Gas Conversion Parts and Instructions for Models without Gas Conversion Kits

Applies to: Indirect-fired Models RPV Series 6, 7, and 8;
Models SC, SCA, SCB, SCE, Series 5 and 6;
Model EEDU Series 3, 5, and 6;
Models X, XE, PAK, RX Series 7 and 8;
all Models RG, RGB, RGBL, RP, RPB, RPBL, SSCBL, PGBL,
(including the above models with prefix "C", "H", or "HC")
and Direct Fired Models ADF/ADFH without electronic modulation;
and Models ADF/ADFH, RDF, and DV with capacities
less than or equal to 750 MBH with electronic modulation

Contents

WARNING:

Selection of replacement control parts from this manual and all servicing of products must be done by a qualified service technician. Improper selection or servicing could result in severe personal injury, death, or property damage.

Intensity Levels of Hazard Notices in this Form

1. DANGER: Failure to comply will result in severe personal injury or death and/or property damage.
2. WARNING: Failure to comply could result in severe personal injury or death and/or property damage.
3. CAUTION: Failure to comply could result in minor personal injury and/or property damage.

General Requirements

All gas conversion must be done by a Distributor or other qualified service technician in accordance with these instructions and in compliance with all codes and requirements.

In Canada, the conversion shall be carried out in accordance with the requirements of the Provincial Authorities having jurisdiction and in accordance with the requirements of the CAN/CGA-B149 (.1 and .2) Installation Code.

This form supersedes and obsoletes all prior information regarding this subject.

NOTES: This instruction sheet includes parts and instructions for several models. It applies only to the models listed on the front page and requires selection of individual parts. If the heater being serviced is not listed on the front page, check the **APPENDIX**, page 16, for a list of models that have gas conversion kits. If your model is in that list, contact your distributor to obtain a kit designed specifically for your application. If your heater model is not listed in either place, conversion parts are not available.

DANGER

Gas conversion should be made only by a qualified service technician. Improper conversion will result in severe personal injury or death. The Manufacturer will not accept responsibility or liability as a result of improper gas conversion. Due to increased cost of material and labor, gas conversion should be discouraged as much as possible.

SECTION A - Heater Serial Number and Model Number

The identifying model and serial number can be found on the heater rating plate. When converting fuels, it is necessary that you have the complete heater model and serial number. Follow the instructions below to decode these numbers. **The rating plate identifies original equipment only so also check the actual gas valve label and look for any gas or ignition conversion labels.**

IMPORTANT: The complete model number (including all model suffixes) and the complete serial number are required. Components needed in gas conversion cannot be selected without this information and depending on the Series may not be available.

DECODING A SERIAL NO.

	AAA	31	A4	N	99999
Serial No. Example	Year and Month the Heater was Manufactured - See table on page 3.	Safety Pilot	**Type of Valve**	**Type of Gas***	Consecutive Number

* N = Natural; L = Propane

DECODING A MODEL NO.

	RG	200	8	M8*
Model No. Example	Model	Size	Series No.	Mechanical Modulation

*Additional Codes affecting gas conversion are listed on page 4.

First Element of the Serial Number - Year and Month of Manufacture												
Year	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
1988	ANA	ANB	ANC	AND	ANE	ANF	ANG	ANH	ANI	ANJ	ANK	ANL
1989	AOA	AOB	AOC	AOD	AOE	AOE	AOG	AOH	AOI	AOJ	AOK	AOL
1990	APA	APB	APC	APD	APE	APF	APG	APH	API	APJ	APK	APL
1991	AQA	AQB	AQC	AQD	AQE	AQF	AQG	AQH	AQI	AQJ	AQK	AQL
1992	ARA	ARB	ARC	ARD	ARE	ARF	ARG	ARH	ARI	ARJ	ARK	ARL
1993	ASA	ASB	ASC	ASD	ASE	ASF	ASG	ASH	ASI	ASJ	ASK	ASL
1994	ATA	ATB	ATC	ATD	ATE	ATF	ATG	ATH	ATI	ATJ	ATK	ATL
1995	AUA	AUB	AUC	AUD	AUE	AUF	AUG	AUH	AUI	AUJ	AUK	AUL
1996	AVA	AVB	AVC	AVD	AVE	AVF	AVG	AVH	AVI	AVJ	AVK	AVL
1997	AWA	AWB	AWC	AWD	AWE	AWF	AWG	AWH	AWI	AWJ	AWK	AWL
1998	AXA	AXB	AXC	AXD	AXE	AXF	AXG	AXH	AXI	AXJ	AXK	AXL
1999	AYA	AYB	AYC	AYD	AYE	AYF	AYG	AYH	AYI	AYJ	AYK	AYL
2000	AZA	AZB	AZC	AZD	AZE	AZF	AZG	AZH	AZI	AZJ	AZK	AZL
2001	BAA	BAB	BAC	BAD	BAE	BAF	BAG	BAH	BAI	BAJ	BAK	BAL
2002	BBA	BBB	BBC	BBD	BBE	BBF	BBG	BBH	BBI	BBJ	BBK	BBL
2003	BCA	BCB	BCC	BCD	BCE	BCF	BCG	BCH	BCI	BCJ	BCK	BCL
2004	BDA	BDB`	BDC	BDD	BDE	BDF	BDG	BDH	BDI	BDJ	BDK	BDL
2005	BEA	BEB	BEC	BED	BEE	BEF	BEG	BEH	BEI	BEJ	BEK	BEL
2006	BFA	BFB	BFC	BFD	BFE	BFF	BFG	BFH	BFI	BFJ	BFK	BFL
2007	BGA	BGB	BGC	BGD	BGE	BGF	BGG	BGH	BGI	BGJ	BGK	BGL
2008	BHA	BHB	BHC	BHD	BHE	BHF	BHG	BHH	BHI	BHJ	BHK	BHL
2009	BIA	BIB	BIC	BID	BIE	BIF	BIG	BIH	BII	BIJ	BIK	BIL
2010	BJA	BJB	BJC	BJD	BJE	BJF	BJG	BJH	BJI	BJJ	BJK	BJL
2011	BKA	BKB	BKC	BKD	BKE	BKF	BKG	BKH	BKI	BKJ	BKK	BKL
2012	BLA	BLB	BLC	BLD	BLE	BLF	BLG	BLH	BLI	BLJ	BLK	BLL
2013	BMA	BMB	BMC	BMD	BME	BMF	BMG	BMH	BMI	BMJ	BMK	BML
2014	BNA	BNB	BNC	BND	BNE	BNF	BNG	BNH	BNI	BNJ	BNK	BNL
2015	BOA	BOB	BOC	BOD	BOE	BOF	BOG	BOH	BOI	BOJ	BOK	BOL
2016	BPA	BPB	BPC	BPD	BPE	BPF	BPG	BPH	BPI	BPJ	BPK	BPL
2017	BQA	BQB	BQC	BQD	BQE	BQF	BQG	BQH	BQI	BQJ	BQK	BQL
2018	BRA	BRB	BRC	BRD	BRE	BRF	BRG	BRH	BRI	BRJ	BRK	BRL
2019	BSA	BSB	BSC	BSD	BSE	BSF	BSG	BSH	BSI	BSJ	BSK	BSL

SECTION B - Parts Selection for Gas Conversion

NOTE: If the unit being converted has multiple furnace sections, order all parts for each furnace.

Conversion Components for Models without Conversion Kits

(**NOTE:** Available conversion kits are listed on page 16.)

Parts required must be selected individually. Follow **STEPS 1-7,** pages 4-9 to select conversion components. Installation instructions are on pages 10-14.

For units with multiple furnaces, order parts for each furnace.

When component selection is completed, the items selected to construct a "conversion kit" should include:

- ☐ **Step 1** - Spring Regulator or Valve
- ☐ **Step 2** - Pilot Orifice
- ☐ **Step 3** - Burner Orifices
- ☐ **Step 4** - Burner Air Shutters (natural gas to propane only)
- ☐ **Step 5** - Conversion Tape and/or Disk
- ☐ **Step 6** - Ignition Controller (natural gas to propane with spark pilot only)
- ☐ **Step 7** - Carryover Components (when required)

SECTION B (cont'd) - Parts Selection for Gas Conversion

STEP 1: Select Spring Regulator Kit or Replacement Valve

To select components needed to "change" the valve, go to the **TABLE** that applies to the unit being converted:

Type of Valve on the Heater	Model No. Suffix	See TABLE
Single-Stage	None	**1**, below
Mechanical Modulation (without a bypass valve)	M	**2A**, below
Mechanical Modulation with a Bypass Valve	MB	**2B**, page 5
Two-Stage Valve with Match-Lit Pilot	2	**3A**, page 5
Two-Stage Valve with Spark Pilot	2 or 2E	**3B**, page 5
Electronic Modulation with 50% turndown	MV	**4**, page 6

TABLE 1 - Spring Regulator for Valve to Convert Units with Single-Stage Gas Valve

With Serial No. Pilot Code	With Serial No. Valve Code	To Convert Single-Stage Valve from Propane TO Natural Gas	To Convert Single-Stage Valve from Natural Gas TO Propane
(See pae 2. Serial No. Codes apply to original equipment.)			
31, ①62, 63	G2, G3, G4, G5, G6, G7, H3, ④H4	Add **P/N 51572**, Spring Regulator Kit (Robertshaw #82445)	Add **P/N 65291**, Spring Regulator Kit (Robertshaw #82431)
	J5, J6	Add **P/N 90203**, Spring Regulator Kit (Robertshaw #78248)	Add **P/N 90202**, Spring Regulator Kit (Robertshaw #78244)
31, ①62, 63, 65, ①66, 84, 94, 95	H1, J7, J9, K7, K9, M5	Add **P/N 90204**, Spring Regulator Kit (Honeywell #391936)	Add **P/N 51749**, Spring Regulator Kit (Honeywell #391937)
31, ①62, 63, 65, ①66, 84, ①94, 95	G8, G9, H2, J8, ②K1, K6, M6, ②M8, 9A, 1B	Add **P/N 82525**, Spring Regulator Kit (White Rodgers #F92-0656)	Add **P/N 82524**, Spring Regulator Kit (White Rodgers #F92-0659)
31,①62, 63, 65, ①66, 71, 84, ①94, 95	K5, K8, M4, ③M7, Q2, Q3, Q4, U2, U3, U6, U7, W8, W9, 9B, 1C	Add **P/N 98721**, LP to NAT Spring Kit (Honeywell #394588) for VR8105, VR8205 & VR8305 single-stage valves	Add **P/N 98720**, NAT to LP Spring Kit, (Honeywell #393691) for VR8105, VR8205 & VR8305 single-stage valves
71	T9, U1	Add **P/N 148059**, Spring Regulator Kit (Robertshaw #A54301)	Add **P/N 148058**, Spring Regulator Kit (Robertshaw #A54300)

①Serial No. pilot code is for an ignition controller without lockout. If the gas conversion requires lockout (required on indoor propane units in U.S. and all propane units in Canada), select parts in STEP 6.

②If used on natural gas units equipped with Maxitrol control systems, see **TABLE 4**.

③Use spring regulator kit to convert to natural gas on sizes up to 165 only. For Sizes 200 and 250, change valve to **P/N 121599**. For Sizes 300, 350, and 400, change valve using Kit **P/N 222037**.

④Use spring regulator kit to convert to natural gas on sizes up to 175 only. For Sizes 200 through 400, change valve to **P/N 96301**.

TABLE 2A - Valves Required to Gas Convert Units with Mechanical Modulation Gas Valve* (without bypass valve)

From Propane to Natural			From Natural Gas to Propane		
Pilot Code	Valve Code	Change Mechanical Modulation Gas Valve	Pilot Code	Valve Code	①Change Mechanical Modulation Gas Valve
65, 66	N3, N4	Valves are no longer available for natural or propane. See functional replacement information in Note ③.	65, ①66	N1, N2	Valves are no longer available for natural or propane. See functional replacement information in Note ③.
	R9②	Change valve to **P/N 131453**, Robertshaw 3B0-341-A04		R7②	Change valve to **P/N 131454**, Robertshaw 3B0-342-A04
	S1②	Change valve to **P/N 131455**, Robertshaw 5N7-341-A04		R8②	Change valve to **P/N 131456**, Robertshaw 5N7-342-A04

* Mechanical modulation gas valve without bypass is identified with "M" as the Model suffix (Example: RP300-M)

①If Serial No. pilot code is 66 and lockout is required, change ignition controller with Kit **P/N 257473**. (Lockout is required for indoor propane models only in U.S. and for all propane models in Canada.) See **STEP 6**.

②Both natural and propane manifolds include a single-stage solenoid valve in series with the modulating valve. Do not remove the solenoid valve.

③ A single mechanical modulation valve for the valve codes listed is no longer available. **WARNING: Do not replace an existing mechanical modulation valve with a mechanical modulation valve Code R7, R8, R9 or S1 only**; unsafe condition will result. Dual functional replacement valves (mechanical modulation plus either a solenoid valve or a single-stage valve depending on the application) are available for most sizes. Select the mechanical modulation and single-stage or solenoid valves for converting a heater listed below by selecting the valves listed for the gas being used. Field-furnished pipe nipples will be required; install valves in series with **single-stage or solenoid valve first and mechanical modulation valve second in the gas stream.** The chart below lists dual functional replacement valves by model/size/gas type combinations. When functional replacement valves are not available. Contact the valve manufacturer concerning availability of a functional replacement.

*Model Series	Sizes	Gas	Original Valve Code (see Serial No. on Furnace Rating Plate)	P/N's (and Codes) of Valves that can be used as Functional Replacements for the Mechanical Modulation Valve (two replacement valves are always required)
X/RX	75-350**	Natural	N1	**P/N 131453**, Robertshaw 3B0-341-A04, & solenoid valve, **P/N 88242** (J/C #H91LG-8)
X/RX	400	Natural	N1	Replacement not available
X/RX	75-400	Propane	N3	**P/N 131454**, Robertshaw 3B0-342-A04, & solenoid valve, **P/N 88242** (J/C #H91LG-8)
RG/RP/SSC	75-225	Natural	N1,N7,N8,P6,Q7	**P/N 131453**, Robertshaw 3B0-341-A04, & Valve Replacement Kit **P/N 221634**
RG/RP/SSC	250-400	Natural	N1	**P/N 131455**, Robertshaw 5N7-341-A04, & Valve Replacement Kit **P/N 221526**
RG/RP/SSC	250-350**	Natural	N8,N9,P6,Q5	**P/N 131453**, Robertshaw 3B0-341-A04, & Valve Replacement Kit **P/N 221526**
RG/RP/SSC	400	Natural	N9,Q5	Replacement not available from Thonas and Betts
RG/RP/SSC	75-225	Propane	N3,N5,N6,Q9	**P/N 131454**, Robertshaw 3B0-342-A04, & Valve Replacement Kit **P/N 221634**
RG/RP/SSC	250-400	Propane	N3	**P/N 131456**, Robertshaw 5N7-342-A04, & Valve Replacement Kit **P/N 221526**
RG/RP/SSC	250-400	Propane	N6	**P/N 131454**, Robertshaw 3B0-342-A04, & Valve Replacement Kit **P/N 221526**

*Only duct furnace model identification of indirect-fired units appears here and on the rating plate. If the duct furnace is part of a Model XE, RGB, RPB, PAK, PGBL, RGBL, RPBL or SSCBL packaged furnace/blower system, valve replacement requirements are the same as for the component duct furnace(s).

**On duct furnace Sizes 300 and 350, dual functional replacement valves require a minimum natural gas supply pressure of 7" w.c.

TABLE 2B - Gas Conversion Cross-Reference for Mechanical Modulation with a Bypass Valve* (Applies to heaters with pilot codes listed in **TABLE 2A**. Change mechanical modulation valve. Install spring kit to convert bypass valve.)

Valve Code	Includes Valves	Action Required to Convert from Propane to Natural
N5	N3	Single M/M valve not available; see ③ TABLE 2A
	M7	Add spring kit, **P/N 98721**, M/H 394588
N6	N3	Single M/M valve not available; see ③ TABLE 2A
	M8	Add spring kit, **P/N 82525**, W/R F92-0656
O4 or P4	N4	Single M/M valve not available; see ③ TABLE 2A
	M7	Add spring kit, **P/N 98721**, M/H 394588
O5 or P5	N4	Single M/M valve not available; see ③ TABLE 2A
	M8	Add spring kit, **P/N 82525**, W/R F92-0656
Q9	N3	Single M/M valve not available; see ③ TABLE 2A
	Q4	Add spring kit, **P/N 98721**, M/H 394588
R1	N4	Single M/M valve not available; see ③ TABLE 2A
	Q4	Add spring kit, **P/N 98721**, M/H 394588
S4	R9	Change valve to **P/N 131453**, Robertshaw 3B0-341-A04
	M8	Add spring kit, **P/N 82525**, W/R F92-0656
S5	S1	Change valve to **P/N 131455,** Robertshaw 5N7-341-A04
	K1	Add spring kit, **P/N 82525**, W/R F92-0656
S8	R9	Change valve to **P/N 131453**, Robertshaw 3B0-341-A04
	M8	Add spring kit, **P/N 82525**, W/R F92-0656
	Q4	Add spring kit, **P/N 98721**, M/H 394588
S9	R9	Change valve to **P/N 131453**, Robertshaw 3B0-341-A04
	(2) K1	Add spring kits, **P/N 82525**, W/R F92-0656

Valve Code	Includes Valves	Action Required to Convert from Natural Gas to Propane (①in TABLE 2A)
N7	N1	Single M/M valve not available; see ③ TABLE 2A
	M4	Add spring kit, **P/N 98720**, M/H 393691
N8	N1	Single M/M valve not available; see ③ TABLE 2A
	M5	Add spring kit, **P/N 51749**, M/H 391937
N9	N1	Single M/M valve not available; see ③ TABLE 2A
	M6	Add spring kit, **P/N 82524**, W/R F92-0659
O1 or P1	N2	Single M/M valve not available; see ③ TABLE 2A
	M4	Add spring kit, **P/N 98720**, M/H 393691
O2 or P2	N2	Single M/M valve not available; see ③ TABLE 2A
	M5	Add spring kit, **P/N 51749**, M/H 391937
O3 or P3	N2	Single M/M valve not available; see ③ TABLE 2A
	M6	Add spring kit, **P/N 82524**, W/R F92-0659
P6	N1	Single M/M valve not available; see ③ TABLE 2A
	Q3	Add spring kit, **P/N 98720**, M/H 393691
P7	N2	Single M/M valve not available; see ③ TABLE 2A
	Q3	Add spring kit, **P/N 98720**, M/H 393691
Q5	N1	Single M/M valve not available; see ③ TABLE 2A
	J8	Add spring kit, **P/N 82524**, W/R F92-0659
Q6	N2	Single M/M valve not available; see ③ TABLE 2A
	J8	Add spring kit, **P/N 82524**, W/R F92-0659
Q7	N1	Single M/M valve not available; see ③ TABLE 2A
	Q2	Add spring kit, **P/N 98720**, M/H 393691
Q8	N2	Single M/M valve not available; see ③ TABLE 2A
	Q2	Add spring kit, **P/N 98720**, M/H 393691
S2	R7	Change valve to **P/N 131454**, Robertshaw 3B0-342-A05
	M8	Add spring kit, **P/N 82524**, W/R F92-0659
S3	R8	Change valve to **P/N 131456**, Robertshaw 5N7-342-A05
	K1	Add spring kit, **P/N 82524**, W/R F92-0659
S6	R7	Change valve to **P/N 131454**, Robertshaw 3B0-342-A05
	M8	Add spring kit, **P/N 82524**, W/R F92-0659
	Q2	Add spring kit, **P/N 98720**, M/H 393691
S7	R7	Change valve to **P/N 131454**, Robertshaw 3B0-342-A05
	K1	Add spring kit, **P/N 82524**, W/R F92-0659
	J8	Add spring kit, **P/N 82524**, W/R F92-0659

* Mechanical modulation with a bypass valve is identified with "MB" as the Model suffix (Example: RG200-MB)

TABLE 3A - Valves to Gas Convert Units with Two-Stage Valve* and Match-Lit Pilot

From Propane to Natural			From Natural Gas to Propane		
Pilot Code	**Valve Code①**	**Change Two-Stage Gas Valve**	**Pilot Code**	**Valve Code①**	**Change Two-Stage Gas Valve**
31	F2, M3, P9	For all sizes, change valve to **P/N 115351**, W/R 36C40, 3/4" (Note: Field-provided reducer is required for 1/2" manifold)	31	F1, M1, M2, P8	All sizes, change valve to **P/N 115352**, W/R 36C41, 3/4" (Note: Field-provided reducer is required for 1/2" manifold on Sizes 75-250.)

*Two stage is identified with a suffix "2" in the Model No. (Example: XE300-2)

①For all Serial No. valve codes except M1, M2, M3, valve change requires a male compression nut, **P/N 9664** (Baso #43283-2) for 1/4" pilot tubing connection (remove pilot tubing fitting supplied with the new valve)

TABLE 3B - Valves to Gas Convert Units with Two-Stage Valve* and Spark Pilot

From Propane to Natural			From Natural Gas to Propane		
Pilot Code	**Valve Code**	**Change Two-Stage Gas Valve**	**Pilot Code**	**Valve Code**	**Change Two-Stage Gas Valve**
62, 63, 65, 66, 84, 94, 95	H7, M9, X1, X4	③**For heater sizes 75-250**, change valve to **P/N 177396**, M/H VR8204Q2418, 1/2"	① 62, 63, 65, 66, 84, 94, 95	H5, H6, X2, X3	②③ All sizes, change valve to **P/N 177398**, VR8304Q4412, 1/2" x 3/4" (Note: Field-provided reducer is required for 3/4" manifold on Sizes 300-400.)
		③④F**or heater sizes 300-400**, change valve to **P/N 177397**, M/H VR8304Q4404, 3/4" (Note: Field-provided reducer fitting is required for 1/2" manifold.)			

*Two-stage units are identified with a suffix "2" in the Model No. (Example: RG300-2)

①If Serial No. pilot code is 62 or 66 and lockout is required, change ignition controller with **Kit P/N 257473**. If Serial No. pilot code is 94 and lockout is required, change ignition controller to **P/N 257010**. (Lockout is required for indoor propane models only in U.S. and for all propane models in Canada.) See **STEP 6**.

②Requires field compression fitting, **P/N 9664** (Baso #43283-2), for 1/4" pilot tubing connection. Remove pilot tubing fitting supplied with valve.

③EEDU 300, 350, and 400 - When replacing a valve with a valve code prior to X1, X2, X3, or X4, a new valve bracket is required. Order **P/N 194152**.

SECTION B (cont'd) - Parts Selection for Gas Conversion

STEP 1 (cont'd): Select Valve or Regulator Spring Kit

TABLE 4 - Valves to Gas Convert Units with Electronic Modulation* and Spark Pilot

From Propane to Natural			From Natural Gas to Propane		
Pilot Code	**Valve Code**	**Change Maxitrol Regulator and Convert Solenoid Valve**	**Pilot Code**	**Valve Code**	**Change Maxitrol Regulator and Convert Solenoid Valve**
62, 63, 65, 66, 84, 94, 95	U8, U9	**For heater sizes 75-125**, change valve with Replacement Valve Kit **P/N 221634**; change Maxitrol regulator to **P/N 42278**, Maxitrol MR410, 1/2". **For heater sizes 150-200**, change valve with Replacement Valve Kit **P/N 221634**; change Maxitrol regulator to P/N 42279, Maxitrol MR510, 1/2"	① 62, 63, 65, 66, 84, 94, 95	M8, K1	**For heater sizes 75-125**, change valve with Replacement Valve Kit **P/N 221634**; change Maxitrol regulator to **P/N 156462**, Maxitrol MR410H-1, 1/2"; and add time delay relay, **P/N 89661**, to prevent delayed ignition (consult factory for wiring diagram). **For heater sizes 150-200**, change valve with Replacement Valve Kit **P/N 221634**; change Maxitrol regulator to **P/N 156463**, Maxitrol MR510H-1, 1/2"; and add time delay relay, **P/N 89661**, to prevent delayed ignition (consult factory for wiring diagram).
		For heater sizes 225-400, change valve with Replacement Valve Kit **P/N 221634**; change Maxitrol regulator to **P/N 42280**, Maxitrol MR510, 3/4" (Note: Field-provided reducer fitting is required for 1/2" manifold.)			**For heater sizes 225-400**, change valve with Replacement Valve Kit **P/N 221634**; change Maxitrol regulator to **P/N 156464**, Maxitrol MR510H-1, 3/4"; and add time delay relay, **P/N 89661**, to prevent delayed ignition (consult factory for wiring diagram).

*Electronic modulation control is identified with an "MV" as the Model suffix (Example: RP400-MV). Does not apply to modulation Options AG 39, 40, 41, & 42.

①If Serial No. pilot code is 62 or 66 and lockout is required, change ignition controller with **Kit P/N 257473**. If Serial No. pilot code is 94 and lockout is required, change ignition controller to **P/N 257010**. (Lockout is required for indoor propane models only in U.S. and for all propane models in Canada.) See **STEP 6**.

STEP 2: Select Natural or Propane Pilot Orifice from Table 5

NOTE: <u>Select spark pilot orifice</u> when heater Serial No. Safety Pilot Code is 62, 63, 65, 66, 84, 94, or 95. <u>Select standing pilot orifice</u> when heater Serial No. Safety Pilot Code is 31.

TABLE 5 - Pilot Orifices	**FOR STANDING PILOT**				**FOR SPARK PILOT**			
① Models	**Propane to Natural**		**Natural Gas to Propane**		**Propane to Natural**		**Natural Gas to Propane**	
(Quantity required is always 1.)	**Type**	**P/N**	**Type**	**P/N**	**Type**	**P/N**	**Type**	**P/N**
EEDU 75-400 **prior to Series 6**	--	--	--	--	(7221)	63088	(4209)	37801
EEDU 75-400 **Series 6**	--	--	--	--	(9731)	103034	(9733)	98695
X, XE, CX, CXE, PAK, CPAK **Series 7 or 8**	(6218)	46392	(4211)	42089	(7221)	63088	(4209)	37801
SC, SCA, SCB, SCE **Series 6**	--	--	--	--	(7715)	93973	(9715)	126024
RX, , CRX **Series 7 or 8**; SC, SCA, SCB, SCE **Series 5**; RPV, CRPV **Series 6, 7, and 8**; ***all*** RG, CRG, RGB, CRGB, RP, CRP, RPB, CRPB, RGBL, CRGBL, RPBL, CRPBL, SSCBL, PGBL	--	--	--	--	(7223)	63397	(4209)	37801

①Also applicable to these models with suffix letter "H".

STEP 3: Select Main Burner Orifices from Table No. 8, 9, 10, 11A, 11B, or 12

NOTE: Burner orifice tables are *not applicable* for high altitude operation. When installation is above an elevation of 2000 feet, the unit must be de-rated. Consult your Distributor for proper orifice size.

TABLE 6 - Applies to (H)EEDU Series 3, 5, and 6

Model	**Orifice**	**Propane to Natural**		**Natural to Propane**	
Size	**Qty**	**Drill Size**	**P/N**	**Drill Size**	**P/N**
75	4	45	38678	1.20mm	63003
100	4	41	11792	1.45mm	61652
125	5	41	11792	1.45mm	61652
140	5	38	45870	1.55mm	61653
170	6	38	45870	1.55mm	61653
200	7	38	45870	1.55mm	61653
225	8	38	45870	1.55mm	61653
250	9	39	45871	1.55mm	61653
300	11	39	45871	53	9789
350	13	39	45871	53	9789
400	15	39	45871	53	9789

TABLE 7A - Applies to Models X, PAK, RX Series 7 and 8; all Models RG, RGB, RGBL, PGBL

NOTE: Do **not** use on Models with prefix "C"; see **TABLE 8**.

①Model	**Orifice**	**Propane to Natural**		**Natural to Propane**	
Size	**Qty**	**Drill Size**	**P/N**	**Drill Size**	**P/N**
75	4	45	38678	1.20mm	63003
100	4	41	11792	1.45mm	61652
125	5	41	11792	1.45mm	61652
150	7	43	11828	55	11830
175	7	41	11792	1.45mm	61652
200	9	43	11828	55	11830
225	9	41	11792	1.45mm	61652
250	12	44	11833	55	11830
300	12	41	11792	1.45mm	61652
350	14	41	11792	1.45mm	61652
400	16	41	11792	1.45mm	61652
D300	16	45	38678	1.20mm	63003

①Also applies to Models listed with prefix "H".

TABLE 7B - Applies to Models RPV Series 6, 7, and 8; Models SC, SCA, SCB, SCE Series 5 and 6; and all Models RP, RPB, RPBL

NOTE: Do **not** use on Models with prefix "C"; see **TABLE 8**.

①Model	Orifice	Propane to Natural		Natural to Propane	
Size	Qty	Drill Size	P/N	Drill Size	P/N
100	4	41	11792	1.45mm	61652
125	5	42	84437	1.45mm	61652
150	7	44	11833	55	11830
175	7	42	84437	1.45mm	61652
200	9	43	11828	55	11830
225	9	42	84437	1.45mm	61652
250	12	44	11833	55	11830
300	12	42	84437	1.45mm	61652
350	14	42	84437	1.50mm	93410
400	16	42	84437	1.45mm	61652
D300	16	45	38678	1.20mm	63003

①Also applies to Models listed with prefix "H".

TABLE 8 - Applies to Models CX, CXE, CRX, CPAK Series 7 and 8; Models CRPV Series 6, 7, and 8; all Models CRG, CRGB, CRP, CRPB, CRGBL, CRPBL

①Model	Orifice	Propane to Natural		Natural to Propane	
Size	Qty	Drill Size	P/N	Drill Size	P/N
75	4	45	38678	1.20mm	63003
100	4	43	11828	55	11830
125	5	43	11828	55	11830
175	7	43	11828	55	11830
225	9	43	11828	55	11830
250	12	45	38678	1.20mm	63003
300	12	43	11828	55	11830
350	14	43	11828	55	11830
400	16	43	11828	55	11830

①Also applies to these "C" Models listed with prefix "H".

STEP 4: When Converting From Natural Gas to Propane, Select a Burner Air Shutter Assembly from Table 9

NOTES: Do not order burner air shutters if the natural gas unit is already equipped with optional factory-installed air shutters. Burner air shutters are required when converting to propane.

TABLE 9 - Burner Air Shutter Assembly Part Numbers

Models	75-100	125	140	150	170	175	200	225	250	300	350	400
EEDU, HEEDU - no assy P/N; order both air shutter assy and guide	165684	165685		--	165686	--	165687	165688	165689	165690	165691	165692
	55552	46109			46113		46115	46117	46119	46121	46123	46125
①X, XE, PAK, RX, , RPV, SC, SCA, SCB, SCE, SSCBL, CX, CXE, CRX,, CRPV, RG, CRG, RGB, CRGB, RGBL, CRGBL, RP CRP, RPB, CRPB, RPBL, CRPBL, PGBL	15681	26562	--	26563	--	26563	15683	15683	15685	② 15685	26693	② 26885

①Also applies to these Models with prefix letter "H".

② Assembly listed for Size 400 also applies to Size 300 with "D" prefix (DX, DRX, DRPV, HDX, HDRX, HDRPV)

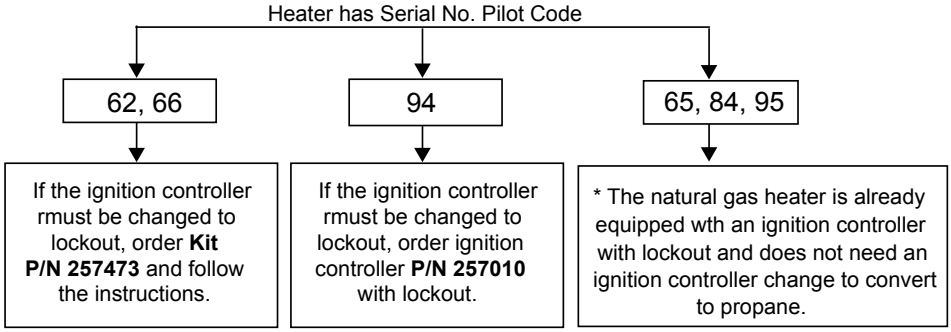
STEP 5: Select Conversion Tape or Disk

TABLE 10 - Conversion Label or Disk

Heater with an A.G.A. Rating Plate or a CSA Rating Plate to ANSI Standards		Heater with a C.G.A. Rating Plate or a CSA Rating Plate to CGA Standards
Propane to Natural Conversion Disk	Natural to Propane Conversion Disk	Conversion Label
P/N 1401	**P/N 37752**	**P/N 64391**

STEP 6: When Converting Indoor (Indoor and Outdoor in Canada) Units with a Spark Pilot to Propane, the Ignition Controller Must Have 100% Lockout

Depending on the pilot serial number code, do the following:



* If the unit is gravity vent and an automatic vent damper is also being added, the ignition controller may need to be replaced. Availability varies by pilot code. - Code 65, requires installation of Kit **P/N 257473**; and Codes 84 and 95, no change as these controllers will accommodate an automatic vent damper.

SECTION B - Parts Selection for Gas Conversion (cont'd)

STEP 7: Select Carryover Parts -- Applies to Models (H)SC, SCA, SCB, SCE Series 5 and 6; (H)X, (H)CX, (H)XE, (H)CXE, (C)PAK; (H)RX, (H)CRX Series 7 and 8; (H)RPV, (H)CRPV Series 6 and 8; and all (H)RG, (H)CRG, (H)RGB, (H)CRGB, (C)RGBL; (H)RP, (H)CRP, (H)RPB, (H)CRPB, (C)RPBL as indicated.

Visually inspect the burner rack to determine whether or not it is factory equipped with a carryover lighter tube system.

FIGURE 1A illustrates a burner rack without a carryover lighter tube; **FIGURE 1B** illustrates a burner rack with a carryover lighter tube without a regulator (used with natural gas); and **FIGURE 1C** illustrates a burner rack with a regulated carryover lighter tube (used with propane).

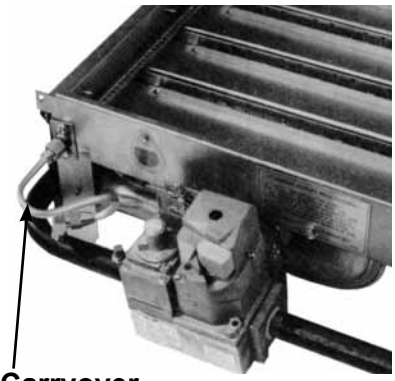
FIGURE 1A - Burner Rack without a Carryover Lighter Tube

No Carryover

Applies only to **natural gas on (H)SC, SCA, SCB, SCE Series 6; (H)X, (H)XE, PAK Series 8; and PGBL**

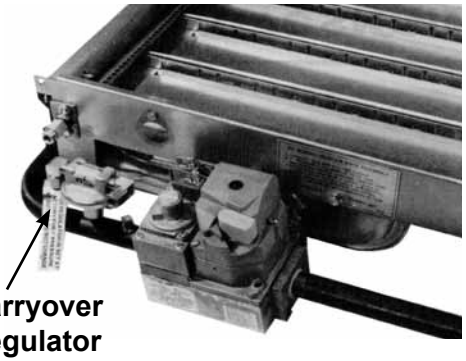
NOTE: Some older models did not have a carryover tube; parts are no longer available to convert those units.

FIGURE 1B - Burner Rack with a Lighter Tube Carryover System without a Regulator (used with natural gas)

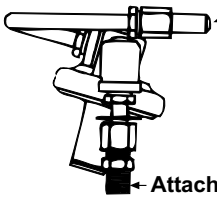


Carryover Tubing - Orifice is at the burner end.

FIGURE 1C - Burner Rack with a Lighter Tube Carryover System with a Regulator (used with propane)



Carryover Regulator and Tubing



Carryover Orifice (attach to carryover tube on the burner)

Attached to Manifold

When converting from propane to natural, order

(1) P/N 93388, Brass Elbow,
(1) P/N 93389, Carryover Tubing, 8-3/4"
(1) P/N 9664, Compression Fitting
PLUS the Carryover Orifice listed in TABLE 11, if required.

NOTE: For units with multiple furnaces, order parts for each furnace.

TABLE 11 - Propane to Natural Gas, Select the Carryover Lighter Tube Orifice Listed in TABLE 11

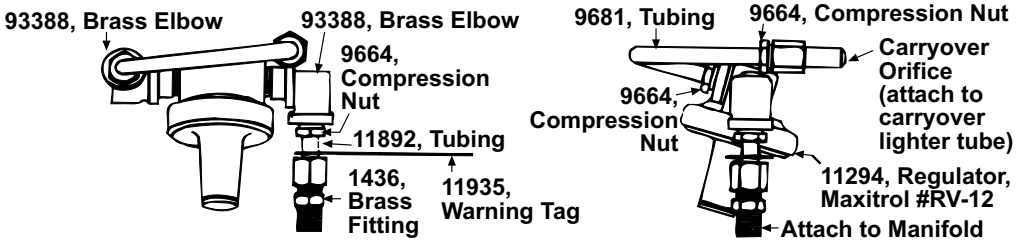
Models ①	Description		75	100	125	150	175	200	225	250	300	350	400
(H)X, (H)CX, (H)RX, (H)CRX,, (H)XE, (H)CXE **Series 7 & 8; all** (H)RG, (H)CRG, (H)RGB, (H)CRGB, RGBL, CRGBL, PGBL	Natural Gas Carryover Orifice	**P/N**	**9870**	**9870**	**9870**	**9680**	**9680**	**10370**	**10370**	**10370**	**10370**	**9792**	**9792**
		Drill	70	70	70	65	65	59	59	59	59	54	54
(H)SC, SCA, SCB, SCE **Series 5;** SSCBL		**P/N**	**--**	**--**	**9680**	**9680**	**9680**	**9680**	**9680**	**10370**	**10370**	**9792**	**11872**
		Drill	--	--	65	65	65	65	65	59	59	54	52

① Models (H)RP, (H)CRP, (H)RPB, (H)CRPB; Models (H)RPV, (H)CRPV Series 6, 7, and 8; Models SC, SCA, SCB, SCE Series 6; Models (H)X, (H)XE, PAK Series 8; and Model PGBL do not require a carryover orifice change when converting from either propane to natural gas or natural gas to propane. When converting to natural gas, remove the regulated carryover lighter tube (See **FIGURE 1C**) and install the natural gas carryover tube using the original (propane) carryover orifice.

When converting from natural to propane, order

(1) P/N 100712, Regulated Carryover Assembly (See FIGURE 7A)
PLUS the Lighter Tube Carryover Orifice listed in TABLE 12, if required.

FIGURE 7 - Regulated Carryover Assembly for Propane (less carryover orifice which differs by size and model) -- P/N 100712



The regulator is factory set at 1" pressure at the outlet -- DO NOT CHANGE.

NOTE: For units with multiple furnaces, order parts for each furnace.

TABLE 12 - For Natural Gas to Propane, Select the Carryover Lighter Tube Components Listed in Table 12

Models ①	Description		75	100	125	150	175	200	225	250	300	350	400
(H)X, (H)CX, (C)PAK, (H)RX, (H)CRX, (X)XE, (H)CXE **Series 7 (Series 8 see below); all** (H)RG, (H)CRG, (H)RGB, (H)CRGB; (C)RGBL	Propane Carryover Orifice	**P/N**	9870	9870	9870	9680	9680	9680	9680	10370	10370	9791	9791
		Drill	70	70	70	65	65	65	65	59	59	56	56
(H)SC, SCA, SCB, SCE **Series 5;** SSCBL; (H)SC, SCA, SCB, SCE **Series 6** ②**;** (H)X, (H)XE, PAK **Series 8** ②**;** PGBL ②		**P/N**	--	9870	9870	9870	9870	9680	9680	10370	10370	38274	38274
		Drill	--	70	70	70	70	65	65	59	59	57	57
	Carryover Lighter Tube for Burner	**P/N**	--	9899	9859	9821	9821	9783	9783	9747	9747	9711	9520
		Length	--	12-3/8"	15-1/8"	20-5/8"		26-1/8"		34-7/8"		39-7/8"	45-3/8"
	Drip Shield	**P/N**	--	15015	15014	15013	15013	15012	15012	15011	15011	15010	14957

① (H)RP, (H)CRP, (H)RPB, (H)CRPB; (H)RPV, (H)CRPV Series 6, 7 and 8 do not require a carryover orifice change when converting from either propane to natural gas or natural gas to propane. When converting to propane, they do require the addition of the regulated carryover assembly (**P/N 100712**) using the original (natural) carryover orifice.

② **(**H)SC, SCA, SCB, SCE Series 6; (H)X, (H)XE, PAK Series 8; and PGBL do not have a lighter tube carryover system on a natural gas burner. When converting to propane, remove the burner and remove factory-installed flash carryover from the "orifice-end" of the burner rack (do not remove the flash carryover from the other end of the burner rack). Order the drip shield and carryover lighter tube listed by P/N (TABLE 12) and install (See **FIGURES 3A and 3B**.) .

FIGURE 3A - Carryover Lighter Tube and Drip Shield for Burner

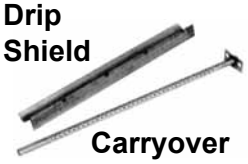
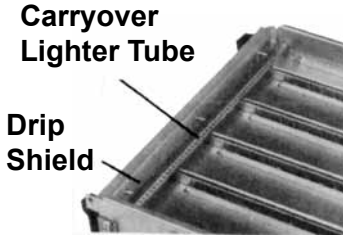


FIGURE 3B - Remove the flash carryover and install the Carryover Lighter Tube and Drip Shield



SECTION C - GAS CONVERSION INSTRUCTIONS for Components Selected in SECTION B *Only*

WARNING

All gas conversions are to be done by a qualified service technician in accordance with these instructions and in compliance with all codes and requirements of authorities having jurisdiction. Failure to follow instructions could result in death, serious injury and/or property damage. The qualified agency performing this work assumes responsibility for this conversion.

NOTE: Field-supplied hardware is required but differs by model and size. Read the instructions before beginning to determine what hardware is required.

Instructions apply to either all models or to specific models and sizes, as noted.

1. Check to be certain that the gas conversion components are appropriate for the furnace Model and Size being converted.
2. If the heater is installed, **turn off the gas supply** at the shutoff valve upstream of the combination valve. **Disconnect the electrical supply.**
3. **Remove the Burner Rack - Select and follow the instructions that apply to the heater being converted.**

   Remove the side panel from the unit. Disconnect the pilot tubing and thermocouple or sensor lead from the pilot. Disconnect the electric leads.

   Uncouple the union in the gas supply to permit removal of the burner rack.

FIGURE 4 - Example of a Burner Rack removed from a Model SC (SC series burner racks include a burner rack skirt that is only on separated-combustion models.)

4. Change the Burner Orifices

Remove the two screws holding the bottom of the burner rack assembly. Slide the "drawer-type" burner rack out of the heater. If equipped with a carryover lighter tube, break the connection at the manifold fitting. Remove the manifold bracket screws and manifold. Change the burner orifices.

WARNING: Do not attempt to drill orifices. Use factory-supplied orifices only.

5. Change the Pilot Orifice

Remove the screws and lift out the pilot burner. Change the pilot orifice.

6. Install the Valve Regulator Spring Kit

To install a spring kit -- Follow the valve manufacturer's installation instructions that are included with the spring kit. After a new regulator spring kit is installed, it is necessary to adjust the spring for the correct manifold pressure. This adjustment can only be made after the heater is in operation. Follow the instructions in STEP 12, Adjust Manifold Pressure.

WARNING

The manufacturer of the spring kit and the gas valve must be the same. Spring kits of different manufacturers are not interchangeable. A spring kit must be used only in the valves for which the kit is designated.

7. Install Burner Air Shutters (if required)

All of these heaters require burner air shutters when operated on propane. If converting to propane (and the heater does not have air shutters), follow the installation instructions that

WARNING

Failure to install and/or adjust air shutters according to directions could cause property damage, personal injury, and/or death.

apply. (NOTE: When converting to natural gas, it is not necessary to remove the shutters; but shutter should be adjusted to full open position.)

Air Shutter Installation Instructions:

Models EEDU, HEEDU -- Refer to FIGURE 5 and follow instructions a) through f).

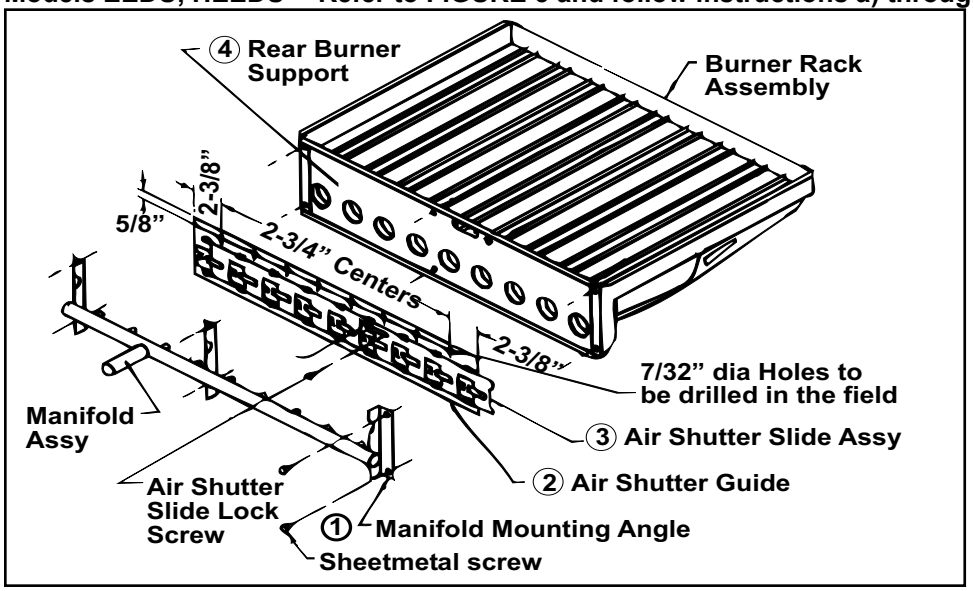


FIGURE 5 - Burner Air Shutter Installation - EEDU, HEEDU

a) Remove the manifold assembly by removing the 1/4" sheetmetal screws ① in the manifold mounting angles.

b) Drill 7/32" holes in the air shutter guide②, 5/8" from the top of the guide and in 2-3/8" on both sides. Drill additional 7/32" holes on 2-3/4" centers as required by the heater size. Guide must fit flat against rear support to prevent air leakage around the air shutter.

c) Position the air shutter assembly ③on the rear burner support ④ so that the clearance holes in the lower edge of the air shutter guide, fit over the extruded holes located on the rear burner support ④.

d) Re-attach the manifold to the rear burner support ④ with the 1/4" sheetmetal screws ①, making sure that the manifold orifices are centered in the air shutter.

e) Using the 7/32" holes that you drilled in the air shutter guide as guide holes, drill 1/8" holes through the rear burner support④ and fasten the air shutter guide ② with the #10x5/8" sheetmetal screws.

f) Adjust the air shutter to the wide open position.

Models RPV Series 6, 7, and 8; Models SC, SCA, SCB, SCE Series 5 and 6; Model SSCBL; Model EEDU Series 3, 5, and 6; Models X, XE, PAK, RX Series 7 and 8; all Models PGBL, RG, RGB, RGBL, RP, RPB, RPBL (including the above models with prefix "C", "H", or "HC") -- Refer to FIGURE 6 and follow the instructions.

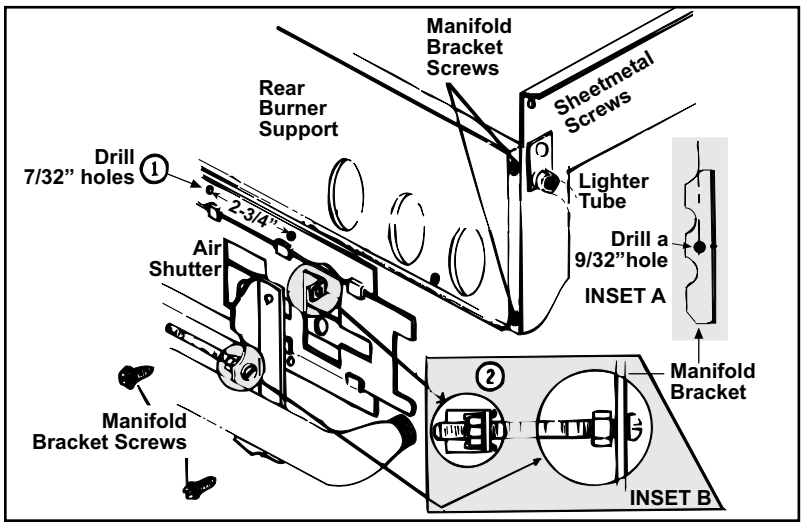


FIGURE 6 - Install Burner Air Shutter and Adjustment Screw

SECTION C - GAS CONVERSION INSTRUCTIONS (cont'd)

a) Remove the manifold assembly by removing the 1/4" sheetmetal manifold bracket screws.

b) Drill 7/32" holes in the air shutter guide ①, 5/8" from the top of the guide and in 2-3/8" on both ends. Drill additional 7/32" holes on 2-3/4" centers as required by the heater size. Guide must fit flat against rear support to prevent air leakage around the air shutter.

c) In the corner of the **manifold bracket** next to the controls, in 3/8" from the edge of the bracket, drill a 9/32" hole. (See Inset A in **FIGURE 6**).

Insert 1/4" x 2-1/2" adjustment bolt through the 9/32" hole drilled in the manifold bracket (See Inset B in **FIGURE 6**). Feed a 1/4" lock nut onto the bolt and turn until the nut clears the bracket by 1/16".

d) Insert the threaded end of the adjustment bolt into the adjustment bolt tab ② on the air shutter and turn into thread until the manifold bracket lines up with the mounting holes.

e) Re-attach the manifold to the rear burner support with the 1/4" sheetmetal screws, making sure that the manifold orifices are centered in the air shutter.

f) Using the 7/32" holes that you drilled in the air shutter as guide holes, drill 1/8" holes through the rear burner support and fasten the air shutter guide with #10x5/8" sheetmetal screws.

g) Adjust air shutters to a fully open position.

8. Install Carryover Components on Required Models (Reference Component Selection STEP 7, pages 8-9)

If converting from natural gas to propane, install the components selected in **STEP 7**.

FIGURE 7A illustrates the regulated carryover required on propane units.

FIGURE 7B shows a propane burner rack with a regulated lighter tube carryover system installed.

FIGURE 7A - Regulated Carryover Required on Propane Units

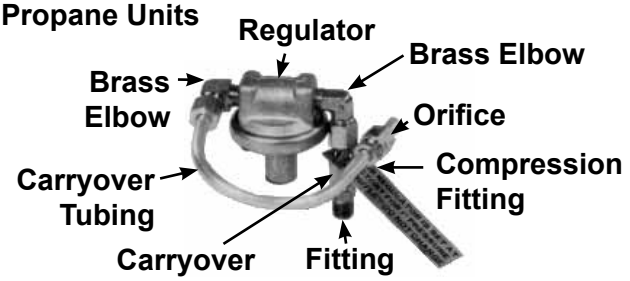
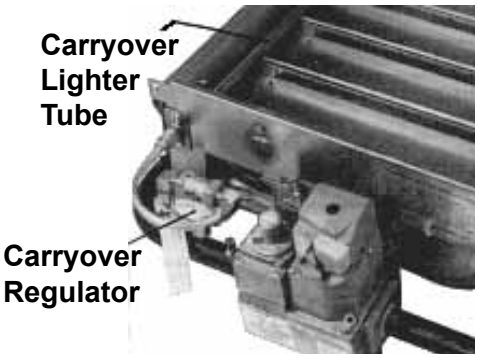


FIGURE 7B - Burner Rack with Carryover Lighter Tube equipped with Carryover Regulator Used with Propane



If converting from propane to natural and require the removal of a carryover regulator, as determined in Component Selection **STEP 7**, remove the carryover regulator assembly and fittings. If an orifice change is required, remove the carryover orifice. Follow the instructions below to install the carryover components required for natural gas, as determined in Component Selection **STEP 7, TABLE 11**.

a) Install the brass elbow with compression fitting in the manifold pipe. If an orifice change is required, insert the new orifice. See **FIGURE 8A**.

b) Install the carryover tubing from the manifold pipe to the carryover orifice (replacing the carryover regulator that was required for propane). See **FIGURE 8B**.

FIGURE 8A - Burner Rack with Carryover Regulator Removed

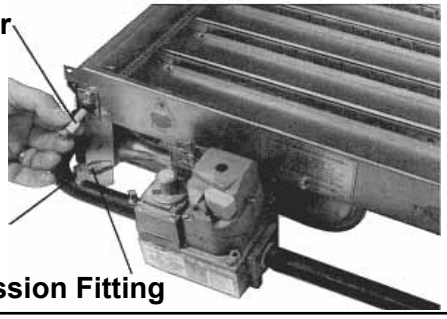
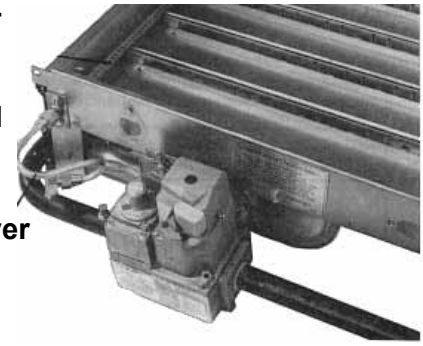


FIGURE 8B - Lighter Carryover Tubing Used with Natural Gas



9. Reverse the above procedures to re-assemble the heater. Be sure to re-assemble correctly so that unsafe conditions are not created. Be certain that the burner rack is properly positioned and tight against the heat exchanger.

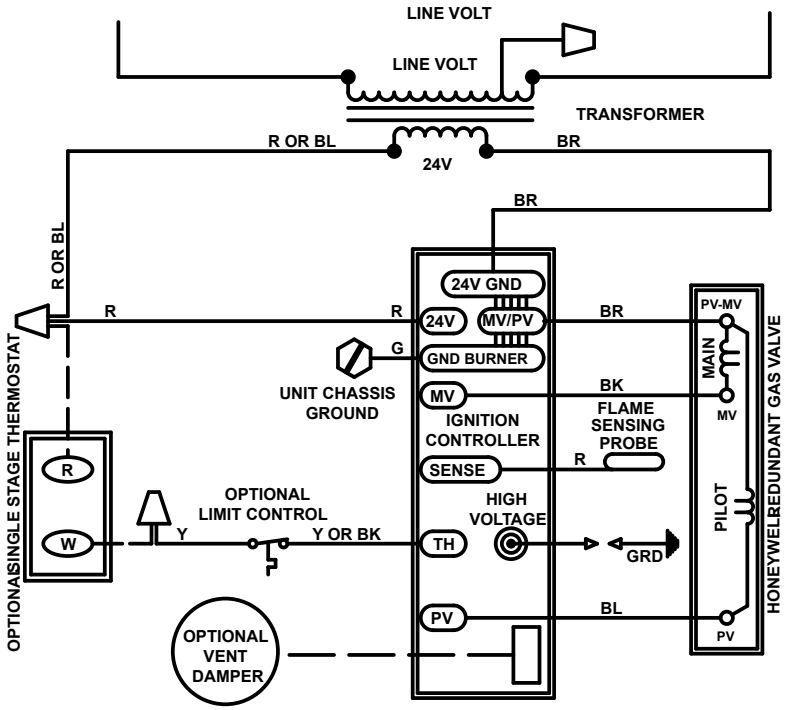
If your conversion requires changing the ignition controller, do not re-connect the flame sensing wire and the high tension lead to the present controller.

10. Change Ignition Controller (when required)

If **STEP 1** or **STEP 6** of the Component Selection Process requires installation of an ignition controller with lockout, follow the instructions in the replacement kit. Or, if changing from ignition controller P/N 257009 (UTC #1003-638-A) to P/N 257010 (UTC #1003-514A), follow the unit wiring diagram or **FIGURE 10**.

Verify connections on the diagram in **FIGURE 10**. Keep for future reference.

FIGURE 10 - Wiring of Controller P/N 257010 with Lockout and Vent Damper Terminal



USED ON: OPTION AH3 FIELD REPLACEMENT WD.# 257478

CAUTION: If any of the original wire as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C, except energy cutoff, blocked vent switch, and sensor lead wires which must be 150°C.

When installing Kit P/N 257243 with controller P/N 257010, all of the wires are connected to the ignition controller at the factory except to the "TH" Terminal. There are two loose wire assemblies in the kit. If the existing wire from the limit control is yellow, use the yellow wire to connect the limit control to the "TH" terminal. If the existing wire from the limit is black, use the black wire to connect the limit control to the "TH" terminal. (One wire will not be used.)

Check special wiring instructions below and follow if applicable.

Special Wiring Instructions when replacing either a P/N 89488 (Pilot Code 65) or P/N 89314 (Pilot Code 62) ignition controller:

In order to connect the ignitor lead to the new controller, it will be necessary to cut off the Rajah connector (metal terminal) on the spark wire. Push back the rubber boot and cut off the terminal (cutting off no more than 1" of wire). Remove the rubber boot. Push the wire directly onto the spike connector on the ignition controller.

Special Wiring Instructions when using an automatic vent damper:

Remove the plug from the ignition controller and plug in the wiring harness from the vent damper. The wiring harness electrically interlocks the vent damper to the control. Unplugging either end results in a system shutdown.

11. Turn on the electric and the gas. Relight, following the instructions on the heater.

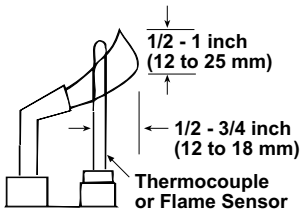
WARNING: All components of a gas supply system must be leak tested prior to placing equipment in service. NEVER TEST FOR LEAKS WITH AN OPEN FLAME. Failure to comply could result in personal injury, property damage, or death.

Check for gas leaks using a commercial leak detecting fluid or a rich soap and water solution. Leaks are indicated by the presence of bubbles. Check all connections including the pilot connections. If a leak cannot be stopped by tightening, replace the part.

Observe the pilot flame through the pilot lighting hole. The flame should extend 1/2" past the flame sensing device. (See **FIGURE 11**).

SECTION C - GAS CONVERSION INSTRUCTIONS (cont'd)

FIGURE 11 - Pilot Flame Adjustment



To adjust the pilot flame:

1) Remove the pilot adjustment cover screw on the valve.
2) Turn the inner adjustment screw clockwise to decrease or counterclockwise to increase the pilot flame
3) Replace the cover screw after adjustment.

WARNING

In the event of a pilot outage or improper ignition, wait at least 5 minutes before attempting to relight the heater.

12. Adjust Manifold Pressure

WARNING

Manifold gas pressure must never exceed 3.5" w.c. for natural gas or 10" w.c. for propane.

CAUTION: DO NOT bottom out the gas valve regulator adjusting screw. This can result in unregulated manifold pressure causing excess overfire and heat exchanger failure.

For Natural Gas - High fire manifold pressure is regulated by the combination valve to 3.5" w.c. Inlet pressure to the valve must be a minimum of 5" w.c. **or as noted on the rating plate** and a maximum of 14" w.c. **NOTE:** ***Always*** check the rating plate for minimum gas supply pressure. Minimum supply pressure requirements vary based on size of burner and gas control option. Most units require a minimum of 5" w.c. as stated above, but size 350 with mechanical modulation requires a minimum of 7" w.c. and sizes 350 and 400 with electronic modulation require a minimum of 6" w.c. natural gas supply.

For Propane - The regulator in the valve must be adjusted to provide a manifold pressure of 10" w.c. Inlet pressure to the valve must be a minimum of 11" w.c. and a maximum of 14" w.c.

Instructions for Measuring Manifold Gas Pressure:

Before attempting to measure or adjust the manifold pressure, be certain that the inlet (supply) pressure is within the specified range for the gas being used, both when the heater is in operation and on standby. Incorrect inlet pressure could cause excessive manifold gas pressure immediately or at some future time.

With the manual valve (on the combination valve) positioned to prevent flow to the main burner, connect a manometer to the 1/8" pipe outlet pressure tap in the valve. Open the valve and operate the heater to measure the manifold gas pressure. **NOTE:** A manometer (fluid filled gauge) is recommended rather than a spring type gauge due to the difficulty of maintaining calibration of a spring-type gauge.

If the manometer indicates that the manifold pressure needs adjustment, set the correct pressure by turning the regulator screw on the valve IN (clockwise) to increase pressure or OUT (counterclockwise) to decrease the pressure.

13. Check for safe and proper operation of the heater by operating the heater for at least one cycle. Cautiously observe the main burners for complete flame carryover. Flame must be present on the full length of each burner.

If air shutters are used, adjust them after the heater has been in operation for 15 minutes. Turn the adjustment screws to close the air shutters no more than is necessary to eliminate the problem condition. Observe the flame for yellow tipping. A limited amount of yellow-tipping is permissible for propane. Natural gas should not display any yellow-tipping. **NOTE:** A hard blue flame may cause resonance. Adjust air shutters slightly until noise disappears.

WARNING

Failure to install and/or adjust air shutters according to directions could cause property damage, personal injury and/or death.

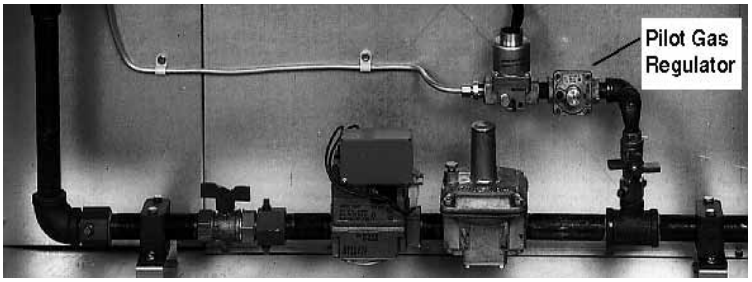
14. Conversion Label or Disk

Complete the information required on the gas conversion tape and affix the tape to the heater near the rating plate. Attach the disk to the heater near the gas valve. Gas conversion is now complete.

SECTION D - Gas Conversion of Direct-Fired Furnaces

Models ADF/ADFH only:

- If converting a Model ADF/ADFH, *always* change the **pilot** gas regulator.



Gas Type	P/N
Propane	**124021**
Natural	**122844**

- If converting a Model ADF/ADFH that does not have electronic modulation gas controls, select the spring kit or replacement valve from TABLES 3-6 on pages 5-7. Follow the valve manufacturer's instructions to install the spring regulator or install the replacement valve.

Direct-fired unit with electronic modulating gas controls - direct-fired models with capacities of **less than or equal to 750 MBH** that are equipped with an electronic gas control system have a pressure regulator (See **FIGURE 12**) that regulates the gas pressure to the burner.

Maximum Differential Gas Pressure at the Burner

Natural Gas is 5.0" w.c.

Propane is 2.0" w.c.

When gas converting, it may be necessary to change the spring in the pressure regulator; check the table below. If a spring replacement is required, order the spring and follow the instructions below.

Regulator Springs for Direct-Fired Models with Electronic Modulation Gas Control System				
Spring P/N	**Spring Color**	**Gas Type**	**Pressure Range**	**Maxitrol No.**
97351	Orange	Natural	4-8" w.c.	R5310-48
91787	Brown	Propane	1-3.5" w.c.	R5310-13
97196	Cadmium Plated	Natural	3-6" w.c.	R5310-36

FIGURE 12 - Change the spring in the main gas regulator (applies to direct-fired units with capacities of less than or equal to 750 MBH)

NOTE: If the firing rate of the installation is less than the full capacity of the burner, it will be necessary to contact your distributor to determine the proper pressure setting.

Read all instructions following the ones that apply:

1. Turn off the gas at the main manual shutoff and turn the disconnect switch "off".
2. Open the burner section door panel.
3. ADF/ADFH Models - Change the pilot gas regulator
4. Model ADF/ADFH with single stage or two-stage gas valve only - Install the spring regulator or replacement valve.
5. Direct-fired burner with capacity equal to or less than 750 mbh with electronic modulation controls - Change the spring in the main gas regulator
   a) Locate the pressure regulator (**FIGURE 12**). Remove the cap and the adjustment screw from the pressure regulator. The regulator spring is now visible.
   b) Remove the spring and insert the new regulator spring.
   c) Replace the adjustment screw.
   d) Measure gas pressure at the burner and adjust pressure to meet application requirements.
   e) Replace the cap on the regulator.
6. Turn on the disconnect switch and the main gas valve. Check for gas leaks using a commercial leak detecting fluid or a rich soap and water solution. Leaks are indicated by the presence of bubbles. Check all connections including the pilot connections. If a leak cannot be stopped by tightening, replace the part.
7. Replace burner section door panel. The unit is now operational from the system switch on the remote console.

APPENDIX

Currently manufactured Models with Gas Conversion Kits

Gas Conversion Kits

Model	Conversion Kits apply to:	See Gas Conversion Form for Kit P/N's by Size	
B	All Sizes	Form CP-F/B-GC	Contact your Distributor for copies of the Forms listed in this table
CAUA		Form CP-CAUA--CP	
F		Form CP-F/B-GC	
LDAP		Form CP-LDAP-GC	
PDH	(For units with 1-stage or 2-stage gas controls only).	Form CP-PREEVA-GC	
RDH			
SDH			
UDAP, UDAS	All Sizes	Form CP-UD-GC	
UDBP, UDBS			
UEAS		Form I-UEAS	
VR		Form CP-VR-GC	

Ignition Conversion Kits

*(**NOTE:** These kits are **NOT** gas conversion kits.)*

Ignition Conversion Kits to Convert from Match-Lit Pilot to Spark Pilot for Models F & B manufactured prior to 8/2008

Model F or Model B	Gas	Kit Description	Kit P/N	Instructions
F/B 25-165	Natural	Spark-ignited, intermittent safety pilot without lockout (UTEC Model 1003-638A, **P/N 257009**)	**100525**	Form CP-F/B IGN, P/N 100550
F/B 200-250			**100526**	
F 300-400, B 300			**100527**	
B 400			**102348**	
F/B 25-165	Natural	Spark-ignited, intermittent safety pilot with lockout (UTEC Model 1003-514, **P/N 257010**)	**100528**	
F/B 200-250			**100529**	
F 300-400, B 300			**100530**	
B 400			**102349**	
F/B 25-200	Propane	(**NOTE: Controller** includes terminal for connecting vent damper.)	**100531**	
F 250-400, B 250-300			**100532**	
B 400			**102350**	

Ignition Conversion Kits to Convert Pilot Systems to Updated Spark Pilot, Hot Surface, or Direct Spark Ignition System for Models listed

Ignition System being Replaced	Gas	Conversion Kit P/N (Type of Ignition Controller in the Kit)	Instructions (included in Kit)		Applies to Models
			Form	P/N	
Replaces Pilot Codes 62, 63, 65, 66, 84	Natural or Propane	**257473** (Ignition Controller 257010) **257472** (Ignition Controller 257009	CP-IGN CNTRL	134704	Indirect fired models with Pilot Codes 62, 63, 65, 66, and 84
Replaces Pilot Codes 71 & 75		**257531** (Ignition Controller 195265)	CP-DSI CNTRL	256905	FT, SFT, TRP
Spark - flame rectification or ultraviolet		**146268, 146318, 146319** (HSI P/N 204376)	CP-RDF-HIS	146321	RDF with Pilot Code 58, 59, 60, or 61
Model CAUA with Pilot Codes 76 & 77		**258251** (Ignition Controller 195573)	CP-CAUA-IGN CNTRL	178435	CAUA with Pilot Code 76 or 77
Model TR with Spark Pilot (Codes 65 or 66)		**216970** (DSI P/N 204955)	CP-TR-IGN CNV	216975	Infrared TR/TR-H with Pilot Code 65 or 66

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