



SVC MANUAL (Exploded View)

Gas Furnace

ENGLISH

FRANÇAIS

MODEL

LNAEA040A1

LNAEA060B1

LNAEA080C1

LNAEA100C1

LNAEA120D1

LNAVE060B1

LNAVE080B1

LNAVE080C1

LNAVE100C1

LNAVE120D1

P/No.: MFL05797501

Rev.00_012026

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1. SPECIFICATIONS

LNAEA040A1 LNAEA060B1 LNAEA080C1 LNAEA100C1 LNAEA120D1

Type		Gas Furnace					
		Unit	LNAEA040A1	LNAEA060B1	LNAEA080C1	LNAEA100C1	LNAEA120D1
Power Supply		V, Phase, Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz
Fuel Type		-	Natural/Propane Gas	Natural/Propane Gas	Natural/Propane Gas	Natural/Propane Gas	Natural/Propane Gas
Performance	Fire Input	Btu/h	40 000	60 000	80 000	100 000	120 000
	Natural Gas Output	Btu/h	32 000	48 000	64 000	80 000	96 000
	LP Gas Output	Btu/h	32 000	48 000	64 000	80 000	96 000
	Temperature Rise Range	°F	20 - 50	25 - 55	30 - 60	30 - 60	35 - 65
	AFUE	-	80	80	80	80	80
Indoor Fan	Type	-	Sirocco	Sirocco	Sirocco	Sirocco	Sirocco
	Air Flow Rate (Cooling)	m³/min	12.7 ~ 32.6	17.0 ~ 36.8	17.0 ~ 36.8	28.3 ~ 49.6	32.6 ~ 55.2
		CFM	450 ~ 1 150	600 ~ 1300	600 ~ 1 300	1 000 ~ 1 750	1 150 ~ 1 950
	Air Flow Rate (Heating)	m³/min	12.7 ~ 32.6	17.0 ~ 36.8	17.0 ~ 36.8	28.3 ~ 49.6	32.6 ~ 55.2
		CFM	450 ~ 1 150	600 ~ 1 300	600 ~ 1 300	1 000 ~ 1 750	1 150 ~ 1 950
Indoor Fan Motor	Type	-	ECM	ECM	ECM	ECM	ECM
	Output	W	375	375	375	750	750
Dimensions	Ne (W x H x D)	mm	368.3 x 857 x 724	444.5 x 857 x 724	533.4 x 857 x 724	533.4 x 857 x 724	622.3 x 857 x 724
		inch	14-1/2x33-3/4x28-1/2	17-1/2x33-3/4x28-1/2	21x33-3/4x28-1/2	21x33-3/4x28-1/2	24-1/2x33-3/4x28-1/2
	Shipping (W x H x D)	mm	432 x 1 025 x 788	508 x 1 025 x 788	598 x 1 025 x 788	598 x 1 025 x 788	687 x 1 025 x 788
		inch	17 x 40-3/8 x 31	20 x 40-3/8 x 31	23-9/16 x 40-3/8 x 31	23-9/16 x 40-3/8 x 31	27-1/32 x 40-3/8 x 31
Weight	Net	kg(lbs)	49.0(108)	52.2(115)	61.2(135)	66.2(146)	68.9(152)
	Shipping	kg(lbs)	59.9(132)	64.0(141)	73.9(163)	80.3(177)	86.2(190)

LNAVE060B1 LNAVE080B1 LNAVE080C1 LNAVE100C1 LNAVE120D1

Type		Gas Furnace					
		Unit	LNAVE060B1	LNAVE080B1	LNAVE080C1	LNAVE100C1	LNAVE120D1
Power Supply		V, Phase, Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz	115 V~ 1Ph 60 Hz
Fuel Type		-	Natural/Propane Gas	Natural/Propane Gas	Natural/Propane Gas	Natural/Propane Gas	Natural/Propane Gas
Performance	High Input	Btu/h	60 000	80 000	80 000	100 000	120 000
	High Natural Gas Output	Btu/h	57 000	76 000	76 000	95 000	115 000
	High LP Gas Output	Btu/h	57 000	76 000	76 000	95 000	115 000
	Low Input	Btu/h	39 000	52 000	52 000	70 000	84 000
	Low Natural Gas Output	Btu/h	37 000	49 000	49 000	67 000	80 500
	Low LP Gas Output	Btu/h	37 000	49 000	49 000	67 000	80 500
	-	°F	30 - 60	35 - 65	35 - 65	35 - 65	40 - 70
	AFUE	-	96	96	96	96	96
Indoor Fan	Type	-	Sirocco	Sirocco	Sirocco	Sirocco	Sirocco
	Air Flow Rate (Cooling)	m³/min	15.6 ~ 36.8	15.6 ~ 34.0	17.0 ~ 36.8	28.3 ~ 49.6	32.6 ~ 55.2
		CFM	550 ~ 1 300	550 ~ 1 200	600 ~ 1 300	1 000 ~ 1 750	1 150 ~ 1 950
	Air Flow Rate (Heating)	m³/min	15.6 ~ 36.8	15.6 ~ 34.0	17.0 ~ 36.8	28.3 ~ 49.6	32.6~55.2
		CFM	550 ~ 1 300	550 ~ 1 200	600 ~ 1 300	1 000~1 750	1 150~1 950
Indoor Fan Motor	Type	-	ECM	ECM	ECM	ECM	ECM
	Output	W	750	750	750	750	750
Dimensions	Net (W x H x D)	mm	444.5 x 857 x 730	444.5 x 857 x 730	533.4 x 857 x 730	533.4 x 857 x 730	622.3 x 857 x 730
		inch	17-1/2x33-3/4x28-3/4	17-1/2x33-3/4x28-3/4	21x33-3/4x28-3/4	21x33-3/4x28-3/4	24-1/2x33-3/4x28-3/4
	Shipping (W x H x D)	mm	508 x 1 025 x 788	508 x 1 025 x 788	598 x 1 025 x 788	598 x 1 025 x 788	687 x 1 025 x 788
		inch	20 x 40-3/8 x 31	20 x 40-3/8 x 31	23-9/16 x 40-3/8 x 31	23-9/16 x 40-3/8 x 31	27-1/32 x 40-3/8 x 31
Weight	Net	kg(lbs)	59.4(131)	63.0(139)	64.4(142)	69.6(153.5)	76.7(169)
	Shipping	kg(lbs)	73.5(162)	76.2(168)	84.1(185.5)	86.6(191)	95.3(210)

Combustion System Specifications

LNAEA040A1 LNAEA060B1 LNAEA080C1 LNAEA100C1 LNAEA120D1

Model			040A1	060B1	080C1	100C1	120D1
Max. Inlet Gas Press	Natural Gas	in.w.c	10.5	10.5	10.5	10.5	10.5
	Propane Gas (LP)	in.w.c	13	13	13	13	13
Min. Inlet Gas Press	Natural Gas	in.w.c	4.5	4.5	4.5	4.5	4.5
	Propane Gas (LP)	in.w.c	11	11	11	11	11
Natural Gas Manifold Pressure (High/Low fire)		in.w.c	3.0	3.5	3.8	3.8	3.9
Propane Gas Manifold Pressure (High/Low fire)		in.w.c	10	10	10	10	10.5
Natural Gas Factory Orifice (0-2000 feet)		#	50	45	49	49	49
Propane Gas (LP) Factory Orifice (0-2000 feet)		#	59	55	56	56	56
Gas Connection Size		in. NPT	3/4	3/4	3/4	3/4	3/4
Igniton Device			Hot surface				
Number of Burners		#	3	3	5	6	7
Primary Heat exchanger Diameter		Inch	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2
Primary Heat exchanger		# tubes	3	3	5	6	7
Flue Vent Diameter		Inch	1-3/16	1-29/64	1-37/64	1-57/64	1-57/64
Safety Switch Settings							
Pressure Switch Factory Setting		Low in.w.c	0.55	0.55	0.55	0.55	0.55
Rollout switch - resettable		Off/On °F	300	300	300	300	300
Inlet High Temperature Limit switch - fixed		Off/On °F	180/150	180/150	180/150	180/150	180/150

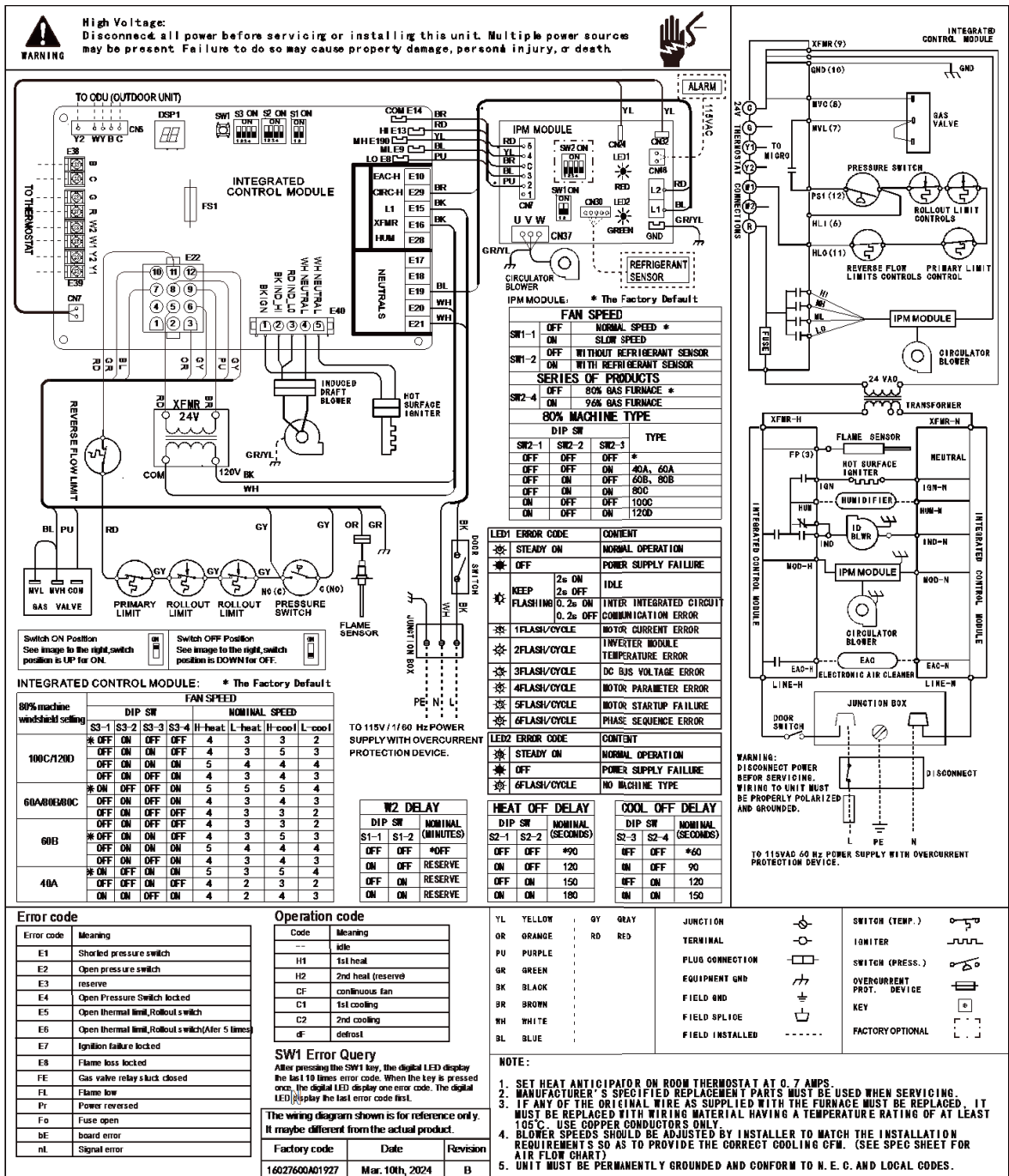
LNAVE060B1 LNAVE080B1 LNAVE080C1 LNAVE100C1 LNAVE120D1

Model			060B1	080B1	080C1	100C1	120D1
Max. Inlet Gas Press	Natural Gas	in.w.c	10.5	10.5	10.5	10.5	10.5
	Propane Gas (LP)	in.w.c	13	13	13	13	13
Min. Inlet Gas Press	Natural Gas	in.w.c	4.5	4.5	4.5	4.5	4.5
	Propane Gas (LP)	in.w.c	11	11	11	11	11
Natural Gas Manifold Pressure (High fire)		in.w.c	3.5	3.5	3.5	3.5	3.5
Natural Gas Manifold Pressure (Low fire)		in.w.c	1.6	1.6	1.6	1.6	1.6
Propane Gas Manifold Pressure (High fire)		in.w.c	10	10	10	10	10
Propane Gas Manifold Pressure (Low fire)		in.w.c	4	4	4	4	4
Natural Gas Factory Orifice (0-2000 feet)		#	45	45	45	45	45
Propane Gas (LP) Factory Orifice (0-2000 feet)		#	55	55	55	55	55
Gas Connection Size		in. NPT	1/2	1/2	1/2	1/2	1/2
Igniton Device			Hot surface				
Number of Burners		#	3	4	4	5	6
Primary Heat exchanger Diameter		Inch	1-6/8	1-6/8	1-6/8	1-6/8	1-6/8
Primary Heat exchanger		# tubes	3	4	4	5	6
Secondary Heat Exchanger Diameter		Inch	3/8	3/8	3/8	3/8	3/8
Secondary Heat Exchanger		# tubes	33	33	39	39	48
Flue Vent Diameter		Inch	2 2/3"	2 2/3"	2 2/3"	2 2/3"	3"
Safety Switch Settings							
Pressure Switch Factory Setting		High (in.w.c)	1.1	1.1	1.1	1.1	1.1
Pressure Switch Factory Setting		Low (in.w.c)	0.55	0.55	0.55	0.55	0.55
Rollout switch - resettable		Off/On (°F)	300	300	300	300	300
Inlet High Temperature Limit switch - fixed		Off/On (°F)	150/120	150/120	150/120	150/120	150/120

2. WIRING DIAGRAMS

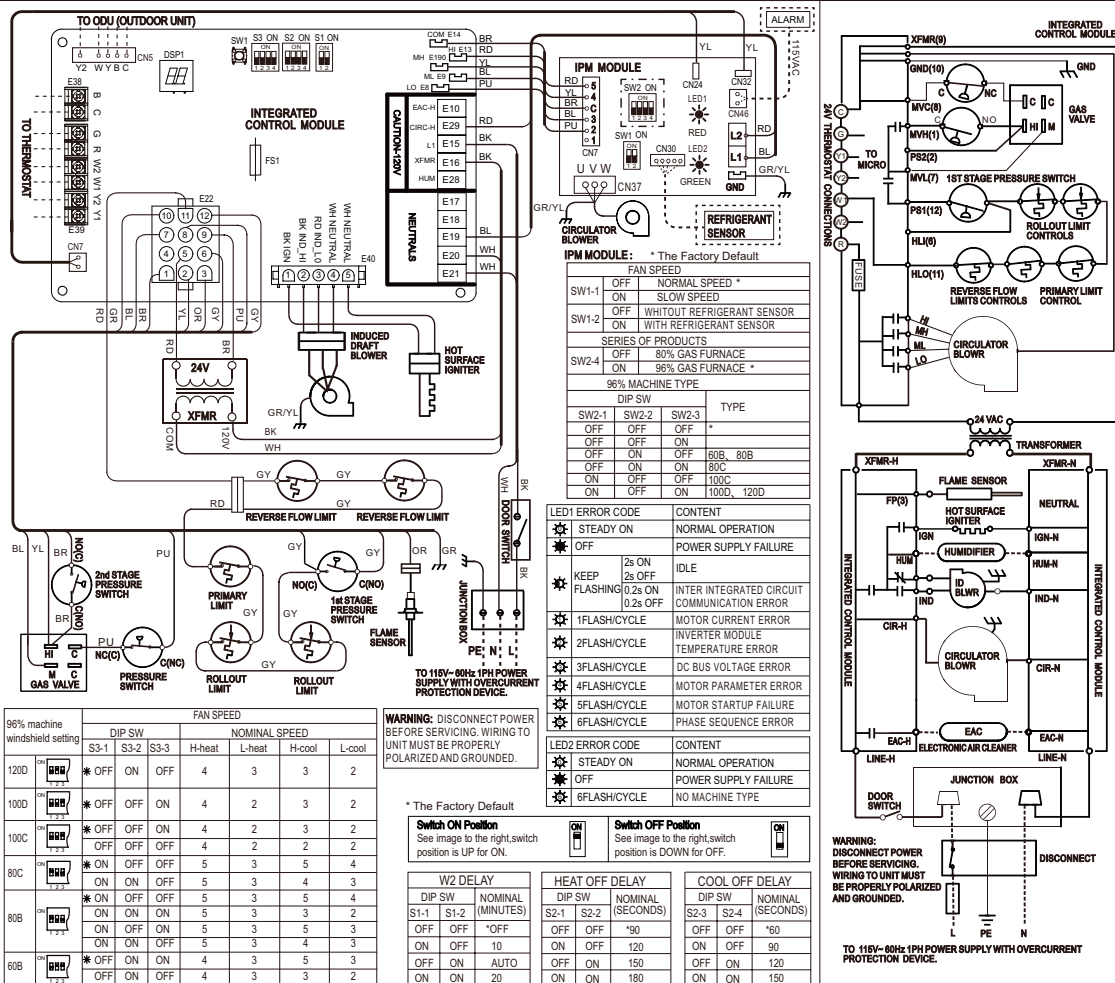
LNAEA040A1, LNAEA060B1, LNAEA080C1, LNAEA100C1, LNAEA120D1

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WARNING

High Voltage:
Disconnect all power before servicing or installing this unit. Multiple power sources may be present. Failure to do so may cause property damage, personal injury, or death.



Error code	
Error code	Meaning
E1	Shorted pressure
E2	Open pressure 1st-stage
E3	Open pressure 2nd-stage
E4	Open Pressure Switch locked
E5	Open thermal limit,Rollout switch
E6	Open thermal limit,Rollout switch (After 5 times)
E7	Ignition failure locked
E8	Flame loss locked
FE	Gas valve relay stuck closed
FL	Flame low
Pr	Power reversed
Fo	Fuse open
bE	Board error
nL	Signal error

Operation code	
Operation code	Meaning
--	Idle
H1	1st heat
H2	2nd heat
CF	Continuous fan
C1	1st cooling
C2	2nd cooling
dF	Defrost

Factory code	Date	Revision
XXXXXXXXXXXX	11.11.2024	1

L YELLOW	GY GRAY	JUNCTION
R ORANGE	RD RED	TERMINAL
U PURPLE		PLUG CONNECTION
R GREEN		EQUIPMENT GND
K BLACK		FIELD GND
R BROWN		FIELD SPLICE
W WHITE		FIELD INSTALLED
L BLUE		

NOTE:

1. SET HEAT ANTICIPATOR ON ROOM THERMOSTAT AT 0.7 AMPS.
2. MANUFACTURER'S SPECIFIED REPLACEMENT PARTS MUST BE USED WHEN SERVICING.
3. IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE FURNACE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING HAVING A TEMPERATURE RATING OF AT LEAST 105°C. USE COPPER CONDUCTORS ONLY.
4. BLOWER SPEEDS SHOULD BE ADJUSTED BY INSTALLER TO MATCH THE INSTALLATION REQUIREMENTS SO AS TO PROVIDE THE CORRECT COOLING CFM. (SEE SPEC SHEET FOR AIR FLOW CHART)
5. UNIT MUST BE PERMANENTLY GROUNDED AND CONFORM TO N. E. C. AND LOCAL CODES.

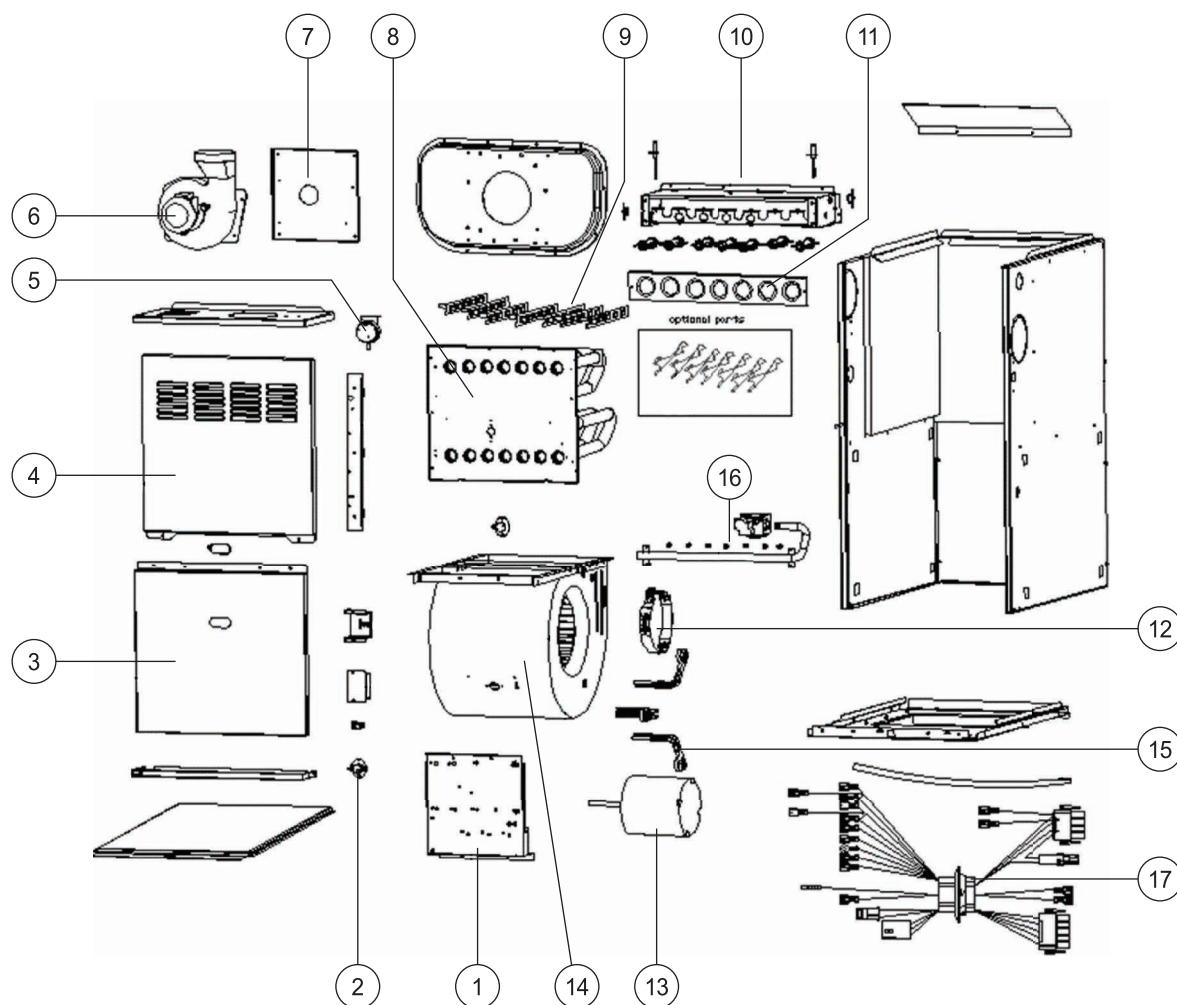
SWITCH (TEMP.)	
IGNITER	
SWITCH (PRESS.)	
OVERCURRENT PROT. DEVICE	
KEY	
FACTORY OPTIONAL	

3. EXPLODED VIEW

Gas Furnace

LNAEA040A1 LNAEA060B1 LNAEA080C1 LNAEA100C1 LNAEA120D1

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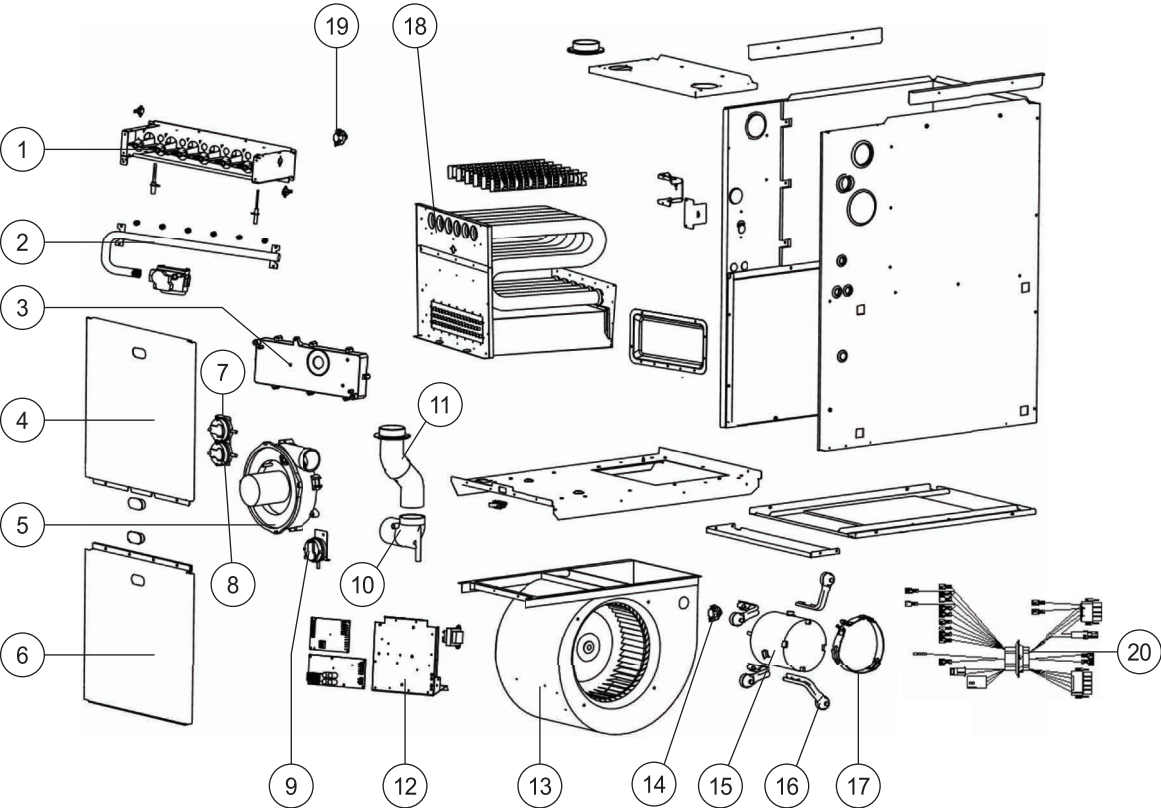


8 EXPLODED VIEW

No.	Description	Loc. No.	Model
1	Electrical Control Box Assembly	249950	LNAEA040A1 / 060B1 / 080C1
			LNAEA100C1 / 120D1
2	Thermostat	269300	All
3	Cover	135500	LNAEA040A1
			LNAEA060B1
			LNAEA080C1 / 100C1
			LNAEA120D1
4	Cover	135501	LNAEA040A1
			LNAEA060B1
			LNAEA080C1 / 100C1
			LNAEA120D1
5	Air Differential Pressure Switch	566001	All
6	Combustion Blower And Motor Assembly	359012B	All
7	Exhaust Baffles	349600	LNAEA040A1
			LNAEA060B1
			LNAEA080C1
			LNAEA100C1 / 120D1
8	Heat Exchanger Tube Bundle	752110	LNAEA040A1 / 060B1
			LNAEA080C1
			LNAEA100C1
			LNAEA120D1
9	Spoiler	W4811	All
10	Burner Assembly	153110	LNAEA040A1 / 060B1
			LNAEA080C1
			LNAEA100C1
			LNAEA120D1
11	Baffle	W4810	LNAEA040A1 / 060B1
			LNAEA080C1
			LNAEA100C1
			LNAEA120D1
12	Motor Holder Assembly	349610	LNAEA040A1 / 060B1 / 080C1
			LNAEA100C1 / 120D1
13	Brushless DC Motor	346810	LNAEA040A1 / 060B1 / 080C1
			LNAEA100C1 / 120D1
14	Centrifugal Fan	359012A	LNAEA040A1
			LNAEA060B1
			LNAEA080C1 / 100C1
			LNAEA120D1
15	Motor Holder	349600	All
16	Gas Pipe Assembly	752111	LNAEA040A1
			LNAEA060B1
			LNAEA080C1
			LNAEA100C1
			LNAEA120D1
17	Strong Electric Cable Group	W6631	All

LNAVE060B1, LNAVE080B1, LNAVE080C1, LNAVE100C1, LNAVE120D1

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No.	Description	Model	Loc. No.
1	Burner Assembly	LNAVE060B1	153110
		LNAVE080B1 / 080C1	
		LNAVE100C1	
		LNAVE120D1	
2	Gas Pipe Assembly	LNAVE060B1	752111
		LNAVE080B1 / 080C1	
		LNAVE100C1	
		LNAVE120D1	
3	Drainage Pan Assembly	LNAVE060B1 / 080B1	330871
		LNAVE080C1 / 100C1	
		LNAEA120D1	
4	Cover assembly	LNAVE060B1 / 080B1	135501
		LNAVE080C1	
		LNAVE100C1	
		LNAVE120D1	
5	Combustion Blower And Motor Assembly	LNAVE060B1 / 080B1 / 080C1	359012B
		LNAVE100C1 / 120D1	
6	Cover assembly	LNAVE060B1 / 080B1	135502
		LNAVE080C1	
		LNAVE100C1	
		LNAVE120D1	
7	Air Differential Pressure Switch	All	566001
8	Air Differential Pressure Switch	All	566002
9	Air Differential Pressure Switch	All	566003
10	Smoke Exhaust Elbow	All	752112
11	Smoke Exhaust Pipe Joint Assembly	All	752113
12	Electrical Control Box Assembly	All	249950
13	Centrifugal Fan	LNAVE060B1 / 080B1	359012A
		LNAVE080C1 / 100C1	
		LNAVE120D1	
14	Thermostat	All	269300
15	Brushless DC Motor	LNAVE060B1 / 080B1 / 080C1	346810
		LNAVE100C1 / 120D1	
16	Motor Holder Assembly	LNAVE060B1 / 080B1	349610
		LNAVE080C1 / 100C1 / 120D1	
17	Motor Holder	All	349600
18	Tube Assembly	LNAVE060B1	752110
		LNAVE080B1	
		LNAVE080C1	
		LNAVE100C1	
		LNAVE120D1	
19	Thermostat	All	269301
20	Strong Electric Cable Group	All	W6631

4. TROUBLESHOOTING

WARNING

FIRE, EXPLOSION AND ASPHYXIATION HAZARD

- Installation and service must be performed by a qualified service agency or the gas supplier.

Refer to the troubleshooting charts and associated figures on the following pages for assistance in determining the source of unit operational problems.

The diagnostic LED blinks to assist in troubleshooting the unit. The number of blinks refers to a specific code.

4.1 Electrostatic Discharge (ESD) Precautions

NOTE

- Discharge body's static electricity before touching unit. An electrostatic discharge can adversely affect electrical components.

Use the following precautions during furnace installation and servicing to protect the integrated control module from damage. By putting the furnace control and the person at the same electrostatic potential these steps will help avoid exposing the integrated control module to electrostatic discharge. This procedure is applicable to both installed and uninstalled (ungrounded) furnaces.

1. Disconnect all power to the furnace. Do not touch the integrated control module or any wire connected to the control prior to discharging your body's electrostatic charge to ground.
2. Firmly touch a clean unpainted metal surface of the furnace away from the control. Any tools held in a person's hand during grounding will be discharged.
3. Service integrated control module or connecting wiring following the discharge process in step 2. Use caution not to recharge your body with static electricity; (i.e. do not move or shuffle your feet, do not touch ungrounded objects, etc.). If you come in contact with an ungrounded object, repeat step 2 before touching control or wires.
4. Discharge your body to ground before removing a new control from its container. Follow steps 1 through 3 if installing the control on a furnace. Return any old or new controls to their containers before touching any ungrounded object.

4.2 Resetting From Lockout

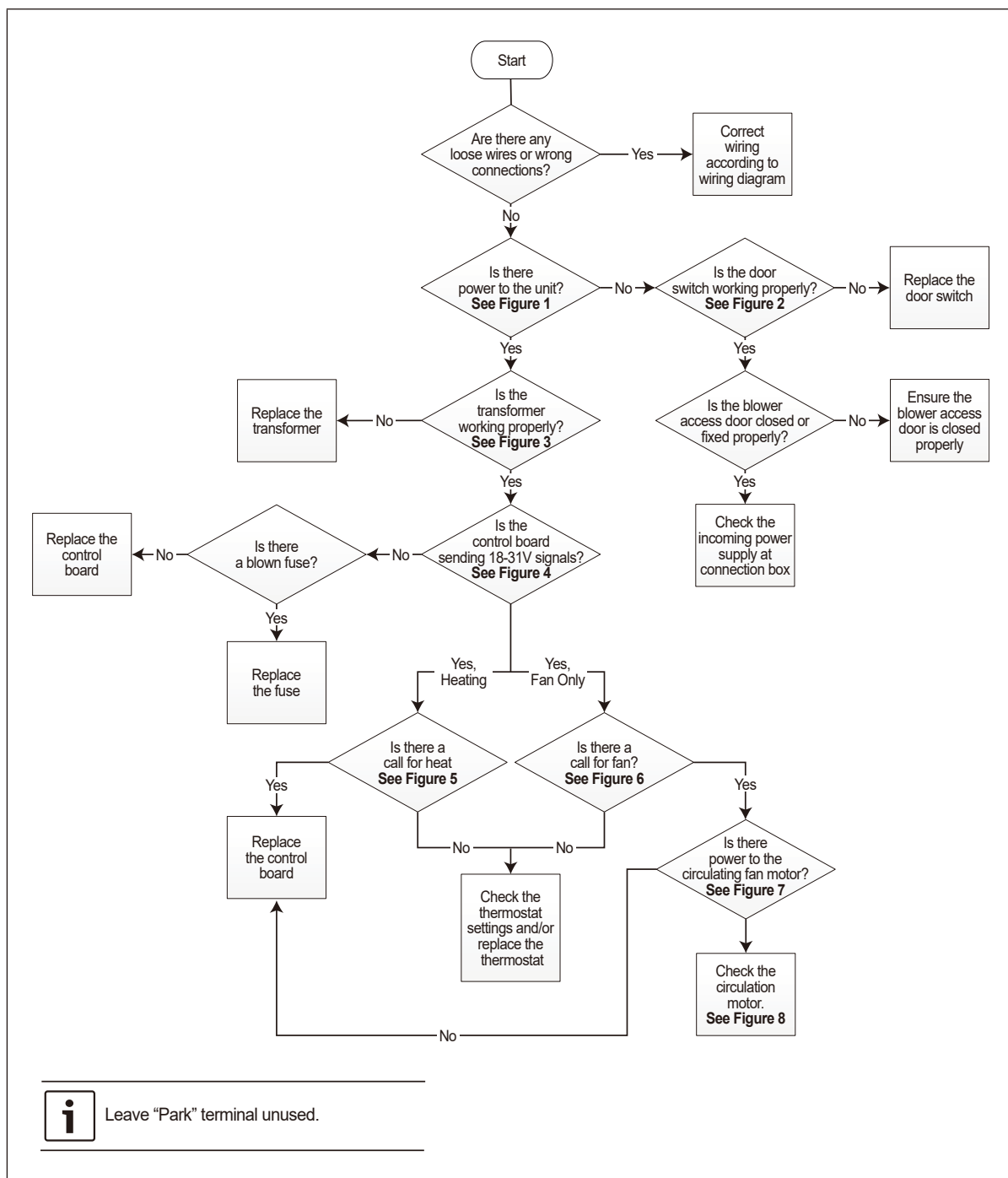
Furnace lockout results when a furnace is unable to achieve ignition after three attempts. Refer to the troubleshooting chart on the following pages for assistance in determining the source of unit operational problems. The red diagnostic LED blinks to assist in troubleshooting the unit. If the furnace is in "lockout" it will (or can be) reset in any of the following ways.

1. Automatic reset. The integrated control module will automatically reset itself and attempt to resume normal operations following a one hour lockout period.
2. Manual power interruption. Interrupt 115 volt power to the furnace for 1 - 20 seconds.
3. Manual thermostat cycle. Lower the thermostat so that there is no longer a call for heat for 1 - 20 sec.

5. ERROR FLASH CODES

5.1 No Light and No Fan (System Does Not Start Normally)

Troubleshooting Chart



Figures & Tables

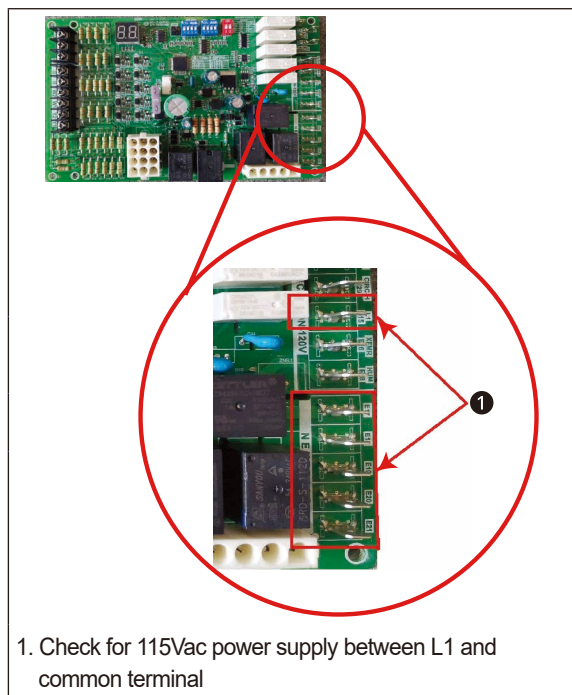


Figure 1

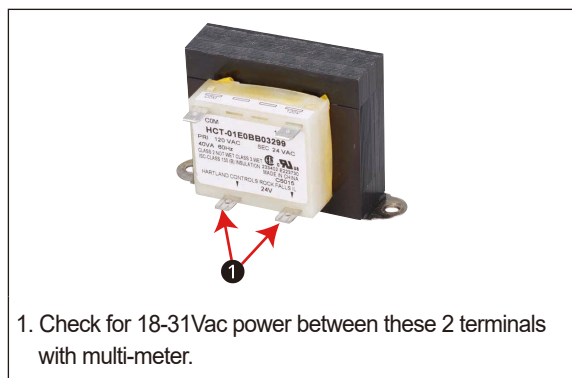


Figure 3

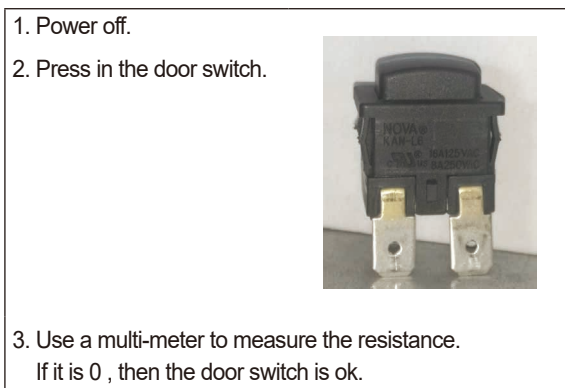


Figure 2

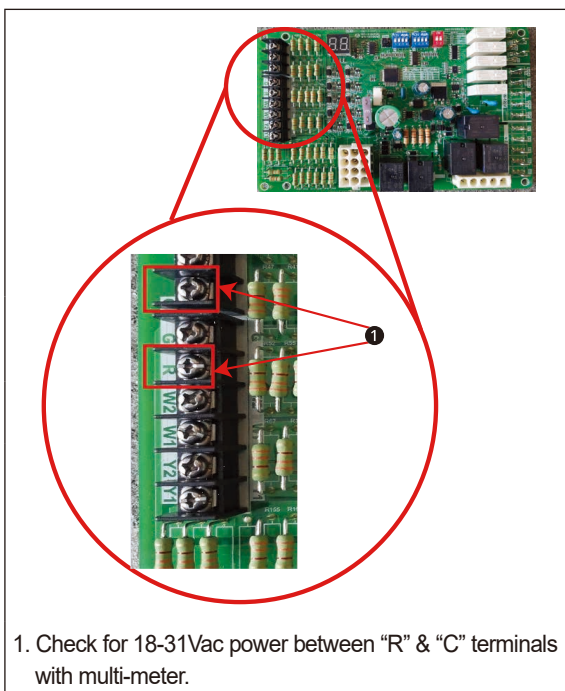


Figure 4

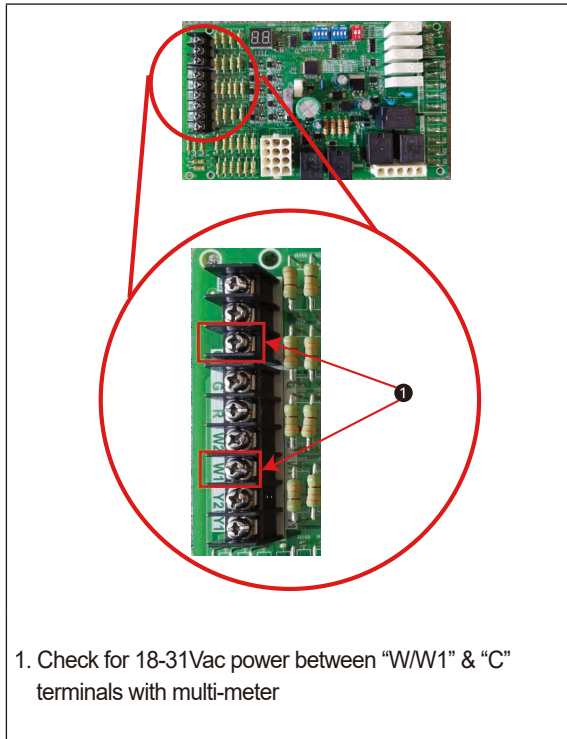


Figure 5

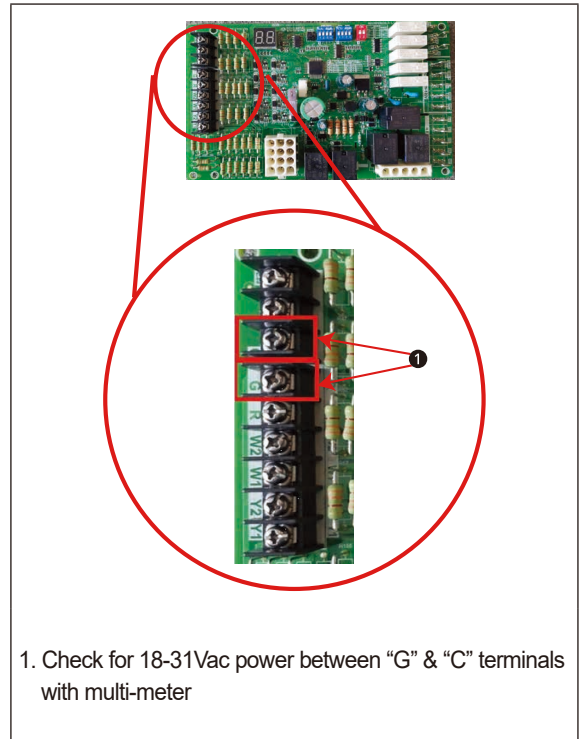


Figure 6

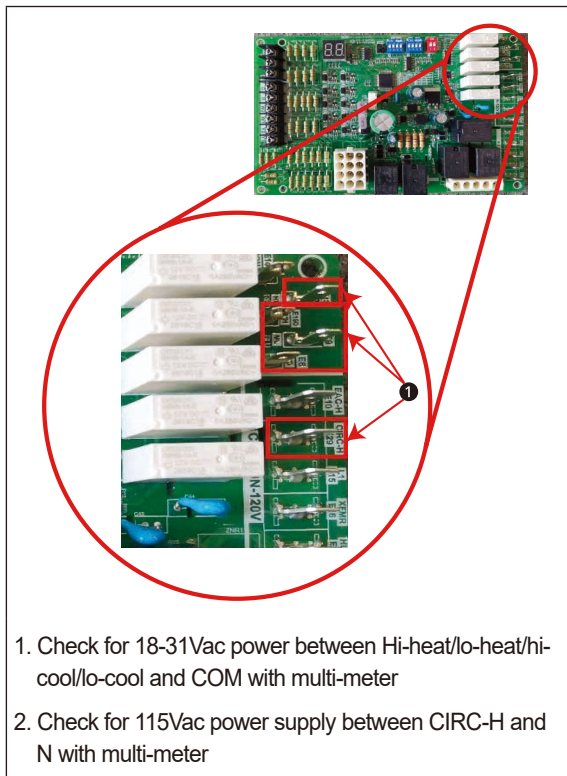


Figure 7

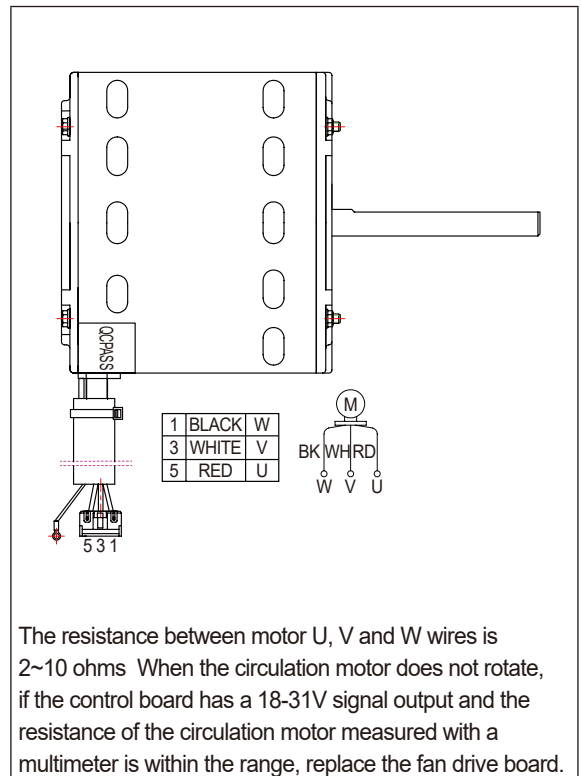
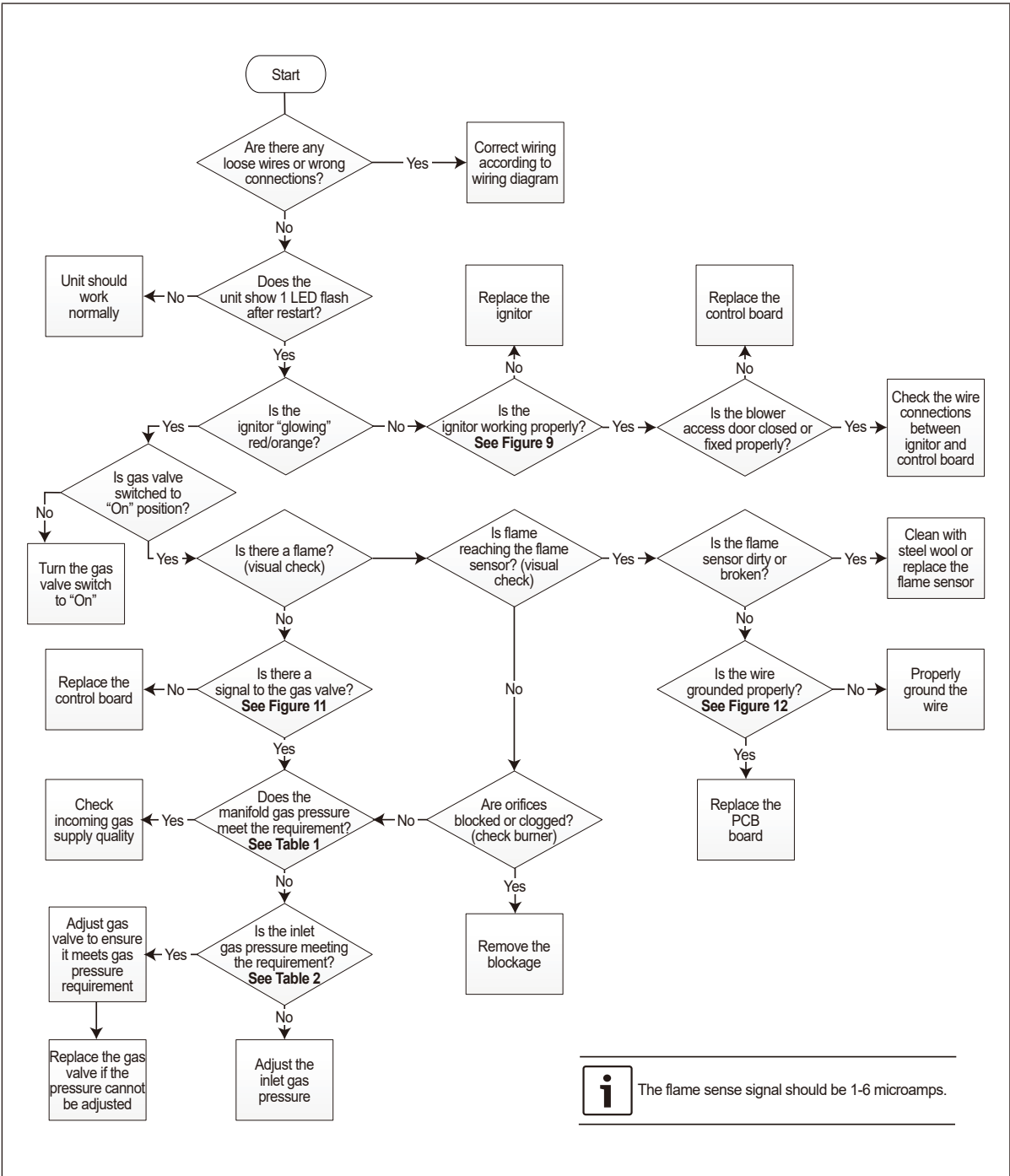


Figure 8

5.2 E7 (System Lock-Out due to Failed Ignition)
E8 (System Lock-Out due to too Many Flame Dropouts)

Troubleshooting Chart

ENGLISH



Figures & Tables



Figure 9

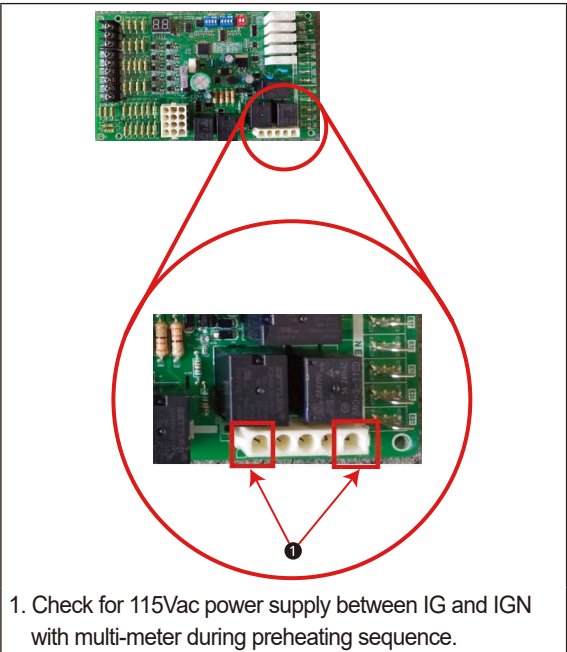


Figure 10

	Manifold Gas Pressure
Natural Gas	3.5 in.W.C.
Propane Gas	10 in.W.C.

Table 1 Manifold Gas Pressure

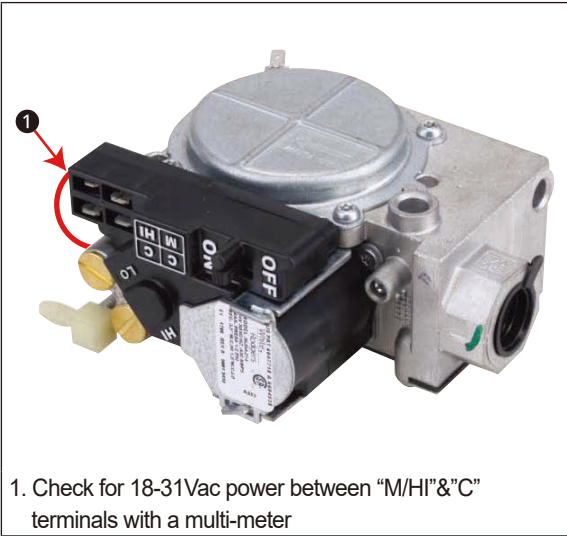


Figure 11

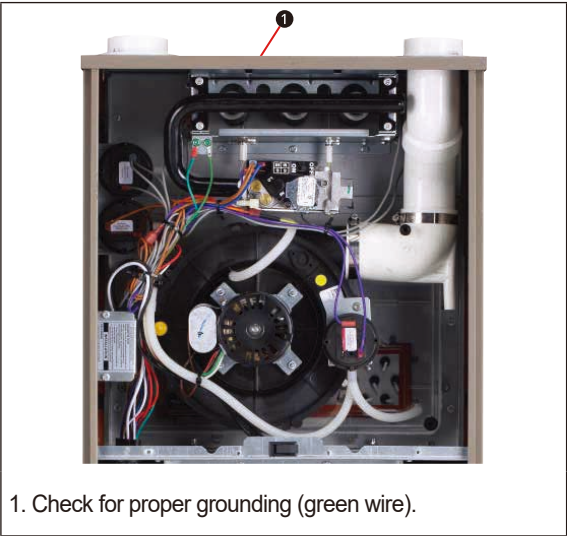


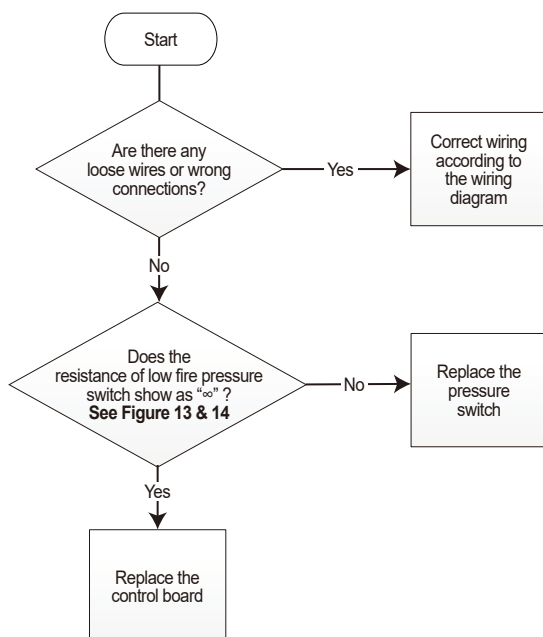
Figure 12

	Inlet Gas Supply Pressure	
Natural Gas	Minimum: 4.5 in. W.C.	Maximum: 10.5 in. W.C.
Propane Gas	Minimum: 11.0 in. W.C.	Maximum: 13.0 in. W.C.

Table 2 Inlet Gas Supply Pressure

5.3 E1 (Low Fire Pressure Switch Stuck Closed)

Troubleshooting Chart



This error could also be caused by a blocked vent. Check vent for obstructions. If a vent is blocked, unit's safety protection logic will turn off unit.

Figures

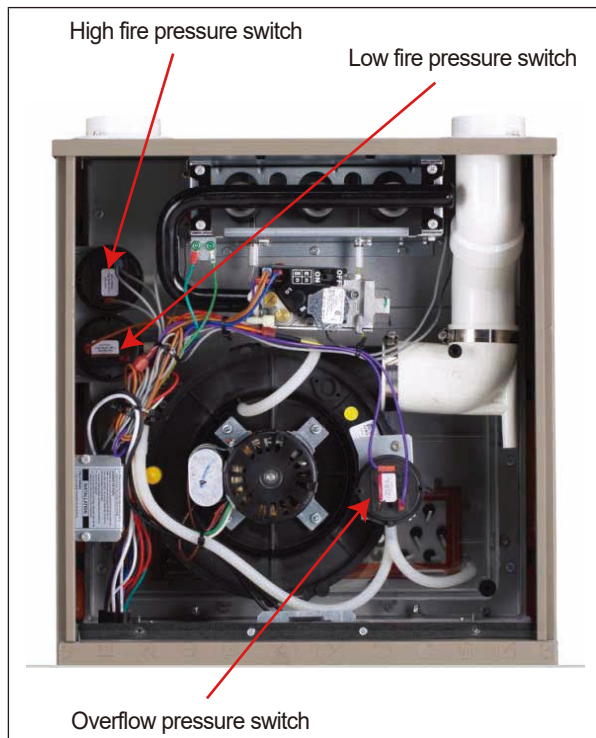


Figure 13

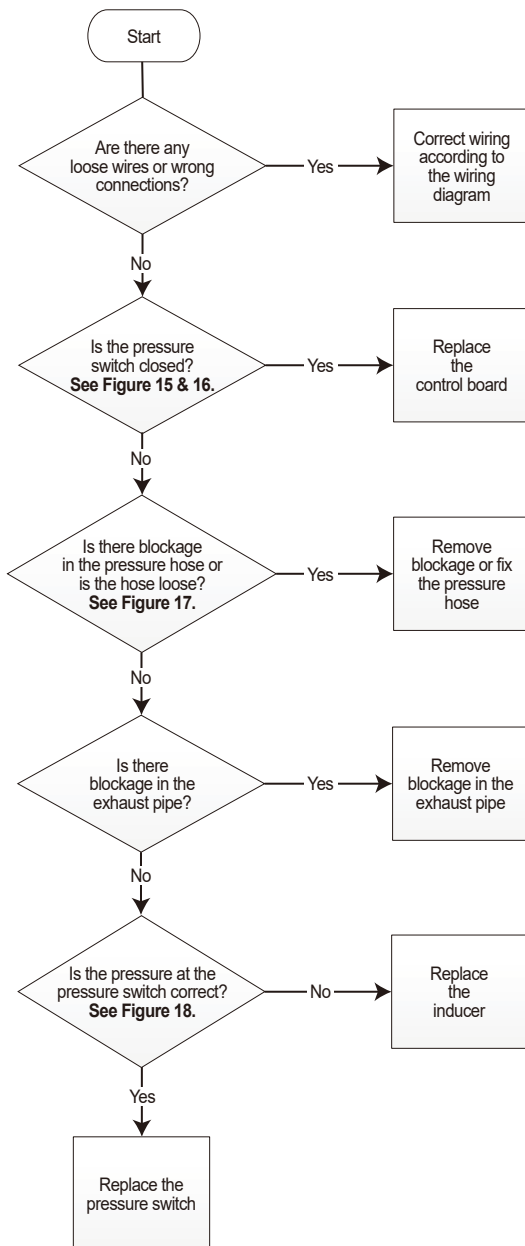


Figure 14

5.4 E2 (Low Pressure Switch Stuck Open) E4 (Pressure Switch Cycle Lockout) E3 (High Pressure Switch Stuck Open)

Troubleshooting Chart

ENGLISH



Figures

i The pressure switch that you are checking in this step depends on the number of LED flashes. Refer to the specific flashes and their descriptions above.

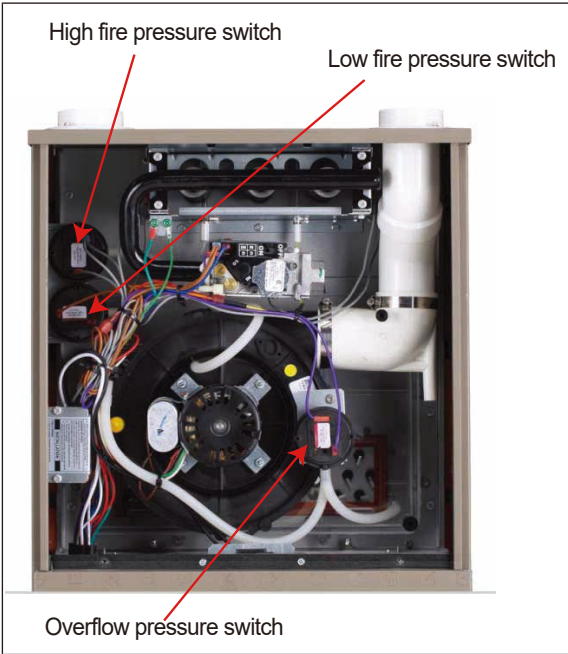


Figure 15



Figure 16

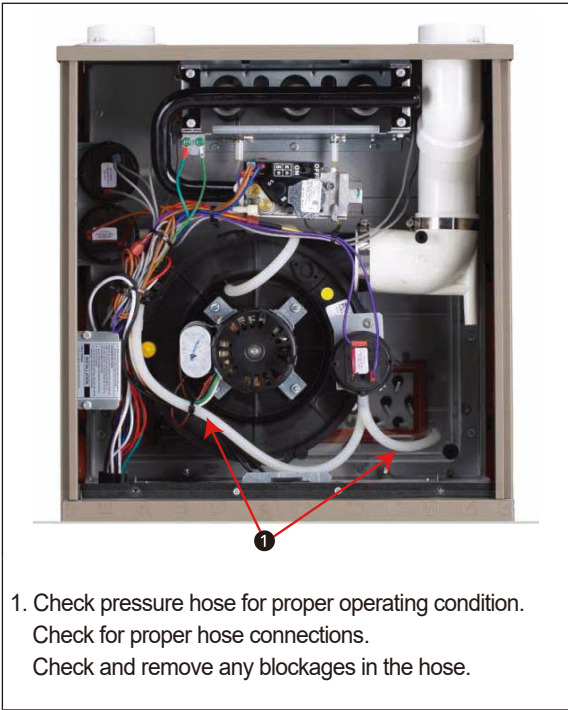


Figure 17

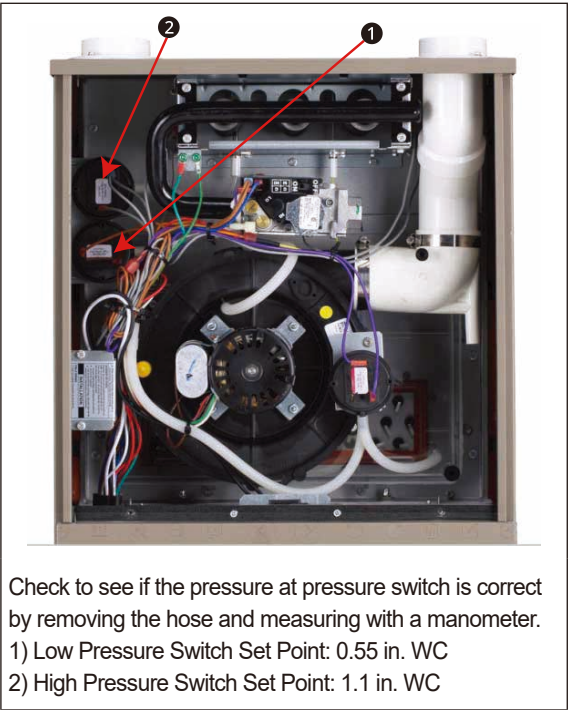
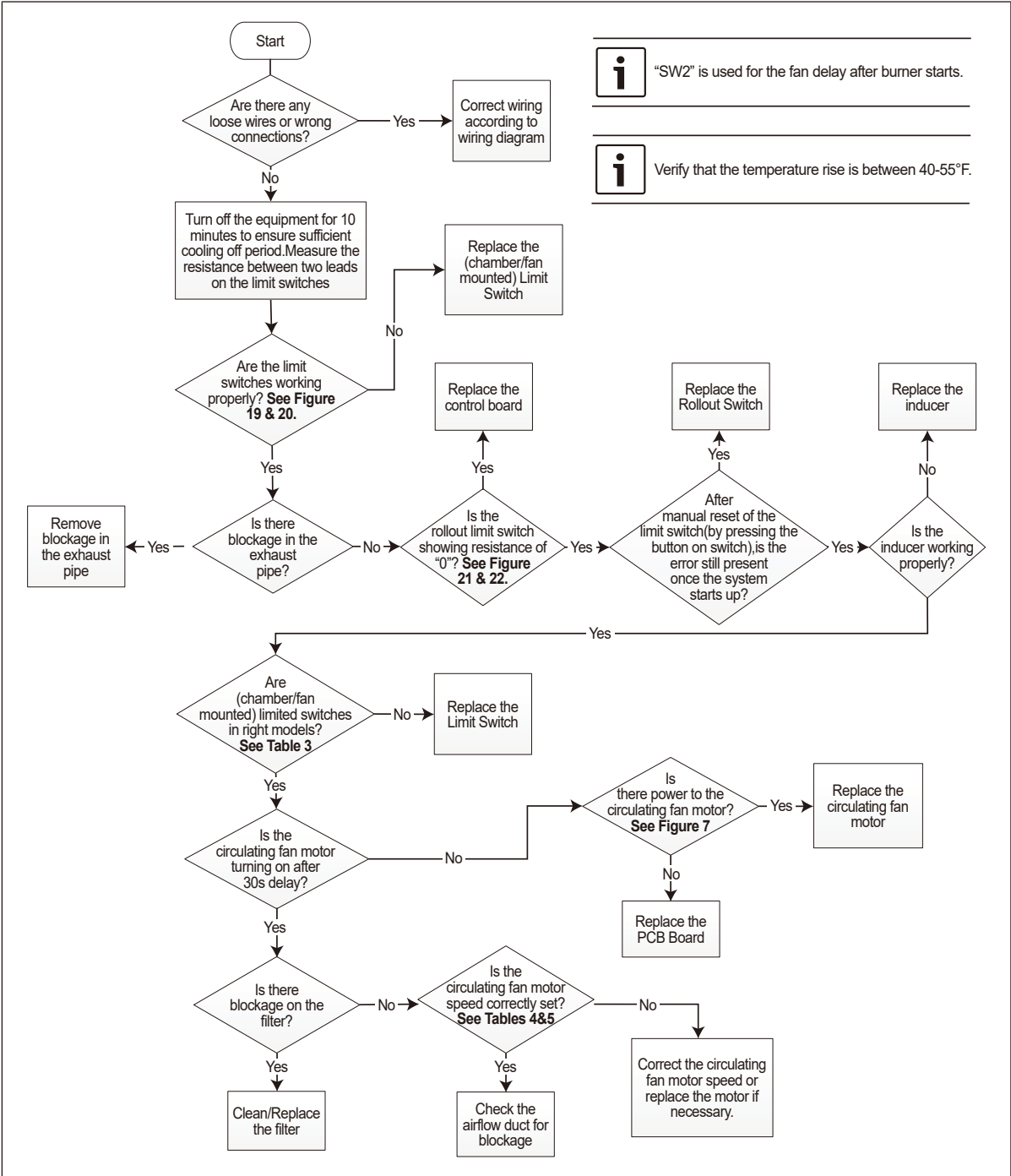


Figure 18

5.5 E5 (Limit/Rollout Switch Open Less than 5 Mins)
E6 (Limit/Rollout Switch Open More than 5 Mins)

Troubleshooting Chart



Figures & Tables

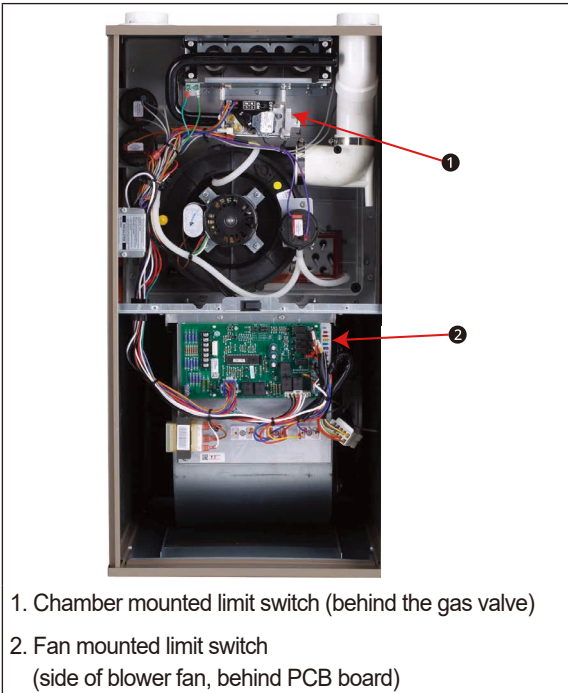


Figure 19



Figure 20

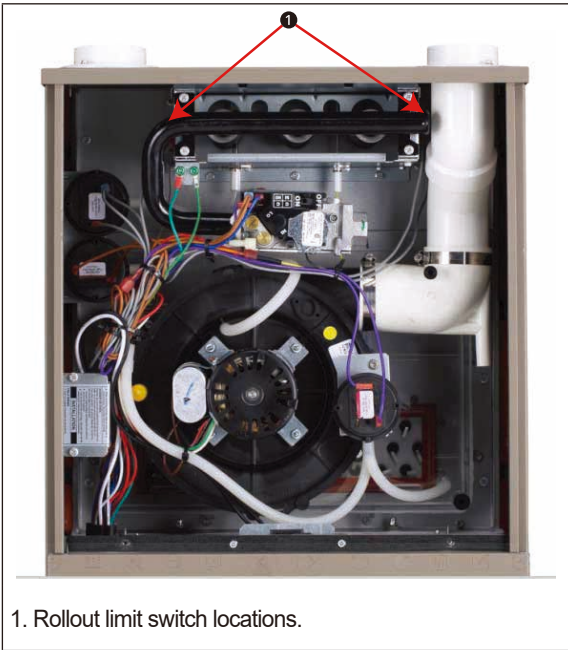


Figure 21

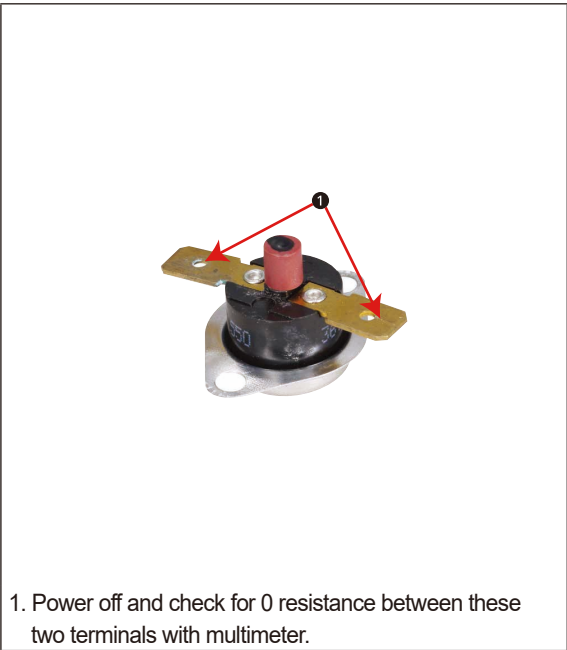


Figure 22

Model			60B	80B	80C	100C	100D	120D
Rollout switch - resettable	-	°F	300					
Inlet High Temperature Limit switch - fi xed	Off /On	°F	150/120	150/120	150/120	150/120	150/120	150/120

Table 3

Furnace size	Return-air inlet	Speed		External static pressure (in. WC)									
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
60B	Bottom or Sides	H	CFM	1 339	1 327	1 338	1 309	1 321	1 320	1 342	1 334	1 316	1 335
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	37.3	37.7	37.5	38.3	38.1	38.1	37.6	37.9	38.5	38.0
		Mid-H	CFM	1 124	1 118	1 102	1 106	1 096	1 099	1 102	1 109	1 089	1 105
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	44.2	44.5	45.2	45.1	45.6	45.5	45.5	45.3	46.2	45.6
		Mid	CFM	880	870	853	858	865	858	854	866	871	839
			Temp Rise-1st stage °F	36.7	37.2	37.9	37.8	37.6	38.0	38.2	37.8	37.6	39.1
			Temp Rise-2nd stage °F	56.3	57.0	58.1	57.9	57.5	58.0	58.4	57.7	57.4	59.7
		Mid-L	CFM	779	768	762	756	740	753	757	747	785	766
			Temp Rise-1st stage °F	41.4	42.0	42.4	42.8	43.8	43.1	43.0	43.6	41.6	42.7
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
		Low	CFM	553	586	543	569	552	562	584	572	575	567
			Temp Rise-1st stage °F	58.1	54.9	59.3	56.7	58.5	57.6	55.5	56.8	56.5	57.4
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
80B	Bottom or Sides	H	CFM	1 230	1 233	1 222	1 226	1 214	1 236	1 255	1 244	1 249	1 251
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	53.9	53.8	54.4	54.3	54.8	53.9	53.2	53.7	53.6	53.6
		Mid-H	CFM	1 052	1 052	1 041	1 044	1 037	1 034	1 048	1 046	1 024	1 076
			Temp Rise-1st stage °F	41.0	41.0	41.5	41.5	41.8	42.1	41.5	41.7	42.7	40.7
			Temp Rise-2nd stage °F	62.8	62.8	63.6	63.5	64.0	64.3	63.4	63.7	65.1	62.1
		Mid	CFM	849	861	854	853	855	844	855	848	834	859
			Temp Rise-1st stage °F	50.6	50.0	50.4	50.5	50.5	51.2	50.6	51.2	52.1	50.7
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
		Mid-L	CFM	754	771	765	764	728	761	782	739	758	758
			Temp Rise-1st stage °F	56.9	55.7	56.2	56.3	59.2	56.8	55.3	58.5	57.2	57.3
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
		Low	CFM	569	554	571	572	568	572	598	594	572	548
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
80C	Bottom or Sides	H	CFM	1 303	1 301	1 281	1 291	1 289	1 291	1 290	1 295	1 298	1 253
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	50.8	50.9	51.8	51.5	51.6	51.6	51.7	51.6	51.6	53.5
		Mid-H	CFM	1 120	1 127	1 134	1 130	1 135	1 138	1 132	1 143	1 107	1 112
			Temp Rise-1st stage °F	38.5	38.3	38.1	38.3	38.2	38.2	38.5	38.2	39.5	39.4
			Temp Rise-2nd stage °F	59.0	58.7	58.4	58.7	58.5	58.4	58.8	58.3	60.3	60.1
		Mid	CFM	908	894	896	902	896	894	864	891	935	880
			Temp Rise-1st stage °F	47.3	48.1	48.0	47.8	48.2	48.4	50.1	48.7	46.5	49.5
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
		Mid-L	CFM	818	819	825	800	813	803	831	838	791	802
			Temp Rise-1st stage °F	52.4	52.4	52.1	53.8	53.1	53.8	52.1	51.8	54.9	54.2
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
		Low	CFM	577	628	605	624	615	601	628	573	590	588
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--

Table 4 Air Delivery - CFM (Without Filter) * **

* A fi lter is required for each return air inlet. This table shows the airfl ow performance without a fi lter. To determine airfl ow performance with a fi lter, if a 3/4 inch (19 mm) washable media fi lter is used, assume an additional 0.1 in. WC available external static pressure.

** The manufacturer default fan settings are based on model, refer to Table 24.

Furnace size	Return-air inlet	Speed		External static pressure (in. WC)									
				0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
100C	Bottom or Sides	H	CFM	1 752	1 764	1 768	1 781	1 774	1 786	1 762	1 802	1 792	1 786
			Temp Rise-1st stage °F										
			Temp Rise-2nd stage °F	47.5	47.3	47.3	47.0	47.3	47.0	47.7	46.8	47.2	47.4
		Mid-H	CFM	1 512	1 506	1 536	1 523	1 514	1 509	1 529	1 551	1 565	1 532
			Temp Rise-1st stage °F	38.6	38.8	38.1	38.5	38.8	39.0	38.6	38.1	37.9	38.8
			Temp Rise-2nd stage °F	54.8	55.1	54.1	54.6	55.1	55.3	54.7	54.0	53.6	54.8
		Mid	CFM	1 354	1 354	1 362	1 370	1 357	1 381	1 389	1 394	1 416	1 383
			Temp Rise-1st stage °F	42.9	43.0	42.8	42.6	43.1	42.4	42.3	42.2	41.7	42.7
			Temp Rise-2nd stage °F	61.1	61.1	60.8	60.6	61.2	60.3	60.0	59.9	59.0	60.5
		Mid-L	CFM	1 165	1 165	1 176	1 164	1 185	1 190	1 186	1 205	1 174	1 199
			Temp Rise-1st stage °F	49.7	49.7	49.3	49.9	49.2	49.0	49.2	48.6	49.9	49.0
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
		Low	CFM	994	1 025	1 018	1 024	1 032	1 026	1 035	988	1 005	1 041
			Temp Rise-1st stage °F	58.1	56.4	56.9	56.6	56.3	56.7	56.3	59.0	58.1	56.2
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
100D	Bottom or Sides	H	CFM	1 926	1 926	1 931	1 943	1 936	1 941	1 960	1 974	2 015	2 043
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	43.2	43.3	43.2	43.1	43.3	43.3	42.9	42.7	42.0	41.6
		Mid-H	CFM	1 746	1 752	1 749	1 748	1 749	1 763	1 771	1 776	1 794	1 791
			Temp Rise-1st stage °F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage °F	47.5	47.4	47.6	47.7	47.7	47.4	47.3	47.2	46.9	47.0
		Mid	CFM	1 488	1 525	1 525	1 515	1 528	1 546	1 501	1 525	1 546	1 544
			Temp Rise-1st stage °F	39.0	38.2	38.2	38.6	38.3	37.9	39.1	38.6	38.2	38.3
			Temp Rise-2nd stage °F	55.6	54.3	54.4	54.8	54.4	53.9	55.5	54.7	54.1	54.2
		Mid-L	CFM	1 348	1 374	1 341	1 383	1 381	1 385	1 408	1 404	1 400	1 401
			Temp Rise-1st stage °F	43.0	42.3	43.3	42.1	42.2	42.2	41.6	41.8	42.0	42.0
			Temp Rise-2nd stage °F	61.2	60.2	61.7	59.9	60.1	60.0	59.1	59.3	59.6	59.6
		Low	CFM	1 163	1 186	1 164	1 167	1 174	1 178	1 182	1 129	1 163	1 172
			Temp Rise-1st stage °F	49.7	48.8	49.8	49.7	49.5	49.4	49.3	51.7	50.3	50.0
			Temp Rise-2nd stage °F	--	--	--	--	--	--	--	--	--	--
120D	Bottom or Sides	H	CFM	1 926	1 933	1 915	1 923	1 916	1 929	1 971	1 941	2 036	1 998
			Temp Rise-1st stage F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage F	51.8	51.7	52.2	52.1	52.4	52.1	51.1	52.0	49.8	50.7
		Mid-H	CFM	1 721	1 747	1 716	1 749	1 760	1 768	1 778	1 783	1 747	1 788
			Temp Rise-1st stage F	--	--	--	--	--	--	--	--	--	--
			Temp Rise-2nd stage F	57.8	57.0	58.1	57.1	56.8	56.6	56.4	56.3	57.5	56.4
		Mid	CFM	1 489	1 497	1 503	1 504	1 507	1 488	1 496	1 518	1 519	1 568
			Temp Rise-1st stage F	46.7	46.6	46.4	46.5	46.5	47.1	47.0	46.4	46.4	45.1
			Temp Rise-2nd stage F	66.5	66.3	66.1	66.1	66.1	67.0	66.7	65.8	65.9	64.0
		Mid-L	CFM	1 384	1 360	1 365	1 384	1 382	1 383	1 379	1 401	1 421	1 414
			Temp Rise-1st stage F	50.2	51.1	51.0	50.4	50.6	50.6	50.8	50.1	49.5	49.9
			Temp Rise-2nd stage F	--	--	--	--	--	--	--	--	--	--
		Low	CFM	1 165	1 175	1 162	1 158	1 158	1 184	1 186	1 204	1 201	1 185
			Temp Rise-1st stage F	59.5	59.0	59.8	60.0	60.1	58.9	58.9	58.1	58.4	59.2
			Temp Rise-2nd stage F	--	--	--	--	--	--	--	--	--	--

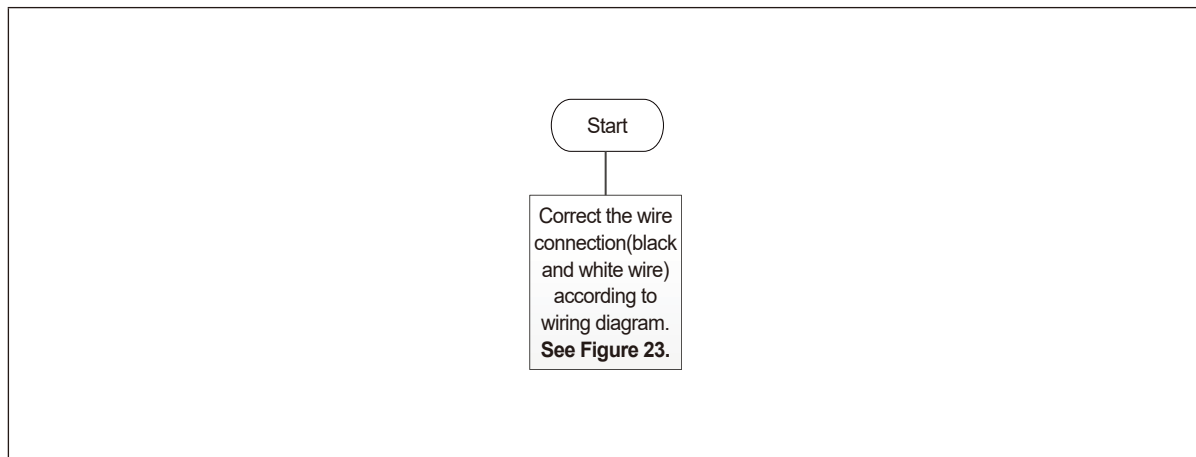
Table 5 Air Delivery - CFM (Without Filter) * **

* A fi lter is required for each return air inlet. This table shows the airfl ow performance without a fi lter. To determine airfl ow performance with a fi lter, if a 3/4 inch (19 mm) washable media fi lter is used, assume an additional 0.1 in. WC available external static pressure.

** The manufacturer default fan settings are based on model, refer to Table 24.

5.6 Pr (Incorrect Polarity of L1/L2)

Troubleshooting Chart



Figures

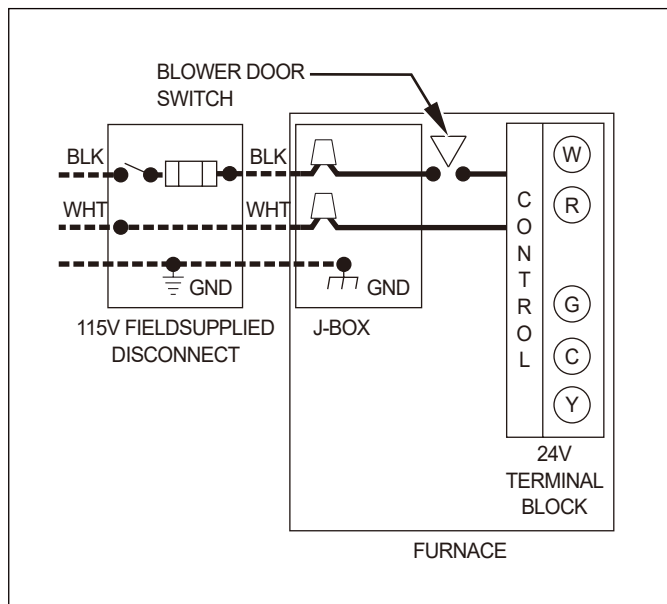


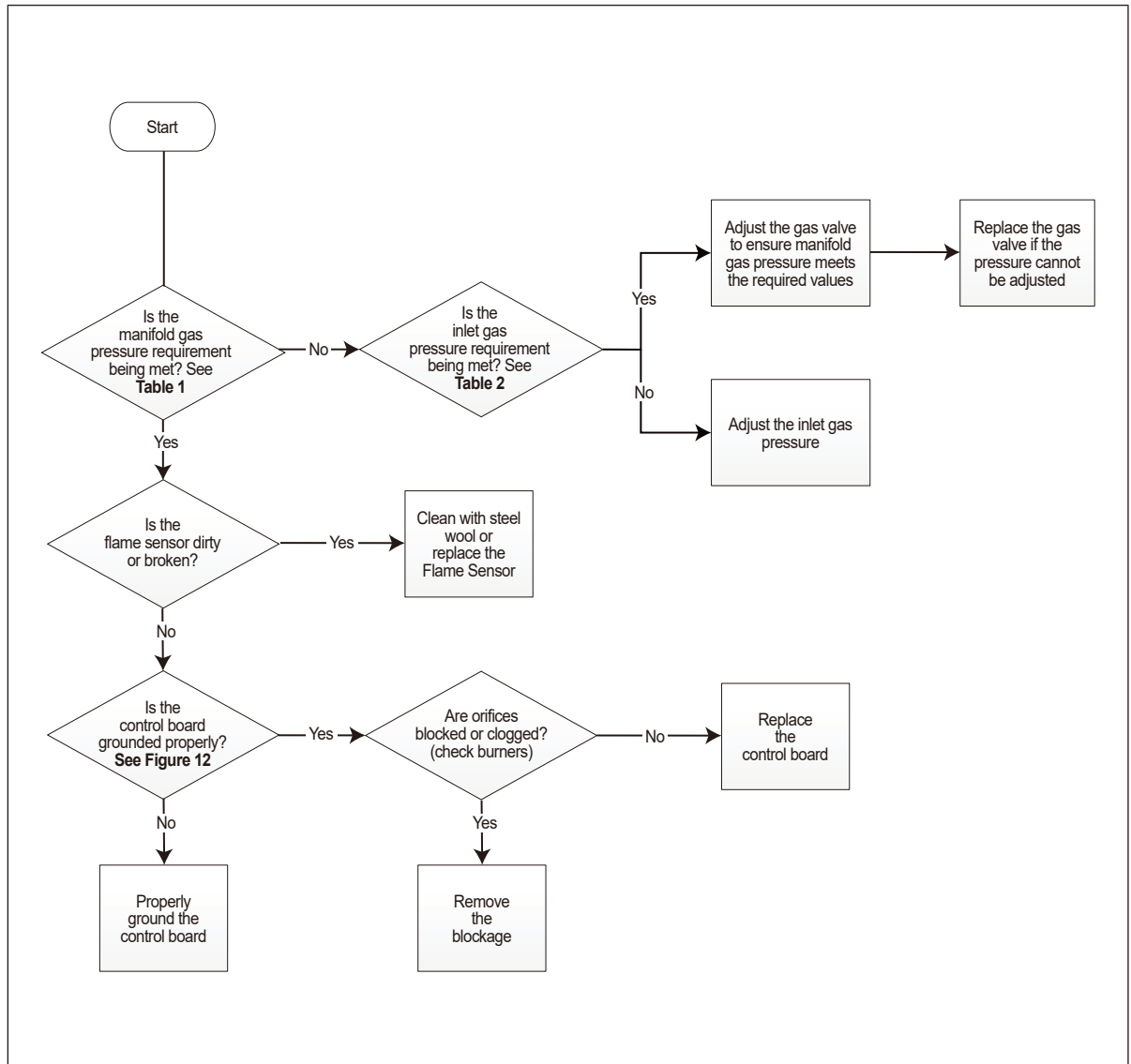
Figure 23

NOTE

- Please refer to the wiring diagram to confirm whether the connection is normal. Please check whether the input power ground wire is correctly and reliably connected to the machine.

5.7 FL (Low Flame)

Troubleshooting Chart



6. SEQUENCE OF OPERATION

Two Stage Controller Logic

6.1 There are two heating modes:

Heating Modes



If you are using a single stage thermostat, only a W1 signal will be sent. In this scenario, the furnace will upstage from low to high fire via a timing sequence.

The time delay is set via the S1-1 & S1-2 dip switches on the control board.

6.1.1 Low Fire Heating Mode Logic (only W1 signal):

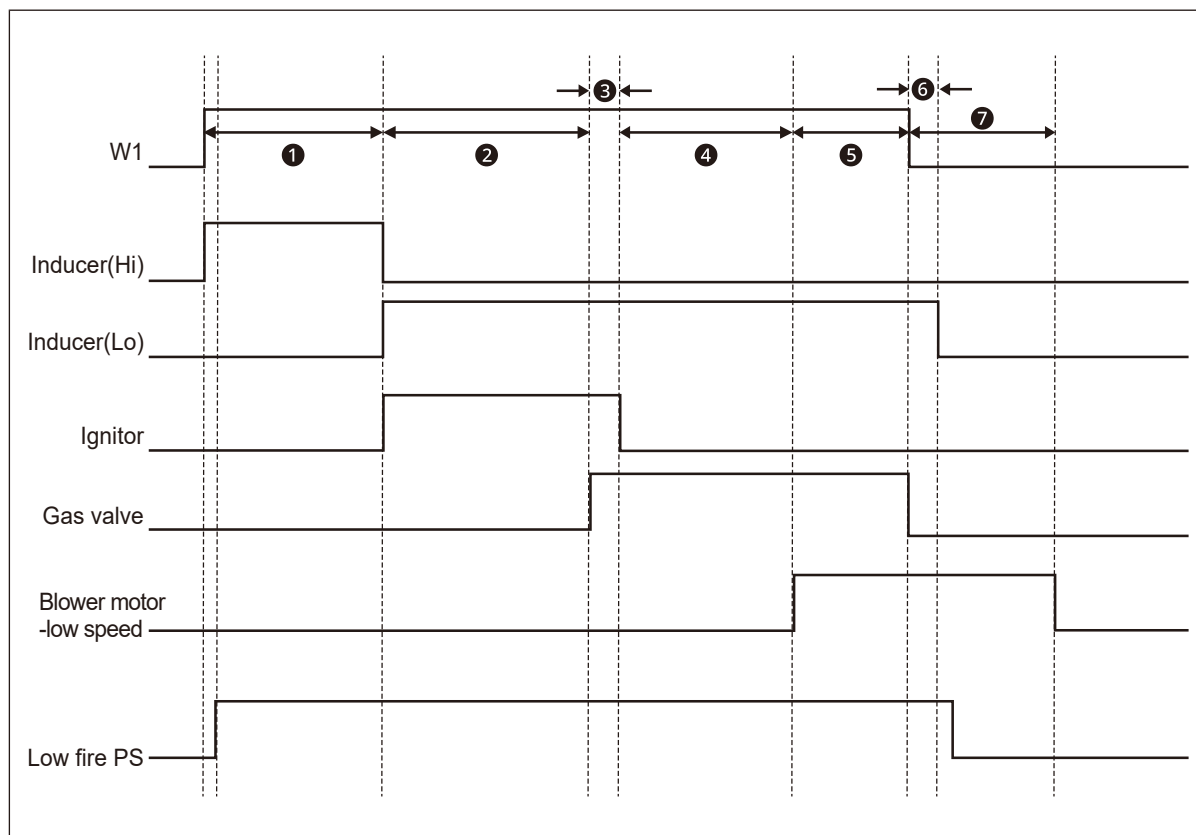


Figure 24

- ① When there is a call for heat (W1), the inducer will start on HIGH speed and the low pressure switch closes. This will last for **15s**.
- ② Inducer will turn to low speed and ignitor will energize. This preheating sequence lasts for **17s**.
- ③ After preheating, gas valve opens and the burners light. The ignitor will turn off after **3s**.
- ④ There is 30s time delay before blower motor starts.
- ⑤ The system is working properly.
- ⑥ When there is no call for heat (no W1 call) and no flame is sensed, post-purge begins. This will last for **15s**.
- ⑦ There is a fan delay to dissipate heat in the system. This time depends on the dip switch S1-3 & S1-4. The default time is **180s**.

6.1.2 High Fire Heating Mode Logic (W1+W2 Signal):

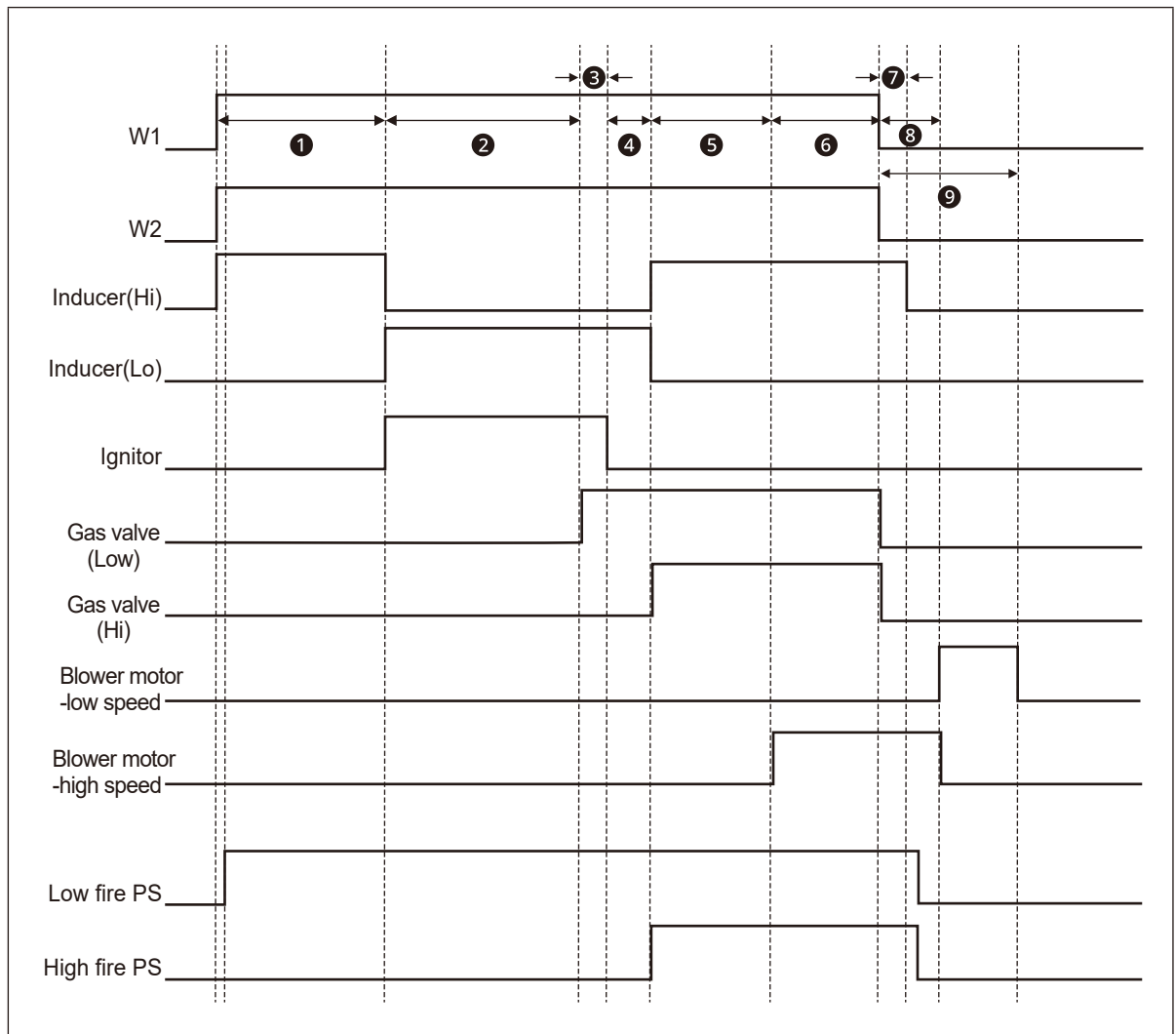


Figure 25

- ❶ When there is a call for heat (W1), the inducer will start on HIGH speed and the low pressure switch closes. This will last for **15s**.
- ❷ Inducer will turn to low speed and ignitor will energize. This preheating sequence lasts for **17s**.
- ❸ After preheating, gas valve opens and the burners light. The ignitor will turn off after **3s**.
- ❹ Before gas valve, inducer, pressure switch turn to high stage, there is a **5s** delay.
- ❹ + ❺ There is a time delay of **30s** before blower motor starts.
- ❻ The system is working properly in high stage.
- ❼ When there is no call for heat, there is a time delay before inducer shuts down. This will last for **15s**.
- ❽ The blower motor will run at high speed for **30s** for fan delay.
- ❾ There is a fan delay to dissipate heat in the system. This time depends on the dip switch S1-3 & S1-4. The default time is **180s**.

6.2 Ignition Failure and Reignition Sequence

If the furnace fails to ignite, there is a separate logic for the re-ignition sequence:

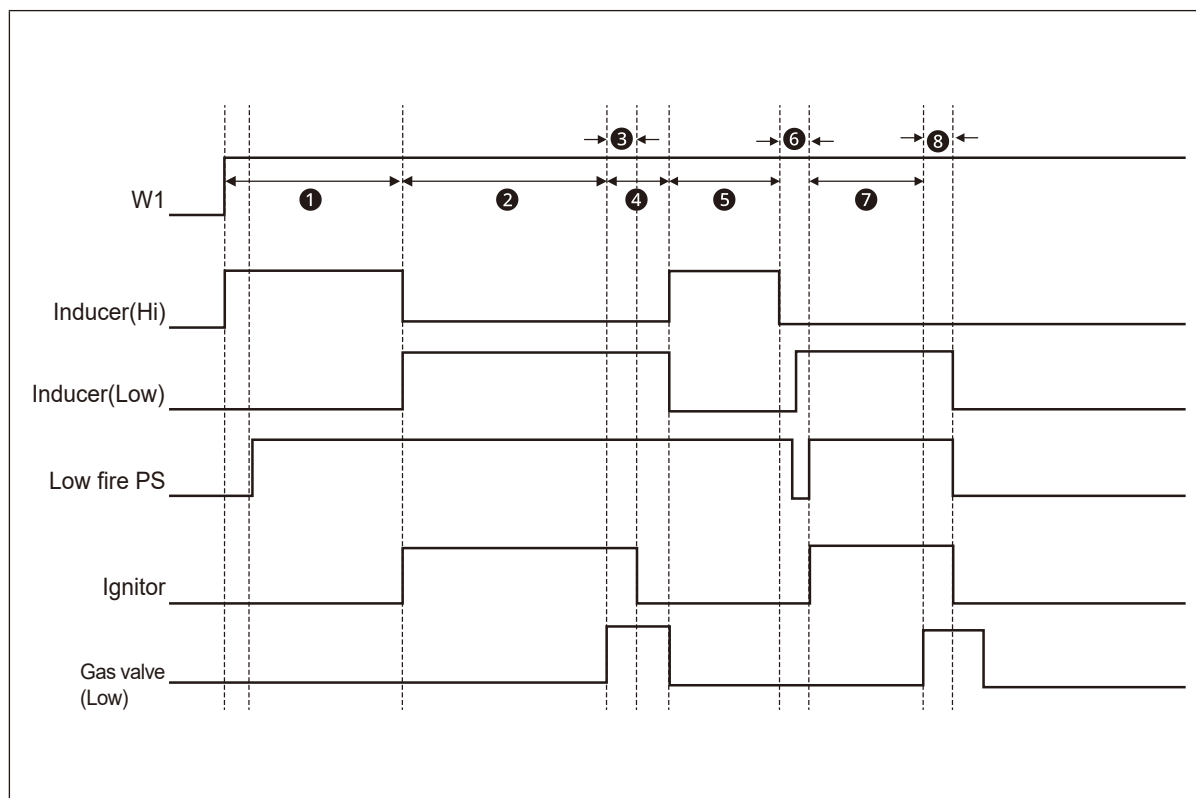


Figure 26

- ❶ When there is a call for heat (W1), the inducer will start on HIGH speed and the low pressure switch closes. This will last for **15s**.
- ❷ Inducer will turn to low speed and ignitor will energize. This preheating sequence lasts for **17s**.
- ❸ After preheating, gas valve opens and the burners light. The ignitor will turn off after **3s**.
- ❹ The gas valve will open for **4s** if there is no flame.
- ❺ The inducer will run at high speed for **60s**.
- ❻ Test of low pressure switch.
- ❼ Preheating occurs for **27s**.
- ❽ After preheating, gas valve opens. The ignitor will turn off after **3s**. After two failed ignition attempts, system will lock out.

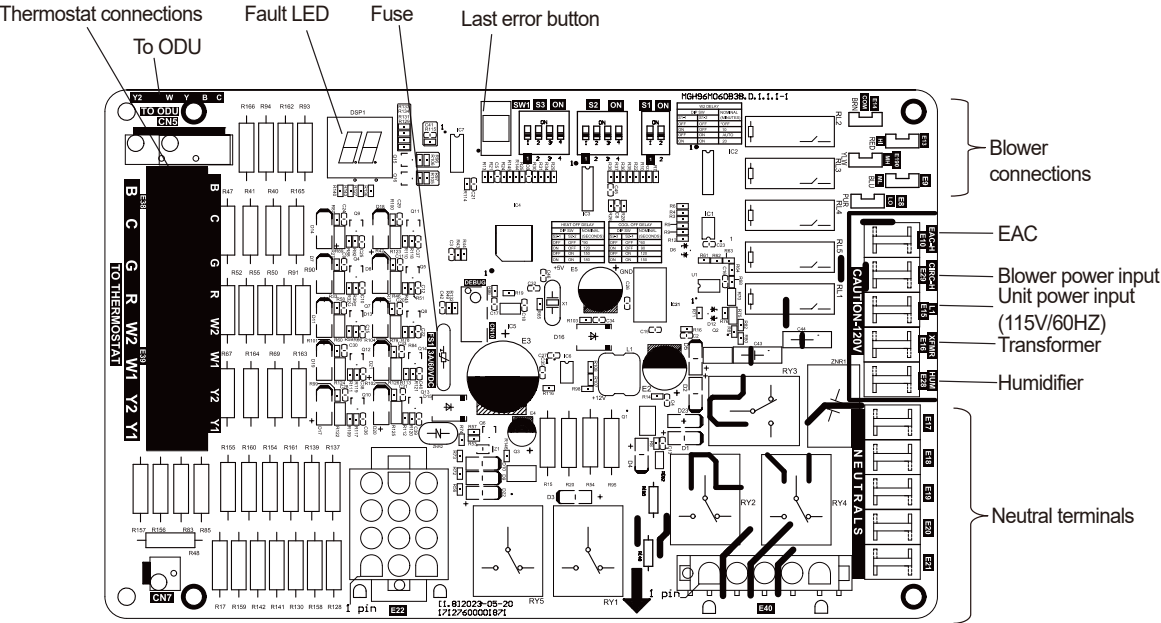
6.3 Requirements for refrigerant leakage sensors

W2 DELAY		
DIP SW		NOMINAL (MINUTES)
S1-1	S1-2	
*OFF	OFF	OFF
ON	OFF	10
OFF	ON	AUTO
ON	ON	20

HEAT OFF DELAY		
DIP SW		NOMINAL (SECONDS)
S2-1	S2-2	
*OFF	OFF	90
ON	OFF	120
OFF	ON	150
ON	ON	180

COOL OFF DELAY		
DIP SW		NOMINAL (SECONDS)
S2-3	S2-4	
*OFF	OFF	60
ON	OFF	90
OFF	ON	120
ON	ON	150

Option Switch Positions

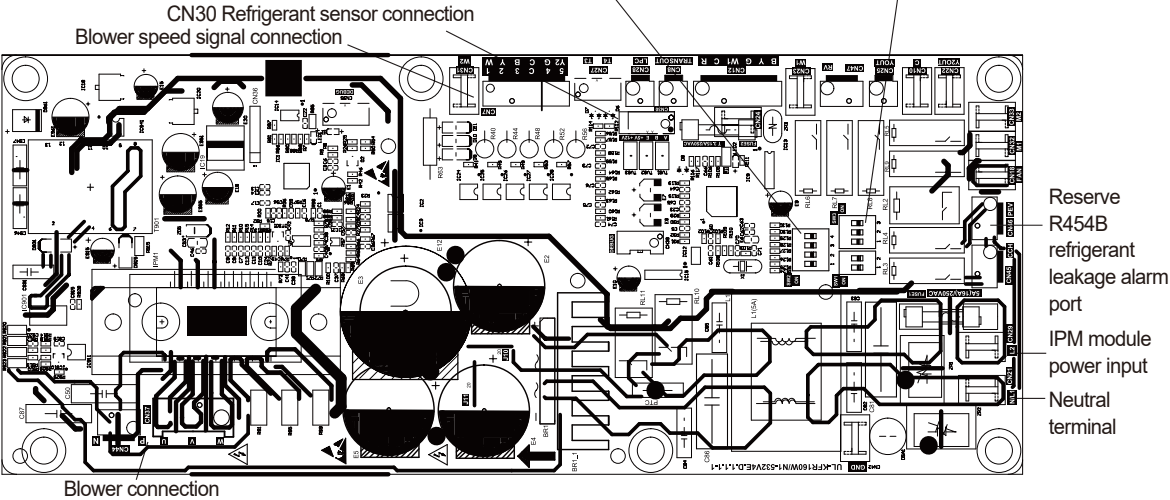


Control Board

SERIES OF PRODUCTS		
SW2-4	OFF	80% GAS FURNACE
	ON	R454B GAS FURNACE

R454B MACHINE TYPE			
DIP SW			TYPE
SW2-1	SW2-2	SW2-3	
OFF	OFF	OFF	*
OFF	OFF	ON	*
OFF	ON	OFF	60B,80B
OFF	ON	ON	80C
ON	OFF	OFF	100C
ON	OFF	ON	100D/120D

FAN SPEED		
SW1-1	OFF	NORMAL SPEED
	ON	SLOW SPEED
SW1-2	OFF	WHITOUT REFRIGERANT SENSOR
	ON	WHIT REFRIGERANT SENSOR



Fan Drive Board

Requirements for refrigerant leakage sensors

WARNING

- According to the safety requirements of UL 60335-2-40 on combustible refrigerant A2L, when the gas furnace is used with coil and the new type of combustible refrigerant is used in the coil, the unit must be equipped with the refrigerant gas detection sensor to monitor the refrigerant concentration around the unit in real time to prevent the danger of abnormal refrigerant leakage.
Refrigerant gas detection sensors are manufactured under the coil manufacturing label and must be installed by a qualified local gas supplier, distributor or service organization.
If the refrigerant gas detection sensor is not installed or is incorrectly installed, it does not meet the requirements of current regulations and cannot effectively warn of an emergency, which may cause personal injury.
Therefore, follow the instructions provided in the manual.

Installation of refrigerant gas detection sensor

For the use of our coil unit, please connect the refrigerant gas sensor cable terminal to the CN30 interface, as shown in "Gas Furnace Control Module in Picture 32", and move the drive plate SW1-2 to the "ON" position. Refer to the coil manual for installation locations of refrigerant gas sensors.

Operation indication of refrigerant gas sensor

When the sensor detects a refrigerant leak, the unit will respond according to the following rules.

LED2 Number of green flashes	Fault location	Fault cause	Unit response & handling method
1	The refrigerant sensor communication fails	The communication with the refrigerant sensor fails for 2 minutes or the refrigerant sensor is faulty	The LED2 indicator of the driver board blinks green once, and the Y signal is disconnected to stop cooling. Contact your distributor to check the sensor.
2	Refrigerant concentration exceeds the limit alarm value	The pipe is damaged or the refrigerant leaks	The green light of the drive board LED2 flashes twice, disconnect the Y signal, stop the refrigeration, and the fan in the unit will continue to run until the refrigerant concentration is detected to decrease to a safe value. Maintain ventilation and avoid open flames. Contact the distributor to check the unit.
3	Forget the dip reminder	The sensor is connected and communication is normal, but SW1-2 is in the "OFF" position	LED2 of the driver board blinks green three times Check whether SW1-2 is in the ON position
4	Expiration reminder	The sensor expires or is faulty. Procedure	The LED2 indicator of the driver board blinks green four times to turn off the Y signal and stop cooling. Contact your distributor for a new refrigerant detection sensor.

