INSTALLATION DATA

780-001 / 780-002 / 780-003 UNIVERSAL IGNITION MODULE REPLACEMENT UNI-KIT®

Robertshaw® Universal Ignition Control Uni-Kit® is available in both nonlockout (780-001) and lockout (780-002). The 780-003 is lockout with a prepurge function.

The Universal Ignition Control Uni-Kits feature a flame sense circuit that automatically detects the presence of a remote sense probe (2 rod system) or it switches to local sense (1 rod system) utilizing the pilot assembly as a sensing source. If both systems are provided, failure of one causes automatic reversion to the other.

780-001 (NONLOCKOUT)

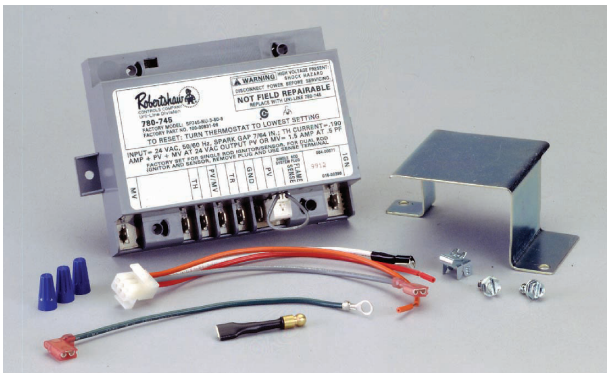
The automatic recycle features assure that, in the event of flame failure, main gas is disabled and the spark repetition sequence is restarted until pilot gas is ignited. Only after pilot ignition has been reestablished can main gas be returned to the burner.

780-002 (LOCKOUT)

These kits have a lockout feature to shut off all gas to the furnace, should pilot ignition fail to occur after a predetermined time period. The 780-002 provides 3 tries for ignition. Each ignition period is 60 seconds followed by a 5 minute time delay between ignition attempts. After 3 tries if no pilot flame is sensed, unit goes into lockout and must be reset at the thermostat.

780-003 (LOCKOUT W/PREPURGE)

Same features as the 780-002 above, except it has a 45 second prepurge function.

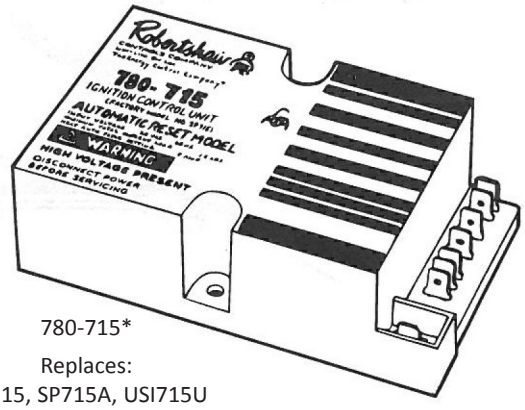


SPECIFICATIONS

Input voltage	24V AC to 50/60 Hz
Transformer	24V AC / 20 VA
Safety lockout timing (780-002 only)	60 seconds*
Prepurge (780-003 only)	45 seconds*
Spark rate	3 to 4 sparks per second
Relay contact ratings	
Pilot valve	1 amp at .5 PF
Main valve	1 amp at .5 PF
Combined load	1.5 at .4 PF
Flame sense current	.7 µA DC @ 25°C / 24 VAC
Maximum total current load	1.5 amp
Flame failure reignition time	.8 seconds maximum
Thermostat anticipator setting	.7 amp
Ambient temperature rating	- 40°F to 175°F (- 40°C to 80°C)
Relative humidity	95% noncondensing at 104°
*The SP745 lockout ignition control used in the 780-002 and 780-003 Uni-Kit provides 3 tries for ignition. Each ignition period is 60 seconds followed by a 5 minute time delay between ignition attempts. After 3 tries if no pilot flame is sensed, the unit goes into lockout and must be reset at the thermostat.	

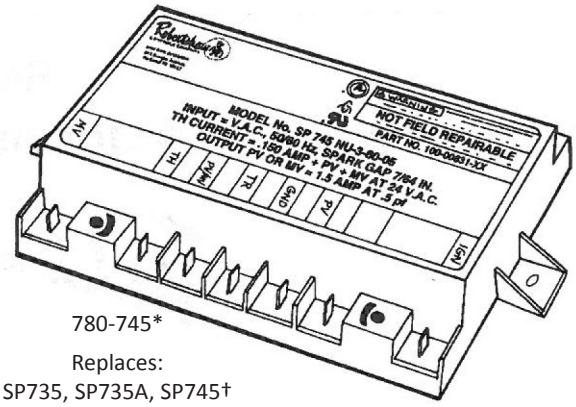
REPLACING ROBERTSHAW: SP715 / SP715A / USI715U / SP735 / SP735A / SP745

1. Turn OFF all electrical power to the appliance being serviced.
2. Remove the old ignition control unit, but leave the wires connected at this time.
3. Install the new Universal Ignition Control Module in the same location as the old one.
4. Locate the 'grey or white plug' assembled to the SENSOR terminal. Remove it and discard. It is no longer required.
5. Remove one wire at a time from the old I.C.U. Reconnect it to the same terminal on the new Universal I.C.U. Example: PV to PV.
6. The wiring and installation of the new ignition module is now compete.
7. Restore electrical power to the appliance being serviced. Proceed as directed in SYSTEM CHECKOUT PROCEDURES section.



780-715*

Replaces:
SP715, SP715A, USI715U



780-745*

Replaces:
SP735, SP735A, SP745†

*Uni-Line part number for the individual model
†Intermittent (spark pilot) model only

JOHNSON CONTROLS

The Robertshaw 780-001 (nonlockout), 780-002 (lockout) and 780-003 (lockout with prepurge) Universal Replacement Module Uni-Kit® is designed to replace the Johnson Controls Spark Ignition System Modules listed on pages 5 and 6. The 780-002 kit must be used whenever a Johnson Controls Y79 Series lockout module is present on the system being serviced.

The 780-001 and 780-002 Uni-Kit replaces only the existing control module, while utilizing the existing Johnson gas valve, pilot sensor and ignitor. The Uni-Kit includes a special mounting bracket for mounting the new module onto the existing gas valve. A special wiring adaptor, (included with the Uni-Kit) is used whenever the existing system includes a Johnson Controls M15/ Y15 Series Vent Damper.

STEP I - IDENTIFYING YOUR JOHNSON CONTROLS MODULE

1. Locate the Johnson Controls part number on the existing module.
2. Find this number in the cross-reference list (pages 5 and 6) to determine which wiring diagram to use.

Existing Module (Control Part) Part Number	Refer to Wiring Diagram Number

3. Over the years Johnson Controls has gone through many different model variations of ignition control units. Along with the many different models, Johnson Controls has also had dozens of different wiring combinations for these controls.

We have provided for you what we feel are the most accurate wiring schematic(s) that we can. If you encounter problems with your wiring, Robertshaw I.C.U. terminals and their functions are listed below:

TH = 24 volt signal from wall thermostat

PV = Pilot valve - pilot gas only

MV = Main valve - main burner gas

SENSOR = Flame sensor (2 rod system)

ACCESSORY TERM E3 = Not used

MV/PV = Common return for MV and PV (grounded)

TR = Transformer common (grounded)

GND. = Ground

IGNITOR = Spark electrode lead wire

STEP II - REMOVING THE OLD IGNITION MODULE

CAUTION: THIS DEVICE SHOULD BE INSTALLED BY A QUALIFIED SERVICEPERSON WITH DUE REGARD FOR SAFETY AS IMPROPER INSTALLATION COULD RESULT IN A HAZARDOUS CONDITION.

NOTE: The following instructions are based on the premise that the appliance being serviced is in correct operating order except for the failed control module. If other problems are present, they must be corrected or the new module may not perform correctly.

1. Turn off all electrical power to the appliance being serviced.
2. Using the wiring tags provided, label each wire with the old terminal designation as you disconnect it. It is not necessary to label the high voltage cable as it is readily identifiable.
3. If a vent damper wiring harness (not just the "dummy plug") is plugged into the six-pin molex connector, make sure that you use the 1751-724 (G60 Vent Damper Adaptor), included with the Uni-Kit.
4. Remove and discard the screws that held the ignition module (control part) onto the mounting plate. Discard the old ignition module. See Figure 1.

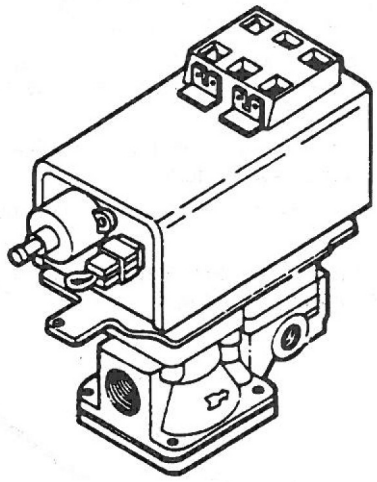


Figure 1

STEP III - INSTALLING THE NEW IGNITION MODULE

1. Locate the G60 adaptor bracket, 6" green grounding wire and using the two #12 x 1/2" sheet metal screws provided, mount the adaptor bracket and 6" ground wire to the gas valve mounting plate as shown in Figure 2. The adaptor bracket fits onto the mounting plate in more than one position. Use the position that gives the easiest access to the mounting screw locations. Actual orientation of the bracket is not important. The screws will accept either a 1/4" flat screwdriver or a 5/16" nut driver. Make sure no wires are pinched between the bracket and mounting plate.
2. Locate the 'grey or white plug' assembled to the SENSOR terminal. Remove it and discard. It is no longer required.
3. Remove the protective backing from one side of the double-sided tape. Place the side of the tape with the exposed adhesive on the bottom of the new Robertshaw ignition module.
4. Referring back to the appropriate wiring instructions, place the wires on the correct terminals.
5. Remove the remaining protective backing from the double-sided tape on the ignition module. Center the module over the previously installed bracket and press down. See Figure 2.

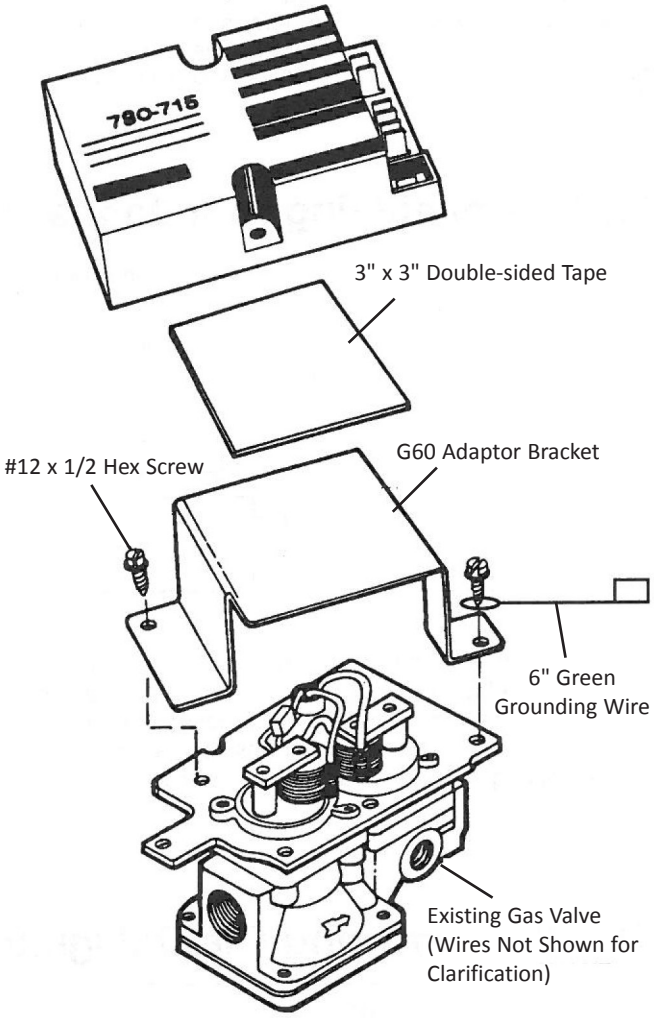


Figure 2

6. Connect the green ground wire, that was attached in Step 1, to any one of the following terminals that are not already being used; GND, MV/PV or TR.

7. Locate the high voltage cable adaptor included in the kit. Attach it to the IGNITOR terminal on the new ignition module. See Figure 3.

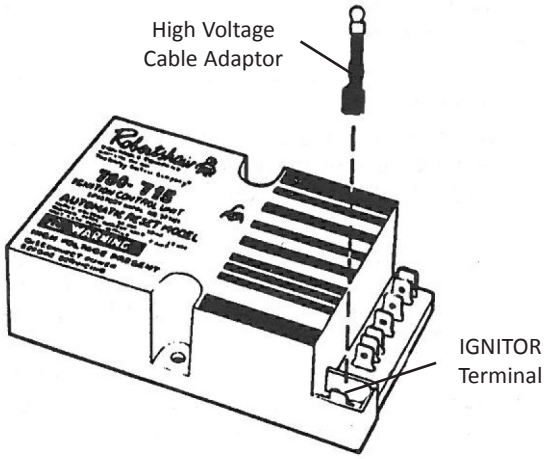


Figure 3

8. Attach the existing high voltage cable (from the pilot ignitor) to the high voltage cable adaptor or IGNITOR terminal.
9. If a vent damper is present in the system, proceed as follows, if not proceed to Step 10.
   A. Locate the orange lead wire on the 1751-724 adaptor, See Figure 4. Wire nut it to the power lead that came off terminal #5 or #6 on the old unit.
   B. Wire nut the red wire on the 1751-724 adaptor to the thermostat wire. This is the wire that was connected to terminal #2 on the old unit.
   C. Connect the gray wire on the 1751-724 to the TH terminal on the new module.

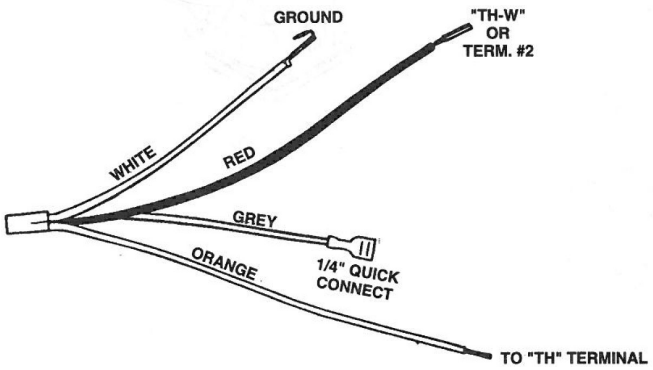


Figure 4

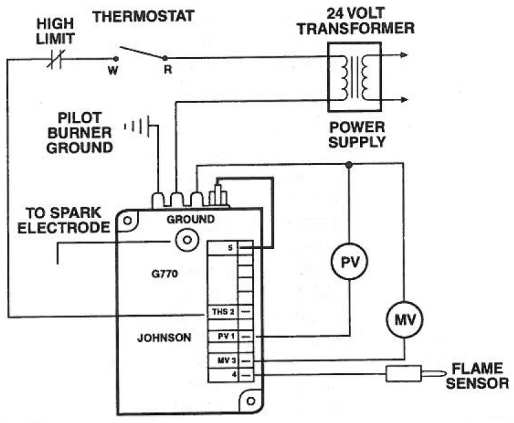
10. The wiring and installation of the new ignition module is now complete.
11. Restore electrical power to the appliance being serviced. Proceed as directed in SYSTEM CHECKOUT PROCEDURES section.

JOHNSON CONTROLS NUMBER	UNI-LINE REPL.	USE WIRING DIAGRAM NUMBER	IF A Y79 IS PRESENT ON SYSTEM USE WIRING DIAGRAM
CSA35A-617R	780-001	3	5
CSA35A-618R	780-001	3	5
CSA42A-600R	780-001	3	4
CSA42A-601R	780-001	3	4
CSA42A-602R	780-001	3	4
CSA42A-603R	780-001	3	4
CSA42A-604R	780-001	3	4
CSA43A-600R	780-001	3	4
CSA44A-600R	780-001	3	4
CSA45A-601R	780-001	3	4
CSA45A-602R	780-001	3	4
CSA46A-600R	780-001	3	4
CSA48A-600R	780-001	3	4
CSA49A-600R	780-002	3	
CSA49A-601R	780-002	3	
CSA49A-605R	780-002	3	
CSA51A-601R	780-002	3	
CSA52A-600R	780-002	3	
G600AX-1	780-001	3	
G600AX-2	780-002	3	
G600AX-3	780-002	3	
G600AY-1	780-001	5	
G600KX-1	780-002	3	
G600LX-1	780-002	3	
G600LX-2	780-002	3	
G600LY-1	780-002	5	
G600MX-1	780-002	3	
G600NX-1	780-002	3	
G600RX-1	780-002	3	
G60AAA-1	712-017	3	
G60AAG-1	780-001	3	5
G60AAG-2	780-002	3	5
G60AAG-3	780-001	3	5
G60AAG-4	780-001	3	5
G60AAG-5	780-001	3	5
G60AAG-6	780-001	3	5
G60AAG-7	780-002	3	
G60CAA-1	712-017	3	
G60CAA-3	712-017	3	
G60CAG-1	780-002	3	5
G60CAG-2	780-002	3	5
G60CAG-3	780-002	3	5
G60CAG-4	780-002	3	5
G60CAG-5	780-001	3	5
G60CAG-6	780-002	3	5
G60CAG-7	780-002	3	5
G60CAG-8	780-002	3	5
G60CAG-9	780-002	3	5
G60CBA-1	712-017	3	
G60CBA-2	712-017	3	
G60CBA-3	712-017	3	
G60CBG-1	780-001	3	5
G60CBG-10	780-001	3	5
G60CBG-11	780-001	3	5
G60CBG-12	780-001	3	5
G60CBG-14	780-001	3	5
G60CBG-16	780-001	3	5
G60CBG-17	780-001	3	5
G60CBG-2	780-002	3	5
G60CBG-3	780-002	3	5
G60CBG-4	780-002	3	5
G60CBG-5	780-002	3	5
G60CBG-6	780-002	3	5
G60CBG-7	780-002	3	5
G60CBG-8	780-002	3	5
G60CBG-9	780-002	3	5
G60CCA-1	712-017	3	
G60CCG-1	780-001	3	5
G60CPG-1	780-001	3	5
G60DBG-1	780-001	3	5
G60DBG-2	780-001	3	5
G60DCG-1	780-001	3	5
G60DCG-2	780-001	3	5
G60DCG-3	780-001	3	5
G60DCG-4	780-001	3	5
G60DGB-1	780-001	3	
G60PAG-1	780-001	3	
G60PAG-2	780-001	3	4
G60PAG-3	780-001	3	4
G60PAG-4	780-001	3	4
G60PAG-5	780-001	3	4
G60PAG-6	780-001	3	4
G60PAJ-1	780-001	3	4
G60PAK-1	780-001	3	4
G60PAK-2	780-001	3	4
G60PFH-1	780-002	3	
G60PFH-2	780-002	3	
G60PFL-1	780-002	3	
G60PFQ-1	780-001	3	
G60PML-1	780-002	3	
G60PVL-1	780-002	3	
G60QAG-1	780-002	3	4
G60QAG-2	780-001	3	4
G60QAG-3	780-002	3	4
G60QAG-4	780-001	3	4
G60QAK-1	780-002	3	4
G60QBG-1	780-001	3	4
G60QBG-2	780-001	3	4
G60QBG-3	780-001	3	4
G60QBG-4	780-001	3	4
G60QBG-5	780-001	3	4
G60QBG-6	780-001	3	4
G60QBG-7	780-001	3	4
G60QBG-8	780-001	3	4
G60QBG-9	780-001	3	4
G60QBH-1	780-001	3	4
G60QBK-1	780-001	3	4
G60QBK-2	780-002	3	4
G60QBK-3	780-002	3	4
G60QBL-1	780-001	3	4
G60QBL-2	780-001	3	4
G60QCG-1	780-002	3	4
G60QCJ-1	780-001	3	4
G60QCL-1	780-001	3	4
G60QDG-1	780-001	3	4
G60QFL-1	780-002	3	4
G60QGH-1	780-002	3	4
G60QHL-1	780-002	3	
G60QHL-2	780-002	3	
G60QJL-1	780-002	3	
G60QLG-1	780-001	3	4
G60QLK-1	780-002	3	4
G60QPL-1	780-001	3	4
G60QRH-1	780-002	3	
G60QRH-2	780-002	3	
G60QRH-3	780-002	3	
G60QRL-1	780-002	3	
G60QRL-2	780-001	3	
G60QRL-3	780-001	3	
G60QSL-1	780-002	3	
G60QTH-1	780-002	3	
G60QTL-1	780-002	3	
G60QUL-1	780-002	3	
G60RAG-1	780-001	3	4
G60RBG-1	780-001	3	4
G60RBG-2	780-001	3	4
G60RBG-3	780-001	3	4
G60RBK-1	780-001	3	4
G60RBK-2	780-001	3	4
G60RCG-1	780-001	3	4
G60RCG-2	780-001	3	4
G60RCJ-1	780-001	3	4
G60RDG-1	780-001	3	4
G60RDK-1	780-001	3	4
G60RGL-1	780-002	3	
G60RHL-1	780-002	3	
G60RHP-1	780-001	3	
G60RPL-1	780-001	3	4
G60RSL-1	780-002	3	
G60ZAG-1	780-002	3	4
G60ZAG-2	780-002	3	4
G65BBG-1	780-001	3	4
G65BBG-2	780-001	3	4
G65BBG-3	780-001	3	4
G65BBG-4	780-001	3	4
G65BBG-5	780-001	3	4
G65BBG-6	780-001	3	4
G65BBG-7	780-001	3	4
G65BBG-8	780-001	3	4
G65BBM-1	780-001	3	
G65BBM-2	780-001	3	
G65BBM-3	780-001	3	
G65BBM-4	780-001	3	
G65BCG-1	780-001	3	4
G65BCM-1	780-001	3	
G65BFG-1	780-001	3	4
G65BKG-1	780-001	3	4
G65BKG-2	7801-001	3	4
G65BKG-3	780-001	3	4
G65BKM-1	780-001	3	
G65BKM-2	780-001	3	
G65BKM-3	780-001	3	
G65BLG-1	780-002	3	4
G65BLG-2	780-001	3	4
G65DBM-1	780-002	3	4
G65DBM-2	780-002	3	
G65DBM-3	780-002	3	
G65DCM-1	780-002	3	
G65DFM-1	780-002	3	
G65DKM-1	780-002	3	
G65DLM-1	780-002	3	
G65QBM-1	780-002	6	
G65QBM-3	780-002	6	
G66AG-1	780-001	3	4
G66AG-2	780-001	3	4
G66BG-1	780-001	3	4
G66MG-1	780-002	3	
G66MG-2	780-002	3	
G66NG-1	780-002	3	
G670AW-1	780-002	6	
G670AW-2	780-002	6	
G67AG-10	780-002	6	2

JOHNSON CONTROLS NUMBER	UNI-LINE REPL.	USE WIRING DIAGRAM NUMBER	IF A Y79 IS PRESENT ON SYSTEM USE WIRING DIAGRAM
G67AG-11	780-002	6	
G67AG-3	780-002	6	
G67AG-4	780-002	6	
G67AG-7	780-002	6	
G67AG-8	780-002	6	
G67AG-9	780-002	6	2
G67BG-2	780-002	7	8
G67BG-3	780-002	7	8
G67BG-4	780-002	7	8
G67BG-5	780-002	7	8
G67KG-1	780-002	3	
G67LG-1	780-002	3	
G67MG-1	780-002	3	
G67MG-2	780-002	3	
G67MG-3	780-002	3	
G67MG-4	780-002	3	
G67NG-2	780-002	3	
G67NG-4	780-002	3	
G770KGA-1	780-002	1	
G770KHA-1	780-002	1	
G770KHA-2	780-001	1	
G770LGA-1	780-002	1	
G770LGA-2	780-002	1	
G770LGC-1	780-002	1	
G770LGC-2	780-002	1	
G770LGC-3	780-002	1	
G770LGC-4	780-002	1	
G770LHA-1	780-002	1	
G770LHA-2	780-002	1	
G770LHC-1	780-003	1	
G770MGA-1	780-002	1	
G770MGA-2	780-002	1	
G770MGA-3	780-002	1	
G770MGC-1	780-002	1	
G770MGC-2	780-002	1	
G770MGC-3	780-002	1	
G770MGC-4	780-002	1	
G770MGC-5	780-002	1	
G770MGC-6	780-002	1	
G770MHA-1	780-002	1	
G770MHA-2	780-002	1	
G770MHC-1	780-003	1	
G770NGA-1	780-002	1	
G770NGC-4	780-002	1	
G770NGC-5	780-002	1	
G770NGC-6	780-002	1	
G770NGC-7	780-002	1	
G770NHA-1	780-002	1	
G770NHC-1	780-003	1	
G770RGA-1	780-002	1	
G770RHA-1	780-002	1	
G770RHA-2	780-002	1	
G775RGA-1	780-002	1	
G775RHA-1	780-002	1	
G775RHA-2	780-002	1	
G779LHA	780-002	1	
Y79ABC-1	780-002	*	
Y79ABC-2	780-002	*	
Y79ABC-3	780-002	*	
Y79ABC-4	780-002	*	
Y79ABC-5	780-002	*	
Y79ABC-6	780-002	*	
Y79ABC-7	780-002	*	
Y79ABD-1	780-002	*	
Y79ABD-2	780-002	*	
Y79BBA-1	780-002	*	
Y79BBA-2	780-002	*	

*To determine the correct wiring diagram, find the Johnson Control I.C.U. model number in this chart and follow the wiring diagram indicated.

WIRING DIAGRAM 1

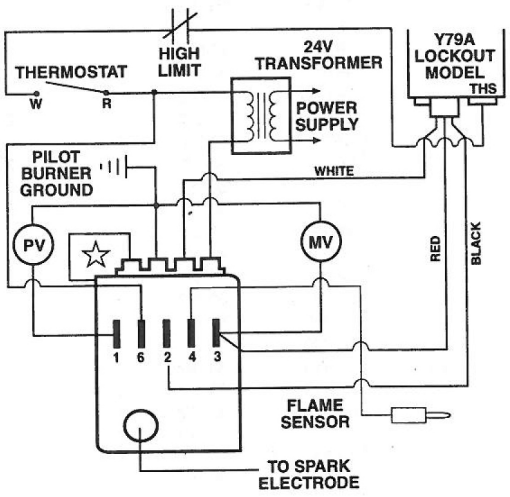


JOHNSON CONTROLS	ROBERTSHAW
1 (PV)	PV•
2 (THS)	TH
3 (MV)	MV•
4	SENSOR
5	NOT USED
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

• Connect the grounded leads of the PV and MV from the Johnson Controls module to the MV/PV terminal on the Robertshaw I.C.U.

WIRING DIAGRAM 2



☆See Step 6 on page 3

JOHNSON CONTROLS	ROBERTSHAW
1	PV•
2	TH□
3	MV•
4	SENSOR
5	NOT USED
6	†
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

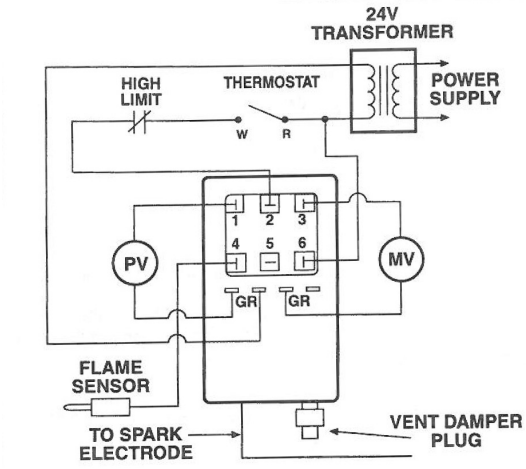
□ Connect the THS lead from the Johnson Controls Y79 module to the TH terminal on the Robertshaw I.C.U.

† This is a hot wire from the 24V transformer secondary and is not used in the Robertshaw installation. Cut off the connector, utilizing the supplied wire nut; connect any wires on terminal 6 together, or insulate the single wire and secure in the appliance.

• Connect the grounded leads of the PV and MV from the Johnson Controls module to the MV/PV terminal on the Robertshaw I.C.U.

★Cut the thermostat lead at the Y79A module and connect it to the TH terminal on the Robertshaw I.C.U. On this application, the Robertshaw I.C.U. (780-002) has the lockout feature built-in. Therefore the Johnson Controls Y79A lockout module can be removed and discarded.

WIRING DIAGRAM 3

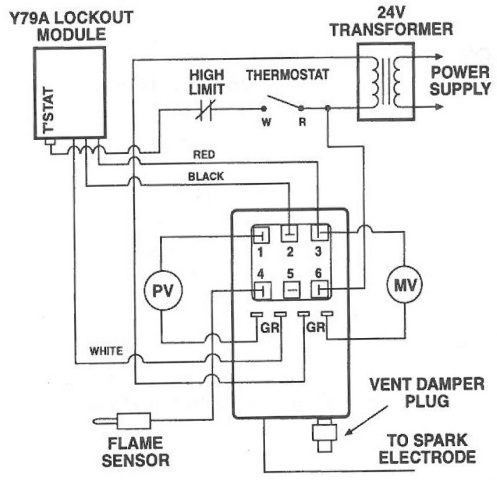


JOHNSON CONTROLS	ROBERTSHAW
1	PV
2	TH
3	MV
4	SENSOR
5	NOT USED
6	†
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

† This is a hot wire from the 24V transformer secondary and is not used in the Robertshaw installation. Cut off the connector, utilizing the supplied wire nut; connect any wires on terminal 6 together, or insulate the single wire and secure in the appliance.

WIRING DIAGRAM 4



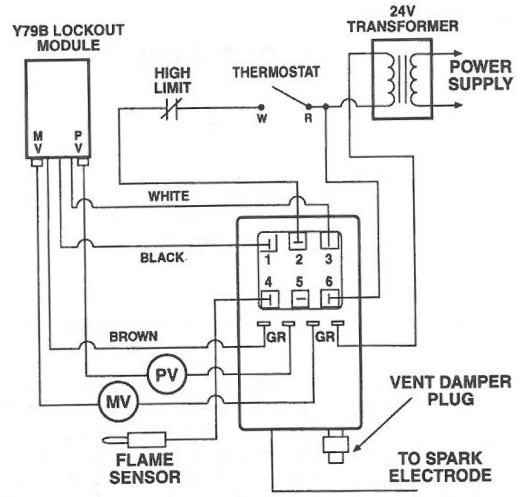
JOHNSON CONTROLS	ROBERTSHAW
1	PV
2	★
3	MV
4	SENSOR
5	NOT USED
6	†
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

† This is a hot wire from the 24V transformer secondary and is not used in the Robertshaw installation. Cut off the connector, utilizing the supplied wire nut; connect any wires on terminal 6 together, or insulate the single wire and secure in the appliance.

★ Cut the thermostat lead at the Y79A module and connect it to the TH terminal on the Robertshaw I.C.U. On this application, the Robertshaw I.C.U. (780-002) has the lockout feature built-in. Therefore the Johnson Controls Y79A lockout module can be removed and discarded.

WIRING DIAGRAM 5



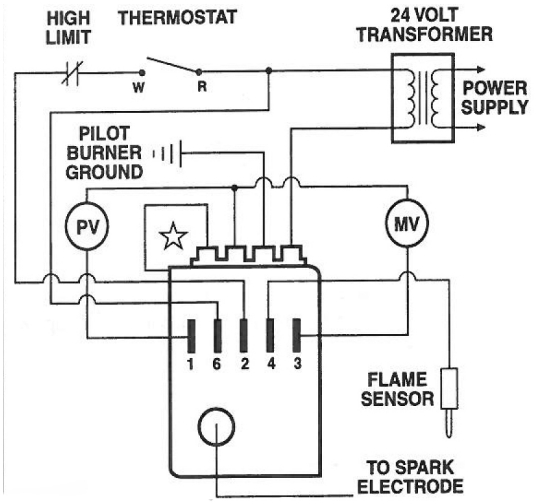
JOHNSON CONTROLS	ROBERTSHAW
1	PV■
2	TH
3	MV■
4	SENSOR
5	NOT USED
6	†
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

† This is a hot wire from the 24V transformer secondary and is not used in the Robertshaw installation. Cut off the connector, utilizing the supplied wire nut; connect any wires on terminal 6 together, or insulate the single wire and secure in the appliance.

■ Cut the MV wire at the Y79B module and connect it to the MV terminal on the Robertshaw I.C.U. Cut the PV wire at the Y79B module and connect it to the PV terminal on the Robertshaw I.C.U. Connect the grounded leads from the MV and PV to the MV/PV terminal on the Robertshaw I.C.U. On this application, the Robertshaw I.C.U. (780-002) has the lockout feature built-in. Therefore the Johnson Controls Y79B lockout module can be removed and discarded.

WIRING DIAGRAM 6



☆See Step 6 on page 3

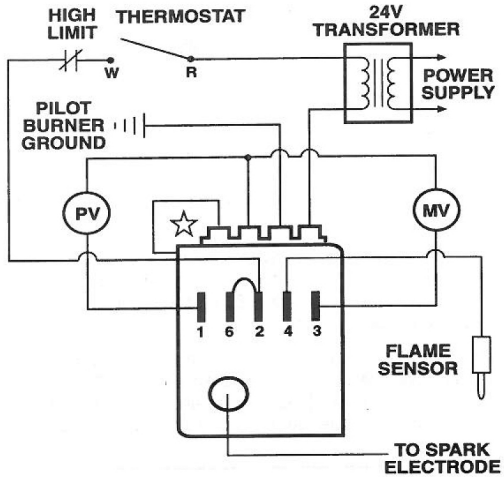
JOHNSON CONTROLS	ROBERTSHAW
1	PV•
2	TH
3	MV•
4	SENSOR
5	NOT USED
6	†
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

† This is a hot wire from the 24V transformer secondary and is not used in the Robertshaw installation. Cut off the connector, utilizing the supplied wire nut; connect any wires on terminal 6 together, or insulate the single wire and secure in the appliance.

• Connect the grounded leads of the PV and MV from the Johnson Controls module to the MV/PV terminal on the Robertshaw I.C.U.

WIRING DIAGRAM 7



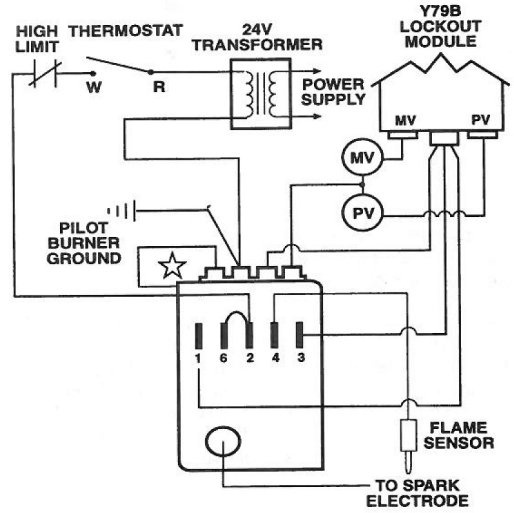
☆See Step 6 on page 3

JOHNSON CONTROLS	ROBERTSHAW
1	PV†
2	TH
3	MV†
4	SENSOR
5	NOT USED
6	NOT USED
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

† Connect the grounded side of the PV and MV from the Johnson Controls module to the MV/PV terminal on the Robertshaw I.C.U.

WIRING DIAGRAM 8



☆See Step 6 on page 3

JOHNSON CONTROLS	ROBERTSHAW
1	◆
2	TH
3	◆
4	SENSOR
5	NOT USED
6	NOT USED
GRD.	*

* On the Robertshaw I.C.U. the following terminals are grounded; MV/PV, TR and GND.

◆ Connect the grounded side of the PV and MV from the Johnson Controls module to the MV/PV terminal on the Robertshaw I.C.U. Connect the MV wire from the Y79B module to the MV terminal on the Robertshaw I.C.U. Connect the PV wire from the Y79B module to the PV terminal on the Robertshaw I.C.U. On this application, the Robertshaw I.C.U. (780-002) has the lockout feature built-in. Therefore the Johnson Controls Y79B lockout module can be removed and discarded.

HONEYWELL

The Robertshaw 780-001 (nonlockout), 780-002 (lockout) and 780-003 (lockout with prepurge) Universal Replacement Module Uni-Kits® are designed to replace the Honeywell Spark Ignition System Modules shown on page 11. The 780-002 or 780-003 kit must be used whenever a Honeywell lockout module is present on the system being serviced.

The Uni-Kits replace **only** the existing control module, while utilizing the existing Honeywell gas valve, pilot sensor and ignitor. A special wiring adaptor, (included with the Uni-Kit) is used whenever the existing system includes a Vent Damper.

STEP I - IDENTIFYING YOUR HONEYWELL MODULE

1. Locate the Honeywell part number on the existing module.
2. Find this number in the cross-reference list (page 11) to determine which wiring diagram to use.

Existing Module (Control Part) Part Number	Refer to Wiring Diagram Number

3. Over the years Honeywell has gone through many different model variations of ignition control units.

We have provided for you what we feel are the most accurate wiring schematic(s) that we can. If you encounter problems with your wiring, Robertshaw I.C.U. terminals and their functions are listed below:

TH = 24 volt signal from wall thermostat

PV = Pilot valve - pilot gas only

MV = Main valve - main pilot

SENSOR = Flame sensor (2 rod system)

ACCESSORY TERM E3 = Not used

MV/PV = Common return for MV and PV (grounded)

TR = Transformer common (grounded)

GND. = Ground

IGNITOR = Spark electrode lead wire

STEP II - REMOVING THE OLD IGNITION MODULE

CAUTION: THIS DEVICE SHOULD BE INSTALLED BY A QUALIFIED SERVICEMAN WITH DUE REGARD FOR SAFETY AS IMPROPER INSTALLATION COULD RESULT IN A HAZARDOUS CONDITION.

NOTE: The following instructions are based on the premise that the appliance being serviced is in correct operating order except for the failed control module. If other problems are present, they must be corrected or the new module may not perform correctly.

1. Turn off all electrical power to the heating appliance being serviced.
2. Remove the Red ignitor wire or cable from the Honeywell ignition module. Place the wire out of the way for now.
3. Disconnect the wires from the Honeywell module one at a time and reconnect it to the appropriate terminal on the 780 kit module. Follow the wiring instructions shown in Figure 5.

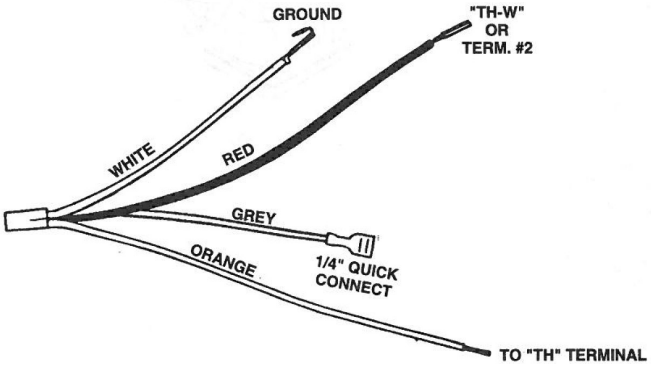


Figure 5

4. Remove Honeywell module and install new 780 kit module in its place using old mounting screws or new mounting screws or double-sided tape provided.
5. Locate the ignitor terminal adaptor included in the kit. Install the adaptor onto IGNITOR terminal on new module, See Figure 6. Connect ignitor lead to the adaptor.

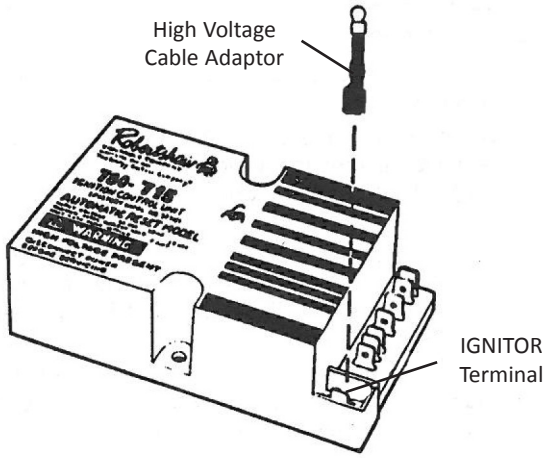


Figure 6

6. If a vent damper is present in the system, proceed as follows, if not proceed to step #7.
   A. Locate the orange lead wire on the 1751-724 adaptor, See Figure 5. Wire nut it to the power lead that came off terminal 25V+ on the old unit.
   B. Wire nut the red wire on the 1751-724 adaptor to the thermostat wire. This is the wire that was connected to terminal #2 on the old unit.
   C. Connect the gray wire on the 1751-724 to the TH terminal on the new module.
   D. Connect the white wire on the 1751-724 adaptor to the MV/PV terminal on the new 780 replacement module.

NOTE: You may have to remove an existing connection first. Reinstall it into the "piggy back" terminal that is now on the MV/PV terminal.

E. Plug the 1751-724 adaptor into the vent damper. Proceed to step #7.

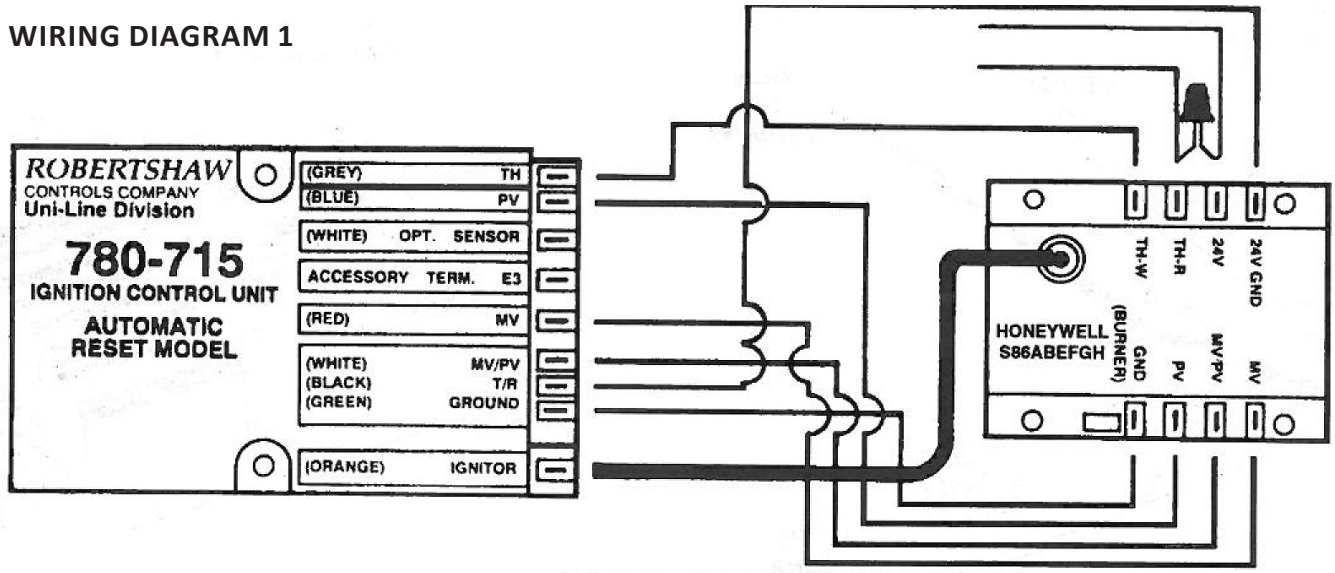
7. The wiring and installation of the new ignition module is now complete.

8. Restore electrical power to the appliance being serviced. Proceed as directed in SYSTEM CHECKOUT PROCEDURES section.

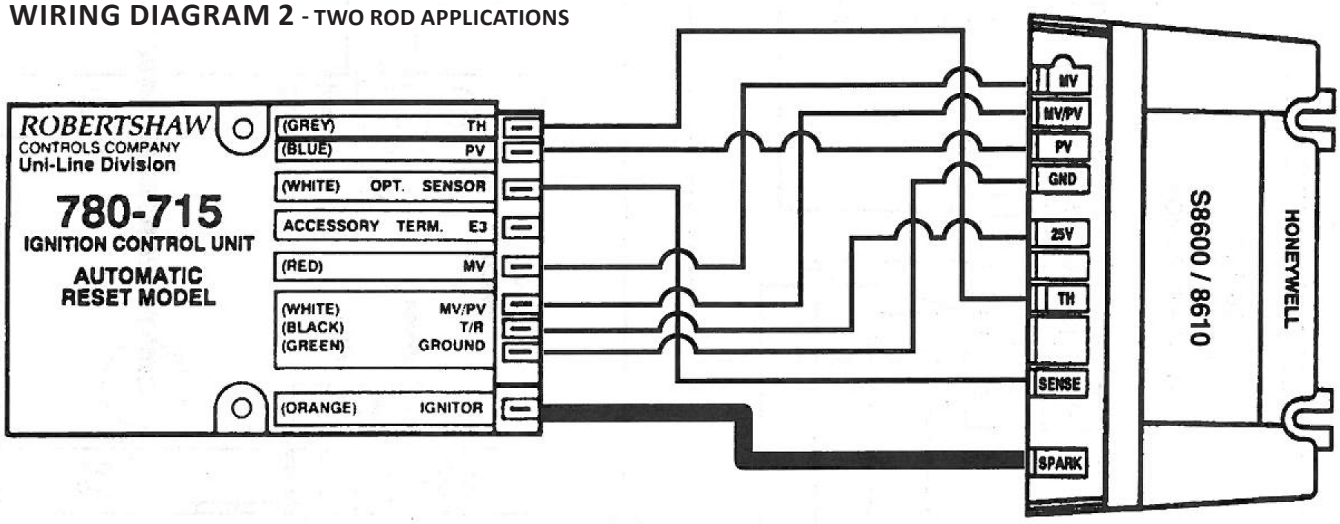
HONEYWELL PART NUMBER	WIRING DIAGRAM NUMBER	ORDER/USE UNI-LINE PART NUMBER	HONEYWELL PART NUMBER	WIRING DIAGRAM NUMBER	ORDER/USE UNI-LINE PART NUMBER
S86A1001	1	780-001	S860C1000	5	780-003
S86A1019	1	780-001	S860D1009	5	780-003
S86A1027	1	780-001	S860D1017	5	780-003
S86A1035	1	780-001	S8600A1001	3	780-002•
S86B1009	1	780-001	S8600B1009	2	780-002•
S86B1017	1	780-001	S8600B1025	2	†
S86B1025	1	780-001	S8600C1015	3	780-002
S86B1007	1	780-002•	S8600F1000	3	780-001
S86B1015	1	780-002•	S8600F1034	3	780-001
S86C1023★	1	780-002	S8600F1042	3	780-001
S86B1031	1	780-002•	S8600H1006	3	780-002•
S86C1049	1	780-002•	S8600H1022	3	780-002•
S86C1056	1	780-002•	S8600H1048	3	780-002•
S86D1005	1	780-002•	S8600H1055	3	780-002•
S86D1013★	1	780-002•	S8600H1063★	3	780-002
S86D1021	1	780-002•	S8600H1071	3	780-002•
S86E1002	1	780-001	S8600H1089	3	780-002•
S86E1010	1	780-001	S8600H1097	3	780-002•
S86E1016	1	780-002•	S8600H1105	3	780-002•
S86E1028	1	780-001	S8600M1005	3	780-002•
S86E1036	1	780-001	S8600M1013	3	780-002•
S86E1044	1	780-001	S8610A1009	2	780-001
S86E1051	1	780-001	S8610B1007	2	780-002•
S86E1069	1	780-001	S8610B1015	2	780-002•
S86E1077	1	780-001	S8610C1005	2	780-002•
S86E1101	1	780-001	S8610F1008	3	780-001
S86E1119	1	780-001	S8610F1016	3	780-001
S86E1127	1	780-001	S8610F1024	3	780-001
S86F1000	1	780-001	S8610F1032	3	780-001
S86F1018	1	780-001	S8610H1004★	3	780-002•
S86F1026	1	780-001	S8610H1012	3	780-002•
S86F1042	1	780-001	S8610H1020★	3	780-003•
S86F1059	1	780-001	S8610H1038	3	780-002•
S86F1067	1	780-001	S8610H1046	3	780-002•
S86F1075	1	780-001	S8610H1053	3	780-002•
S86F1083	1	780-001	S8610H1061★	3	780-002•
S86F1091	1	780-001	S8610H1079	3	780-002•
S86G1008	1	780-002•	S8610M1003	3	780-002•
S86G1016	1	780-002•	S8610M1011 ★	3	780-002•
S86G1024★	1	780-002•	S8610M1029	3	780-002•
S86G1032	1	780-002•	S8610U1003	3	780-002•
S86G1057	1	780-002•	S8620C1003		†
S86G1073	1	780-002•	S8620C1011		†
S86H1006	1	780-002•	S8620H1002		780-002
S86H1014★	1	780-002•	S8620H1010		†
S86H1022	1	780-002•	S8620H1028	3	780-003
S86H1048	1	780-002•	S8660D1002		780-003
S86H1055	1	†	S8660J1008		†
S86H1063	1	†	S8660K1006		†
S86H1089	1	780-002•	S8670D1000	3	780-003
S86H1097	1	780-002•	S8670D1018	3	780-003
S86H1105	1	780-002•	S8670E1007	3	780-003
S86H1113	1	780-002•	S90A1005	4	780-001
S86H1139★	1	780-002•	S90B1003	4	780-002•
S86H1147	1	780-002•	S90B1011	4	780-002•

•780-002 replacement has 60 seconds lockout timing.
★Has 15 seconds lockout timing.
†No replacement - contact O.E.M.

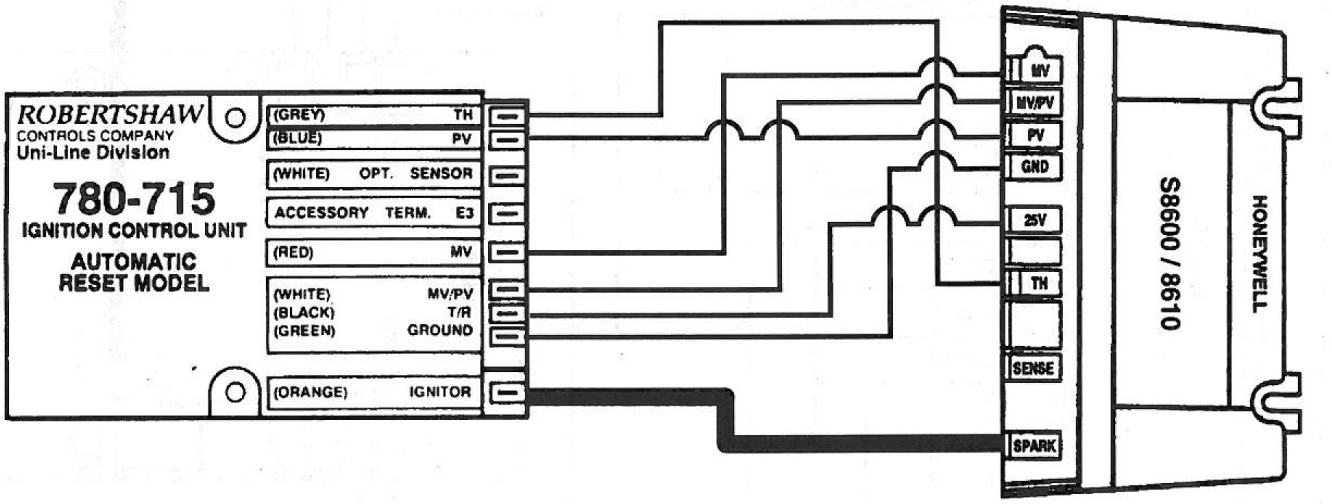
WIRING DIAGRAM 1



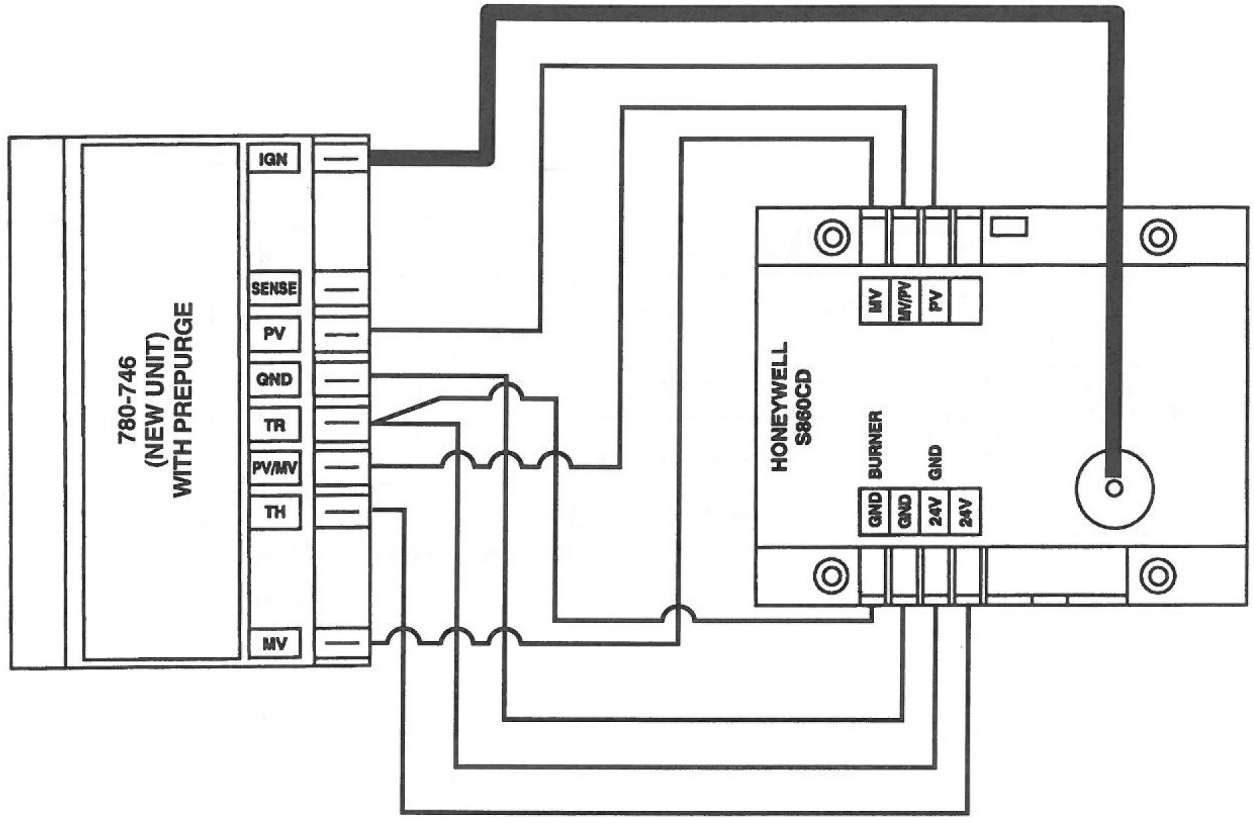
WIRING DIAGRAM 2 - TWO ROD APPLICATIONS



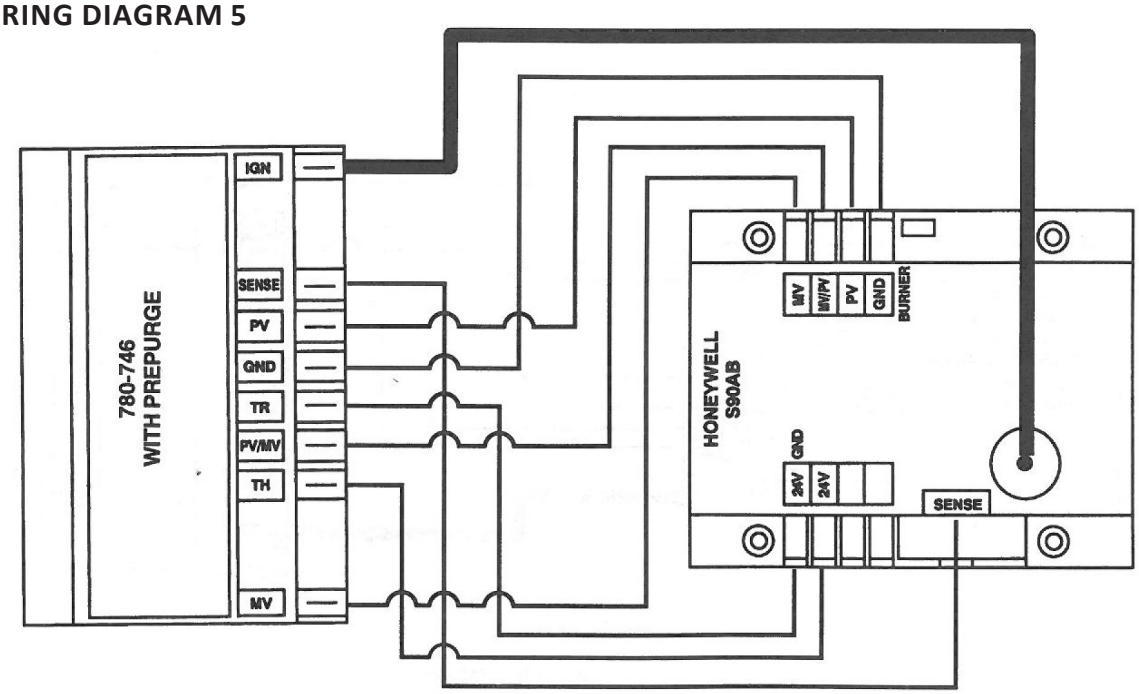
WIRING DIAGRAM 3 - ONE ROD APPLICATIONS



WIRING DIAGRAM 4



WIRING DIAGRAM 5



SYSTEM CHECKOUT PROCEDURES

The initial installation portion is now completed and ready for final system checkout. The checkout procedures listed below must be followed. While there are redundant safety features built into the system, it is imperative that you follow the steps outlined below to ensure proper and safe operation. If you encounter any irregularities, refer to the TROUBLESHOOTING GUIDE.

1. Check all wiring connections.
2. Turn on main gas supply and put the manual valve or selector arm on the gas valve into the "ON" position.
3. Turn on electrical power.
4. Set thermostat to high.
5. Sparking begins, pilot gas ignites.
6. Pilot flame on ignitor/sensor, main burner on.
7. With main burner on, cycle thermostat off then on. System will turn off and immediately on again.
8. With the main burner on, turn the manual gas valve to OFF position. Wait until all flame is out. Turn manual gas valve ON again.
   A. Sparking will begin as soon as the pilot flame is out.
   B. Pilot ignition takes place when gas flow is restored.
9. If this is a lockout system, with main burner on, turn manual gas valve OFF. Sparking will begin when the pilot flame goes out. After 60 seconds the system will go into time delay (5 minutes) and sparking will cease.
10. Check manifold pressure. Adjust pressure regulator (if necessary) to match the appliances rated output.
11. Visually determine that the main burner is burning properly, i.e., no floating, lifting, or flashback. Adjust the primary air shutter(s) as required.
12. It is absolutely necessary that the system be cycled normally (thermostatically controlled) through at least three complete heating cycles. Set thermostat to a temperature slightly higher than the existing ambient. Allow the appliance to cycle ON and run through a normal cycle. Do not manually shorten the cycle.
13. **Applicable only to furnaces:** Check both the limit control and the fan control for proper operation. Limit control operation can be checked by blocking the circulating air inlet or temporarily disconnecting the electrical supply to blower motor. Determine that the limit control acts to shut off the main burner gas.
    Applicable only to boilers: Determine that the circulating water pumps are in operating condition. Test low water cutoffs, automatic feed controls, pressure and temperature limit controls, and relief valves in accordance with the manufacturer's recommendation to determine they are in operating condition.
14. The initial checkout procedures have been completed. If the system has functioned normally, return thermostat setting to its normal setting. If the appliance has automatic vent damper, complete its interface with the system. Leave these and all other instructions with the homeowner.

TROUBLESHOOTING GUIDE

PILOT IGNITION SYSTEM / FLAME RECTIFICATION / IGNITION CONTROL UNITS SP715 / SP745

To perform the following test you will need a volt/ohmmeter. Refer to your appropriate wiring diagrams.

There are five potential problem conditions with the thermostat set high.

Problem #1: Thermostat on, no spark, no pilot gas.

Possible Causes:

A. No main power
B. Faulty transformer
C. Faulty thermostat
D. Faulty limit
E. Faulty ignition control unit

Solution:

1. With power on and thermostat set high, set your test meter to the 24 volt scale. Probe terminals TH and TR. If you do not read 24 volts, the problem is not the ignition system. Perform normal system checks of main power, transformer, thermostat and the limit control. If you do read 24 volts at TH and TR the problem is in the ignition system. Check for loose or defective wiring. If wiring is good replace the ignition control unit.

Problem #2: Have spark, no pilot gas flow.

Possible Causes:

A. Main gas supply turned off
B. Manual valve on gas valve turned off
C. Faulty primary valve in the gas valve
D. Faulty wire connection
E. Faulty ignition control unit

Solution: Set test meter to 24 volt scale.

1. Be sure main gas valve (gas cock or selector arm) is turned on.
2. With gas on and the system sparking, probe terminals PV and TR. If 24 volts is read at these terminals and pilot gas does not flow, replace the gas valve.
3. If you do not read 24 volts at terminals PV and MV/PV replace the ignition control unit.

Problem #3: Have pilot gas, no spark.

Possible Causes:

A. Defective ignitor/sensor and/or its wiring

B. Faulty ignition control unit

Solution: Set test meter to ohm scale.

1. Disconnect the wire from the IGN terminal on the ignition control unit.
2. Touch one meter probe to the tip of the ignitor/sensor rod in the pilot. Touch the other probe to the quick-connect at the other end of the ignitor/sensor wire.
3. If you have continuity from the tip of the ignitor/sensor rod to the connector and no spark, replace the ignition control unit.
4. If you do not have continuity through the wire and the ignitor/sensor, check for loose wire connection in the wire. Repair as needed.
5. Check to see if the spark is shorting to furnace through a cut in the ignitor wire.

Problem #4: Have pilot flame, main burner will not turn on.

Possible Causes:

A. Faulty main valve coil in the gas valve

B. Faulty ignitor/sensor and/or its wiring

C. Ground wire not attached to furnace chassis

D. Faulty ignition control unit

Solution: Set test meter to 24 volt scale.

1. With pilot flame on ignitor/sensor - probe terminals MV and MV/PV on the ignition control unit. If you read 24 volts here, but not at the gas valve, there is a loose wiring connection. Repair or replace as needed.
2. If you do read 24 volts at MV and MV/PV and the pilot flame is impinging on the ignitor/sensor rod, the problem may be:
   - Faulty ignitor/sensor and/or its wiring
   - Faulty ignition control unit
3. Set test meter to the ohm scale. Set thermostat low to turn system off.
4. Check continuity through the green ground wire and its connections.
5. Reconnect the ignitor/sensor wire and the ground wire.
6. Set thermostat high. With the pilot burning and the flame on the ignitor/sensor rod, if the main burner does not turn on - replace the ignition control unit.

Problem #5: Short-cycling of main burner. Main burner turns off before the thermostat is satisfied.

Possible Causes:

A. Draft condition pulls pilot flame away from ignitor/sensor rod

B. Incorrect thermostat anticipator setting

C. Faulty limit control

Solution:

1. Check the thermostat anticipator setting. Set to .7 amp. A lower setting will cause short-cycling.
2. Set thermostat high, with main burner on, observe the pilot flame impingement on the ignitor/sensor rod.
   - If pilot flame is small and draft condition pulls flame from ignitor/sensor rod the burner will turn off and then on again.
   - Adjust pilot flame higher or clean pilot orifice.
   - Bend ignitor/sensor rod closer to pilot flame.
3. If flame impingement on the ignitor/sensor is stable and the system short-cycles, check the limit switch.
4. Set test meter to 110 volt scale.
   - When the system cycles off, probe the switch terminals of the limit switch.
   - If you read 110V or 24V across the switch terminals the limit switch is open. Replace the limit switch.
5. A pilot flame set too high will also cause burner to short cycle. Pilot flame lifts over ignitor/sensor.

Robertshaw

Customer Service Telephone 1.800.304.6563
Customer Service Facsimile 1.800.426.0804
HVACCustomerService@robertshaw.com

For Technical Service
Telephone 1.800.445.8299
Facsimile 1.630.260.7294
TechnicalService@robertshaw.com

Robertshaw®, Ranco®, Paragon® and Uni-Line® is a trademark of Robertshaw, its subsidiaries and/or affiliated companies. All other brands mentioned may be the trademarks of their respective owners.

www.Uni-Line.com
www.Robertshaw.com
©2014 Robertshaw
1-869 Rev B