

Communicating-ENABLED EL297UHV SERIES UNITS

EL297UHV(X) series units are 90% efficiency gas furnaces used for upflow or horizontal applications only, manufactured with Lennox Duralok heat exchangers formed of aluminized steel. EL297UHV(X) units are available in heating capacities of 44,000 to 132,000 Btuh and cooling applications up to 5 tons. Refer to Product Specifications Manual for proper sizing.

Units are factory equipped for use with natural gas. Kits are available for conversion to LPG operation. EL297UHV(X) model units are equipped with the icomfort® enabled SureLight® two-stage variable speed integrated control. EL297UHV(X) unit meets the California Nitrogen Oxides (NOx) Standards and California Seasonal Efficiency requirements. All units use a redundant gas valve to assure safety shut-off as required by C.S.A.

All specifications in this manual are subject to change. Procedures outlined in this manual are presented as a recommendation only and do not supersede or replace local or state codes. In the absence of local or state codes, the guidelines and procedures outlined in this manual (except where noted) are recommendations only and do not constitute code.

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⚠ WARNING
 Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer (or equivalent), service agency or the gas supplier.

⚠ CAUTION
 As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

SPECIFICATIONS

| Gas | Model No. | EL297UH045XV36B | EL297UH070XV36B | EL297UH090XV36C | |
|-------------------------------|---|----------------------------------|---------------------|---------------------|------------|
| Heating | ¹ AFUE | 97% | 97% | 97% | |
| Performance | High Fire | Input - Btuh | 44,000 | 66,000 | 88,000 |
| | | Output - Btuh | 43,000 | 64,000 | 85,000 |
| | | Temperature rise range - °F | 35 - 65 | 50 - 80 | 60 - 90 |
| | | Gas Manifold Pressure (in. w.g.) | 3.5 / 10.0 | 3.5 / 10.0 | 3.5 / 10.0 |
| | | Nat. Gas / LPG/Propane | | | |
| | Low Fire | Input - Btuh | 29,000 | 43,000 | 57,000 |
| | | Output - Btuh | 28,000 | 42,000 | 56,000 |
| | | Temperature rise range - °F | 20 - 50 | 25 - 55 | 30 - 60 |
| | | Gas Manifold Pressure (in. w.g.) | 1.7 / 4.5 | 1.7 / 4.5 | 1.7 / 4.5 |
| | | Nat. Gas / LPG/Propane | | | |
| High static - in. w.g. | Heating | 0.8 | 0.8 | 0.8 | |
| | Cooling | 1.0 | 1.0 | 1.0 | |
| Connections in. | Intake / Exhaust Pipe (PVC) | 2 / 2 | 2 / 2 | 2 / 2 | |
| | Gas pipe size IPS | 1/2 | 1/2 | 1/2 | |
| | Condensate Drain Trap (PVC pipe) - i.d. | 3/4 | 3/4 | 3/4 | |
| | with furnished 90° street elbow | 3/4 slip x 3/4 Mipt | 3/4 slip x 3/4 Mipt | 3/4 slip x 3/4 Mipt | |
| | with field supplied (PVC coupling) - o.d. | 3/4 slip x 3/4 MPT | 3/4 slip x 3/4 MPT | 3/4 slip x 3/4 MPT | |
| Indoor Blower | Wheel nominal diameter x width - in. | 10 x 9 | 10 x 9 | 10 x 9 | |
| | Motor output - hp | 1/2 | 1/2 | 1/2 | |
| | Tons of add-on cooling | 2 - 3 | 2 - 3 | 2 - 3 | |
| | Air Volume Range - cfm | 465 - 1370 | 490 - 1365 | 520 - 1360 | |
| Electrical Data | Voltage | 120 volts - 60 hertz - 1 phase | | | |
| | Blower motor full load amps | 7.7 | 7.7 | 7.7 | |
| | Maximum overcurrent protection | 15 | 15 | 15 | |
| Shipping Data | lbs. - 1 package | 130 | 136 | 152 | |

NOTE - Filters and provisions for mounting are not furnished and must be field provided.

¹ Annual Fuel Utilization Efficiency based on DOE test procedures and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

SPECIFICATIONS

| Gas | Model No. | EL297UH090XV48C | EL297UH090XV60C | EL297UH110XV48C | |
|----------------------------------|---|----------------------------------|---------------------|---------------------|------------|
| Heating | AHRI Ref. No. | 4988513 | 4988514 | 4988515 | |
| Performance | ¹ AFUE | 97% | 97% | 97% | |
| | | | | | |
| | High Fire | Input - Btuh | 88,000 | 88,000 | 110,000 |
| | | Output - Btuh | 86,000 | 86,000 | 106,000 |
| | | Temperature rise range - °F | 45 - 75 | 40 - 70 | 60 - 90 |
| | | Gas Manifold Pressure (in. w.g.) | 3.5 / 10.0 | 3.5 / 10.0 | 3.5 / 10.0 |
| | | Nat. Gas / LPG/Propane | | | |
| | Low Fire | Input - Btuh | 57,000 | 57,000 | 72,000 |
| | | Output - Btuh | 56,000 | 56,000 | 70,000 |
| | | Temperature rise range - °F | 30 - 60 | 25 - 55 | 35 - 65 |
| Gas Manifold Pressure (in. w.g.) | | 1.7 / 4.5 | 1.7 / 4.5 | 1.7 / 4.5 | |
| Nat. Gas / LPG/Propane | | | | | |
| High static - in. w.g. | Heating | 0.8 | 0.8 | 0.8 | |
| | Cooling | 1.0 | 1.0 | 1.0 | |
| Connections in. | Intake / Exhaust Pipe (PVC) | 2 / 2 | 2 / 2 | 2 / 2 | |
| | Gas pipe size IPS | 1/2 | 1/2 | 1/2 | |
| | Condensate Drain Trap (PVC pipe) - i.d. | 3/4 | 3/4 | 3/4 | |
| | with furnished 90° street elbow | 3/4 slip x 3/4 Mipt | 3/4 slip x 3/4 Mipt | 3/4 slip x 3/4 Mipt | |
| | with field supplied (PVC coupling) - o.d. | 3/4 slip x 3/4 MPT | 3/4 slip x 3/4 MPT | 3/4 slip x 3/4 MPT | |
| Indoor Blower | Wheel nominal diameter x width - in. | 11 x 11 | 11 x 11 | 11 x 11 | |
| | Motor output - hp | 3/4 | 1 | 3/4 | |
| | Tons of add-on cooling | 2.5 - 4 | 3 - 5 | 2.5 - 4 | |
| | Air Volume Range - cfm | 680 - 1770 | 840 - 2195 | 670 - 1760 | |
| Electrical Data | Voltage | 120 volts - 60 hertz - 1 phase | | | |
| | Blower motor full load amps | 10.1 | 12.8 | 10.1 | |
| | Maximum overcurrent protection | 15 | 20 | 15 | |
| Shipping Data | lbs. - 1 package | 163 | 164 | 173 | |

NOTE - Filters and provisions for mounting are not furnished and must be field provided.

¹ Annual Fuel Utilization Efficiency based on DOE test procedures and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

SPECIFICATIONS

| | Model No. | EL297UH110XV60C | EL297UH135XV60D | |
|--------------------------------|--|--|---------------------|-----------|
| Gas Heating Performance | ¹ AFUE | 97% | 97% | |
| | High Fire | Input - Btuh | 110,000 | 132,000 |
| | | Output - Btuh | 107,000 | 127,000 |
| | Temperature rise range - °F | 45 - 75 | 55 - 85 | |
| | Gas Manifold Pressure (in. w.g.) Nat. Gas / LPG/Propane | 3.5 / 10.0 | 3.5 / 10.0 | |
| | Low Fire | Input - Btuh | 72,000 | 86,000 |
| | | Output - Btuh | 70,000 | 84,000 |
| | | Temperature rise range - °F | 35 - 65 | 40 - 70 |
| | | Gas Manifold Pressure (in. w.g.) Nat. Gas / LPG/Propane | 1.7 / 4.5 | 1.7 / 4.5 |
| | High static - in. w.g. | Heating | 0.8 | 0.8 |
| Cooling | | 1.0 | 1.0 | |
| Connections in. | Intake / Exhaust Pipe (PVC) | 2 / 2 | 2 / 2 | |
| | Gas pipe size IPS | 1/2 | 1/2 | |
| | Condensate Drain Trap (PVC pipe) - i.d. | 3/4 | 3/4 | |
| | with furnished 90° street elbow | 3/4 slip x 3/4 Mipt | 3/4 slip x 3/4 Mipt | |
| | with field supplied (PVC coupling) - o.d. | 3/4 slip x 3/4 MPT | 3/4 slip x 3/4 MPT | |
| Indoor Blower | Wheel nominal diameter x width - in. | 11 x 11 | 11 x 11 | |
| | Motor output - hp | 1 | 1 | |
| | Tons of add-on cooling | 3-5 | 3-5 | |
| | Air Volume Range - cfm | 850 - 2125 | 950 - 2250 | |
| Electrical Data | Voltage | 120 volts - 60 hertz - 1 phase | | |
| | Blower motor full load amps | 12.8 | 12.8 | |
| | Maximum overcurrent protection | 20 | 20 | |
| Shipping Data | lbs. - 1 package | 174 | 188 | |

NOTE - Filters and provisions for mounting are not furnished and must be field provided.

¹ Annual Fuel Utilization Efficiency based on DOE test procedures and according to FTC labeling regulations. Isolated combustion system rating for non-weatherized furnaces.

BLOWER DATA

EL297UH045XV36B BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | Second Stage Heating Speed - cfm | |
|--|---------------------------------|-----|----------------------------------|------|
| | +24% | 915 | | 1125 |
| +18% | 865 | | 1085 | |
| +12% | 805 | | 1040 | |
| +6% | 780 | | 985 | |
| Factory Default | 740 | | 925 | |
| -6% | 665 | | 875 | |
| -12% | 630 | | 800 | |
| -18% | 585 | | 735 | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 595 | 760 | 865 | 980 | 905 | 1075 | 1210 | 1370 |
| Factory Default | 540 | 660 | 785 | 890 | 815 | 980 | 1120 | 1255 |
| - | 485 | 600 | 695 | 790 | 720 | 885 | 1020 | 1135 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH045XV36B BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 18 | 33 | 54 | 73 | 88 | 107 | 124 | 144 | 158 | 64 | 87 | 112 | 140 | 171 | 196 | 225 | 243 | 267 | 297 | 317 |
| | Med-low | 36 | 58 | 82 | 100 | 120 | 141 | 166 | 182 | 211 | 127 | 138 | 185 | 214 | 237 | 271 | 296 | 326 | 348 | 369 | 390 |
| | Med-High | 57 | 86 | 103 | 128 | 159 | 187 | 210 | 233 | 255 | 189 | 219 | 250 | 280 | 305 | 340 | 377 | 411 | 439 | 464 | 483 |
| | High | 91 | 114 | 142 | 177 | 217 | 235 | 259 | 285 | 311 | 267 | 281 | 322 | 363 | 400 | 433 | 468 | 502 | 521 | 552 | 549 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 16 | 34 | 52 | 67 | 86 | 98 | 120 | 138 | 155 | 46 | 69 | 91 | 115 | 142 | 167 | 188 | 206 | 232 | 260 | 280 |
| | Med-low | 25 | 35 | 65 | 85 | 110 | 125 | 140 | 155 | 180 | 93 | 110 | 138 | 173 | 209 | 230 | 255 | 280 | 304 | 325 | 343 |
| | Med-High | 41 | 66 | 87 | 106 | 129 | 154 | 178 | 195 | 223 | 150 | 166 | 206 | 238 | 264 | 293 | 320 | 349 | 376 | 399 | 420 |
| | High | 61 | 87 | 110 | 138 | 169 | 194 | 222 | 241 | 265 | 213 | 245 | 269 | 300 | 334 | 368 | 399 | 431 | 460 | 480 | 513 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 10 | 28 | 40 | 56 | 76 | 89 | 106 | 122 | 137 | 33 | 52 | 78 | 97 | 116 | 132 | 159 | 174 | 202 | 224 | 238 |
| | Med-low | 18 | 34 | 55 | 73 | 89 | 108 | 124 | 145 | 159 | 59 | 86 | 104 | 129 | 160 | 187 | 211 | 234 | 256 | 282 | 303 |
| | Med-High | 29 | 45 | 72 | 92 | 114 | 129 | 151 | 166 | 193 | 107 | 122 | 157 | 188 | 221 | 247 | 273 | 302 | 324 | 343 | 361 |
| | High | 44 | 67 | 89 | 111 | 135 | 160 | 183 | 200 | 227 | 160 | 185 | 214 | 246 | 277 | 302 | 335 | 364 | 391 | 414 | 435 |

BLOWER DATA

EL297UH045XV36B BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | | | Second Stage Heating Speed - cfm | | | |
|--|---------------------------------|-----|--|--|----------------------------------|------|--|--|
| | +24% | 910 | | | | 1125 | | |
| +18% | 850 | | | | 1080 | | | |
| +12% | 785 | | | | 1035 | | | |
| +6% | 765 | | | | 990 | | | |
| Factory Default | 755 | | | | 935 | | | |
| -6% | 690 | | | | 880 | | | |
| -12% | 635 | | | | 810 | | | |
| -18% | 600 | | | | 765 | | | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 610 | 760 | 845 | 975 | 920 | 1065 | 1205 | 1340 |
| Factory Default | 550 | 680 | 770 | 880 | 815 | 985 | 1110 | 1245 |
| - | 465 | 610 | 720 | 775 | 745 | 890 | 1020 | 1130 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH045XV36B BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. w.g. | | | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 19 | 37 | 57 | 74 | 97 | 116 | 136 | 151 | 168 | 55 | 82 | 104 | 135 | 158 | 194 | 221 | 243 | 270 | 297 | 314 |
| | Med-low | 34 | 57 | 80 | 103 | 124 | 148 | 168 | 195 | 216 | 103 | 123 | 159 | 193 | 225 | 254 | 282 | 307 | 338 | 361 | 389 |
| | Med-High | 45 | 74 | 98 | 123 | 150 | 179 | 204 | 236 | 260 | 164 | 198 | 225 | 260 | 287 | 326 | 352 | 391 | 428 | 450 | 478 |
| | High | 76 | 103 | 133 | 163 | 191 | 223 | 256 | 277 | 303 | 235 | 256 | 294 | 346 | 374 | 409 | 445 | 478 | 510 | 541 | 551 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 16 | 31 | 52 | 67 | 85 | 100 | 118 | 136 | 150 | 38 | 68 | 90 | 106 | 133 | 162 | 188 | 212 | 239 | 262 | 286 |
| | Med-low | 20 | 45 | 65 | 85 | 110 | 125 | 145 | 170 | 195 | 75 | 99 | 128 | 159 | 187 | 219 | 251 | 273 | 299 | 323 | 350 |
| | Med-High | 38 | 64 | 88 | 106 | 130 | 157 | 180 | 207 | 230 | 125 | 145 | 186 | 216 | 248 | 278 | 303 | 331 | 365 | 388 | 419 |
| | High | 51 | 81 | 103 | 133 | 157 | 191 | 218 | 242 | 268 | 182 | 210 | 245 | 273 | 317 | 346 | 376 | 410 | 440 | 465 | 497 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 10 | 28 | 40 | 59 | 73 | 89 | 105 | 121 | 138 | 30 | 52 | 72 | 100 | 119 | 141 | 159 | 185 | 206 | 228 | 253 |
| | Med-low | 20 | 38 | 58 | 75 | 97 | 116 | 136 | 151 | 169 | 48 | 75 | 99 | 124 | 151 | 180 | 205 | 237 | 261 | 285 | 303 |
| | Med-High | 27 | 48 | 69 | 93 | 116 | 133 | 152 | 178 | 203 | 85 | 107 | 139 | 172 | 201 | 233 | 266 | 286 | 312 | 337 | 364 |
| | High | 38 | 66 | 89 | 106 | 131 | 159 | 184 | 209 | 235 | 134 | 155 | 196 | 223 | 259 | 290 | 316 | 344 | 374 | 399 | 432 |

BLOWER DATA

EL297UH045XV36B BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR WITH OPTIONAL RETURN AIR BASE

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
|--|---------------------------------|----------------------------------|
| +24% | 895 | 1115 |
| +18% | 850 | 1070 |
| +12% | 795 | 1030 |
| +6% | 755 | 980 |
| Factory Default | 715 | 920 |
| -6% | 665 | 850 |
| -12% | 645 | 805 |
| -18% | 595 | 740 |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 605 | 730 | 845 | 965 | 895 | 1060 | 1185 | 1345 |
| Factory Default | 550 | 660 | 760 | 875 | 820 | 975 | 1105 | 1215 |
| - | 490 | 610 | 685 | 770 | 720 | 860 | 1015 | 1125 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH045XV36B BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 20 | 36 | 57 | 77 | 99 | 111 | 133 | 149 | 168 | 54 | 82 | 99 | 130 | 157 | 180 | 210 | 238 | 259 | 282 | 308 |
| | Med-low | 28 | 50 | 72 | 97 | 118 | 141 | 161 | 184 | 207 | 103 | 122 | 159 | 189 | 220 | 250 | 277 | 303 | 331 | 353 | 382 |
| | Med-High | 45 | 74 | 94 | 121 | 148 | 170 | 201 | 221 | 254 | 162 | 188 | 227 | 259 | 283 | 318 | 353 | 383 | 414 | 435 | 473 |
| | High | 73 | 98 | 130 | 157 | 186 | 219 | 247 | 274 | 294 | 224 | 249 | 283 | 326 | 366 | 398 | 433 | 473 | 491 | 529 | 545 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 14 | 32 | 47 | 62 | 82 | 100 | 119 | 132 | 149 | 38 | 63 | 82 | 109 | 131 | 161 | 176 | 210 | 231 | 250 | 272 |
| | Med-low | 20 | 40 | 60 | 80 | 105 | 120 | 145 | 160 | 180 | 74 | 96 | 125 | 152 | 182 | 214 | 242 | 268 | 289 | 313 | 335 |
| | Med-High | 31 | 57 | 76 | 104 | 126 | 153 | 170 | 196 | 223 | 123 | 143 | 180 | 215 | 240 | 272 | 300 | 326 | 359 | 379 | 408 |
| | High | 51 | 81 | 98 | 128 | 156 | 178 | 208 | 235 | 258 | 173 | 206 | 240 | 261 | 297 | 337 | 365 | 402 | 431 | 456 | 490 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 8 | 27 | 38 | 54 | 73 | 88 | 106 | 119 | 137 | 27 | 46 | 71 | 92 | 112 | 133 | 155 | 178 | 195 | 214 | 242 |
| | Med-low | 21 | 37 | 57 | 77 | 100 | 112 | 134 | 149 | 169 | 48 | 75 | 95 | 122 | 149 | 171 | 201 | 222 | 255 | 271 | 294 |
| | Med-High | 25 | 44 | 67 | 86 | 110 | 127 | 150 | 170 | 187 | 84 | 105 | 139 | 167 | 197 | 229 | 256 | 284 | 305 | 330 | 355 |
| | High | 34 | 60 | 79 | 106 | 128 | 157 | 173 | 203 | 227 | 130 | 153 | 188 | 225 | 248 | 282 | 307 | 339 | 371 | 392 | 420 |

BLOWER DATA

EL297UH070XV36B BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | | | Second Stage Heating Speed - cfm | | | |
|--|---------------------------------|------|--|--|----------------------------------|------|--|--|
| | +24% | 1095 | | | | 1220 | | |
| +18% | 1035 | | | | 1170 | | | |
| +12% | 985 | | | | 1120 | | | |
| +6% | 915 | | | | 1055 | | | |
| Factory Default | 850 | | | | 995 | | | |
| -6% | 835 | | | | 915 | | | |
| -12% | 755 | | | | 845 | | | |
| -18% | 695 | | | | 810 | | | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 600 | 740 | 840 | 970 | 860 | 1060 | 1215 | 1365 |
| Factory Default | 555 | 665 | 770 | 855 | 810 | 960 | 1130 | 1265 |
| - | 500 | 600 | 680 | 790 | 705 | 840 | 1005 | 1140 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH070XV36B BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. w.g. | | | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 22 | 36 | 51 | 60 | 80 | 95 | 101 | 117 | 138 | 68 | 88 | 105 | 129 | 152 | 169 | 198 | 214 | 231 | 244 | 274 |
| | Med-low | 37 | 57 | 75 | 89 | 106 | 127 | 148 | 168 | 182 | 121 | 144 | 168 | 192 | 211 | 243 | 262 | 287 | 305 | 329 | 358 |
| | Med-High | 62 | 85 | 97 | 122 | 144 | 164 | 180 | 203 | 220 | 213 | 231 | 259 | 285 | 311 | 328 | 357 | 374 | 397 | 419 | 445 |
| | High | 88 | 115 | 132 | 155 | 176 | 203 | 233 | 240 | 274 | 304 | 322 | 359 | 379 | 411 | 442 | 458 | 486 | 502 | 527 | 554 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 16 | 29 | 42 | 55 | 71 | 82 | 98 | 112 | 120 | 52 | 69 | 86 | 107 | 122 | 146 | 165 | 183 | 199 | 212 | 229 |
| | Med-low | 26 | 41 | 63 | 79 | 88 | 112 | 128 | 145 | 159 | 89 | 108 | 135 | 151 | 174 | 198 | 223 | 247 | 268 | 288 | 298 |
| | Med-High | 39 | 62 | 77 | 96 | 117 | 140 | 156 | 180 | 196 | 151 | 173 | 201 | 225 | 243 | 266 | 289 | 313 | 339 | 368 | 383 |
| | High | 65 | 84 | 104 | 125 | 148 | 166 | 178 | 206 | 225 | 237 | 256 | 284 | 303 | 328 | 343 | 374 | 395 | 421 | 435 | 454 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 11 | 21 | 35 | 53 | 64 | 75 | 82 | 95 | 113 | 34 | 50 | 67 | 86 | 106 | 121 | 141 | 159 | 174 | 186 | 201 |
| | Med-low | 21 | 36 | 51 | 66 | 81 | 92 | 107 | 127 | 141 | 64 | 85 | 100 | 114 | 145 | 160 | 182 | 206 | 219 | 237 | 251 |
| | Med-High | 35 | 48 | 66 | 82 | 104 | 118 | 137 | 146 | 159 | 101 | 125 | 143 | 171 | 193 | 211 | 242 | 258 | 282 | 304 | 330 |
| | High | 43 | 60 | 82 | 100 | 123 | 144 | 159 | 174 | 197 | 161 | 188 | 211 | 229 | 258 | 277 | 307 | 327 | 354 | 379 | 404 |

BLOWER DATA

EL297UH070XV36B BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
|--|---------------------------------|----------------------------------|
| +24% | 1090 | 1205 |
| +18% | 1025 | 1165 |
| +12% | 960 | 1090 |
| +6% | 890 | 1045 |
| Factory Default | 815 | 975 |
| -6% | 755 | 895 |
| -12% | 720 | 810 |
| -18% | 675 | 750 |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 590 | 705 | 805 | 955 | 840 | 1050 | 1205 | 1355 |
| Factory Default | 540 | 640 | 725 | 820 | 750 | 945 | 1130 | 1230 |
| - | 500 | 580 | 665 | 720 | 685 | 805 | 990 | 1110 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH070XV36B BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 17 | 29 | 48 | 61 | 73 | 94 | 100 | 123 | 130 | 63 | 84 | 104 | 117 | 142 | 160 | 174 | 208 | 215 | 245 | 255 |
| | Med-low | 30 | 50 | 66 | 79 | 107 | 128 | 137 | 159 | 178 | 121 | 137 | 165 | 195 | 213 | 239 | 257 | 283 | 303 | 329 | 342 |
| | Med-High | 51 | 70 | 92 | 106 | 127 | 150 | 170 | 184 | 207 | 195 | 214 | 243 | 268 | 290 | 324 | 348 | 370 | 387 | 409 | 434 |
| | High | 88 | 109 | 134 | 150 | 184 | 201 | 221 | 243 | 265 | 294 | 309 | 344 | 372 | 399 | 421 | 445 | 474 | 495 | 520 | 532 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 12 | 25 | 38 | 52 | 66 | 83 | 96 | 105 | 117 | 43 | 65 | 75 | 98 | 120 | 139 | 152 | 170 | 192 | 212 | 228 |
| | Med-low | 22 | 41 | 55 | 70 | 86 | 103 | 123 | 141 | 154 | 88 | 106 | 130 | 150 | 173 | 197 | 220 | 239 | 259 | 276 | 297 |
| | Med-High | 36 | 55 | 75 | 90 | 107 | 129 | 152 | 167 | 184 | 142 | 161 | 187 | 211 | 239 | 263 | 287 | 307 | 332 | 352 | 369 |
| | High | 57 | 76 | 99 | 116 | 135 | 153 | 176 | 197 | 213 | 220 | 236 | 267 | 294 | 323 | 342 | 364 | 382 | 411 | 436 | 455 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 8 | 22 | 32 | 50 | 60 | 77 | 86 | 100 | 116 | 31 | 48 | 63 | 83 | 102 | 122 | 137 | 150 | 166 | 188 | 203 |
| | Med-low | 19 | 32 | 47 | 63 | 77 | 93 | 103 | 120 | 133 | 53 | 75 | 91 | 111 | 129 | 152 | 169 | 188 | 210 | 227 | 251 |
| | Med-High | 25 | 42 | 58 | 74 | 90 | 109 | 131 | 143 | 154 | 101 | 120 | 141 | 170 | 190 | 215 | 233 | 256 | 274 | 298 | 317 |
| | High | 37 | 56 | 76 | 95 | 115 | 135 | 153 | 173 | 192 | 157 | 177 | 201 | 224 | 254 | 277 | 303 | 321 | 346 | 362 | 385 |

BLOWER DATA

EL297UH070XV36B BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR WITH OPTIONAL RETURN AIR BASE

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | | | Second Stage Heating Speed - cfm | | | |
|--|---------------------------------|------|--|--|----------------------------------|------|--|--|
| | +24% | 1070 | | | | 1205 | | |
| +18% | 1020 | | | | 1150 | | | |
| +12% | 955 | | | | 1100 | | | |
| +6% | 895 | | | | 1035 | | | |
| Factory Default | 850 | | | | 965 | | | |
| -6% | 795 | | | | 905 | | | |
| -12% | 745 | | | | 845 | | | |
| -18% | 690 | | | | 790 | | | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 595 | 715 | 815 | 950 | 855 | 1045 | 1205 | 1350 |
| Factory Default | 520 | 655 | 755 | 840 | 790 | 945 | 1090 | 1255 |
| - | 490 | 595 | 670 | 745 | 720 | 845 | 985 | 1130 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH070XV36B BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 18 | 32 | 46 | 61 | 76 | 89 | 104 | 115 | 133 | 64 | 83 | 95 | 120 | 141 | 159 | 175 | 203 | 208 | 234 | 246 |
| | Med-low | 34 | 52 | 69 | 86 | 104 | 126 | 141 | 160 | 174 | 109 | 131 | 150 | 179 | 204 | 219 | 239 | 268 | 283 | 313 | 335 |
| | Med-High | 63 | 82 | 98 | 115 | 138 | 153 | 173 | 187 | 209 | 177 | 197 | 227 | 246 | 273 | 311 | 328 | 354 | 383 | 402 | 408 |
| | High | 88 | 107 | 131 | 148 | 175 | 192 | 217 | 235 | 253 | 261 | 281 | 312 | 346 | 382 | 402 | 430 | 465 | 489 | 506 | 533 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 12 | 25 | 37 | 55 | 66 | 82 | 94 | 105 | 121 | 43 | 61 | 76 | 99 | 121 | 133 | 162 | 169 | 189 | 211 | 224 |
| | Med-low | 25 | 40 | 55 | 74 | 89 | 109 | 120 | 136 | 150 | 76 | 96 | 112 | 138 | 162 | 186 | 207 | 232 | 243 | 262 | 281 |
| | Med-High | 41 | 61 | 75 | 98 | 115 | 135 | 151 | 173 | 189 | 129 | 150 | 177 | 198 | 227 | 247 | 272 | 301 | 324 | 332 | 369 |
| | High | 63 | 86 | 99 | 122 | 139 | 159 | 180 | 204 | 216 | 209 | 227 | 254 | 282 | 298 | 324 | 341 | 364 | 395 | 413 | 428 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 9 | 20 | 35 | 48 | 59 | 75 | 86 | 94 | 110 | 29 | 43 | 63 | 84 | 99 | 113 | 131 | 144 | 164 | 185 | 197 |
| | Med-low | 16 | 32 | 45 | 62 | 75 | 90 | 103 | 119 | 138 | 56 | 71 | 101 | 112 | 131 | 158 | 168 | 184 | 207 | 235 | 245 |
| | Med-High | 28 | 43 | 63 | 77 | 98 | 115 | 132 | 145 | 162 | 88 | 107 | 129 | 154 | 183 | 204 | 214 | 245 | 263 | 281 | 308 |
| | High | 46 | 61 | 86 | 100 | 121 | 136 | 153 | 172 | 193 | 142 | 163 | 187 | 216 | 236 | 261 | 279 | 301 | 325 | 356 | 375 |

BLOWER DATA

EL297UH090XV36C BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

| HEATING | | |
|--|---------------------------------|----------------------------------|
| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
| +24% | 1215 | 1300 |
| +18% | 1140 | 1240 |
| +12% | 1100 | 1170 |
| +6% | 1020 | 1115 |
| Factory Default | 965 | 1070 |
| -6% | 915 | 970 |
| -12% | 850 | 925 |
| -18% | 805 | 855 |

| COOLING | | | | | | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 625 | 710 | 830 | 950 | 875 | 1040 | 1210 | 1360 |
| Factory Default | 565 | 670 | 760 | 860 | 800 | 945 | 1100 | 1245 |
| - | 520 | 610 | 685 | 785 | 720 | 840 | 970 | 1115 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH090XV36C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 19 | 33 | 51 | 67 | 81 | 97 | 113 | 128 | 144 | 47 | 64 | 90 | 111 | 127 | 153 | 174 | 193 | 215 | 234 | 250 |
| | Med-low | 35 | 52 | 76 | 90 | 108 | 130 | 146 | 166 | 185 | 87 | 114 | 130 | 158 | 184 | 205 | 227 | 252 | 278 | 301 | 321 |
| | Med-High | 51 | 70 | 92 | 117 | 138 | 155 | 181 | 199 | 219 | 146 | 170 | 199 | 223 | 246 | 277 | 303 | 329 | 357 | 379 | 399 |
| | High | 69 | 94 | 113 | 133 | 152 | 177 | 194 | 222 | 246 | 225 | 250 | 277 | 308 | 329 | 362 | 391 | 411 | 442 | 465 | 489 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 14 | 31 | 44 | 59 | 75 | 88 | 104 | 125 | 137 | 37 | 54 | 74 | 94 | 114 | 135 | 152 | 175 | 187 | 209 | 223 |
| | Med-low | 29 | 46 | 63 | 80 | 95 | 114 | 133 | 146 | 164 | 65 | 87 | 108 | 130 | 152 | 173 | 196 | 222 | 236 | 262 | 283 |
| | Med-High | 39 | 56 | 78 | 97 | 117 | 137 | 155 | 175 | 192 | 102 | 127 | 152 | 175 | 202 | 228 | 246 | 279 | 306 | 328 | 345 |
| | High | 46 | 68 | 86 | 111 | 126 | 154 | 174 | 194 | 214 | 167 | 184 | 218 | 253 | 272 | 301 | 332 | 360 | 381 | 402 | 421 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 11 | 27 | 39 | 57 | 70 | 84 | 99 | 113 | 131 | 26 | 45 | 61 | 81 | 96 | 118 | 134 | 152 | 169 | 189 | 205 |
| | Med-low | 23 | 39 | 53 | 71 | 87 | 103 | 118 | 133 | 148 | 44 | 60 | 85 | 107 | 127 | 150 | 169 | 186 | 207 | 226 | 247 |
| | Med-High | 24 | 43 | 56 | 79 | 97 | 111 | 129 | 149 | 165 | 75 | 101 | 117 | 140 | 160 | 182 | 215 | 235 | 255 | 275 | 296 |
| | High | 33 | 51 | 69 | 94 | 111 | 131 | 150 | 170 | 186 | 112 | 134 | 160 | 186 | 220 | 236 | 264 | 293 | 311 | 335 | 363 |

BLOWER DATA

EL297UH090XV36C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | Second Stage Heating Speed - cfm | |
|--|---------------------------------|------|----------------------------------|------|
| | +24% | 1170 | | 1245 |
| +18% | 1125 | | 1190 | |
| +12% | 1075 | | 1145 | |
| +6% | 1005 | | 1075 | |
| Factory Default | 935 | | 1030 | |
| -6% | 880 | | 950 | |
| -12% | 810 | | 890 | |
| -18% | 775 | | 820 | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 610 | 705 | 795 | 920 | 840 | 1015 | 1165 | 1300 |
| Factory Default | 560 | 640 | 715 | 810 | 770 | 910 | 1050 | 1190 |
| - | 525 | 605 | 665 | 725 | 695 | 795 | 945 | 1110 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH090XV36C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. w.g. | | | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 13 | 30 | 46 | 62 | 75 | 93 | 110 | 129 | 143 | 42 | 60 | 83 | 101 | 122 | 144 | 163 | 181 | 206 | 219 | 241 |
| | Med-low | 25 | 45 | 62 | 80 | 96 | 115 | 134 | 151 | 173 | 78 | 104 | 122 | 144 | 170 | 195 | 215 | 239 | 265 | 283 | 308 |
| | Med-High | 36 | 55 | 79 | 95 | 117 | 139 | 156 | 178 | 199 | 233 | 154 | 175 | 213 | 236 | 269 | 282 | 309 | 336 | 357 | 381 |
| | High | 62 | 83 | 105 | 128 | 148 | 163 | 193 | 210 | 234 | 210 | 229 | 259 | 291 | 317 | 344 | 366 | 391 | 415 | 441 | 466 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 9 | 28 | 38 | 55 | 71 | 83 | 100 | 116 | 135 | 28 | 48 | 65 | 86 | 104 | 124 | 142 | 164 | 182 | 199 | 219 |
| | Med-low | 20 | 38 | 52 | 69 | 83 | 102 | 120 | 135 | 152 | 59 | 81 | 100 | 125 | 142 | 162 | 182 | 204 | 229 | 248 | 269 |
| | Med-High | 26 | 46 | 63 | 83 | 101 | 117 | 141 | 157 | 178 | 95 | 118 | 142 | 165 | 192 | 213 | 244 | 264 | 288 | 314 | 329 |
| | High | 39 | 59 | 81 | 98 | 121 | 143 | 161 | 180 | 202 | 149 | 171 | 199 | 229 | 257 | 285 | 306 | 330 | 359 | 389 | 403 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 8 | 23 | 35 | 52 | 66 | 80 | 95 | 108 | 121 | 21 | 41 | 56 | 71 | 91 | 110 | 126 | 144 | 164 | 179 | 197 |
| | Med-low | 12 | 29 | 44 | 59 | 75 | 92 | 111 | 126 | 140 | 35 | 56 | 73 | 95 | 115 | 137 | 155 | 176 | 198 | 216 | 235 |
| | Med-High | 20 | 37 | 56 | 71 | 86 | 104 | 122 | 143 | 155 | 70 | 89 | 114 | 135 | 157 | 175 | 199 | 225 | 242 | 266 | 282 |
| | High | 27 | 47 | 67 | 82 | 102 | 124 | 142 | 160 | 181 | 104 | 125 | 150 | 178 | 207 | 232 | 251 | 273 | 297 | 321 | 350 |

BLOWER DATA

EL297UH090XV36C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR WITH OPTIONAL RETURN AIR BASE

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | | | Second Stage Heating Speed - cfm | | | |
|--|---------------------------------|------|--|--|----------------------------------|------|--|--|
| | +24% | 1170 | | | | 1250 | | |
| +18% | 1110 | | | | 1200 | | | |
| +12% | 1045 | | | | 1145 | | | |
| +6% | 995 | | | | 1070 | | | |
| Factory Default | 940 | | | | 1010 | | | |
| -6% | 880 | | | | 950 | | | |
| -12% | 815 | | | | 895 | | | |
| -18% | 775 | | | | 825 | | | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 605 | 715 | 810 | 930 | 850 | 995 | 1165 | 1305 |
| Factory Default | 570 | 660 | 735 | 820 | 775 | 905 | 1050 | 1205 |
| - | 530 | 600 | 670 | 725 | 710 | 800 | 945 | 1070 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 250 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 250 cfm.

EL297UH090XV36C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 12 | 29 | 43 | 59 | 75 | 92 | 111 | 123 | 139 | 41 | 62 | 86 | 102 | 123 | 145 | 165 | 185 | 205 | 229 | 253 |
| | Med-low | 24 | 42 | 61 | 76 | 97 | 112 | 132 | 150 | 169 | 79 | 108 | 126 | 148 | 174 | 190 | 218 | 248 | 273 | 294 | 316 |
| | Med-High | 38 | 56 | 81 | 99 | 115 | 138 | 157 | 176 | 199 | 131 | 152 | 184 | 208 | 237 | 264 | 289 | 320 | 339 | 361 | 390 |
| | High | 61 | 85 | 104 | 127 | 144 | 171 | 192 | 212 | 239 | 205 | 226 | 258 | 283 | 312 | 344 | 365 | 393 | 410 | 437 | 466 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 9 | 26 | 37 | 54 | 67 | 83 | 97 | 112 | 130 | 30 | 50 | 72 | 87 | 108 | 127 | 149 | 167 | 184 | 209 | 226 |
| | Med-low | 19 | 37 | 53 | 67 | 83 | 101 | 119 | 135 | 153 | 62 | 86 | 101 | 129 | 144 | 165 | 189 | 215 | 232 | 251 | 275 |
| | Med-High | 27 | 48 | 65 | 82 | 101 | 119 | 139 | 161 | 177 | 91 | 114 | 140 | 163 | 195 | 220 | 239 | 265 | 289 | 315 | 339 |
| | High | 42 | 62 | 85 | 99 | 121 | 143 | 162 | 183 | 203 | 149 | 167 | 201 | 228 | 258 | 289 | 316 | 333 | 355 | 389 | 403 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 8 | 23 | 35 | 51 | 62 | 77 | 91 | 104 | 119 | 25 | 45 | 61 | 75 | 91 | 112 | 131 | 147 | 166 | 184 | 198 |
| | Med-low | 13 | 29 | 46 | 60 | 78 | 93 | 110 | 125 | 140 | 40 | 61 | 81 | 103 | 119 | 143 | 162 | 179 | 204 | 220 | 245 |
| | Med-High | 22 | 41 | 57 | 70 | 88 | 109 | 127 | 144 | 159 | 70 | 92 | 120 | 133 | 165 | 178 | 203 | 231 | 246 | 274 | 301 |
| | High | 29 | 50 | 69 | 83 | 106 | 123 | 143 | 164 | 183 | 101 | 124 | 151 | 180 | 203 | 227 | 257 | 276 | 306 | 326 | 358 |

BLOWER DATA WITH BLOWER DRIVE (See Earlier Version EHB For CFM With No Blower Drive)

EL297UH090XV48C BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | Second Stage Heating Speed - cfm | |
|--|---------------------------------|------|----------------------------------|------|
| | +24% | 1490 | | 1645 |
| +18% | 1415 | | 1565 | |
| +12% | 1330 | | 1480 | |
| +6% | 1295 | | 1405 | |
| Factory Default | 1220 | | 1325 | |
| -6% | 1150 | | 1260 | |
| -12% | 1065 | | 1190 | |
| -18% | 1010 | | 1105 | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 795 | 950 | 1080 | 1260 | 1115 | 1355 | 1550 | 1775 |
| Factory Default | 730 | 870 | 985 | 1140 | 1015 | 1220 | 1430 | 1605 |
| - | 650 | 790 | 890 | 1020 | 930 | 1105 | 1285 | 1470 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 380 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 380 cfm.

EL297UH090XV48C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. w.g. | | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|---|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |

+ Setting

| | | | | | | | | | | | | | | | | | | | | | |
|------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cooling Speed | Low | 38 | 62 | 81 | 101 | 122 | 143 | 165 | 188 | 214 | 89 | 123 | 148 | 175 | 200 | 228 | 257 | 287 | 318 | 349 | 381 |
| | Med-low | 63 | 88 | 109 | 133 | 158 | 184 | 211 | 226 | 253 | 159 | 196 | 226 | 257 | 288 | 320 | 353 | 386 | 421 | 457 | 492 |
| | Med-High | 85 | 116 | 140 | 166 | 189 | 217 | 246 | 275 | 305 | 246 | 289 | 321 | 353 | 387 | 421 | 457 | 494 | 532 | 571 | 615 |
| | High | 132 | 165 | 194 | 223 | 253 | 284 | 316 | 349 | 381 | 382 | 426 | 464 | 497 | 537 | 577 | 610 | 650 | 696 | 738 | 781 |

Factory Default

| | | | | | | | | | | | | | | | | | | | | | |
|------------------|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cooling Speed | Low | 31 | 54 | 71 | 91 | 110 | 130 | 151 | 174 | 196 | 70 | 101 | 123 | 148 | 176 | 200 | 223 | 253 | 280 | 308 | 337 |
| | Med-low | 49 | 74 | 95 | 116 | 138 | 161 | 185 | 211 | 232 | 115 | 151 | 178 | 206 | 236 | 266 | 297 | 328 | 361 | 394 | 426 |
| | Med-High | 68 | 95 | 117 | 141 | 167 | 196 | 215 | 242 | 270 | 188 | 225 | 258 | 290 | 323 | 356 | 390 | 424 | 461 | 497 | 535 |
| | High | 97 | 129 | 155 | 179 | 206 | 236 | 265 | 296 | 327 | 278 | 321 | 354 | 387 | 421 | 457 | 492 | 531 | 568 | 609 | 650 |

- Setting

| | | | | | | | | | | | | | | | | | | | | | |
|------------------|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cooling Speed | Low | 28 | 53 | 62 | 80 | 98 | 117 | 136 | 156 | 177 | 55 | 82 | 102 | 124 | 148 | 173 | 199 | 221 | 241 | 267 | 295 |
| | Med-low | 37 | 61 | 81 | 101 | 121 | 142 | 164 | 187 | 213 | 84 | 118 | 143 | 171 | 193 | 223 | 254 | 284 | 314 | 345 | 375 |
| | Med-High | 52 | 78 | 98 | 120 | 143 | 167 | 193 | 218 | 236 | 136 | 173 | 201 | 229 | 260 | 289 | 321 | 353 | 386 | 421 | 456 |
| | High | 74 | 102 | 125 | 150 | 178 | 200 | 226 | 256 | 284 | 206 | 243 | 277 | 309 | 344 | 377 | 412 | 449 | 486 | 520 | 556 |

BLOWER DATA

EL297UH090XV48C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

| HEATING | | |
|--|---------------------------------|----------------------------------|
| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
| +24% | 1400 | 1570 |
| +18% | 1380 | 1475 |
| +12% | 1310 | 1415 |
| +6% | 1255 | 1360 |
| Factory Default | 1210 | 1285 |
| -6% | 1125 | 1260 |
| -12% | 1080 | 1150 |
| -18% | 990 | 1115 |

| COOLING | | | | | | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 820 | 1005 | 1135 | 1290 | 1140 | 1340 | 1525 | 1725 |
| Factory Default | 755 | 880 | 1025 | 1150 | 1040 | 1235 | 1395 | 1565 |
| - | 680 | 815 | 925 | 1065 | 910 | 1120 | 1275 | 1400 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 380 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 380 cfm.

EL297UH090XV48C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 43 | 65 | 85 | 96 | 119 | 134 | 156 | 179 | 199 | 102 | 131 | 155 | 189 | 216 | 249 | 282 | 304 | 331 | 359 | 387 |
| | Med-low | 66 | 95 | 113 | 140 | 164 | 189 | 212 | 242 | 268 | 173 | 196 | 242 | 271 | 306 | 337 | 362 | 405 | 430 | 460 | 493 |
| | Med-High | 95 | 126 | 151 | 180 | 210 | 242 | 277 | 302 | 320 | 243 | 277 | 316 | 371 | 412 | 457 | 492 | 534 | 566 | 605 | 651 |
| | High | 143 | 166 | 203 | 243 | 282 | 309 | 333 | 368 | 389 | 368 | 410 | 453 | 511 | 562 | 604 | 651 | 690 | 730 | 771 | 809 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 36 | 48 | 73 | 86 | 108 | 120 | 140 | 152 | 168 | 75 | 101 | 125 | 156 | 178 | 215 | 244 | 259 | 288 | 320 | 339 |
| | Med-low | 52 | 75 | 95 | 110 | 130 | 161 | 176 | 201 | 216 | 129 | 154 | 190 | 218 | 257 | 295 | 322 | 346 | 377 | 404 | 434 |
| | Med-High | 70 | 94 | 125 | 146 | 172 | 198 | 230 | 252 | 275 | 190 | 222 | 270 | 299 | 325 | 368 | 398 | 439 | 470 | 508 | 549 |
| | High | 100 | 131 | 162 | 197 | 228 | 260 | 298 | 328 | 347 | 275 | 310 | 359 | 400 | 445 | 469 | 525 | 562 | 597 | 642 | 682 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 32 | 45 | 58 | 80 | 97 | 110 | 121 | 133 | 154 | 62 | 87 | 109 | 129 | 152 | 173 | 199 | 221 | 250 | 266 | 295 |
| | Med-low | 45 | 63 | 82 | 99 | 119 | 137 | 150 | 171 | 193 | 95 | 124 | 150 | 180 | 207 | 240 | 269 | 297 | 325 | 356 | 375 |
| | Med-High | 55 | 82 | 101 | 119 | 145 | 167 | 192 | 213 | 239 | 148 | 177 | 205 | 244 | 286 | 309 | 346 | 370 | 402 | 431 | 467 |
| | High | 76 | 101 | 137 | 160 | 188 | 218 | 245 | 271 | 302 | 198 | 239 | 274 | 308 | 349 | 384 | 426 | 471 | 500 | 542 | 576 |

BLOWER DATA

EL297UH090XV48C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR WITH OPTIONAL RETURN AIR BASE

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | | | Second Stage Heating Speed - cfm | | | |
|--|---------------------------------|------|--|--|----------------------------------|------|--|--|
| | +24% | 1430 | | | | 1565 | | |
| +18% | 1400 | | | | 1500 | | | |
| +12% | 1330 | | | | 1410 | | | |
| +6% | 1260 | | | | 1380 | | | |
| Factory Default | 1195 | | | | 1305 | | | |
| -6% | 1135 | | | | 1275 | | | |
| -12% | 1065 | | | | 1180 | | | |
| -18% | 990 | | | | 1095 | | | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 840 | 955 | 1120 | 1280 | 1160 | 1360 | 1530 | 1740 |
| Factory Default | 775 | 910 | 1010 | 1170 | 1060 | 1240 | 1400 | 1590 |
| - | 695 | 815 | 930 | 1045 | 925 | 1130 | 1295 | 1440 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 380 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 380 cfm.

EL297UH090XV48C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 40 | 60 | 80 | 96 | 115 | 133 | 151 | 176 | 192 | 94 | 127 | 151 | 180 | 207 | 241 | 274 | 303 | 340 | 358 | 381 |
| | Med-low | 58 | 87 | 108 | 132 | 158 | 188 | 212 | 240 | 264 | 166 | 195 | 233 | 269 | 300 | 328 | 356 | 394 | 426 | 455 | 496 |
| | Med-High | 91 | 126 | 145 | 169 | 205 | 228 | 255 | 288 | 320 | 234 | 273 | 314 | 354 | 403 | 431 | 484 | 514 | 571 | 599 | 632 |
| | High | 134 | 163 | 195 | 231 | 264 | 297 | 320 | 359 | 381 | 337 | 378 | 426 | 470 | 518 | 557 | 604 | 654 | 684 | 722 | 768 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 36 | 47 | 70 | 88 | 103 | 120 | 139 | 146 | 167 | 75 | 100 | 130 | 149 | 183 | 212 | 238 | 260 | 293 | 315 | 337 |
| | Med-low | 51 | 75 | 93 | 115 | 135 | 158 | 187 | 201 | 222 | 132 | 156 | 192 | 220 | 259 | 284 | 319 | 343 | 376 | 404 | 423 |
| | Med-High | 59 | 92 | 112 | 141 | 166 | 200 | 228 | 259 | 281 | 183 | 215 | 262 | 284 | 315 | 348 | 387 | 427 | 464 | 494 | 523 |
| | High | 97 | 130 | 156 | 191 | 215 | 256 | 283 | 310 | 343 | 253 | 292 | 331 | 379 | 414 | 462 | 497 | 546 | 575 | 613 | 661 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 26 | 41 | 55 | 73 | 88 | 104 | 120 | 134 | 149 | 56 | 84 | 104 | 123 | 149 | 174 | 199 | 224 | 248 | 268 | 290 |
| | Med-low | 41 | 62 | 79 | 98 | 117 | 132 | 154 | 172 | 195 | 94 | 122 | 146 | 177 | 208 | 239 | 264 | 295 | 320 | 352 | 368 |
| | Med-High | 50 | 75 | 95 | 120 | 147 | 164 | 187 | 209 | 243 | 140 | 170 | 197 | 234 | 263 | 301 | 327 | 357 | 377 | 412 | 453 |
| | High | 72 | 102 | 125 | 154 | 178 | 208 | 234 | 262 | 293 | 196 | 235 | 264 | 302 | 332 | 377 | 413 | 441 | 482 | 518 | 548 |

BLOWER DATA

EL297UH090XV60C BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

| HEATING | | |
|--|---------------------------------|----------------------------------|
| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
| +24% | 1490 | 1985 |
| +18% | 1435 | 1915 |
| +12% | 1335 | 1805 |
| +6% | 1280 | 1645 |
| Factory Default | 1185 | 1625 |
| -6% | 1095 | 1530 |
| -12% | 990 | 1450 |
| -18% | 900 | 1345 |

| COOLING | | | | | | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 1050 | 1270 | 1445 | 1620 | 1590 | 1815 | 2010 | 2195 |
| Factory Default | 975 | 1120 | 1295 | 1460 | 1460 | 1645 | 1845 | 2010 |
| - | 865 | 1010 | 1120 | 1290 | 1320 | 1500 | 1645 | 1860 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 450 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 450 cfm.

EL297UH090XV60C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|------|------|------|------|------|------|------|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 79 | 107 | 135 | 157 | 188 | 215 | 245 | 273 | 293 | 264 | 284 | 346 | 390 | 425 | 453 | 503 | 538 | 580 | 607 | 640 |
| | Med-low | 120 | 152 | 188 | 220 | 264 | 298 | 328 | 365 | 389 | 393 | 422 | 484 | 554 | 582 | 629 | 690 | 737 | 778 | 805 | 859 |
| | Med-High | 191 | 221 | 272 | 304 | 333 | 372 | 414 | 452 | 481 | 582 | 604 | 679 | 726 | 778 | 839 | 887 | 921 | 970 | 1008 | 1039 |
| | High | 264 | 284 | 346 | 390 | 425 | 453 | 503 | 538 | 580 | 805 | 845 | 888 | 949 | 1009 | 1048 | 1109 | 1133 | 1166 | 1196 | 1191 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 60 | 86 | 112 | 129 | 152 | 179 | 202 | 232 | 252 | 202 | 218 | 270 | 315 | 351 | 387 | 419 | 452 | 479 | 512 | 546 |
| | Med-low | 90 | 123 | 149 | 174 | 209 | 235 | 264 | 293 | 331 | 286 | 340 | 389 | 378 | 430 | 503 | 553 | 580 | 636 | 661 | 699 |
| | Med-High | 137 | 166 | 203 | 240 | 279 | 307 | 342 | 372 | 402 | 454 | 467 | 517 | 573 | 632 | 672 | 717 | 767 | 809 | 849 | 880 |
| | High | 202 | 218 | 270 | 315 | 351 | 387 | 419 | 452 | 479 | 559 | 590 | 649 | 728 | 789 | 823 | 896 | 926 | 974 | 1030 | 1062 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 47 | 62 | 85 | 107 | 132 | 148 | 166 | 179 | 201 | 142 | 168 | 212 | 247 | 285 | 313 | 348 | 373 | 409 | 450 | 472 |
| | Med-low | 69 | 97 | 119 | 139 | 165 | 189 | 214 | 244 | 265 | 226 | 245 | 295 | 339 | 374 | 410 | 451 | 474 | 497 | 549 | 566 |
| | Med-High | 90 | 123 | 149 | 174 | 209 | 235 | 264 | 293 | 331 | 301 | 335 | 385 | 430 | 471 | 510 | 557 | 607 | 632 | 677 | 713 |
| | High | 133 | 167 | 200 | 232 | 274 | 311 | 340 | 371 | 405 | 454 | 470 | 553 | 588 | 641 | 695 | 725 | 764 | 820 | 849 | 880 |

BLOWER DATA

EL297UH090XV60C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR – Air volumes in **bold** require Optional Return Air Base and field fabricated transition to accommodate 20 x 25 x 1 in. air filter in order to maintain proper air velocity.

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
|--|---------------------------------|----------------------------------|
| +24% | 1445 | 1920 |
| +18% | 1385 | 1875 |
| +12% | 1275 | 1735 |
| +6% | 1245 | 1600 |
| Factory Default | 1155 | 1565 |
| -6% | 1070 | 1480 |
| -12% | 975 | 1400 |
| -18% | 920 | 1275 |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 1040 | 1225 | 1380 | 1550 | 1555 | 1715 | 1920 | 2135 |
| Factory Default | 960 | 1085 | 1225 | 1415 | 1430 | 1565 | 1790 | 1980 |
| - | 840 | 990 | 1085 | 1250 | 1280 | 1450 | 1580 | 1790 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 450 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 450 cfm.

EL297UH090XV60C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. w.g. | | | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|------|------|------|------|------|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 66 | 95 | 123 | 147 | 173 | 204 | 233 | 260 | 290 | 241 | 273 | 315 | 357 | 405 | 433 | 466 | 519 | 547 | 584 | 620 |
| | Med-low | 108 | 139 | 173 | 210 | 248 | 283 | 315 | 342 | 376 | 332 | 374 | 428 | 489 | 518 | 568 | 631 | 665 | 719 | 762 | 813 |
| | Med-High | 159 | 192 | 233 | 272 | 314 | 359 | 386 | 421 | 457 | 518 | 557 | 601 | 675 | 713 | 772 | 819 | 873 | 913 | 949 | 987 |
| | High | 241 | 273 | 315 | 357 | 405 | 433 | 466 | 519 | 547 | 713 | 750 | 822 | 866 | 946 | 986 | 1042 | 1085 | 1116 | 1144 | 1184 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 55 | 81 | 101 | 126 | 144 | 165 | 194 | 217 | 243 | 181 | 204 | 251 | 292 | 323 | 369 | 403 | 444 | 474 | 496 | 525 |
| | Med-low | 75 | 109 | 134 | 159 | 194 | 226 | 255 | 282 | 316 | 270 | 304 | 361 | 389 | 433 | 473 | 506 | 547 | 602 | 642 | 665 |
| | Med-High | 108 | 144 | 180 | 211 | 248 | 293 | 320 | 357 | 391 | 374 | 410 | 467 | 512 | 583 | 618 | 670 | 723 | 778 | 797 | 839 |
| | High | 181 | 204 | 251 | 292 | 323 | 369 | 403 | 444 | 474 | 542 | 579 | 642 | 684 | 743 | 809 | 843 | 883 | 942 | 991 | 1019 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 36 | 56 | 71 | 102 | 119 | 141 | 161 | 179 | 198 | 113 | 142 | 181 | 221 | 255 | 300 | 325 | 352 | 395 | 424 | 456 |
| | Med-low | 57 | 84 | 110 | 133 | 151 | 175 | 210 | 234 | 257 | 170 | 208 | 209 | 303 | 343 | 382 | 417 | 455 | 489 | 509 | 552 |
| | Med-High | 75 | 109 | 134 | 159 | 194 | 226 | 255 | 282 | 316 | 264 | 299 | 357 | 387 | 426 | 478 | 501 | 551 | 586 | 635 | 682 |
| | High | 113 | 142 | 181 | 221 | 255 | 300 | 325 | 352 | 395 | 374 | 410 | 467 | 512 | 583 | 618 | 670 | 723 | 778 | 797 | 839 |

BLOWER DATA WITH BLOWER DRIVE (See Earlier Version EHB For CFM With No Blower Drive)

EL297UH110XV48C BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
|--|---------------------------------|----------------------------------|
| +24% | 1470 | 1605 |
| +18% | 1450 | 1495 |
| +12% | 1385 | 1445 |
| +6% | 1295 | 1385 |
| Factory Default | 1225 | 1305 |
| -6% | 1160 | 1225 |
| -12% | 1090 | 1150 |
| -18% | 1035 | 1070 |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 765 | 920 | 1040 | 1230 | 1085 | 1310 | 1515 | 1745 |
| Factory Default | 705 | 835 | 960 | 1100 | 985 | 1185 | 1395 | 1565 |
| - | 635 | 765 | 860 | 985 | 890 | 1070 | 1245 | 1425 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 380 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 380 cfm.

EL297UH110XV48C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|---|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |

+ Setting

| Cooling Speed | Low | 32 | 58 | 73 | 90 | 109 | 130 | 151 | 175 | 199 | 73 | 104 | 128 | 152 | 178 | 203 | 230 | 257 | 285 | 314 | 344 |
|------------------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Med-low | 54 | 78 | 97 | 118 | 141 | 163 | 184 | 207 | 231 | 138 | 171 | 199 | 227 | 256 | 285 | 313 | 343 | 374 | 407 | 441 |
| | Med-High | 70 | 99 | 121 | 145 | 169 | 195 | 221 | 248 | 276 | 212 | 251 | 281 | 313 | 344 | 377 | 409 | 445 | 480 | 517 | 554 |
| | High | 115 | 145 | 171 | 197 | 225 | 253 | 281 | 310 | 340 | 316 | 360 | 396 | 431 | 465 | 502 | 545 | 582 | 618 | 662 | 707 |

Factory Default

| Cooling Speed | Low | 31 | 58 | 64 | 81 | 100 | 119 | 139 | 159 | 181 | 55 | 86 | 107 | 129 | 151 | 174 | 201 | 227 | 254 | 281 | 309 |
|------------------|----------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Med-low | 41 | 65 | 83 | 102 | 122 | 145 | 170 | 191 | 210 | 100 | 132 | 157 | 183 | 209 | 236 | 264 | 292 | 321 | 352 | 384 |
| | Med-High | 56 | 82 | 102 | 125 | 147 | 167 | 192 | 218 | 245 | 161 | 197 | 226 | 256 | 286 | 317 | 348 | 380 | 413 | 448 | 482 |
| | High | 83 | 111 | 135 | 160 | 185 | 212 | 238 | 266 | 293 | 234 | 274 | 305 | 336 | 369 | 402 | 437 | 471 | 507 | 544 | 582 |

- Setting

| Cooling Speed | Low | 30 | 57 | 58 | 73 | 90 | 107 | 124 | 142 | 162 | 45 | 71 | 90 | 110 | 132 | 156 | 177 | 198 | 220 | 245 | 270 |
|------------------|----------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | Med-low | 30 | 57 | 72 | 90 | 109 | 129 | 151 | 175 | 201 | 68 | 100 | 123 | 147 | 173 | 199 | 225 | 252 | 280 | 309 | 339 |
| | Med-High | 45 | 70 | 87 | 106 | 127 | 150 | 173 | 194 | 214 | 118 | 151 | 177 | 204 | 231 | 259 | 288 | 316 | 347 | 378 | 411 |
| | High | 60 | 88 | 110 | 132 | 154 | 178 | 204 | 230 | 258 | 173 | 209 | 239 | 269 | 300 | 332 | 365 | 397 | 431 | 466 | 501 |

BLOWER DATA

EL297UH110XV48C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
|--|---------------------------------|----------------------------------|
| +24% | 1480 | 1580 |
| +18% | 1410 | 1505 |
| +12% | 1330 | 1415 |
| +6% | 1255 | 1365 |
| Factory Default | 1190 | 1270 |
| -6% | 1130 | 1205 |
| -12% | 1070 | 1120 |
| -18% | 1020 | 1060 |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 795 | 975 | 1065 | 1200 | 1085 | 1295 | 1515 | 1695 |
| Factory Default | 755 | 855 | 1000 | 1110 | 1015 | 1180 | 1375 | 1565 |
| - | 700 | 785 | 885 | 1025 | 920 | 1070 | 1235 | 1395 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 380 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 380 cfm.

EL297UH110XV48C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 35 | 58 | 79 | 99 | 120 | 148 | 166 | 192 | 209 | 79 | 107 | 142 | 168 | 196 | 225 | 254 | 286 | 314 | 344 | 376 |
| | Med-low | 52 | 81 | 103 | 132 | 153 | 178 | 212 | 236 | 262 | 130 | 167 | 199 | 237 | 272 | 313 | 350 | 392 | 419 | 457 | 486 |
| | Med-High | 93 | 128 | 156 | 183 | 207 | 246 | 274 | 314 | 339 | 215 | 246 | 290 | 334 | 375 | 416 | 457 | 490 | 528 | 569 | 598 |
| | High | 108 | 144 | 175 | 207 | 241 | 276 | 308 | 345 | 376 | 287 | 333 | 383 | 427 | 482 | 515 | 571 | 614 | 666 | 716 | 756 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 28 | 49 | 69 | 92 | 110 | 128 | 147 | 175 | 192 | 63 | 88 | 122 | 143 | 169 | 198 | 224 | 250 | 281 | 311 | 330 |
| | Med-low | 40 | 65 | 85 | 110 | 135 | 155 | 180 | 205 | 235 | 100 | 136 | 166 | 195 | 227 | 261 | 291 | 329 | 358 | 394 | 423 |
| | Med-High | 59 | 85 | 115 | 139 | 163 | 190 | 220 | 245 | 274 | 154 | 192 | 229 | 270 | 309 | 345 | 383 | 428 | 459 | 503 | 534 |
| | High | 85 | 116 | 148 | 175 | 201 | 235 | 263 | 299 | 325 | 245 | 280 | 328 | 370 | 412 | 444 | 488 | 521 | 570 | 608 | 650 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 25 | 42 | 60 | 82 | 103 | 113 | 137 | 152 | 173 | 46 | 72 | 94 | 120 | 146 | 170 | 197 | 226 | 249 | 268 | 293 |
| | Med-low | 39 | 62 | 82 | 102 | 120 | 140 | 165 | 187 | 207 | 74 | 99 | 137 | 162 | 193 | 218 | 247 | 276 | 305 | 337 | 366 |
| | Med-High | 43 | 71 | 92 | 116 | 142 | 165 | 190 | 217 | 243 | 113 | 150 | 181 | 214 | 247 | 286 | 320 | 358 | 388 | 425 | 451 |
| | High | 65 | 89 | 125 | 146 | 173 | 201 | 227 | 254 | 285 | 164 | 202 | 244 | 285 | 315 | 356 | 398 | 441 | 476 | 518 | 550 |

BLOWER DATA

EL297UH110XV48C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR WITH OPTIONAL RETURN AIR BASE

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | Second Stage Heating Speed - cfm | |
|--|---------------------------------|------|----------------------------------|------|
| | +24% | 1465 | | 1560 |
| +18% | 1370 | | 1490 | |
| +12% | 1310 | | 1400 | |
| +6% | 1235 | | 1340 | |
| Factory Default | 1185 | | 1270 | |
| -6% | 1120 | | 1210 | |
| -12% | 1060 | | 1120 | |
| -18% | 1015 | | 1065 | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 800 | 935 | 1055 | 1190 | 1085 | 1285 | 1500 | 1680 |
| Factory Default | 745 | 860 | 980 | 1100 | 1015 | 1185 | 1355 | 1550 |
| - | 670 | 790 | 890 | 1025 | 920 | 1075 | 1240 | 1385 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 380 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 380 cfm.

EL297UH110XV48C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 35 | 58 | 79 | 99 | 120 | 148 | 166 | 192 | 209 | 73 | 108 | 132 | 158 | 184 | 214 | 244 | 279 | 309 | 336 | 363 |
| | Med-low | 44 | 75 | 92 | 117 | 150 | 170 | 198 | 230 | 249 | 110 | 150 | 178 | 209 | 248 | 288 | 324 | 355 | 389 | 430 | 460 |
| | Med-High | 69 | 102 | 126 | 154 | 178 | 206 | 235 | 274 | 299 | 187 | 230 | 262 | 305 | 337 | 378 | 429 | 463 | 501 | 536 | 573 |
| | High | 94 | 133 | 162 | 185 | 216 | 255 | 294 | 321 | 360 | 270 | 319 | 361 | 403 | 440 | 494 | 538 | 580 | 629 | 670 | 718 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 27 | 50 | 69 | 87 | 102 | 127 | 150 | 168 | 192 | 59 | 88 | 116 | 136 | 161 | 194 | 218 | 251 | 272 | 302 | 325 |
| | Med-low | 35 | 60 | 80 | 100 | 125 | 150 | 175 | 195 | 225 | 86 | 126 | 154 | 177 | 205 | 242 | 280 | 306 | 345 | 377 | 409 |
| | Med-High | 54 | 83 | 107 | 128 | 157 | 184 | 210 | 243 | 263 | 131 | 172 | 203 | 240 | 279 | 318 | 351 | 390 | 426 | 469 | 500 |
| | High | 78 | 113 | 137 | 162 | 189 | 221 | 252 | 284 | 317 | 210 | 252 | 291 | 327 | 376 | 413 | 456 | 493 | 529 | 570 | 620 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 24 | 42 | 65 | 80 | 93 | 116 | 135 | 155 | 173 | 37 | 66 | 89 | 111 | 140 | 163 | 190 | 202 | 239 | 266 | 296 |
| | Med-low | 32 | 57 | 75 | 94 | 114 | 136 | 161 | 184 | 205 | 71 | 104 | 128 | 155 | 180 | 208 | 237 | 276 | 302 | 327 | 352 |
| | Med-High | 38 | 65 | 85 | 106 | 135 | 158 | 184 | 200 | 233 | 97 | 137 | 166 | 191 | 225 | 264 | 304 | 330 | 367 | 402 | 434 |
| | High | 61 | 91 | 118 | 139 | 164 | 196 | 221 | 255 | 276 | 145 | 182 | 220 | 259 | 299 | 333 | 374 | 410 | 449 | 487 | 523 |

BLOWER DATA

EL297UH110XV60C BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

| HEATING | | |
|--|---------------------------------|----------------------------------|
| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
| +24% | 1385 | 1965 |
| +18% | 1475 | 1880 |
| +12% | 1355 | 1790 |
| +6% | 1370 | 1725 |
| Factory Default | 1200 | 1630 |
| -6% | 1140 | 1550 |
| -12% | 1070 | 1460 |
| -18% | 980 | 1345 |

| COOLING | | | | | | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 1060 | 1245 | 1345 | 1545 | 1560 | 1740 | 1930 | 2125 |
| Factory Default | 970 | 1145 | 1265 | 1395 | 1405 | 1565 | 1775 | 1945 |
| - | 885 | 1025 | 1110 | 1250 | 1270 | 1425 | 1610 | 1770 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 450 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 450 cfm.

EL297UH110XV60C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 81 | 113 | 135 | 165 | 200 | 228 | 251 | 280 | 315 | 220 | 254 | 300 | 346 | 385 | 432 | 472 | 511 | 560 | 600 | 610 |
| | Med-low | 119 | 147 | 179 | 210 | 241 | 273 | 309 | 331 | 358 | 345 | 386 | 414 | 475 | 516 | 547 | 594 | 637 | 681 | 714 | 748 |
| | Med-High | 157 | 191 | 225 | 265 | 304 | 331 | 377 | 405 | 435 | 492 | 536 | 573 | 623 | 666 | 711 | 761 | 804 | 842 | 891 | 918 |
| | High | 220 | 254 | 300 | 346 | 385 | 432 | 472 | 511 | 560 | 675 | 699 | 767 | 839 | 876 | 915 | 973 | 1033 | 1062 | 1115 | 1134 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 60 | 88 | 114 | 137 | 167 | 187 | 219 | 244 | 276 | 163 | 196 | 231 | 266 | 309 | 348 | 388 | 421 | 451 | 489 | 512 |
| | Med-low | 81 | 108 | 147 | 173 | 195 | 231 | 257 | 288 | 326 | 232 | 263 | 314 | 353 | 412 | 445 | 490 | 516 | 557 | 596 | 649 |
| | Med-High | 122 | 145 | 182 | 215 | 246 | 286 | 306 | 333 | 360 | 372 | 401 | 449 | 498 | 541 | 577 | 643 | 672 | 695 | 744 | 765 |
| | High | 163 | 196 | 231 | 266 | 309 | 348 | 388 | 421 | 451 | 497 | 539 | 579 | 646 | 681 | 734 | 773 | 817 | 851 | 904 | 957 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 45 | 62 | 96 | 116 | 132 | 153 | 179 | 199 | 227 | 124 | 146 | 189 | 215 | 245 | 279 | 316 | 331 | 373 | 396 | 423 |
| | Med-low | 56 | 85 | 115 | 134 | 159 | 185 | 215 | 251 | 270 | 163 | 195 | 243 | 270 | 314 | 353 | 397 | 414 | 470 | 496 | 535 |
| | Med-High | 80 | 114 | 141 | 161 | 203 | 230 | 256 | 294 | 318 | 248 | 274 | 324 | 386 | 416 | 470 | 494 | 539 | 583 | 620 | 652 |
| | High | 124 | 146 | 189 | 215 | 245 | 279 | 316 | 331 | 373 | 377 | 413 | 457 | 502 | 548 | 583 | 629 | 684 | 705 | 753 | 783 |

BLOWER DATA

EL297UH110XV60C BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR – Air volumes in **bold** require Optional Return Air Base and field fabricated transition to accommodate 20 x 25 x 1 in. air filter in order to maintain proper air velocity.

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
|--|---------------------------------|----------------------------------|
| +24% | 1495 | 1910 |
| +18% | 1425 | 1840 |
| +12% | 1335 | 1785 |
| +6% | 1210 | 1710 |
| Factory Default | 1195 | 1555 |
| -6% | 1140 | 1510 |
| -12% | 1075 | 1410 |
| -18% | 975 | 1300 |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 1050 | 1195 | 1315 | 1495 | 1515 | 1710 | 1870 | 2065 |
| Factory Default | 960 | 1095 | 1220 | 1355 | 1360 | 1555 | 1755 | 1890 |
| - | 850 | 985 | 1095 | 1220 | 1215 | 1400 | 1555 | 1755 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 450 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 450 cfm.

EL297UH110XV60C BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. w.g. | | | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 67 | 95 | 124 | 148 | 172 | 212 | 241 | 260 | 287 | 215 | 247 | 287 | 338 | 378 | 412 | 448 | 497 | 535 | 557 | 600 |
| | Med-low | 112 | 140 | 176 | 200 | 232 | 262 | 303 | 323 | 350 | 332 | 360 | 420 | 459 | 500 | 551 | 601 | 636 | 666 | 705 | 747 |
| | Med-High | 151 | 191 | 221 | 251 | 283 | 321 | 356 | 392 | 431 | 478 | 513 | 560 | 611 | 672 | 701 | 750 | 801 | 843 | 865 | 916 |
| | High | 215 | 247 | 287 | 338 | 378 | 412 | 448 | 497 | 535 | 661 | 699 | 751 | 813 | 856 | 901 | 955 | 1005 | 1047 | 1088 | 1131 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 53 | 82 | 99 | 128 | 153 | 172 | 199 | 231 | 251 | 156 | 198 | 217 | 270 | 297 | 328 | 371 | 403 | 440 | 474 | 515 |
| | Med-low | 81 | 109 | 136 | 165 | 198 | 229 | 259 | 281 | 307 | 244 | 272 | 327 | 361 | 410 | 446 | 494 | 527 | 564 | 600 | 636 |
| | Med-High | 113 | 144 | 174 | 209 | 233 | 269 | 304 | 323 | 362 | 387 | 415 | 458 | 513 | 552 | 602 | 644 | 680 | 719 | 763 | 807 |
| | High | 156 | 198 | 217 | 270 | 297 | 328 | 371 | 403 | 440 | 505 | 541 | 594 | 624 | 675 | 727 | 780 | 812 | 843 | 886 | 925 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 43 | 62 | 84 | 111 | 125 | 152 | 167 | 189 | 211 | 114 | 137 | 183 | 206 | 235 | 264 | 303 | 330 | 358 | 388 | 417 |
| | Med-low | 62 | 86 | 115 | 134 | 162 | 187 | 219 | 238 | 262 | 165 | 199 | 236 | 281 | 308 | 357 | 381 | 426 | 466 | 492 | 531 |
| | Med-High | 81 | 109 | 136 | 165 | 198 | 229 | 259 | 281 | 307 | 239 | 269 | 326 | 354 | 413 | 463 | 498 | 523 | 573 | 601 | 656 |
| | High | 114 | 137 | 183 | 206 | 235 | 264 | 303 | 330 | 358 | 387 | 415 | 458 | 513 | 552 | 602 | 644 | 680 | 719 | 744 | 776 |

BLOWER DATA

EL297UH135XV60D BLOWER PERFORMANCE (less filter)

BOTTOM RETURN AIR

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | | | | Second Stage Heating Speed - cfm | | | |
|--|---------------------------------|------|--|--|----------------------------------|------|--|--|
| | +24% | 1770 | | | | 2125 | | |
| +18% | 1680 | | | | 2015 | | | |
| +12% | 1610 | | | | 1935 | | | |
| +6% | 1485 | | | | 1855 | | | |
| Factory Default | 1440 | | | | 1740 | | | |
| -6% | 1360 | | | | 1650 | | | |
| -12% | 1285 | | | | 1565 | | | |
| -18% | 1215 | | | | 1460 | | | |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 1150 | 1310 | 1440 | 1610 | 1640 | 1840 | 2000 | 2250 |
| Factory Default | 1080 | 1210 | 1330 | 1475 | 1480 | 1660 | 1885 | 2035 |
| - | 985 | 1095 | 1210 | 1315 | 1330 | 1500 | 1675 | 1885 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 450 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 450 cfm.

EL297UH135XV60D BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. w.g. | | | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 79 | 108 | 140 | 173 | 200 | 232 | 265 | 290 | 325 | 229 | 250 | 310 | 367 | 396 | 452 | 487 | 529 | 557 | 595 | 639 |
| | Med-low | 125 | 157 | 190 | 221 | 264 | 297 | 325 | 355 | 390 | 348 | 385 | 434 | 482 | 532 | 571 | 627 | 655 | 704 | 736 | 793 |
| | Med-High | 162 | 199 | 241 | 268 | 303 | 350 | 390 | 426 | 454 | 505 | 532 | 597 | 649 | 689 | 733 | 782 | 826 | 872 | 906 | 942 |
| | High | 222 | 250 | 310 | 367 | 396 | 452 | 487 | 529 | 557 | 696 | 733 | 780 | 839 | 910 | 974 | 996 | 1049 | 1091 | 1138 | 1175 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 63 | 93 | 119 | 144 | 173 | 199 | 230 | 258 | 284 | 172 | 210 | 249 | 277 | 326 | 361 | 394 | 444 | 467 | 513 | 545 |
| | Med-low | 85 | 115 | 150 | 190 | 210 | 245 | 275 | 310 | 340 | 238 | 261 | 329 | 375 | 427 | 465 | 505 | 548 | 589 | 631 | 670 |
| | Med-High | 125 | 159 | 190 | 222 | 260 | 295 | 325 | 358 | 391 | 392 | 426 | 482 | 518 | 581 | 619 | 665 | 699 | 741 | 789 | 826 |
| | High | 172 | 210 | 249 | 277 | 326 | 361 | 394 | 444 | 467 | 523 | 561 | 612 | 671 | 716 | 751 | 805 | 867 | 899 | 935 | 986 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 52 | 78 | 106 | 129 | 148 | 177 | 201 | 228 | 258 | 123 | 154 | 191 | 216 | 261 | 296 | 331 | 353 | 384 | 421 | 459 |
| | Med-low | 68 | 98 | 124 | 150 | 184 | 207 | 241 | 268 | 294 | 172 | 214 | 244 | 289 | 334 | 368 | 408 | 454 | 491 | 523 | 564 |
| | Med-High | 89 | 119 | 150 | 192 | 213 | 246 | 279 | 312 | 340 | 265 | 297 | 352 | 403 | 439 | 489 | 534 | 574 | 605 | 651 | 699 |
| | High | 123 | 154 | 191 | 216 | 261 | 296 | 331 | 353 | 384 | 392 | 426 | 482 | 518 | 581 | 619 | 665 | 699 | 741 | 789 | 826 |

BLOWER DATA

EL297UH135XV60D BLOWER PERFORMANCE (less filter)

SINGLE SIDE RETURN AIR – Air volumes in **bold** require Optional Return Air Base and field fabricated transition to accommodate 20 x 25 x 1 in. air filter in order to maintain proper air velocity.

0 through 0.8 in. w.g. (Heating) and 0 through 1.0 in. w.g. (Cooling) External Static Pressure Range

HEATING

| ¹ Heating Speed DIP Switch Settings | First Stage Heating Speed - cfm | Second Stage Heating Speed - cfm |
|--|---------------------------------|----------------------------------|
| +24% | 1725 | 2070 |
| +18% | 1635 | 1975 |
| +12% | 1555 | 1900 |
| +6% | 1470 | 1815 |
| Factory Default | 1405 | 1715 |
| -6% | 1325 | 1610 |
| -12% | 1250 | 1525 |
| -18% | 1185 | 1420 |

COOLING

| ¹ Cooling Speed DIP Switch Settings | First Stage Cooling Speed - cfm | | | | Second Stage Cooling Speed - cfm | | | |
|--|---------------------------------|------------|-------------|-------------------|----------------------------------|-------------|-------------|-------------------|
| | Low | Medium-Low | Medium-High | ² High | Low | Medium-Low | Medium-High | ² High |
| + | 1130 | 1275 | 1405 | 1555 | 1595 | 1805 | 1975 | 2180 |
| Factory Default | 1040 | 1185 | 1280 | 1415 | 1450 | 1625 | 1840 | 2000 |
| - | 950 | 1080 | 1185 | 1300 | 1310 | 1480 | 1655 | 1840 |

¹ Cooling and heating speeds are based on a combination of DIP switch settings on the furnace control. Refer to Installation Instructions for specific DIP Switch Settings.

² Factory default setting.

NOTES - The effect of static pressure is included in air volumes shown.

First stage HEAT is approximately 91% of the same second stage HEAT.

First stage COOL (two-stage air conditioning units only) is approximately 70% of the same second stage COOL speed position.

Continuous Fan Only speed is selectable at 28% and 38% of the selected second stage cooling speed - minimum 450 cfm.

Lennox® Smart Zoning System Applications - Minimum blower speed is 450 cfm.

EL297UH135XV60D BLOWER MOTOR WATTS (COOLING)

| ¹ Cooling Speed DIP Switch Settings | Motor Watts @ Various External Static Pressures - in. wg. | | | | | | | | | | | | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | First Stage | | | | | | | | | | Second Stage | | | | | | | | | | |
| | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| + Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 87 | 123 | 145 | 178 | 213 | 241 | 270 | 299 | 340 | 244 | 283 | 316 | 356 | 418 | 453 | 491 | 529 | 570 | 598 | 642 |
| | Med-low | 131 | 161 | 197 | 228 | 266 | 309 | 334 | 361 | 392 | 340 | 377 | 425 | 477 | 528 | 570 | 615 | 661 | 702 | 732 | 789 |
| | Med-High | 168 | 201 | 248 | 283 | 319 | 357 | 385 | 438 | 468 | 479 | 523 | 587 | 615 | 665 | 717 | 762 | 812 | 860 | 907 | 955 |
| | High | 239 | 283 | 316 | 356 | 418 | 453 | 491 | 529 | 570 | 661 | 703 | 770 | 822 | 862 | 941 | 994 | 1037 | 1098 | 1136 | 1177 |
| Factory Default | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 67 | 97 | 126 | 150 | 177 | 210 | 239 | 264 | 296 | 162 | 201 | 243 | 273 | 311 | 353 | 384 | 426 | 469 | 505 | 541 |
| | Med-low | 100 | 130 | 165 | 190 | 225 | 255 | 290 | 320 | 350 | 245 | 281 | 322 | 374 | 433 | 465 | 509 | 546 | 596 | 629 | 666 |
| | Med-High | 132 | 169 | 198 | 228 | 267 | 306 | 333 | 370 | 401 | 370 | 404 | 458 | 516 | 559 | 600 | 657 | 696 | 746 | 783 | 816 |
| | High | 163 | 201 | 243 | 273 | 311 | 353 | 384 | 426 | 469 | 502 | 544 | 601 | 639 | 683 | 744 | 791 | 845 | 884 | 927 | 961 |
| - Setting | | | | | | | | | | | | | | | | | | | | | |
| Cooling Speed | Low | 57 | 84 | 107 | 133 | 157 | 177 | 206 | 236 | 259 | 126 | 158 | 192 | 226 | 265 | 290 | 326 | 360 | 392 | 424 | 459 |
| | Med-low | 73 | 102 | 132 | 158 | 185 | 221 | 252 | 273 | 302 | 175 | 213 | 252 | 291 | 338 | 366 | 417 | 453 | 487 | 521 | 572 |
| | Med-High | 100 | 130 | 167 | 193 | 225 | 257 | 290 | 320 | 354 | 254 | 292 | 343 | 377 | 431 | 475 | 521 | 566 | 604 | 642 | 678 |
| | High | 126 | 158 | 192 | 226 | 265 | 290 | 326 | 360 | 392 | 370 | 404 | 458 | 516 | 559 | 600 | 657 | 696 | 746 | 783 | 816 |

PARTS IDENTIFICATION

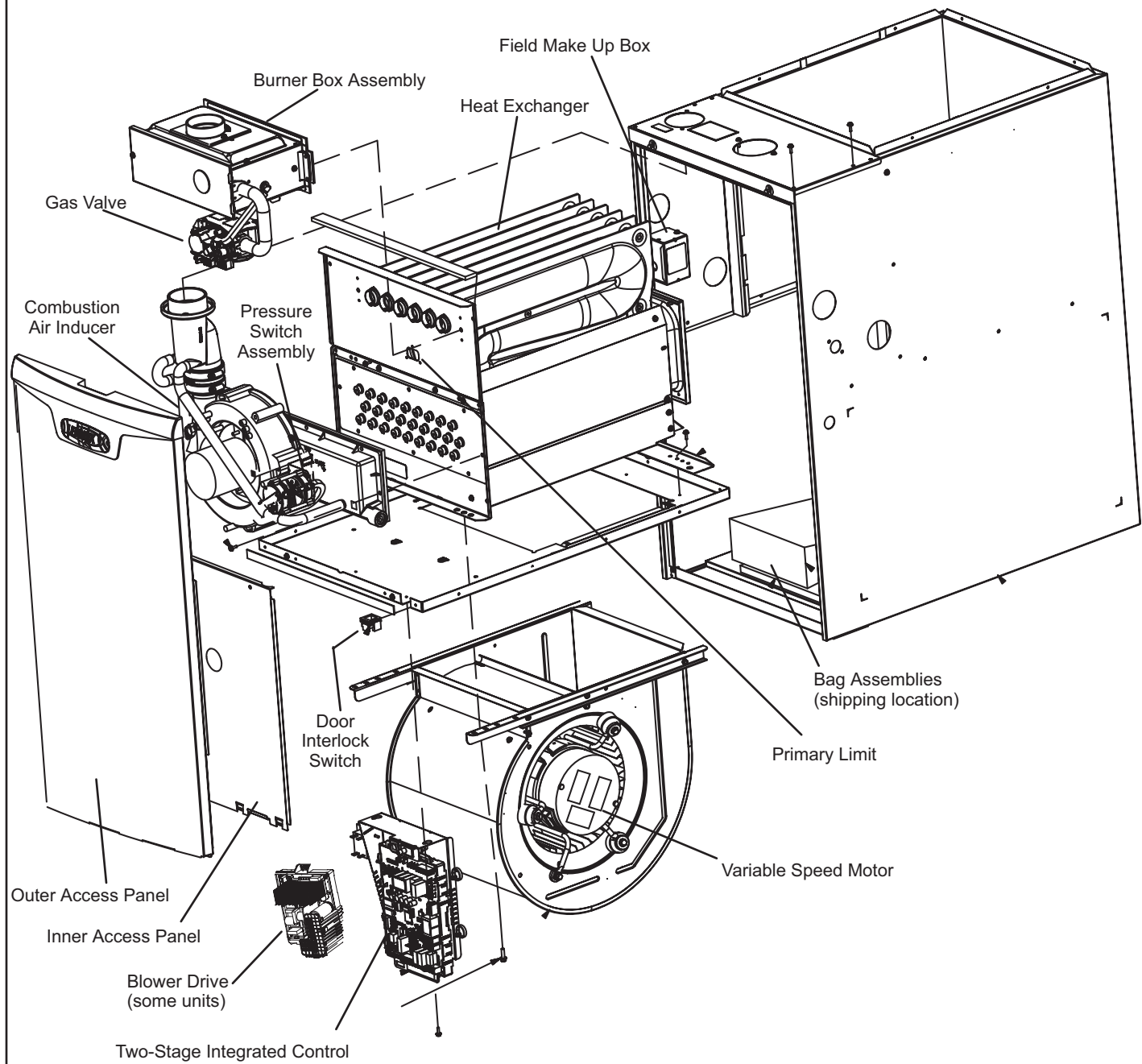



FIGURE 1

I-UNIT COMPONENTS

EL297UHV(X) unit components are shown in FIGURE 1. The gas valve, combustion air inducer and burners can be accessed by removing the access panel. Electrical components are in the control box (FIGURE 2) found in the blower section.

EL297UHV(X) units are factory equipped with a bottom return air panel in place. The panel is designed to be field removed as required for bottom air return. Markings are provided for side return air and may be cut out in the field.

| | |
|---|---|
| ELECTROSTATIC DISCHARGE (ESD) Precautions and Procedures | |
| ⚠ CAUTION | |
|  | Electrostatic discharge can affect electronic components. Take precautions to neutralize electrostatic charge by touching your hand and tools to metal prior to handling the control. |

A- Control Box

1. Control Transformer (T1)

A transformer located in the control box provides power to the low voltage section of the unit. Transformers on all models are rated 40VA with a 120V primary and a 24V secondary.

2. Door Interlock Switch (S51)

A door interlock switch rated 14A at 125VAC is wired in series with line voltage. When the inner blower access panel is removed the unit will shut down.

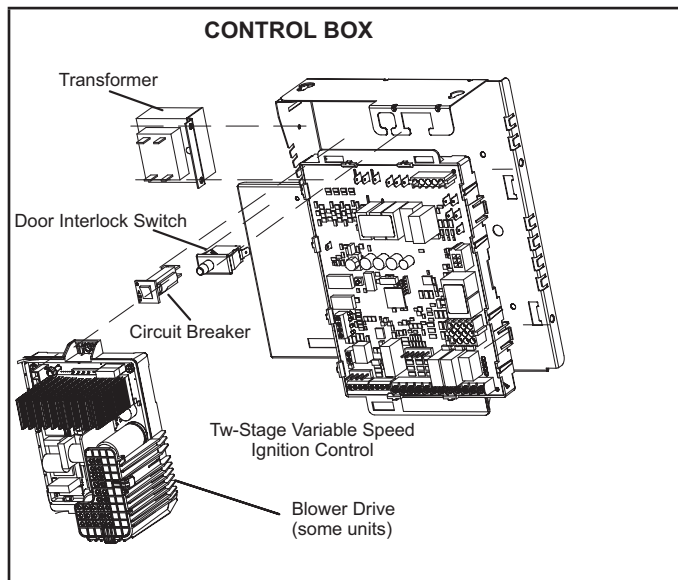


FIGURE 2

3. Circuit Breaker (CB8)

A 24V circuit breaker is also located in the control box. The switch provides overcurrent protection to the transformer (T1). The breaker is rated 3A at 32V.

If the current exceeds this limit the breaker will trip and all unit operation will shutdown. The breaker can be manually reset by pressing the button on the face. See FIGURE 3.

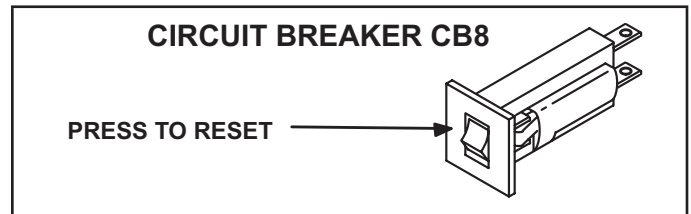


FIGURE 3

| |
|---|
| ⚠ WARNING |
| Shock hazard. Disconnect power before servicing. Integrated control is not field repairable. If control is inoperable, simply replace entire control. Can cause injury or death. Unsafe operation will result if repair is attempted. |

4. Blower Drive (See Indoor Blower Section)

5. Integrated Control (A92)

Units are equipped with a communicating enabled Sure-Light[®] two-stage, variable speed integrated control. This control is used with a communicating thermostat as part of a communicating comfort system. The control can also operate with a non-communicating conventional single or two-stage thermostat. The system consists of a ignition / blower control (FIGURE 4 and FIGURE 6) with control pin designations in TABLE 1, TABLE 2 and TABLE 3 and ignitor (FIGURE 15). The control and ignitor work in combination to ensure furnace ignition and ignitor durability. The control provides gas ignition, safety checks and indoor blower control with two-stage gas heating.

The furnace combustion air inducer, gas valve and indoor blower are controlled in response to various system inputs such as thermostat signal, pressure and limit switch signal and flame signal. The control features a seven-segment LED display, indicating furnace status (including indoor blower) and error codes. The LED flashes in single digits. The control also has two unpowered (dry) 1/4" contacts for a humidifier and a 120 volt accessory terminal. Both rated at (1) one amp each.

Electronic Ignition

At the beginning of the heat cycle the integrated control monitors the first stage and second stage combustion air inducer prove switch. The control will not begin the heating cycle if the first stage prove switch is closed (by-passed). Likewise the integrated control will not begin the second stage heating cycle if the second stage prove switch is closed, and will remain in first stage heat. However, if the second stage prove switch closes during the first stage heat pre-purge, the control will allow second stage heat. Once the first stage prove switch is determined to be open, the combustion air inducer is energized on low (first stage) heat speed.

When the differential in the prove switch is great enough, the prove switch closes and a 15-second pre-purge begins.

NOTE - During abnormal conditions such as low supply voltage or low outdoor temperatures and the low fire pressure switch does not close, the combustion air inducer will switch to high fire. After a 15 second pre-purge the high fire pressure switch will close and the unit will begin operation on high fire. After 10 to 20 seconds of high fire operation the unit will switch to low fire

After the 15-second pre-purge period, the SureLight® ignitor warms up for 20 seconds after which the gas valve opens for a 4-second trial for ignition. The ignitor remains energized during the trial until flame is sensed. If ignition is not proved during the 4-second period, the control will try four more times with an inter purge and warm-up time between trials of 35 seconds. After a total of five trials for ignition (including the initial trial), the control goes into Watchguard- Flame Failure mode. After a 60-minute reset period, the control will begin the ignition sequence again.

Two Stage Operation / Thermostat Selection DIP Switch

The control can be utilized in two modes: SINGLE-STAGE thermostat or TWO-STAGE thermostat. The thermostat selection is made using a DIP switch and must be positioned for the particular application. DIP switch 1, labeled T^hSTAT HEAT STAGE is factory-set in the OFF position for use with a two-stage thermostat. Move the DIP switch to ON for use with a single stage thermostat.

While in the single-stage thermostat mode, the burners will always fire on first-stage heat. The combustion air inducer will operate on low speed and indoor blower will operate on low heat speed. The unit will switch to second stage heat after a “recognition period”. DIP switch 2, labeled SECOND STAGE DELAY, is factory set in the OFF position for a 7 minute recognition period. The switch can be moved to the ON position for a 12 minute recognition period, after which time the unit will switch to second-stage heat. While in the two-stage thermostat mode, the burners will fire on first-stage heat. The combustion air inducer will operate on low speed and indoor blower will operate on low heat speed. The unit will switch to second-stage heat on call from the indoor thermostat. If there is a simultaneous call for first and second stage heat, the unit will fire an first stage heat and switch to second stage heat after 30 seconds of operation. See Sequence of Operation flow charts in the back of this manual for more detail.

TABLE 1

SureLight® Control 5 Pin Terminal Designation

| Pin # | Function |
|-------|-----------------------------------|
| 1 | Ignitor |
| 2 | Combustion Air Inducer High Speed |
| 3 | Combustion Air Inducer Low Speed |
| 4 | Combustion Air Inducer Neutral |
| 5 | Ignitor Neutral |

TABLE 2

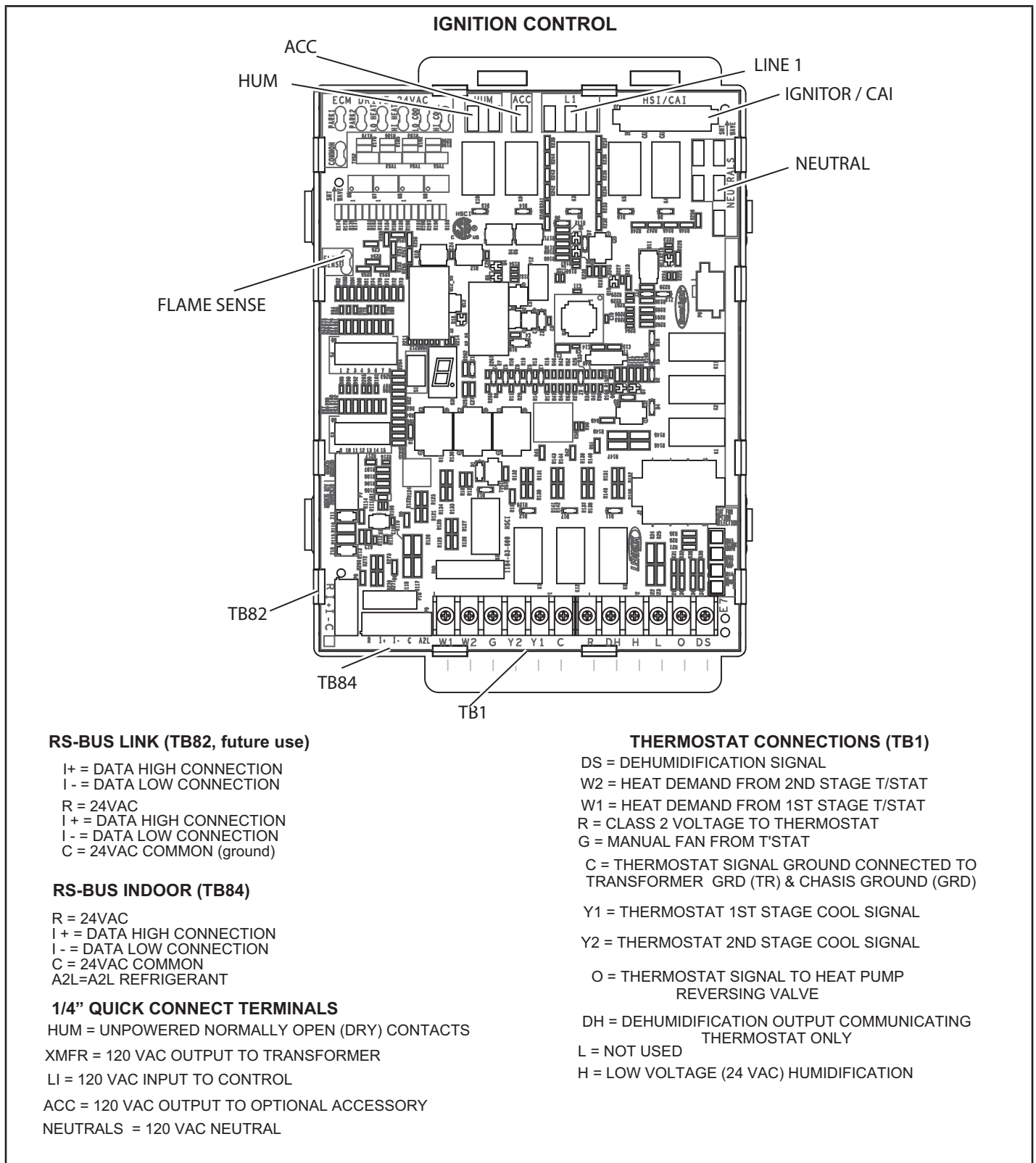
SureLight® Control 12 Pin Terminal Designation

| Pin # | Function |
|-------|---------------------------|
| 1 | Gas Valve Second Stage |
| 2 | Second Stage Prove Switch |
| 3 | Rollout Switch In |
| 4 | Ground |
| 5 | 24V Hot |
| 6 | Primary Limit In |
| 7 | Gas Valve First Stage |
| 8 | Gas Valve Common |
| 9 | 24V Neutral |
| 10 | Ground |
| 11 | Rollout Switch Out |
| 12 | First Stage Prove Switch |

TABLE 3

SureLight® Control 6 Pin Terminal Designation

| Pin # | Function |
|-------|-----------------------|
| 1 | Data Input From Motor |
| 2 | Common |
| 3 | Not Used |
| 4 | Data Output To Motor |
| 5 | 5 Volt Bias Supply |
| 6 | Not Used |



RS-BUS LINK (TB82, future use)

- I+ = DATA HIGH CONNECTION
- I- = DATA LOW CONNECTION
- R = 24VAC
- I+ = DATA HIGH CONNECTION
- I- = DATA LOW CONNECTION
- C = 24VAC COMMON (ground)

RS-BUS INDOOR (TB84)

- R = 24VAC
- I+ = DATA HIGH CONNECTION
- I- = DATA LOW CONNECTION
- C = 24VAC COMMON
- A2L=A2L REFRIGERANT

1/4" QUICK CONNECT TERMINALS

- HUM = UNPOWERED NORMALLY OPEN (DRY) CONTACTS
- XMFR = 120 VAC OUTPUT TO TRANSFORMER
- LI = 120 VAC INPUT TO CONTROL
- ACC = 120 VAC OUTPUT TO OPTIONAL ACCESSORY
- NEUTRALS = 120 VAC NEUTRAL

THERMOSTAT CONNECTIONS (TB1)

- DS = DEHUMIDIFICATION SIGNAL
- W2 = HEAT DEMAND FROM 2ND STAGE T/STAT
- W1 = HEAT DEMAND FROM 1ST STAGE T/STAT
- R = CLASS 2 VOLTAGE TO THERMOSTAT
- G = MANUAL FAN FROM T'STAT
- C = THERMOSTAT SIGNAL GROUND CONNECTED TO TRANSFORMER GRD (TR) & CHASIS GROUND (GRD)
- Y1 = THERMOSTAT 1ST STAGE COOL SIGNAL
- Y2 = THERMOSTAT 2ND STAGE COOL SIGNAL
- O = THERMOSTAT SIGNAL TO HEAT PUMP REVERSING VALVE
- DH = DEHUMIDIFICATION OUTPUT COMMUNICATING THERMOSTAT ONLY
- L = NOT USED
- H = LOW VOLTAGE (24 VAC) HUMIDIFICATION

FIGURE 4

INTEGRATED CONTROL CONFIGURATION GUIDE TYPICAL

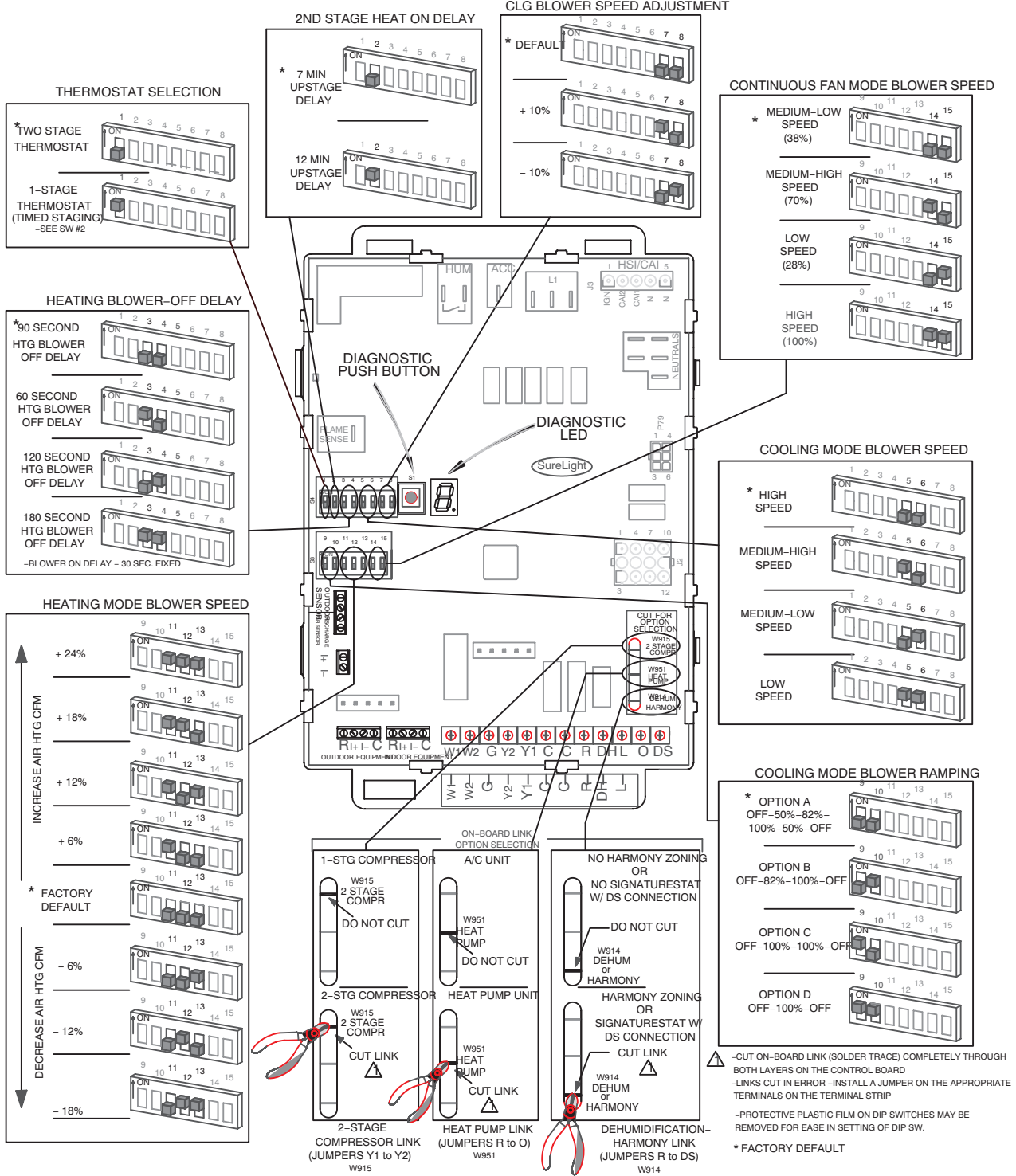


FIGURE 5

Ignition Control 107045-XX Diagnostic Modes

| Display | Action (when button is released) |
|---------------------------------|--|
| No change (idle)* | Remain in idle mode |
| Solid "E" | Enter diagnostic recall mode |
| Solid "U" | Discharge Air Installed |
| Solid "F" | Enter flame signal mode |
| Solid "P" (variable speed only) | Program unit capacity size (Unit Code) |
| Two horizontal lines | soft disable |

* No change implies the display will continue to show whatever is currently being displayed for normal operation (blinking decimal, active error code, heat state, etc.)

Diagnostic LED

The seven-segment diagnostic LED displays operating status, target airflow, error codes and other information. The table beginning on the next page lists diagnostic LED codes.

Diagnostic Push Button

The diagnostic push button is located adjacent to the seven-segment diagnostic LED. This button is used to enable the Error Code Recall "E" mode and the Flame Signal "F" mode. Press the button and hold it to cycle through a menu of options. Every five seconds a new menu item will be displayed. When the button is released, the displayed item will be selected. Once all items in the menu have been displayed, the menu resumes from the beginning until the button is released.

Error Code Recall Mode

Select "E" from the menu to access the most recent 10 error codes. Select "c" from the Error Code Recall menu to clear all error codes. Button must be pressed a second time while "c" is flashing to confirm command to delete codes. Press the button until a solid "≡" is displayed to exit the Error Code Recall mode.

Flame Signal Mode

Select "F" from the menu to access the flame signal mode. The integrated control will display the flame current on 7 segment LED in micro amps (uA).

Flame signal mode is exited after any of the following:

- Power is reset
- Pressing and holding push button until 3 horizontal lines "≡" are displayed
- 10 minutes after entering the flame sense mode.

Program Unit Capacity/Size Mode

After the "P" is selected (by releasing the push button) the integrated control will start flashing the "P" on display for 90 seconds. If push button is pressed again and held during that time, the control will start to display characters corresponding to different variable speed furnace models for 3 seconds each. While the wanted character-model is displayed push button has to be released. Selected option will flash display for 10 seconds and during that time push button has to be pressed and held for 5 seconds. Once control accepts new setting it will store data in non-volatile memory and reset itself. If 10 seconds expires or push button is held less than 5 seconds, control will exit field test mode and go into idle without changing programming the unit size.

Soft Disable

Soft disabling is when thermostat finds a device on the BUS that it does not recognize and the thermostat sends a the device a message to be in soft disabling mode until properly configured. Two horizontal bars will display.

Steps to follow if the damper control module is displaying the soft disable code.

- 1 - Confirm proper wiring between all devices (thermostat, damper control module, indoor and outdoor).
- 2 - Cycle power to the control that is displaying the soft disable code.
- 3 - Put the room thermostat through set up.
- 4 - Go to setup / system devices / thermostat / edit / then push reset.
- 5 - Go to setup / system devices / thermostat / edit / then push resetAll.

Ignition Control 107045-XX Diagnostic Modes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|---|---|
| . | Idle mode (Decimal blinks at 1 Hertz -- 0.5 second ON, 0.5 second OFF). | |
| A | Cubic feet per minute (cfm) setting for indoor blower (1 second ON, 0.5 second OFF) / cfm setting for current mode displayed. | |
| C | Cooling stage (1 second ON, 0.5 second OFF) / 1 or 2 displayed / Pause / cfm setting displayed / Pause / Repeat codes). | |
| d | Dehumidification mode (1 second ON) / 1 second OFF) / cfm setting displayed / Pause / Repeat Codes). | |
| h | Heat pump stage (1 second ON, 0.5 second OFF) / % of input rate displayed / Pause / cfm setting / Pause / Repeat codes. | |
| H | Gas Heat Stage (1 second ON, 0.5 second OFF) / 1 or 2 displayed / Pause / cfm setting displayed / Pause / Repeat codes. Blinking during ignition. | |
| dF | Defrost mode. | |
| U | Discharge Air Temperature | |
| E000 | No error in memory | |
| E105 | Device communication problem - No other devices on RS BUS (Communication system). | |
| E110 | Low line voltage. | Line Voltage Low (Voltage lower than nameplate rating). Check power line voltage and correct. Alarm clears 5 seconds after fault recovered. |
| E111 | Low line voltage. | Reverse line power voltage wiring. System resumes normal operation 5 seconds after fault recovered. |
| E112 | Ground not detected | System shuts down. Provide proper earth ground. System resumes normal operation 5 seconds after fault recovered. |
| E113 | High line voltage. | Line Voltage High (Voltage higher than nameplate rating). Provide power voltage within proper range. System resumes normal operation 5 seconds after fault recovered. |
| E114 | Line voltage frequency out-of-range. | No 60 Hertz Power. Check voltage and line power frequency. Correct voltage and frequency problems. System resumes normal operation 5 seconds after fault recovered. |
| E115 | Low 24V - Control will restart if the error recovers. | 24-Volt Power Low (Range is 18 to 30 volts). Check and correct voltage. Check for additional power-robbing equipment connected to system. May require installation of larger VA transformer to be installed in furnace / air handler. Clears after fault recovered. |
| E117 | Poor ground detected (Warning only) | Provide proper grounding for unit. Check for proper earth ground to the system. Warning only will clear 30 seconds after fault recovered. |
| E120 | Unresponsive device. Communication only. | Usually caused by delay in outdoor unit responding to indoor unit polling. Recycle power. Check all wiring connections. Cleared after unresponsive device responds to any inquiry. |

Ignition Control 107045-XX Diagnostic Modes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|--|---|
| E124 | Active communicating thermostat signal missing for more than 3 minutes. | Equipment lost communication with the thermostat. Check four wiring connections, ohm wires and cycle power at the thermostat. Alert stops all services and waits for heartbeat message from thermostat (subnet controller). Cleared after valid thermostat (subnet controller) message is received. |
| E125 | Control failed self-check, internal error, failed hardware. Will restart if error recovers. Integrated control not communicating. Covers hardware errors (flame sense circuit faults, pin shorts, etc.). | Hardware problem on the control. Cycle power on control. Replace if problem prevents service and is persistent. Critical alert. Cleared 300 seconds after fault recovered. |
| E131 | Corrupted control parameters (Verify configuration of system). Communicating only. | Reconfigure the system. Replace control if heating or cooling is not available. Only applicable in the communicating mode, not in startup. Exit from Commissioning and Execute 'Set Factory Default mode Control will still operate on default parameter settings |
| E150 | A2L Refigerant leak alarm | |
| E151 | A2L Sensor fault (sensor problem) (communication mode only) | |
| E180 | Outdoor air temperature sensor failure. Only shown if shorted or out-of-range. | Compare outdoor sensor resistance to temperature/ resistance charts in unit installation instructions. Replace sensor pack if necessary. At beginning of (any) configuration, furnace or air handler control will sense outdoor air and discharge air temperature sensor(s). If detected (reading in range), appropriate feature will be set as 'installed' and that could be seen in 'About' screen. In normal operation after control recognizes sensors, alarm will be sent if valid temperature reading is lost. To get rid of setting and alarm, redo configuration and make sure that temperature sensor is marked as 'not installed' in Indoor Unit 'About' screen. When Indoor unit control is replaced, thermostat will 'tell' new control if temperature sensor is in system or not. Clears 30 seconds after fault recovered. |
| E200 | Hard lockout - Rollout circuit open or previously open. | Correct cause of rollout trip, or replace flame rollout switch. Test furnace operation. Cleared after fault recovered. |
| E201 | Indoor blower communication failure - Unable to communicate with blower motor. | Indoor blower communication failure (including power outage). Lost communication with indoor blower motor. Possible causes: motor not powered, loose wiring. Problem may be on control or motor side. Cleared after fault recovered. |
| E202 | Indoor blower motor mis-match - Indoor motor horsepower does not match unit capacity. | Incorrect appliance capacity code selected. Check for proper configuring under: Unit Size Codes for Furnace/Air Handler on configuration guide or in installation instructions. Cleared after the correct match is detected following a reset. (Remove thermostat from system while applying power and reprogramming.) |
| E203 | Appliance capacity / size is NOT programmed. Invalid unit codes refer to configuration flow chart. | No appliance capacity code selected. Check for proper configuring under: Unit Size Codes for Furnace on configuration guide or in installation instructions. Critical Alert. Cleared after valid unit code is read following a reset. (Remove thermostat from system while applying power and reprogramming.) |
| E204 | Gas valve mis-wired. | Check gas valve operation and wiring. Clears when repaired. |
| E205 | Gas valve control relay contact shorted. | Check wiring on control and gas valve. If wiring is correct, replace control. |

Ignition Control 107045-XX Diagnostic Modes

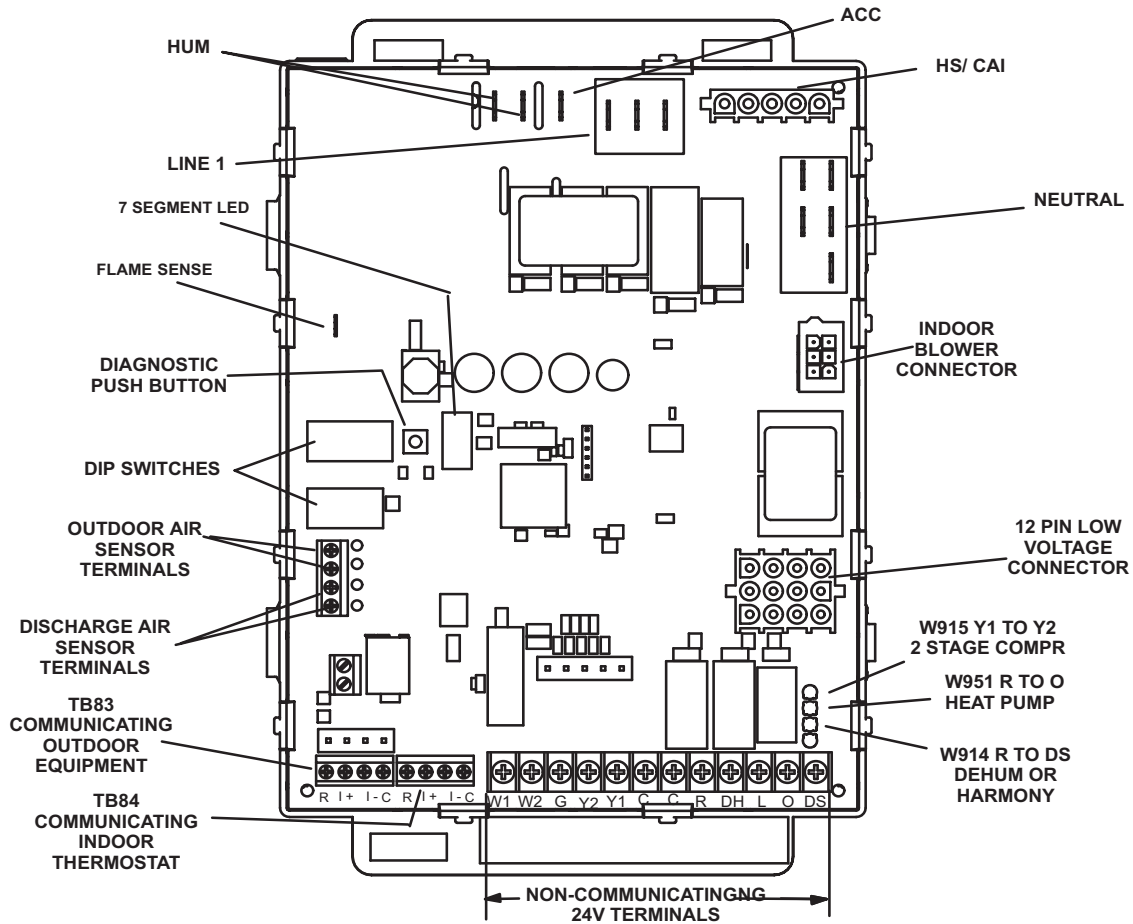
| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|---|---|
| E206 | Gas valve second-stage relay failure | Furnace will operate on 1st stage for remainder of the heating demand. Will clear after fault recovered. If unable to operate 2nd stage, replace control. |
| E207 | Hot surface ignitor sensed open. | Measure resistance of hot surface ignitor. Replace if open or not within specified range found in IOM. Resumes normal operation after fault is cleared. |
| E223 | Low pressure switch failed open. | Check pressure (inches w.c.) of low pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared |
| E224 | Low pressure switch failed closed. | Check operation of low pressure switch to see if it is stuck closed on heat call longer than 150 seconds. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E225 | High pressure switch failed open. | Check pressure (inches w.c.) of high pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E226 | High pressure switch failed closed | Check operation of high pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E227 | Low pressure switch open during trial for ignition or run mode. | Check pressure (inches w.c.) of low pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E228 | Combustion air inducer calibration failure | Unable to perform pressure switch calibration. Check vent system and pressure switch wiring connections. Resumes normal operation after fault is cleared. |
| E229 | Ignition on high fire | IFC switched to high fire ignition because low fire pressure switch did not close in allowed time. No action is needed. |
| E240 | Low flame current - Run mode. | Check micro-amperes of flame sensor using control diagnostics or field-installed mode. Clean or replace sensor. Measure voltage of neutral to ground to ensure good unit ground. Alert clears after current heat call has been completed. |
| E241 | Flame sensed out of sequence - Flame still present. | Shut off gas. Check for gas valve leak. Replace, if necessary. Alert clears when fault is recovered. |
| E250 | Limit switch circuit open. | Check for proper firing rate on furnace. Ensure there is no blockage in heater. Check for proper air flow. If limit not closed within 3 minutes, unit will go into 1-hour soft lockout. Resumes normal operation after fault is cleared. |
| E252 | Discharge air temperature too high (gas heat only). | Check temperature rise, air flow and input rate. Cleared when heat call is finished. |
| E270 | Soft lockout - Exceeded maximum number of retries. No flame current sensed. | Check for proper gas flow. Ensure that ignitor is lighting burner. Check flame sensor current. Clears when heat call finishes successfully. |

Ignition Control 107045-XX Diagnostic Modes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|---|--|
| E271 | Soft lockout - Exceeded maximum number of retries. Last retry failed due to the pressure switch opening. | Check pressure (inches w.c.) of low pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Clears when heat call finishes successfully. |
| E272 | Soft lockout - Exceeded maximum number of recycles. Last recycle due to the pressure switch opening. | Check operation of low pressure switch to see if it is stuck closed on heat call. Check pressure (inches w.c.) of high pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Clears when heat call finishes successfully. |
| E273 | Soft lockout - Exceeded maximum number of recycles. Last recycle due to flame failure. | Check micro-amperes of flame sensor using control diagnostics or field-installed mode. Clean or replace sensor. Measure voltage of neutral to ground to ensure good unit ground. Clears when heat call finishes successfully. |
| E274 | Soft lockout - Exceeded maximum number of recycles. Last recycle failed due to the limit circuit opening or limit remained open longer than 3 minutes | Shut down system. 1-hour soft lockout. Check firing rate and air flow. Check for blockage. Clears when heat call finishes successfully. |
| E275 | Soft lockout - Flame sensed out of sequence. Flame signal is gone. | Shut off gas. Check for gas valve leak. 1-hour soft lockout. Clears when flame has been proven stable. |
| E290 | Ignitor circuit fault - Failed ignitor or triggering circuitry. | Measure resistance of hot surface ignitor. Replace if open or not within specifications. 1-hour soft lockout. Clears when flame has been proven stable. |
| E292 | Indoor blower motor unable to start due to obstructed wheel, seized bearings. | Indoor blower motor unable to start (seized bearing, stuck wheel, etc.). Replace motor or wheel if assembly does not operate or meet performance standards. 1-hour soft lockout. Clears after circulator successfully starts. |
| E295 | Indoor blower motor temperature is too high. | Indoor blower motor over temperature (motor tripped on internal protector). Check motor bearings and amps. Replace if necessary. Cleared after blower demand is satisfied. |
| E310 | Discharge error temperature sensor failure. Only shown if shorted or out of range. | Compare outdoor sensor resistance to temperature/ resistance charts in installation instructions. Replace sensor if necessary. Cleared in Communicating mode: 30 seconds after fault recovered. In Non-Communicating mode: Cleared after the current heat call is completed. |
| E311 | Heat rate reduced to match indoor blower air flow. | Warning Only. Furnace blower in cutback mode due to restricted airflow. Reduce firing rate every 60 seconds to match available CFM. Check filter and duct system. To clear, replace filter if needed or repair/ add duct. 2-stage controls will reduce firing rate to 1st stage. Clears when heat call finishes successfully. |

Ignition Control 107045-XX Diagnostic Modes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|--|---|
| E312 | Restricted air flow in cooling or continuous fan mode is lower than cfm setting. | Warning Only. Restricted airflow - Indoor blower is running at a reduced CFM (Cutback Mode - The variable speed motor has pre-set speed and torque limiters to protect the motor from damage caused by operating outside of design parameters (0 to 0.8" W.C.. total external static pressure). Check filter and duct system. To clear, replace filter if needed or repair/add duct. Cleared after the current service demand is satisfied. |
| E313 | Indoor or outdoor unit capacity mismatch. Communication only. | Incorrect indoor/outdoor capacity code selected. Check for proper configuring in installation instructions. Alarm is just a warning. The system will operate, but might not meet efficiency and capacity parameters. Alarm will clear when commissioning is exited. Cleared after commissioning is complete. |
| E334 | Relay "Y1" stuck on interated control. | Replace integrated control. |
| E345 | Relay O Failure | |
| E347 | No 24 Volt output on Y1 of "integrated control" with non communicating outdoor unit. | Operation stopped. Y1 relay / Stage 1 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed. |
| E348 | No 24 Volt output on Y2 of "integrated control" with non?communicating outdoor unit. | Y2 relay / Stage 2 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed. |
| E370 | Interlock switch sensed open for 2 minutes. | Control sees the loss of 24VAC for 2 minutes. Terminate all services and wait for interlock switch to close. The alarm will clear when 24VAC is continuously sensed on DS terminal for a minimum of 10 seconds or on a power reset. |



RS-BUS LINK (TB82, future use)

I+ = DATA HIGH CONNECTION
I- = DATA LOW CONNECTION

RS-BUS OUTDOOR (TB83)

R = 24VAC
I+ = DATA HIGH CONNECTION
I- = DATA LOW CONNECTION
C = 24VAXC COMMON

RS-BUS INDOOR (TB84)

R = 24VAC
I+ = DATA HIGH CONNECTION
I- = DATA LOW CONNECTION
C = 24VAXC COMMON

1/4" QUICK CONNECT TERMINALS

HUM = UNPOWERED NORMALLY OPEN (DRY) CONTACTS
XMFR = 120 VAC OUTPUT TO TRANSFORMER
LI = 120 VAC INPUT TO CONTROL
ACC = 120 VAC OUTPUT TO OPTIONAL ACCESSORY
NEUTRALS = 120 VAC NEUTRAL

THERMOSTAT CONNECTIONS (TB1)

DS = DEHUMIDIFICATION SIGNAL
W2 = HEAT DEMAND FROM 2ND STAGE T/STAT
W1 = HEAT DEMAND FROM 1ST STAGE T/STAT
R = CLASS 2 VOLTAGE TO THERMOSTAT
G = MANUAL FAN FROM T/STAT
C = THERMOSTAT SIGNAL GROUND CONNECTED TO TRANSFORMER GRD (TR) & CHASIS GROUND (GRD)
Y1 = THERMOSTAT 1ST STAGE COOL SIGNAL
Y2 = THERMOSTAT 2ND STAGE COOL SIGNAL
O = THERMOSTAT SIGNAL TO HEAT PUMP REVERSING VALVE
DH = DEHUMIDIFICATION OUTPUT COMMUNICATING THERMOSTAT ONLY
L = USE ONLY WITH A COMMUNICATING THERMOSTAT AND A NON-COMMUNICATING OUTDOOR UNIT

FIGURE 6

Ignition Control 103130-XX Diagnostic Modes

| Display | Action (when button released) |
|---------------------------------|--|
| No change (idle)* | Remain in idle mode |
| Solid "E" | Enter diagnostic recall mode |
| Solid "D" | Discharge Air Installed |
| Solid "F" | Enter flame signal mode |
| Solid "P" (variable speed only) | Program unit capacity/size (Unit Code) |
| Two horizontal bars = | Soft disable |

* No change implies the display will continue to show whatever is currently being displayed for normal operation (blinking decimal, active error code, heat state, etc..)

Diagnostic LED

The seven-segment diagnostic LED displays operating status, target airflow, error codes and other information. The table beginning on Page 9 lists diagnostic LED codes.

Diagnostic Push Button

The diagnostic push button is located adjacent to the seven-segment diagnostic LED. This button is used to enable the Error Code Recall "E" mode and the Flame Signal "F" mode. Press the button and hold it to cycle through a menu of options. Every five seconds a new menu item will be displayed. When the button is released, the displayed item will be selected. Once all items in the menu have been displayed, the menu resumes from the beginning until the button is released.

Error Code Recall Mode

Select "E" from the menu to access the most recent 10 error codes. Select "c" from the Error Code Recall menu to clear all error codes. Button must be pressed a second time while "c" is flashing to confirm command to delete codes. Press the button until a solid "≡" is displayed to exit the Error Code Recall mode.

Flame Signal Mode

Select "F" from the menu to access the flame signal mode. The integrated control will display the flame current on 7 segment LED in micro amps (uA).

- Flame signal mode is exited after any of the following: Power is reset
- Pressing and holding push button until 3 horizontal lines "≡" are displayed
- 10 minutes after entering the flame sense mode.

Program Unit Capacity/Size Mode

After the "P" is selected (by releasing the push button) the integrated control will start flashing the "P" on display for 90 seconds. If push button is pressed again and held during that time, the control will start to display characters corresponding to different variable speed furnace models for 3 seconds each. While the wanted character-model is displayed push button has to be released. Selected option will flash display for 10 seconds and during that time push button has to be pressed and held for 5 seconds. Once control accepts new setting it will store data in non-volatile memory and reset itself. If 10 seconds expires or push button is held less than 5 seconds, control will exit field test mode and go into idle without changing programming the unit size.

Soft Disable

Soft disabling is when thermostat finds a device on the BUS that it does not recognize and the thermostat sends a the device a message to be in soft disabling mode until properly configured. Two horizontal bars will display.

Steps to follow if the damper control module is displaying the soft disable code.

- 1 - Confirm proper wiring between all devices (thermostat, damper control module, indoor and outdoor).
- 2 - Cycle power to the control that is displaying the soft disable code.
- 3 - Put the room thermostat through set up.
- 4 - Go to **setup / system devices / thermostat / edit** / then push reset.
- 5 - Go to **setup / system devices / thermostat / edit** / then push **resetAll**.

Ignition Control 103130-XX Diagnostic Codes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|---|---|
| . | Idle mode (Decimal blinks at 1 Hertz -- 0.5 second ON, 0.5 second OFF). | |
| A | Cubic feet per minute (cfm) setting for indoor blower (1 second ON, 0.5 second OFF) / cfm setting for current mode displayed. | |
| C | Cooling stage (1 second ON, 0.5 second OFF) / 1 or 2 displayed / Pause / cfm setting displayed / Pause / Repeat codes). | |
| d | Dehumidification mode (1 second ON) / 1 second OFF) / cfm setting displayed / Pause / Repeat Codes). | |
| h | Heat pump stage (1 second ON, 0.5 second OFF) / % of input rate displayed / Pause / cfm setting / Pause / Repeat codes. | |
| H | Gas Heat Stage (1 second ON, 0.5 second OFF) / 1 or 2 displayed / Pause / cfm setting displayed / Pause / Repeat codes. Blinking during ignition. | |
| dF | Defrost mode. | |
| U | Discharge Air Temperature | |
| E105 | Device communication problem - No other devices on RS BUS (Communication system). | |
| E110 | Low line voltage. | Line Voltage Low (Voltage lower than nameplate rating). Check power line voltage and correct. Alarm clears 5 seconds after fault recovered. |
| E111 | Low line voltage. | Reverse line power voltage wiring. System resumes normal operation 5 seconds after fault recovered. |
| E112 | Ground not detected | System shuts down. Provide proper earth ground. System resumes normal operation 5 seconds after fault recovered. |
| E113 | High line voltage. | Line Voltage High (Voltage higher than nameplate rating). Provide power voltage within proper range. System resumes normal operation 5 seconds after fault recovered. |
| E114 | Line voltage frequency out-of-range. | No 60 Hertz Power. Check voltage and line power frequency. Correct voltage and frequency problems. System resumes normal operation 5 seconds after fault recovered. |
| E115 | Low 24V - Control will restart if the error recovers. | 24-Volt Power Low (Range is 18 to 30 volts). Check and correct voltage. Check for additional power-robbing equipment connected to system. May require installation of larger VA transformer to be installed in furnace / air handler. Clears after fault recovered. |
| E116 | High 24V. | 24 Volt Power High (Range is 18 to 30 volts). Check and correct voltage. Check for proper line voltage (120V, 240V, etc.) to equipment. Clears when control senses proper voltage. |
| E117 | Poor ground detected (Warning only) | Provide proper grounding for unit. Check for proper earth ground to the system. Warning only will clear 30 seconds after fault recovered. |
| E120 | Unresponsive device. Communication only. | Usually caused by delay in outdoor unit responding to indoor unit polling. Recycle power. Check all wiring connections. Cleared after unresponsive device responds to any inquiry. |

Ignition Control 103130-XX Diagnostic Codes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|--|---|
| E124 | Active communicating thermostat signal missing for more than 3 minutes. | Equipment lost communication with the thermostat. Check four wiring connections, ohm wires and cycle power at the thermostat. Alert stops all services and waits for heartbeat message from thermostat (subnet controller). Cleared after valid thermostat (subnet controller) message is received. |
| E125 | Control failed self-check, internal error, failed hardware. Will restart if error recovers. Integrated control not communicating. Covers hardware errors (flame sense circuit faults, pin shorts, etc.). | Hardware problem on the control. Cycle power on control. Replace if problem prevents service and is persistent. Critical alert. Cleared 300 seconds after fault recovered. |
| E126 | Control internal communication problem. | Hardware problem on the control. Cycle power on control. Replace if problem prevents service and is persistent. Cleared 300 seconds after fault recovered. |
| E131 | Corrupted control parameters (Verify configuration of system). Communicating only. | Reconfigure the system. Replace control if heating or cooling is not available. Only applicable in the communicating mode, not in startup. Exit from Commissioning and Execute 'Set Factory Default mode Control will still operate on default parameter settings |
| E180 | Outdoor air temperature sensor failure. Only shown if shorted or out-of range. | Compare outdoor sensor resistance to temperature/ resistance charts in unit installation instructions. Replace sensor pack if necessary. At beginning of (any) configuration, furnace or air handler control will sense outdoor air and discharge air temperature sensor(s). If detected (reading in range), appropriate feature will be set as 'installed' and that could be seen in 'About' screen. In normal operation after control recognizes sensors, alarm will be sent if valid temperature reading is lost. To get rid of setting and alarm, redo configuration and make sure that temperature sensor is marked as 'not installed' in Indoor Unit 'About' screen. When Indoor unit control is replaced, thermostat will 'tell' new control if temperature sensor is in system or not. Clears 30 seconds after fault recovered. |
| E200 | Hard lockout - Rollout circuit open or previously open. | Correct cause of rollout trip, or replace flame rollout switch. Test furnace operation. Cleared after fault recovered. |
| E201 | Indoor blower communication failure - Unable to communicate with blower motor. | Indoor blower communication failure (including power outage). Lost communication with indoor blower motor. Possible causes: motor not powered, loose wiring. Problem may be on control or motor side. Cleared after fault recovered. |
| E202 | Indoor blower motor mis-match - Indoor motor horsepower does not match unit capacity. | Incorrect appliance capacity code selected. Check for proper configuring under: Unit Size Codes for Furnace/Air Handler on configuration guide or in installation instructions. Cleared after the correct match is detected following a reset. (Remove thermostat from system while applying power and reprogramming.) |
| E203 | Appliance capacity / size is NOT programmed. Invalid unit codes refer to configuration flow chart. | No appliance capacity code selected. Check for proper configuring under: Unit Size Codes for Furnace on configuration guide or in installation instructions. Critical Alert. Cleared after valid unit code is read following a reset. (Remove thermostat from system while applying power and reprogramming.) |
| E204 | Gas valve mis-wired. | Check gas valve operation and wiring. Clears when repaired. |
| E205 | Gas valve control relay contact shorted. | Check wiring on control and gas valve. If wiring is correct, replace control. |

Ignition Control 103130-XX Diagnostic Codes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|---|---|
| E206 | Gas valve second-stage relay failure | Furnace will operate on 1st stage for remainder of the heating demand. Will clear after fault recovered. If unable to operate 2nd stage, replace control. |
| E207 | Hot surface ignitor sensed open. | Measure resistance of hot surface ignitor. Replace if open or not within specified range found in IOM. Resumes normal operation after fault is cleared. |
| E223 | Low pressure switch failed open. | Check pressure (inches w.c.) of low pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared |
| E224 | Low pressure switch failed closed. | Check operation of low pressure switch to see if it is stuck closed on heat call longer than 150 seconds. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E225 | High pressure switch failed open. | Check pressure (inches w.c.) of high pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E226 | High pressure switch failed closed | Check operation of high pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E227 | Low pressure switch open during trial for ignition or run mode. | Check pressure (inches w.c.) of low pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Resumes normal operation after fault is cleared. |
| E228 | Combustion air inducer calibration failure | Unable to perform pressure switch calibration. Check vent system and pressure switch wiring connections. Resumes normal operation after fault is cleared. |
| E229 | Ignition on high fire | IFC switched to high fire ignition because low fire pressure switch did not close in allowed time. No action is needed. |
| E240 | Low flame current - Run mode. | Check micro-amperes of flame sensor using control diagnostics or field-installed mode. Clean or replace sensor. Measure voltage of neutral to ground to ensure good unit ground. Alert clears after current heat call has been completed. |
| E241 | Flame sensed out of sequence - Flame still present. | Shut off gas. Check for gas valve leak. Replace, if necessary. Alert clears when fault is recovered. |
| E250 | Limit switch circuit open. | Check for proper firing rate on furnace. Ensure there is no blockage in heater. Check for proper air flow. If limit not closed within 3 minutes, unit will go into 1-hour soft lockout. Resumes normal operation after fault is cleared. |
| E252 | Discharge air temperature too high (gas heat only). | Check temperature rise, air flow and input rate. Cleared when heat call is finished. |
| E270 | Soft lockout - Exceeded maximum number of retries. No flame current sensed. | Check for proper gas flow. Ensure that ignitor is lighting burner. Check flame sensor current. Clears when heat call finishes successfully. |

Ignition Control 103130-XX Diagnostic Codes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|---|--|
| E271 | Soft lockout - Exceeded maximum number of retries. Last retry failed due to the pressure switch opening. | Check pressure (inches w.c.) of low pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Clears when heat call finishes successfully. |
| E272 | Soft lockout - Exceeded maximum number of recycles. Last recycle due to the pressure switch opening. | Check operation of low pressure switch to see if it is stuck closed on heat call. Check pressure (inches w.c.) of high pressure switch closing on heat call. Measure operating pressure (inches w.c.). Inspect vent and combustion air inducer for correct operation and restriction. Clears when heat call finishes successfully. |
| E273 | Soft lockout - Exceeded maximum number of recycles. Last recycle due to flame failure. | Check micro-amperes of flame sensor using control diagnostics or field-installed mode. Clean or replace sensor. Measure voltage of neutral to ground to ensure good unit ground. Clears when heat call finishes successfully. |
| E274 | Soft lockout - Exceeded maximum number of recycles. Last recycle failed due to the limit circuit opening or limit remained open longer than 3 minutes | Shut down system. 1-hour soft lockout. Check firing rate and air flow. Check for blockage. Clears when heat call finishes successfully. |
| E275 | Soft lockout - Flame sensed out of sequence. Flame signal is gone. | Shut off gas. Check for gas valve leak. 1-hour soft lockout. Clears when flame has been proven stable. |
| E276 | Watchguard calibration failure. | Unable to perform pressure switch calibration. Check vent system and pressure switch wiring connections. 1-hour soft lockout. Clears when calibration has finished successfully. |
| E290 | Ignitor circuit fault - Failed ignitor or triggering circuitry. | Measure resistance of hot surface ignitor. Replace if open or not within specifications. 1-hour soft lockout. Clears when flame has been proven stable. |
| E291 | Heat air flow restricted below the minimum. | Check for dirty filter and air flow restriction. Check blower performance. 1-hour soft lockout. Cleared when heat call finishes successfully. |
| E292 | Indoor blower motor unable to start due to obstructed wheel, seized bearings. | Indoor blower motor unable to start (seized bearing, stuck wheel, etc.). Replace motor or wheel if assembly does not operate or meet performance standards. 1-hour soft lockout. Clears after circulator successfully starts. |
| E294 | Combustion air inducer over current. | Check combustion blower bearings, wiring and amps. Replace if does not operate or does not meet performance standards. Clears after inducer current is sensed to be in-range after the ignition following the soft lockout or reset. |
| E295 | Indoor blower motor temperature is too high. | Indoor blower motor over temperature (motor tripped on internal protector). Check motor bearings and amps. Replace if necessary. Cleared after blower demand is satisfied. |
| E310 | Discharge error temperature sensor failure. Only shown if shorted or out of range. | Compare outdoor sensor resistance to temperature/ resistance charts in installation instructions. Replace sensor if necessary. Cleared in Communicating mode: 30 seconds after fault recovered. In Non-Communicating mode: Cleared after the current heat call is completed. |
| E311 | Heat rate reduced to match indoor blower air flow. | Warning Only. Furnace blower in cutback mode due to restricted airflow. Reduce firing rate every 60 seconds to match available CFM. Check filter and duct system. To clear, replace filter if needed or repair/ add duct. 2-stage controls will reduce firing rate to 1st stage. Clears when heat call finishes successfully. |

Ignition Control 103130-XX Diagnostic Codes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|---|---|
| E312 | Restricted air flow in cooling or continuous fan mode is lower than cfm setting. | Warning Only. Restricted airflow - Indoor blower is running at a reduced CFM (Cutback Mode - The variable speed motor has pre-set speed and torque limiters to protect the motor from damage caused by operating outside of design parameters (0 to 0.8" W.C.. total external static pressure). Check filter and duct system. To clear, replace filter if needed or repair/add duct. Cleared after the current service demand is satisfied. |
| E313 | Indoor or outdoor unit capacity mismatch. Communication only. | Incorrect indoor/outdoor capacity code selected. Check for proper configuring in installation instructions. Alarm is just a warning. The system will operate, but might not meet efficiency and capacity parameters. Alarm will clear when commissioning is exited. Cleared after commissioning is complete. |
| E331 | Global network connection - Communication link problem. | For Future Use. |
| E334 | Relay "Y1" stuck on integrated control. | Replace integrated control. |
| E347 | No 24 Volt output on Y1 of "integrated control" with non communicating outdoor unit. | Operation stopped. Y1 relay / Stage 1 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed. |
| E348 | No 24 Volt output on Y2 of "integrated control" with non communicating outdoor unit. | Y2 relay / Stage 2 failed. (Pilot relay contacts did not close or the relay coil did not energize; no input back to IFC chip). Critical Alert. Cleared after reset and Y1 input sensed. |
| E349 | No 24 Volts between R & O on "integrated control" with non communicating outdoor unit (Dual fuel module required for heat pump application) | Configuration link R to O needs to be restored. Replace link or hardwire. Applicable in non communicating mode. Critical Alert. |
| E370 | Interlock switch sensed open for 2 minutes. | Control sees the loss of 24VAC for 2 minutes. Terminate all services and wait for interlock switch to close. The alarm will clear when 24VAC is continuously sensed on DS terminal for a minimum of 10 seconds or on a power reset. |
| E400 | LSOM - Compressor internal overload tripped. | Thermostat demand Y1 is present; but, compressor is not running. Check power to outdoor unit. Clears the error after current is sensed in both RUN and START sensors for at least 2 seconds, or after service is removed, or after power reset. |
| E401 | LSOM Compressor long run cycle or low system pressure. | Compressor ran more than 18 hours to satisfy a single thermostat demand. Critical Alert. Clears the error after 30 consecutive normal run cycles or power reset. Also monitors low pressure switch trips. |
| E402 | LSOM - Outdoor unit system pressure trip. | Discharge or suction pressure out-of-limits, or compressor overloaded. Clears the error after 4 consecutive normal compressor run cycles. |
| E403 | LSOM - Compressor short-cycling. (Running less than 4 minutes). Outdoor unit pressure trip | Compressor runs less than 3 minutes to satisfy a thermostat demand. Clears the error after 4 consecutive normal run cycles or power reset. |
| E404 | LSOM - Compressor rotor locked. Compressor short-cycling. (Running less than 4 minutes). | Compressor rotor locked up due to run capacitor short, bearings are seized, excessive liquid refrigerant, etc. Clears the error after 4 consecutive normal run cycles or after power reset. |
| E405 | LSOM - Compressor open circuit. | Compressor circuit open (due to power disconnection, open fuse, etc.) Clears the error after 1 normal compressor run cycle. |

Ignition Control 103130-XX Diagnostic Codes

| Code | Diagnostic Codes/Status of Equipment | Action Required to Clear and Recover |
|------|--|--|
| E406 | LSOM - Compressor open start circuit. | Required amount of current is not passing through Start current transformer. Clears the error after current is sensed in START sensor, or after power reset. |
| E407 | LSOM - Compressor open run circuit. | Required amount of current is not passing through Run current transformer. Clears the error after current is sensed in RUN sensor, or 1 normal compressor run cycle, or after power reset. |
| E408 | LSOM - Compressor contactor is welded. | Compressor runs continuously. Clears the error after 1 normal compressor run cycle or after power reset. |
| E409 | LSOM - Compressor low voltage. | Secondary voltage is below 18VAC. After 10 minutes, operation is discontinued. Clears the code after voltage is higher than 20 VAC for 2 seconds or after power reset. |

**Integrated Control DIP Switch Settings
Conventional Thermostat (non-communicating)**

EL297UHV units are equipped with a two-stage, variable speed integrated control. This control manages ignition timing, heating mode fan off delays and indoor blower speeds based on selections made using the control dip switches and jumpers. The control includes an internal watchdog feature which automatically resets the ignition control when it has been locked out. After one hour of continuous thermostat demand for heat, the watchdog will break and remake thermostat demand to the furnace and automatically reset the control to relight the furnace.

Note: All communicating settings are set at the communicating thermostat. See thermostat installation instruction. In a communication system all DIP switch and clippable link settings are ignored. For conventional thermostats proceed with DIP switch and clippable link settings as outlined in the following.

Heating Operation DIP Switch Settings

Switch 1 -- Thermostat Selection -- This unit may be used with either a single-stage or two-stage thermostat. The thermostat selection is made using a DIP switch which must be properly positioned for the particular application. The DIP switch is factory-positioned for use with a two-stage thermostat. If a single-stage thermostat is to be used, the DIP switch must be repositioned.

- a. Select "OFF" for two-stage heating operation controlled by a two-stage heating thermostat (factory setting);
- b. Select "ON" for two-stage heating operation controlled by a single-stage heating thermostat. This setting provides a timed delay before second-stage heat is initiated.

Switch 2 -- Second Stage Delay (Used with Single-Stage Thermostat Only) -- This switch is used to determine the second stage on delay when a single-stage thermostat is being used. The switch is factory-set in the OFF position, which provides a 7-minute delay before second-stage heat is initiated. If the switch is toggled to the ON position, it will provide a 12-minute delay before second-stage heat is initiated. This switch is only activated when the thermostat selector jumper is positioned for Single stage thermostat use.

Switches 3 and 4 -- Blower-Off Delay -- The blower-on delay of 30 seconds is not adjustable. The blower-off delay (time that the blower operates after the heating demand has been satisfied) can be adjusted by moving switches 3 and 4 on the integrated control. The unit is shipped from the factory with a blower-off delay of 90 seconds. The blower off delay affects comfort and is adjustable to satisfy individual applications. Adjust the blower off delay to achieve a supply air temperature between 90° and 110°F at the exact moment that the blower is de-energized. Longer off delay settings provide lower supply air temperatures; shorter settings provide higher supply air temperatures. TABLE 4 provides the blower off timings that will result from different switch settings.

**TABLE 4
Blower Off Delay Switch Settings**

| Blower Off Delay Seconds | Switch 3 | Switch 4 |
|--------------------------|----------|----------|
| 60 | On | Off |
| 90 (factory) | Off | Off |
| 120 | Off | On |
| 180 | On | On |

Indoor Blower Operation DIP Switch Settings

Switches 5 and 6 -- Cooling Mode Blower Speed -- The unit is shipped from the factory with the dip switches positioned for high speed (4) indoor blower motor operation during the cooling mode. TABLE 5 provides the cooling mode blower speeds that will result from different switch settings. Switches 5 and 6 set the blower cfm for second-stage cool. The integrated control automatically ramps down to 70% of the second-stage cfm for first-stage cfm. Refer to tables for corresponding cfm values. See Product Specifications for more detailed blower cfm tables.

**TABLE 5
Cooling Mode Blower Speeds**

| Speed | Switch 5 | Switch 6 |
|----------------|----------|----------|
| Low | On | On |
| Medium Low | Off | On |
| Medium High | On | Off |
| High (factory) | Off | Off |

Switches 7 and 8 -- Cooling Blower Speed Adjustment

-- The unit is shipped from the factory with the dip switches positioned for NORMAL (no) adjustment. The dip switches may be positioned to adjust the blower speed by +10% or -10% to better suit the application. TABLE 6 below provides blower speed adjustments that will result from different switch settings. Refer to tables for corresponding cfm values. See Product Specifications for more detailed blower cfm tables.

**TABLE 6
Cooling Blower Speed Adjustment**

| Adjustment | Switch 7 | Switch 8 |
|-----------------|----------|----------|
| +10% (approx) | On | Off |
| Factory Default | Off | Off |
| -10% (approx) | Off | On |

Switches 9 and 10 -- Cooling Mode Blower Speed Ramping -- Blower speed ramping may be used to enhance dehumidification performance. The switches are factory set at option A which has the greatest effect on dehumidification performance. TABLE 7 provides the cooling mode blower speed ramping options that will result from different switch settings. The cooling mode blower mode blower speed ramping options are detailed on the next page.

NOTE - In heat pump mode blower operation defaults to option c.

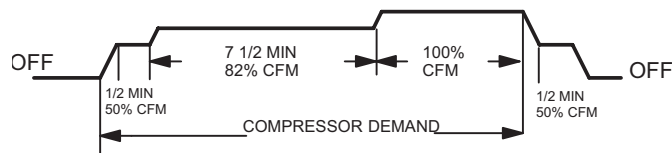
TABLE 7

Cooling Mode Blower Speed Ramping

| Ramping | Switch 9 | Switch 10 |
|-------------|----------|-----------|
| A (Factory) | Off | Off |
| B | Off | On |
| C | On | Off |
| D | On | On |

Ramping Option A (Factory Selection)

- Motor runs at 50% for 30 seconds.
- Motor then runs at 82% for approximately 7-1/2 minutes.
- If demand has not been satisfied after 7-1/2 minutes, motor runs at 100% until demand is satisfied.
- Once demand is met, motor runs at 50% for 30 seconds then ramps down to stop.



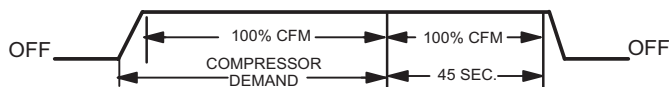
Ramping Option B

- Motor runs at 82% for approximately 7-1/2 minutes. If demand has not been satisfied after 7-1/2 minutes, motor runs at 100% until demand is satisfied.
- Once demand is met, motor ramps down to stop.



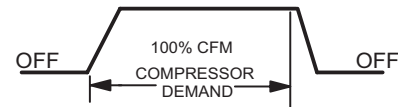
Ramping Option C

- Motor runs at 100% until demand is satisfied.
- Once demand is met, motor runs at 100% for 45 seconds then ramps down to stop.



Ramping Option D

- Motor runs at 100% until demand is satisfied.
- Once demand is met, motor ramps down to stop.



Switches 11, 12 and 13 -- Heating Mode Blower Speed

The switches are factory set to the OFF position which provides factory default heat speed. Refer to TABLE 8 for switches 11, 12 and 13 that provided the corresponding increases or decrease to both high and low heat demand.

TABLE 8

Heating Mode Blower Speeds

| Heat Speed | Switch 11 | Switch 12 | Switch 13 |
|-----------------|-----------|-----------|-----------|
| Increase 24% | On | On | On |
| Increase 18% | On | On | Off |
| Increase 12% | On | Off | On |
| Increase 6% | On | Off | Off |
| Factory Default | Off | Off | Off |
| Decrease 6% | Off | Off | On |
| Decrease 12% | Off | On | Off |
| Decrease 18% | Off | On | On |

Switches 14 and 15 -- Continuous Blower Speed --

TABLE 9 provides continuous blower speed adjustments that will result from different switch settings.

TABLE 9

Continuous Blower Speed

| Continuous Blower Speed | Switch 14 | Switch 15 |
|---|-----------|-----------|
| 28% of High Cool Speed | Off | On |
| 38% of High Cool Speed (Factory Setting) | Off | Off |

Switch 16 - Not Used

On Board Links

Note: In communicating systems with a conventional outdoor unit (non-communicating), the on-board clippable links must be set to properly configure the system.

On-Board Link W914 Dehum or Harmony (R to DS)

On-Board Link W914 Dehum or Harmony (R to DS) On-board link W914, is a clippable connection between terminals R and DS on the integrated control. W914 must be cut when the furnace is installed with either the ZSV variable zoning system control or a thermostat which features humidity control. If the link is left intact the PMW signal from the ZSV control will be blocked and also lead to control damage

Refer to TABLE 10 for operation sequence in applications including EL297UHV, a thermostat which features humidity control and a single-speed outdoor unit. TABLE 11 gives the operation sequence in applications with a two-speed outdoor unit.

On-Board Link W951 Heat Pump (R to O)

On-board link W951 is a clippable connection between terminals R and O on the integrated control. W951 must be cut when the furnace is installed in applications which include a heat pump unit and a thermostat which features dual fuel use. If the link is left intact, terminal "O" will remain energized eliminating the HEAT MODE in the heat pump.

On-Board Link W915 2 Stage Compr (Y1 to Y2)

On-board link W915 is a clippable connection between terminals Y1 and Y2 on the integrated control. W915 must be cut if two-stage cooling will be used. If the Y1 to Y2 link is not cut the outdoor unit will operate in second-stage cooling only.

**TABLE 10
OPERATING SEQUENCE**

Non-Communicating Thermostat with Humidity Control Feature and Single-Speed Outdoor Unit

| OPERATING SEQUENCE | | SYSTEM DEMAND | | | | SYSTEM RESPONSE | | | | |
|--|------|-------------------|----|----|----|-------------------|--------|------------|-------------------|--|
| System Condition | Step | Thermostat Demand | | | | Relative Humidity | | Compressor | Blower CFM (cool) | Comments |
| | | Y1 | O | G | W1 | Status | D | | | |
| <i>NO CALL FOR DEHUMIDIFICATION</i> | | | | | | | | | | |
| Normal Operation | 1 | On | On | On | | Acceptable | 24 VAC | High | 100% | Compressor and indoor blower follow thermostat demand |
| <i>BASIC MODE (only active on a Y1 thermostat demand)</i> | | | | | | | | | | |
| Normal Operation | 1 | On | On | On | | Acceptable | 24 VAC | High | 100% | CS7500 thermostat energizes Y1 and de-energizes D on a call for de-humidification |
| Dehumidification call | 2 | On | On | On | | Demand | 0 VAC | High | 70% | |
| <i>PRECISION MODE (operates independent of a Y1 demand)</i> | | | | | | | | | | |
| Normal Operation | 1 | On | On | On | | Acceptable | 24 VAC | High | 100% | Dehumidification mode begins when humidity is greater than set point |
| Dehumidification Call | 2 | On | On | On | | Demand | 0 VAC | High | 70% | |
| Dehumidification Call Only | 1 | On | On | On | | Demand | 0 VAC | High | 70% | CS7500 thermostat will try to maintain room humidity setpoint by allowing the room space to maintain a cooler room thermostat setpoint** |
| Jumpers at indoor unit with a single stage outdoor unit. With Condensing unit - Cut W914 (R to DS) on SureLight® control With Heat Pump - Cut W914 (R to DS) & W951 (R to O) on SureLight® control | | | | | | | | | | |
| CS7000 thermostat to use for this application - Y2081 4 heat / 2 cool | | | | | | | | | | |
| *Dehumidification blower speed is 70% of COOL speed for all units . | | | | | | | | | | |
| **In Precision mode, CS7000 thermostat will maintain room temperature up to 2 °F (1.2°C) cooler than room setting. | | | | | | | | | | |

**TABLE 11
OPERATING SEQUENCE**

Non-Communicating Thermostat with Humidity Control Feature and Two-Speed Outdoor Unit

| OPERATING SEQUENCE | | SYSTEM DEMAND | | | | | | SYSTEM RESPONSE | | | | |
|---|---|-------------------|----|----|----|----|----|-------------------|--------|------------|-------------------|---|
| System Condition | Step | Thermostat Demand | | | | | | Relative Humidity | | Compressor | Blower CFM (cool) | Comments |
| | | Y1 | Y2 | O | G | W1 | W2 | Status | D | | | |
| NO CALL FOR DEHUMIDIFICATION | | | | | | | | | | | | |
| Normal Operation Y1 | 1 | On | | On | On | | | Acceptable | 24 VAC | Low | 70% | Compressor and indoor blower follow thermostat demand |
| Normal Operation Y2 | 2 | On | On | On | On | | | Acceptable | 24 VAC | High | 100% | |
| ROOM THERMOSTAT CALLS FOR FIRST STAGE COOLING | | | | | | | | | | | | |
| BASIC MODE (only active on a Y1 thermostat demand) | | | | | | | | | | | | |
| Normal Operation | 1 | On | | On | On | | | Acceptable | 24 VAC | Low | 70% | CS7500 thermostat energizes Y1 and de-energizes D on a call for de-humidification |
| Dehumidification call | 2 | On | On | On | On | | | Demand | 0 VAC | High | 70% | |
| PRECISION MODE (operates independent of a Y1 demand) | | | | | | | | | | | | |
| Normal Operation | 1 | On | | On | On | | | Acceptable | 24 VAC | Low | 70% | Dehumidification mode begins when humidity is greater than set point |
| Dehumidification Call | 2 | On | On | On | On | | | Demand | 0 VAC | High | 70% | |
| Dehumidification Call Only | 1 | On | On | On | On | | | Demand | 0 VAC | High | 70% | CS 7500 thermostat will try to maintain room humidity setpoint by allowing the room space to maintain a cooler room thermostat setpoint** |
| ROOM THERMOSTAT CALLS FOR FIRST AND SECOND STAGE COOLING | | | | | | | | | | | | |
| BASIC MODE (only active on a Y1 thermostat demand) | | | | | | | | | | | | |
| Normal Operation | 1 | On | On | On | On | | | Acceptable | 24 VAC | High | 100% | CS7500 thermostat energizes Y2 and de-energizes D on a call for de-humidification |
| Dehumidification Call | 2 | On | On | On | On | | | Demand | 0 VAC | High | 70% | |
| PRECISION MODE (operates independent of a Y1 thermostat demand) | | | | | | | | | | | | |
| Normal Operation | 1 | On | | On | On | | | Acceptable | 24 VAC | Low | 70% | Dehumidification mode begins when humidity is greater than set point |
| Dehumidification Call | 2 | On | On | On | On | | | Demand | 0 VAC | High | 70% | |
| Dehumidification Call ONLY | 1 | On | On | On | On | | | Demand | 0 VAC | High | 70% | CS7500 thermostat will try to maintain room humidity setpoint by allowing the room space to maintain a cooler room thermostat setpoint*** |
| | Jumpers at indoor unit with a two stage outdoor unit Cut factory jumper from Y1 to Y2 or cut W915 (Y1 to Y2) With Condensing unit - Cut W914 (R to DS) on SureLight® control With Heat Pump - Cut W914 (R to DS) & W951 (R to O) on SureLight® control | | | | | | | | | | | |
| <i>Dave Lennox CS7000 thermostat to use for this application - Y2081 4 heat / 2 cool</i> | | | | | | | | | | | | |
| <i>*Normal operation first stage cooling blower speed is 70% COOL speed.</i> | | | | | | | | | | | | |
| <i>**Dehumidification blower speed is, reduced to 70% of COOL.</i> | | | | | | | | | | | | |
| <i>***In Precision mode, CS 7000 thermostat will maintain room temperature up to 2 °F (1.2°C) cooler than room setting.</i> | | | | | | | | | | | | |

B- Indoor Blower Motor

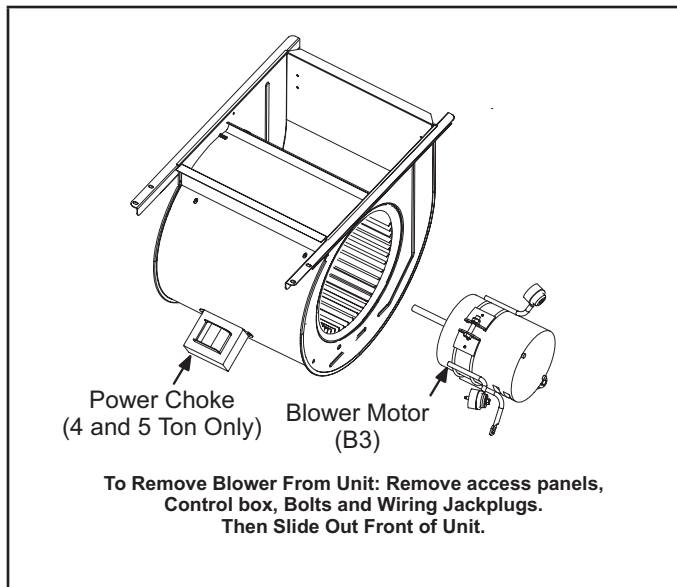


FIGURE 7

Blower Drive

Some EL297UHV units will be equipped with a blower drive shown in FIGURE 8 with LED codes for operation in TABLE 12. The blower drive is not repairable. If it fails replace the drive.

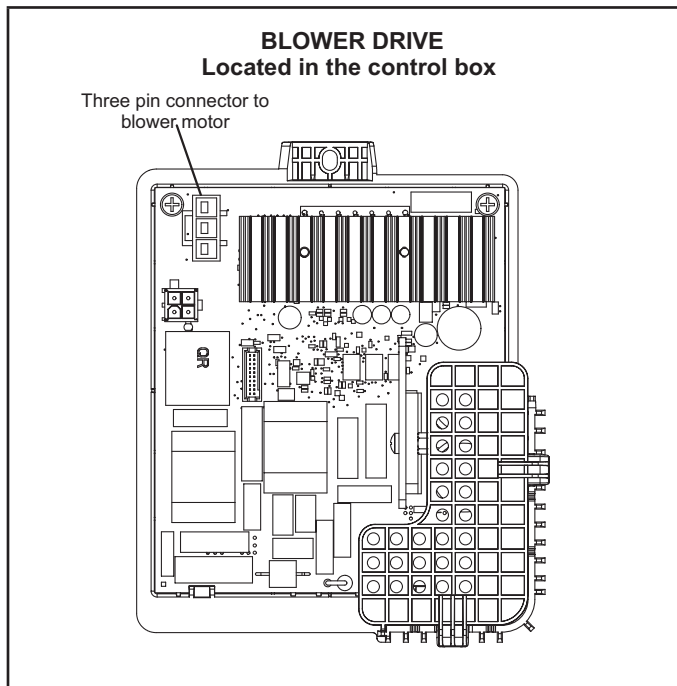


FIGURE 8

! IMPORTANT
Earlier ECM motors used on other Lennox furnace models are not interchangeable with motors used on the EL297UH furnace line.

TABLE 12

| Led* | Meaning |
|-------------------------------|---|
| 1 short blink | Normal heartbeat |
| 2 short blinks | Drive fault replace drive |
| 3 short blinks | |
| 4 short blinks | |
| 5 short blinks | Temporary fault (see troubleshooting page 52) |
| 1 long blink + 1 short blink | |
| 1 long blink + 2 short blinks | |
| 1 long blink + 3 short blinks | |

* Do not touch or remove drive for replacement until all blinking lights are off. Blinking light(s) indicates drive still has power.

! WARNING
During blower operation, the ECM motor emits energy that may interfere with pacemaker operation. Interference is reduced by both the sheet metal cabinet and distance.

The motor communicates with the integrated control via a 2-way serial connection. The motor receives all necessary functional parameters from the integrated control and does not rely on a factory program like traditional variable speed motors. EL297UHV units use a three-phase, electronically controlled D.C. brushless motor (controller converts single phase a.c. to three phase D.C.), with a permanent-magnet type rotor (FIGURE 9). Because this motor has a permanent magnet rotor it does not need brushes like conventional D.C. motors.

The stator windings are split into three poles which are electrically connected to the controller. This arrangement allows motor windings to turn on and off in sequence by the controller.

A solid-state controller is permanently attached to the motor. The controller is primarily an A.C. to D.C. converter. Converted D.C. power is used to drive the motor. The controller contains a microprocessor which monitors varying conditions inside the motor (such as motor workload).

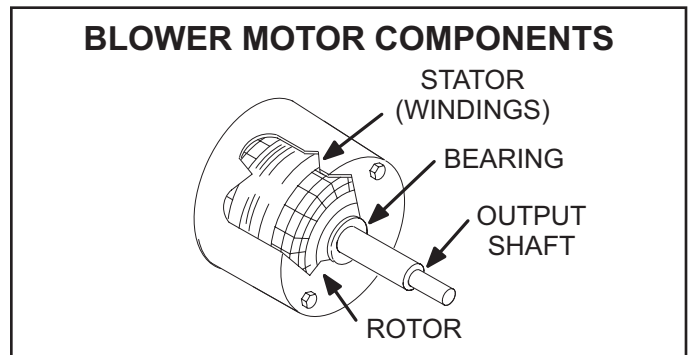


FIGURE 9

The controller uses sensing devices to sense what position the rotor is in at any given time. By sensing the position of the rotor and then switching the motor windings on and off in sequence, the rotor shaft turns the blower.

All EL297UHV blower motors use single phase power. An external run capacitor is not used. The motor uses permanently lubricated ball-type bearings.

Internal Operation

The motor is controlled via serial communication between the integrated control on the furnace and the controller attached to the motor shell. The messages sent back and forth between the two controls serve to communicate rotational direction, demand, motor size, current draw, torque, and rpm, among other variables.

Motor rpm is continually adjusted internally to maintain constant static pressure against the blower wheel. The controller monitors the static work load on the motor and motor ampdraw to determine the amount of rpm adjustment. Blower rpm may be adjusted any amount in order to maintain a constant cfm as shown in Blower Ratings Tables. The cfm remains relatively stable over a broad range of static pressure. Since the blower constantly adjusts rpm to maintain a specified cfm, motor rpm is not rated. Hence, the terms “cool speed”, “heat speed ” or “speed tap” in this manual, on the unit wiring diagram and on blower B3, refer to blower cfm regardless of motor rpm.

Initial Power Up

When line voltage is applied to B3, there will be a large inrush of power lasting less than 1/4 second. This inrush charges a bank of DC filter capacitors inside the controller. If the disconnect switch is bounced when the disconnect is closed, the disconnect contacts may become welded. Try not to bounce the disconnect switch when applying power to the unit.

Motor Start-Up

When B3 begins start-up, the motor gently vibrates back and forth for a moment. This is normal. During this time the electronic controller is determining the exact position of the rotor.

Once the motor begins turning, the controller slowly eases the motor up to speed (this is called “soft-start”). The motor may take as long as 10-15 seconds to reach full speed. If the motor does not reach 200 rpm within 13 seconds, the motor shuts down. Then the motor will immediately attempt a restart. The shutdown feature provides protection in case of a frozen bearing or blocked blower wheel. The motor may attempt to start eight times. If the motor does not start after the eighth try, the controller locks out. Reset controller by momentarily turning off power to unit.

The DC filter capacitors inside the controller are connected electrically to the motor supply wires. The capacitors take approximately 5 minutes to discharge when the disconnect is opened. For this reason it is necessary to wait at least 5 minutes after turning off power to the unit before attempting to service motor.



Power Choke (L13)

A choke coil is used on EL297UHV 4 and 5 ton units equipped with 1 hp motors. The choke is located on the blower housing and is used to suppress transient current spikes.

Troubleshooting Motor Operation

To verify motor operation see steps below and FIGURE 10 and FIGURE 11.

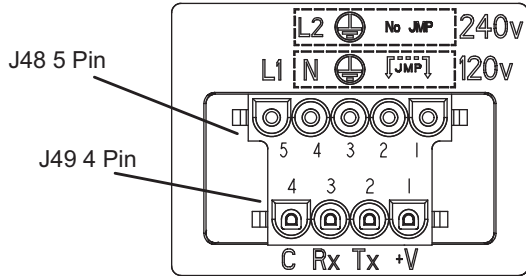
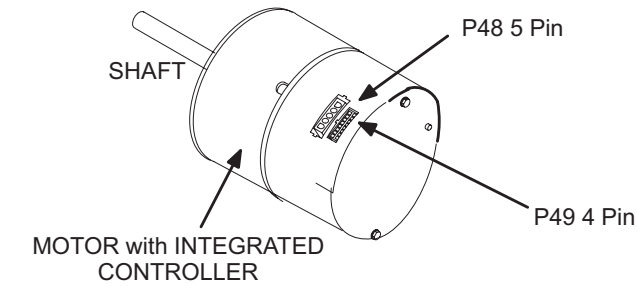
- 1 - Remove J48 (5 pin power plug) from P48 on the motor.
- 2 - With the power on at the furnace and door switch depressed, use a test meter to verify 120V between pins 4 and 5 on J48.
- 3 - Reconnect J48 to P48 on the motor.
- 4 - Remove J49 (4 pin low voltage connector) from P49 on the motor.
- 5 - Using test jumpers, apply 24V to pins 3 and 4 on P49 on the motor.

Note: Do not apply 24V to pins 2 and 4 on P49. Doing so will cause permanent damage to the motor.

- 6 - Motor should run at 75%.
- 7 - Test is complete. Remove jumpers and reconnect plugs.

Another option is to use the TECMate PRO motor tester with the 16 to 4 pin adaptor. The use of the TECMate PRO isolates the motor from the integrated control. Follow the instructions provided with the kit. If the motor runs do not replace.

BLOWER B3 HARNESS CONNECTORS



| J49 4 Pin Control Connector | |
|-----------------------------|--------------------|
| PIN | DESCRIPTION |
| 1 | 12V INPUT |
| 2 | SERIAL DATA OUTPUT |
| 3 | SERIAL DATA INPUT |
| 4 | COMMON |

| J48 5 Pin Line Voltage Connector | |
|----------------------------------|--|
| PIN | DESCRIPTION |
| 1 | JUMPER PIN 1 TO PIN 2 FOR 120VAC LINE INPUT ONLY *** |
| 2 | 120VAC LINE INPUT ONLY *** |
| 3 | CHASSIS GROUND |
| 4 | AC LINE |
| 5 | AC LINE |

FIGURE 10

BLOWER B3 HARNESS CONNECTORS

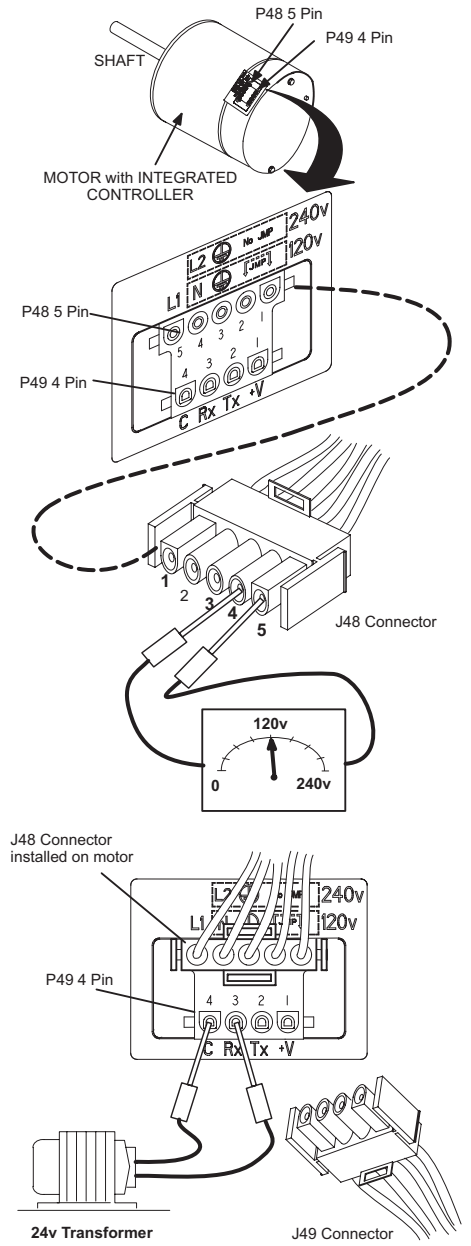


FIGURE 11

Troubleshooting Motor Windings

Ensure that motor windings are not damaged by performing the following tests:

NOTE - If your ohm meter is not an auto-ranging type, set it to the highest ohm scale (100k ohms or greater) before performing tests.

TABLE 13
Ohm Meter Range

| Scale | Measurement Range | |
|-------|---|-------------|
| | in words | ohms |
| 2M | two megohm -- two million ohms | 0-2,000,000 |
| 200K | two hundred kilohm -- two hundred thousand ohms | 0-200,000 |
| 20K | twenty kilohm -- twenty thousand ohms | 0-20,000 |
| 2K | two kilohm -- two thousand ohms | 0-2,000 |
| 200 | two hundred ohm | 0-200 |

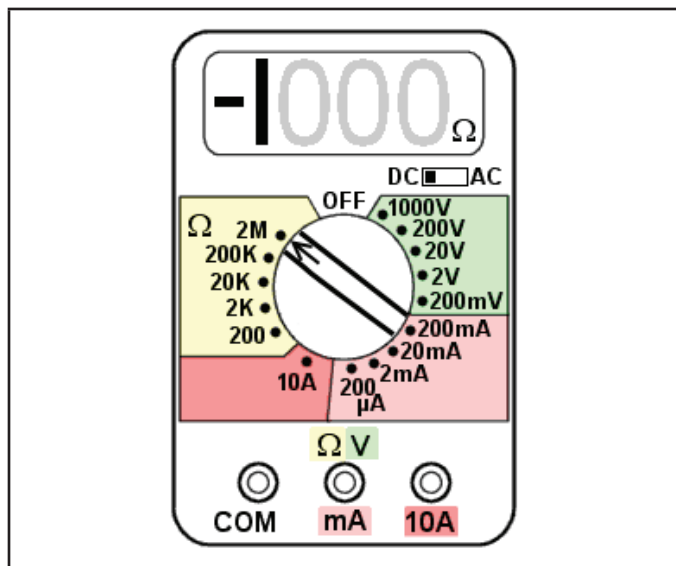


FIGURE 12
TEST A

Measure the resistance between each of the three motor leads (3-pin plug) and the unpainted part of the end shield. If the winding resistance to ground is <100k ohms, replace the motor and control module. If the resistance to ground is >100k, the motor windings are fine. Proceed to Test B.

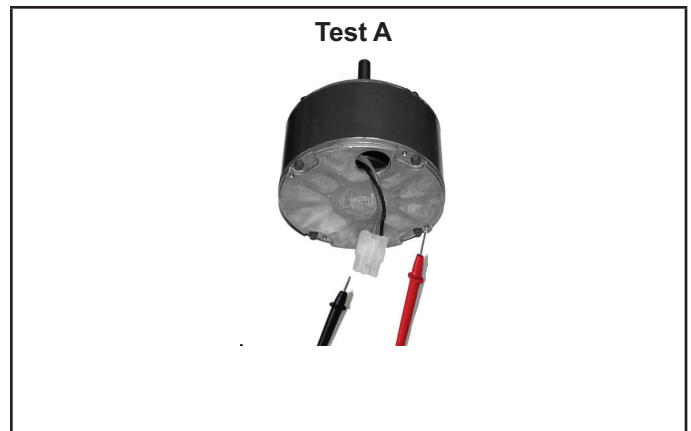


FIGURE 13
TEST B

Use an ohmmeter to measure the motor phase-to-phase resistance by checking these combinations of the the 3-pin motor plug. For the purpose of this test, start at either end of the connector as lead 1.

- 1 - The lead-to-lead resistance across any two leads should be less than 20 ohms.
- 2 - Each lead-to-lead resistance should be the same. If the measured resistance is greater than 20 ohms, replace the motor and control module.

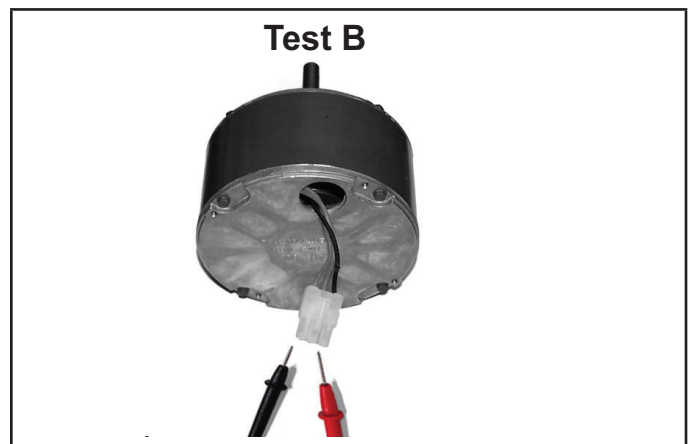


FIGURE 14

Models with the Lennox Blower Drive

Removed the three blower leads from the blower drive. see TEST A. If ohms to ground shows resistance replace motor. If the circuit is open move to test B and table below for acceptable resistance. If ohm reading is met motor has passed. If the motor passes both test A and B and the shaft spins freely by hand, replace the blower drive.

| Motor HP | Ohm Reading |
|----------|-------------|
| 1/2 | 7.6 ± .76 |
| 3/4 | 6.3 ± .63 |
| 1 | 4.7 ± .47 |

C- Heating Components

1. Ignitor

The SureLight® ignitor is made of durable silicon nitride. Longevity is enhanced by controlling voltage to the ignitor. The integrated control provides a regulated 120 volts to the ignitor for a consistent ignition and long ignitor life.

Ohm value should be 39 to 70. See FIGURE 15 for ignitor location and FIGURE 16 for ignitor check out.

NOTE - The EL297UHV(X) furnace contains electronic components that are polarity sensitive. Make sure that the furnace is wired correctly and is properly grounded.

2. Flame Sensor

A flame sensor is located on the left side of the burner support. See FIGURE 15. The sensor tip protrudes into the flame envelope of the left-most burner. The sensor can be removed for service without removing any part of the burners. During operation, flame is sensed by current passed through the flame and sensing electrode. The SureLight control allows the gas valve to remain open as long as flame signal is sensed. To check flame sense signal use the push-button found on the integrated control and go to Field Test Mode. The menu will display the flame signal. See TABLE 14 for flame signal.

TABLE 14
Flame Signal in Microamps

| Normal | Low | Drop Out |
|----------------|-------------|----------|
| 2.6 or greater | 2.5 or less | 1.1 |

3. Gas Valve

The valve (FIGURE 52) is internally redundant to assure safety shut-off. If the gas valve must be replaced, the same type valve must be used.

24VAC terminals and gas control knob are located on the valve. A wire harness connects the terminals from the gas valve to the electronic ignition control. 24V applied to the terminals energizes the valve. Inlet and outlet pressure taps are located on the valve. A regulator adjustment screw is located on the valve.

LPG change over kits are available from Lennox. Kits include burner orifices and a gas valve.

4. Flame Rollout Switches (S47)

Flame rollout switch is a high temperature limit located on top of the burner box, one on each side.- See FIGURE 15. The limit is a N.C. SPST manual-reset limit. When S47 senses rollout, the circuit breaks and the ignition control immediately stops ignition and closes the gas valve. Rollout can be caused by a blocked heat exchanger, flue or lack of combustion air. The switch is factory set to trip (open) at 210°F and cannot be adjusted. The switch can be manually reset. To manually reset a tripped switch, push the reset button located on the control.

5. Burners

All units use inshot burners. Burners are factory set and require no adjustment. Always operate the unit with the burner box front panel in place. Each burner uses an orifice that is precisely matched to the burner input. Burners can be removed as a one piece assembly for service. If burner assembly has been removed, it is critical to align center of each burner to the center of the clamshell when re-installing. See more detail in Section VI- MAINTENANCE.

6. Primary Limit Control (S10)

The primary limit (S10) is located in the heating vestibule panel. When excess heat is sensed in the heat exchanger, the limit will open. If the limit is open, the furnace control energizes the supply air blower and closes the gas valve. The limit automatically resets when unit temperature returns to normal. The switch must reset within three minutes or the SureLight control will go into Watch guard for one hour. The switch is factory set and cannot be adjusted. The switch may have a different set point for each unit model number. See Lennox Repair Parts Handbook if limit switch must be replaced.

HEATING COMPONENTS

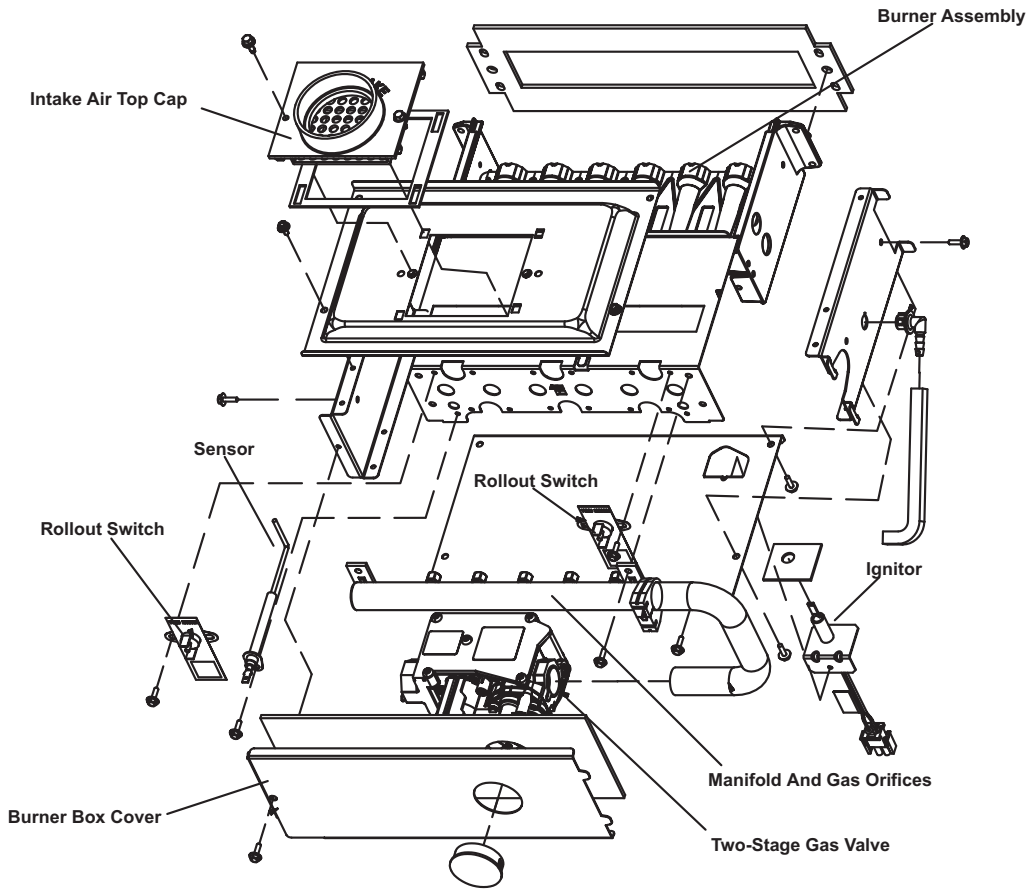


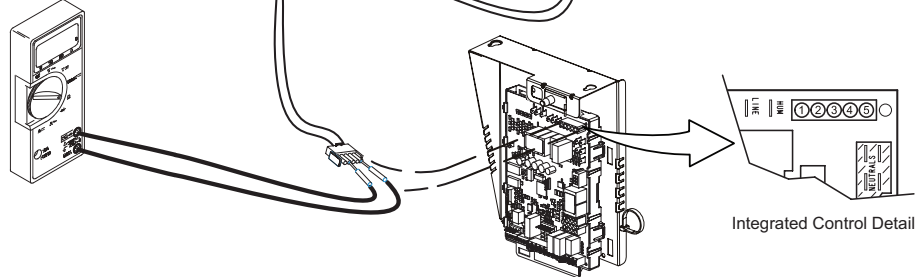
FIGURE 15

Ignitor Check

Test 1

Check ignitor circuit for correct resistance.
Remove 4-pin plug from control.
Check ohms reading across terminals 1 and 5.
Reading should be between 39 and 70 ohms. If value is correct, this is the only test needed. If the reading on the meter is not correct, (0 or infinity) then a second test is needed.

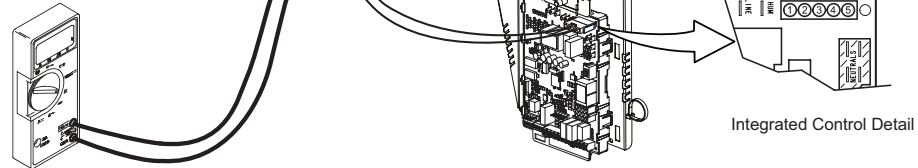
Meter
(set to ohms)



Test 2

Check ignitor for correct resistance.
Separate the 2-pin jack-plug near the manifold and check resistance of ignitor at the plug. Reading should be between 39 and 70 ohms. If the reading is correct, then the problem is with the wiring between the jack-plug and the control. If reading is not correct, the issue is the ignitor.

Meter
(set to ohms)



Test 3

Check ignitor for correct voltage
Insert meter probes into terminals 1 and 5 (use small diameter probes in order not to damage plug).
Check voltage during 20 second ignitor warm up period.
Voltage should read 120 volts \pm 10%. If voltage reads below these values, check for correct supply voltage to furnace.

Meter
(set to AC volts)

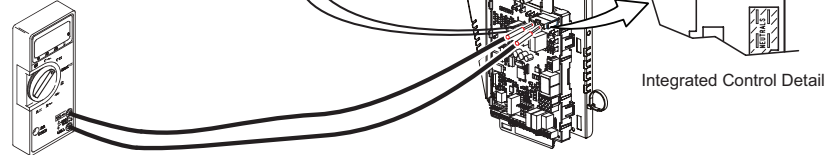


FIGURE 16

7. Combustion Air Inducer (B6) and

Cold End Header Box

All EL297UHV(X) units use a two-stage combustion air inducer to move air through the burners and heat exchanger during heating operation. The blower uses a 120VAC motor. The motor operates during all heating operation and is controlled by integrated control A92. The inducer also operates for 15 seconds before burner ignition (prepurge) and for 5 seconds after the gas valve closes (postpurge). The inducer operates on low speed during first stage heat, then switches to high speed for second stage heat.

NOTE - Each furnace model uses a unique CAI. Refer to Lennox Repair Parts listing for correct inducer for replacement.

The combustion air inducer is installed on the cold end header box. The cold end header box is a single piece made of hard plastic. The box has an internal channel where the combustion air inducer creates negative pressure at unit start up. The channel contains an orifice used to regulate flow created by the combustion air inducer.

The box has pressure taps for the combustion air inducer pressure switch hoses. The pressure switch measures the pressure differential across the combustion air inducer orifice or difference in the channel and the box. **If replacement is necessary the gaskets used to seal the box to the vestibule panel and the combustion air inducer to the box, must also be replaced.**

A proving switch connected to the combustion air inducer orifice plate is used to prove inducer operation. The combustion air inducer orifice will be different for each model. See TABLE 15 for orifice sizes. The pressure switch measures the pressure differential across the combustion air inducer orifice. When the proving switch opens, the furnace control (A92) immediately closes the gas valve to prevent burner operation.

TABLE 15

| EL297UHV Unit | C.A.I. Orifice Size |
|---------------|---------------------|
| -045 | 0.650 |
| -070 | 0.810 |
| -090 | 0.920 |
| -110 | 1.070 |
| -135 | 1.300 |

8. Combustion Air Inducer Pressure Switch (S18)

EL297UHV(X) series units are equipped with a dual combustion air pressure switch (first and second stage) located on the combustion air inducer orifice bracket. See FIGURE 17. The switch is connected to the combustion air inducer housing by means of a flexible silicone hose. It monitors negative air pressure in the combustion air inducer housing.

The switches are a single-pole single-throw pressure switch electrically connected to the integrated control. The purpose of the switch is to prevent burner operation if the combustion air inducer is not operating or if the flue becomes obstructed.

On heat demand (first or second stage) the switch senses that the combustion air inducer is operating. It closes a circuit to the integrated control when pressure inside the combustion air inducer decreases to a certain set point. Set points vary depending on unit size. See TABLE 16 0 - 4500' The pressure sensed by the switch is negative relative to atmospheric pressure. If the flue becomes obstructed during operation, the switch senses a loss of negative pressure becomes more equal with atmospheric pressure) and opens the circuit to the furnace control and gas valve. A bleed port on the switch allows relatively dry air in the vestibule to purge switch tubing, to prevent condensate build up.

NOTE - The switch is factory set and is not field adjustable. It is a safety shut-down control in the furnace and must not be by-passed for any reason. If switch is closed or bypassed, the control will not initiate ignition at start up.

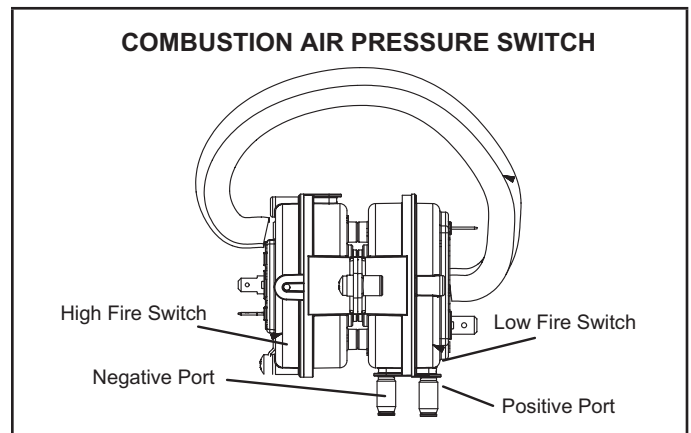


FIGURE 17

TABLE 16 0 - 4500'

| Unit | Set Point High Heat | Set Point Low Heat |
|------|---------------------|--------------------|
| -045 | 0.80 | 0.50 |
| -070 | 0.95 | 0.55 |
| -090 | 0.90 | 0.50 |
| -110 | 1.00 | 0.55 |
| -135 | 0.85 | 0.45 |

TABLE 17 4501 - 7500'

| Unit | Set Point High Heat | Set Point Low Heat |
|------|---------------------|--------------------|
| -045 | 0.74 | 0.41 |
| -070 | 0.85 | 0.50 |
| -090 | 0.75 | 0.45 |
| -110 | 0.95 | 0.55 |
| -135 | 0.80 | 0.40 |

TABLE 18 7500 - 10,000'

| Unit | Set Point High Heat | Set Point Low Heat |
|------|---------------------|--------------------|
| -045 | 0.70 | 0.40 |
| -070 | 0.75 | 0.45 |
| -090 | 0.70 | 0.40 |
| -110 | 0.90 | 0.50 |
| -135 | 0.75 | 0.35 |

Pressure Switch Check

To check pressure switch differential, refer to FIGURE 18 and use the provided fittings and tubing to follow the steps below.

- 1 - Remove thermostat demand and allow unit to cycle off.
- 2 - Remove the tubing from the negative side (red and black or red) and positive side (black) of the pressure switch (leave both connected to cold end header box).
- 3 - Take the 2" length square tubing and connect to the positive (+) side of the pressure switch. Take the 10" length square tubing and tee into the tubing from the positive side of the cold end header box and the other side of the 2" square tubing. Connect the other end of the 10" square tubing the positive (+) side of the measuring device.
- 4 - Take a second piece the 2" length square tubing and connect to the negative (-) side of the pressure switch. Take a second piece of 10" length square tubing and tee into the tubing from the negative (-) side of the cold end header box and the other side of the 2" square tubing. Connect the other end of the 10" square tubing to the negative (-) side of the measuring device.
- 5 - Operate unit and observe manometer reading. Readings will change as heat exchanger warms.
 - a. Take one reading immediately after start-up.
 - b. Take a second reading after unit has reached steady state (approximately 5 minutes). This will be the pressure differential.
- 6 - Remove thermostat demand and allow to cycle off.
- 7 - Replace original pressure switch tubing.

The pressure differential should be at least 0.15" greater than those listed in the TABLE 16 0 - 4500' TABLE 17 4501 - 7500' and TABLE 18 7500 - 10,000' Readings in table are the set points or "break points".

NOTE - Pressure differential values (set point) in table are the "break", or "open" specifications. "Make", or "close" pressure differentials are 0.15" greater than the set points listed in table.

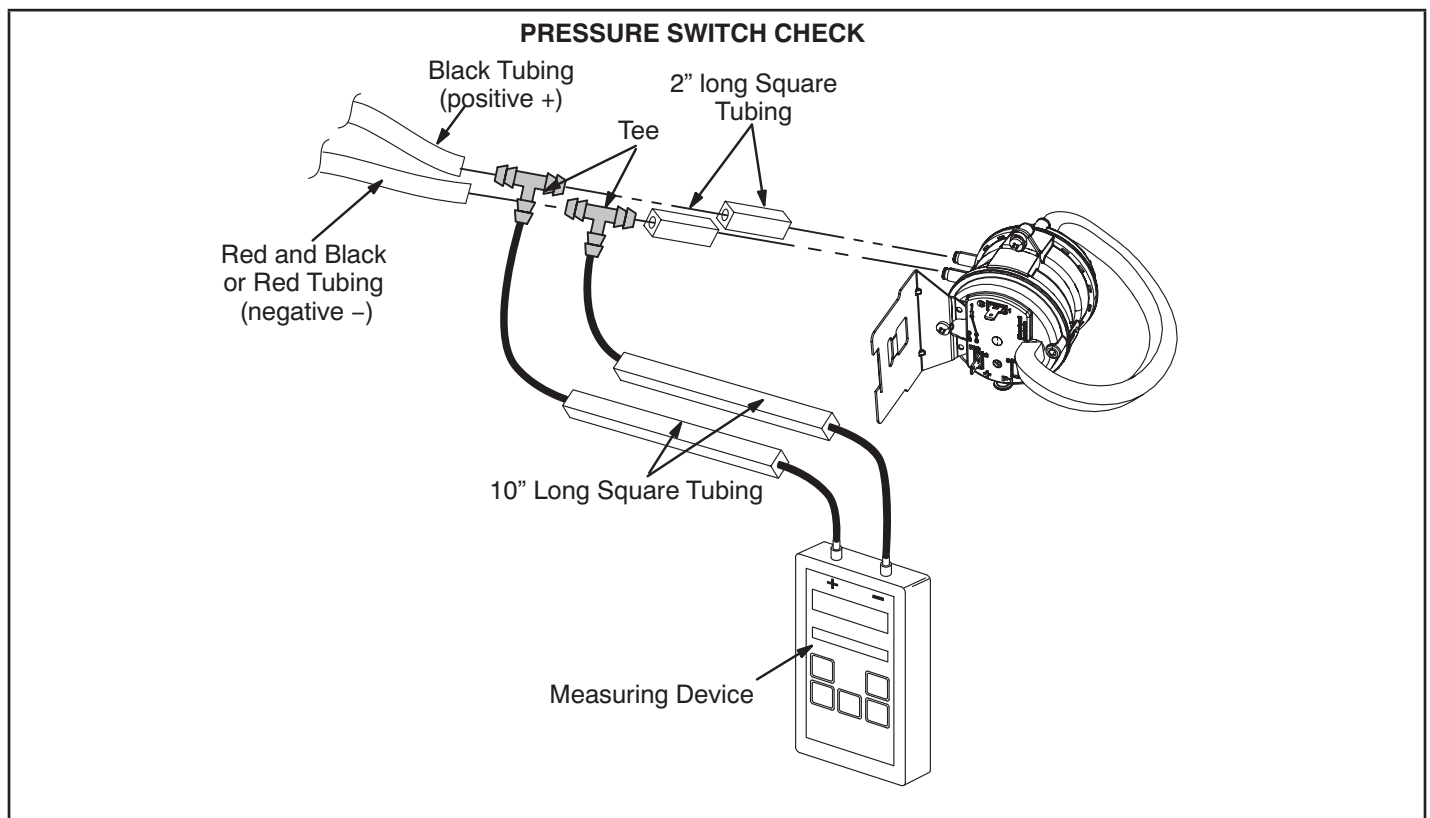


FIGURE 18

II-PLACEMENT AND INSTALLATION

All pipe, fittings, primer and solvent cement must conform with American National Standard Institute and the American Society for Testing and Materials (ANSI/ASTM) standards. The solvent shall be free flowing and contain no lumps, undissolved particles or any foreign matter that adversely affects the joint strength or chemical resistance of the cement. The cement shall show no gelation, stratification, or separation that cannot be removed by stirring. Refer to TABLE 19 below for approved piping and fittings.

**TABLE 19
PIPING AND FITTINGS SPECIFICATIONS**

| | |
|--|---------------------------|
| Schedule 40 PVC (Pipe) | D1785 |
| Schedule 40 PVC (Cellular Core Pipe)* | F891 |
| Schedule 40 PVC (Fittings) | D2466 |
| Schedule 40 CPVC (Pipe) | F441 |
| Schedule 40 CPVC (Fittings) | F438 |
| SDR-21 PVC or SDR-26 PVC (Pipe) | D2241 |
| SDR-21 CPVC or SDR-26 CPVC (Pipe) | F442 |
| Schedule 40 ABS Cellular Core DWV (Pipe)* | F628 |
| Schedule 40 ABS (Pipe) | D1527 |
| Schedule 40 ABS (Fittings) | D2468 |
| ABS-DWV (Drain Waste & Vent) (Pipe & Fittings) | D2661 |
| PVC-DWV (Drain Waste & Vent) Pipe & Fittings) | D2665 |
| PRIMER & SOLVENT CEMENT | ASTM SPECIFICATION |
| PVC & CPVC Primer | F656 |
| PVC Solvent Cement | D2564 |
| CPVC Solvent Cement | F493 |
| ABS Solvent Cement | D2235 |
| PVC/CPVC/ABS All Purpose Cement For Fittings & Pipe of the same material | D2564, D2235, F493 |
| ABS to PVC or CPVC Transition Solvent Cement | D3138 |
| CANADA PIPE & FITTING & SOLVENT CEMENT | MARKING |
| PVC & CPVC Pipe and Fittings | ULCS636 |
| PVC & CPVC Solvent Cement | |
| ABS to PVC or CPVC Transition Cement | |
| POLYPROPYLENE VENTING SYSTEM | |
| PolyPro® by Duravent | UL1738 |
| InnoFlue® by Centrotherm | |
| UL 1738 CERTIFIED GAS VENTING SYSTEM | |
| IPEX System1738 Schedule 40 PVC Pipes and Fittings | UL1738 |
| IPEX System1738 PVC FGV Cement & Primer | |

* Not approved as of 12-1-2022

CAUTION

Solvent cements for plastic pipe are flammable liquids and should be kept away from all sources of ignition. Do not use excessive amounts of solvent cement when making joints. Good ventilation should be maintained to reduce fire hazard and to minimize breathing of solvent vapors. Avoid contact of cement with skin and eyes.

IMPORTANT

EL297UHV exhaust and intake connections are made of PVC. Use PVC primer and solvent cement when using PVC vent pipe. When using ABS vent pipe, use transitional solvent cement to make connections to the PVC fittings in the unit.

Use PVC primer and solvent cement or ABS solvent cement meeting ASTM specifications, refer to TABLE 19. As an alternate, use all purpose cement, to bond ABS, PVC, or CPVC pipe when using fittings and pipe made of the same materials. Use transition solvent cement when bonding ABS to either PVC or CPVC.

Low temperature solvent cement is recommended during cooler weather. Metal or plastic strapping may be used for vent pipe hangers. Uniformly apply a liberal coat of PVC primer for PVC or use a clean dry cloth for ABS to clean inside socket surface of fitting and male end of pipe to depth of fitting socket.

Canadian Applications Only - Pipe, fittings, primer and solvent cement used to vent (exhaust) this appliance must be certified to ULC S636 and supplied by a single manufacturer as part of an approved vent (exhaust) system. In addition, the first three feet of vent pipe from the furnace flue collar must be accessible for inspection.

**TABLE 20
OUTDOOR TERMINATION USAGE***

| Input Size | Vent Pipe Dia. in. | STANDARD | | | CONCENTRIC | | | |
|------------|-----------------------|--------------------------|---------------------------|---------------------------|---------------------|---------------------------|---------------------------|---------------------------|
| | | Flush Mount Kit | Wall Kit | | Field Fabricated | 1-1.2 inch | 2 inch | 3 inch |
| | | | 2 inch | 3 inch | | 71M80 (US) 444W92 (CA) | 69M29 (US) 444W92 (CA) | 60L46 (US) 444W93 (CA) |
| | | 51W11 (US) 51W12 (CA) | 22G44 (US) 430G28 (CA) | 44J40 (US) 481J20 (CA) | | | | |
| 045 | ⁶ 1-1/2 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| | 2 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| | 2-1/2 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| | 3 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| 070 | ⁶ 1-1/2 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| | 2 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| | 2-1/2 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| | 3 | ³ YES | YES | ¹ YES | ⁵ YES | ² YES | | |
| 090 | 2 | ³ YES | | YES | ⁵ YES | | YES YES | |
| | 2-1/2 | ³ YES | | YES | ⁵ YES | | YES YES | |
| | 3 | ³ YES | | YES | ⁵ YES | | YES YES | |
| 110 | 2 | YES | | YES | ⁵ YES | | YES YES | |
| | 2-1/2 | YES | | YES | ⁵ YES | | YES YES | |
| | 3 | YES | | YES | ⁵ YES | | YES YES | |
| 135 | 3 | YES | | YES | ⁵ YES | | YES | |

NOTE - Standard Terminations do not include any vent pipe or elbows external to the structure. Any vent pipe or elbows external to the structure must be included in total vent length calculations. See vent length tables.

* Kits must be properly installed according to kit instructions.

1 Requires field-provided outdoor 1-1/2" exhaust accelerator.

2 Concentric kits 71M80 and 44W92 include 1-1/2" outdoor accelerator, when used with 045 and 070 input models. 1-1/2 in. pipe must be transitioned to 2 in. when used with a concentric kit.

3 Flush mount kits 51W11 and 51W12 includes 1-1/2 in. outdoor exhaust accelerator, required when used with 045, 070 and 090 input models. 1-1/2 in. pipe must be transitioned to 2 in. pipe when used with the flushmount kit.

4 Termination kits 30G28, 44W92, 44W93 and 81J20 are certified to ULC S636 for use in Canada only.

5 See table 8 for vent accelerator requirements.

6 2 in. pipe to 1-1/2 in. reducer required and must be field provided.

Joint Cementing Procedure

All cementing of joints should be done according to the specifications outlined in ASTM D 2855.

DANGER

DANGER OF EXPLOSION!

Fumes from PVC glue may ignite during system check. Allow fumes to dissipate for at least 5 minutes before placing unit into operation..

- 1 - Measure and cut vent pipe to desired length.
- 2 - Debur and chamfer end of pipe, removing any ridges or rough edges. If end is not chamfered, edge of pipe may remove cement from fitting socket and result in a leaking joint.

NOTE - Check the inside of vent pipe thoroughly for any obstruction that may alter furnace operation.

- 3 - Clean and dry surfaces to be joined.
- 4 - Test fit joint and mark depth of fitting on outside of pipe.

- 5 - Uniformly apply a liberal coat of PVC primer for PVC or use a clean dry cloth for ABS to clean inside socket surface of fitting and male end of pipe to depth of fitting socket.

NOTE - Time is critical at this stage. Do not allow primer to dry before applying cement.

- 6 - Promptly apply solvent cement to end of pipe and inside socket surface of fitting. Cement should be applied lightly but uniformly to inside of socket. Take care to keep excess cement out of socket. Apply second coat to end of pipe.

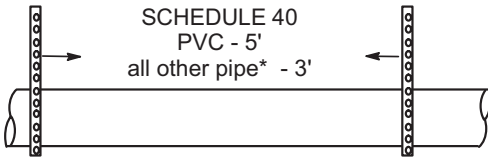
- 7 - Immediately after applying last coat of cement to pipe, and while both inside socket surface and end of pipe are wet with cement, forcefully insert end of pipe into socket until it bottoms out. Turn PVC pipe 1/4 turn during assembly (but not after pipe is fully inserted) to distribute cement evenly. DO NOT turn ABS or cellular core pipe.

NOTE - Assembly should be completed within 20 seconds after last application of cement. Hammer blows uld not be used when inserting pipe.

- 8 - After assembly, wipe excess cement from pipe at end of fitting socket. A properly made joint will show a bead around its entire perimeter. Any gaps may indicate an improper assembly due to insufficient solvent.
- 9 - Handle joints carefully until completely set.

Venting Practices

HORIZONTAL PIPING SUPPORT GUIDELINES



* See Piping and Fittings Specifications table

NOTE - Vertical support guidelines: Recommend following the guidelines in the International Plumbing code for PVC.

NOTE - Isolate piping at the point where it exits the outside wall or roof in order to prevent transmission of vibration to the structure.

Wall Thickness Guidelines

24" maximum
3/4" minimum

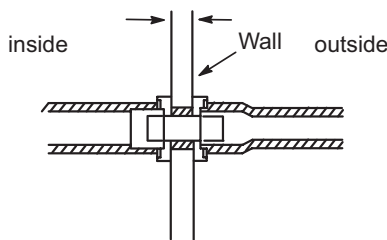


FIGURE 19

- 1 - In areas where piping penetrates joists or interior walls, hole must be large enough to allow clearance on all sides of pipe through center of hole using a hanger.
- 2 - When furnace is installed in a residence where unit is shut down for an extended period of time, such as a vacation home, make provisions for draining condensate collection trap and lines.

Removal of the Furnace from Common Vent

In the event that an existing furnace is removed from a venting system commonly run with separate gas appliances, the venting system is likely to be too large to properly vent the remaining attached appliances.

Conduct the following test while each appliance is operating and the other appliances (which are not operating) remain connected to the common venting system. If the venting system has been installed improperly, you must correct the system as indicated in the general venting requirements section.

⚠ WARNING

CARBON MONOXIDE POISONING HAZARD

Failure to follow the steps outlined below for each appliance connected to the venting system being placed into operation could result in carbon monoxide poisoning or death.

The following steps shall be followed for each appliance connected to the venting system being placed into operation, while all other appliances connected to the venting system are not in operation:

- 1 - Seal any unused openings in the common venting system.
- 2 - Inspect the venting system for proper size and horizontal pitch. Determine that there is no blockage, restriction, leakage, corrosion, or other deficiencies which could cause an unsafe condition.
- 3 - Close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliances not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
- 4 - Follow the lighting instructions. Turn on the appliance that is being inspected. Adjust the thermostat so that the appliance operates continuously.
- 5 - After the main burner has operated for 5 minutes, test for leaks of flue gases at the draft hood relief opening. Use the flame of a match or candle.
- 6 - After determining that each appliance connected to the common venting system is venting properly, (step 3 return all doors, widows, exhaust fans, fireplace dampers, and any other gas-burning appliances to their previous mode of operation.
- 7 - If a venting problem is found during any of the preceding tests, the common venting system must be modified to correct the problem.

Resize the common venting system to the minimum vent pipe size determined by using the appropriate tables in Appendix G. (These are in the current standards).

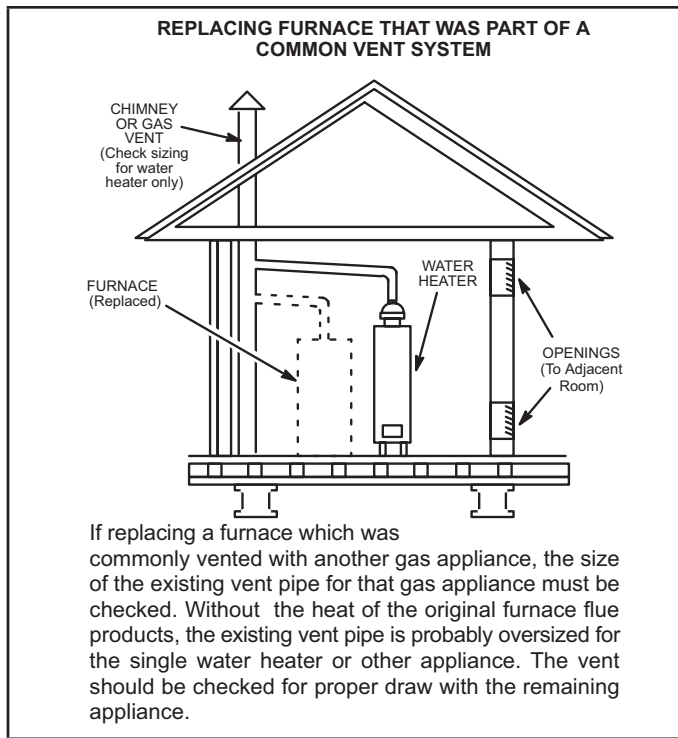


FIGURE 20

Exhaust Piping (FIGURE 21, FIGURE 23 and FIGURE 24)

Route piping to outside of structure. Continue with installation following instructions given in piping termination section.

⚠ CAUTION

Do not discharge exhaust into an existing stack or stack that also serves another gas appliance. If vertical discharge through an existing unused stack is required, insert PVC pipe inside the stack until the end is even with the top or outlet end of the metal stack.

⚠ CAUTION

The exhaust vent pipe operates under positive pressure and must be completely sealed to prevent leakage of combustion products into the living space.

Vent Piping Guidelines

NOTE - Lennox has approved the use of DuraVent® and Centrotherm manufactured vent pipe and terminations as an option to PVC. When using the PolyPro® by DuraVent or InnoFlue® by Centrotherm venting system the vent pipe requirements stated in the unit installation instruction – minimum & maximum vent lengths, termination clearances, etc. – apply and must be followed. Follow the instructions provided with PolyPro by DuraVent and InnoFlue by Centrotherm venting system for assembly or if requirements are more restrictive. The PolyPro by DuraVent and InnoFlue by Centrotherm venting system must also follow the uninsulated.

The EL297UHV can be installed as either a Non-Direct Vent or a Direct Vent gas central furnace.

NOTE - In Non-Direct Vent installations, combustion air is taken from indoors or ventilated attic or crawlspace and flue gases are discharged outdoors. In Direct Vent installations, combustion air is taken from outdoors and flue gases are discharged outdoors.

Intake and exhaust pipe sizing -- Size pipe according to TABLE 21 (minimum) and TABLE 22 (maximum). Count all elbows inside and outside the home.

Regardless of the diameter of pipe used, the standard roof and wall terminations described in section Exhaust Piping Terminations should be used. Exhaust vent termination pipe is sized to optimize the velocity of the exhaust gas as it exits the termination. Refer to TABLE 8. In some applications which permit the use of several different sizes of vent pipe, a combination vent pipe may be used. Contact Lennox' Application Department for assistance in sizing vent pipe in these applications.

NOTE - The exhaust collar on all models is sized to accommodate 2" Schedule 40 vent pipe. In horizontal applications, any transition to exhaust pipe larger than 2" must be made in vertical runs of the pipe. Therefore a 2" elbow must be added before the pipe is transitioned to any size larger than 2". This elbow must be added to the elbow count used to determine acceptable vent lengths. Contact the Application Department for more information concerning sizing of vent systems which include multiple pipe sizes.

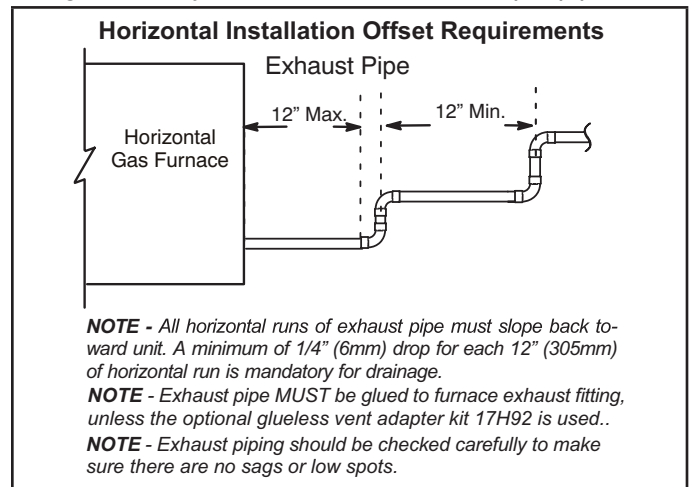


FIGURE 21

TABLE 21

MINIMUM VENT PIPE LENGTHS

| EL297UHV MODEL | MIN. VENT LENGTH* |
|-------------------------|--|
| 045, 070, 090, 110, 135 | 15 ft. or 5 ft plus 2 elbows or 10 ft plus 1 elbow |

*Any approved termination may be added to the minimum length listed. Two 45 degree elbows are the equivalent to one 90 degree elbow.

NOTE - Lennox offers a glueless vent adapter kit 17H92 as an option for exhaust exiting at the furnace top cap coupling. If the kit is not used, then the exhaust pipe **MUST** be glued to the furnace exhaust fitting.

Use the following steps to correctly size vent pipe diameter.

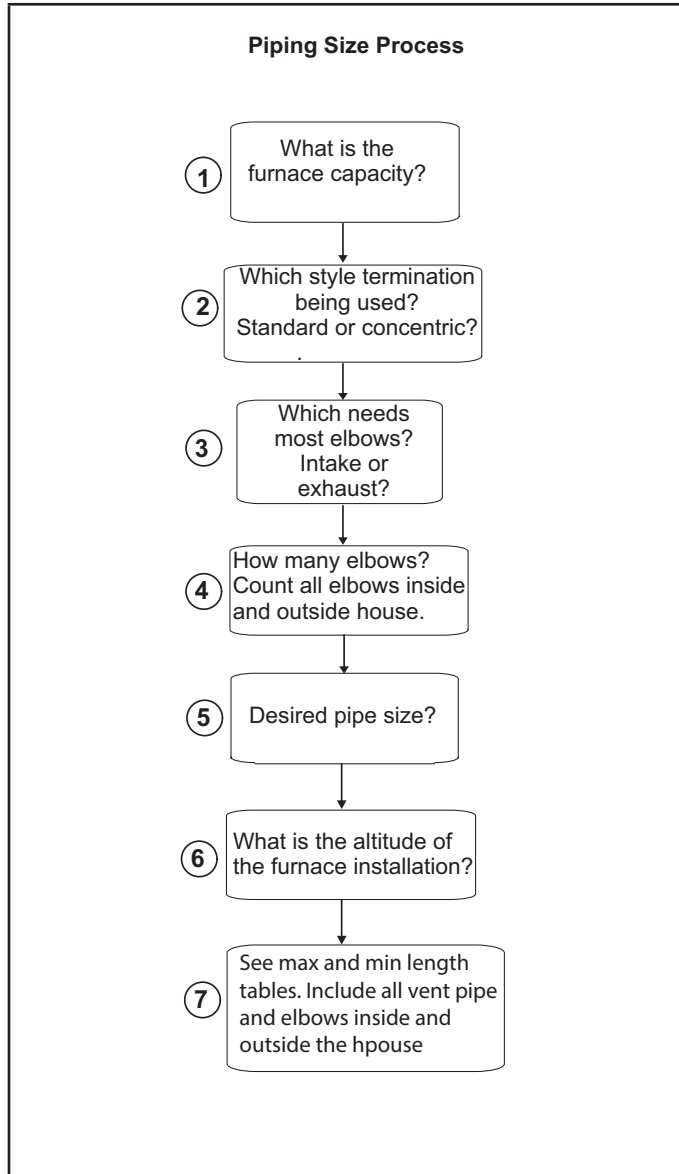


FIGURE 22

! IMPORTANT

Do not use screens or perforated metal in exhaust or intake terminations. Doing so will cause freeze-ups and may block the terminations.

TABLE 22

Maximum Allowable Intake or Exhaust Vent Length in Feet

NOTE - Size intake and exhaust pipe length separately. Values in table are for Intake OR Exhaust, not combined total. Both Intake and Exhaust must be same pipe size.

| Standard Termination at Elevation 0 - 4500 ft | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|-----|----|
| No Of 90° Elbows Used | 1-1/2" Pipe | | | | | 2" Pipe | | | | | 2-1/2" Pipe | | | | | 3" Pipe | | | | | | |
| | Model | | | | | Model | | | | | Model | | | | | Model | | | | | | |
| | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | | |
| 1 | 25 | 20 | n/a | n/a | n/a | 81 | 66 | 44 | 22 | n/a | 115 | 115 | 93 | 58 | n/a | 138 | 137 | 118 | 118 | 114 | | |
| 2 | 20 | 15 | | | | 76 | 61 | 39 | 19 | | 110 | 110 | 88 | 53 | | 133 | 132 | 113 | 113 | 109 | | |
| 3 | 15 | 10 | | | | 71 | 56 | 34 | 14 | | 105 | 105 | 83 | 48 | | 128 | 127 | 108 | 108 | 104 | | |
| 4 | 10 | n/a | | | | 66 | 51 | 29 | n/a | | 100 | 100 | 78 | 43 | | 123 | 122 | 103 | 103 | 99 | | |
| 5 | n/a | | | | | 61 | 46 | 24 | | | 95 | 95 | 73 | 38 | | 118 | 117 | 98 | 98 | 94 | | |
| 6 | | n/a | | | | 56 | 41 | 19 | 90 | | 90 | 68 | 33 | 113 | | 112 | 93 | 93 | 89 | | | |
| 7 | n/a | | | | | 51 | 36 | 14 | 85 | | 85 | 63 | 28 | 108 | | 107 | 88 | 88 | 84 | | | |
| 8 | | n/a | | | | 46 | 31 | n/a | 80 | | 80 | 58 | 23 | 103 | | 102 | 83 | 83 | 79 | | | |
| 9 | n/a | | | | | 41 | 26 | | 75 | | 75 | 53 | 18 | 98 | | 97 | 78 | 78 | 74 | | | |
| 10 | | n/a | | | | 36 | 21 | 70 | 70 | | 48 | 13 | 93 | 92 | | 73 | 73 | 69 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Standard Termination Elevation 4500 - 10,000 ft | | | | | | | | | | | | | | | | | | | | | | |
| No Of 90° Elbows Used | 1-1/2" Pipe | | | | | 2" Pipe | | | | | 2-1/2" Pipe | | | | | 3" Pipe | | | | | | |
| | Model | | | | | Model | | | | | Model | | | | | Model | | | | | | |
| | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | | |
| 1 | 25 | 20 | n/a | n/a | n/a | 81 | 66 | 44 | n/a | n/a | 115 | 115 | 93 | 58 | n/a | 138 | 137 | 118 | 118 | 114 | | |
| 2 | 20 | 15 | | | | 76 | 61 | 39 | | | 110 | 110 | 88 | 53 | | 133 | 132 | 113 | 113 | 109 | | |
| 3 | 15 | 10 | | | | 71 | 56 | 34 | | | 105 | 105 | 83 | 48 | | 128 | 127 | 108 | 108 | 104 | | |
| 4 | 10 | n/a | | | | 66 | 51 | 29 | | | n/a | n/a | 100 | 100 | | 78 | 43 | 123 | 122 | 103 | 103 | 99 |
| 5 | n/a | | | | | 61 | 46 | 24 | | | | | 95 | 96 | | 73 | 38 | 118 | 117 | 98 | 98 | 94 |
| 6 | | n/a | | | | 56 | 41 | 19 | | | 90 | 90 | 68 | 33 | | 113 | 112 | 93 | 93 | 89 | | |
| 7 | n/a | | | | | 51 | 36 | 14 | | | 85 | 85 | 63 | 28 | | 108 | 107 | 88 | 88 | 84 | | |
| 8 | | n/a | | | | 46 | 31 | n/a | | | 80 | 80 | 58 | 23 | | 103 | 102 | 83 | 83 | 79 | | |
| 9 | n/a | | | | | 41 | 26 | | | | 75 | 75 | 53 | 18 | | 98 | 97 | 78 | 78 | 74 | | |
| 10 | | n/a | | | | 36 | 21 | 70 | | | 70 | 48 | 13 | 93 | | 92 | 73 | 73 | 69 | | | |
| | | | | | | | | | | | | | | | | | | | | | | |

TABLE 22 Continued

Maximum Allowable Intake or Exhaust Vent Length in Feet

NOTE - Size intake and exhaust pipe length separately. Values in table are for Intake OR Exhaust, not combined total. Both Intake and Exhaust must be same pipe size.

| Concentric Termination at Elevation 0 - 4500 ft | | | | | | | | | | | | | | | | | | | | |
|--|--------------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|--------------------|-----|-----|-----|-----|----------------|-----|-----|-----|-----|
| No Of 90° Elbows Used | 1-1/2" Pipe | | | | | 2" Pipe | | | | | 2-1/2" Pipe | | | | | 3" Pipe | | | | |
| | Model | | | | | Model | | | | | Model | | | | | Model | | | | |
| | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 |
| 1 | 20 | 15 | | | | 73 | 58 | 42 | 22 | | 105 | 105 | 89 | 54 | | 121 | 121 | 114 | 114 | 105 |
| 2 | 15 | 10 | | | | 68 | 53 | 37 | 17 | | 100 | 100 | 84 | 49 | | 116 | 116 | 109 | 109 | 100 |
| 3 | 10 | | | | | 63 | 48 | 32 | 12 | | 95 | 95 | 79 | 44 | | 111 | 111 | 104 | 104 | 95 |
| 4 | | | | | | 58 | 43 | 27 | | | 90 | 90 | 74 | 39 | | 106 | 106 | 99 | 99 | 90 |
| 5 | | | | | | 53 | 38 | 22 | | | 85 | 85 | 69 | 34 | | 101 | 101 | 94 | 94 | 85 |
| 6 | | | n/a | n/a | n/a | 48 | 33 | 17 | | | 80 | 80 | 64 | 29 | | 96 | 96 | 89 | 89 | 80 |
| 7 | n/a | n/a | | | | 43 | 28 | 12 | n/a | | 75 | 75 | 59 | 24 | | 91 | 91 | 84 | 84 | 75 |
| 8 | | | | | | 38 | 23 | | | | 70 | 70 | 54 | 19 | | 86 | 86 | 79 | 79 | 70 |
| 9 | | | | | | 33 | 18 | n/a | | | 65 | 65 | 49 | 14 | | 81 | 81 | 74 | 74 | 65 |
| 10 | | | | | | 28 | 13 | | | | 60 | 60 | 44 | n/a | | 76 | 76 | 69 | 69 | 60 |
| Concentric Termination Elevation 4500 - 10,000 ft | | | | | | | | | | | | | | | | | | | | |
| No Of 90° Elbows Used | 1-1/2" Pipe | | | | | 2" Pipe | | | | | 2-1/2" Pipe | | | | | 3" Pipe | | | | |
| | Model | | | | | Model | | | | | Model | | | | | Model | | | | |
| | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 |
| 1 | 20 | 15 | | | | 73 | 58 | 42 | | | 105 | 105 | 89 | 54 | | 121 | 121 | 114 | 114 | 105 |
| 2 | 15 | 10 | | | | 68 | 53 | 37 | | | 100 | 100 | 84 | 49 | | 116 | 116 | 109 | 109 | 100 |
| 3 | 10 | | | | | 63 | 48 | 32 | | | 95 | 95 | 79 | 44 | | 111 | 111 | 104 | 104 | 95 |
| 4 | | | | | | 58 | 43 | 27 | | | 90 | 90 | 74 | 39 | | 106 | 106 | 99 | 99 | 90 |
| 5 | | | | | | 53 | 38 | 22 | | | 85 | 85 | 69 | 34 | | 101 | 101 | 94 | 94 | 85 |
| 6 | | | n/a | n/a | n/a | 48 | 33 | 17 | n/a | n/a | 80 | 80 | 64 | 29 | | 96 | 96 | 89 | 89 | 80 |
| 7 | n/a | n/a | | | | 43 | 28 | 12 | | | 75 | 75 | 59 | 24 | | 91 | 91 | 84 | 84 | 75 |
| 8 | | | | | | 38 | 23 | | | | 70 | 70 | 54 | 19 | | 86 | 86 | 79 | 79 | 70 |
| 9 | | | | | | 33 | 18 | n/a | | | 65 | 65 | 49 | 14 | | 81 | 81 | 74 | 74 | 65 |
| 10 | | | | | | 28 | 13 | | | | 60 | 60 | 44 | n/a | | 76 | 76 | 69 | 69 | 60 |

TABLE 23

Maximum Allowable Exhaust Vent Lengths With Furnace Installed in a Closet or Basement Using Ventilated Attic or Crawl Space For Intake Air in Feet

NOTE - Size intake and exhaust pipe length separately. Values in table are for Intake OR Exhaust, not combined total. Both Intake and Exhaust must be same pipe size.

NOTE - Additional vent pipe and elbows used to terminate the vent pipe outside the structure must be included in the total vent length calculation

| Standard Termination at Elevation 0 - 4500 ft | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|---------|-----|-----|-----|-----|----|----|
| No Of 90° Elbows Used | 1-1/2" Pipe | | | | | 2" Pipe | | | | | 2-1/2" Pipe | | | | | 3" Pipe | | | | | | |
| | Model | | | | | Model | | | | | Model | | | | | Model | | | | | | |
| | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | | |
| 1 | 20 | 15 | n/a | n/a | n/a | 71 | 56 | 34 | 14 | n/a | 100 | 100 | 78 | 43 | n/a | 118 | 117 | 98 | 98 | 94 | | |
| 2 | 15 | 10 | | | | 66 | 51 | 29 | 9 | | 95 | 95 | 73 | 38 | | 113 | 112 | 93 | 93 | 89 | | |
| 3 | 10 | 61 | | | | 46 | 24 | 4 | 90 | | 90 | 68 | 33 | 108 | | 107 | 88 | 88 | 84 | | | |
| 4 | n/a | n/a | | | | 56 | 41 | 19 | n/a | | 85 | 85 | 63 | 28 | | 103 | 102 | 83 | 83 | 79 | | |
| 5 | | | | | | 51 | 36 | 14 | | | 80 | 80 | 58 | 23 | | 98 | 97 | 78 | 78 | 74 | | |
| 6 | | | | | | 46 | 31 | 9 | | | 75 | 75 | 53 | 18 | | 93 | 92 | 73 | 73 | 69 | | |
| 7 | | | | | | 41 | 26 | 4 | | | 70 | 70 | 48 | 13 | | 88 | 87 | 68 | 68 | 64 | | |
| 8 | | | | | | 36 | 21 | n/a | | | 65 | 65 | 43 | 8 | | 83 | 82 | 63 | 63 | 59 | | |
| 9 | | | | | | 31 | 16 | | | | 60 | 60 | 38 | 3 | | 78 | 77 | 58 | 58 | 54 | | |
| 10 | 26 | 11 | | | | 55 | 55 | 33 | n/a | | 73 | 72 | 53 | 53 | | 49 | | | | | | |
| Standard Termination Elevation 4500 - 10,000 ft | | | | | | | | | | | | | | | | | | | | | | |
| No Of 90° Elbows Used | 1-1/2" Pipe | | | | | 2" Pipe | | | | | 2-1/2" Pipe | | | | | 3" Pipe | | | | | | |
| | Model | | | | | Model | | | | | Model | | | | | Model | | | | | | |
| | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | 045 | 070 | 090 | 110 | 135 | | |
| 1 | 20 | 15 | n/a | n/a | n/a | 71 | 56 | 34 | n/a | n/a | 100 | 100 | 78 | 43 | n/a | 118 | 117 | 98 | 98 | 94 | | |
| 2 | 15 | 10 | | | | 66 | 51 | 29 | | | 95 | 95 | 73 | 38 | | 113 | 112 | 93 | 93 | 89 | | |
| 3 | 10 | 61 | | | | 46 | 24 | 90 | | | 90 | 68 | 33 | 108 | | 107 | 88 | 88 | 84 | | | |
| 4 | n/a | n/a | | | | 56 | 41 | 19 | | | n/a | n/a | 85 | 85 | | 63 | 28 | 103 | 102 | 83 | 83 | 79 |
| 5 | | | | | | 51 | 36 | 14 | | | | | 80 | 80 | | 58 | 23 | 98 | 97 | 78 | 78 | 74 |
| 6 | | | | | | 46 | 31 | 9 | | | | | 75 | 75 | | 53 | 18 | 93 | 92 | 73 | 73 | 69 |
| 7 | | | | | | 41 | 26 | 4 | | | | | 70 | 70 | | 48 | 13 | 88 | 87 | 68 | 68 | 64 |
| 8 | | | | | | 36 | 21 | n/a | | | | | 65 | 65 | | 43 | 8 | 83 | 82 | 63 | 63 | 59 |
| 9 | | | | | | 31 | 16 | | | | | | 60 | 60 | | 38 | 3 | 78 | 77 | 58 | 58 | 54 |
| 10 | 26 | 11 | | | | 55 | 55 | 33 | | | n/a | 73 | 72 | 53 | | 53 | 49 | | | | | |

Intake Piping

The EL297UHV furnace may be installed in either **direct vent** or **non-direct vent** applications. In non-direct vent applications, when intake air will be drawn into the furnace from the surrounding space, the indoor air quality must be considered and guidelines listed in Combustion, Dilution and Ventilation Air section must be followed.

Follow the next two steps when installing the unit in **Direct Vent applications**, where combustion air is taken from outdoors and flue gases are discharged outdoors. **The provided air intake screen must not be used in direct vent applications (outdoors).**

- 1 - Use transition solvent cement or a sheet metal screw to secure the intake pipe to the inlet air connector.
- 2 - Route piping to outside of structure. Continue with installation following instructions given in general guidelines for piping terminations and intake and exhaust piping terminations for direct vent sections. Refer to TABLE 22 for pipe sizes.

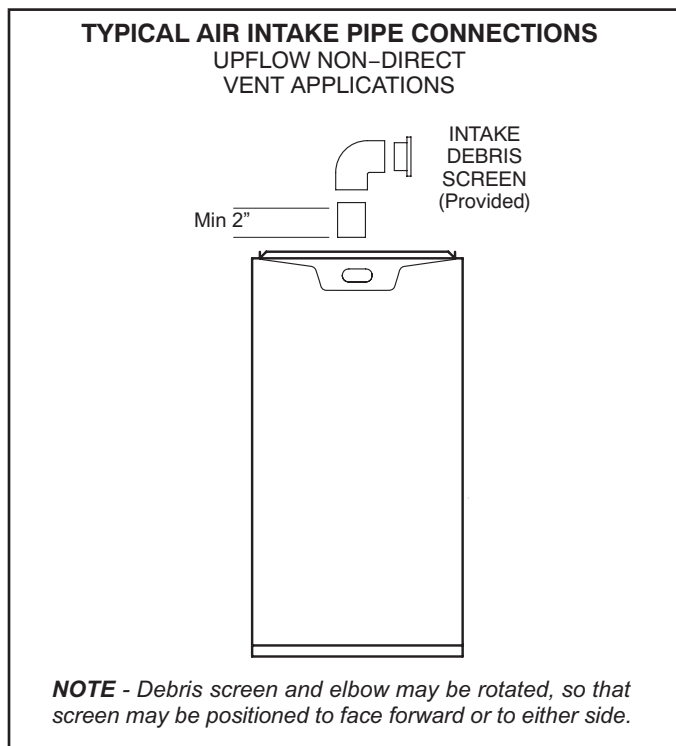


FIGURE 25

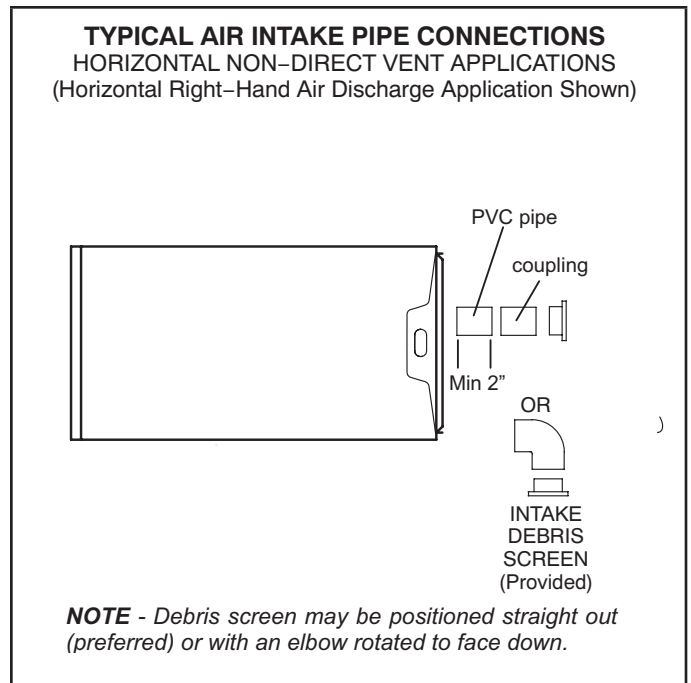


FIGURE 26

Follow the next two steps when installing the unit in **Non-Direct Vent applications** where combustion air is taken from indoors or ventilated attic or crawlspace and flue gases are discharged outdoors.

- 1 - Use field-provided materials and the factory-provided air intake screen to route the intake piping as shown in FIGURE 25 and FIGURE 26. Maintain a minimum clearance of 3" (76mm) around the air intake opening. The air intake opening (with the protective screen) should always be directed forward or to either side in the upflow position, and either straight out or downward in the horizontal position.

The air intake piping must not terminate too close to the flooring or a platform. Ensure that the intake air inlet will not be obstructed by loose insulation or other items that may clog the debris screen.

- 2 - If intake air is drawn from a ventilated attic (FIGURE 27) or ventilated crawlspace (FIGURE 28) the exhaust vent length must not exceed those listed in TABLE 23. If 3" diameter pipe is used, reduce to 2" diameter pipe at the termination point to accommodate the debris screen.
- 3 - Use a sheet metal screw to secure the intake pipe to the connector, if desired.

⚠ CAUTION

If this unit is being installed in an application with combustion air coming in from a space serviced by an exhaust fan, power exhaust fan, or other device which may create a negative pressure in the space, take care when sizing the inlet air opening. The inlet air opening must be sized to accommodate the maximum volume of exhausted air as well as the maximum volume of combustion air required for all gas appliances serviced by this space.

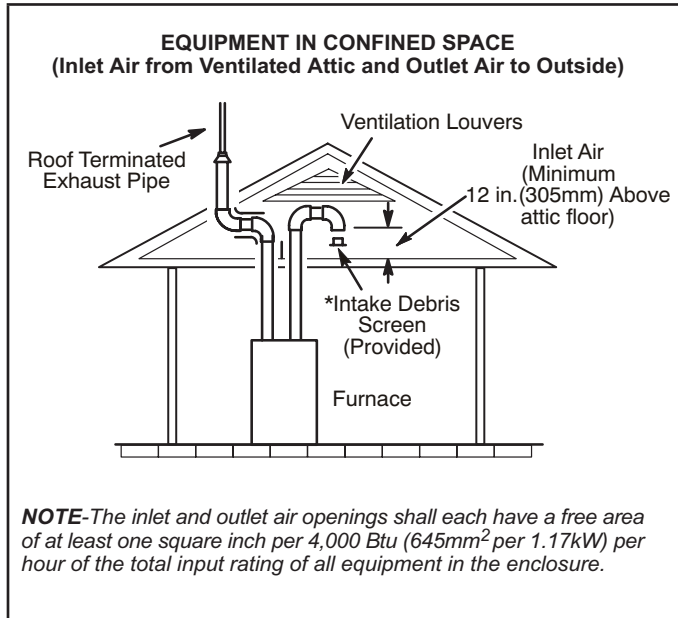


FIGURE 27

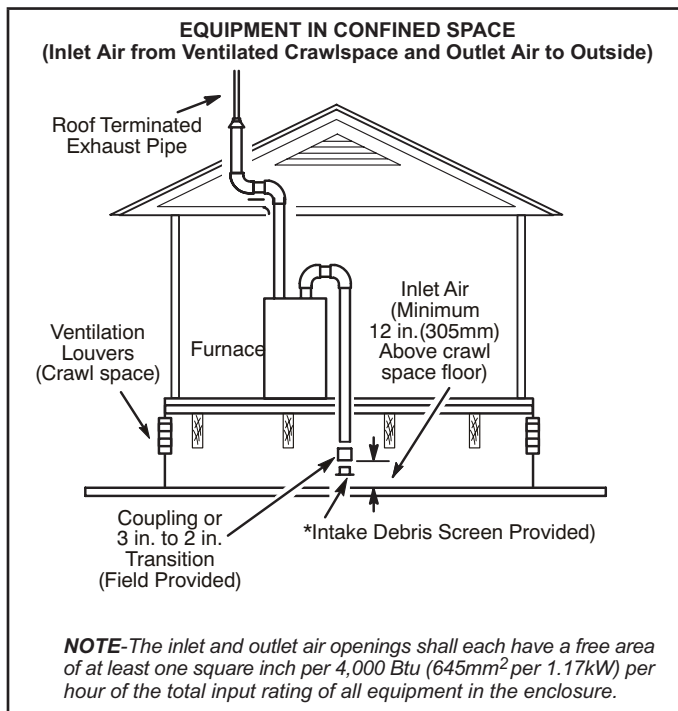


FIGURE 28

General Guidelines for Vent Terminations

In Non-Direct Vent applications, combustion air is taken from indoors or ventilated attic or crawlspace and the flue gases are discharged to the outdoors. The EL297UHV is then classified as a non-direct vent, Category IV gas furnace.

In Direct Vent applications, combustion air is taken from outdoors and the flue gases are discharged to the outdoors. The EL297UHV is then classified as a direct vent, Category IV gas furnace.

In both Non-Direct Vent and Direct Vent applications, the vent termination is limited by local building codes. In the absence of local codes, refer to the current National Fuel Gas Code ANSI Z223-1/NFPA 54 in U.S.A., and current CSA-B149 Natural Gas and Propane Installation Codes in Canada for details.

Position termination according to location given in FIGURE 30 or FIGURE 31. In addition, position termination so it is free from any obstructions and 12" above the average snow accumulation.

At vent termination, care must be taken to maintain protective coatings over building materials (prolonged exposure to exhaust condensate can destroy protective coatings). It is recommended that the exhaust outlet not be located within 6 feet (1.8m) of an outdoor AC unit because the condensate can damage the painted coating.

NOTE - See TABLE 24 for maximum allowed exhaust pipe length without insulation in unconditioned space during winter design temperatures below 32°F (0°C). If required exhaust pipe should be insulated with 1/2" (13mm) Armaflex or equivalent. In extreme cold climate areas, 3/4" (19mm) Armaflex or equivalent may be necessary. Insulation must be protected from deterioration. Armaflex with UV protection is permissible. Basements or other enclosed areas that are not exposed to the outdoor ambient temperature and are above 32 degrees F (0°C) are to be considered conditioned spaces.

⚠ IMPORTANT

Do not use screens or perforated metal in exhaust or intake terminations. Doing so will cause freeze-ups and may block the terminations.

⚠ IMPORTANT

For Canadian Installations Only:

In accordance to CSA International B149 installation codes, the minimum allowed distance between the combustion air intake inlet and the exhaust outlet of other appliances shall not be less than 12 inches (305mm).

TABLE 24

Maximum Allowable Exhaust Vent Pipe Length (in ft.³) Without Insulation In Unconditioned Space For Winter Design Temperatures Two - Stage High Efficiency Furnace

| Winter Design Temperatures ¹ °F (°C) | Vent Pipe Diameter | Unit Input Size | | | | | | | | | |
|---|--------------------|-----------------|-----------------|-----|-----------------|-----|-----------------|-----|-----------------|-----|-----------------|
| | | 045 | | 070 | | 090 | | 110 | | 135 | |
| | | PVC | ² PP | PVC | ² PP | PVC | ² PP | PVC | ² PP | PVC | ² PP |
| 32 to 21 (0 to -6) | 1-1/2 | 22 | n/a | 25 | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| | 2 in | 21 | 18 | 33 | 30 | 46 | 42 | 30 | 30 | n/a | n/a |
| | 2-1/2 in | 16 | n/a | 26 | n/a | 37 | n/a | 36 | n/a | n/a | n/a |
| | 3 in | 12 | 12 | 21 | 21 | 30 | 30 | 29 | 29 | 42 | 42 |
| 20 to 1 (-7 to -17) | 1-1/2 | 12 | n/a | 20 | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| | 2 in | 11 | 9 | 19 | 17 | 28 | 25 | 27 | 24 | n/a | n/a |
| | 2-1/2 in | 7 | n/a | 14 | n/a | 21 | n/a | 20 | n/a | n/a | n/a |
| | 3 in | 2 | 2 | 9 | 9 | 16 | 16 | 14 | 14 | 23 | 23 |
| 0 to -20 (-18 to -29) | 1-1/2 | 8 | n/a | 13 | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| | 2 in | 6 | 4 | 12 | 10 | 19 | 16 | 18 | 15 | n/a | n/a |
| | 2-1/2 in | 1 | n/a | 7 | n/a | 13 | n/a | 12 | n/a | n/a | n/a |
| | 3 in | 1 | 1 | 2 | 2 | 8 | 8 | 7 | 7 | 13 | 13 |

¹Refer to 99% Minimum Design Temperature table provided in the current edition of the ASHRAE Fundamentals Handbook.

² Poly-Propylene vent pipe (PP) by Duravent and Centrotherm.

³ Vent length in table is equivalent length. Consider each elbow as 5ft. of linear length

NOTE - Concentric terminations are the equivalent of 5' and should be considered when measuring pipe length.

NOTE - Maximum uninsulated vent lengths listed may include the termination(vent pipe exterior to the structure) and cannot exceed 5 linear feet or the maximum allowable intake or exhaust vent length listed in TABLE 22 or TABLE 23 which ever is less.

NOTE - If insulation is required in an unconditioned space, it must be located on the pipe closest to the furnace. See FIGURE 29.

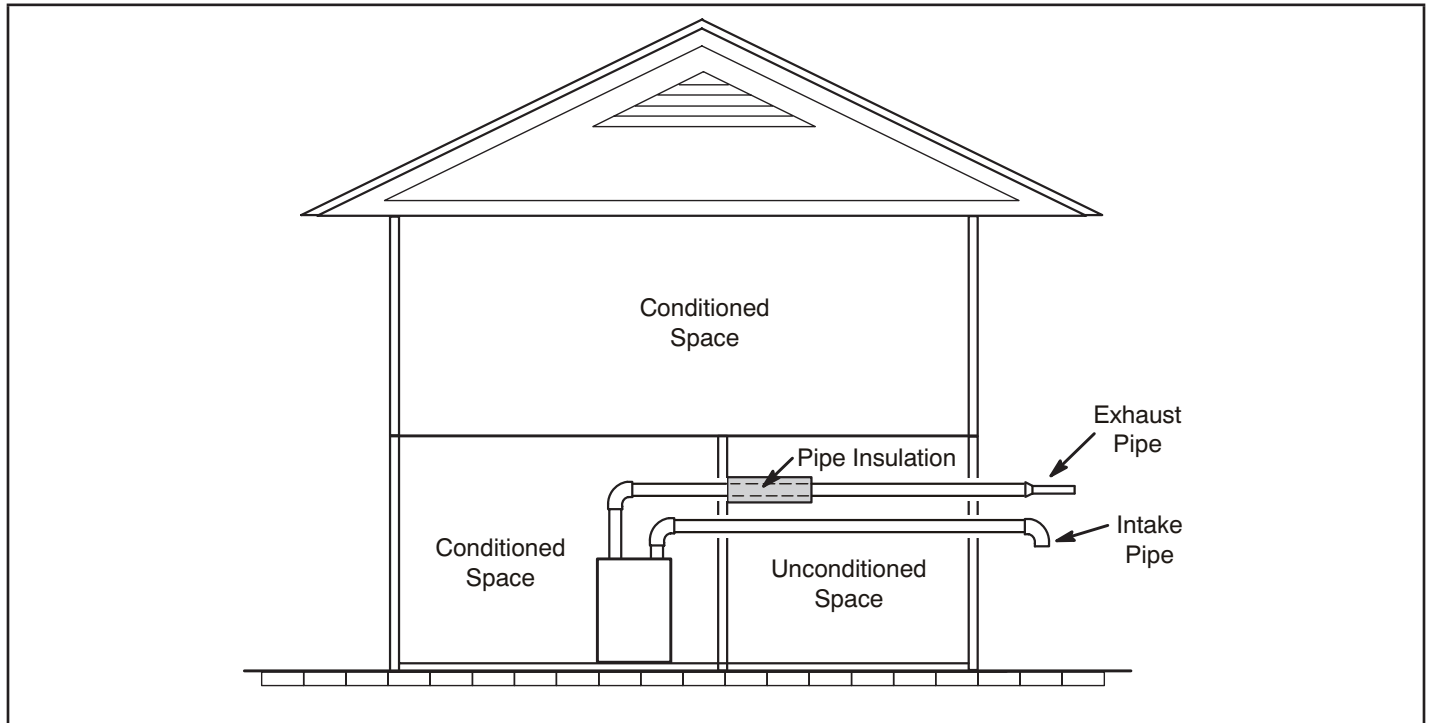
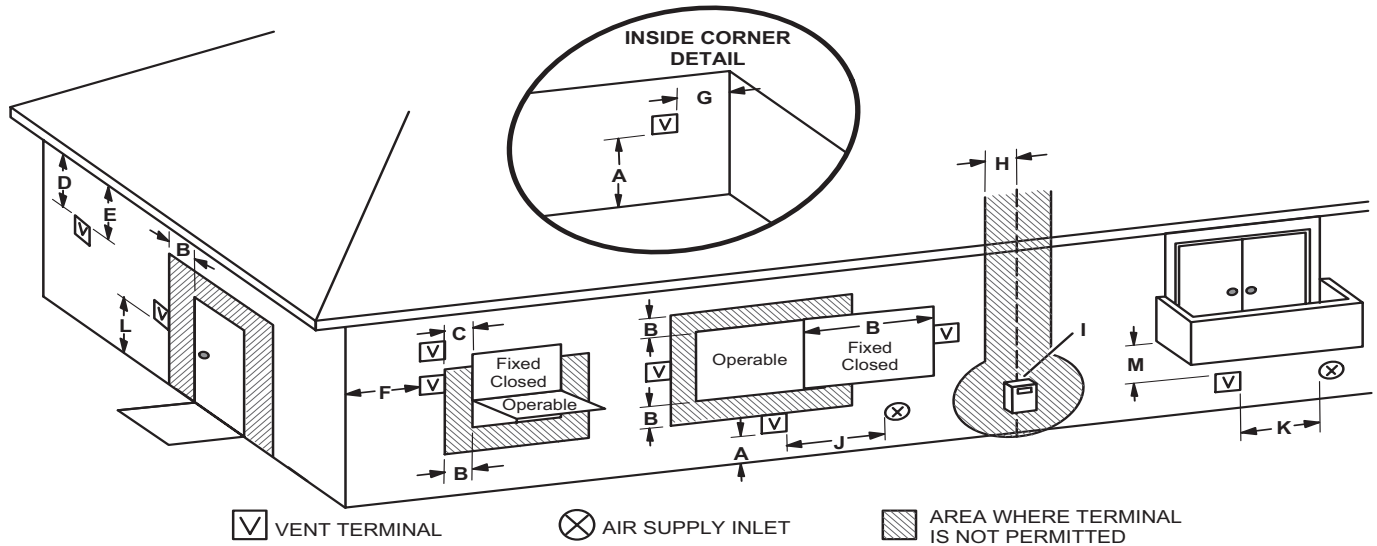


FIGURE 29

VENT TERMINATION CLEARANCES FOR NON-DIRECT VENT INSTALLATIONS IN THE USA AND CANADA



| | US Installations ¹ | Canadian Installations ² | |
|-----|---|--|---|
| A = | Clearance above grade, veranda, porch, deck or balcony | 12 inches (305mm) or 12 in. (305mm) above average snow accumulation. | 12 inches (305mm) or 12 in. (305mm) above average snow accumulation. |
| B = | Clearance to window or door that may be opened | 4 feet (1.2 m) below or to side of opening; 1 foot (30cm) above opening | 6 inches (152mm) for appliances <10,000 Btuh (3kw), 12 inches (305mm) for appliances > 10,000 Btuh (3kw) and <100,000 Btuh (30kw), 36 inches (.9m) for appliances > 100,000 Btuh (30kw) |
| C = | Clearance to permanently closed window | * 12" | * 12" |
| D = | Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (610 mm) from the center line of the terminal | * Equal to or greater than soffit depth. | * Equal to or greater than soffit depth. |
| E = | Clearance to unventilated soffit | * Equal to or greater than soffit depth. | * Equal to or greater than soffit depth. |
| F = | Clearance to outside corner | * No minimum to outside corner | * No minimum to outside corner |
| G = | Clearance to inside corner | * | * |
| H = | Clearance to each side of center line extended above meter / regulator assembly | * 3 feet (.9m) within a height 15 feet (4.5m) above the meter / regulator assembly | 3 feet (.9m) within a height 15 feet (4.5m) above the meter / regulator assembly |
| I = | Clearance to service regulator vent outlet | * 3 feet (.9m) | 3 feet (.9m) |
| J = | Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance | 4 feet (1.2 m) below or to side of opening; 1 foot (30 cm) above opening | 6 inches (152mm) for appliances <10,000 Btuh (3kw), 12 inches (305mm) for appliances > 10,000 Btuh (3kw) and <100,000 Btuh (30kw), 36 inches (.9m) for appliances > 100,000 Btuh (30kw) |
| K = | Clearance to mechanical air supply inlet | 3 feet (.9m) above if within 10 feet (3m) horizontally | 6 feet (1.8m) |
| L = | Clearance above paved sidewalk or paved driveway located on public property | 7 feet (2.1m)† | 7 feet (2.1m)† |
| M = | Clearance under veranda, porch, deck or balcony | *12 inches (305mm)‡ | 12 inches (305mm)‡ |

¹ In accordance with the current ANSI Z223.1/NFPA 54 Natural Fuel Gas Code

² In accordance with the current CSA B149.1, Natural Gas and Propane Installation Code

† A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.

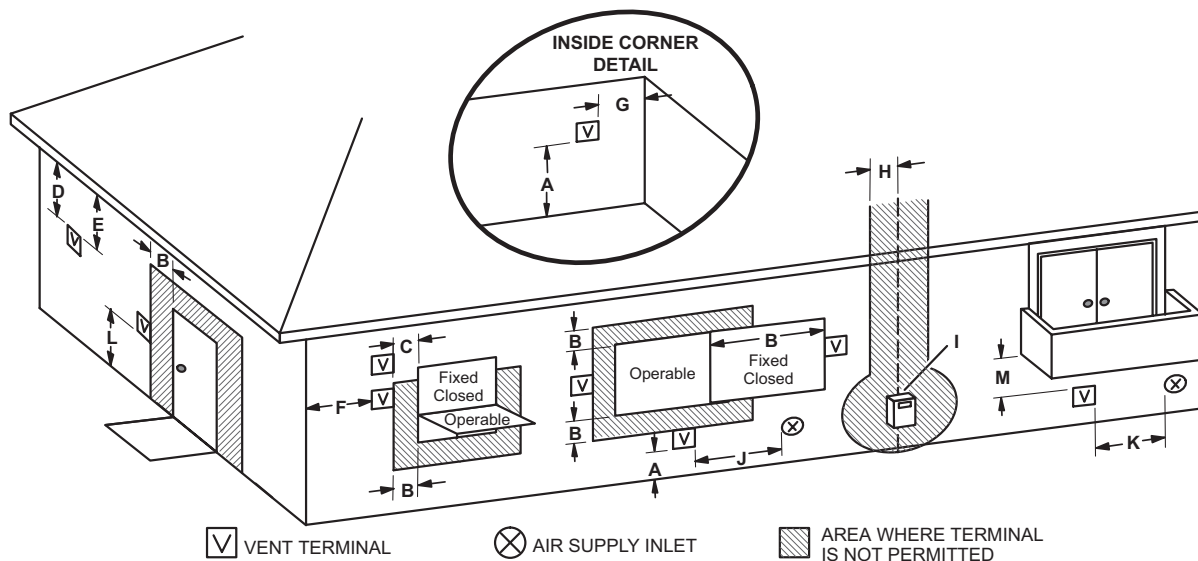
‡ Permitted only if veranda, porch, deck or balcony is fully open on a minimum of two sides beneath the floor. Lennox recommends avoiding this location if possible.

For clearances not specified in ANSI Z223.1/NFPA 54 or CSA B149.1, clearance will be in accordance with local installation codes and the requirements of the gas supplier and these installation instructions.

NOTE - This figure is intended to illustrate clearance requirement and does not serve as a substitute for locally adopted installation codes.

FIGURE 30

VENT TERMINATION CLEARANCES FOR DIRECT VENT INSTALLATIONS IN THE US AND CANADA



| | US Installations ¹ | Canadian Installations ² | |
|-----|--|---|---|
| A = | Clearance above grade, veranda, porch, deck or balcony | 12 inches (305mm) or 12 in. (305mm) above average snow accumulation. | 12 inches (305mm) or 12 in. (305mm) above average snow accumulation. |
| B = | Clearance to window or door that may be opened | 6 inches (152mm) for appliances <10,000 Btuh (3kw), 9 inches (228mm) for appliances > 10,000 Btuh (3kw) and <50,000 Btuh (15 kw), 12 inches (305mm) for appliances > 50,000 Btuh (15kw) | 6 inches (152mm) for appliances <10,000 Btuh (3kw), 12 inches (305mm) for appliances > 10,000 Btuh (3kw) and <100,000 Btuh (30kw), 36 inches (.9m) for appliances > 100,000 Btuh (30kw) |
| C = | Clearance to permanently closed window | * 12" | * 12" |
| D = | Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet (610mm) from the center line of the terminal | * Equal to or greater than soffit depth | * Equal to or greater than soffit depth |
| E = | Clearance to unventilated soffit | * Equal to or greater than soffit depth | * Equal to or greater than soffit depth |
| F = | Clearance to outside corner | * No minimum to outside corner | * No minimum to outside corner |
| G = | Clearance to inside corner | * | * |
| H = | Clearance to each side of center line extended above meter / regulator assembly | 3 feet (.9m) within a height 15 feet (4.5m) above the meter / regulator assembly | 3 feet (.9m) within a height 15 feet (4.5m) above the meter / regulator assembly |
| I = | Clearance to service regulator vent outlet | * 3 feet (.9m) | 3 feet (.9m) |
| J = | Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance | 6 inches (152mm) for appliances <10,000 Btuh (3kw), 9 inches (228mm) for appliances > 10,000 Btuh (3kw) and <50,000 Btuh (15 kw), 12 inches (305mm) for appliances > 50,000 Btuh (15kw) | 6 inches (152mm) for appliances <10,000 Btuh (3kw), 12 inches (305mm) for appliances > 10,000 Btuh (3kw) and <100,000 Btuh (30kw), 36 inches (.9m) for appliances > 100,000 Btuh (30kw) |
| K = | Clearance to mechanical air supply inlet | 3 feet (.9m) above if within 10 feet (3m) horizontally | 6 feet (1.8m) |
| L = | Clearance above paved sidewalk or paved driveway located on public property | * 7 feet (2.1m) | 7 feet (2.1m)† |
| M = | Clearance under veranda, porch, deck or balcony | *12 inches (305mm)‡ | 12 inches (305mm)‡ |

¹ In accordance with the current ANSI Z223.1/NFPA 54 Natural Fuel Gas Code

² In accordance with the current CSA B149.1, Natural Gas and Propane Installation Code

† A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.

‡ Permitted only if veranda, porch, deck or balcony is fully open on a minimum of two sides beneath the floor. Lennox recommends avoiding this location if possible.

For clearances not specified in ANSI Z223.1/NFPA 54 or CSA B149.1, clearance will be in accordance with local installation codes and the requirements of the gas supplier and these installation instructions.

NOTE - This figure is intended to illustrate clearance requirements and does not serve as a substitute for locally adopted installation codes.

FIGURE 31

Details of Intake and Exhaust Piping Terminations for Direct Vent Installations

NOTE - In Direct Vent installations, combustion air is taken from outdoors and flue gases are discharged to outdoors.

NOTE - Flue gas may be slightly acidic and may adversely affect some building materials. If any vent termination is used and the flue gasses may impinge on the building material, a corrosion-resistant shield (minimum 24 inches square) should be used to protect the wall surface. If the optional tee is used, the protective shield is recommended. The shield should be constructed using wood, plastic, sheet metal or other suitable material. All seams, joints, cracks, etc. in the affected area should be sealed using an appropriate sealant. See FIGURE 35.

Intake and exhaust pipes may be routed either horizontally through an outside wall or vertically through the roof. In attic or closet installations, vertical termination through the roof is preferred. FIGURE 32 through FIGURE 40 show typical terminations.

- 1 - Intake and exhaust terminations are not required to be in the same pressure zone. You may exit the intake on one side of the structure and the exhaust on another side (FIGURE 33). You may exit the exhaust out the roof and the intake out the side of the structure (FIGURE 34).
- 2 - Intake and exhaust pipes should be placed as close together as possible at termination end (refer to illustrations). Maximum separation is 3" (76MM) on roof terminations and 6" (152MM) on side wall terminations.

NOTE - When venting in different pressure zones, the maximum separation requirement of intake and exhaust pipe DOES NOT apply.

- 3 - On roof terminations, the intake piping should terminate straight down using two 90° elbows (FIGURE 32).
- 4 - Exhaust piping must terminate straight out or up as shown. A reducer may be required on the exhaust piping at the point where it exits the structure to improve the velocity of exhaust away from the intake piping. See TABLE 25.

NOTE - Care must be taken to avoid recirculation of exhaust back into intake pipe.

- 5 - On field-supplied terminations for side wall exit, exhaust piping may extend a maximum of 12 inches (305MM) for 2" PVC and 20 inches (508MM) for 3" (76MM) PVC beyond the outside wall. Intake piping should be as short as possible. See FIGURE 35.
- 6 - On field-supplied terminations, a minimum distance between the end of the exhaust pipe and the end of the intake pipe without a termination elbow is 8" and a minimum distance of 6" with a termination elbow. See FIGURE 35.
- 7 - If intake and exhaust piping must be run up a side wall to position above snow accumulation or other obstructions, piping must be supported. At least one bracket must be used within 6" from the top of the elbow and then every 24" (610mm) as shown in FIGURE 35, to prevent any movement in any direction. When exhaust and intake piping must be run up an outside wall, the exhaust piping must be terminated with pipe sized per TABLE 25 The intake piping may be equipped with a 90° elbow turndown. Using turndown will add 5 feet (1.5m) to the equivalent length of the pipe.

- 8 - A multiple furnace installation may use a group of up to four terminations assembled together horizontally, as shown in FIGURE 39.

TABLE 25

EXHAUST PIPE TERMINATION SIZE REDUCTION

| EL297UHV MODEL | Termination Pipe Size |
|----------------|-----------------------|
| *045 and 070 | 1-1/2" (38MM) |
| *090 | 2" (51MM) |
| 110 | 2" (51MM) |
| 135 | 2" (51MM) |

*EL297UHV-045, -070 and -090 units with the flush mount termination must use the 1-1/2" accelerator supplied with the kit.

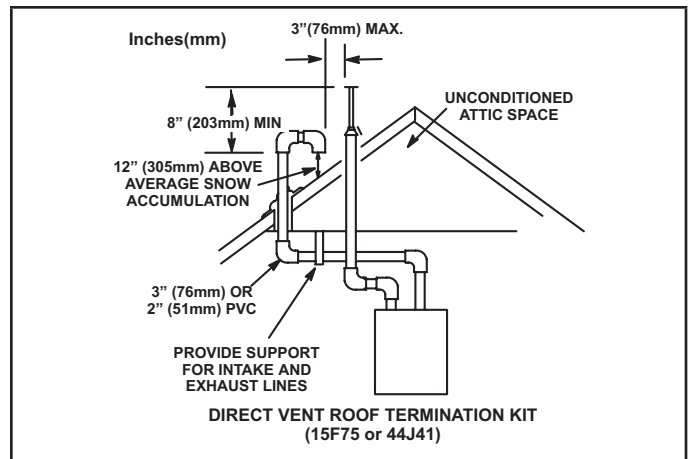


FIGURE 32

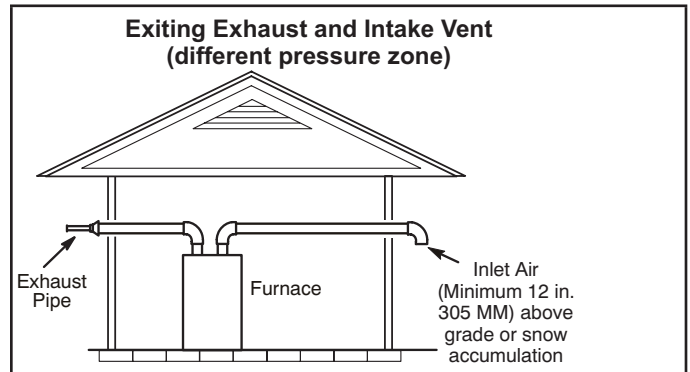


FIGURE 33

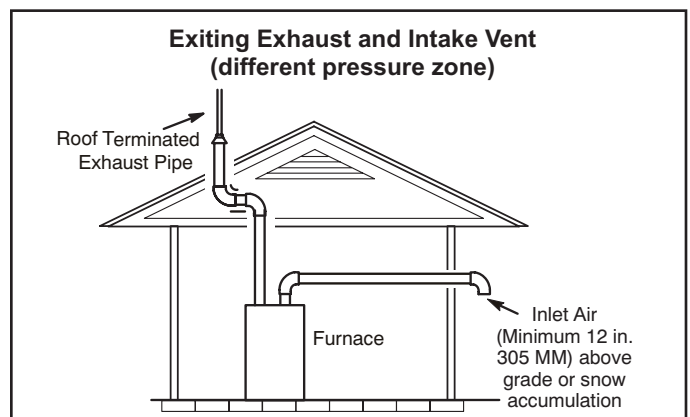
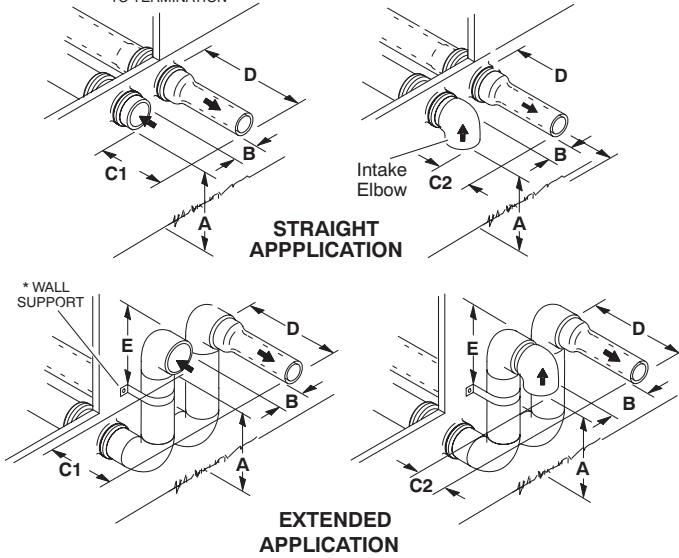


FIGURE 34

NOTE – FIELD-PROVIDED REDUCER MAY BE REQUIRED TO ADAPT LARGER VENT PIPE SIZE TO TERMINATION

FIELD FABRICATED WALL TERMINATION



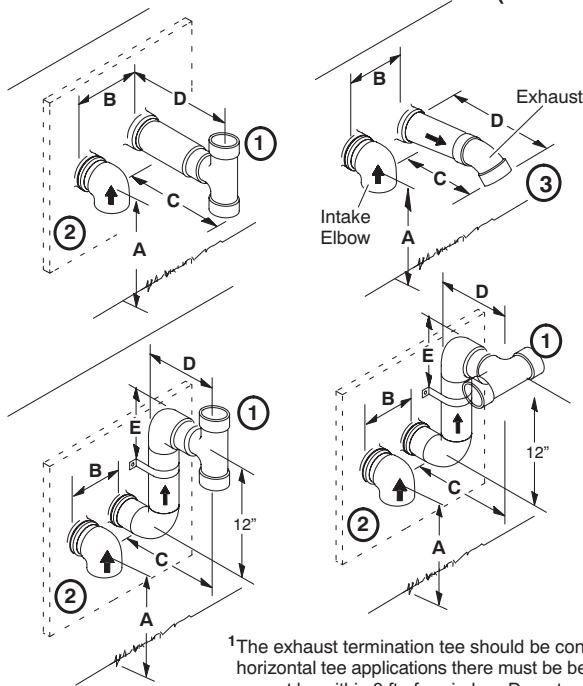
| | 2" (51mm) Vent Pipe | 3" (76mm) Vent Pipe |
|---|---------------------|---------------------|
| A- Minimum clearance above grade or average snow accumulation | 12" (305 mm) | 12" (305 mm) |
| B- Maximum horizontal separation between intake and exhaust | 6" (152 mm) | 6" (152 mm) |
| C1 -Minimum from end of exhaust to inlet of intake | 8" (203 mm) | 8" (203 mm) |
| C2 -Minimum from end of exhaust to inlet of intake | 6" (152 mm) | 6" (152 mm) |
| D- Maximum exhaust pipe length | 12" (305 mm) | 20" (508 mm) |
| E- Maximum wall support distance from top of each pipe (intake/exhaust) | 6" (152 mm) | 6" (152 mm) |

See maximum allowable venting tables for venting lengths with this arrangement.

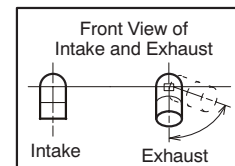
* Use wall support every 24" (610 mm). Use two wall supports if extension is greater than 24" (610 mm) but less than 48" (1219 mm).

NOTE – One wall support must be within 6" (152 mm) from top of each pipe (intake and exhaust) to prevent movement in any direction.

ALTERNATE TERMINATIONS (TEE & FORTY-FIVE DEGREE ELBOWS ONLY)



| | 2" (51mm) Vent Pipe | 3" (76mm) Vent Pipe |
|--|-----------------------------------|-----------------------------------|
| A - Clearance above Grade or average snow accumulation | 12" (305 mm) Min | 12" (305 mm) Min |
| B - Horizontal separation between intake and exhaust | 6" (152mm)min 24" (610mm)Max | 6" (152mm)min 24" (610mm)Max |
| C - Minimum from end of exhaust to inlet of intake | 9" (227mm) | 9" (227mm) |
| D - Exhaust pipe length | 12" (305mm)min 16" (405mm)Max | 12" (305mm)min 16" (405mm)Max |
| E - Wall support distance from top of each pipe (intake/exhaust) | 6" (152mm) Max | 6" (152mm) Max |



¹The exhaust termination tee should be connected to the 2" or 3" PVC flue pipe as shown in the illustration. In horizontal tee applications there must be a minimum of 3 ft away from covered patios or any living areas and cannot be within 3 ft of a window. Do not use an accelerator in applications that include an exhaust termination tee. The accelerator is not required.

² As required. Flue gas may be acidic and may adversely affect some building materials. If a side wall vent termination is used and flue gases will impinge on the building materials, a corrosion-resistant shield (24 inches square) should be used to protect the wall surface. If optional tee is used, the protective shield is recommended. The shield should be constructed using wood, sheet metal or other suitable material. All seams, joints, cracks, etc. in affected area, should be sealed using an appropriate sealant.

³ Exhaust pipe 45° elbow can be rotated to the side away from the combustion air inlet to direct exhaust away from adjacent property. The exhaust must never be directed toward the combustion air inlet.

FIGURE 35

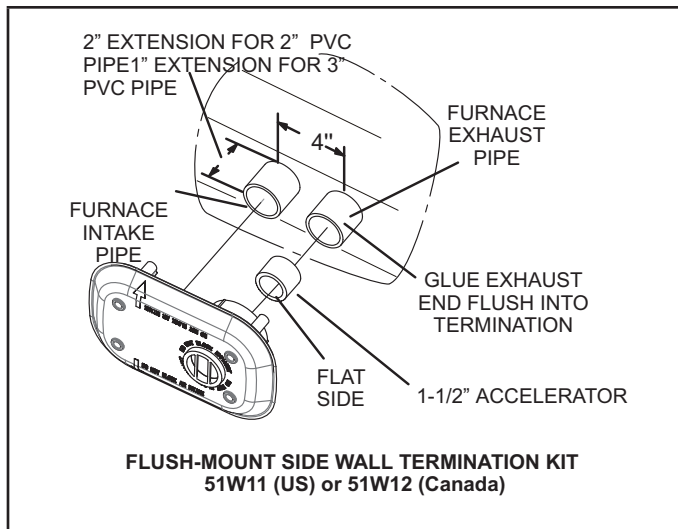


FIGURE 36

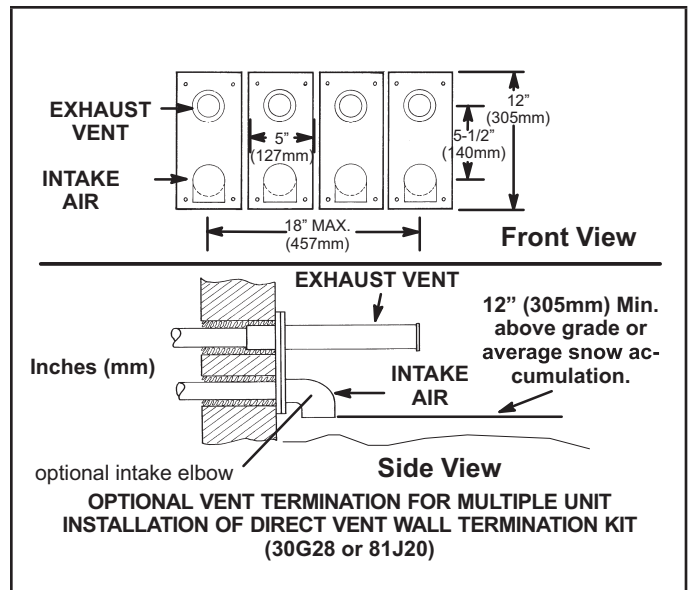


FIGURE 39

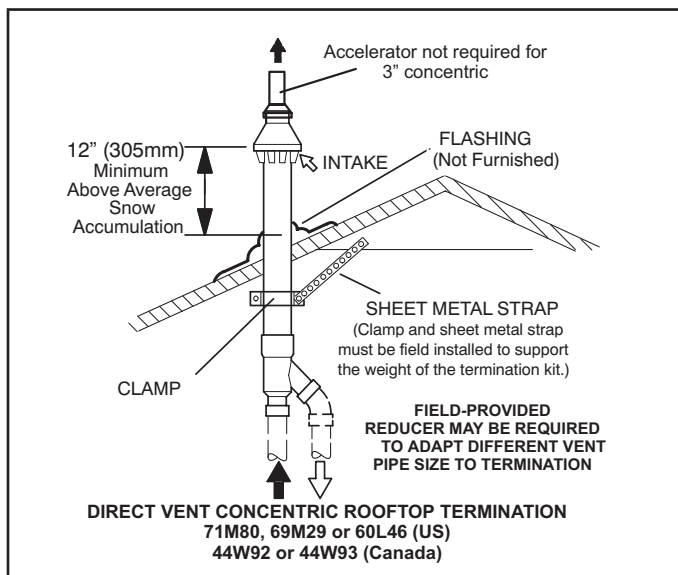


FIGURE 37

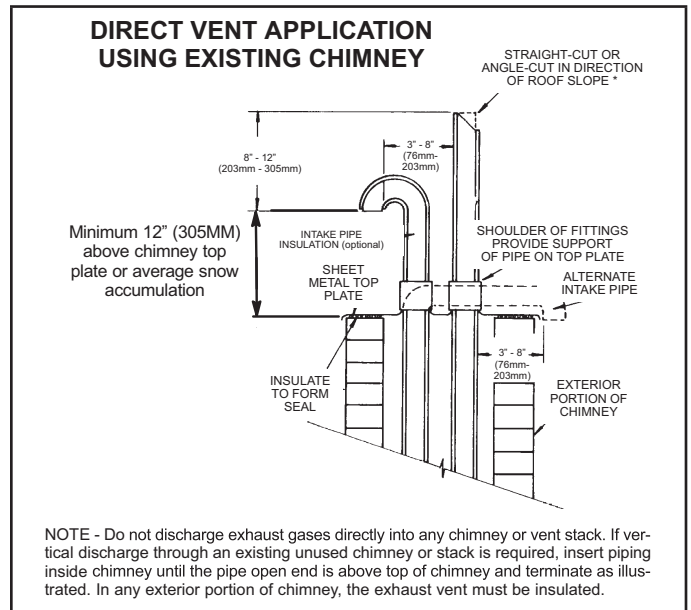


FIGURE 40

Details of Exhaust Piping Terminations for Non-Direct Vent Applications

Exhaust pipes may be routed either horizontally through an outside wall or vertically through the roof. In attic or closet installations, vertical termination through the roof is preferred. FIGURE 41 and FIGURE 42 show typical terminations.

- 1 - Exhaust piping must terminate straight out or up as shown. The termination pipe must be sized as listed in TABLE 25. The specified pipe size ensures proper velocity required to move the exhaust gases away from the building.

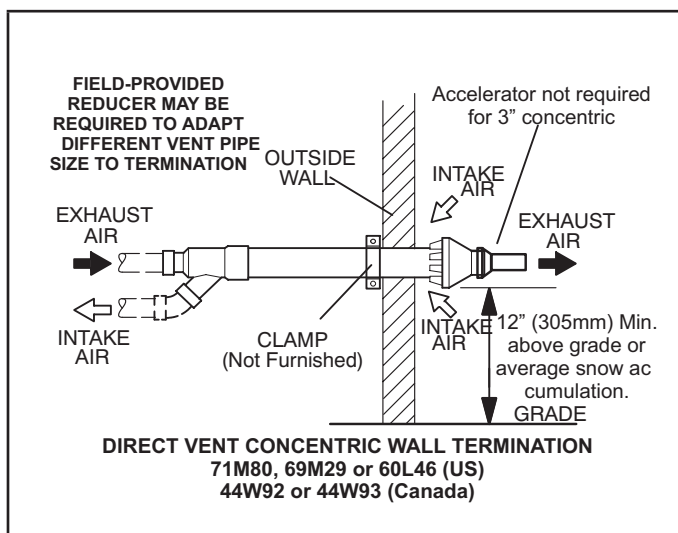


FIGURE 38

- 2 - On field supplied terminations for side wall exit, exhaust piping may extend a maximum of 12 inches (305MM) for 2" PVC and 20 inches (508MM) for 3" (76MM) PVC beyond the outside wall.
- 3 - If exhaust piping must be run up a side wall to position above snow accumulation or other obstructions, piping must be supported every 24 inches (610MM). When exhaust piping must be run up an outside wall, any reduction in exhaust pipe size must be done after the final elbow.
- 4 - Distance between exhaust pipe terminations on multiple furnaces must meet local codes.

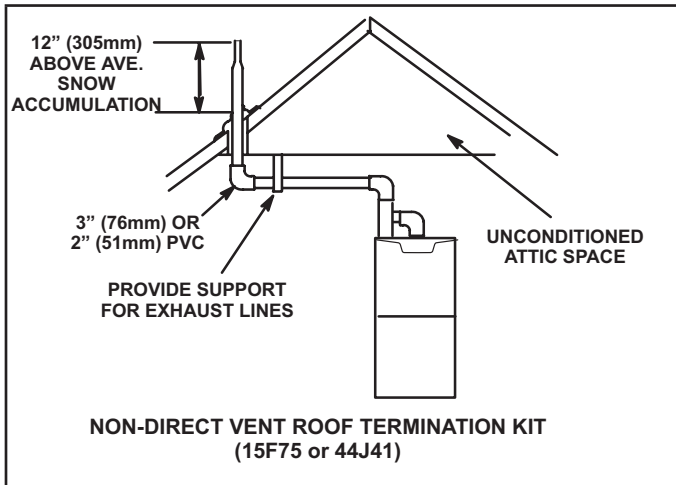


FIGURE 41

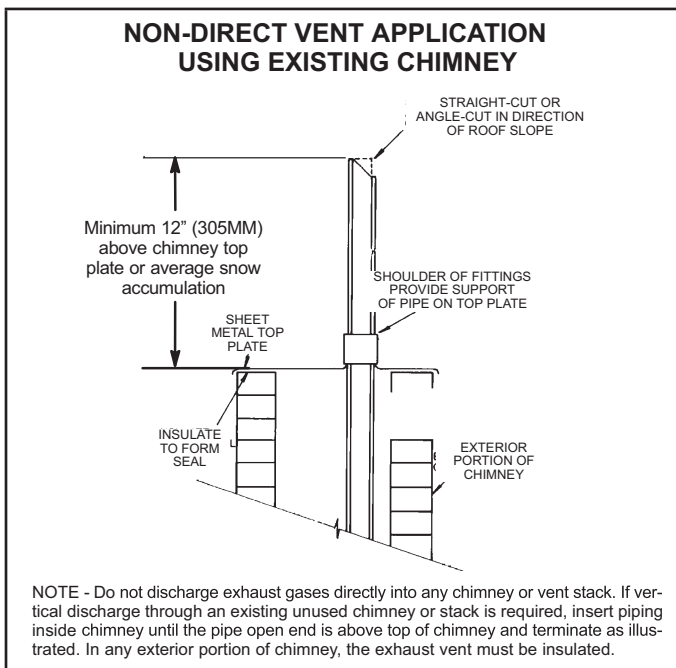


FIGURE 42

Condensate Piping

This unit is designed for either right- or left-side exit of condensate piping in upflow applications. In horizontal applications, the condensate trap must extend below the unit. An 8" service clearance is required for the condensate trap. Refer to FIGURE 43 for condensate trap locations. FIGURE 51 shows trap assembly

NOTE - If necessary the condensate trap may be installed up to 5' away from the furnace. Use PVC pipe to connect trap to furnace condensate outlet. Piping from furnace must slope down a minimum of 1/4" per ft. toward trap.

- 1 - Determine which side condensate piping will exit the unit, location of trap, field-provided fittings and length of PVC pipe required to reach available drain.
 - 2 - Use a large flat head screw driver or a 1/2" drive socket extension and remove plug (Figure 45) from the cold end header box at the appropriate location on the side of the unit. Install provided 3/4 NPT street elbow fitting into cold end header box. Use Teflon tape or appropriate pipe dope.
- NOTE** - Cold end header box drain plugs are factory installed. Check the unused plug for tightness to prevent leakage.
- 3 - Install the cap over the clean out opening at the base of the trap. Secure with clamp. See FIGURE 51.
 - 4 - Install drain trap using appropriate PVC fittings, glue all joints. Glue the provided drain trap as shown in FIGURE 55. Route the condensate line to an open drain. Condensate line must maintain a 1/4" downward slope from the furnace to the drain.

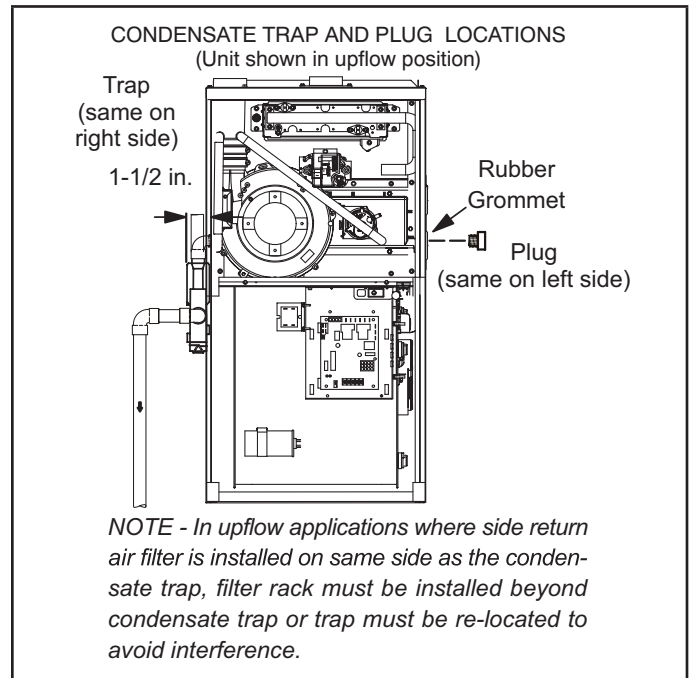


FIGURE 43

- 5 - FIGURE 46 and FIGURE 48 show the furnace and evaporator coil using a separate drain. If necessary the condensate line from the furnace and evaporator coil can drain together. See FIGURE 47, FIGURE 49 and FIGURE 50 .

Upflow furnace (FIGURE 49) - In upflow furnace applications the field provided vent must be a minimum 1" to a maximum 2" length above the condensate drain outlet connection. Any length above 2" may result in a flooded heat exchanger if the combined primary drain line were to become restricted.

Horizontal furnace (FIGURE 50) - In horizontal furnace applications the field provided vent must be a minimum 4" to a maximum 5" length above the condensate drain outlet connection. Any length above 5" may result in a flooded heat exchanger if the combined primary drain line were to become restricted.

NOTE - In horizontal applications it is recommended to install a secondary drain pan underneath the unit and trap assembly.

NOTE - Appropriately sized tubing and barbed fitting may be used for condensate drain. Attach to the drain on the trap using a hose clamp. See FIGURE 44.

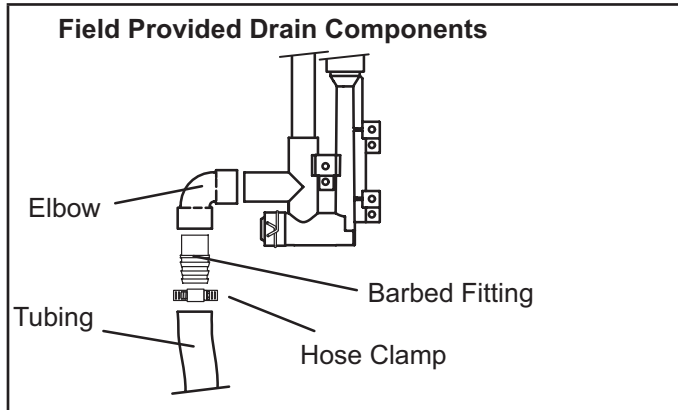


FIGURE 44

CAUTION
Do not use copper tubing or existing copper condensate lines for drain line.

6 - If unit will be started immediately upon completion of installation, prime trap per procedure outlined in Unit Start-Up section.

Condensate line must slope downward away from the trap to drain. If drain level is above condensate trap, condensate pump must be used. Condensate drain line should be routed within the conditioned space to avoid freezing of condensate and blockage of drain line. If this is not possible, a heat cable kit may be used on the condensate trap and line. Heating cable kit is available from Lennox in various lengths; 6 ft. (1.8m) - kit no. 26K68; 24 ft. (7.3m) - kit no. 26K69; and 50 ft. (15.2m) - kit no. 26K70.

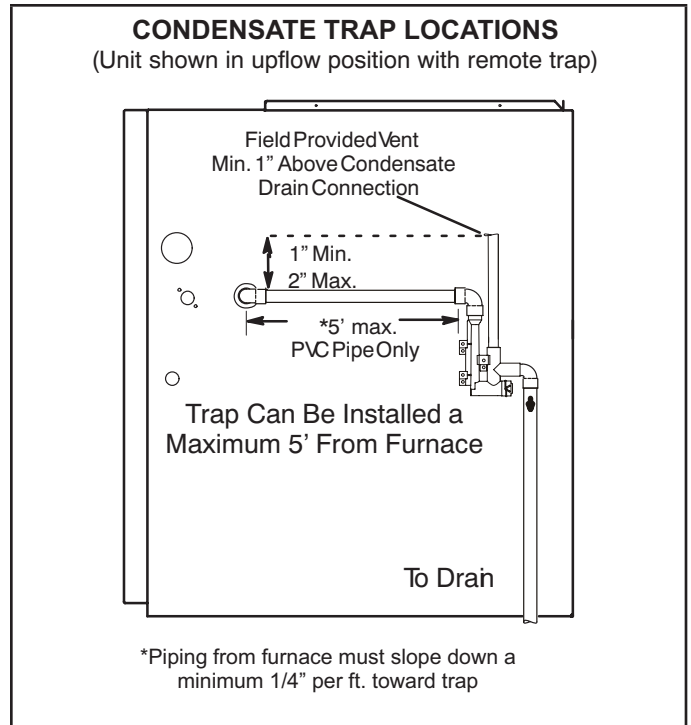


FIGURE 45

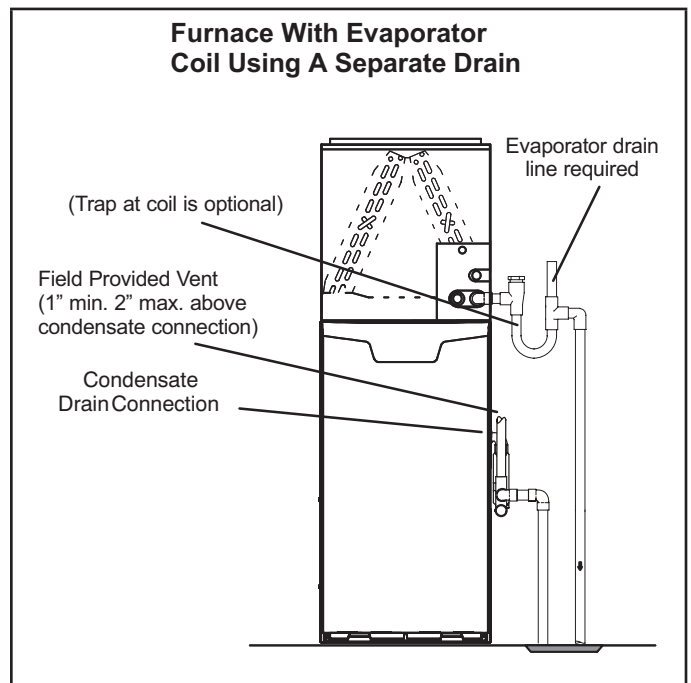


FIGURE 46

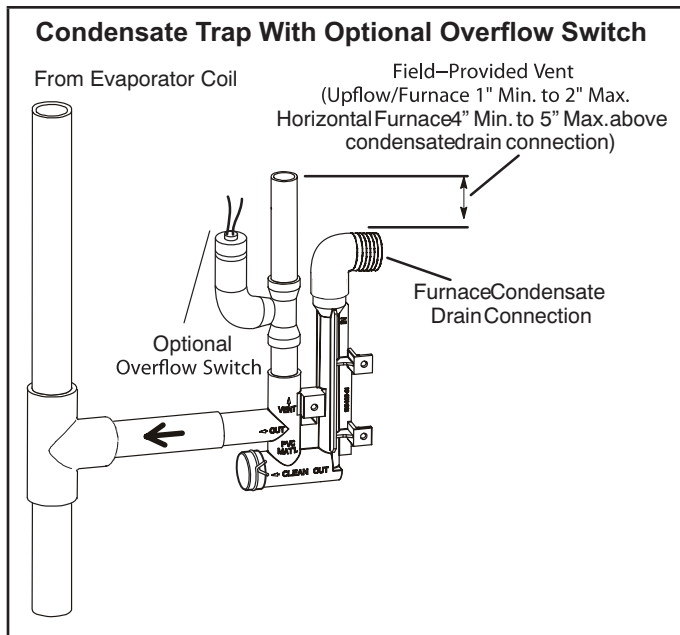


FIGURE 47

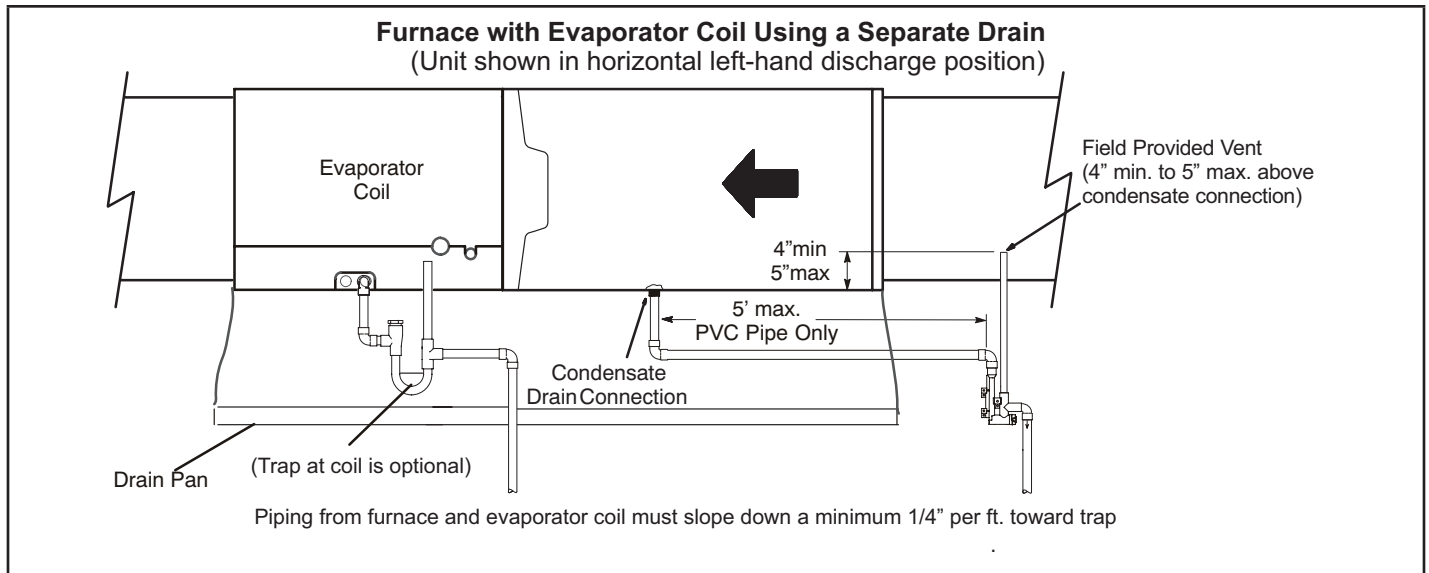


FIGURE 48

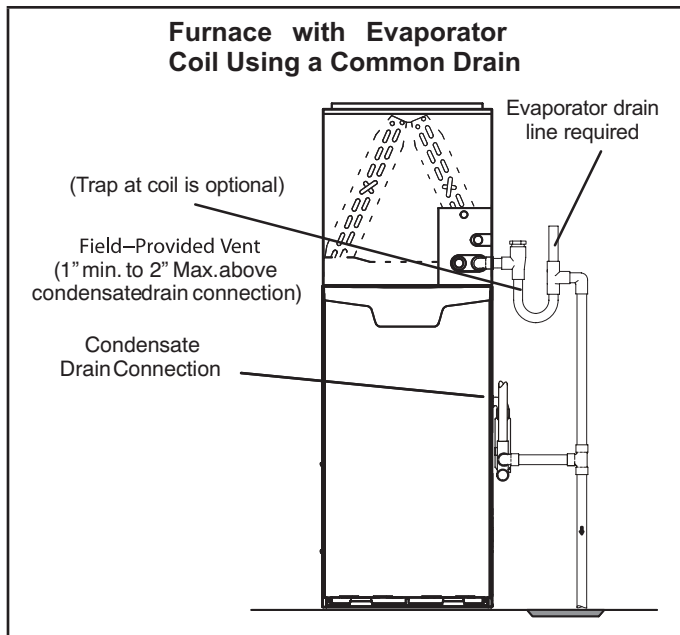


FIGURE 49

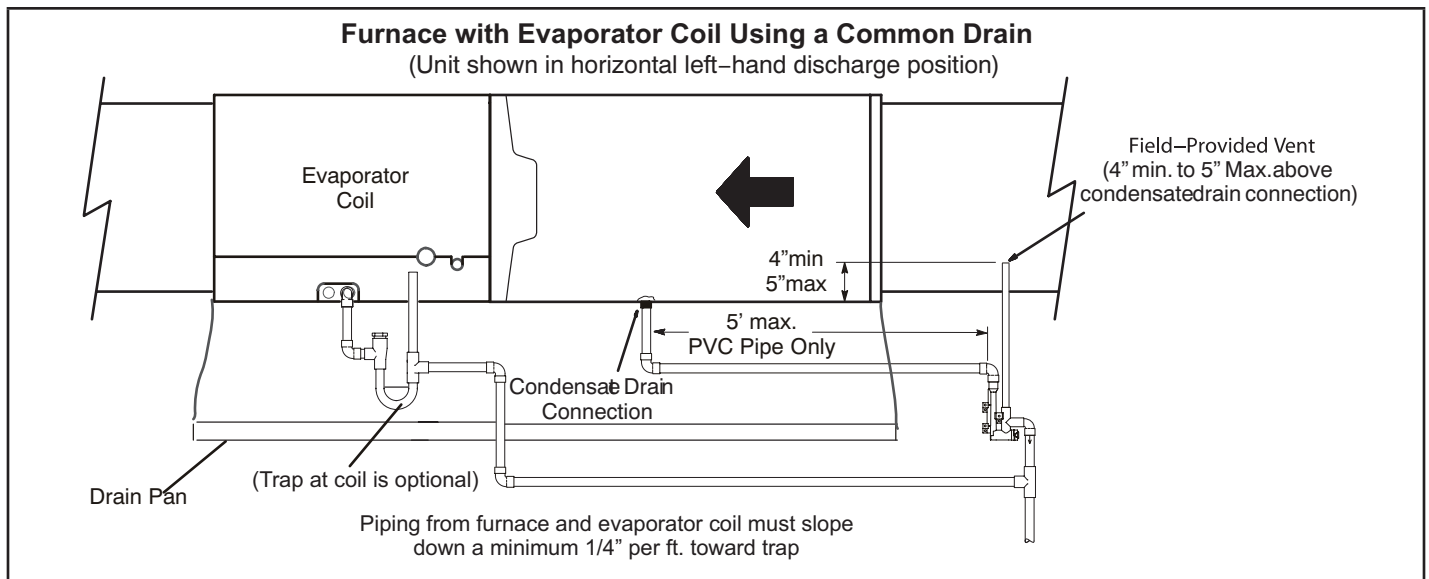
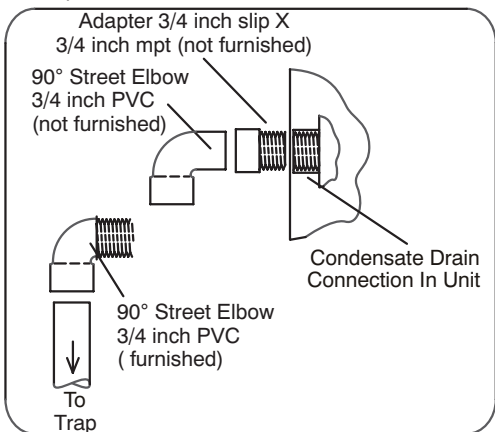


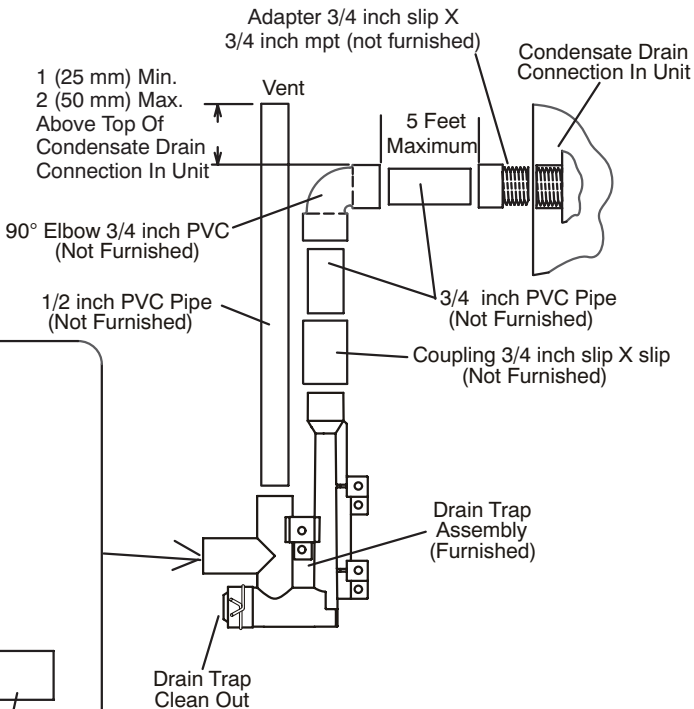
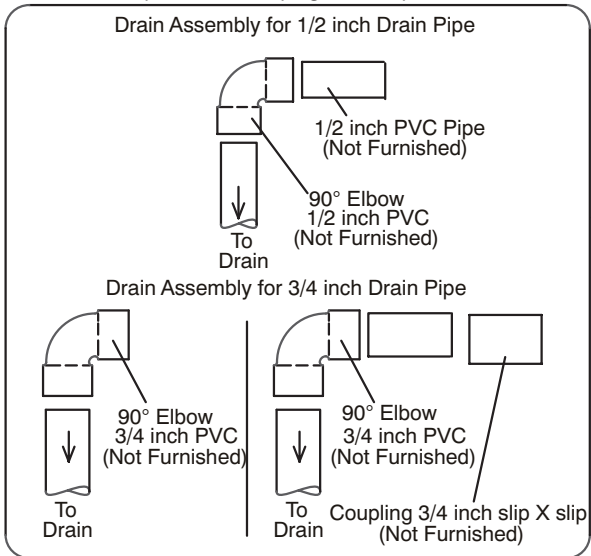
FIGURE 50

TRAP / DRAIN ASSEMBLY USING 1/2" PVC OR 3/4" PVC

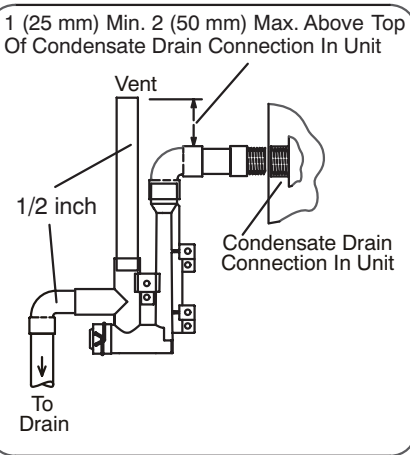
Optional Condensate Drain Connection



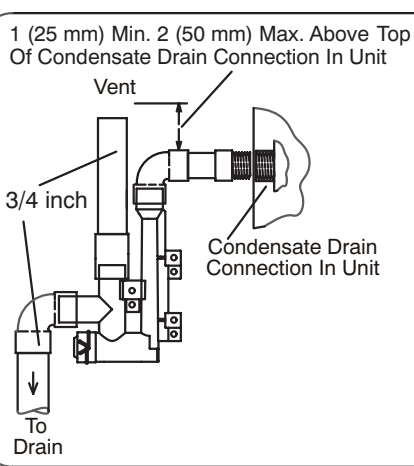
Optional Drain Piping From Trap



Drain Trap Assembly with 1/2 inch Piping



Drain Trap Assembly with 3/4 inch Piping



Drain Trap Assembly
(Furnished)

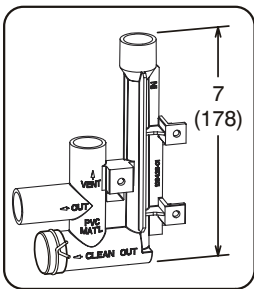


FIGURE 51

III-START-UP

A-Preliminary and Seasonal Checks

- 1 - Inspect electrical wiring, both field and factory installed for loose connections. Tighten as required.
- 2 - Check voltage at disconnect switch. Voltage must be within range listed on the nameplate. If not, consult the power company and have voltage condition corrected before starting unit.
- 3 - Inspect condition of condensate traps and drain assembly. Disassemble and clean seasonally.

B-Heating Start-Up

BEFORE LIGHTING the unit, smell all around the furnace area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. The gas valve on the EL297UHV is equipped with a gas control switch. Use only your hand to move the switch. Never use tools. If the the switch will not move by hand, replace the valve. Do not try to repair it. Force or attempted repair may result in a fire or explosion.

Placing the furnace into operation:

EL297UHV units are equipped with a SureLight® ignition system. Do **not** attempt to manually light burners on this furnace. Each time the thermostat calls for heat, the burners will automatically light. The ignitor does not get hot when there is no call for heat on units with SureLight ignition system.

Priming Condensate Trap

The condensate trap should be primed with water prior to start-up to ensure proper condensate drainage. Either pour 10 fl. oz. (300 ml) of water into the trap, or follow these steps to prime the trap:

- 1 - Follow the lighting instructions to place the unit into operation.
- 2 - Set the thermostat to initiate a heating demand.
- 3 - Allow the burners to fire for approximately 3 minutes.
- 4 - Adjust the thermostat to deactivate the heating demand.
- 5 - Wait for the combustion air inducer to stop. Set the thermostat to initiate a heating demand and again allow the burners to fire for approximately 3 minutes.
- 6 - Adjust the thermostat to deactivate the heating demand and again wait for the combustion air inducer to stop. At this point, the trap should be primed with sufficient water to ensure proper condensate drain operation.

WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or death.

Gas Valve Operation (FIGURE 52)

- 1 - **STOP!** Read the safety information at the beginning of this section.
- 2 - Set the thermostat to the lowest setting.
- 3 - Turn off all electrical power to the unit.

- 4 - This furnace is equipped with an ignition device which automatically lights the burners. Do not try to light the burners by hand.
- 5 - Remove the upper access panel.
- 6 - Move gas valve switch to **OFF**. See FIGURE 52.
- 7 - Wait five minutes to clear out any gas. If you then smell gas, **STOP!** Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas go to next step.
- 8 - Move gas valve switch to ON. See FIGURE 52.

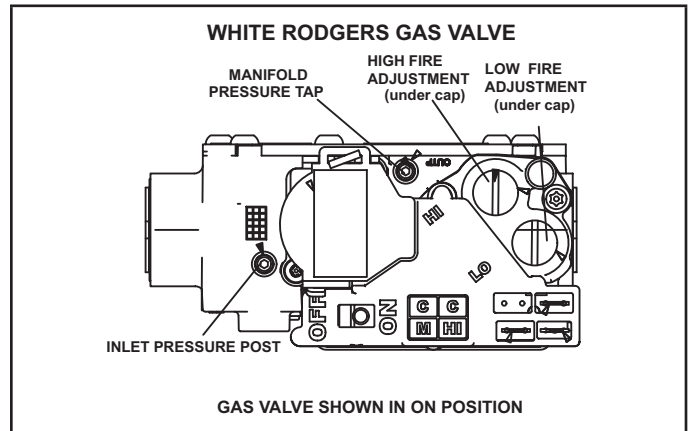


FIGURE 52

- 9 - Replace the upper access panel.
 - 10 - Turn on all electrical power to the unit.
 - 11 - Set the thermostat to desired setting.
- NOTE** - When unit is initially started, steps 1 through 11 may need to be repeated to purge air from gas line.
- 12 - If the appliance will not operate, follow the instructions "Turning Off Gas to Unit" and call your service technician or gas supplier.

Turning Off Gas to Unit

- 1 - Set the thermostat to the lowest setting.
- 2 - Turn off all electrical power to the unit if service is to be performed.
- 3 - Remove the upper access panel.
- 4 - Move gas valve switch to OFF.
- 5 - Replace the upper access panel.

Failure To Operate

If the unit fails to operate, check the following:

- 1 - Is the thermostat calling for heat?
- 2 - Are access panels securely in place?
- 3 - Is the main disconnect switch closed?
- 4 - Is there a blown fuse or tripped breaker?
- 5 - Is the filter dirty or plugged? Dirty or plugged filters will cause the limit control to shut the unit off.
- 6 - Is gas turned on at the meter?
- 7 - Is the manual main shut-off valve open?
- 8 - Is the internal manual shut-off valve open?
- 9 - Is the unit ignition system in lockout? If the unit locks out again, inspect the unit for blockages.

IV-HEATING SYSTEM SERVICE CHECKS

A-CSA Certification

All units are CSA design certified without modifications. Refer to the EL297UHV(X) Installation Instruction.

B-Gas Piping

⚠ CAUTION

If a flexible gas connector is required or allowed by the authority that has jurisdiction, black iron pipe shall be installed at the gas valve and extend outside the furnace cabinet.

⚠ WARNING

Do not over torque (800 in-lbs) or under torque (350 in-lbs) when attaching the gas piping to the gas valve.

Gas supply piping should not allow more than 0.5"W.C. drop in pressure between gas meter and unit. Supply gas pipe must not be smaller than unit gas connection.

Compounds used on gas piping threaded joints should be resistant to action of liquefied petroleum gases.

C-Testing Gas Piping

⚠ IMPORTANT

In case emergency shutdown is required, turn off the main shut-off valve and disconnect the main power to unit. These controls should be properly labeled by the installer.

When pressure testing gas lines, the gas valve must be disconnected and isolated. Gas valves can be damaged if subjected to more than 0.5 psig (14" W.C.). See FIGURE 53. If the pressure is greater than 0.5psig (14"W.C.), use the manual shut-off valve before pressure testing to isolate furnace from gas supply.

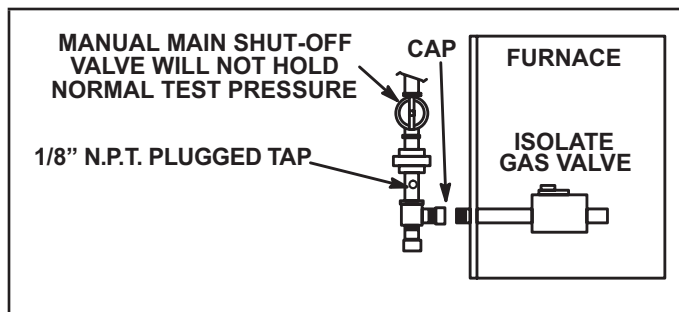


FIGURE 53

When checking piping connections for gas leaks, use preferred means. Kitchen detergents can cause harmful corrosion on various metals used in gas piping. Use of a specialty Gas Leak Detector is strongly recommended. It is available through Lennox under part number 31B2001. See Corp. 8411-L10, for further details.

Do not use matches, candles, flame or any other source of ignition to check for gas leaks.

D-Testing Gas Supply Pressure

An inlet post located on the gas valve provides access to the supply pressure. See FIGURE 52. Back out the 3/32 hex screw one turn, connect a piece of 5/16 tubing and connect to a manometer to measure supply pressure. See TABLE 28 for supply line pressure.

E-Check Manifold Pressure

A manifold pressure post located on the gas valve provides access to the manifold pressure. See FIGURE 52. Back out the 3/32 hex screw one turn, connect a piece of 5/16 tubing and connect to a manometer to measure manifold pressure.

To correctly measure manifold pressure, the differential pressure between the positive gas manifold and the negative burner box must be considered.

⚠ IMPORTANT

For safety, connect a shut-off valve between the manometer and the gas tap to permit shut off of gas pressure to the manometer.

The gas valve is factory set and should not require adjustment. All gas valves are factory regulated.

- 1 - Connect the test gauge positive side "+" to manifold pressure tap on gas valve as noted above.
- 2 - Tee into the gas valve regulator vent hose and connect to test gauge negative "-".
- 3 - Ignite unit on low fire and let run for 5 minutes to allow for steady state conditions.
- 4 - After allowing unit to stabilize for 5 minutes, record manifold pressure and compare to value given in TABLE 28.
- 5 - If necessary, make adjustments. FIGURE 52 shows location of high fire and low fire adjustment screws.
- 6 - Repeat steps 3, 4 and 5 on high fire. See values in TABLE 28.
- 7 - Shut unit off and remove manometer as soon as an accurate reading has been obtained.
- 8 - Start unit and perform leak check. Seal leaks if found.

F- Proper Gas Flow (Approximate)

Furnace should operate at least 5 minutes before checking gas flow. Determine time in seconds for two revolutions of gas through the meter. (Two revolutions assures a more accurate time.) Divide by two and compare to time in TABLE 26. If manifold pressure matches TABLE 26 and rate is incorrect, check gas orifices for proper size and restriction.

NOTE- To obtain accurate reading, shut off all other gas appliances connected to meter.

TABLE 26

| GAS METER CLOCKING CHART | | | | |
|--|----------------------------|-----------------|-----------------|-----------------|
| EL297 Unit | Seconds for One Revolution | | | |
| | Natural | | LP | |
| | 1 cu ft Dial | 2 cu ft Dial | 1 cu ft Dial | 2 cu ft Dial |
| -045 | 80 | 160 | 200 | 400 |
| -070 | 55 | 110 | 136 | 272 |
| -090 | 41 | 82 | 102 | 204 |
| -110 | 33 | 66 | 82 | 164 |
| -135 | 27 | 54 | 68 | 136 |
| Natural-1000 btu/cu ft LP-2500 btu/cu ft | | | | |

⚠ IMPORTANT

For safety, shut unit off and remove manometer as soon as an accurate reading has been obtained. Take care to replace pressure tap plug.

G- Proper Combustion

Furnace should operate minimum 15 minutes with correct manifold pressure and gas flow rate before checking combustion. See sections E- and F-. Take combustion sample beyond the flue outlet. TABLE 27 shows acceptable combustions. **The maximum carbon monoxide reading should not exceed 100 ppm.**

TABLE 27

| EL297 Model | CO ₂ % For Nat | | CO ₂ % For L.P | |
|---|---------------------------|-----------|---------------------------|------------|
| | Low Fire | High Fire | Low Fire | High Fire |
| 045 | 5.4 - 6.4 | 7.5 - 8.5 | 6.4 - 7.4 | 8.8 - 9.8 |
| 070 | 5.3 - 6.3 | 7.4 - 8.4 | 6.3 - 7.3 | 8.7 - 9.7 |
| 090 | 5.8 - 6.8 | 7.6 - 8.6 | 6.8 - 7.8 | 8.9 - 9.9 |
| 110 | 6.1 - 7.1 | 8.0 - 9.0 | 7.1 - 8.1 | 9.3 - 10.3 |
| 135 | 6.1 - 7.1 | 7.8 - 8.8 | 7.1 - 8.2 | 9.1 - 10.1 |
| The maximum carbon monoxide reading should not exceed 100ppm. | | | | |

H- High Altitude

The manifold pressure, gas orifice and pressure switch may require adjustment or replacement to ensure proper operation at higher altitudes. See TABLE 28 for manifold pressures. See TABLE 29 for gas conversion and pressure switch kits.

TABLE 28

Manifold and Supply Line Pressure 0-10,000ft.

| Unit | Gas | Manifold Pressure in. w.g. | | | | | | | | | | Supply Line Pressure in. w.g 0 - 10,000 ft. | |
|-----------|------------|----------------------------|-----------|-----------------|-----------|----------------|-----------|----------------|-----------|------------------|-----------|---|------|
| | | 0 - 4500 ft | | 4501 - 5500 ft. | | 5501 - 6500 ft | | 6501 - 7500 ft | | 7501 - 10,000 ft | | Min | Max |
| | | Low Fire | High Fire | Low Fire | High Fire | Low Fire | High Fire | Low Fire | High Fire | Low Fire | High Fire | | |
| All Sizes | Natural | 1.7 | 3.5 | 1.6 | 3.3 | 1.5 | 3.2 | 1.5 | 3.1 | 1.7 | 3.5 | 4.5 | 13.0 |
| | LP/Propane | 4.5 | 10.0 | 4.2 | 9.4 | 4.0 | 9.1 | 3.9 | 8.9 | 4.5 | 10.0 | 11.0 | 13.0 |

NOTE - A natural to L.P. propane gas changeover kit is necessary to convert this unit. Refer to the changeover kit installation instruction for the conversion procedure.

TABLE 29

LP/Propane Conversion Kit and Pressure Switch Requirements at Varying Altitudes

| Unit | Natural to LP/Propane | High Altitude Natural Burner Orifice Kit | High Altitude LP/Propane Burner Orifice Kit | High Altitude Pressure Switch | |
|------|-----------------------|--|---|-------------------------------|------------------|
| | 0 - 7500 ft | 7501 - 10,000 ft | 7501 - 10,000 ft | 4501 - 7500 ft | 7501 - 10,000 ft |
| 045 | *11K51 | 73W37 | *11K46 | 14A51 | 14A53 |
| 070 | | | | 14A48 | 14A54 |
| 090 | | | | 14A54 | 14A53 |
| 110 | | | | 25B93 | 14A45 |
| 135 | | | | 25B94 | 25B95 |

*** Conversion requires installation of a gas valve manifold spring which is provided with the gas conversion kit. Pressure switch is factory set. No adjustment necessary. All models use the factory-installed pressure switch from 0-4500 feet (0-1370 m).**

I- Proper Ground and Voltage

A poorly grounded furnace can contribute to premature ignitor failure. Use the following procedure to check for ground and voltage to the integrated control.

- 1 - Measure the AC voltage between Line Neutral (spade terminals) and "C" terminal (low voltage terminal block) on the integrated control. See FIGURE 54. A wide variation in the voltage between Line Neutral and "C" as a function of load indicates a poor or partial ground. Compare the readings to TABLE 30. If the readings exceed the maximum shown in table 1, make repairs before operating the furnace.

NOTE - FIGURE 54 is a typical ignition illustration. Use as reference.

- 2 - In addition, measure the AC voltage from Line Hot to Line Neutral (spade terminals) on the integrated control. See FIGURE 54. This voltage should be in the range of 97 to 132 Vac.

TABLE 30

| Furnace Status | Measurement VAC | |
|-------------------------|-----------------|---------|
| | Expected | Maximum |
| Power On Furnace Idle | 0.3 | 2 |
| CAI / Ignitor Energized | 0.75 | 5 |
| Indoor Blower Energized | Less than 2 | 10 |

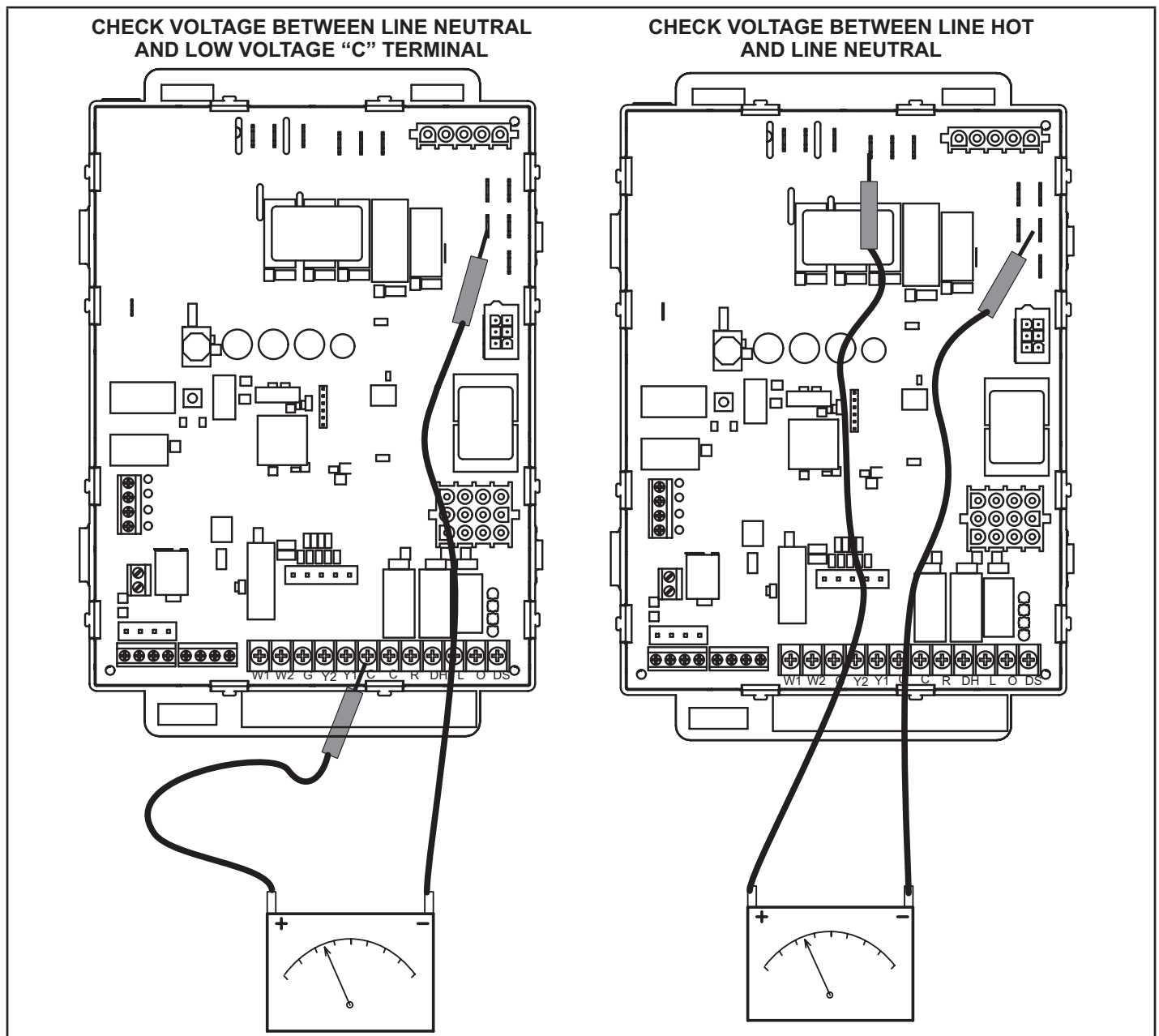


FIGURE 54

V-TYPICAL OPERATING CHARACTERISTICS

A-Blower Operation and Adjustment

- 1 - Blower operation is dependent on thermostat control system.
- 2 - Generally, blower operation is set at thermostat subbase fan switch. With fan switch in ON position, blower operates continuously. With fan switch in AUTO position, blower cycles with demand or runs continuously while heating or cooling circuit cycles.
- 3 - Depending on the type of indoor thermostat, blower and entire unit will be off when the system switch is in OFF position.

B-Temperature Rise (FIGURE 55)

Temperature rise for EL297UHV units depends on unit input, blower speed, blower horsepower and static pressure as marked on the unit rating plate. The blower speed must be set for unit operation within the range of "TEMP. RISE °F" listed on the unit rating plate.

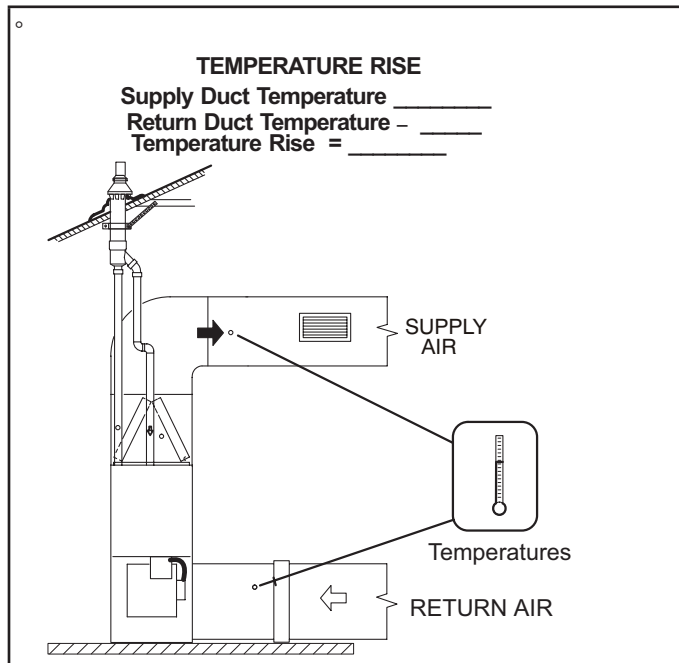


FIGURE 55

C-External Static Pressure

- 1 - Tap locations shown in FIGURE 56.
- 2 - Punch a 1/4" diameter hole in supply and return air plenums. Insert manometer hose flush with inside edge of hole or insulation. Seal around the hose with permagum. Connect the zero end of the manometer to the discharge (supply) side of the system. On ducted systems, connect the other end of manometer to the return duct as above.
- 3 - With only the blower motor running and the evaporator coil dry, observe the manometer reading. Adjust blower motor speed to deliver the air desired according to the job requirements.
- 4 - Seal the hole when the check is complete.

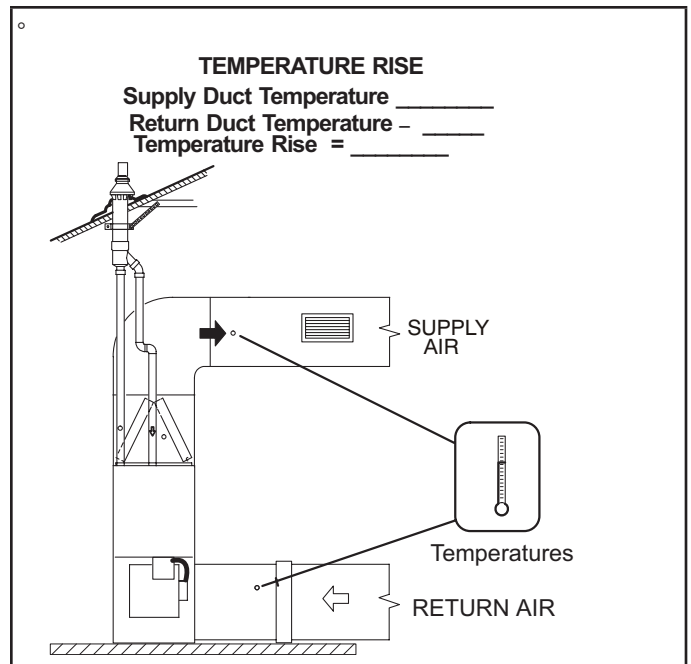


FIGURE 56

VI-MAINTENANCE

⚠ WARNING

**ELECTRICAL SHOCK, FIRE,
OR EXPLOSION HAZARD.**

Failure to follow safety warnings exactly could result in dangerous operation, serious injury, death or property damage.

Improper servicing could result in dangerous operation, serious injury, death, or property damage. Before servicing, disconnect all electrical power to furnace.

When servicing controls, label all wires prior to disconnecting. Take care to reconnect wires correctly. Verify proper operation after servicing.

At the beginning of each heating season, system should be checked as follows by a qualified service technician:

Blower

Check the blower wheel for debris and clean if necessary. The blower motors are prelubricated for extended bearing life. No further lubrication is needed.

⚠ WARNING

The blower access panel must be securely in place when the blower and burners are operating. Gas fumes, which could contain carbon monoxide, can be drawn into living space resulting in personal injury or death.

Filters

All air filters are installed external to the unit. Filters should be inspected monthly. Clean or replace the filters when necessary to ensure proper furnace operation. TABLE 31 lists recommended filter sizes.

⚠ IMPORTANT

If a high efficiency filter is being installed as part of this system to ensure better indoor air quality, the filter must be properly sized. High efficiency filters have a higher static pressure drop than standard efficiency glass/foam filters. If the pressure drop is too great, system capacity and performance may be reduced. The pressure drop may also cause the limit to trip more frequently during the winter and the indoor coil to freeze in the summer, resulting in an increase in the number of service calls.

Before using any filter with this system, check the specifications provided by the filter manufacturer against the data given in the appropriate Lennox Product Specifications bulletin. Additional information is provided in Service and Application Note ACC002 (August 2000).

TABLE 31

| Furnace Cabinet Width | Filter Size | |
|-----------------------|-----------------|-----------------|
| | Side Return | Bottom Return |
| 17-1/2" | 16 X 25 X 1 (1) | 16 X 25 X 1 (1) |
| 21" | 16 X 25 X 1 (1) | 20 X 25 X 1 (1) |
| 24-1/2" | 16 X 25 X 1 (2) | 24 X 25 X 1 (1) |

Exhaust and air intake pipes

Check the exhaust and air intake pipes and all connections for tightness and to make sure there is no blockage.

NOTE - After any heavy snow, ice or frozen fog event the furnace vent pipes may become restricted. Always check the vent system and remove any snow or ice that may be obstructing the plastic intake or exhaust pipes.

Electrical

- 1 - Check all wiring for loose connections.
- 2 - Check for the correct voltage at the furnace (furnace operating).
- 3 - Check amp-draw on the blower motor.
Motor Nameplate _____ Actual _____

Winterizing and Condensate Trap Care

- 1 - Turn off power to the furnace.
- 2 - Have a shallow pan ready to empty condensate water.
- 3 - Remove the clean out cap from the condensate trap and empty water. Inspect the trap then reinstall the clean out cap.

Condensate Hose Screens (FIGURE 57)

Check the condensate hose screens for blockage and clean if necessary.

- 1 - Turn off power to the unit.
- 2 - Remove hoses from cold end header box. Twist and pull screens to remove.

- 3 - Inspect screens and rinse with tap water if needed.
- 4 - Reinstall screens, reconnect hoses and turn on power to unit.

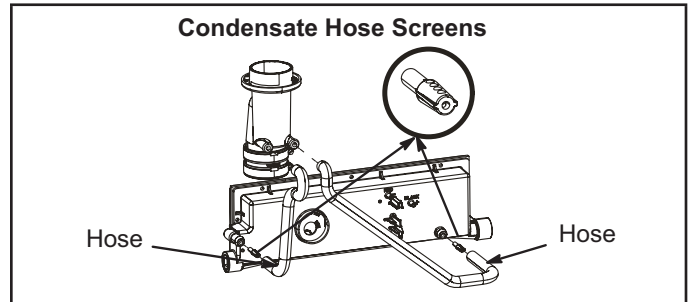


FIGURE 57

Cleaning Heat Exchanger

If cleaning the heat exchanger becomes necessary, follow the below procedures and refer to FIGURE 1 when disassembling unit. Use papers or protective covering in front of furnace while removing heat exchanger assembly.

- 1 - Turn off electrical and gas supplies to the furnace.
 - 2 - Remove the furnace access panels.
 - 3 - Disconnect the 2 wires from the gas valve.
 - 4 - Remove gas supply line connected to gas valve. Remove the burner box cover (if equipped) and remove gas valve/manifold assembly.
 - 5 - Remove sensor wire from sensor. Disconnect 2-pin plug from the ignitor.
 - 6 - Disconnect wires from flame roll-out switches.
 - 7 - Disconnect combustion air intake pipe. It may be necessary to cut the existing pipe to remove burner box assembly.
 - 8 - Remove four burner box screws at the vestibule panel and remove burner box. Set burner box assembly aside.
- NOTE** - If necessary, clean burners at this time. Follow procedures outlined in Burner Cleaning section.
- 9 - Loosen the clamps to the flexible exhaust coupling.
 - 10 - Disconnect condensate drain line from the cold end header box.
 - 11 - Disconnect condensate drain tubing from flue collar. Remove screws that secures the flue collar into place. Remove flue collar. It may be necessary to cut the exiting exhaust pipe for removal of the fitting.
 - 12 - Mark and disconnect all combustion air pressure tubing from cold end header collector box.
 - 13 - Mark and remove wires from pressure switch assembly. Remove the assembly. Keep tubing attached to pressure switches.
 - 14 - Disconnect the plug from the combustion air inducer. Remove two screws which secure combustion air inducer to collector box. Remove combustion air inducer assembly. Remove ground wire from vest panel.
 - 15 - Disconnect the condensate drain line.
 - 16 - Remove cold end header box.

- 17 - Remove electrical junction box from the side of the furnace.
- 18 - Mark and disconnect any remaining wiring to heating compartment components. Disengage strain relief bushing and pull wiring and bushing through the hole in the blower deck.
- 19 - Remove the primary limit from the vestibule panel.
- 20 - Remove two screws from the front cabinet flange at the blower deck. Spread cabinet sides slightly to allow clearance for removal of heat exchanger.
- 21 - Remove screws along vestibule sides and bottom which secure vestibule panel and heat exchanger assembly to cabinet. Remove two screws from blower rail which secure bottom heat exchanger flange. Remove heat exchanger from furnace cabinet.
- 22 - Back wash heat exchanger with soapy water solution or steam. **If steam is used it must be below 275°F (135°C) .**
- 23 - Thoroughly rinse and drain the heat exchanger. Soap solutions can be corrosive. Take care to rinse entire assembly.
- 24 - Reinstall heat exchanger into cabinet making sure that the clamshells of the heat exchanger assembly is engaged properly into the support bracket on the blower deck. Remove the indoor blower to view this area through the blower opening.
- 25 - Re-secure the supporting screws along the vestibule sides and bottom to the cabinet.
- 26 - Reinstall cabinet screws on front flange at blower deck.
- 27 - Reinstall the primary limit on the vestibule panel.
- 28 - Route heating component wiring through hole in blower deck and reinsert strain relief bushing.
- 29 - Reinstall electrical junction box.
- 30 - Reinstall the cold end header box.
- 31 - Reinstall the combustion air inducer. Reconnect the plug to the wire harness.
- 32 - Reinstall pressure switches and reconnect pressure switch wiring.
- 33 - Carefully connect combustion air pressure switch tubing from pressure switches to proper ports on cold end header collector box.
- 34 - Reconnect condensate drain line to the cold end header box.
- 35 - Use securing screws to reinstall flue collar to the top cap on the furnace. Reconnect exhaust piping and exhaust drain tubing.
- 36 - Replace flexible exhaust adapter on combustion air inducer and flue collar. Secure using two existing hose clamps.
- 37 - Reinstall burner box assembly in vestibule area. Secure burner box assembly to vestibule panel using four existing screws. **Make sure burners line up in center of burner ports.**
- 38 - Reconnect flame roll-out switch wires.
- 39 - Reconnect sensor wire and reconnect 2-pin plug from ignitor.
- 40 - Reinstall gas valve manifold assembly. Reconnect gas supply line to gas valve.

- 41 - Reconnect the combustion air intake pipe.
- 42 - Reinstall burner box cover.
- 43 - Reconnect wires to gas valve.
- 44 - Replace the blower compartment access panel.
- 45 - Reconnect gas supply piping. Turn on power and gas supply to unit.
- 46 - Follow lighting instructions on unit nameplate to light and operate furnace for 5 minutes to ensure the furnace is operating properly.
- 47 - Check all piping connections, factory and field, for gas leaks. Use a leak detecting solution or other preferred means.
- 48 - Replace heating compartment access panel.

CAUTION

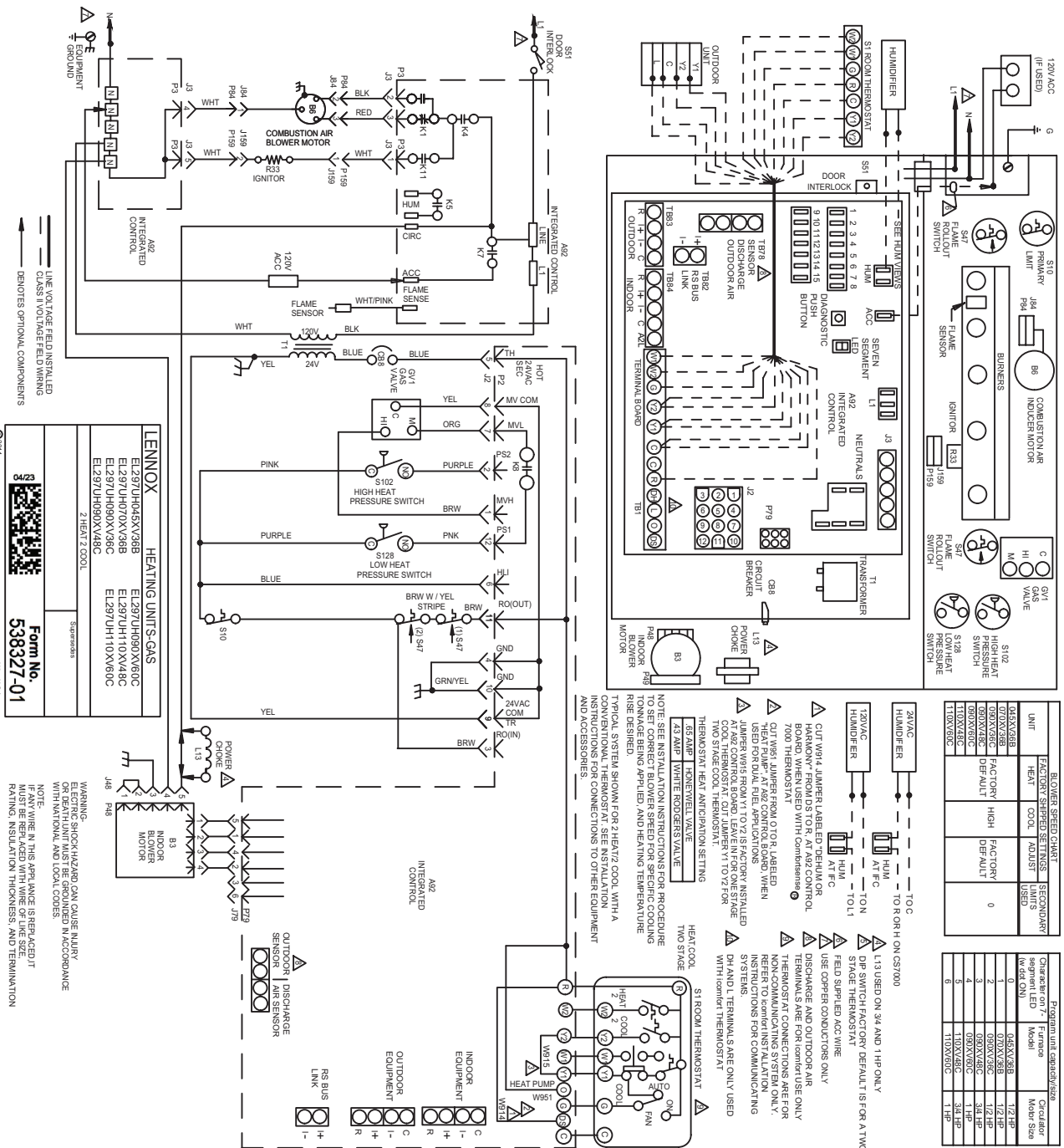
Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

Cleaning the Burner Assembly (if needed)

- 1 - Turn off electrical and gas power supplies to furnace. Remove upper and lower furnace access panels.
- 2 - Disconnect the wires from the gas valve.
- 3 - Remove the burner box cover (if equipped).
- 4 - Disconnect the gas supply line from the gas valve. Remove gas valve/manifold assembly.
- 5 - Mark and disconnect sensor wire from the sensor. Disconnect wires from flame rollout switches.
- 6 - Disconnect combustion air intake pipe. It may be necessary to cut the existing pipe to remove burner box assembly.
- 7 - Remove four screws which secure burner box assembly to vest panel. Remove burner box from the unit.
- 8 - Use the soft brush attachment on a vacuum cleaner to gently clean the face of the burners. Visually inspect the inside of the burners and crossovers for any blockage caused by foreign matter. Remove any blockage.
- 9 - Reinstall the burner box assembly using the existing four screws. Make sure that the burners line up in the center of the burner ports.
- 10 - Reconnect the sensor wire and reconnect the 2-pin plug to the ignitor wiring harness. Reconnect wires to flame rollout switches.
- 11 - Reinstall the gas valve manifold assembly. Reconnect the gas supply line to the gas valve. Reinstall the burner box cover.
- 12 - Reconnect wires to gas valve.
- 13 - Replace the blower compartment access panel.
- 14 - Refer to instruction on verifying gas and electrical connections when re-establishing supplies.
- 15 - Follow lighting instructions to light and operate furnace for 5 minutes to ensure that heat exchanger is clean and dry and that furnace is operating properly.
- 16 - Replace heating compartment access panel.

VII- Wiring and Sequence of Operation

EL297UHV WITH IGNITION CONTROL 107045-XX UNIT DIAGRAM



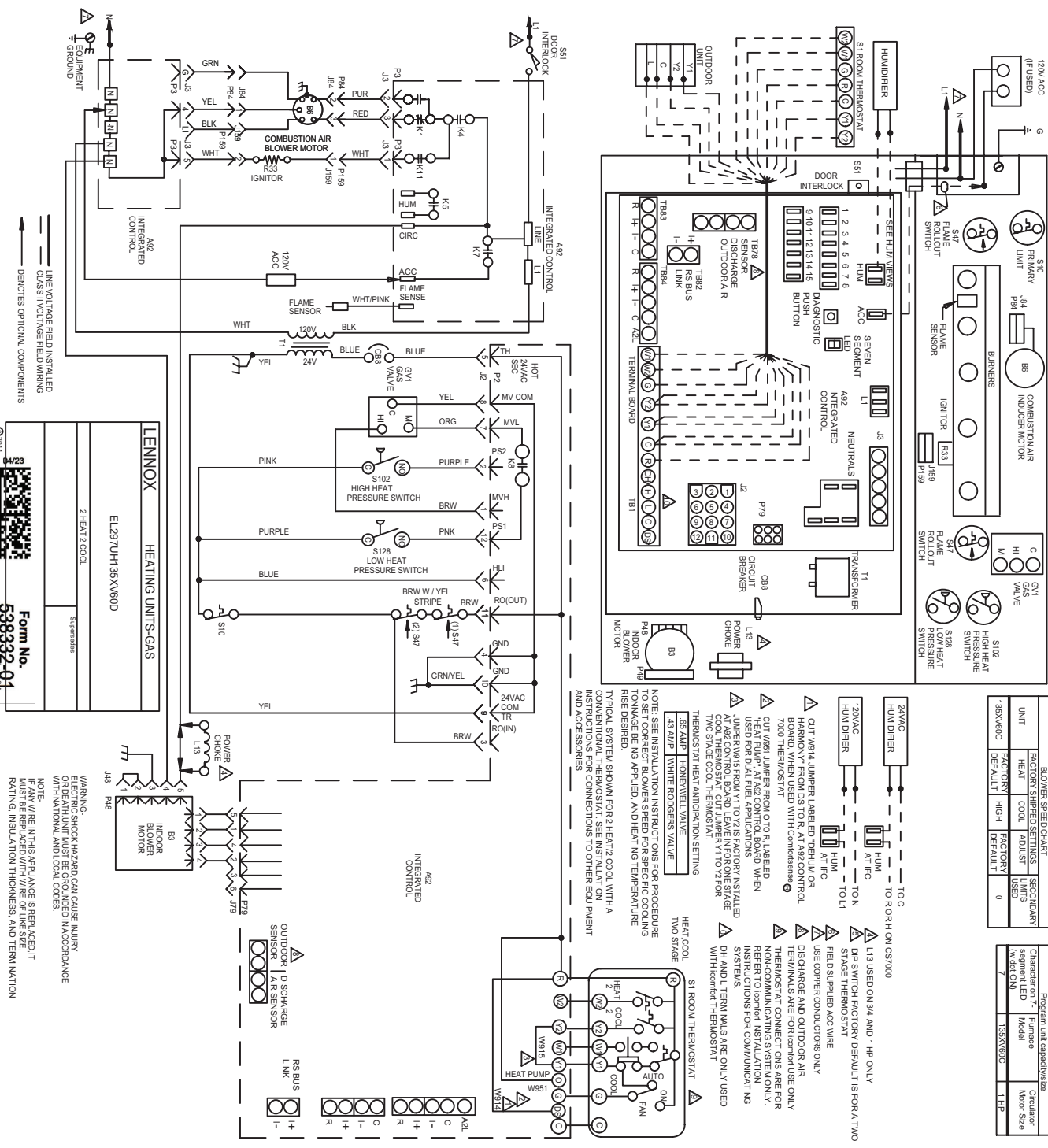
| UNIT | FACTORY SPEED SETTINGS | SECONDARY SPEED |
|------|------------------------|-----------------|
| HEAT | TOOL ADJUST | USED |
| COOL | ADJUST | USED |
| 0 | FACTORY | 0 |
| 1 | HSH | FACTORY |
| 2 | DEFAULT | DEFAULT |

| Character on Furnace Model | Furnace Model | Circular Motor Size |
|----------------------------|---------------|---------------------|
| 0 | 045XV38B | 1/2 HP |
| 1 | 070XV38B | 1/2 HP |
| 2 | 090XV38C | 1/2 HP |
| 3 | 090XV38C | 1/2 HP |
| 4 | 090XV60C | 1 HP |
| 5 | 110XV48C | 3/4 HP |
| 6 | 110XV60C | 1 HP |

NOTES:

- SEE INSTALLATION INSTRUCTIONS FOR PROCEEDURE TO SET CORRECT BLOWER SPEED FOR SPECIFIC COOLING TONNAGE BEING APPLIED, AND HEATING TEMPERATURE RISE DESIRED.
- TYPICAL SYSTEM SHOWN FOR 2 HEAT/2 COOL WITH A TWO STAGE COOL THERMOSTAT.
- SEE INSTALLATION INSTRUCTIONS FOR CONNECTIONS TO OTHER EQUIPMENT AND ACCESSORIES.
- HEAT/COOL TWO STAGE
- HEAT/COOL TWO STAGE
- HEAT/COOL TWO STAGE

EL297UHV-135 WITH IGNITION CONTROL 107045-XX UNIT DIAGRAM



LENNOX HEATING UNITS-GAS

EL297UHV135XV60D

2 HEAT 2 COOL

Supersedes

Form No. 538332-01

Rev. 03/11

WARNING: SHOCK HAZARD CAN CAUSE INJURY OR DEATH! UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

NOTE: IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF THE SAME SIZE, MATERIAL, INSULATION THICKNESS, AND TERMINATION.

BURNER SPEED CHART

| UNIT | FACTORY SETPOINT | SECONDARY FACTORY SETTINGS |
|----------|------------------|----------------------------|
| 135XV60C | HEAT | COOL |
| 135XV60C | ADJUST | ADJUST |
| 135XV60C | HIGH | DEFAULT |
| 135XV60C | DEFAULT | 0 |

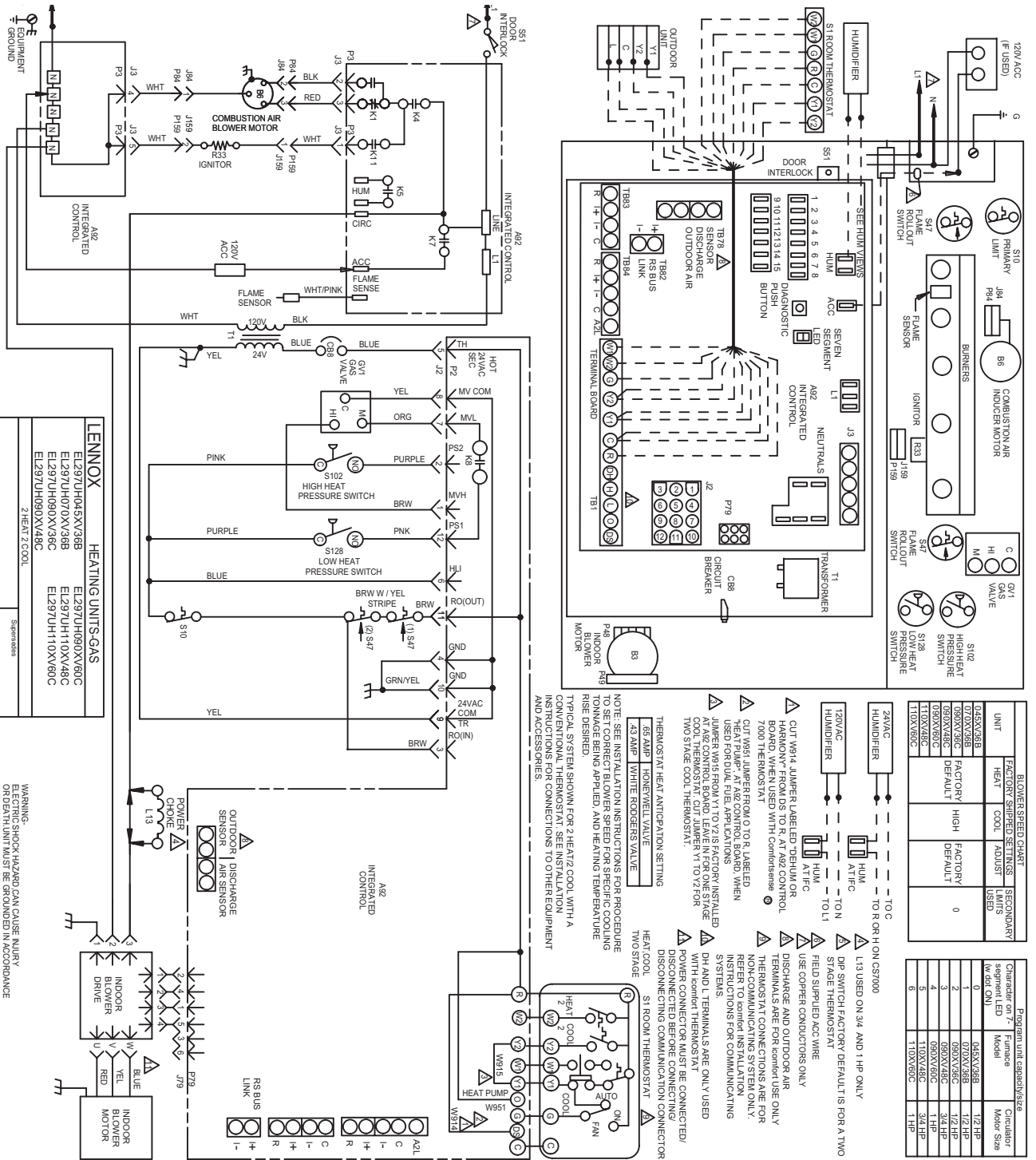
Program unit capabilities

| Character set | Feature | Character |
|---------------|----------|------------|
| segment LED | Model | Motor Size |
| width ON | Model | Motor Size |
| width ON | 135XV60C | 1 HP |

Notes:

- HEAT/COOL TWO STAGE
- HEAT PUMP
- OUTDOOR UNIT
- DISCHARGE SENSOR
- AMPS SENSOR
- LINK
- RS BUS
- 42L
- 1
- 2
- 3
- 4
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- 12
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- 100

EL297UHV WITH IGNITION CONTROL 107045-XX AND BLOWER DRIVE



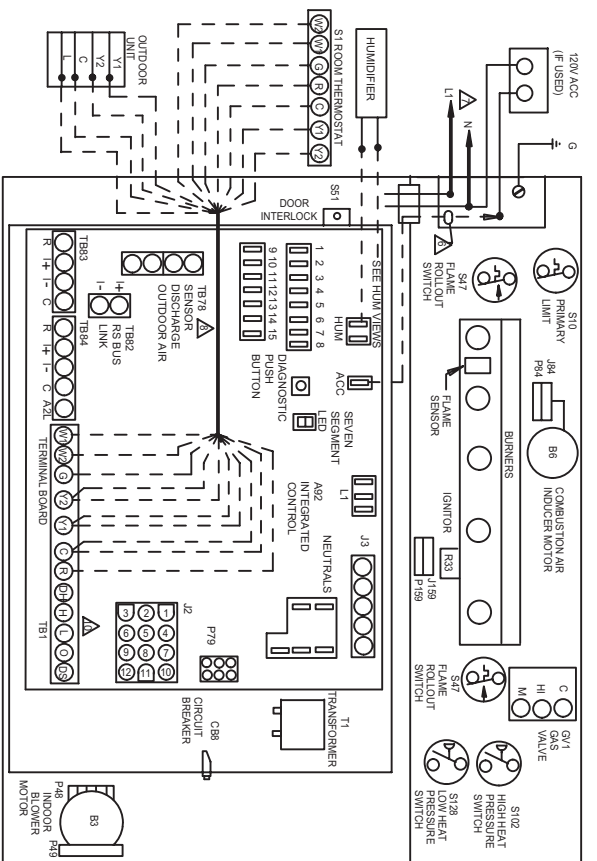
LINE VOLTAGE FIELD INSTALLED
CLASS II VOLTAGE FIELD WIRING
DENOTES OPTIONAL COMPONENTS

| LENOX HEATING UNITS-GAS | |
|-------------------------|-----------------|
| EL297UH045XV36B | EL297UH090XV60C |
| EL297UH070XV36B | EL297UH110XV48C |
| EL297UH090XV36C | EL297UH110XV60C |
| EL297UH090XV48C | |

2 HEAT 2 COOL

WARNING:
ELECTRIC SHOCK HAZARD CAN CAUSE INJURY
OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE
WITH NATIONAL AND LOCAL CODES.
NOTE:
WIRE IN THIS APPLIANCE IS REPLACED IT
MUST BE REPLACED WITH WIRE OF LIKE SIZE,
RATING, INSULATION THICKNESS AND TERMINATION

Form No. 538338-01
Lennox U.S.A.



Blower Speed Chart

| UNIT | FACTORY SHIPPED SETTINGS | SECONDARY LIMITS |
|------|--------------------------|------------------|
| HEAT | COOL | ADJUST |
| COOL | ADJUST | HEAT |
| 0 | 0 | 0 |

Program unit capacitance

| Character on r- segment LED (w/ def. ON) | Furnace Model | Circulator Motor Size |
|--|---------------|-----------------------|
| 0 | 045XV36B | 1/2 HP |
| 1 | 070X36B | 1/2 HP |
| 2 | 080X48C | 3/4 HP |
| 3 | 090X48C | 3/4 HP |
| 4 | 090X60C | 1 HP |
| 5 | 110X48C | 3/4 HP |
| 6 | 110X60C | 1 HP |

Notes:

- 1.13 USED ON 3/4 AND 1 HP ONLY
- DRP SWITCH FACTORY DEFAULTS FOR A TWO STAGE THERMOSTAT
- FIELD SUPPLIED ACC WIRE
- USE COPPER CONDUCTORS ONLY
- DISCHARGE AND OUTDOOR AIR TERMINALS ARE FOR COMFORT USE ONLY
- TERMINALS IN CONNECTIONS ARE FOR NON-RESIDENTIAL APPLICATIONS ONLY. REFER TO IDENTIFICATION INSTRUCTIONS FOR COMMUNICATING SYSTEMS.
- DH AND L TERMINALS ARE ONLY USED WITH ICOM THERMOSTAT
- POWER CONNECTOR MUST BE CONNECTED/ DISCONNECTED BEFORE CONNECTING/ DISCONNECTING COMMUNICATION CONNECTOR
- HEAT PUMP
- HEAT COOL
- ST ROOM THERMOSTAT
- HEAT COOL
- ST ROOM THERMOSTAT
- HEAT COOL
- ST ROOM THERMOSTAT

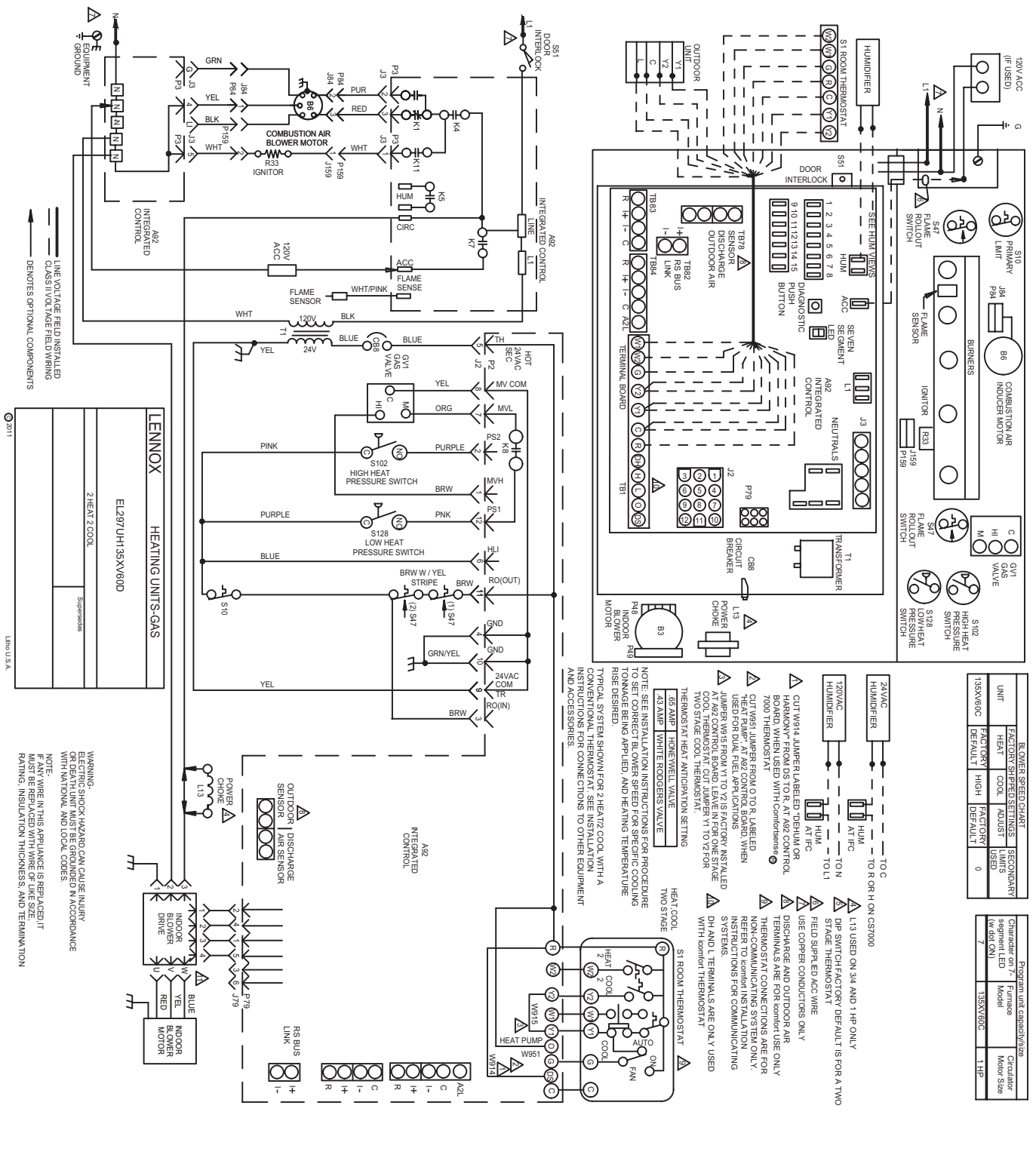
Thermostat Heat Anticipation Settings

| 43 AMP | WHITE | ROOFSERV VALVE |
|-----------|-----------|----------------|
| HEAT COOL | TWO STAGE | |

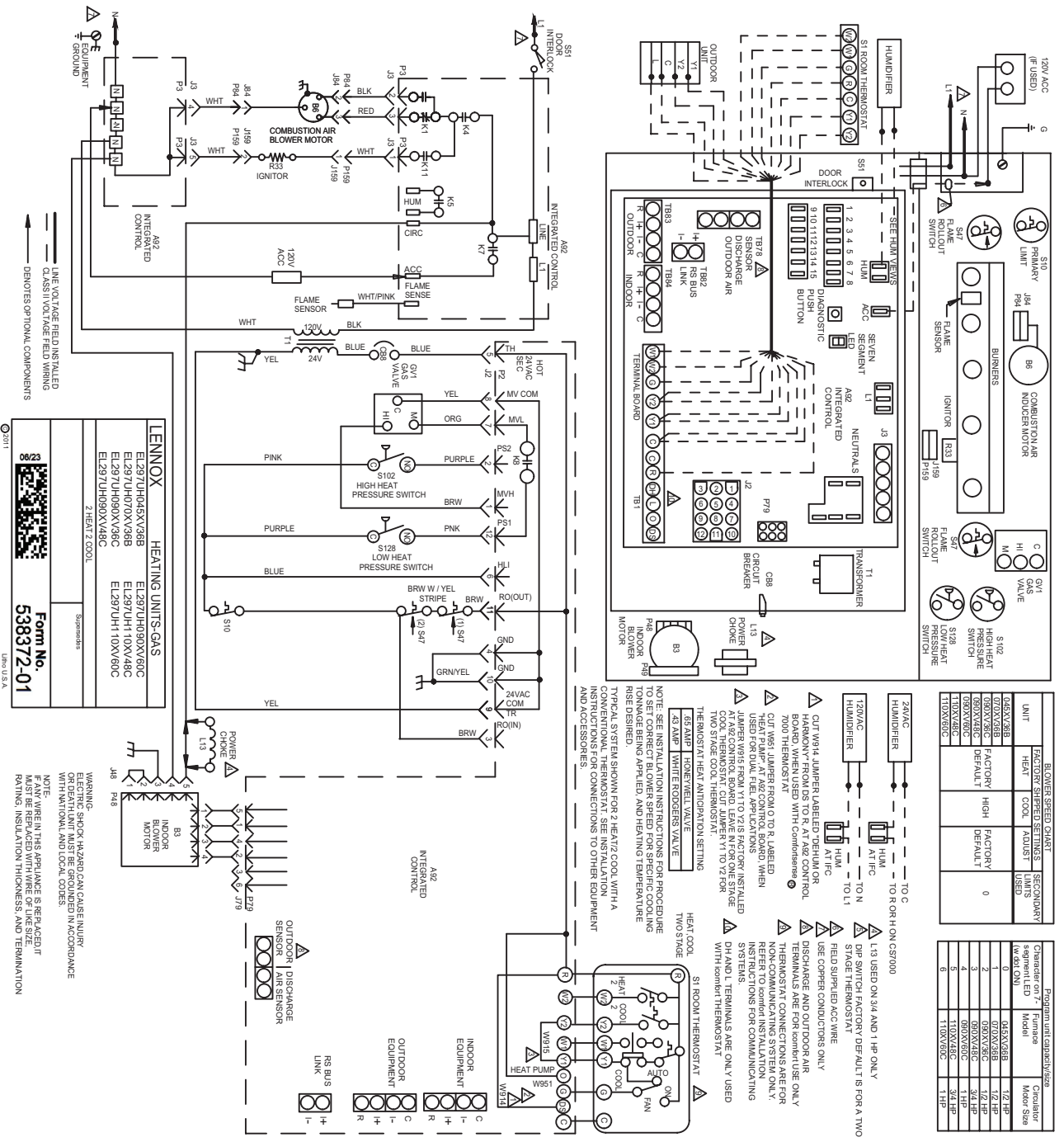
Notes:

- NOTE: SEE INSTALLATION INSTRUCTIONS FOR PROCEDURE TO SET CORRECT BLOWER SPEED FOR SPECIFIC COOLING RISES/SETBACKS.
- TYPICAL SYSTEMS SHOWN FOR 2 HEAT/2 COOL WITH A COMFORT SYSTEM THERMOSTAT. REFER TO IDENTIFICATION INSTRUCTIONS FOR CONNECTIONS TO OTHER EQUIPMENT AND ACCESSORIES.
- CUT W915 JUMPER FROM Q1 TO R LABELLED AT A22 CONTROL BOARD. LEAVE IN FOR ONE STAGE COOL THERMOSTAT. CUT JUMPER Y1 TO Y2 FOR TWO STAGE COOL THERMOSTAT.
- CUT W915 JUMPER FROM Q1 TO R LABELLED AT A22 CONTROL BOARD. LEAVE IN FOR ONE STAGE COOL THERMOSTAT. CUT JUMPER Y1 TO Y2 FOR TWO STAGE COOL THERMOSTAT.
- USE FOR DUAL FUEL APPLICATIONS
- 7000 THERMOSTAT
- HARMONY™ FROM DS TO R, AT A22 CONTROL BOARD. WHEN USED WITH ComfortSense™
- CUT W914 JUMPER LABELLED THERMUM OR TON FROM DS TO R, AT A22 CONTROL BOARD. WHEN USED WITH ComfortSense™
- 7000 THERMOSTAT
- CUT W915 JUMPER FROM Q1 TO R LABELLED AT A22 CONTROL BOARD. LEAVE IN FOR ONE STAGE COOL THERMOSTAT. CUT JUMPER Y1 TO Y2 FOR TWO STAGE COOL THERMOSTAT.
- USE FOR DUAL FUEL APPLICATIONS
- 7000 THERMOSTAT
- HARMONY™ FROM DS TO R, AT A22 CONTROL BOARD. WHEN USED WITH ComfortSense™
- CUT W914 JUMPER LABELLED THERMUM OR TON FROM DS TO R, AT A22 CONTROL BOARD. WHEN USED WITH ComfortSense™
- 7000 THERMOSTAT

EL297UHV-135 WITH IGNITION CONTROL 107045-XX AND BLOWER DRIVE



EL297UHV WITH IGNITION CONTROL 103130-XX UNIT DIAGRAM



BLOWER SPEED CHART

| UNIT | HEAT | COOL | ADJUST | SECONDARY LIMITS USED |
|----------|---------|---------|---------|-----------------------|
| EL297UHV | FACTORY | COOL | ADJUST | USED |
| EL297UHV | FACTORY | HIGH | FACTORY | 0 |
| EL297UHV | FACTORY | DEFAULT | FACTORY | DEFAULT |
| EL297UHV | FACTORY | DEFAULT | FACTORY | DEFAULT |
| EL297UHV | FACTORY | DEFAULT | FACTORY | DEFAULT |

Program unit capacity/size

| Character on 7- segment LED | Furnace Model | Chiller Model | Medium Size | Chiller Size |
|--------------------------------|---------------|---------------|-------------|--------------|
| 1 | 025XV38B | 025XV38B | 12 HP | 12 HP |
| 2 | 030XV38C | 030XV38C | 12 HP | 12 HP |
| 3 | 030XV38C | 030XV38C | 34 HP | 34 HP |
| 4 | 030XV38C | 030XV38C | 1 HP | 1 HP |
| 6 | 110XV38C | 110XV38C | 1 HP | 1 HP |

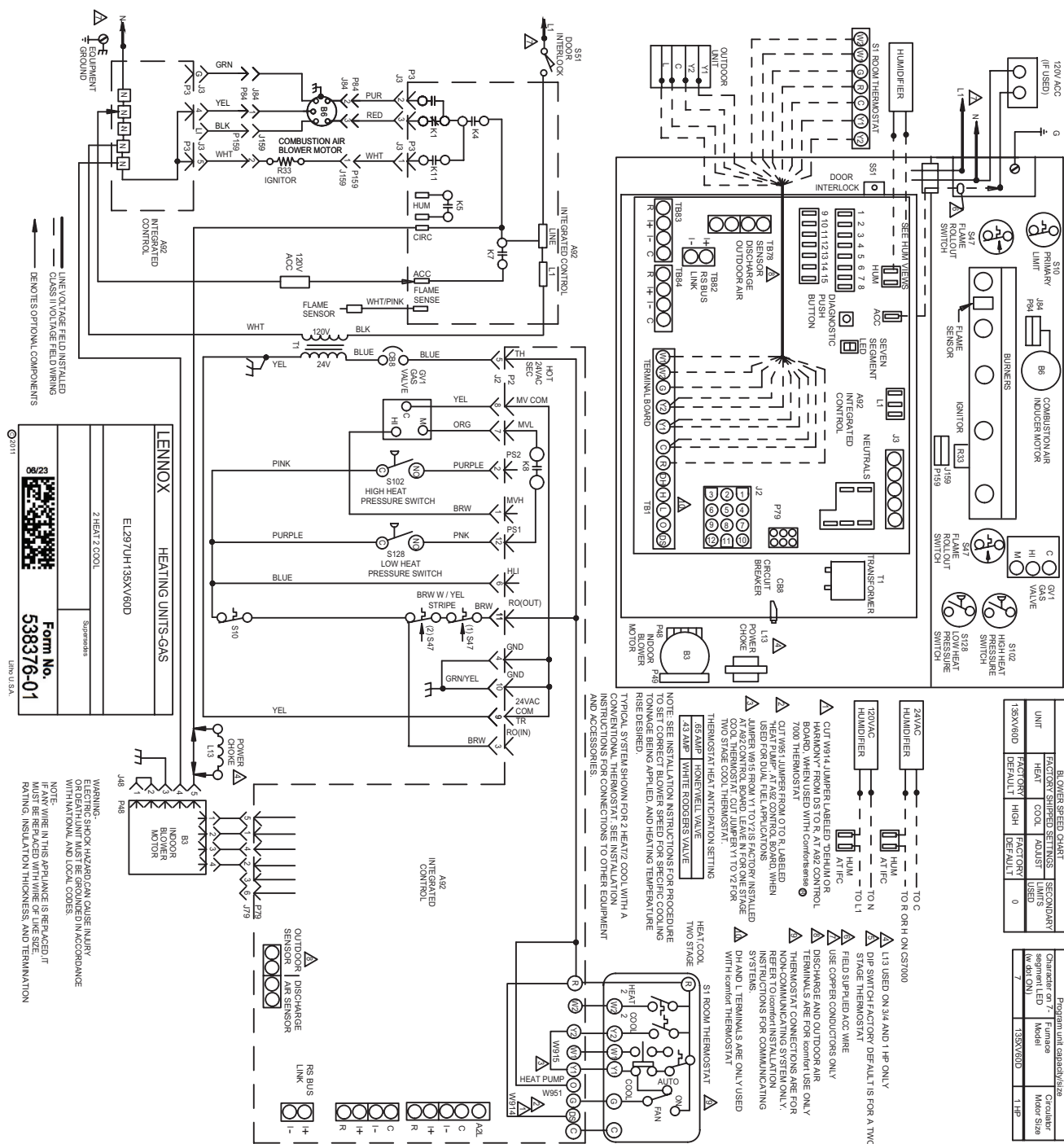
- NOTE: SEE INSTALLATION INSTRUCTIONS FOR PROCEDURE AND TONNAGE BEING APPLIED, AND HEATING TEMPERATURE RISE DESIRED.
- TYPICAL SYSTEM SHOWN FOR 2 HEAT/2 COOL WITH A CONVENTIONAL THERMOSTAT. SEE INSTALLATION INSTRUCTIONS FOR CONNECTIONS TO OTHER EQUIPMENT AND ACCESSORIES.
- △ 119 USED ON C97/000
 - △ DR SWITCH FACTORY DEFAULT IS FOR A TWO STAGE THERMOSTAT
 - △ RED SUPERLEAD WIRE
 - △ USE COPPER CONDUCTORS ONLY
 - △ DISCHARGE AND OUTDOOR AIR THERMOSTAT CONNECTIONS ARE FOR NON-COMMUNICATING SYSTEM ONLY. REFER TO IDENTIFY INSTALLATION INSTRUCTIONS FOR COMMUNICATING SYSTEMS.
 - △ HEAT PUMP AT AZ2 CONTROL BOARD WHEN USED FOR DUAL FUEL APPLICATIONS PER INSTALLED JUMPER SETTINGS. AT AZ2 CONTROL BOARD, COOL THERMOSTAT CUT JUMPER Y1 TO Z1 FOR TWO STAGE COOL THERMOSTAT.
 - △ CUT W81 JUMPER FROM O TO R, LABELED "HARDWIRE" FROM O TO R AT AZ2 CONTROL BOARD WITH CONDENSERS.
 - △ HARMONY FROM O TO R AT AZ2 CONTROL BOARD WITH CONDENSERS.
 - △ CUT W81 JUMPER FROM O TO R, LABELED "HEAT PUMP" AT AZ2 CONTROL BOARD WHEN USED FOR DUAL FUEL APPLICATIONS PER INSTALLED JUMPER SETTINGS. AT AZ2 CONTROL BOARD, COOL THERMOSTAT CUT JUMPER Y1 TO Z1 FOR TWO STAGE COOL THERMOSTAT.

LENNOX HEATING UNITS-GAS

EL297UH04SXV38B
 EL297UH070XV38B
 EL297UH090XV38C
 EL297UH110XV48C
 EL297UH110XV60C
 EL297UH090XV48C
 2 HEAT/2 COOL

Form No. 538372-01

EL297UHV-135 WITH IGNITION CONTROL 103130-XX UNIT DIAGRAM



BLOWER SPEED CHART

| UNIT | FACTORY SET | SECONDARY LIMITS |
|----------|-------------|------------------|
| HEAT | ADJUST | USED |
| COOL | ADJUST | USED |
| 135XV60D | FACTORY | 0 |
| DEFULT | DEFULT | 0 |

Program and Characteristics

| Character on Furnace segment LED (w/ def ON) | Model | Circular Motor Size |
|--|----------|---------------------|
| 7 | 135XV60D | 1 HP |

LENNOX HEATING UNITS-GAS

EL297UHV135XV60D

2 HEAT 2 COOL

Supersedes

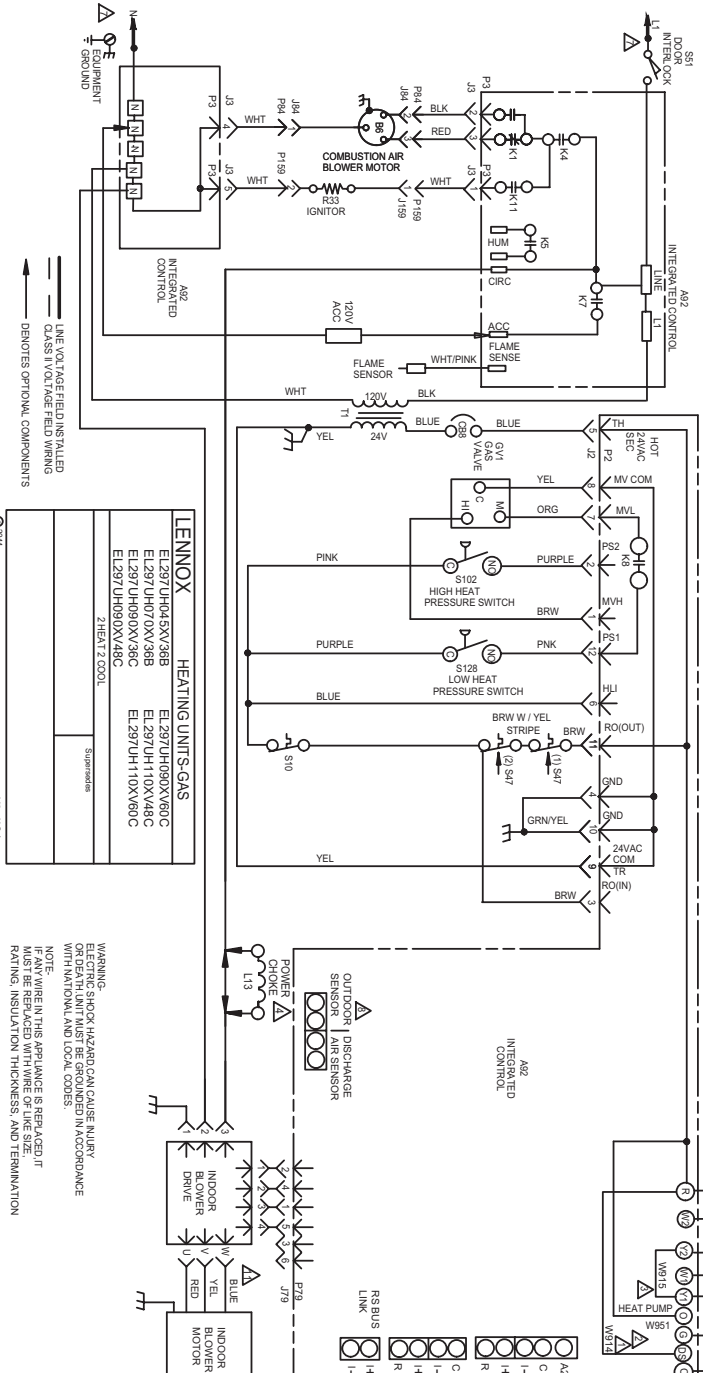
Form No. 538376-01

Lennox U.S.A.

08/23

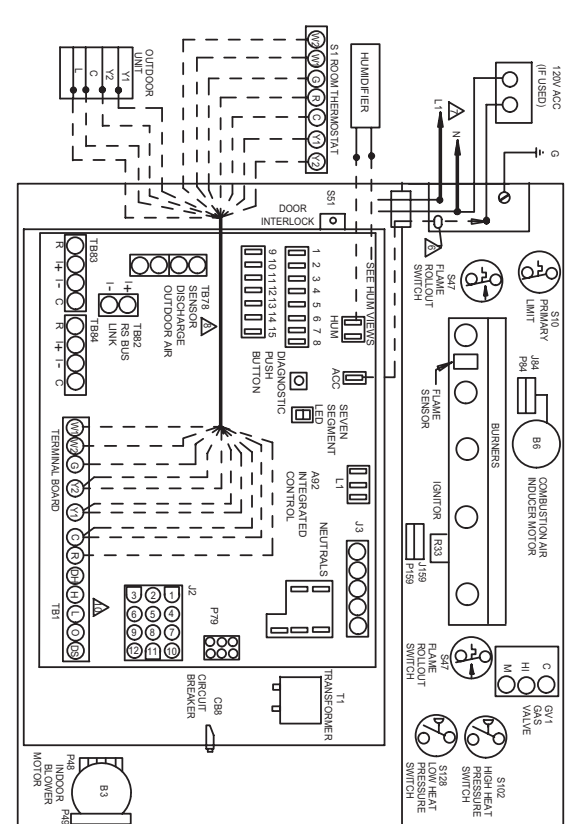
WARNING:
ELECTRIC SHOCK HAZARD CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.
NOTE: WIRE IN THIS APPLIANCE IS BEING Aged. IT MUST BE REPLACED WITH WIRE OF LIKE SIZE, RATING, INSULATION THICKNESS, AND TERMINATION.

EL297UHV WITH IGNITION CONTROL 103130-XX AND BLOWER DRIVE



| HEATING UNITS-GAS | |
|-------------------|------------------|
| EL297UH04SVX/38B | EL297UH090X/96C |
| EL297UH070XV/38B | EL297UH110XV/48C |
| EL297UH090XV/38C | EL297UH110XV/60C |
| EL297UH090XV/48C | |
| Z-HEATZ COOL | |

WARNING
ELECTRIC SHOCK HAZARD CAN CAUSE INJURY OR DEATH. DISCONNECT POWER TO THE UNIT BEFORE ATTEMPTING ANY WORK.
NOTE: IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF THE SAME SIZE, TYPE, AND INSULATION THICKNESS AND TERMINATION.



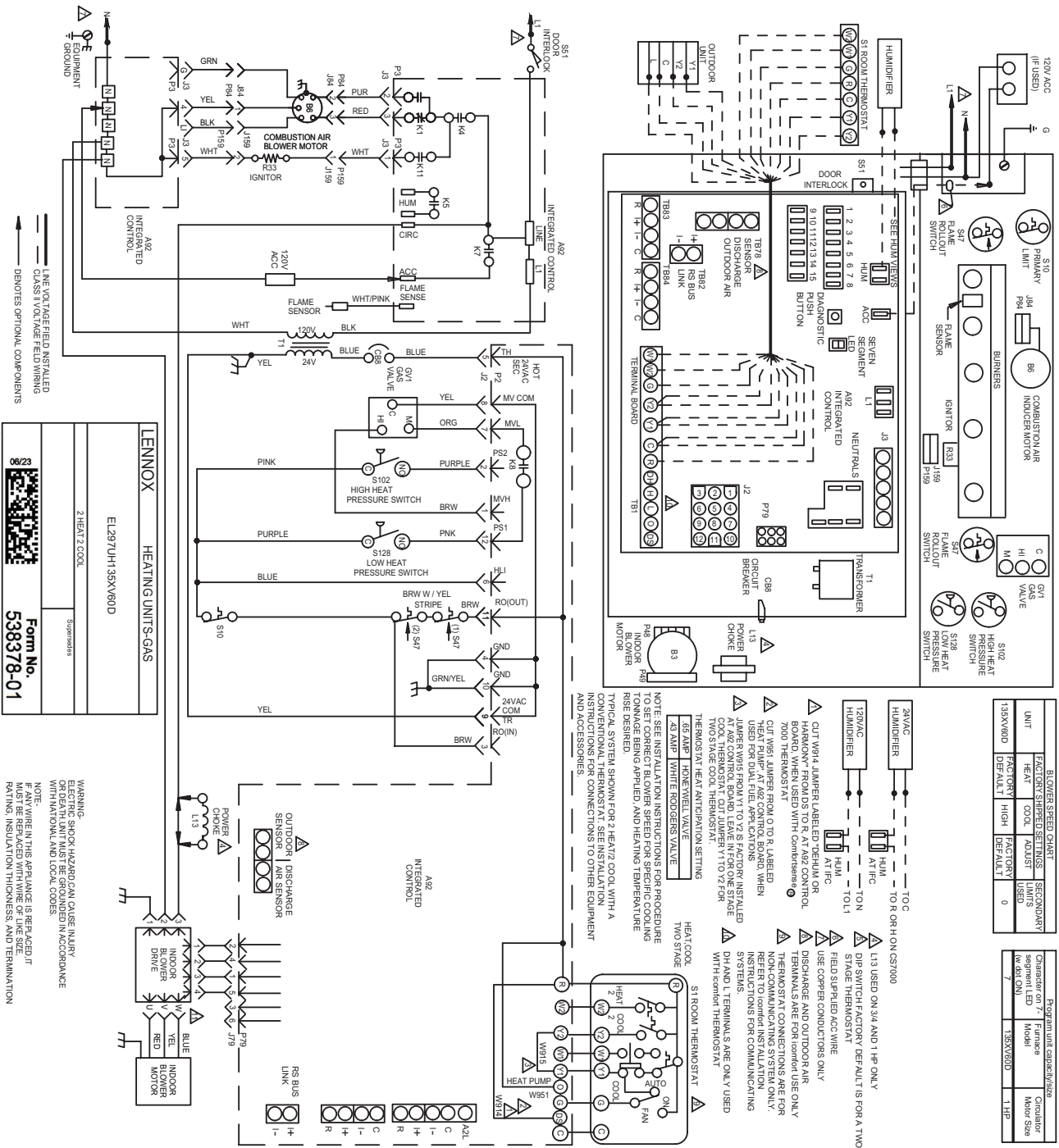
| BLOWER SPEED CHART | | | |
|--------------------|--------------------------|------------------|---------|
| UNIT | FACTORY SHIMMED SETTINGS | SECONDARY LIMITS | USED |
| 038XV/38B | HEAT | COOL | ADJUST |
| 090XV/38C | FACTORY | HIGH | FACTORY |
| 090XV/48C | DEFAULT | DEFAULT | 0 |
| 090XV/60C | | | |
| 110XV/48C | | | |
| 110XV/60C | | | |

| Diagram Unit(s) and Model | | | |
|---------------------------|-----------|-------------------|---------|
| Character or segment LED | Model | Blower Motor Size | Control |
| 0 | 038XV/38B | 1/2 HP | Control |
| 1 | 090XV/38C | 1/2 HP | Control |
| 2 | 090XV/48C | 3/4 HP | Control |
| 3 | 090XV/60C | 1 HP | Control |
| 4 | 110XV/48C | 3/4 HP | Control |
| 5 | 110XV/60C | 1 HP | Control |

NOTE: SEE INSTALLATION INSTRUCTIONS FOR PROCEDURE TO SET CORRECT BLOWER SPEED FOR SPECIFIC COOLING TONnage BEING APPLIED AND HEATING TEMPERATURE RISE DESIRED.
TYPICAL SYSTEM SHOWN FOR Z-HEATZ COOL WITH A HIGH HEAT PRESSURE SWITCH AND LOW HEAT PRESSURE SWITCH.
INSTRUCTIONS FOR CONNECTIONS TO OTHER EQUIPMENT AND ACCESSORIES.

WARNING: DISCONNECTED BEFORE CONNECTING/ DISCONNECTING COMMUNICATION CONNECTOR.
S1 ROOM THERMOSTAT
HEAT PUMP
FAN
ON/OFF
HEAT COOL
W915
W916
W917
W918
W919
W920
W921
W922
W923
W924
W925
W926
W927
W928
W929
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W1000

EL297UHV-135 WITH IGNITION CONTROL 103130-XX AND BLOWER DRIVE



LENNOX HEATING UNITS-GAS

EL297UHV135XYV60D

2 HEAT 2 COOL

Supersedes

Form No. 538378-01

Leno USA

WARNING:
ELECTRIC SHOCK HAZARD CAN CAUSE INJURY OR DEATH. ALWAYS DISCONNECT POWER TO THE UNIT BEFORE WORKING ON IT. ALWAYS GROUND THE UNIT. ALWAYS USE PROPER SAFETY PROCEDURES. ALWAYS USE THE CORRECT WIRE SIZE, RATING, INSULATION THICKNESS, AND TERMINATION.

CAUTION

Failure to use properly sized wiring and circuit breaker may result in property damage. Size wiring and circuit breaker(s) per Product Specifications bulletin (EHB) and unit rating plate.

WARNING

Fire Hazard. Use of aluminum wire with this product may result in a fire, causing property damage, severe injury or death. Use copper wire only with this product.

WARNING



Electric Shock Hazard. Can cause injury or death. Unit must be properly grounded in accordance with national and local codes.

Electronic Ignition

The two-stage, variable speed integrated control used in EL297UHV units has an added feature of an internal Watchguard control. The feature serves as an automatic reset device for ignition control lockout caused by ignition failure. After one hour of continuous thermostat demand for heat, the Watchguard will break and remake thermostat demand to the furnace and automatically reset the control to begin the ignition sequence.

NOTE - The ignition control thermostat selection DIP switch is factory-set in the "TWO-STAGE" position.

Applications Using a Two-Stage Thermostat

See FIGURE 58 for ignition control sequence

A - Heating Sequence - Integrated Control Thermostat Selection DIP Switch 1 OFF in "Two-Stage" Position (Factory Setting)

- 1 - On a call for heat, thermostat first-stage contacts close sending a signal to the integrated control. The integrated control runs a self-diagnostic program and checks high temperature limit switches for normally closed contacts and pressure switches for normally open contacts. The combustion air inducer is energized at low speed.
- 2 - Once the control receives a signal that the low pressure switch has closed, the combustion air inducer begins a 15-second pre-purge in low speed.

NOTE - If the low fire pressure switch does not close the combustion air inducer will switch to high fire. After a 15 second pre-purge the high fire pressure switch will close and the unit will begin operation on high fire. After 10 to 20 seconds of high fire operation the unit will switch to low fire.

- 3 - After the pre-purge is complete, a 20-second initial ignitor warm-up period begins. The combustion air inducer continues to operate at low speed.
- 4 - After the 20-second warm-up period has ended, the gas valve is energized on low fire (first stage) and ignition occurs. At the same time, the control module sends a signal to begin an indoor blower 30-second ON-delay. When the delay ends, the indoor blower motor is energized on the low fire heating speed, the HUM contacts close energizing the humidifier and 120V ACC terminal is energized. The furnace will continue this operation as long as the thermostat has a first-stage heating demand.
- 5 - If second-stage heat is required, the thermostat second-stage heat contacts close and send a signal to the integrated control. The integrated control initiates a 30-second second-stage recognition delay.

NOTE - If the indoor thermostat is set on CONTINUOUS FAN ON mode, the furnace will light on high fire (second-stage) for 60 seconds to improve heat exchanger warm up. After 60 second warm-up period, furnace will switch to low fire (first-stage).

- 6 - At the end of the recognition delay, the integrated control energizes the combustion air inducer at high speed. The control also checks the high fire (second stage) pressure switch to make sure it is closed. The high fire (second stage) gas valve is energized and the indoor blower motor is energized for operation at the high fire heating speed.
- 7 - When the demand for high fire (second stage) heat is satisfied, the combustion air inducer is switched to the low-fire heating speed and the high-fire (second stage) gas valve is de-energized. The low-fire (first stage) gas valve continues operation. The indoor blower motor is switched to the low-fire heating speed.
- 8 - When the thermostat demand for low-fire (first stage) heat is satisfied, the gas valve is de-energized and the field-selected indoor blower off delay begins. The combustion air inducer begins a 5-second post-purge period.
- 9 - When the combustion air post-purge period is complete, the inducer, the HUM contacts as well as the 120V ACC terminals are de-energized. The indoor blower is de-energized at the end of the off delay.

Applications Using A Single-Stage Thermostat See FIGURE 59 for ignition control sequence

B - Heating Sequence -- Integrated Control Thermostat Selection DIP Switch 1 ON in "Single-Stage" Position

NOTE - In these applications, two-stage heat will be initiated by the integrated control if heating demand has not been satisfied after the field adjustable period (7 or 12 minutes).

- 1 - On a call for heat, thermostat first-stage contacts close sending a signal to the integrated control. The integrated control runs a self-diagnostic program and checks high temperature limit switches for normally closed contacts and pressure switches for normally open contacts. The combustion air inducer is energized at low speed
- 2 - Once the control receives a signal that the low pressure switch has closed, the combustion air inducer begins a 15-second pre-purge in low speed.

NOTE - If the low fire pressure switch does not close the combustion air inducer will switch to high fire. After a 15 second pre-purge the high fire pressure switch will close and the unit will begin operation on high fire. After 10 to 20 seconds of high fire operation the unit will switch to low fire.

- 3 - After the pre-purge is complete, a 20-second initial ignitor warm-up period begins. The combustion air inducer continues to operate at low speed.

- 4 - After the 20-second warm-up period has ended, the gas valve is energized on low fire (first stage) and ignition occurs. At the same time, the control module sends a signal to begin an indoor blower 30-second ON-delay. When the delay ends, the indoor blower motor is energized on the low fire heating speed and the HUM contacts are energized. The integrated control also initiates a second-stage on delay (factory-set at 7 minutes; adjustable to 12 minutes).
- 5 - If the heating demand continues beyond the second stage on delay, the integrated control energizes the combustion air inducer at high speed. The control also checks the high fire (second stage) pressure switch to make sure it is closed. The high fire (second stage) gas valve is energized and the indoor blower motor is energized for operation at the high fire heating speed.
- 6 - When the thermostat heating demand is satisfied, the combustion air inducer begins a 5-second low speed post-purge. The field-selected indoor blower off delay begins. The indoor blower operates at the low-fire heating speed.
- 7 - When the combustion air post-purge period is complete, the inducer, the HUM contacts as well as the 120V ACC terminals are de-energized. The indoor blower is de-energized at the end of the off delay.

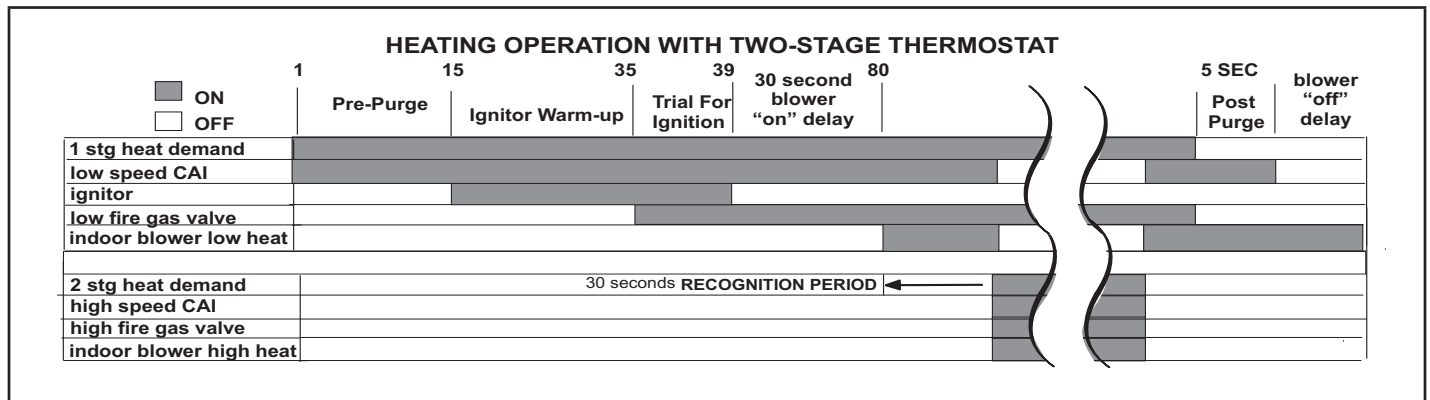


FIGURE 58

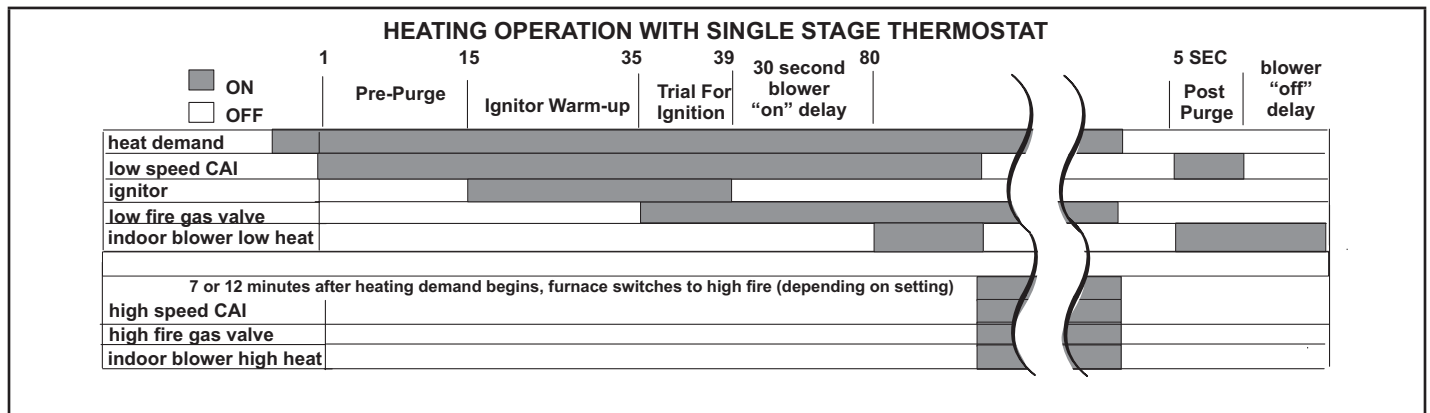
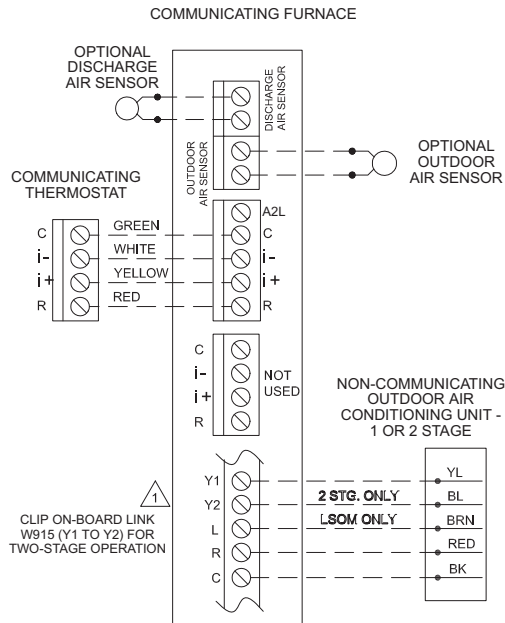


FIGURE 59

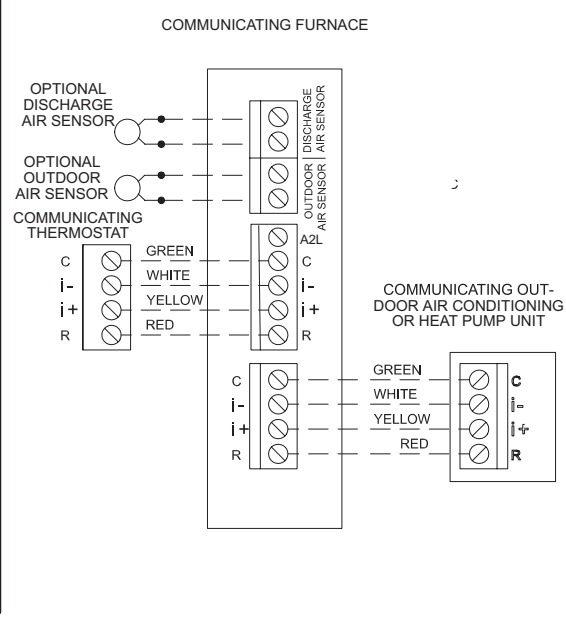
VIII- FIELD WIRING WITH CONVENTIONAL AND COMMUNICATING ENABLED THERMOSTAT

Ignition Control Control 107045-XX

Communicating Enabled Furnace and Non-Communicating Outdoor Unit



Communicating Enabled Furnace and Communicating Enabled Outdoor Unit



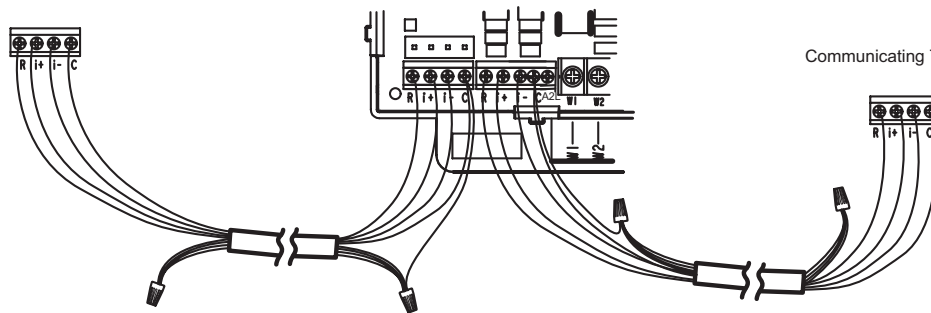
Communicating systems four thermostat wires between the thermostat and the furnace/air handler control and four wires between the outdoor unit and the furnace/air handler control. When a thermostat cable with more than four wires is used, the extra wires must be properly connected to avoid electrical noise. The wires must not be left disconnected.

Use wire nuts to bundle the four unused wires at each end of the cable. A single wire should then be connected to the indoor unit end of the wire bundle and attached to the "C" terminals as shown below.

Outdoor Unit

Communicating Integrated Control

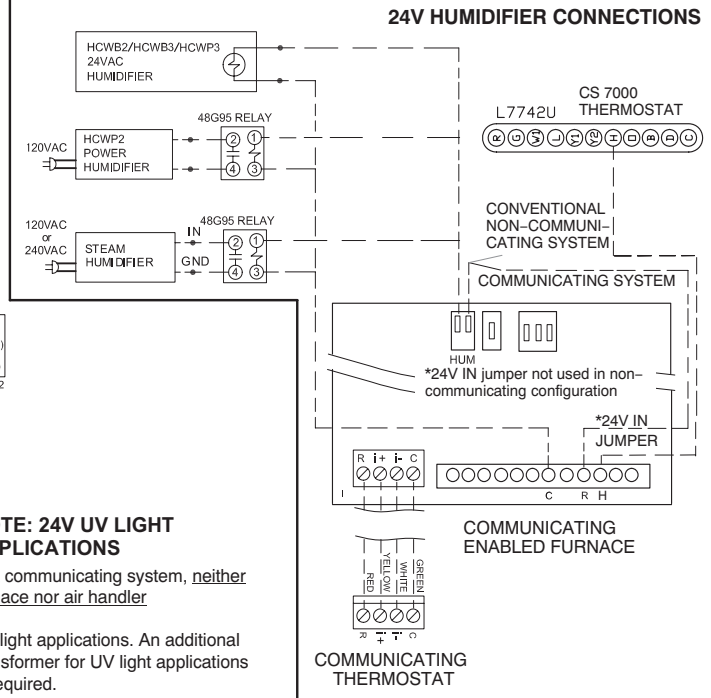
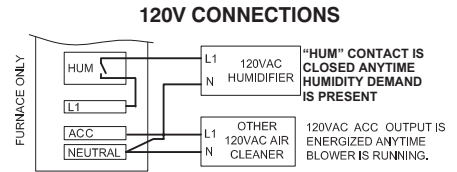
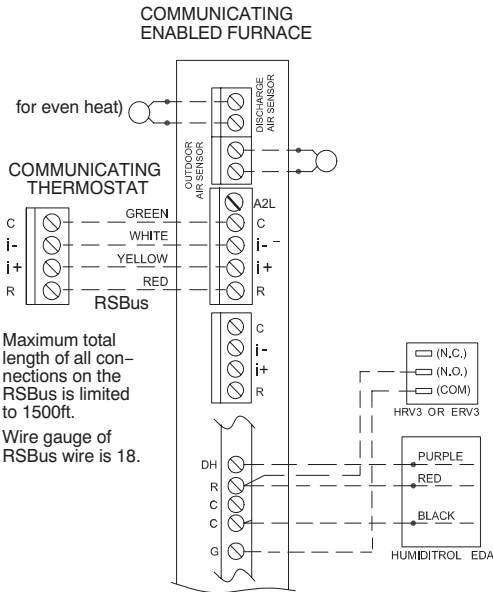
Communicating Thermostat



Optional Accessories for use with Communicating System

NOTE: COMMUNICATING THERMOSTAT SENSES HUMIDITY & CONTROLS HUM CONTACTS TO CYCLE HUMIDIFIER BASED ON DEMAND. NO OTHER CONTROL OR HUMIDISTAT REQUIRED.

OPTIONAL OUTDOOR AIR SENSOR FOR USE WITH HUMIDIFIER (IF NOT ALREADY IN THE SYSTEM FOR OTHER FUNCTIONS. BUILT INTO ALL COMMUNICATING ENABLED OUTDOOR UNITS).

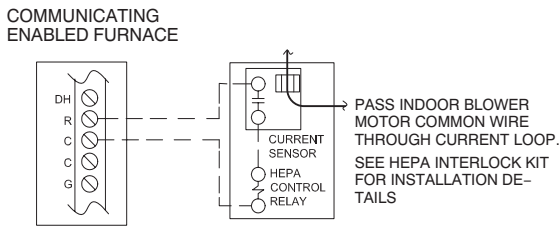


NOTE: 24V UV LIGHT APPLICATIONS

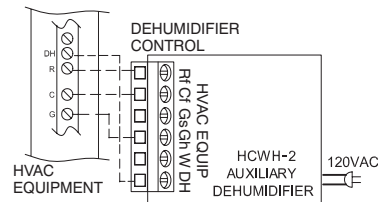
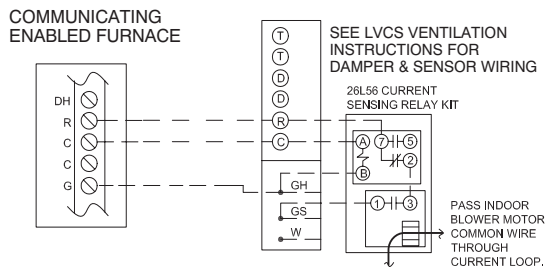
In a communicating system, neither furnace nor air handler

UV light applications. An additional transformer for UV light applications is required.

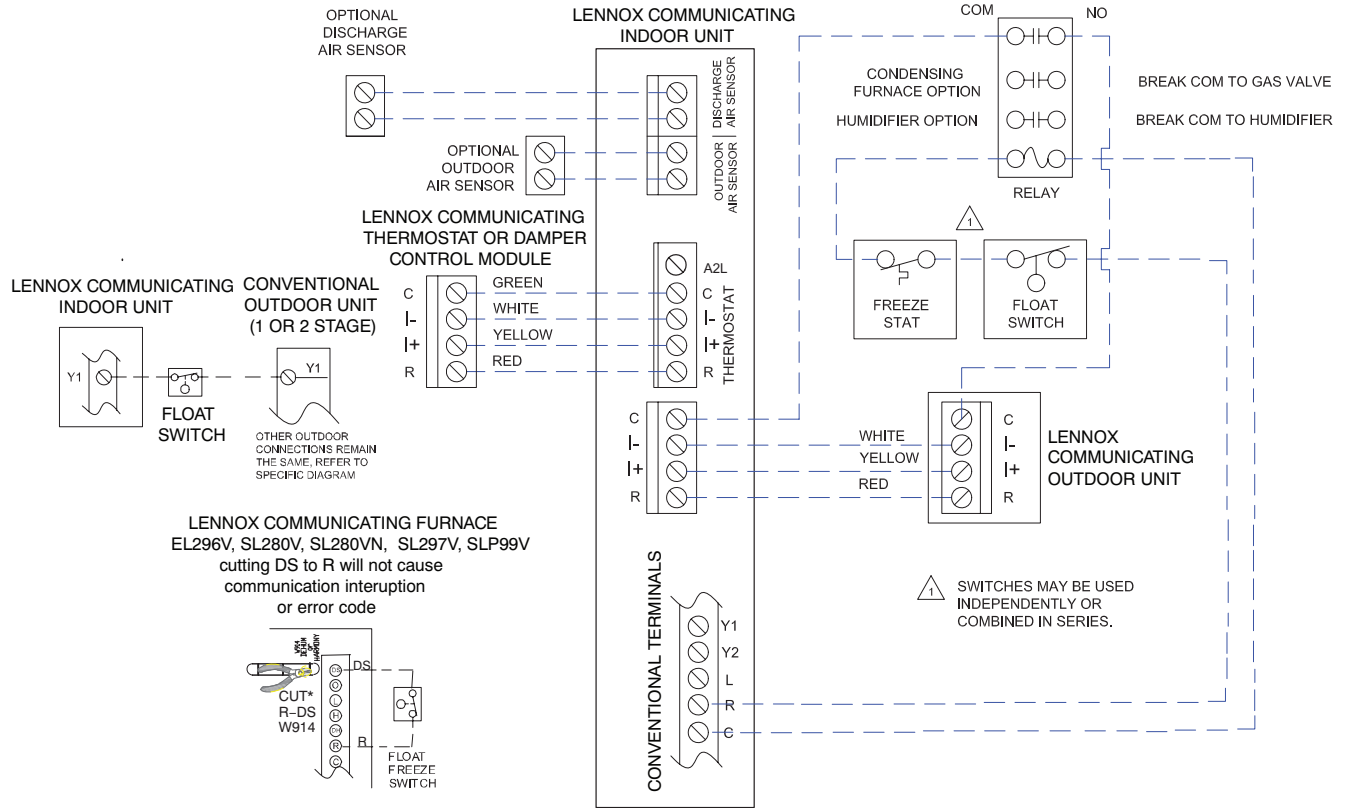
HEPA BYPASS FILTER X2680 HEPA INTERLOCK KIT



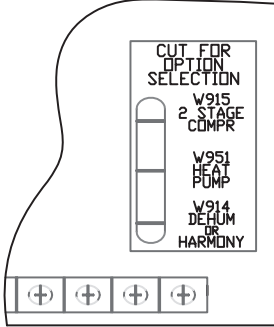
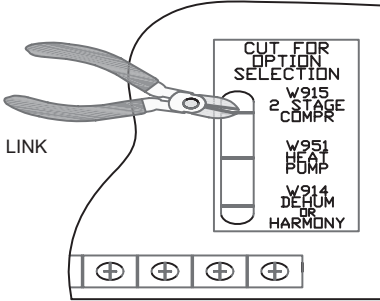
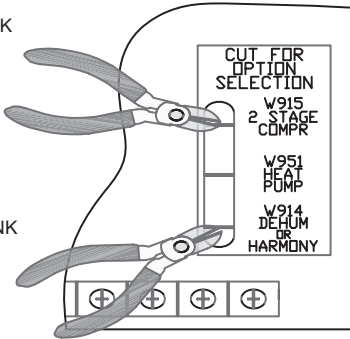
LVCS VENTILATION CONTROL SYSTEM



Optional Accessories For Use With Communicating System

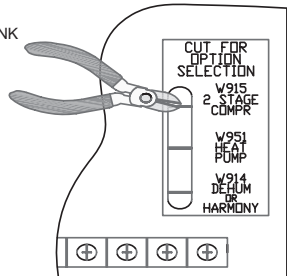
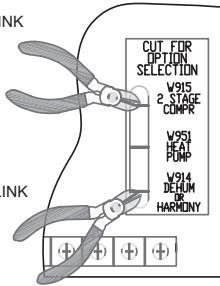
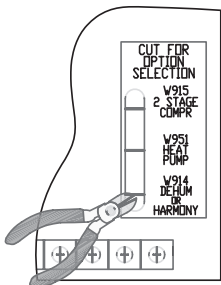
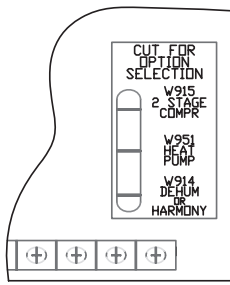


Ignition Control Control 107045-XX DIP Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|--|-----------|---------------------|--------------|-----------|------|--|--|-----|--|------|------|--|-----------|------|--|----------|-----|------------|----------|-----|--|----------|-----|-----------|-----------|------|------------|-----------|------|------------|--|-----|--|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Heat / 1 Cool <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.</i> | ON | DO NOT CUT ANY ON-BOARD LINKS  | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td></td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(H)</td> <td></td> </tr> <tr> <td>(W2)</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)-----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)-----</td> <td>(R)</td> <td>*----- (R)</td> </tr> <tr> <td>(G)-----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)-----</td> <td>(C)</td> <td>----- (C)</td> </tr> <tr> <td></td> <td>(Y2)</td> <td></td> </tr> <tr> <td>(Y)-----</td> <td>(Y1)</td> <td>----- (Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | (DS) | | | (H) | | (W2) | (W2) | | (W1)----- | (W1) | | (R)----- | (R) | *----- (R) | (G)----- | (G) | | (C)----- | (C) | ----- (C) | | (Y2) | | (Y)----- | (Y1) | ----- (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (H) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1)----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R)----- | (R) | *----- (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G)----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C)----- | (C) | ----- (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y)----- | (Y1) | ----- (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Heat / 2 Cool <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.</i> | ON | CUT ON-BOARD LINK W915 2 STAGE COMPR  | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td></td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(H)</td> <td></td> </tr> <tr> <td></td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W)-----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)-----</td> <td>(R)</td> <td>*----- (R)</td> </tr> <tr> <td>(G)-----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)-----</td> <td>(C)</td> <td>----- (C)</td> </tr> <tr> <td>(Y2)-----</td> <td>(Y2)</td> <td>----- (Y2)</td> </tr> <tr> <td>(Y1)-----</td> <td>(Y1)</td> <td>----- (Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | (DS) | | | (H) | | | (W2) | | (W)----- | (W1) | | (R)----- | (R) | *----- (R) | (G)----- | (G) | | (C)----- | (C) | ----- (C) | (Y2)----- | (Y2) | ----- (Y2) | (Y1)----- | (Y1) | ----- (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (H) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W)----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R)----- | (R) | *----- (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G)----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C)----- | (C) | ----- (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2)----- | (Y2) | ----- (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1)----- | (Y1) | ----- (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Heat / 2 Cool with t'stat with humidity control <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.</i> | ON | CUT ON-BOARD LINK W915 2 STAGE COMPR CUT ON-BOARD LINK W914 DEHUM OR HARMONY  | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td>(DS)-----</td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(H)</td> <td></td> </tr> <tr> <td></td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)-----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)-----</td> <td>(R)</td> <td>*----- (R)</td> </tr> <tr> <td>(G)-----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)-----</td> <td>(C)</td> <td>----- (C)</td> </tr> <tr> <td>(Y2)-----</td> <td>(Y2)</td> <td>----- (Y2)</td> </tr> <tr> <td>(Y1)-----</td> <td>(Y1)</td> <td>----- (Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (DS)----- | (DS) | | | (H) | | | (W2) | | (W1)----- | (W1) | | (R)----- | (R) | *----- (R) | (G)----- | (G) | | (C)----- | (C) | ----- (C) | (Y2)----- | (Y2) | ----- (Y2) | (Y1)----- | (Y1) | ----- (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (DS)----- | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (H) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1)----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R)----- | (R) | *----- (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G)----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C)----- | (C) | ----- (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2)----- | (Y2) | ----- (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1)----- | (Y1) | ----- (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Not required on all units.

Ignition Control 107045-XX Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|--|--------------|------------------------|-----------------|------|------|--|--|-----|--|------|------|--|------|------|--|-----|-------|-----|-----|-----|--|-----|-----|-----|------|------|------|------|------|------|--|-----|--|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 2 Cool | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p>  | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td>(DS)</td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(H)</td> <td></td> </tr> <tr> <td>(W2)</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)</td> <td>(R) *</td> <td>(R)</td> </tr> <tr> <td>(G)</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)</td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td>(Y2)</td> <td>(Y2)</td> <td>(Y2)</td> </tr> <tr> <td>(Y1)</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (DS) | (DS) | | | (H) | | (W2) | (W2) | | (W1) | (W1) | | (R) | (R) * | (R) | (G) | (G) | | (C) | (C) | (C) | (Y2) | (Y2) | (Y2) | (Y1) | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (DS) | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (H) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) | (R) * | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2) | (Y2) | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1) | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 2 Cool with t'stat with humidity control | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p>  | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td>(DS)</td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(H)</td> <td></td> </tr> <tr> <td>(W2)</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)</td> <td>(R) *</td> <td>(R)</td> </tr> <tr> <td>(G)</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)</td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td>(Y2)</td> <td>(Y2)</td> <td>(Y2)</td> </tr> <tr> <td>(Y1)</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (DS) | (DS) | | | (H) | | (W2) | (W2) | | (W1) | (W1) | | (R) | (R) * | (R) | (G) | (G) | | (C) | (C) | (C) | (Y2) | (Y2) | (Y2) | (Y1) | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (DS) | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (H) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) | (R) * | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2) | (Y2) | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1) | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 1 Cool with t'stat with humidity control | OFF | <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p>  | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td>(DS)</td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(H)</td> <td></td> </tr> <tr> <td>(W2)</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)</td> <td>(R) *</td> <td>(R)</td> </tr> <tr> <td>(G)</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)</td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td>(Y1)</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (DS) | (DS) | | | (H) | | (W2) | (W2) | | (W1) | (W1) | | (R) | (R) * | (R) | (G) | (G) | | (C) | (C) | (C) | (Y1) | (Y1) | (Y1) | | (O) | | | | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (DS) | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (H) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) | (R) * | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1) | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 1 Cool | OFF | <p>DO NOT CUT ANY ON-BOARD LINKS</p>  | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td></td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(H)</td> <td></td> </tr> <tr> <td>(W2)</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)</td> <td>(R) *</td> <td>(R)</td> </tr> <tr> <td>(G)</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)</td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td></td> <td>(Y2)</td> <td></td> </tr> <tr> <td>(Y)</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | (DS) | | | (H) | | (W2) | (W2) | | (W1) | (W1) | | (R) | (R) * | (R) | (G) | (G) | | (C) | (C) | (C) | | (Y2) | | (Y) | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (H) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) | (R) * | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y) | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Not required on all units.

Ignition Control 107045-XX Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections |
|--|---|--|--|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | |
| <p>Dual Fuel Single Stage Heat Pump</p> <p>ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control</p> | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p> | <p>L7742U T'STAT FURNACE TERM. STRIP HEAT PUMP</p> <p>(R) --- (R) --- (R)</p> <p>(H) --- (H)</p> <p>(W2) --- (W2) 67M41*</p> <p>(W1) --- (W1) ← 67M41* → (W1)</p> <p>(O) --- (O) --- (O)</p> <p>(L) --- (L) --- (L)</p> <p>(Y1) --- (Y1) --- (Y)</p> <p>(Y2) --- (Y2)</p> <p>(G) --- (G)</p> <p>(D) --- (DS)</p> <p>(B) --- (Y2)</p> <p>(C) --- (C) --- (C)</p> <p>(T) --- (T) --- outdoor sensor</p> <p>(T) --- (T)</p> |
| <p>Dual Fuel Two Stage Heat Pump</p> <p>ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control</p> | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W951 HEAT PUMP</p> | <p>L7742U T'STAT FURNACE TERM. STRIP HEAT PUMP</p> <p>(R) --- (R) --- (R)</p> <p>(H) --- (H)</p> <p>(W2) --- (W2) 67M41*</p> <p>(W1) --- (W1) ← 67M41* → (W1)</p> <p>(O) --- (O) --- (O)</p> <p>(L) --- (L) --- (L)</p> <p>(Y1) --- (Y1) --- (Y1)</p> <p>(Y2) --- (Y2) --- (Y2)</p> <p>(G) --- (G)</p> <p>(D) --- (DS)</p> <p>(B) --- (Y2) --- Y2 out blue</p> <p>(C) --- (C) --- (C)</p> <p>(T) --- (T) --- outdoor sensor</p> <p>(T) --- (T)</p> |

* Connect W1 to W1 ONLY if using defrost tempering kit 67M41

NOTE - **Do NOT** make a wire connection between the room thermostat L terminal and the L terminal of the furnace integrated control.

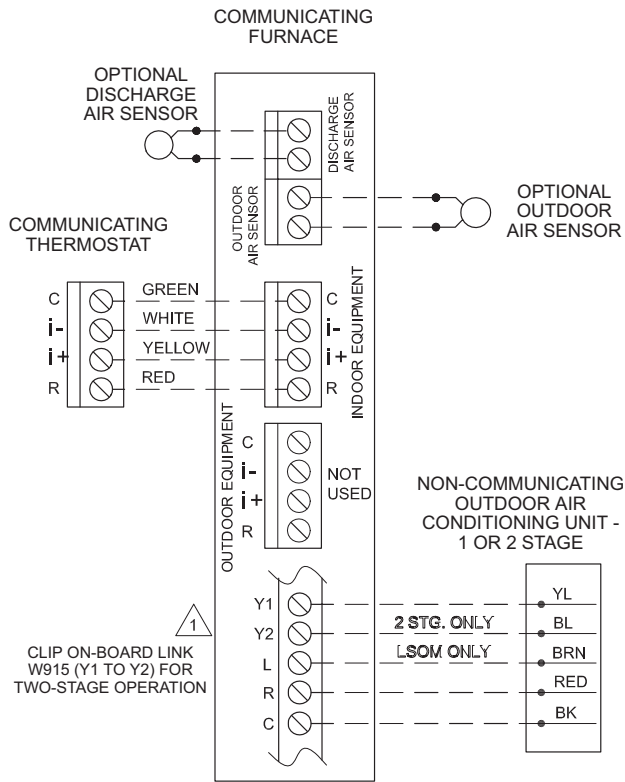
Ignition Control 107045-XX DIP Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections |
|--|---|--|---|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | |
| Dual Fuel Single Stage Heat Pump ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p> | <p>L7742U T'STAT FURNACE TERM. STRIP HEAT PUMP</p> <p>R --- R --- R</p> <p>H --- H</p> <p>W2 --- W2 --- 67M41* --- W1</p> <p>W1 --- W1 --- W1</p> <p>O --- O --- O</p> <p>L --- L --- L</p> <p>Y1 --- Y1 --- Y</p> <p>Y2 --- Y2</p> <p>G --- G</p> <p>D --- DS</p> <p>B --- Y2</p> <p>C --- C --- C</p> <p>T --- T --- outdoor sensor</p> |
| Dual Fuel Two Stage Heat Pump ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W951 HEAT PUMP</p> | <p>L7742U T'STAT FURNACE TERM. STRIP HEAT PUMP</p> <p>R --- R --- R</p> <p>H --- H</p> <p>W2 --- W2 --- 67M41* --- W1</p> <p>W1 --- W1 --- W1</p> <p>O --- O --- O</p> <p>L --- L --- L</p> <p>Y1 --- Y1 --- Y1</p> <p>Y2 --- Y2 --- Y2</p> <p>G --- G</p> <p>D --- DS</p> <p>B --- Y2</p> <p>C --- C --- C</p> <p>T --- T --- outdoor sensor</p> |

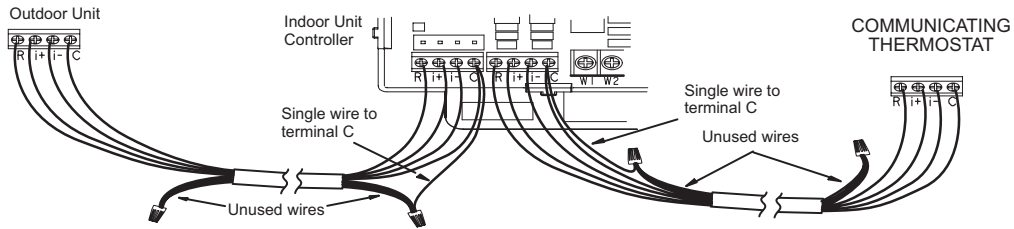
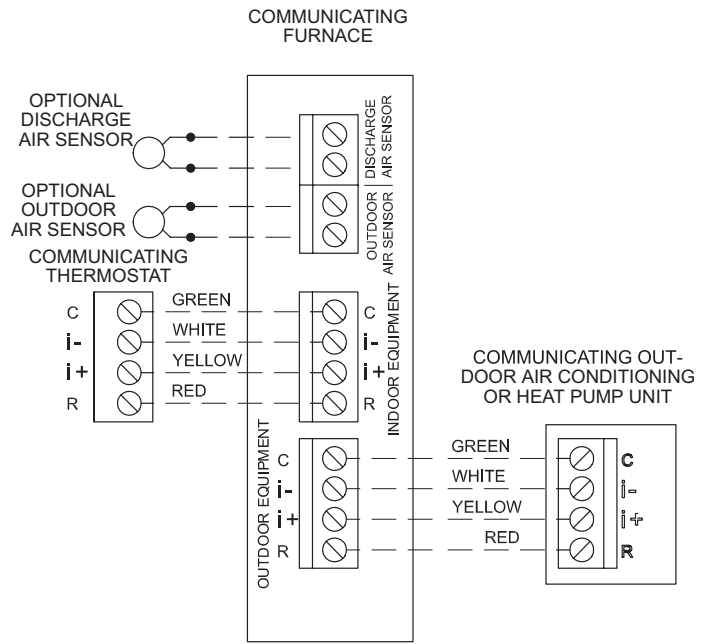
* Connect W1 to W1 ONLY if using defrost tempering kit 67M41

NOTE - **Do NOT** make a wire connection between the room thermostat L terminal and the L terminal of the furnace integrated control.

Communicating Enabled Furnace with a Non-Communicating Outdoor Unit



Communicating Enabled Furnace with a Communicating Enabled Outdoor Unit



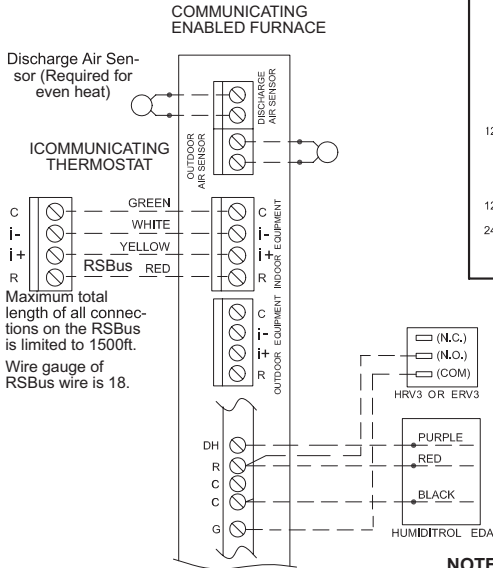
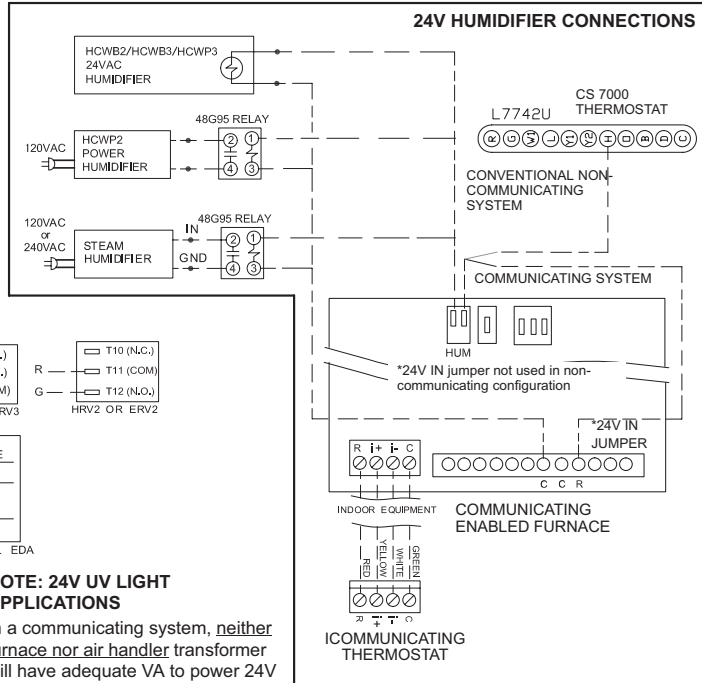
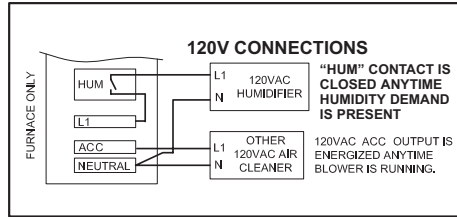
Communicating systems using the Communicating thermostat require four thermostat wires between the thermostat and the furnace/air handler control and four wires between the outdoor unit and the furnace/air handler control. When a thermostat cable with more than four wires is used, the extra wires must be properly connected to avoid electrical noise. The wires must not be left disconnected.

Use wire nuts to bundle the four unused wires at each end of the cable. A single wire should then be connected to the indoor unit end of the wire bundle and attached to the "C" terminals as shown above.

Optional Accessories for use with any Communicating System

NOTE: ICOMMUNICATING THERMOSTAT SENSES HUMIDITY & CONTROLS HUM CONTACTS TO CYCLE HUMIDIFIER BASED ON DEMAND. NO OTHER CONTROL OR HUMIDISTAT REQUIRED.

OPTIONAL OUTDOOR AIR SENSOR FOR USE WITH HUMIDIFIER (IF NOT ALREADY IN THE SYSTEM FOR OTHER FUNCTIONS. BUILT INTO ALL COMMUNICATING ENABLED OUT DOOR UNITS).

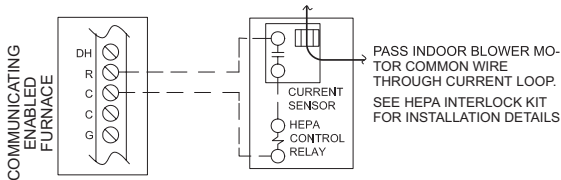


Maximum total length of all connections on the RSBUS is limited to 1500ft. Wire gauge of RSBUS wire is 18.

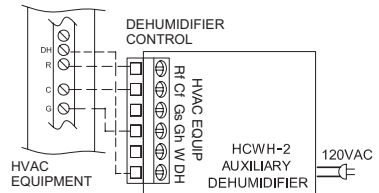
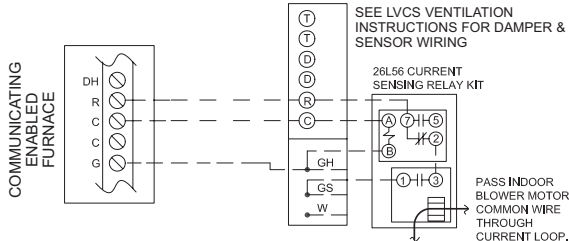
NOTE: 24V UV LIGHT APPLICATIONS

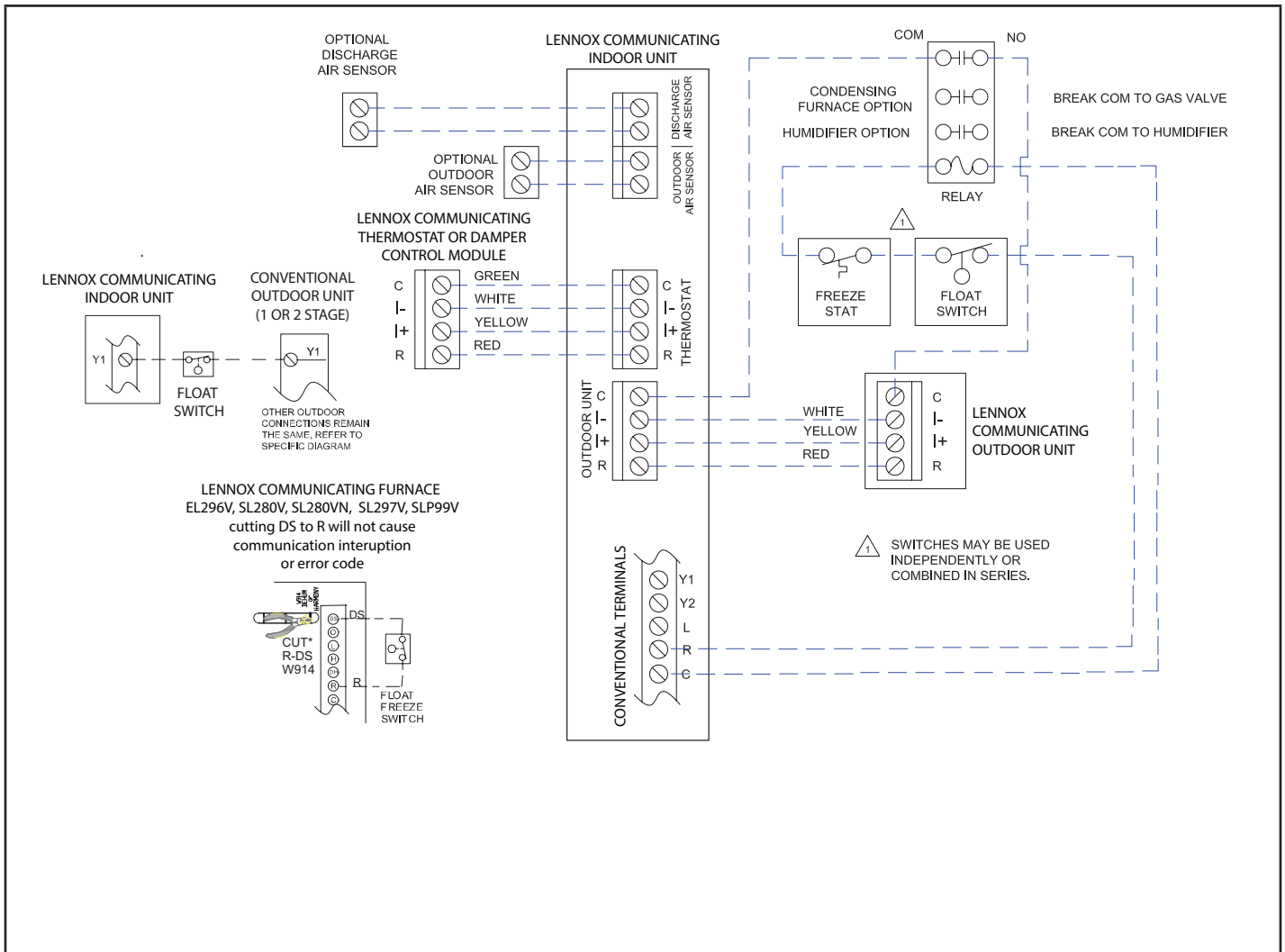
In a communicating system, neither furnace nor air handler transformer will have adequate VA to power 24V UV light applications. An additional transformer for UV light applications is required.

HEPA BYPASS FILTER X2680 HEPA INTERLOCK KIT



LVCS VENTILATION CONTROL SYSTEM



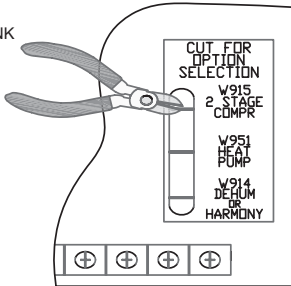
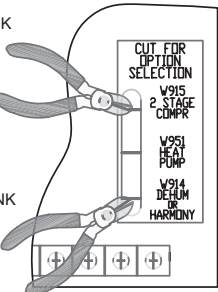
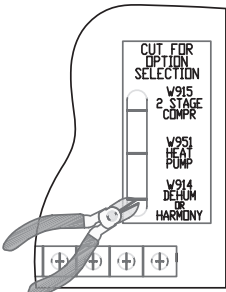
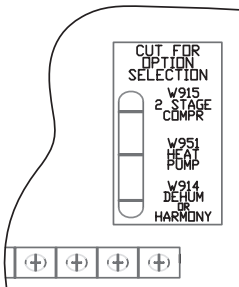


Ignition Control 103130-XX DIP Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|--|-----------|---------------------|--------------|------------|------|--|------|------|--|------------|------|--|-----------|-------------|-----|-----------|-----|--|-----------|-----------|-----|------------|------|------|------------|------------|------|--|-----|--|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Heat / 1 Cool <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.</i> | ON | DO NOT CUT ANY ON-BOARD LINKS | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td></td> <td>(DS)</td> <td></td> </tr> <tr> <td>(W2)</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1) -----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R) -----</td> <td>(R) ----- *</td> <td>(R)</td> </tr> <tr> <td>(G) -----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C) -----</td> <td>(C) -----</td> <td>(C)</td> </tr> <tr> <td></td> <td>(Y2)</td> <td></td> </tr> <tr> <td>(Y) -----</td> <td>(Y1) -----</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | (DS) | | (W2) | (W2) | | (W1) ----- | (W1) | | (R) ----- | (R) ----- * | (R) | (G) ----- | (G) | | (C) ----- | (C) ----- | (C) | | (Y2) | | (Y) ----- | (Y1) ----- | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) ----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) ----- | (R) ----- * | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) ----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) ----- | (C) ----- | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y) ----- | (Y1) ----- | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Heat / 2 Cool <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.</i> | ON | CUT ON-BOARD LINK W915 2 STAGE COMPR | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td></td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W) -----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R) -----</td> <td>(R) ----- *</td> <td>(R)</td> </tr> <tr> <td>(G) -----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C) -----</td> <td>(C) -----</td> <td>(C)</td> </tr> <tr> <td>(Y2) -----</td> <td>(Y2)</td> <td>(Y2)</td> </tr> <tr> <td>(Y1) -----</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | (DS) | | | (W2) | | (W) ----- | (W1) | | (R) ----- | (R) ----- * | (R) | (G) ----- | (G) | | (C) ----- | (C) ----- | (C) | (Y2) ----- | (Y2) | (Y2) | (Y1) ----- | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W) ----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) ----- | (R) ----- * | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) ----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) ----- | (C) ----- | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2) ----- | (Y2) | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1) ----- | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 Heat / 2 Cool with t'stat with humidity control <i>NOTE - Use DIP switch 2 to set second-stage heat ON delay. OFF-7 minutes. ON-12 minutes.</i> | ON | CUT ON-BOARD LINK W915 2 STAGE COMPR CUT ON-BOARD LINK W914 DEHUM OR HARMONY | <table border="0"> <tr> <td>S1 T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>OUTDOOR UNIT</td> </tr> <tr> <td>(DS) -----</td> <td>(DS)</td> <td></td> </tr> <tr> <td></td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1) -----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R) -----</td> <td>(R) ----- *</td> <td>(R)</td> </tr> <tr> <td>(G) -----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C) -----</td> <td>(C) -----</td> <td>(C)</td> </tr> <tr> <td>(Y2) -----</td> <td>(Y2)</td> <td>(Y2)</td> </tr> <tr> <td>(Y1) -----</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (DS) ----- | (DS) | | | (W2) | | (W1) ----- | (W1) | | (R) ----- | (R) ----- * | (R) | (G) ----- | (G) | | (C) ----- | (C) ----- | (C) | (Y2) ----- | (Y2) | (Y2) | (Y1) ----- | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (DS) ----- | (DS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) ----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) ----- | (R) ----- * | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) ----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) ----- | (C) ----- | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2) ----- | (Y2) | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1) ----- | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Not required on all units.

Ignition Control 103130-XX DIP Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|--|--------------|------------------------|-----------------|-----------|------|--|-----------|------|--|-----------|------|--|----------|-----------|-----|----------|-----|--|-----------|-----|-----|-----------|------|------|-----------|------|------|--|-----|--|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 2 Cool | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p>  | <table border="0"> <thead> <tr> <th>S1 T'STAT</th> <th>FURNACE TERM. STRIP</th> <th>OUTDOOR UNIT</th> </tr> </thead> <tbody> <tr> <td>(W2)-----</td> <td>(DB)</td> <td></td> </tr> <tr> <td>(W1)-----</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(R)-----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(G)-----</td> <td>(R)-----*</td> <td>(R)</td> </tr> <tr> <td>(C)-----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(Y2)-----</td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td>(Y1)-----</td> <td>(Y2)</td> <td>(Y2)</td> </tr> <tr> <td></td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </tbody> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (W2)----- | (DB) | | (W1)----- | (W2) | | (R)----- | (W1) | | (G)----- | (R)-----* | (R) | (C)----- | (G) | | (Y2)----- | (C) | (C) | (Y1)----- | (Y2) | (Y2) | | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2)----- | (DB) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1)----- | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R)----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G)----- | (R)-----* | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C)----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2)----- | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1)----- | (Y2) | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 2 Cool with t'stat with humidity control | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p>  | <table border="0"> <thead> <tr> <th>S1 T'STAT</th> <th>FURNACE TERM. STRIP</th> <th>OUTDOOR UNIT</th> </tr> </thead> <tbody> <tr> <td>(DB)-----</td> <td>(DB)</td> <td></td> </tr> <tr> <td>(W2)-----</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)-----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)-----</td> <td>(R)-----*</td> <td>(R)</td> </tr> <tr> <td>(G)-----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)-----</td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td>(Y2)-----</td> <td>(Y2)</td> <td>(Y2)</td> </tr> <tr> <td>(Y1)-----</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </tbody> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (DB)----- | (DB) | | (W2)----- | (W2) | | (W1)----- | (W1) | | (R)----- | (R)-----* | (R) | (G)----- | (G) | | (C)----- | (C) | (C) | (Y2)----- | (Y2) | (Y2) | (Y1)----- | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (DB)----- | (DB) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2)----- | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1)----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R)----- | (R)-----* | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G)----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C)----- | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2)----- | (Y2) | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1)----- | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 1 Cool with t'stat with humidity control | OFF | <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p>  | <table border="0"> <thead> <tr> <th>S1 T'STAT</th> <th>FURNACE TERM. STRIP</th> <th>OUTDOOR UNIT</th> </tr> </thead> <tbody> <tr> <td>(DB)-----</td> <td>(DB)</td> <td></td> </tr> <tr> <td>(W2)-----</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(W1)-----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(R)-----</td> <td>(R)-----*</td> <td>(R)</td> </tr> <tr> <td>(G)-----</td> <td>(G)</td> <td></td> </tr> <tr> <td>(C)-----</td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td>(Y1)-----</td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </tbody> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (DB)----- | (DB) | | (W2)----- | (W2) | | (W1)----- | (W1) | | (R)----- | (R)-----* | (R) | (G)----- | (G) | | (C)----- | (C) | (C) | (Y1)----- | (Y1) | (Y1) | | (O) | | | | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (DB)----- | (DB) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2)----- | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1)----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R)----- | (R)-----* | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G)----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C)----- | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1)----- | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 Heat / 1 Cool | OFF | <p>DO NOT CUT ANY ON-BOARD LINKS</p>  | <table border="0"> <thead> <tr> <th>S1 T'STAT</th> <th>FURNACE TERM. STRIP</th> <th>OUTDOOR UNIT</th> </tr> </thead> <tbody> <tr> <td>(W2)-----</td> <td>(DB)</td> <td></td> </tr> <tr> <td>(W1)-----</td> <td>(W2)</td> <td></td> </tr> <tr> <td>(R)-----</td> <td>(W1)</td> <td></td> </tr> <tr> <td>(G)-----</td> <td>(R)-----*</td> <td>(R)</td> </tr> <tr> <td>(C)-----</td> <td>(G)</td> <td></td> </tr> <tr> <td></td> <td>(C)</td> <td>(C)</td> </tr> <tr> <td>(Y)-----</td> <td>(Y2)</td> <td></td> </tr> <tr> <td></td> <td>(Y1)</td> <td>(Y1)</td> </tr> <tr> <td></td> <td>(O)</td> <td></td> </tr> </tbody> </table> | S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | (W2)----- | (DB) | | (W1)----- | (W2) | | (R)----- | (W1) | | (G)----- | (R)-----* | (R) | (C)----- | (G) | | | (C) | (C) | (Y)----- | (Y2) | | | (Y1) | (Y1) | | (O) | |
| S1 T'STAT | FURNACE TERM. STRIP | OUTDOOR UNIT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2)----- | (DB) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1)----- | (W2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R)----- | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G)----- | (R)-----* | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C)----- | (G) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (C) | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y)----- | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (Y1) | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Not required on all units.

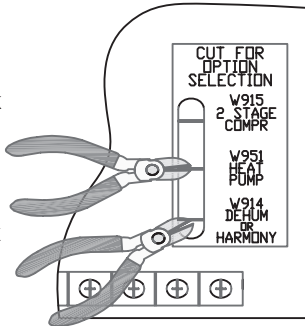
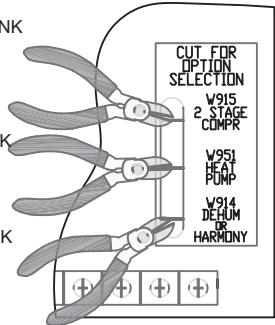
Ignition Control 103130-XX DIP Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|--|--------|---------------------|-----------|---------------------|-------------|-----|---------|-----------------|--|----------|---------------|------|----------|---------|-----|---------|---------|-----|---------|----------|------|----------|----------|------|----------|----------|------|---------|---------|--|---------|----------|--|---------|----------|-------------|---------|---------|-----|---------|--|----------------|---------|--|--|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Dual Fuel Single Stage Heat Pump</p> <p>ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control</p> | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p> | <table border="0"> <tr> <td>T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>HEAT PUMP</td> </tr> <tr> <td>(R) --- (R) --- (R)</td> <td>(R) --- (R)</td> <td>(R)</td> </tr> <tr> <td>(H) ---</td> <td>(W2) --- 67M41*</td> <td></td> </tr> <tr> <td>(W2) ---</td> <td>(W1) ← (W1) →</td> <td>(W1)</td> </tr> <tr> <td>(W1) ---</td> <td>(O) ---</td> <td>(O)</td> </tr> <tr> <td>(O) ---</td> <td>(O) ---</td> <td>(O)</td> </tr> <tr> <td>(L) ---</td> <td>(Y1) ---</td> <td>(Y1)</td> </tr> <tr> <td>(Y1) ---</td> <td>(Y1) ---</td> <td>(Y)</td> </tr> <tr> <td>(Y2) ---</td> <td>(Y2) ---</td> <td>(Y)</td> </tr> <tr> <td>(G) ---</td> <td>(G) ---</td> <td></td> </tr> <tr> <td>(D) ---</td> <td>(DS) ---</td> <td></td> </tr> <tr> <td>(B) ---</td> <td>(Y2) ---</td> <td></td> </tr> <tr> <td>(C) ---</td> <td>(C) ---</td> <td>(C)</td> </tr> <tr> <td>(T) ---</td> <td></td> <td>outdoor sensor</td> </tr> <tr> <td>(T) ---</td> <td></td> <td></td> </tr> </table> | T'STAT | FURNACE TERM. STRIP | HEAT PUMP | (R) --- (R) --- (R) | (R) --- (R) | (R) | (H) --- | (W2) --- 67M41* | | (W2) --- | (W1) ← (W1) → | (W1) | (W1) --- | (O) --- | (O) | (O) --- | (O) --- | (O) | (L) --- | (Y1) --- | (Y1) | (Y1) --- | (Y1) --- | (Y) | (Y2) --- | (Y2) --- | (Y) | (G) --- | (G) --- | | (D) --- | (DS) --- | | (B) --- | (Y2) --- | | (C) --- | (C) --- | (C) | (T) --- | | outdoor sensor | (T) --- | | |
| T'STAT | FURNACE TERM. STRIP | HEAT PUMP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) --- (R) --- (R) | (R) --- (R) | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (H) --- | (W2) --- 67M41* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) --- | (W1) ← (W1) → | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) --- | (O) --- | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (O) --- | (O) --- | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (L) --- | (Y1) --- | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1) --- | (Y1) --- | (Y) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2) --- | (Y2) --- | (Y) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) --- | (G) --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (D) --- | (DS) --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (B) --- | (Y2) --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) --- | (C) --- | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (T) --- | | outdoor sensor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (T) --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Dual Fuel Two Stage Heat Pump</p> <p>ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control</p> | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p> | <table border="0"> <tr> <td>T'STAT</td> <td>FURNACE TERM. STRIP</td> <td>HEAT PUMP</td> </tr> <tr> <td>(R) --- (R) --- (R)</td> <td>(R) --- (R)</td> <td>(R)</td> </tr> <tr> <td>(H) ---</td> <td>(W2) --- 67M41*</td> <td></td> </tr> <tr> <td>(W2) ---</td> <td>(W1) ← (W1) →</td> <td>(W1)</td> </tr> <tr> <td>(W1) ---</td> <td>(O) ---</td> <td>(O)</td> </tr> <tr> <td>(O) ---</td> <td>(O) ---</td> <td>(O)</td> </tr> <tr> <td>(L) ---</td> <td>(Y1) ---</td> <td>(Y1)</td> </tr> <tr> <td>(Y1) ---</td> <td>(Y1) ---</td> <td>(Y1)</td> </tr> <tr> <td>(Y2) ---</td> <td>(Y2) ---</td> <td>(Y2)</td> </tr> <tr> <td>(G) ---</td> <td>(G) ---</td> <td></td> </tr> <tr> <td>(D) ---</td> <td>(DS) ---</td> <td></td> </tr> <tr> <td>(B) ---</td> <td>(Y2) ---</td> <td>Y2 out blue</td> </tr> <tr> <td>(C) ---</td> <td>(C) ---</td> <td>(C)</td> </tr> <tr> <td>(T) ---</td> <td></td> <td>outdoor sensor</td> </tr> <tr> <td>(T) ---</td> <td></td> <td></td> </tr> </table> | T'STAT | FURNACE TERM. STRIP | HEAT PUMP | (R) --- (R) --- (R) | (R) --- (R) | (R) | (H) --- | (W2) --- 67M41* | | (W2) --- | (W1) ← (W1) → | (W1) | (W1) --- | (O) --- | (O) | (O) --- | (O) --- | (O) | (L) --- | (Y1) --- | (Y1) | (Y1) --- | (Y1) --- | (Y1) | (Y2) --- | (Y2) --- | (Y2) | (G) --- | (G) --- | | (D) --- | (DS) --- | | (B) --- | (Y2) --- | Y2 out blue | (C) --- | (C) --- | (C) | (T) --- | | outdoor sensor | (T) --- | | |
| T'STAT | FURNACE TERM. STRIP | HEAT PUMP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (R) --- (R) --- (R) | (R) --- (R) | (R) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (H) --- | (W2) --- 67M41* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W2) --- | (W1) ← (W1) → | (W1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (W1) --- | (O) --- | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (O) --- | (O) --- | (O) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (L) --- | (Y1) --- | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y1) --- | (Y1) --- | (Y1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (Y2) --- | (Y2) --- | (Y2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (G) --- | (G) --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (D) --- | (DS) --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (B) --- | (Y2) --- | Y2 out blue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (C) --- | (C) --- | (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (T) --- | | outdoor sensor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (T) --- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Connect W1 to W1 ONLY if using defrost tempering kit 67M41

NOTE - **Do NOT** make a wire connection between the room thermostat L terminal and the L terminal of the furnace integrated control.

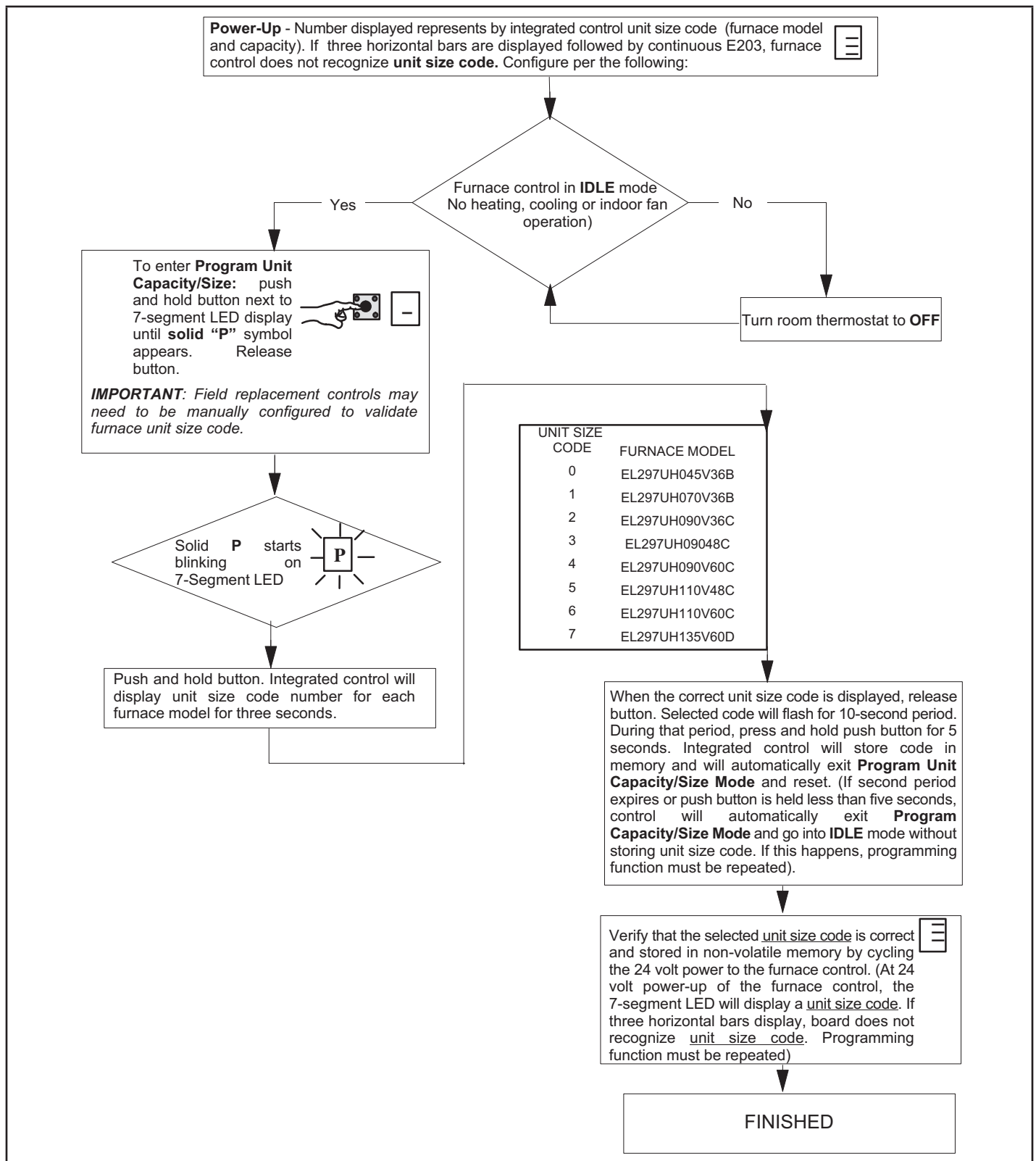
Ignition Control 103130-XX DIP Switch Settings and On Board Links

| Thermostat | DIP Switch Settings and On-Board Links | | Wiring Connections | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|---|--------|---------------------|-----------|---|---|---|---|--|--|----|-----------|--|----|-----------|--|---|---|---|---|--|---|----|----|----|----|--|----|---|---|--|---|----|--|---|----|-------------|---|---|---|---|--|----------------|---|--|--|
| | DIP Switch 1 Thermostat Heating Stages | On Board Links Must Be Cut To Select System Options | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Dual Fuel Single Stage Heat Pump</p> <p>ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control w/dehumidification control</p> | OFF | <p>CUT ON-BOARD LINK W951 HEAT PUMP</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p>  | <table border="0"> <thead> <tr> <th>T'STAT</th> <th>FURNACE TERM. STRIP</th> <th>HEAT PUMP</th> </tr> </thead> <tbody> <tr><td>R</td><td>R</td><td>R</td></tr> <tr><td>H</td><td></td><td></td></tr> <tr><td>W2</td><td>W2 67M41*</td><td></td></tr> <tr><td>W1</td><td>W1 ← → W1</td><td></td></tr> <tr><td>O</td><td>O</td><td>O</td></tr> <tr><td>L</td><td></td><td>L</td></tr> <tr><td>Y1</td><td>Y1</td><td>Y</td></tr> <tr><td>Y2</td><td></td><td></td></tr> <tr><td>G</td><td>G</td><td></td></tr> <tr><td>D</td><td>DS</td><td></td></tr> <tr><td>B</td><td>Y2</td><td></td></tr> <tr><td>C</td><td>C</td><td>C</td></tr> <tr><td>T</td><td></td><td>outdoor sensor</td></tr> <tr><td>T</td><td></td><td></td></tr> </tbody> </table> | T'STAT | FURNACE TERM. STRIP | HEAT PUMP | R | R | R | H | | | W2 | W2 67M41* | | W1 | W1 ← → W1 | | O | O | O | L | | L | Y1 | Y1 | Y | Y2 | | | G | G | | D | DS | | B | Y2 | | C | C | C | T | | outdoor sensor | T | | |
| T'STAT | FURNACE TERM. STRIP | HEAT PUMP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W2 | W2 67M41* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 | W1 ← → W1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| O | O | O | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | | L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y1 | Y1 | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | G | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | DS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | Y2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | C | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | | outdoor sensor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Dual Fuel Two Stage Heat Pump</p> <p>ComfortSense thermostat w/ dual fuel capabilities Capable of 2 stage gas heat control w/dehumidification</p> | OFF | <p>CUT ON-BOARD LINK W915 2 STAGE COMPR</p> <p>CUT ON-BOARD LINK W951 HEAT PUMP</p> <p>CUT ON-BOARD LINK W914 DEHUM OR HARMONY</p>  | <table border="0"> <thead> <tr> <th>T'STAT</th> <th>FURNACE TERM. STRIP</th> <th>HEAT PUMP</th> </tr> </thead> <tbody> <tr><td>R</td><td>R</td><td>R</td></tr> <tr><td>H</td><td></td><td></td></tr> <tr><td>W2</td><td>W2 67M41*</td><td></td></tr> <tr><td>W1</td><td>W1 ← → W1</td><td></td></tr> <tr><td>O</td><td>O</td><td>O</td></tr> <tr><td>L</td><td></td><td>L</td></tr> <tr><td>Y1</td><td>Y1</td><td>Y1</td></tr> <tr><td>Y2</td><td></td><td>Y2</td></tr> <tr><td>G</td><td>G</td><td></td></tr> <tr><td>D</td><td>DS</td><td></td></tr> <tr><td>B</td><td>Y2</td><td>Y2 out blue</td></tr> <tr><td>C</td><td>C</td><td>C</td></tr> <tr><td>T</td><td></td><td>outdoor sensor</td></tr> <tr><td>T</td><td></td><td></td></tr> </tbody> </table> | T'STAT | FURNACE TERM. STRIP | HEAT PUMP | R | R | R | H | | | W2 | W2 67M41* | | W1 | W1 ← → W1 | | O | O | O | L | | L | Y1 | Y1 | Y1 | Y2 | | Y2 | G | G | | D | DS | | B | Y2 | Y2 out blue | C | C | C | T | | outdoor sensor | T | | |
| T'STAT | FURNACE TERM. STRIP | HEAT PUMP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W2 | W2 67M41* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W1 | W1 ← → W1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| O | O | O | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | | L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y1 | Y1 | Y1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y2 | | Y2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | G | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | DS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | Y2 | Y2 out blue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | C | C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | | outdoor sensor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* Connect W1 to W1 ONLY if using defrost tempering kit 67M41

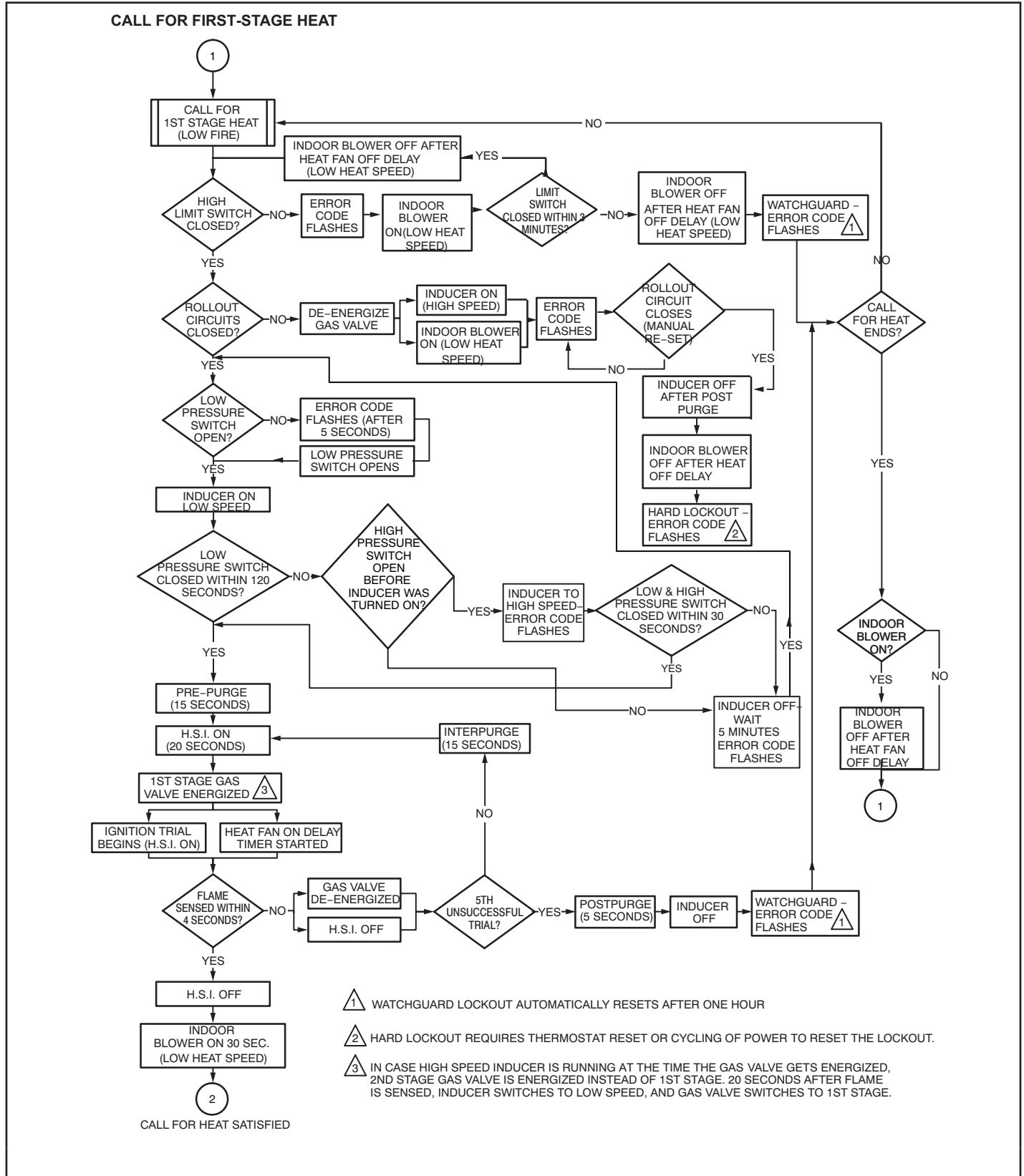
NOTE - Do NOT make a wire connection between the room thermostat L terminal and the L terminal of the furnace integrated control.

IX- Program Unit Capacity Size Modes

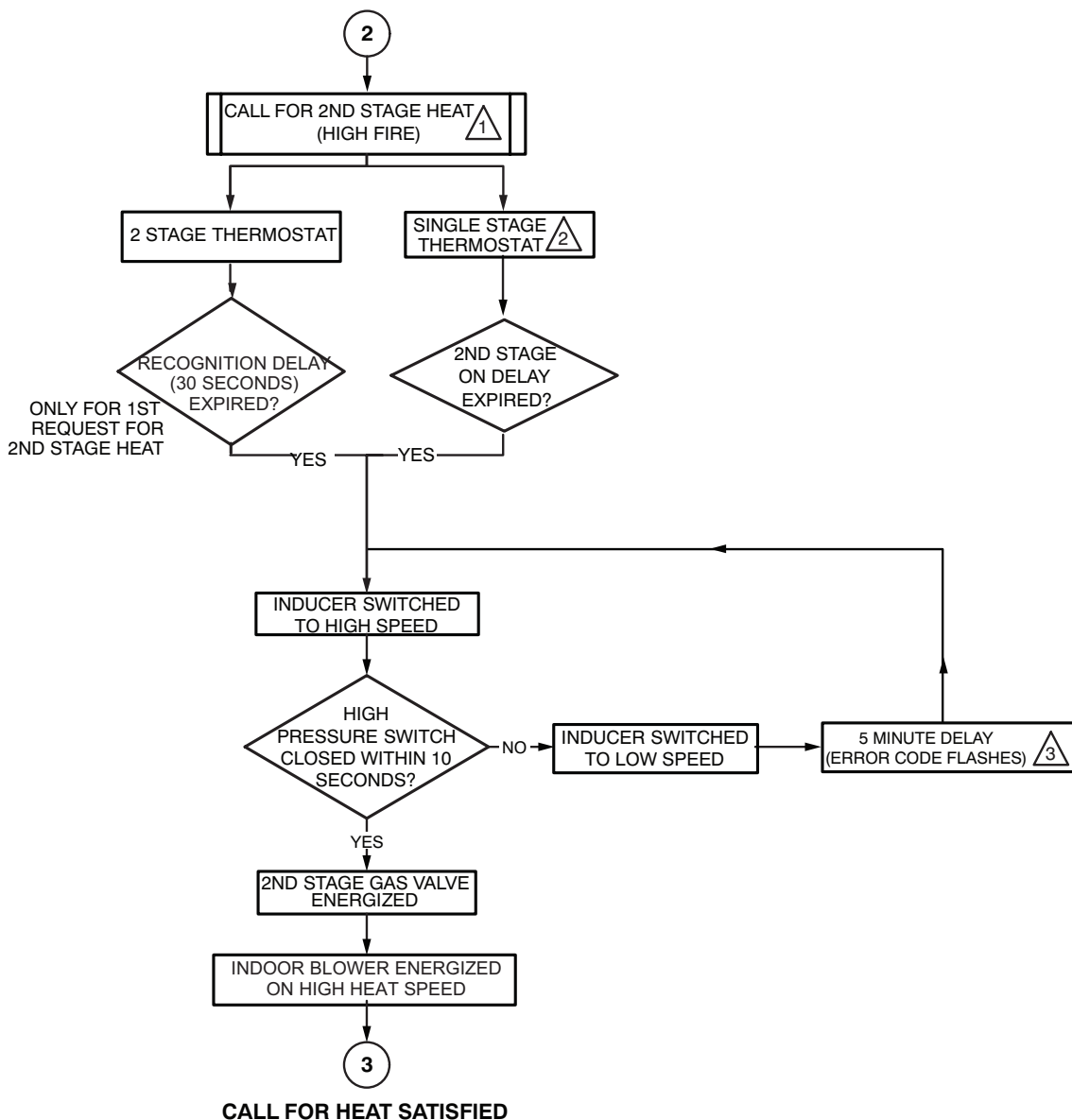


X- Troubleshooting

Troubleshooting: Heating Sequence of Operation



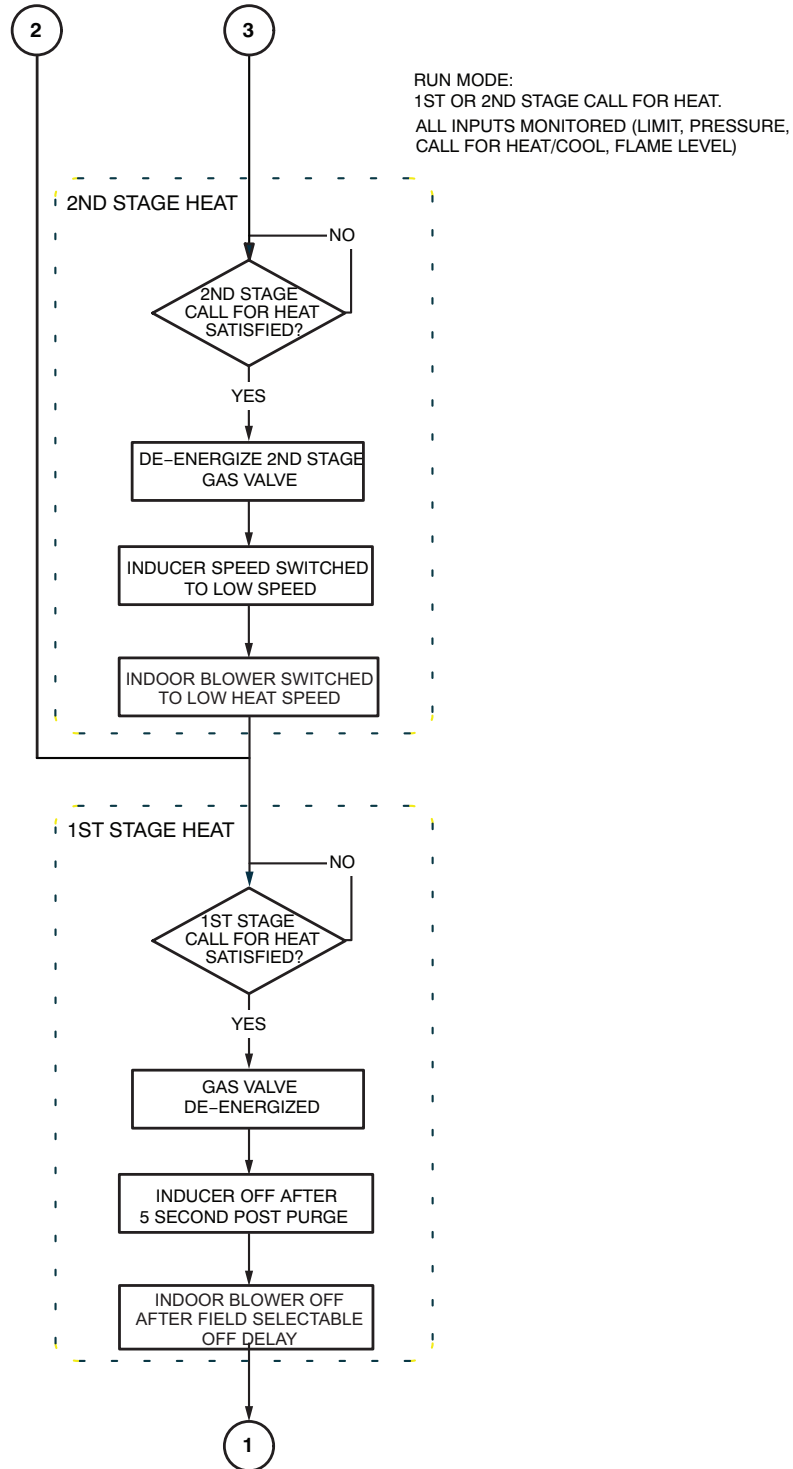
CALL FOR SECOND-STAGE HEAT



- 1 SYSTEM WILL ALWAYS LIGHT ON LOW FIRE, EVEN IF 2ND STAGE HEAT IS IN PLACE.
- 2 WHEN USED WITH A SINGLE STAGE THERMOSTAT, SET SW1 TO THE ON POSITION IN DIP SWITCH S4.
- 3 IF THE HIGH FIRE PRESSURE SWITCH DOES NOT CLOSE WITHIN 5 ATTEMPTS, THE SYSTEM WILL OPERATE AT LOW FIRE FOR THE REMAINDER OF THE CALL FOR HEAT REQUEST.

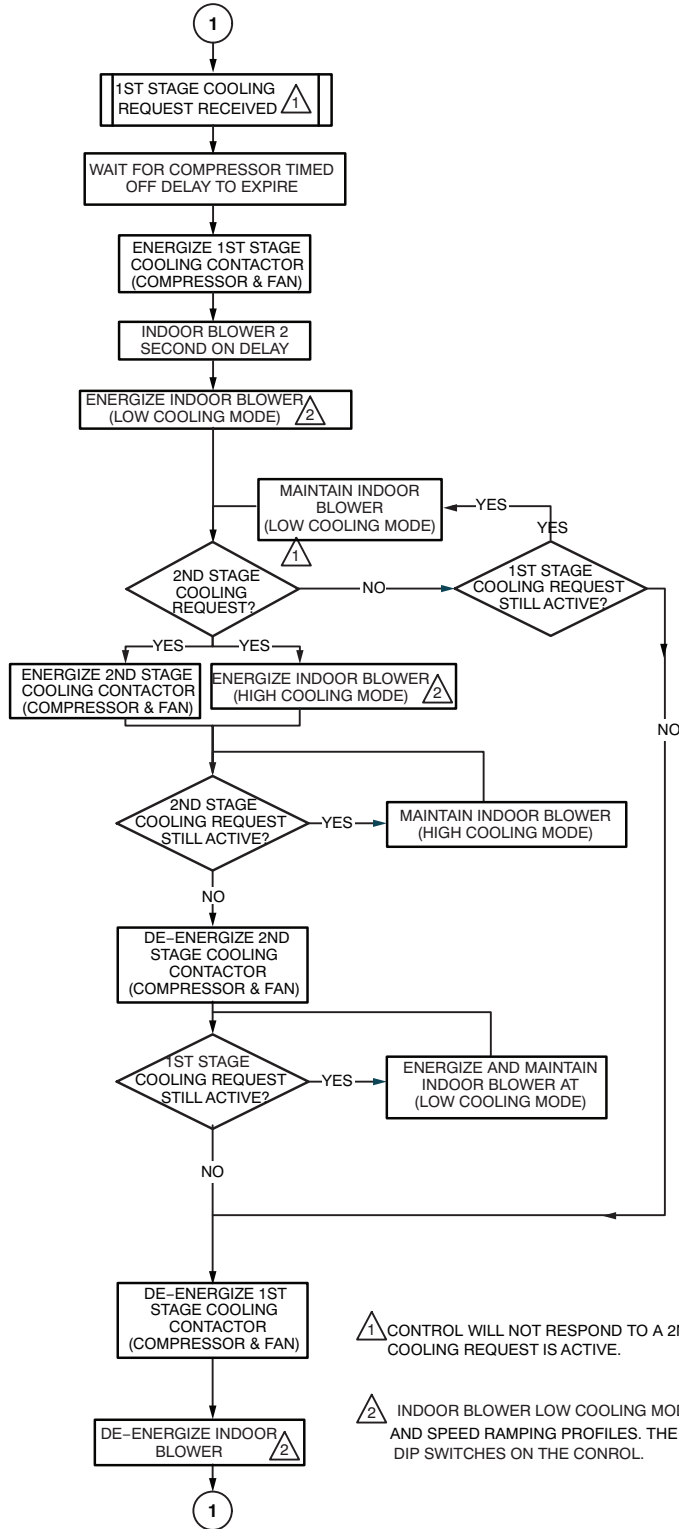
CALL FOR HEAT SATISFIED

FIRST-STAGE HEAT SECOND-STAGE HEAT



Troubleshooting: Cooling Sequence of Operation

CALL FOR COOLING



CALL FOR FAN

