

## Q375A

### FLAME SENSING/IGNITION ELECTRODE

#### INSTRUCTION SHEET



## APPLICATION

The Q375 flame sensing/ignition electrode is for use in both Direct Spark Ignition (DSI) systems and Intermittent Pilot burner (IP) systems to ignite main burner and to detect presence of main burner flame.

## DESCRIPTION

The Q375A is designed to work together with automatic ignition controls.

The Q375A consists of a bracket with a ceramic insulator combined with a flame sensing/ignition electrode and ground electrode.

The ground electrode extends over tip of insulated flame sensing/ignition electrode and forms a 3 mm spark gap with it. Arcing across this spark gap ignites main burner.

The flame sensing/ignition electrode is immersed in the main main burner flame, with the burner head as ground area. In presence of main burner flame a direct current is established to prove burner ignition and continuously monitor the flame during burner on period.

## SPECIFICATIONS

### Model

Q375A 1005: 2.8 x 0.5 mm "110" serie termination.  
Q375A 1013: with 6.3 mm dia spark plug connection

### Dimensions

See fig. 1. and fig. 2. page 3

### Spark gap

3 mm

## INSTALLATION

### IMPORTANT

*Installer must be a trained experienced service man.*

*The appliance manufacturer's instructions should always be followed when provided.*

*Disconnect power supply to prevent electrical shock and/or equipment damage.*

*Ensure combustion chamber is free of gas before start up.*

*Conduct a thorough check out when installation is completed.*

### Mounting

- Disconnect ignition cable and/or lead wire and remove original flame sensing/ignition electrode.
- The Q375A should be rigidly mounted in an accessible location. It must remain in a fixed position relative to the burner.
- Position Q375A so that only the tip of the flame sensing/ignition electrode is immersed in the burner flame. Depth of immersion (usually about 25 mm) are dependent on type of burner and flame configuration.

Criteria for correct position:

- flame sensing current is sufficient.
- burner ignites smoothly, usually this will be accomplished with spark gap spaced approximately about 6 mm from surface of the burner.
- ground electrode does not block gas entrance.

NOTE: On some systems it is important to limit the length of the ignition cable (distance between Q375A and the ignition control)

### Wiring



## CAUTION

Wiring must be in accordance with applicable electrical codes and local regulations.

Follow wiring diagram furnished by the appliance manufacturer, if not available follow the procedure as outlined below.

### Burner ignition

- 1 Replace ignition cable, using a 2.8 x 0.5 mm receptacle on cable end for Q375A 1005 or a 6.35 mm spark plug for Q375A 1013. This high voltage cable must meet national standards.
- 2 Cable should not be in continuous contact with metal surface to prevent spark electrode will be greatly reduced. If necessary use ceramic or plastic standoff insulators.

- ③ Connect ground terminal of the ignition control to mounting screw of Q375A. Ignition control and Q375A must have a common ground.

#### Flame sensing

- Wiring between ignition control and flame sensing/ignition electrode should have good quality insulation, suitable for the temperatures encountered.
- Use for Q375A 1005 an untinned female spade terminal on cable end for connection. Use for Q375A 1013 a 6.35 mm spark plug receptacle on cable end for connection.
- Connect Q375A to the ignition control. If necessary use a shield to protect lead wire from radiant heat of burner.
- Main burner serves as grounding area for flame signal. If there is not a good metal-to-metal contact between burner surface and ground, run lead wire from burner head to common system ground.

## CHECKOUT

### IMPORTANT

*Refer to specific instructions supplied by the appliance manufacturer as ignition controls used in DSI systems may vary.*

*If not available follow the procedure as outlined below:*

#### ① Burner ignition

- Adjust thermostat or temperature control to call for heat.
- Spark should turn on after pre-purge time (waiting time) as specified by the appliance manufacturer.
- Burner should ignite smoothly within 3 seconds after gas reaches the burner ports.
- Check time for spark cut off; spark ignition should cut off when burner flame is established.

#### ② Recycle

- Operate burner for several minutes, then turn thermostat or temperature control off and immediately back when burner flame is extinguished.
- Check sequence as mentioned under burner ignition.

#### Safety lock out

- With system off, manually shut off the gas supply.
- Turn system ON to energize spark ignition.
- Simultaneously start timing number of seconds to spark cut off. This should not exceed the safety lock out time stamped on the system control or as mentioned in the appliance manufacturer instructions.
- After spark cut off, manually re open the gas supply and no gas should flow to the main burner.

#### Restart after lock out

- Turn thermostat or temperature control off.
- Reset burner control as specified in the manufacturer's instructions, then turn gas supply on.
- Adjust thermostat or temperature control to call for heat and observe performance through at least a complete cycle to ensure system is opening correctly.

#### Final checkout

After installation or any adjustment, set burner system in operation and observe through a complete cycle to ensure that burner system components function correctly.

## SERVICE

#### Measurement of flame current.

### IMPORTANT

*Current values depends on the type of ignition control so check the instructions supplied by the appliance manufacturer*

NOTE: The ignition control provides ac power to the Q375A which the flame rectifies to a direct current. Therefore a direct current microampère meter must be used. This meter must be connected in series with the flame signal lead wire. The Honeywell W136 Test Meter with 25 mA dc scale is recommended.

If the control system does not perform as described under **Checkout**, a check of each component as outlined by the appliance manufacturer should be made.

This will include a meter check of flame current as follows:

- ① Disconnect Q375A lead wire at flame sensor terminal. Connect red (+) lead of microampère meter to free end of lead wire. Connect black (-) lead of microampère meter to flame sensor terminal.
- ② Restart the installation and read meter. Terminal flame sensor current must be at least 2 microampère or system will go into safety lock out. The reading should be steady, no varying more than width of the meter needle.

If less than 2 microampère of unsteady check:

#### a. Burner flame

Lifting of flame disturbs electrical continuity to burner head (circuit ground). Flame lifting may be due to gas input on excess of appliance rating or excessive primary air or stack draft. Flame sensing electrode must be continuously immersed in burner flame. Deflection or wavering of flame may be caused by either poor or excessive draft or by high velocity of secondary air at flame sensing rod location.

#### b. Flame sensing electrode

A bent flame sensing electrode or mounting bracket out of shape can alter both depth of flame immersion and spacing to surface of burner head. Visually examine and correct if bent out of position. Excessive temperature of ceramic insulator will cause leakage to ground, decreasing current to ignition control. Satisfactory signal strength usually is obtained with about 25 mm of flame sensing electrode tip immersed in burner flame.

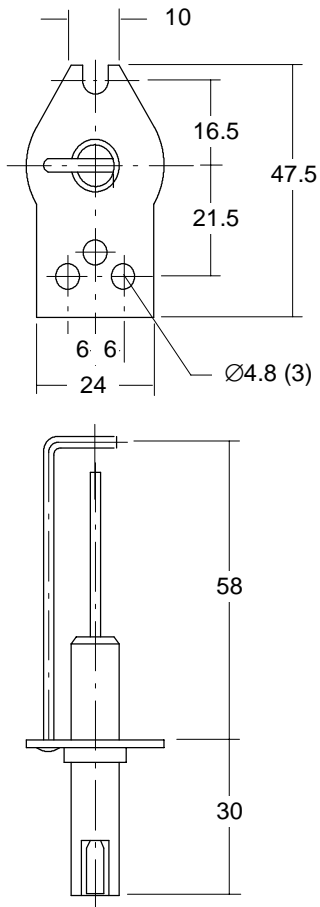
#### c. Electrical connection, short leakage

Electrical connections must be clean and tight. If lead wire is damaged or deteriorated use only moisture resistant high voltage wire which can withstand 180 °C ambient temperature as replacement. Excessive temperature of ceramic insulator will

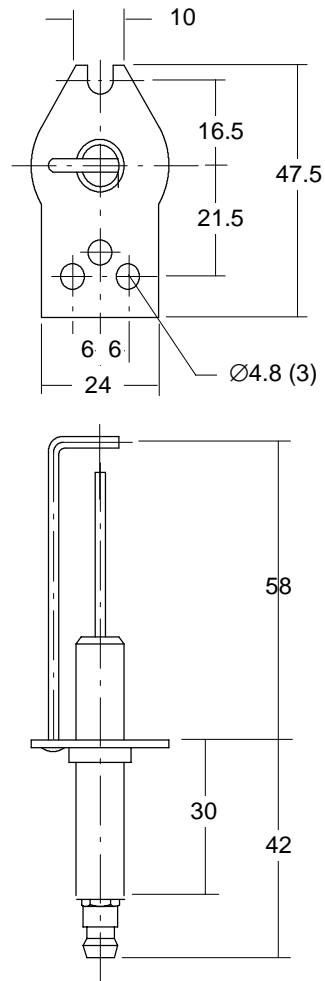
cause leakage to ground and decreasing current to ignition control.

**d. If ceramic insulation is cracked.**

If ceramic insulator is cracked replace Q375A



**Fig. 1. Dimensions Q375A 1005**



**Fig. 2. Dimensions Q375A 1013**

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