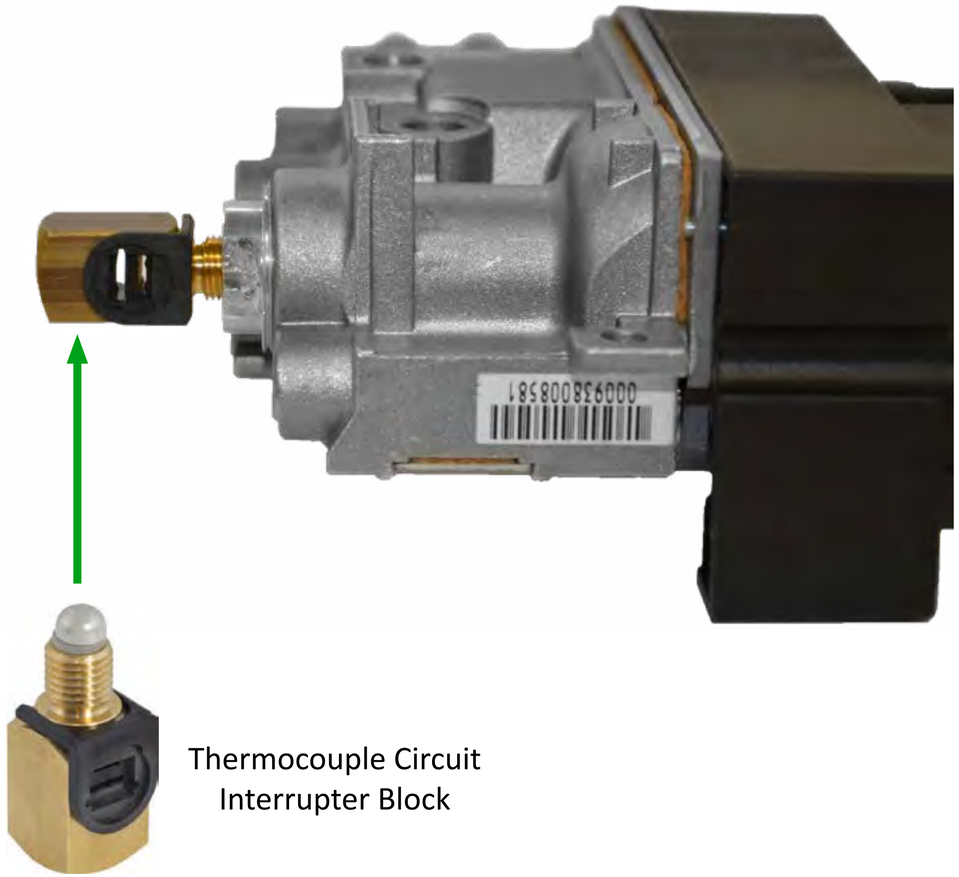
Thermocouple Circuit Interrupter

Installation:

1. Tighten brass interrupter block into valve ¼ turn beyond finger tight. If necessary, an additional ¼ turn is possible.

CAUTION: Further tightening will damage the plastic sleeve in the brass interrupter block and can cause a short in the circuit.

NOTE: Do not over-torque or under-torque the interrupter block to achieve a specific slot alignment.

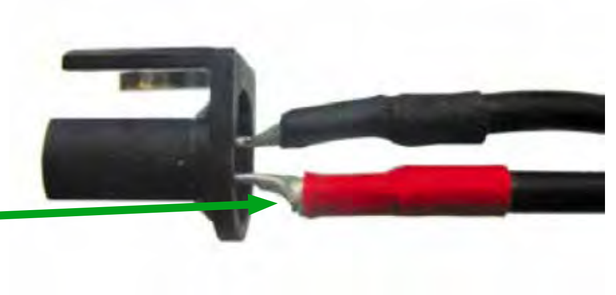


Thermocouple Circuit Interrupter Block

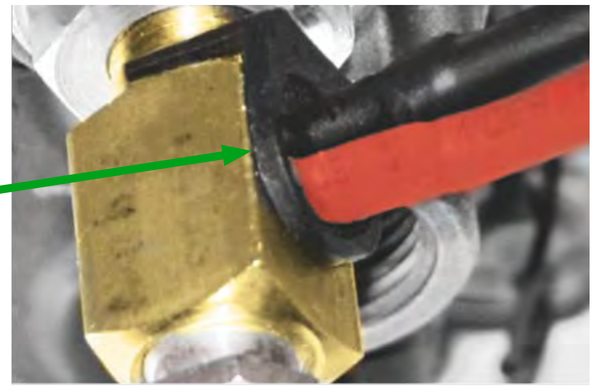
Thermocouple Circuit Interrupter

Installation:

2. Slide spade connectors into plastic insert.



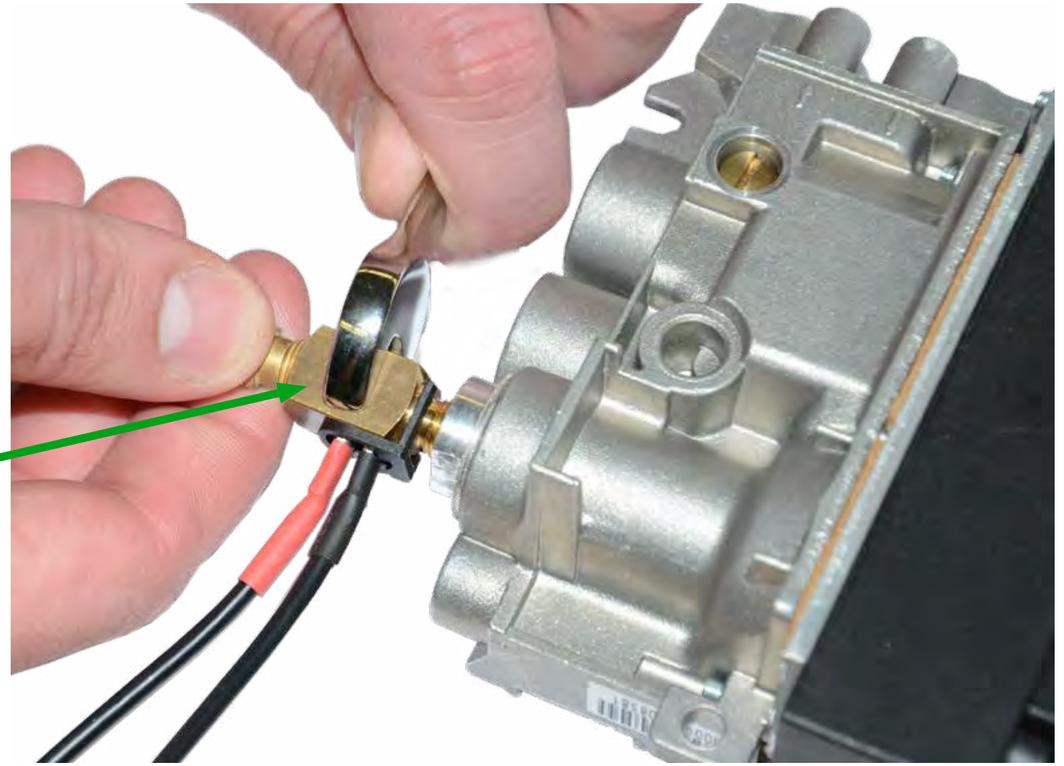
3. Slide plastic insert with spade connectors into the brass interrupter block until it snaps.



Thermocouple Circuit Interrupter

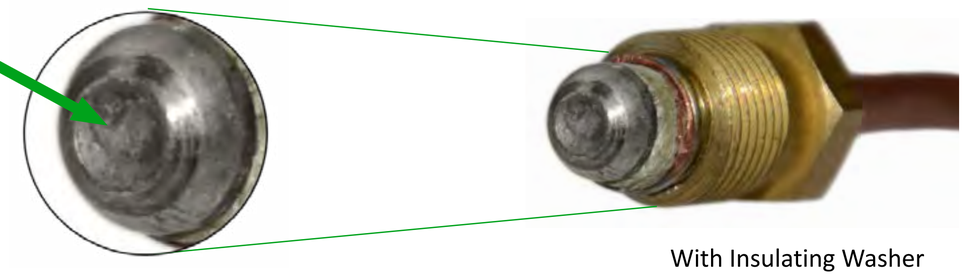
Installation:

4. While holding the interrupter block with a wrench, thread the thermocouple into the female end of the interrupter block ¼ - ½ turn beyond finger tight.



Thermocouple Installation

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

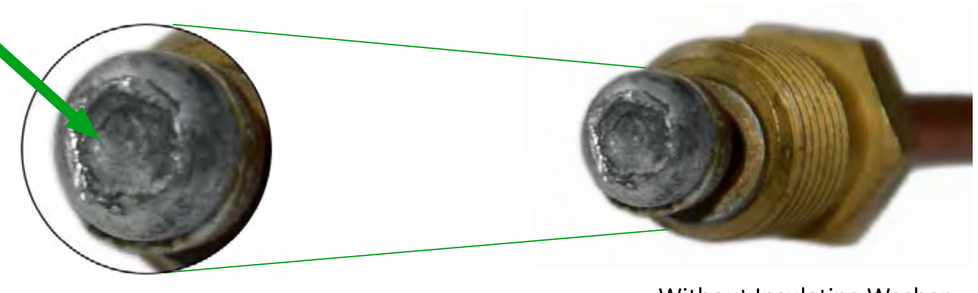


With Insulating Washer

Figure 1

WARNING:

Over-tightening the thermocouple can damage the thermocouple and decrease the available surface area, which results in much higher resistance. Over-tightening can also damage the insulating washer at the base of the thermocouple as seen in Figure 2.



Without Insulating Washer

Figure 2

Both situations can result in the pilot dropping out and/or nuisance shutoffs.

GV60 Receiver Components

The receiver module is not only a battery box. It is the system processor.

Setting the Electronics Code

Synchronizing the Receiver and Handset

- Press and hold the receiver's reset button until you hear one short beep followed by one long beep. After the long 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 Reset Button

Small Flame Button on Handset

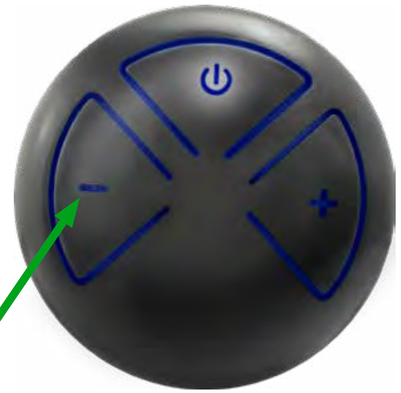
Setting the Electronics Code

Synchronizing the Receiver and the Puck

- Press and hold the receiver's reset button until you hear one short beep followed by one long beep. After the long beep, release the reset button.
- Within the subsequent 20 seconds press the low flame button on the Puck 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.

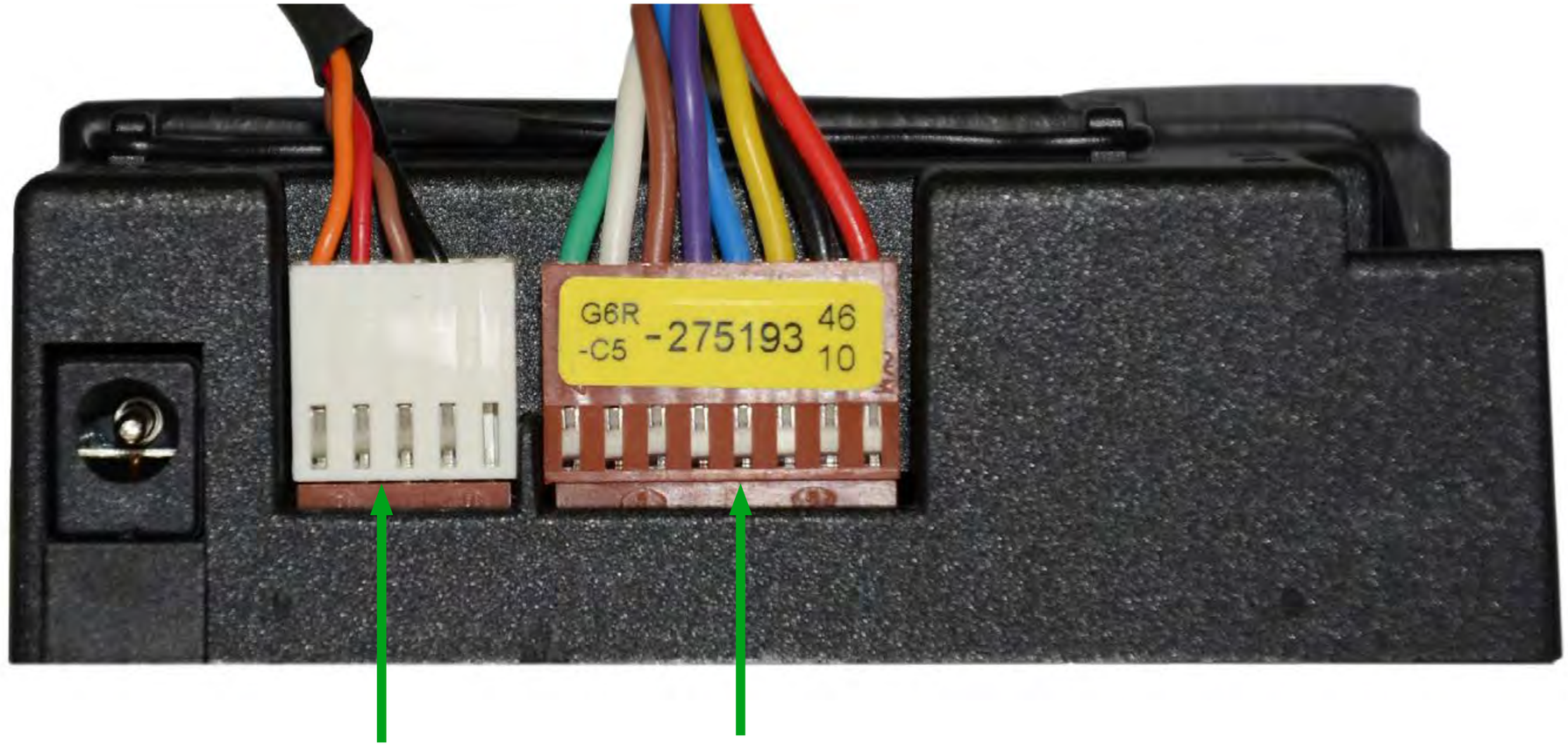
NOTE: This is a one time setting only, and is not required after mains power failure or changing the batteries of the Puck or receiver.

Receiver Reset Button

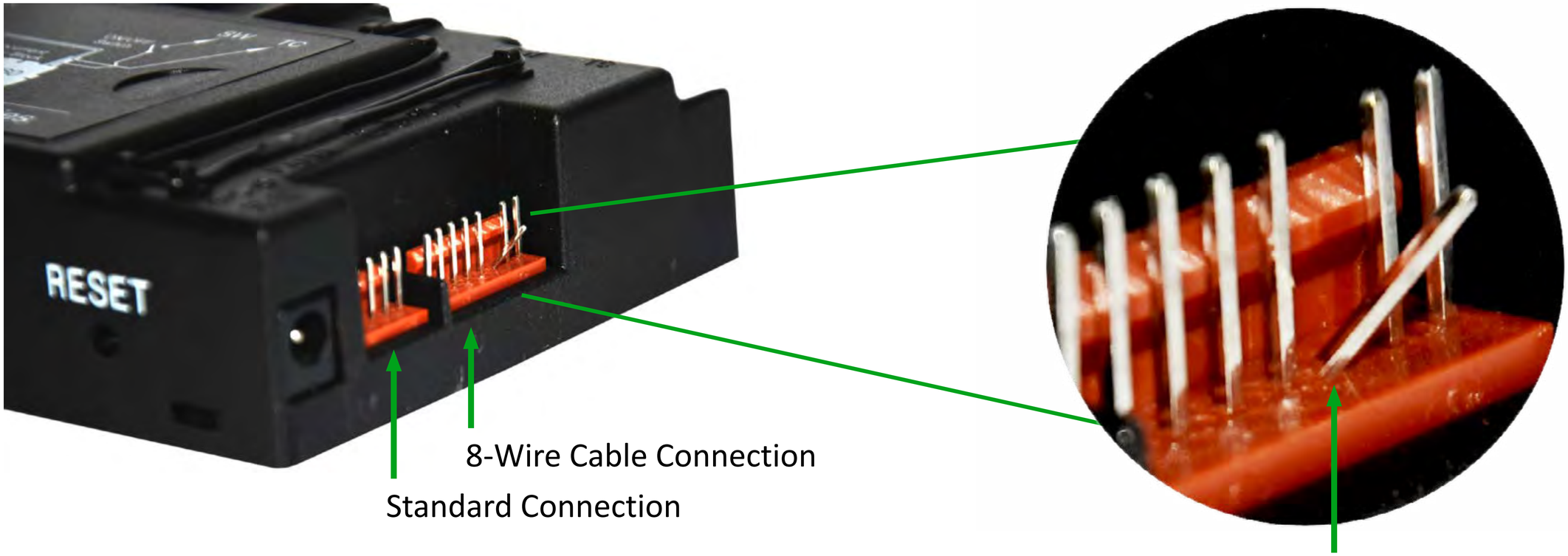


Low Flame Button on the Puck

Wire Harness Connections

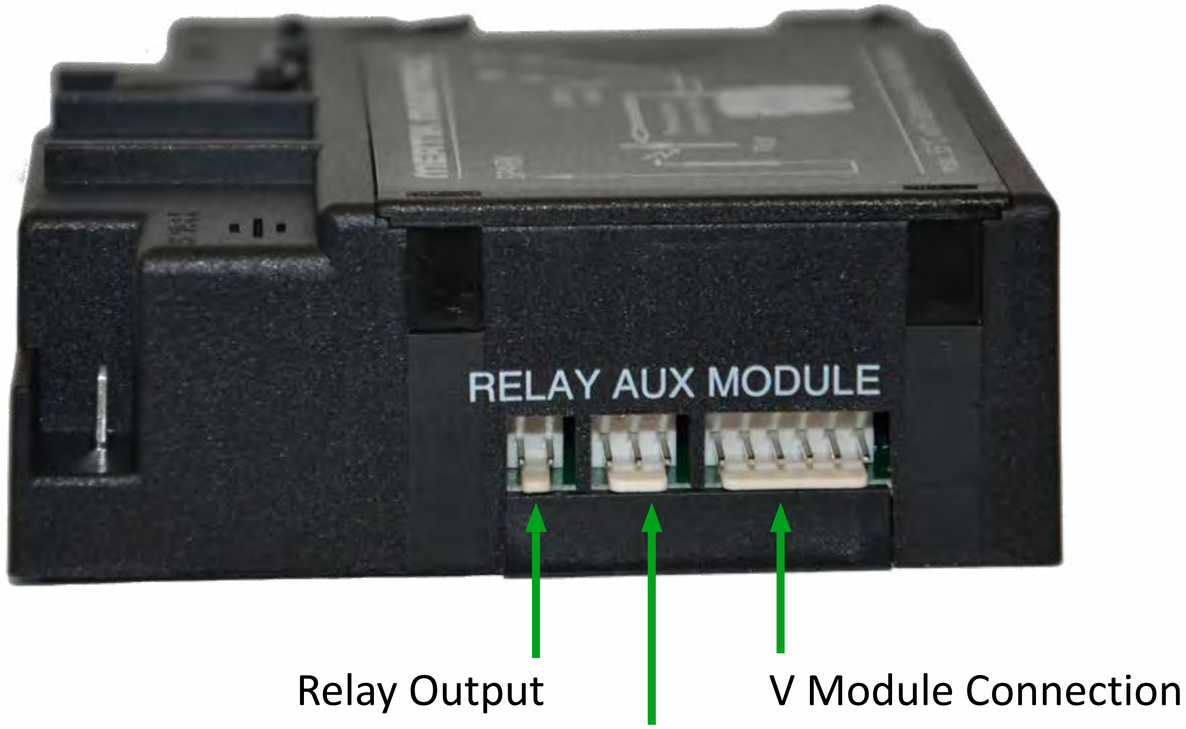


Wire Harness Connections



Wire Harness Connections

Universal Receiver



Power Connection

AC Mains Adapter

Remote Battery Box

AC Mains Adapter or Remote Battery Box Connection

Power Connection

Remote Battery Box

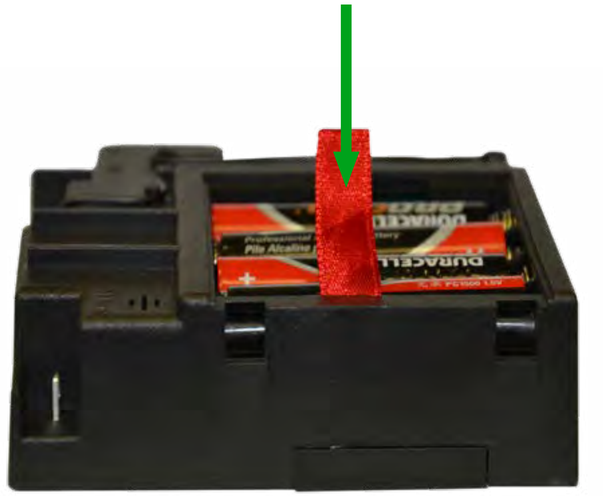
WARNING:

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.

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.



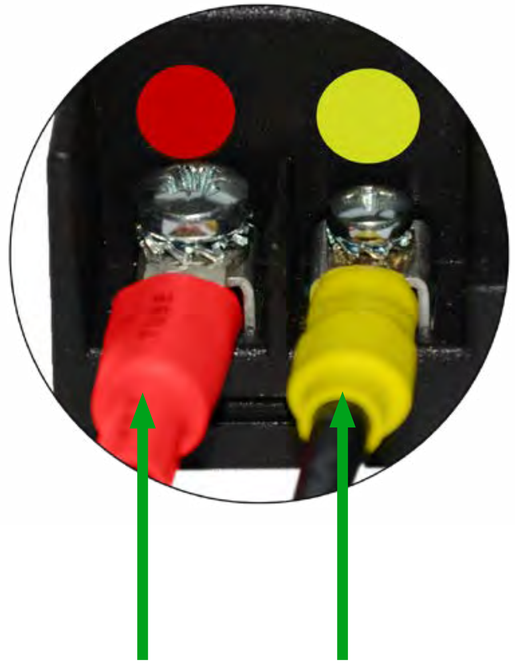
WARNING:

- 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.

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.



Red Terminal:
from Thermocouple

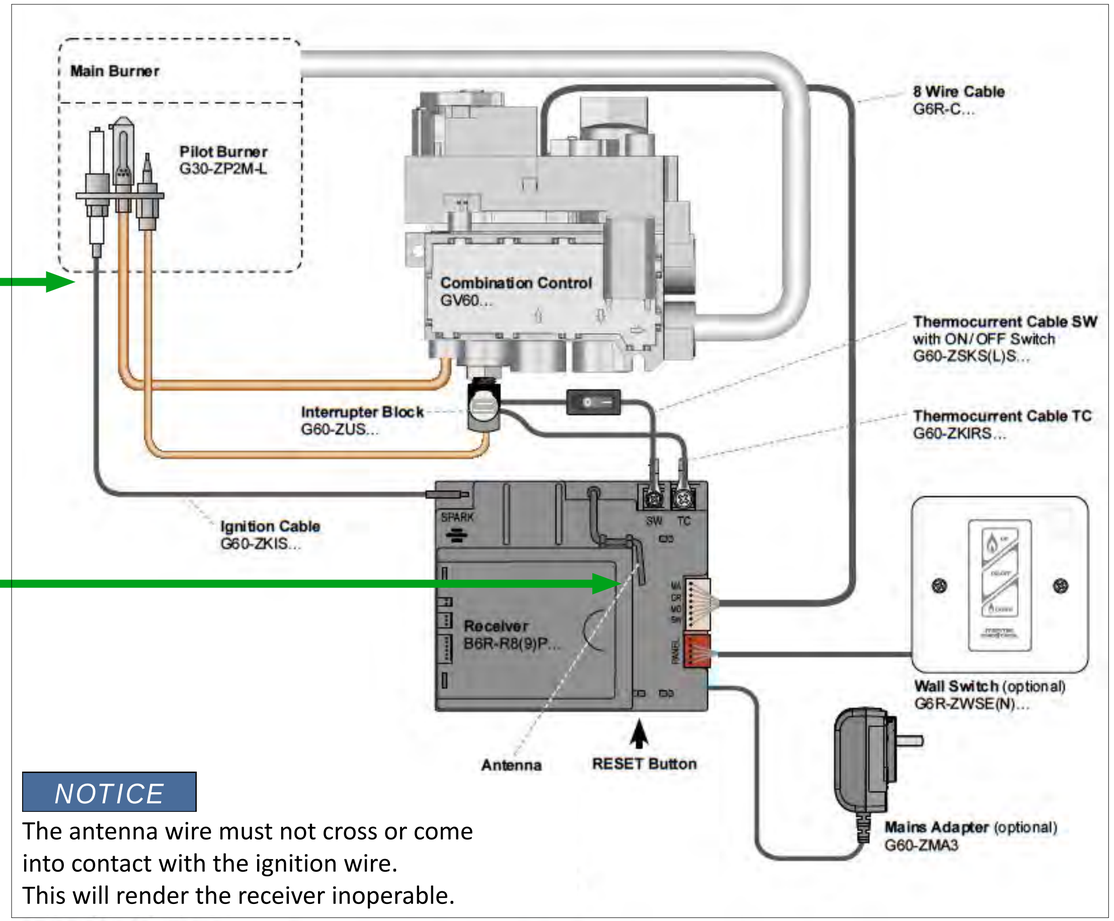
Yellow Terminal:
back to ON/OFF Switch

Receiver Antenna

Ignition Cable

Antenna Wire

NOTE: Antenna wire can be moved for better reception.



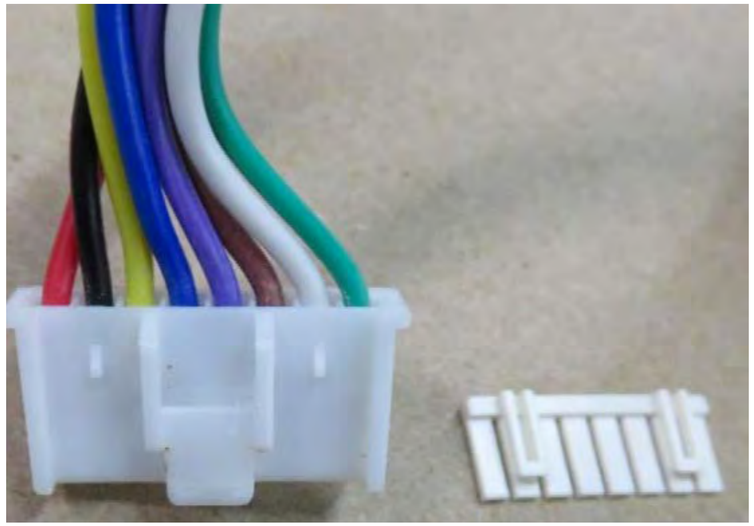
NOTICE

The antenna wire must not cross or come into contact with the ignition wire.
This will render the receiver inoperable.

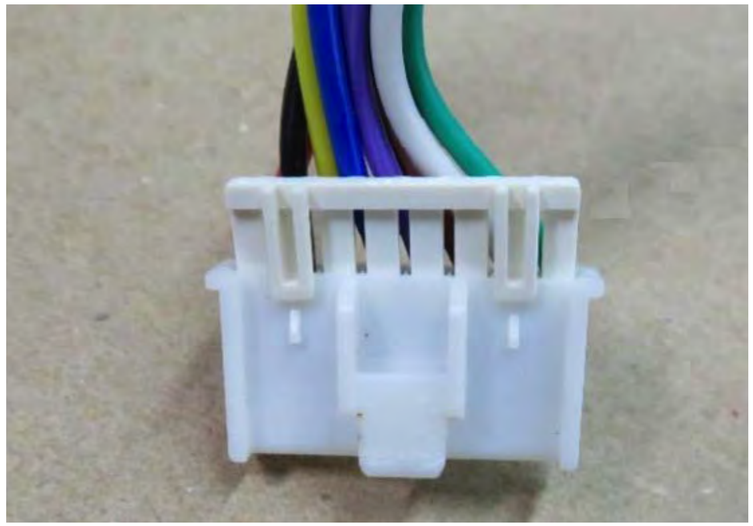
CAUTION:

Damage and/or interference to the GV electronic system will occur if the distance between the ignition cable (high voltage) and other GV system wiring is less than 1” (3 cm).

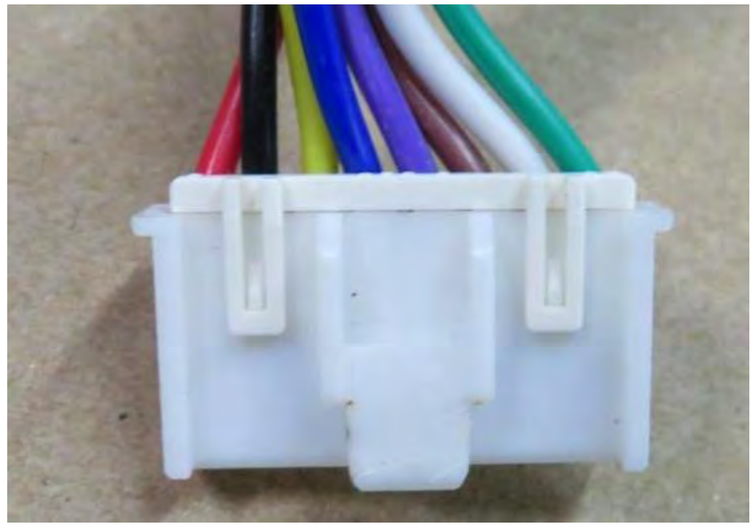
8-Wire Cable



Strain Relief
Loose



Strain Relief
Fitted



Strain Relief
Applied

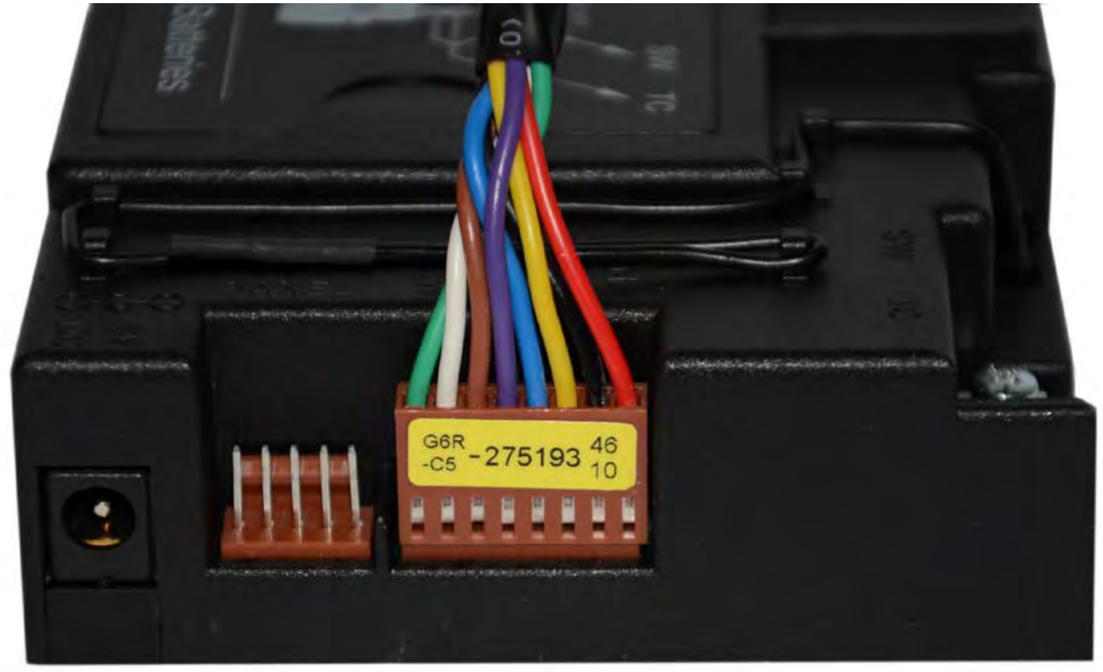
Receiver to Valve 8-Wire Control Cable

Green
White
Micro Switch

Brown
Purple
Motor

Blue
Yellow
Ground

Black
Red
Impulse Magnet



GV60 Troubleshooting

TOOLS NEEDED

Advanced Technical Training Mertik Maxitrol GV60 Gas Control System – Typical Installation and Test Instruments

- ☐ Digital multi-meter with test probes
  (AC and DC Volts, Ohms, Current)
- ☐ Differential pressure gage (0-15”w.c.)
- ☐ Small standard screwdriver (for pressure test ports)
- ☐ Screwdriver T20 Torx (for ground ring)
- ☐ Digital Thermometer
- ☐ Various hand tools:

  Allen wrench for inlet and outlet plugs

  Pipe wrench

  Miscellaneous open/box end wrenches

  Standard and Phillips screwdrivers

  Pliers

  Wire cutter/strippers

  NO HAMMER NEEDED!!!

GV60 Troubleshooting

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

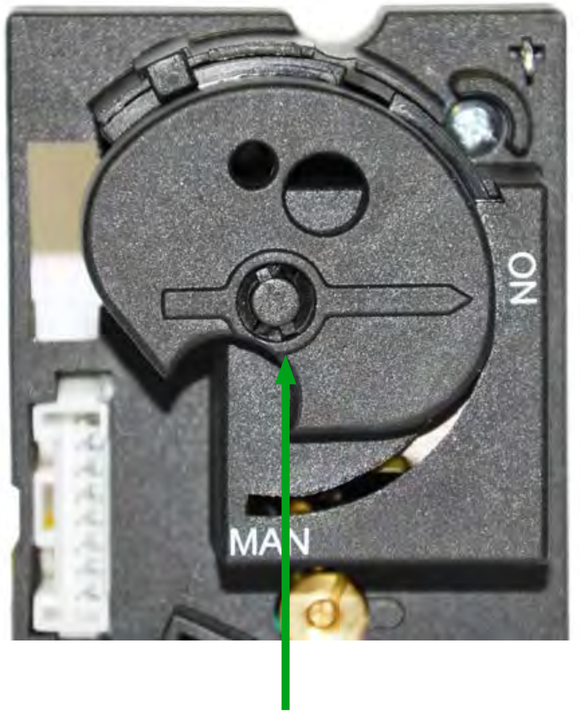
TEST THE VALVE

Testing the Valve

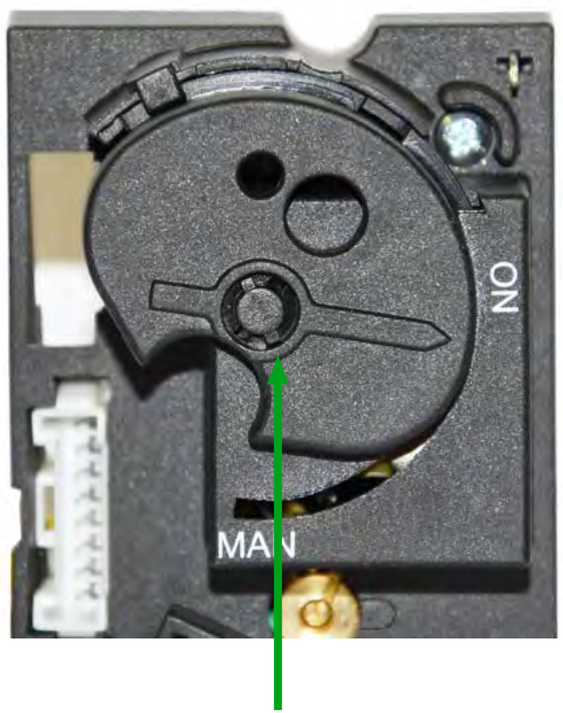
TEST: Verify that the MANUAL knob is in the ON position.

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.



CORRECT.
MANUAL knob should be fully in the ON position.



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

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.

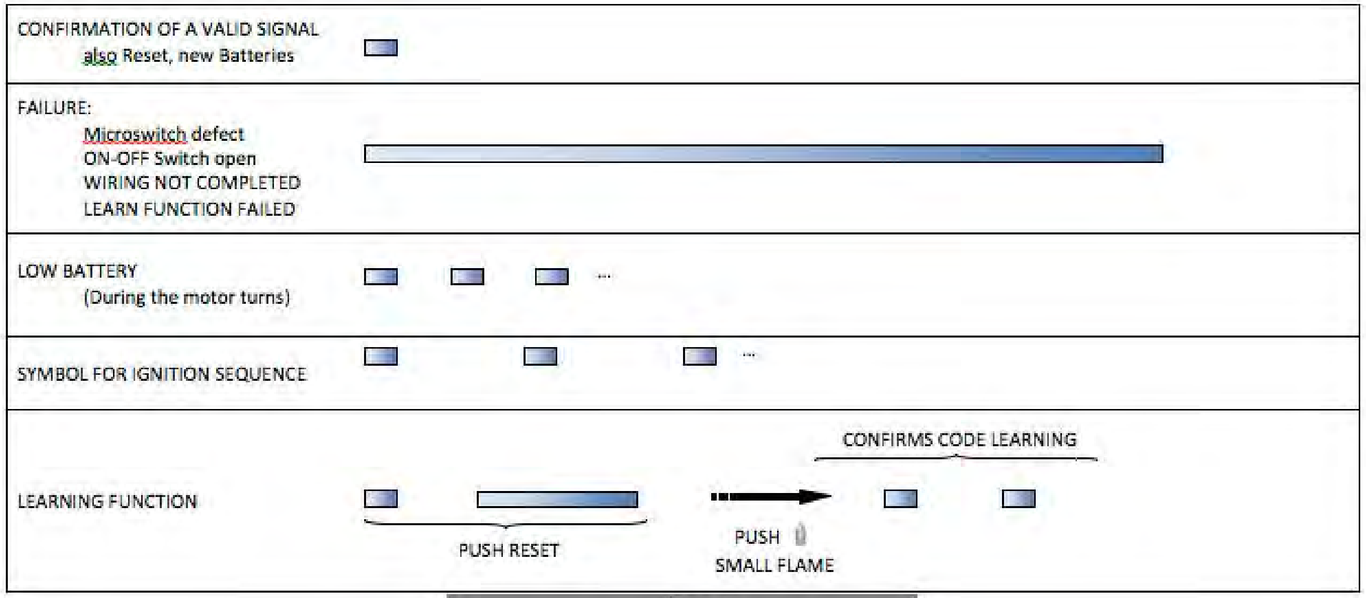
GV60 Troubleshooting

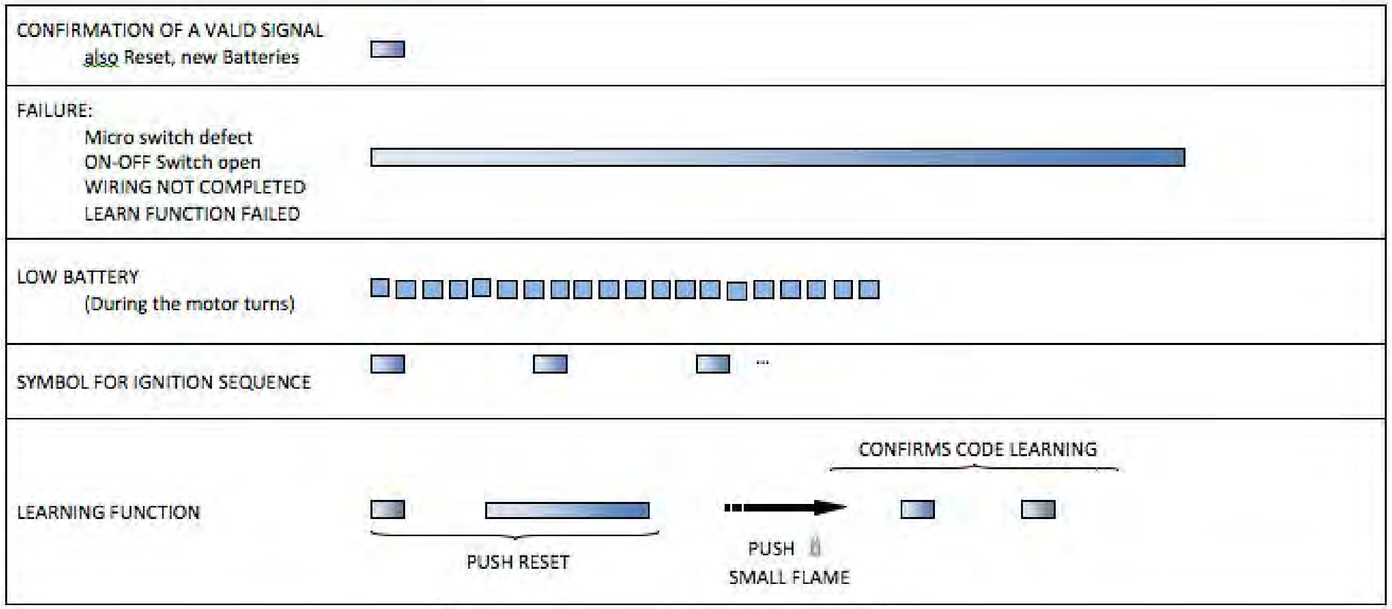
Potential Problem: The appliance will not light with the handset.

TEST THE ELECTRONICS

For Bi Directional Equipped Systems

Message Shown in App	Symptom	Possible cause
FO3 Contact Service.	☐ 5 sec. beep from Receiver ☐ Ignition process is interrupted ☐ Fire is not responding, no ignition	☐ Thermocouple wiring incorrect or interrupted ☐ ON/OFF switch in “O” (OFF) position
FO6 Contact Service.	☐ 3 failed ignition sequences w/in 5 min. ☐ Fire is not responding, no pilot flame	☐ No gas supply ☐ Air in pilot supply line ☐ No spark ☐ Reversed polarity in Thermocouple wiring ☐ LPG injector in NG appliance
F43 No Receiver Connected. Contact Service.	☐ Fire is not responding ☐ No electronic control of fire	☐ No communication between receiver and myfire Wi-Fi box





CONFIRMATION IGNITION START	
FAILURE: Micro switch defect ON-OFF Switch open WIRING NOT COMPLETED LEARN FUNCTION FAILED 2nd THERMOCOUPLE CONNECTED TO STANDARD VERSIONS (WHITE STICKER ON THE RECEIVER'S BACKSIDE NO 2nd THERMOCOUPLE CONNECTED TO 2nd THERMOCOUPLE VERSION (YELLOW STICKER ON THE RECEIVER'S BACKSIDE) IGNITION TRIED WHILE 2nd THERMOCOUPLE HAS NOT COOLED DOWN YET	
LOW BATTERY (During the motor turns)	
RESET also Batteries changed, Power on	
LEARNING FUNCTION	PUSH RESET; PUSH SMALL FLAME; CONFIRMS CODE LEARNING

SILVER STICKER AT THIS POSITION IS USED FOR B6R VERSIONS (G6R has the sticker at a different position

GV60 Troubleshooting

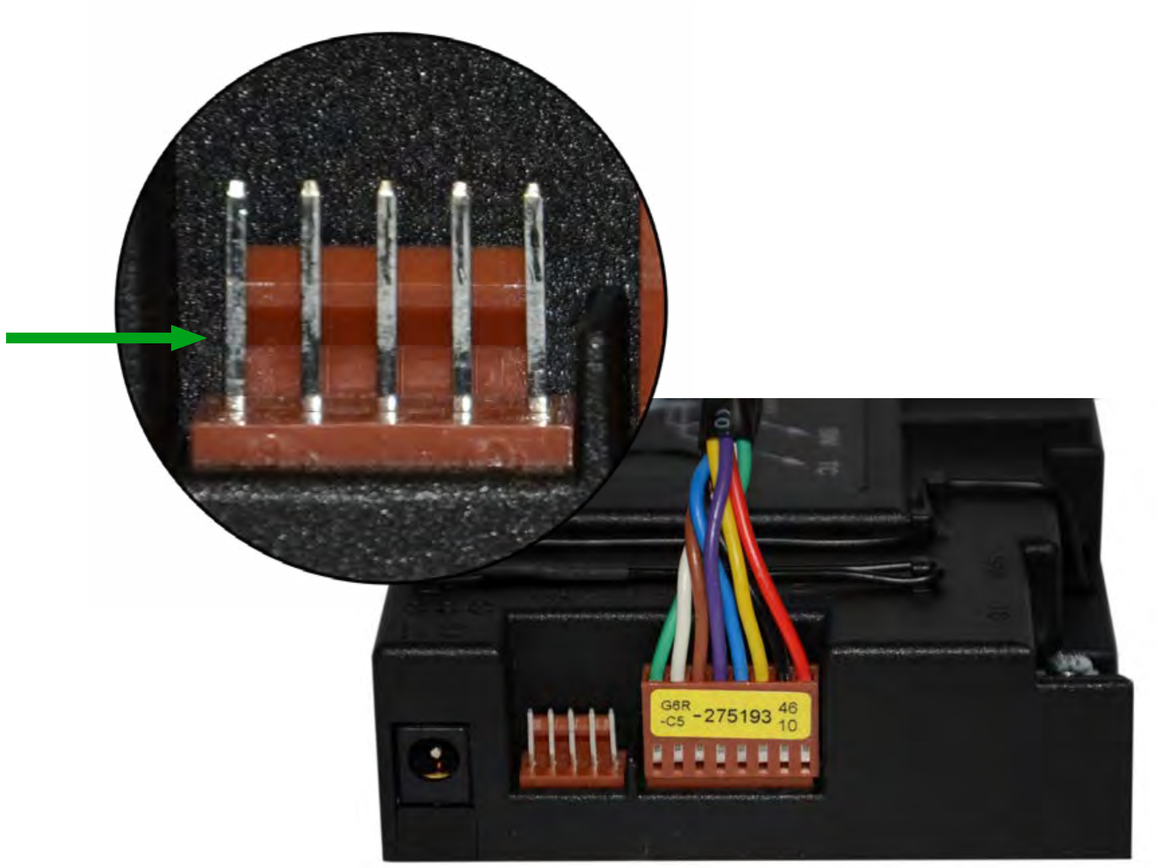
TEST THE BATTERIES

Testing the Batteries

TEST: Check batteries for proper voltage.

PROCEDURE: Connect “+” test probe to the pin on the far left of the 5-wire connector.
Connect “–” test probe to ground, e.g. valve body or appliance chassis.

RESULT: The reading should be 5 – 6 VDC.



GV60 Troubleshooting

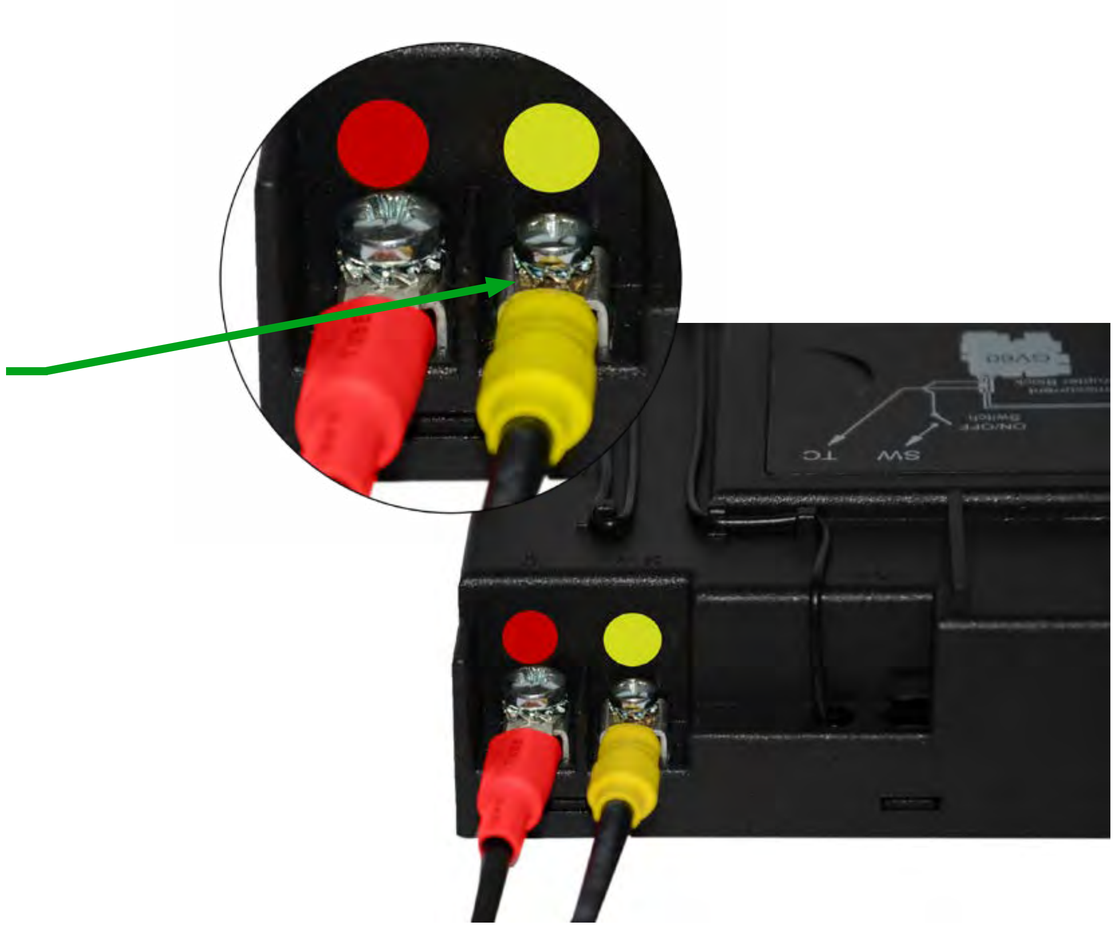
TEST THE INITIAL RECEIVER OUTPUT

Do you hear a “clunk” when the impulse magnet engages?

TEST: Test the initial receiver output.

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.



Verifying Ground with Gas Valve

TEST: Verify that the system has an effective ground lug.

PROCEDURE: Connect “+” test probe on yellow wire.
Connect “-” test probe to ground lug on valve body.

RESULT: The reading in mΩ (Milli Ohms) should not be greater than 60 mΩ.
If resistance is significantly higher, remove ground lug from valve body using a Torx T 20 driver.
Lightly sand the ring connector and the lock washer for better conductive ground.
Reinstall and verify measurement is where it should be.

Testing the Electronics

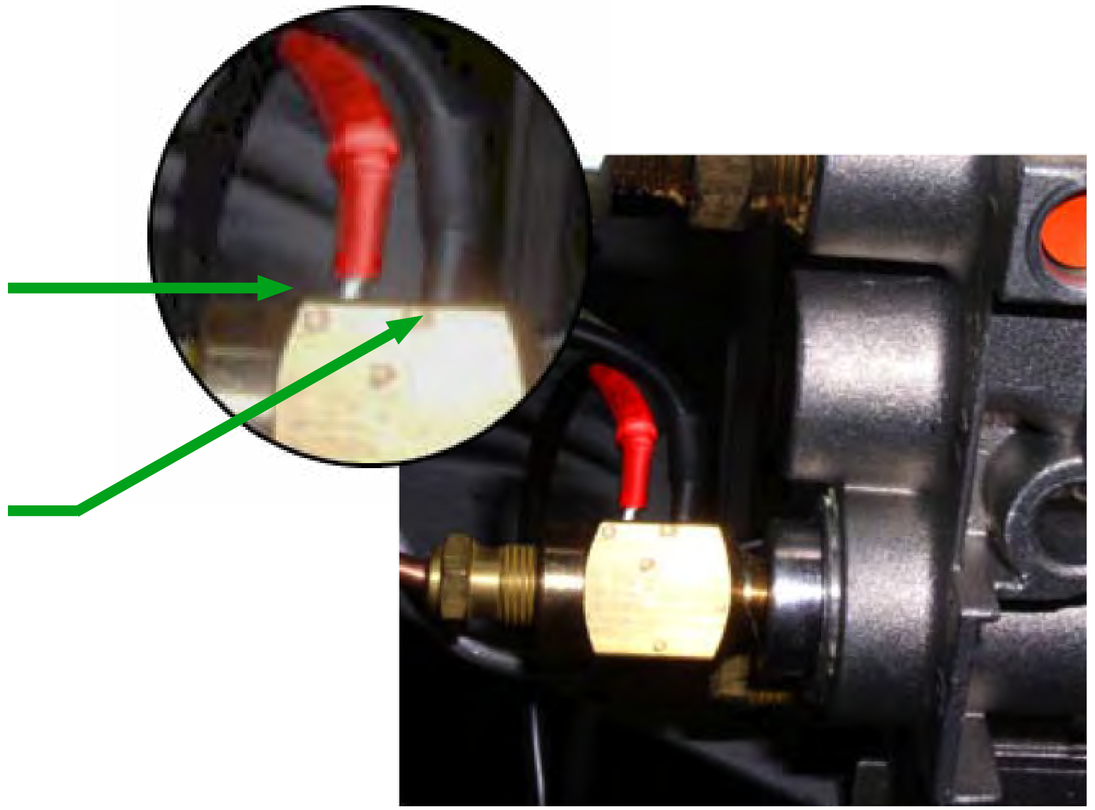
TEST: Test the thermocouple circuit voltage by measuring the mV at the red and black connections at the thermocouple interrupter block.

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.

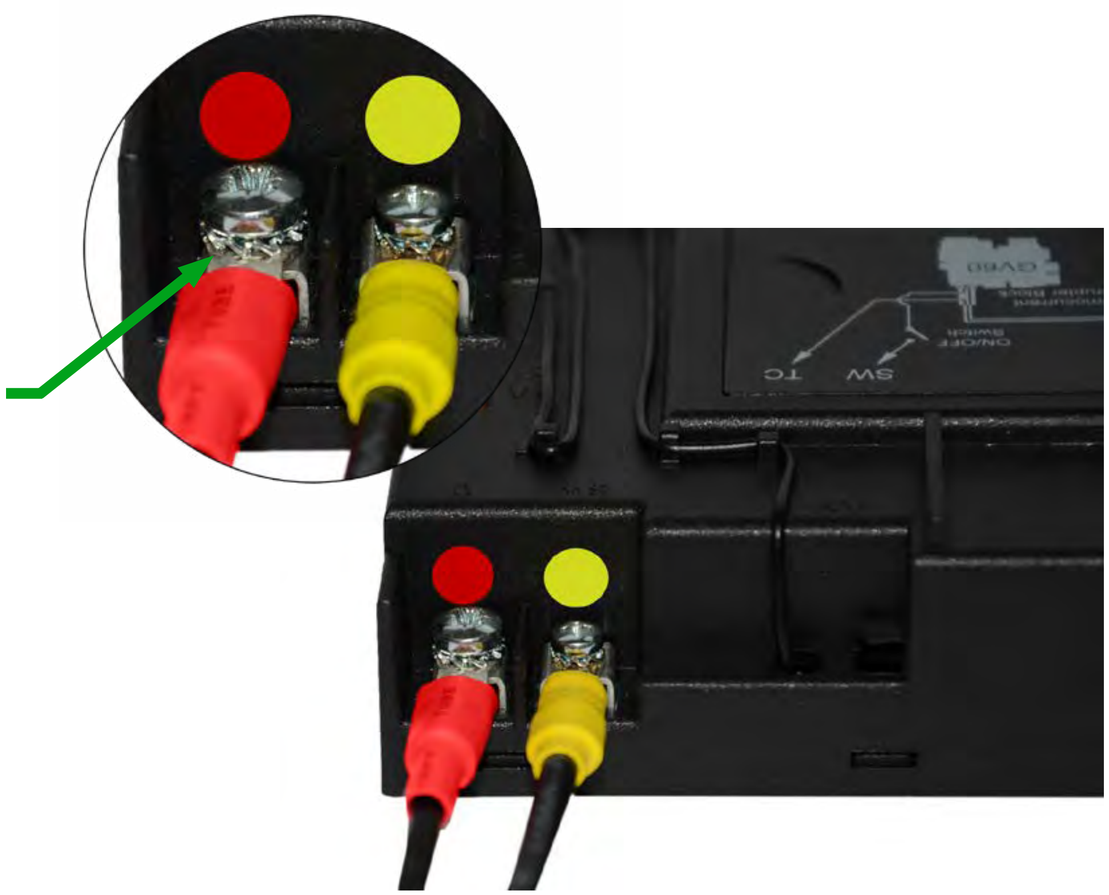


Testing the Electronics

TEST: Test the thermocouple interrupter circuit by taking 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.

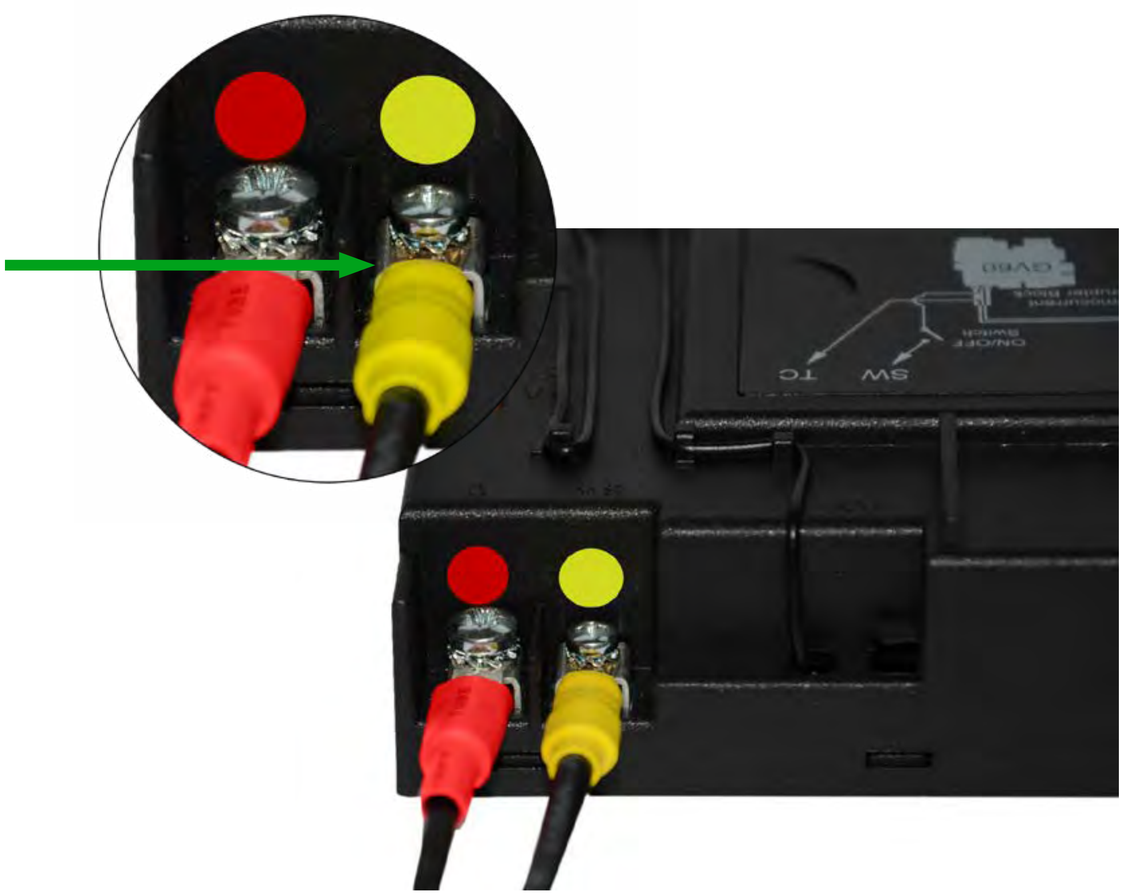


Testing the Electronics

TEST: Test the thermocouple interrupter circuit 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.
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. A minimum of 5 mV is required for proper operation.

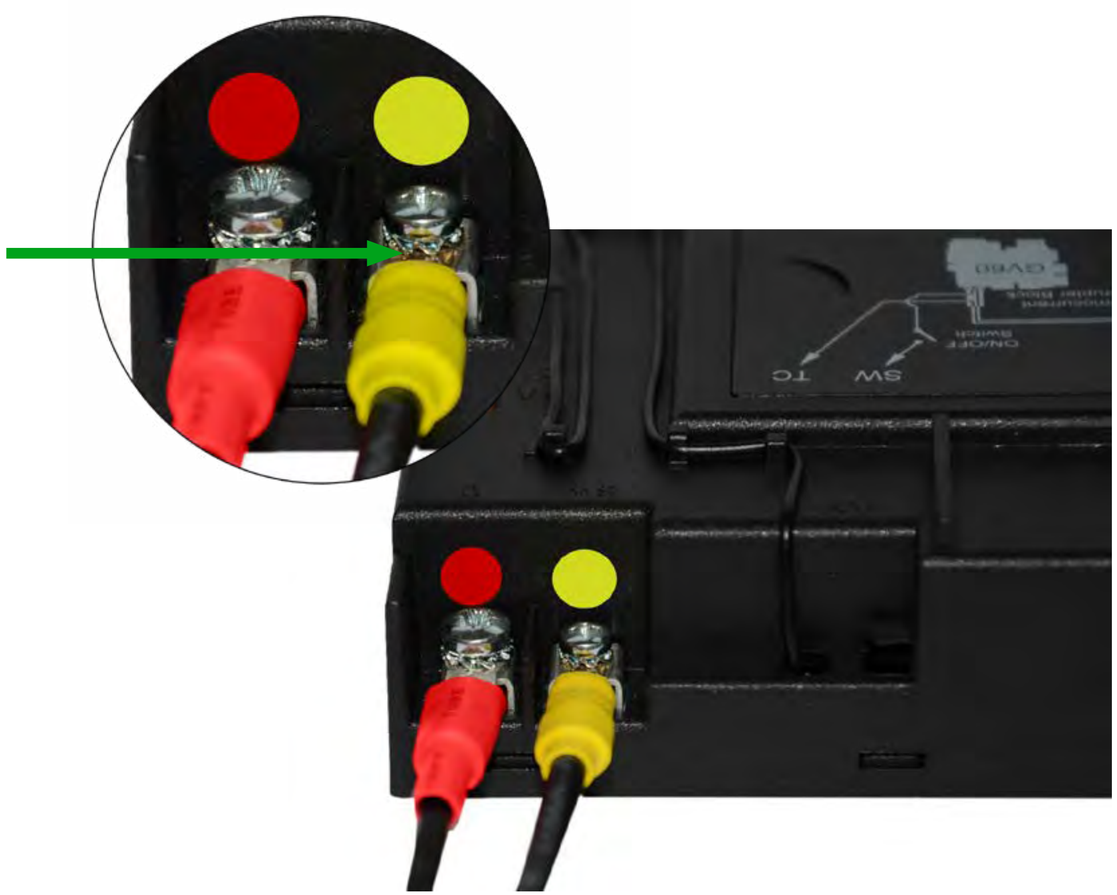


Testing the Electronics

TEST: Test the thermocouple interrupter circuit 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.
(ANSI Z21.88 requires that Direct Vent Appliances drop-out in 30 seconds or less)

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



GV60 Troubleshooting

Potential Problem: The flame height will not change.

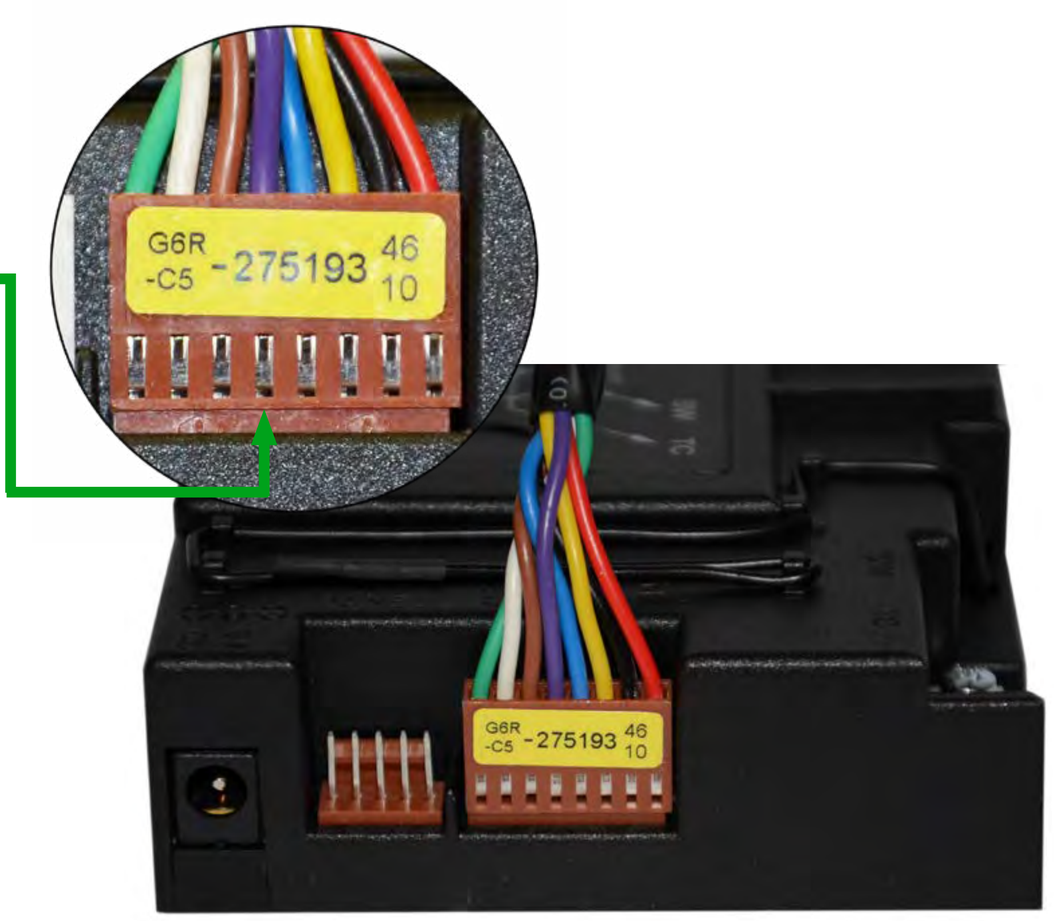
VERIFY MOTOR OPERATION

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 or there may be a wiring harness issue.

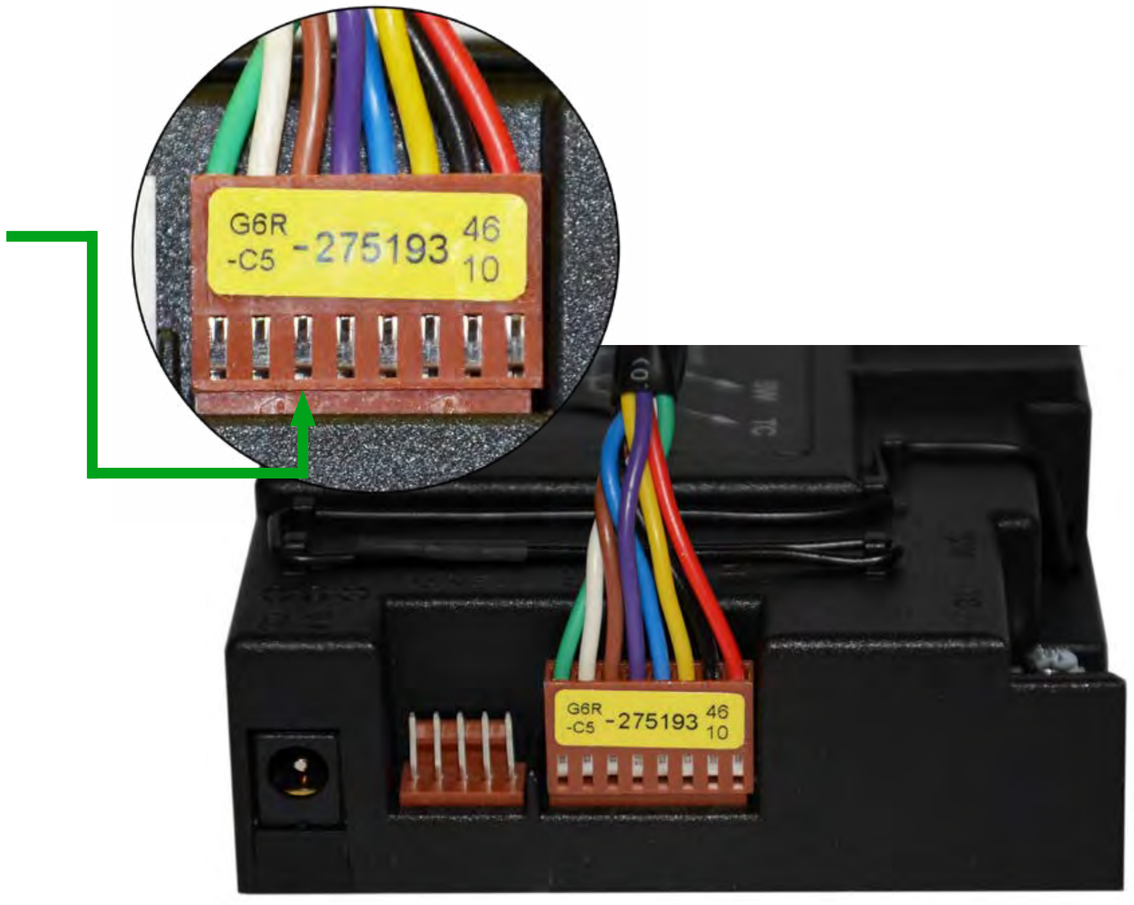


Verifying Motor Operation

TEST: Verify that the motor is receiving power.

PROCEDURE: Connect “+” test probe on the 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 or there may be a wiring harness issue.



GV60 Troubleshooting

Potential Problem: Intermittent Operation

TEST GAS PRESSURE

Testing Gas Pressure

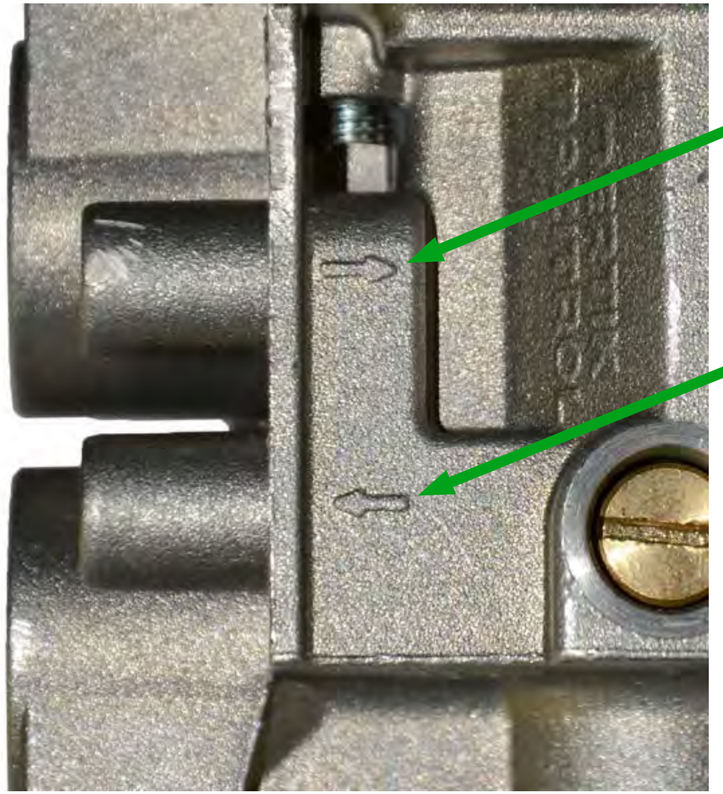
TEST: Check gas pressure at pressure test ports on valve.

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.

NOTE: Always check gas pressure at full flow.



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

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

NEW! myfire® WiFi Box

- Variable power supply between 5 – 24 volts.
- Two RGB outlets
- Much smaller footprint and easy installation
- Identical connectors on both ends of cable
- Communication/Wi-Fi Chip is approved by Apple, Amazon, and Google.
- More memory
- Increased processing speed
- Temperature sensor
- Fewer steps for myfire® app setup.

New Version!

NEW! The Puck

- Works in conjunction with the myfire® app
- Temperature sensing
- Up, down, on/off control

myfire®

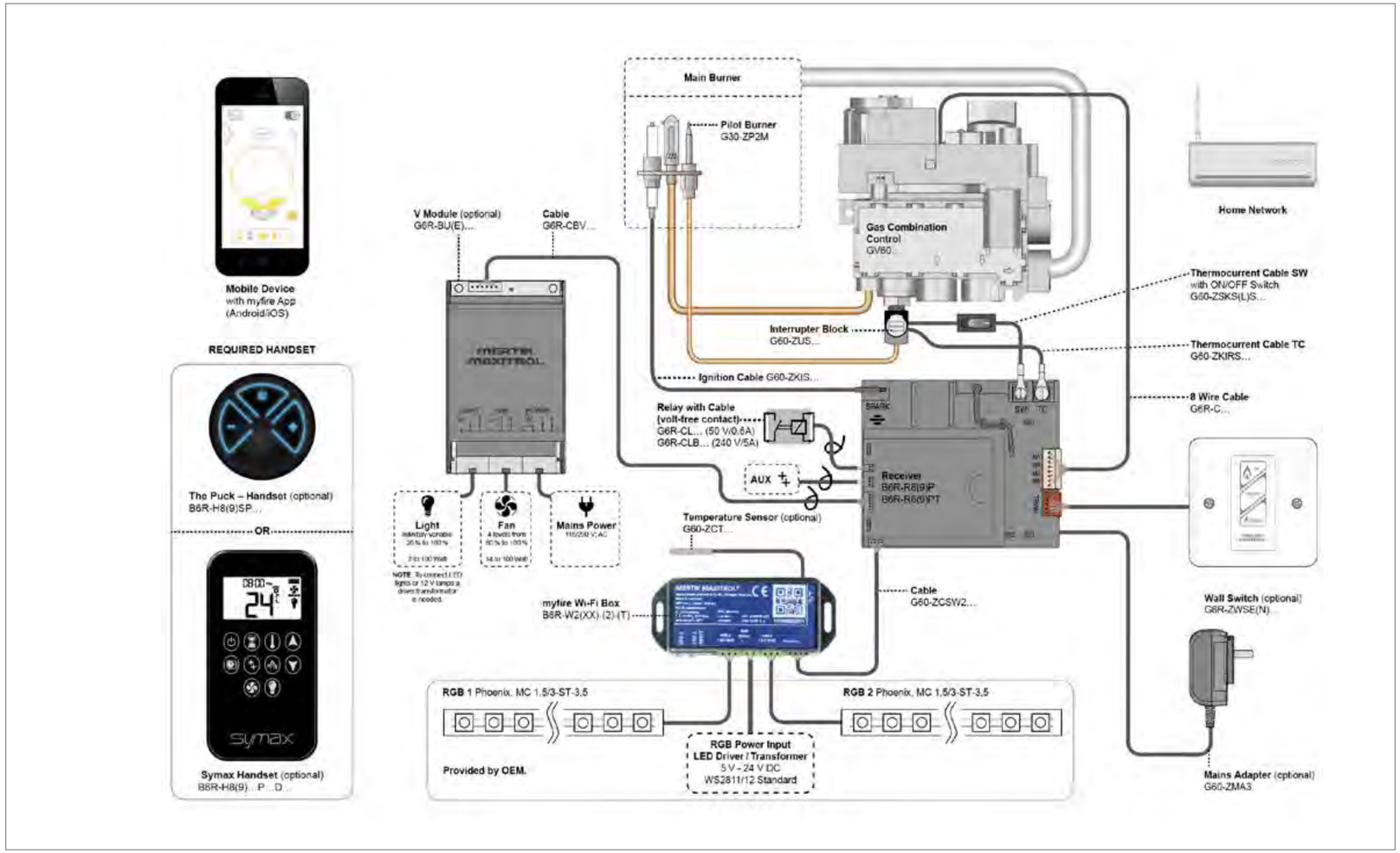
App Setup & Training

MERTIK MAXITROL®

Bi-Directional Electronics

- Receiver and Symax handset transmit and receive signals.
- Symax handset shows real-time status of system.
- System performs self-diagnostics and failure codes are displayed on handset.
- System interacts with myfire®.

Hardware Installation



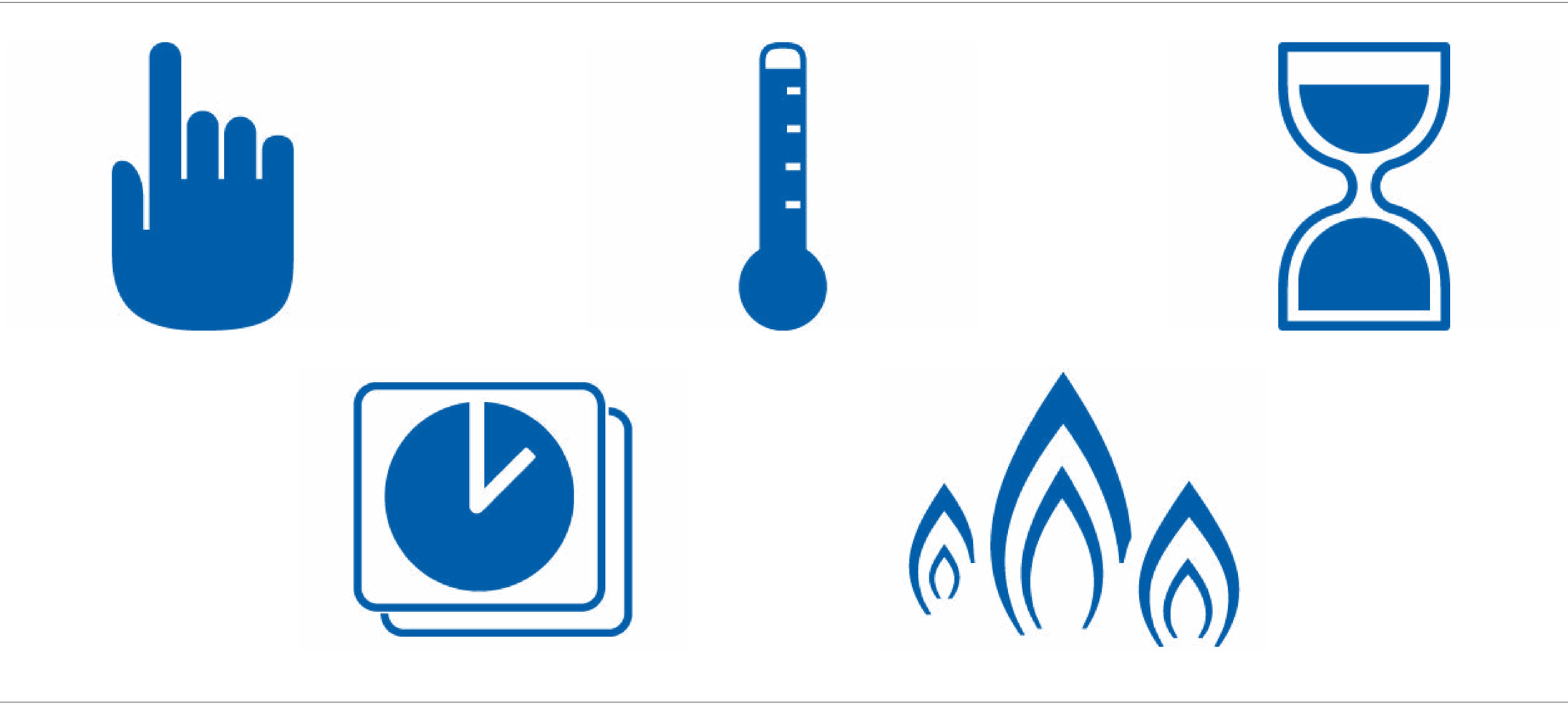
Materials Needed Before Beginning Installation

- Router – Your home WiFi Router. (2.4 GHz only).
- SSID Address – the name of the router set by your internet service provider or what you named the home network.
- Router Password – what ever password you selected when initially setting up the home WiFi network.
  - → This information is needed in order for the network and the MyFire® WiFi box to communicate.
  - → The MYFIREPLACE password is the default password for the MyFire® WiFi box.

Do not get these confused.

Download myfire® Application

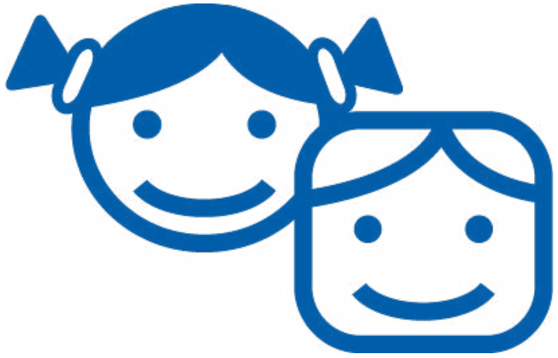
myfire® App Functions



myfire® App Functions







www.myfireapp.com

- Access to literature with step-by-step instructions on how to install the app software on your smart device.
- Video tutorials that demonstrate how to use each of the app functions.
- Complete answers to frequently asked questions.

Frequent Questions

- The myfire® app is compatible with Apple iOS and Google Android smartphones and tablets.
- The myfire® app supports Apple iOS 6.0 or later and Android 4.2 and up.
- Storage for myfire® app is 60.3 MB for Apple/iOS and 19 MB for Android.
- myfire® app can be installed on any number of smart devices.
- The myfire® app is stored locally on the smart device.
- myfire® app does not work on PC or Mac computers.
- An internet connection is necessary for the myfire® app to control fire.
- The myfire® app can control up to 8 gas fires. Each fire requires a separate myfire® Wi-Fi box.
- Myfire® app updates have no additional charge and are available via the Apple App Store or Google Play.
- New versions of the myfire® app are announced and available in the app store. You will be notified in the app itself of updates available for the myfire® Wi-Fi box.

Q & A