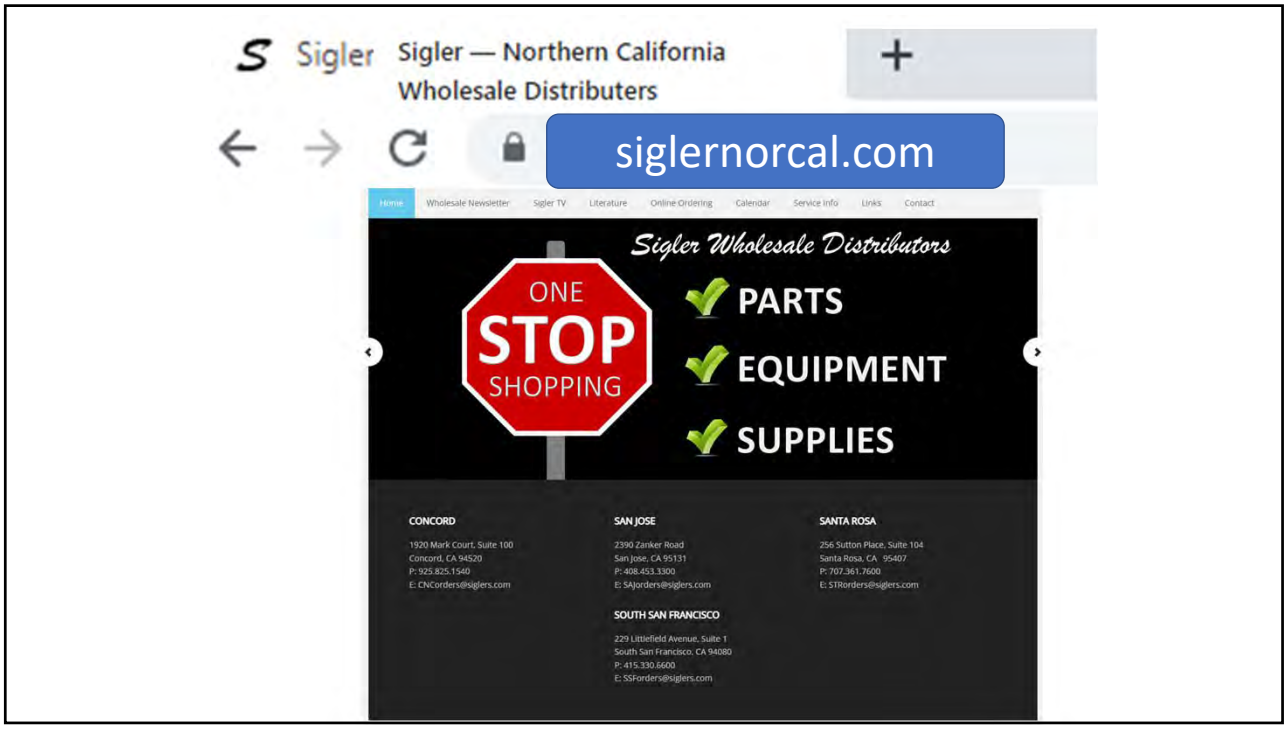
What Makes The Phone Ring

Carrier

Sigler
Wholesale Distributors

1



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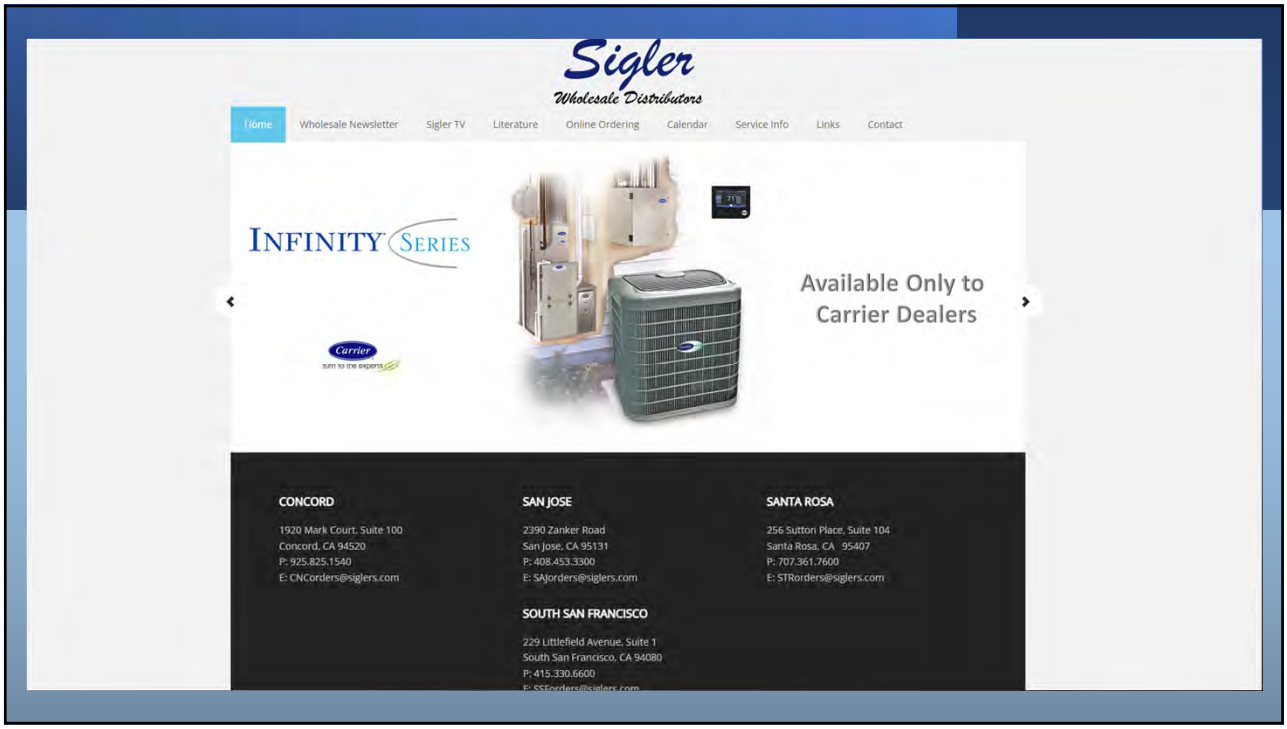
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Calendar
Service Info
Links
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INFINITY SERIES
Carrier
Available Only to
Carrier Dealers
CONCORD
1920 Mark Court, Suite 100
Concord, CA 94520
P: 925.825.1540
E: CNCorders@siglers.com
SAN JOSE
2390 Zanker Road
San Jose, CA 95131
P: 408.453.3300
E: SAJorders@siglers.com
SANTA ROSA
256 Suttori Place, Suite 104
Santa Rosa, CA 95407
P: 707.361.7600
E: STRorders@siglers.com
SOUTH SAN FRANCISCO
229 Littlefield Avenue, Suite 1
South San Francisco, CA 94080
P: 415.330.6600

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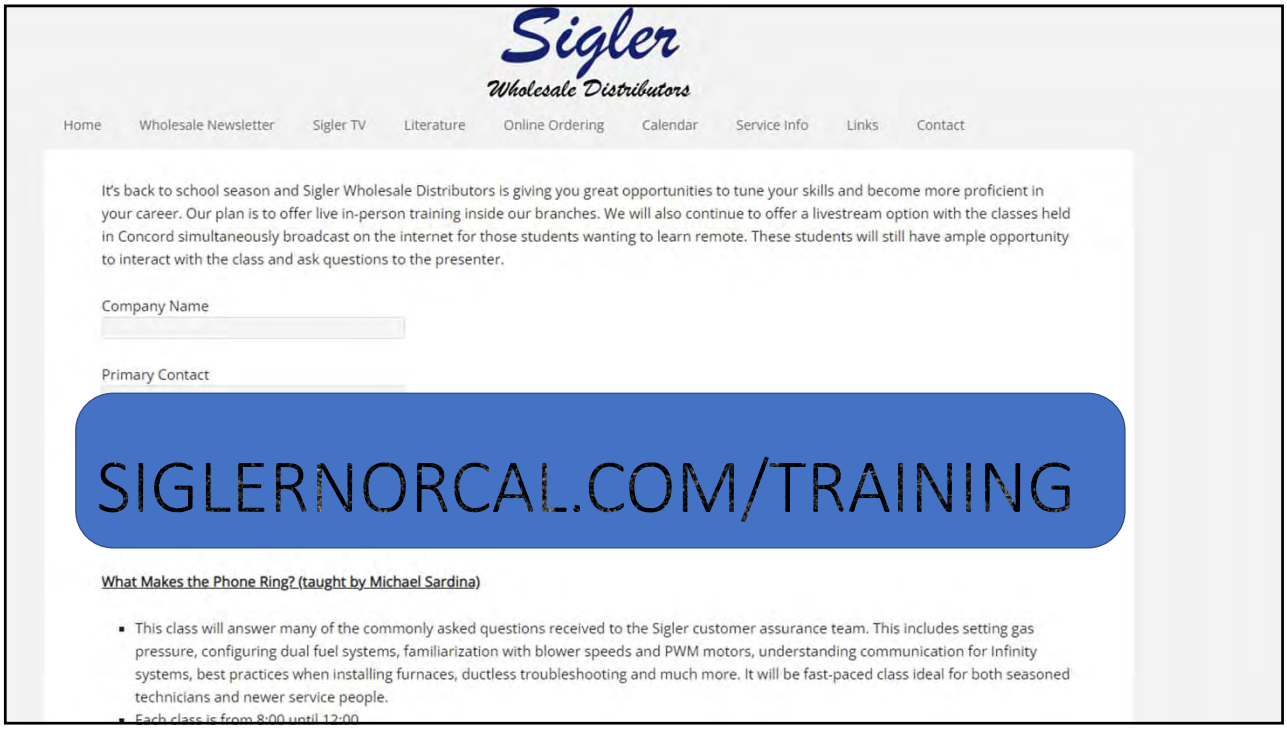
Wholesale Newsletter
Wholesale is our monthly newsletter, filled with quick bits of information, promotion details, new products and service tips. Please click HERE to download this month's issue, or scroll down for a complete archive.
Issue 3
2022
PERIODIC NEWSLETTER FOR THE VALUED CUSTOMERS OF SIGLER WHOLESALE DISTRIBUTORS IN THE SAN FRANCISCO BAY AREA
Wholesale
Up To Date
Dealer Convention
Carrier's national dealer convention in Las Vegas is September 26-28.
Fall Cool Cash
Carrier's Fall Cool Cash program begins on September 12 with instant rebates up to $1750. Systems must be installed and claimed by December
What's New on SiglerTV
Heat Pumps (6 videos)
Ashley James in the Concord store
Nex Tax Credits & Incentives
Inside the "Inflation Reduction Act" recently passed by congress and signed by President Biden, the 25C tax credits for energy efficiency home improvements have been extended through 2032. For this tax year, the credits that we saw in the
are federally mandated income tiers that may make many homeowners in the Bay Area ineligible for these rebates. The tiers are based on the median household income, which is currently $77,358 in California. The federal income tiers are:
Fall Training
The fall training schedule is now available with sales, technical, Carrier University classes. Register online today at SiglerNorCal.com/training.
December 2012
November 2012
October 2012
September 2012
August 2012
July 2012
June 2012
May 2012
April 2012
March 2012
February 2012
January 2012

4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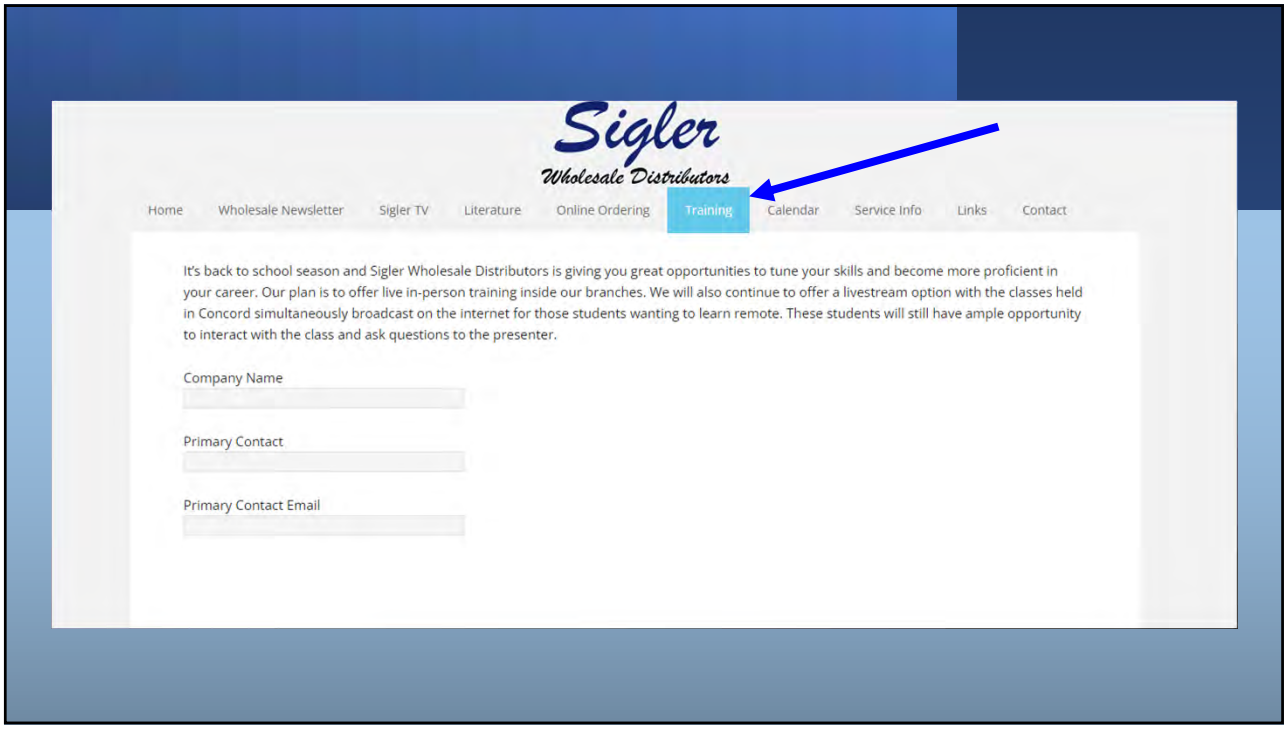
It's back to school season and Sigler Wholesale Distributors is giving you great opportunities to tune your skills and become more proficient in your career. Our plan is to offer live in-person training inside our branches. We will also continue to offer a livestream option with the classes held in Concord simultaneously broadcast on the internet for those students wanting to learn remote. These students will still have ample opportunity to interact with the class and ask questions to the presenter.
Company Name
Primary Contact
SIGLERNORCAL.COM/TRAINING
What Makes the Phone Ring? (taught by Michael Sardina)
This class will answer many of the commonly asked questions received to the Sigler customer assurance team. This includes setting gas pressure, configuring dual fuel systems, familiarization with blower speeds and PWM motors, understanding communication for Infinity systems, best practices when installing furnaces, ductless troubleshooting and much more. It will be fast-paced class ideal for both seasoned technicians and newer service people.
Each class is from 8:00 until 12:00

5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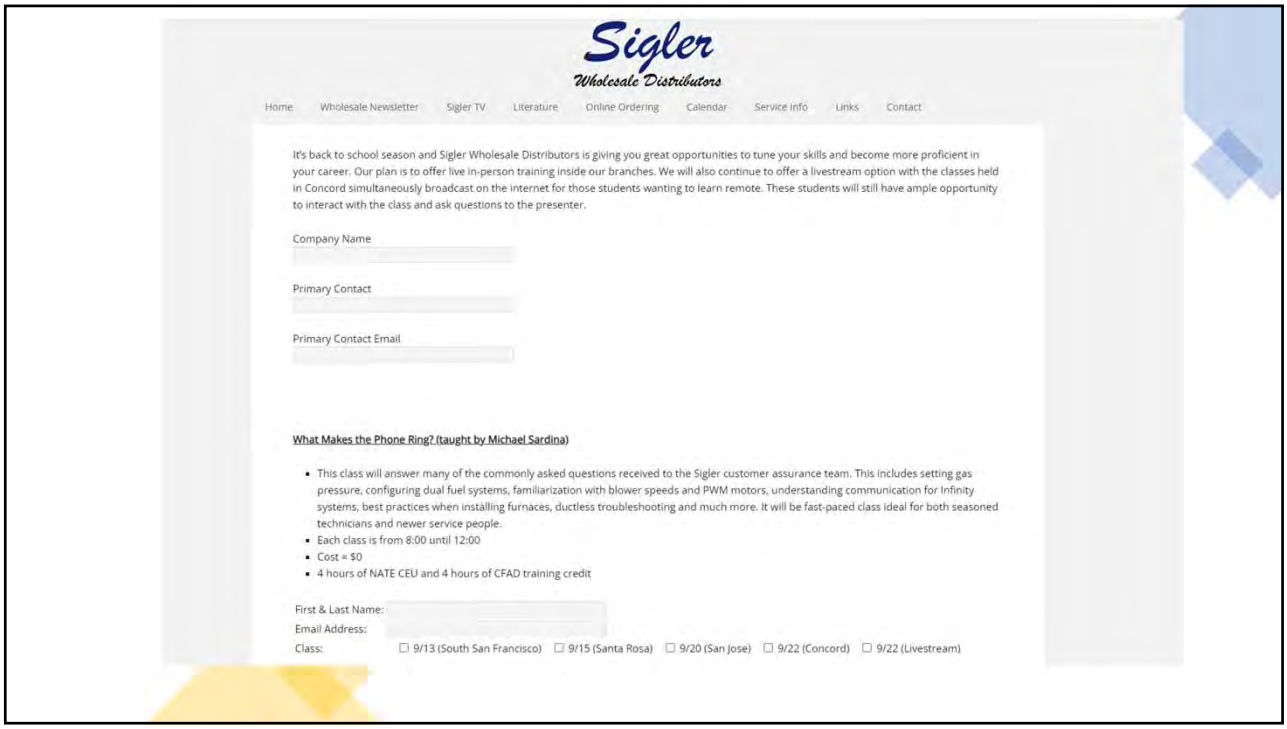
Company Name
Primary Contact
Primary Contact Email

6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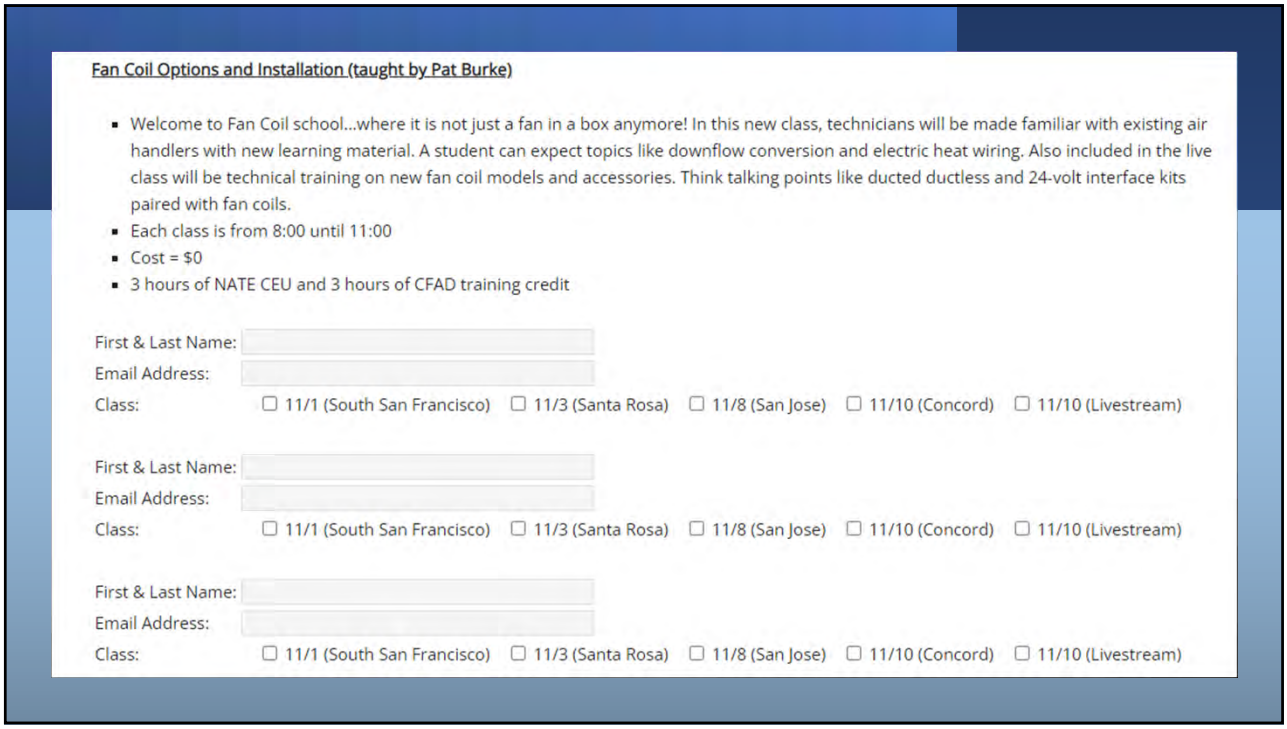
Each class is from 8:00 until 12:00
Cost = $0
4 hours of NATE CEU and 4 hours of CFAD training credit
First & Last Name:
Email Address:
Class:
9/13 (South San Francisco)
9/15 (Santa Rosa)
9/20 (San Jose)
9/22 (Concord)
9/22 (Livestream)

7


Fan Coil Options and Installation (taught by Pat Burke)
Welcome to Fan Coil school...where it is not just a fan in a box anymore! In this new class, technicians will be made familiar with existing air handlers with new learning material. A student can expect topics like downflow conversion and electric heat wiring. Also included in the live class will be technical training on new fan coil models and accessories. Think talking points like ducted ductless and 24-volt interface kits paired with fan coils.
Each class is from 8:00 until 11:00
Cost = $0
3 hours of NATE CEU and 3 hours of CFAD training credit
First & Last Name:
Email Address:
Class:
11/1 (South San Francisco)
11/3 (Santa Rosa)
11/8 (San Jose)
11/10 (Concord)
11/10 (Livestream)
First & Last Name:
Email Address:
Class:
11/1 (South San Francisco)
11/3 (Santa Rosa)
11/8 (San Jose)
11/10 (Concord)
11/10 (Livestream)
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Email Address:
Class:
11/1 (South San Francisco)
11/3 (Santa Rosa)
11/8 (San Jose)
11/10 (Concord)
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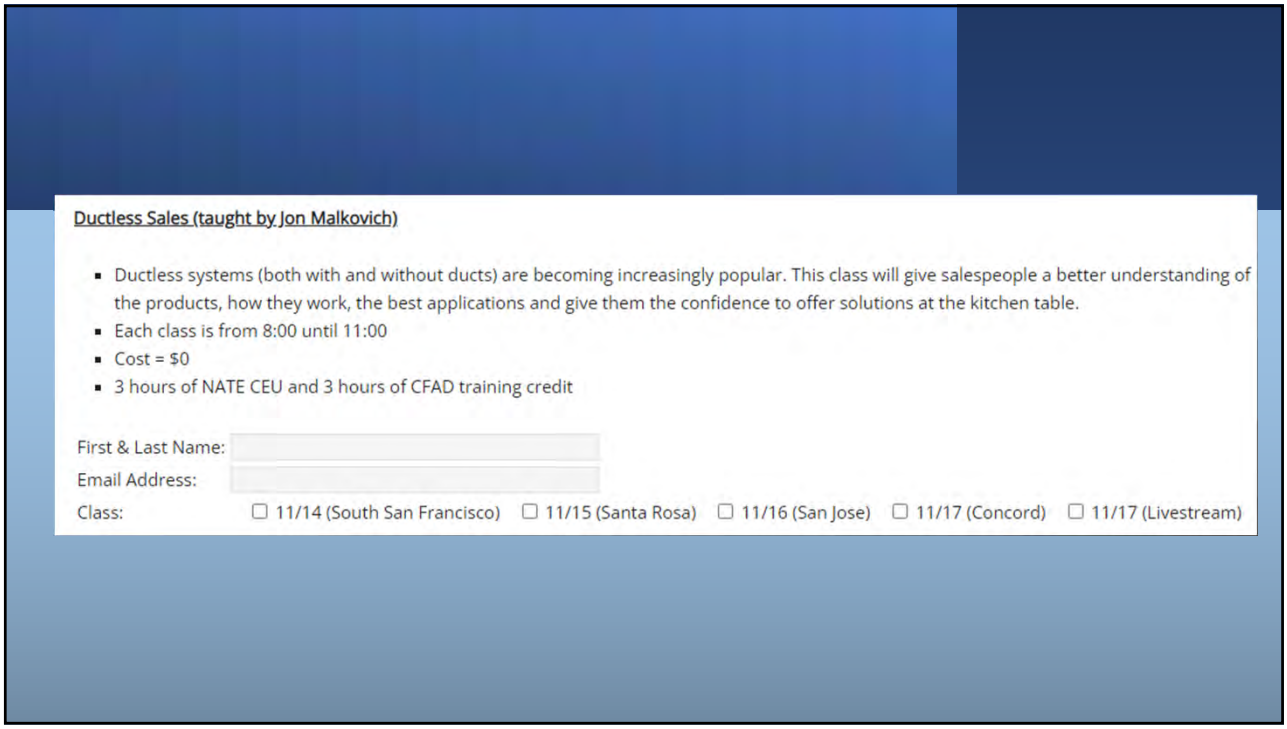
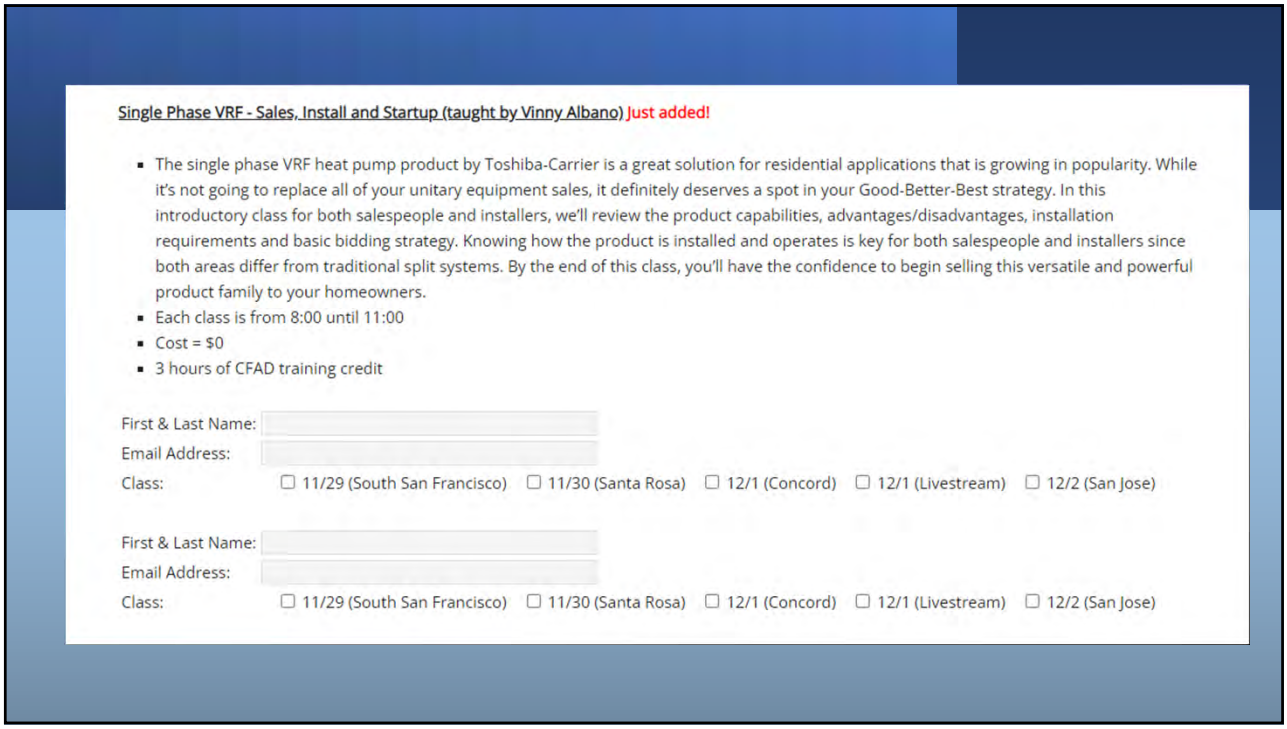

Ductless Sales (taught by Jon Malkovich)
Ductless systems (both with and without ducts) are becoming increasingly popular. This class will give salespeople a better understanding of the products, how they work, the best applications and give them the confidence to offer solutions at the kitchen table.
Each class is from 8:00 until 11:00
Cost = $0
3 hours of NATE CEU and 3 hours of CFAD training credit
First & Last Name:
Email Address:
Class:
11/14 (South San Francisco)
11/15 (Santa Rosa)
11/16 (San Jose)
11/17 (Concord)
11/17 (Livestream)

9


Single Phase VRF - Sales, Install and Startup (taught by Vinny Albano) Just added!
The single phase VRF heat pump product by Toshiba-Carrier is a great solution for residential applications that is growing in popularity. While it's not going to replace all of your unitary equipment sales, it definitely deserves a spot in your Good-Better-Best strategy. In this introductory class for both salespeople and installers, we'll review the product capabilities, advantages/disadvantages, installation requirements and basic bidding strategy. Knowing how the product is installed and operates is key for both salespeople and installers since both areas differ from traditional split systems. By the end of this class, you'll have the confidence to begin selling this versatile and powerful product family to your homeowners.
Each class is from 8:00 until 11:00
Cost = $0
3 hours of CFAD training credit
First & Last Name:
Email Address:
Class:
11/29 (South San Francisco)
11/30 (Santa Rosa)
12/1 (Concord)
12/1 (Livestream)
12/2 (San Jose)
First & Last Name:
Email Address:
Class:
11/29 (South San Francisco)
11/30 (Santa Rosa)
12/1 (Concord)
12/1 (Livestream)
12/2 (San Jose)

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Carrier University

- Several Carrier University classes are being offered virtually this fall. These are all exclusive for our Factory Authorized Dealers. Please contact your territory manager for more details.
- 15 Keys to Contractors Success (October 17-18 and October 27-28)
- Customer Driven Sales (October 17-18 and October 27-28)
- Customer Service Excellence (October 18)
- Dispatching Excellence (October 19 and October 25)
- HVAC Onboarding (October 20-21)
- Improving Airflow with Aerodynamic Fittings (October 20 and October 21)
- Pricing a Job Correctly (October 20 and October 21)
- Selling Indoor Air Quality (October 18 and October 25)
- Successful Service for Today's HVAC Company (October 24)
- Top Gun Technician Excellence: Beyond Diagnostics (October 25-26)

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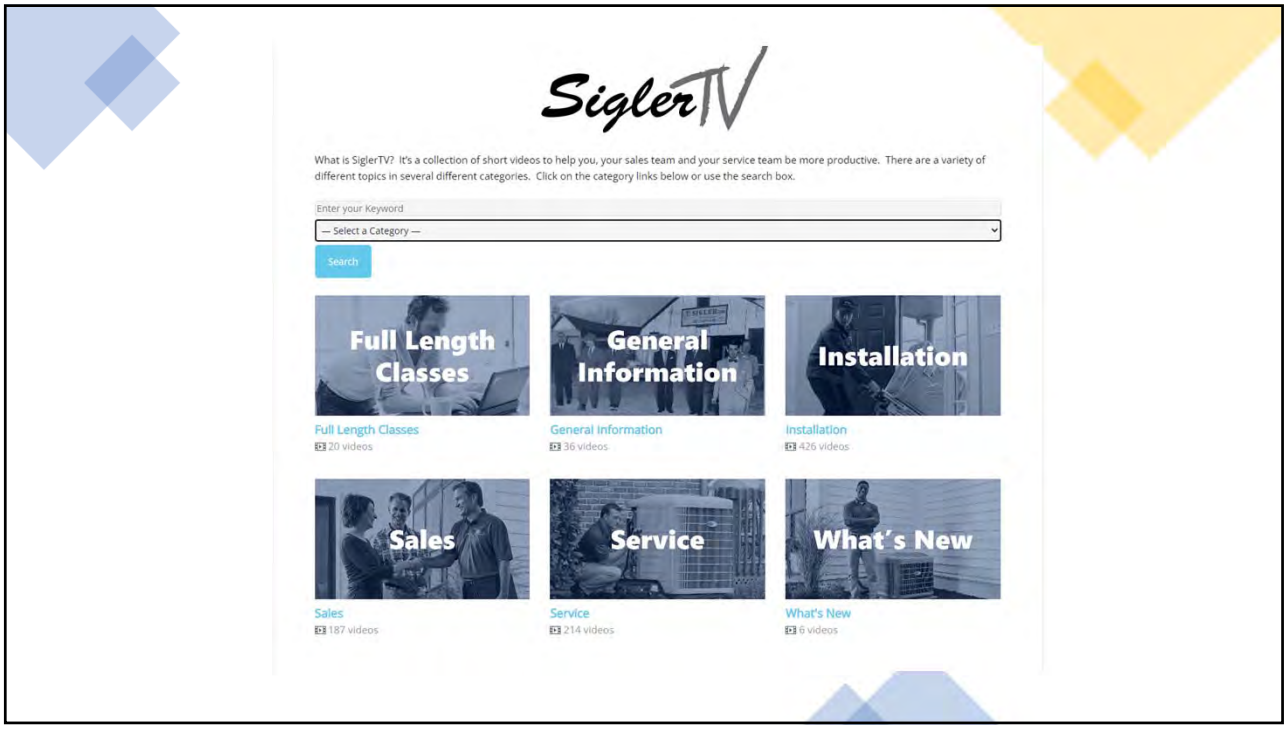

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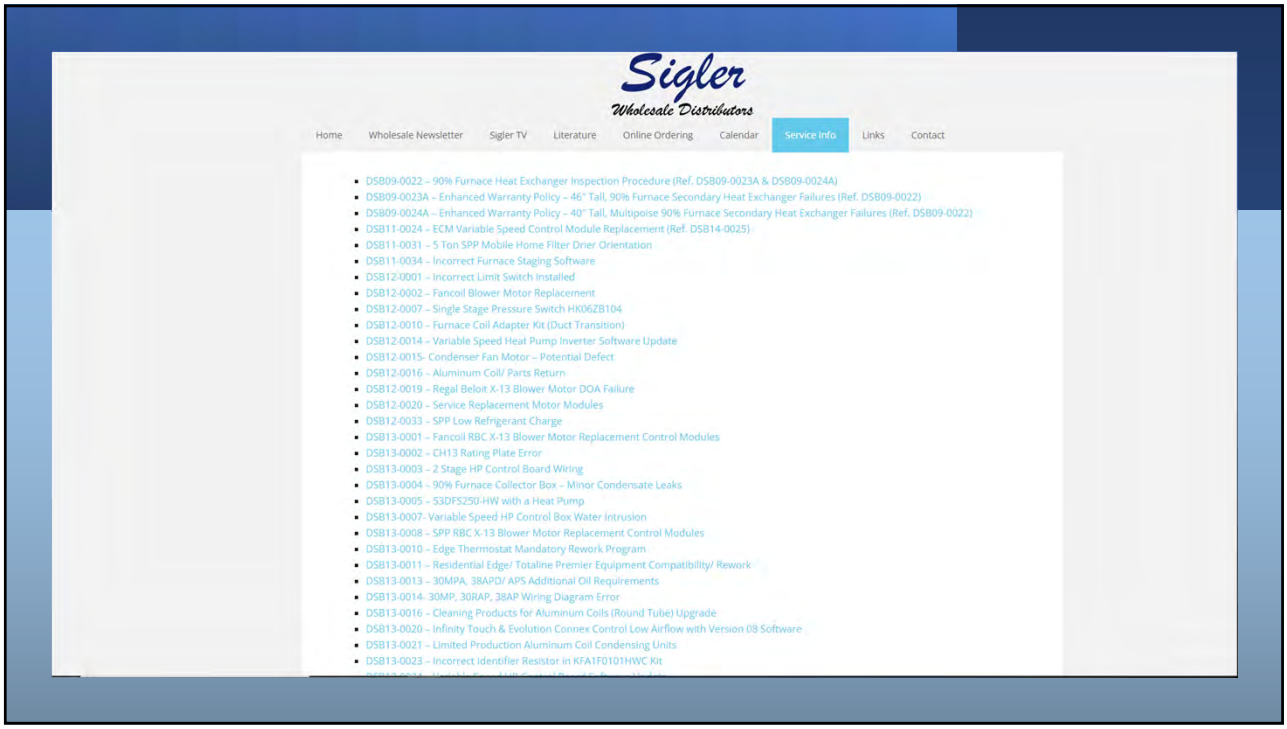
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DSB09-0022 – 90% Furnace Heat Exchanger Inspection Procedure (Ref. DSB09-0023A & DSB09-0024A)
DSB09-0023A – Enhanced Warranty Policy – 46" Tall, 90% Furnace Secondary Heat Exchanger Failures (Ref. DSB09-0022)
DSB09-0024A – Enhanced Warranty Policy – 40" Tall, Multipoise 90% Furnace Secondary Heat Exchanger Failures (Ref. DSB09-0022)
DSB11-0024 – ECM Variable Speed Control Module Replacement (Ref. DSB14-0025)
DSB11-0031 – 5 Ton SPP Mobile Home Filter Drier Orientation
DSB11-0034 – Incorrect Furnace Staging Software
DSB12-0001 – Incorrect Limit Switch Installed
DSB12-0002 – Fancoil Blower Motor Replacement
DSB12-0007 – Single Stage Pressure Switch HK06ZB104
DSB12-0010 – Furnace Coil Adapter Kit (Duct Transition)
DSB12-0014 – Variable Speed Heat Pump Inverter Software Update
DSB12-0015- Condenser Fan Motor – Potential Defect
DSB12-0016 – Aluminum Coil/ Parts Return
DSB12-0019 – Regal Beloit X-13 Blower Motor DOA Failure
DSB12-0020 – Service Replacement Motor Modules
DSB12-0033 – SPP Low Refrigerant Charge
DSB13-0001 – Fancoil RBC X-13 Blower Motor Replacement Control Modules
DSB13-0002 – CH13 Rating Plate Error
DSB13-0003 – 2 Stage HP Control Board Wiring
DSB13-0004 – 90% Furnace Collector Box – Minor Condensate Leaks
DSB13-0005 – 53DFS250-HW with a Heat Pump
DSB13-0007- Variable Speed HP Control Box Water Intrusion
DSB13-0008 – SPP RBC X-13 Blower Motor Replacement Control Modules
DSB13-0010 – Edge Thermostat Mandatory Rework Program
DSB13-0011 – Residential Edge/ Totaline Premier Equipment Compatibility/ Rework
DSB13-0013 – 30MPA, 38APD/ APS Additional Oil Requirements
DSB13-0014- 30MP, 30RAP, 38AP Wiring Diagram Error
DSB13-0016 – Cleaning Products for Aluminum Coils (Round Tube) Upgrade
DSB13-0020 – Infinity Touch & Evolution Connex Control Low Airflow with Version 08 Software
DSB13-0021 – Limited Production Aluminum Coil Condensing Units
DSB13-0023 – Incorrect Identifier Resistor in KFA1F0101HWC Kit

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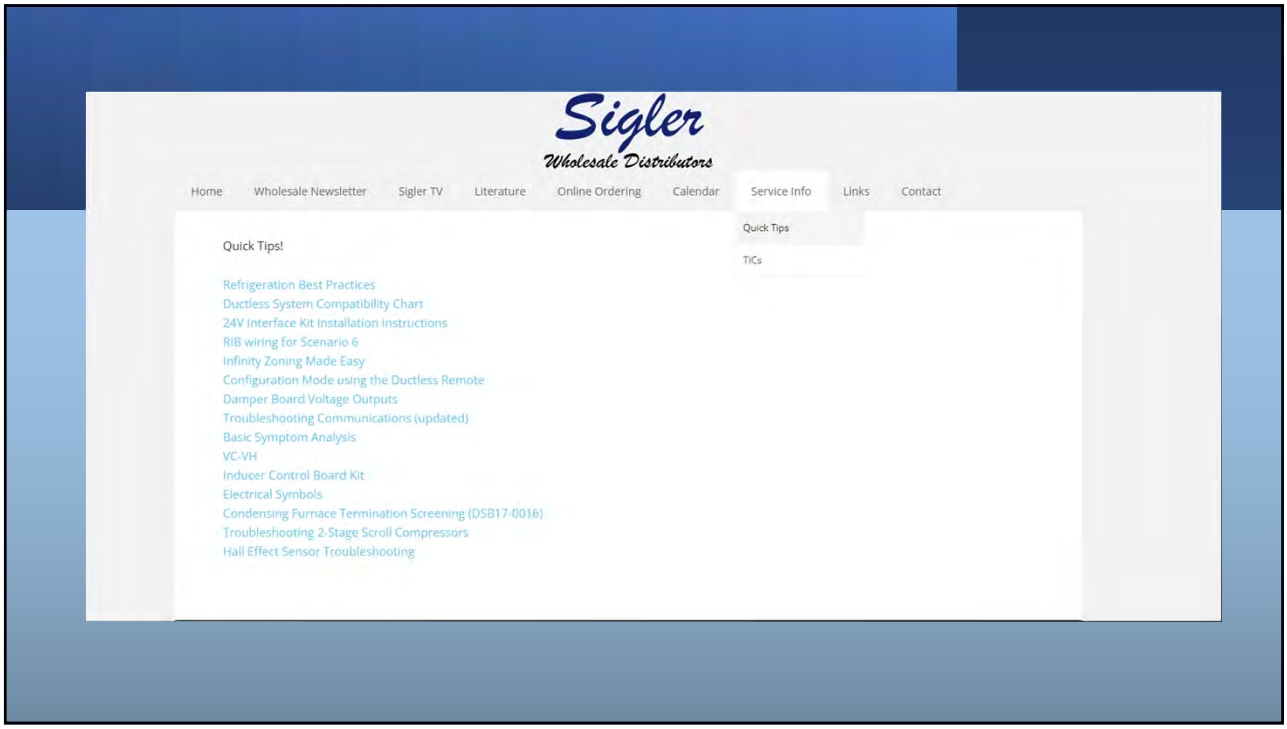
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Quick Tips
TICs
Quick Tips!
Refrigeration Best Practices
Ductless System Compatibility Chart
24V Interface Kit Installation Instructions
RIB wiring for Scenario 6
Infinity Zoning Made Easy
Configuration Mode using the Ductless Remote
Damper Board Voltage Outputs
Troubleshooting Communications (updated)
Basic Symptom Analysis
VC-VH
Inducer Control Board Kit
Electrical Symbols
Condensing Furnace Termination Screening (DSB17-0016)
Troubleshooting 2-Stage Scroll Compressors
Hall Effect Sensor Troubleshooting

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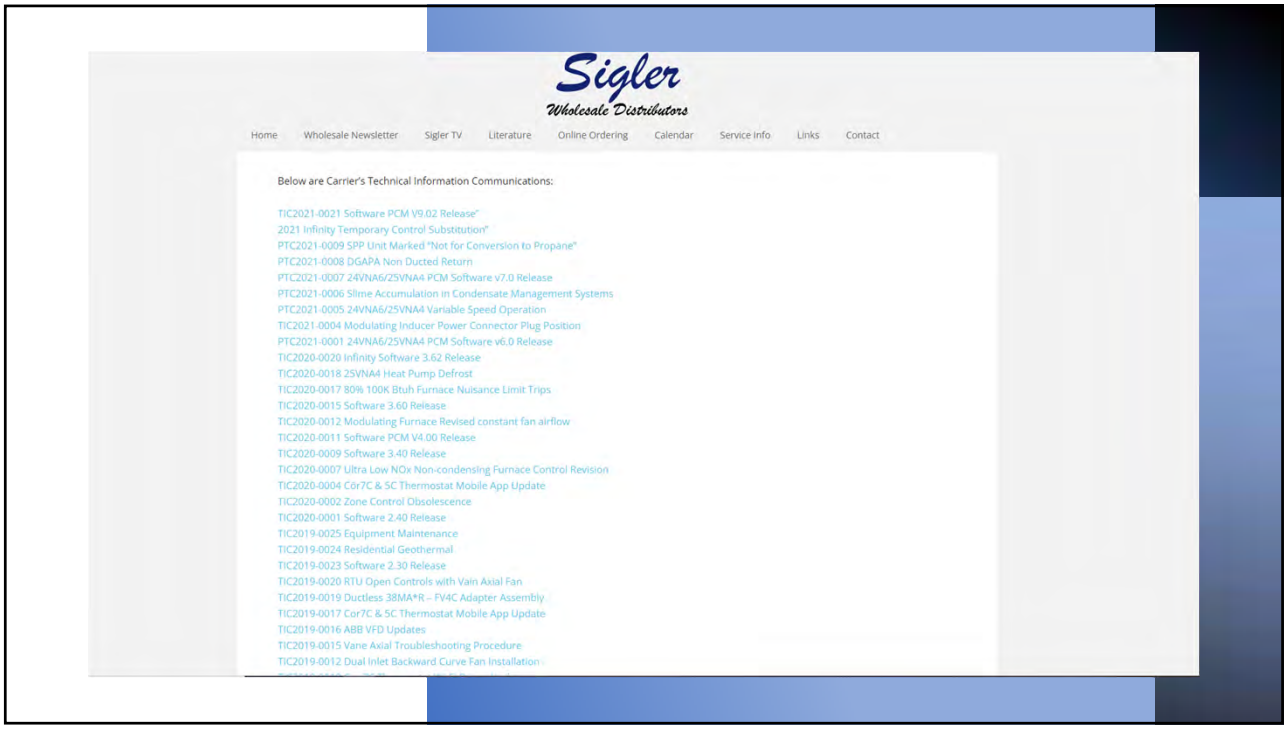
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Below are Carrier's Technical Information Communications:
TIC2021-0021 Software PCM V9.02 Release"
2021 Infinity Temporary Control Substitution"
PTC2021-0009 SPP Unit Marked "Not for Conversion to Propane"
PTC2021-0008 DGAPA Non Ducted Return
PTC2021-0007 24VNA6/25VNA4 PCM Software v7.0 Release
PTC2021-0006 Slime Accumulation in Condensate Management Systems
PTC2021-0005 24VNA6/25VNA4 Variable Speed Operation
TIC2021-0004 Modulating Inducer Power Connector Plug Position
PTC2021-0001 24VNA6/25VNA4 PCM Software v6.0 Release
TIC2020-0020 Infinity Software 3.62 Release
TIC2020-0018 25VNA4 Heat Pump Defrost
TIC2020-0017 80% 100K Btuh Furnace Nuisance Limit Trips
TIC2020-0015 Software 3.60 Release
TIC2020-0012 Modulating Furnace Revised constant fan airflow
TIC2020-0011 Software PCM V4.00 Release
TIC2020-0009 Software 3.40 Release
TIC2020-0007 Ultra Low NOx Non-condensing Furnace Control Revision
TIC2020-0004 Cor7C & SC Thermostat Mobile App Update
TIC2020-0002 Zone Control Obsolescence
TIC2020-0001 Software 2.40 Release
TIC2019-0025 Equipment Maintenance
TIC2019-0024 Residential Geothermal
TIC2019-0023 Software 2.30 Release
TIC2019-0020 RTU Open Controls with Vain Axial Fan
TIC2019-0019 Ductless 38MA*R – FV4C Adapter Assembly
TIC2019-0017 Cor7C & SC Thermostat Mobile App Update
TIC2019-0016 ABB VFD Updates
TIC2019-0015 Vane Axial Troubleshooting Procedure
TIC2019-0012 Dual Inlet Backward Curve Fan Installation

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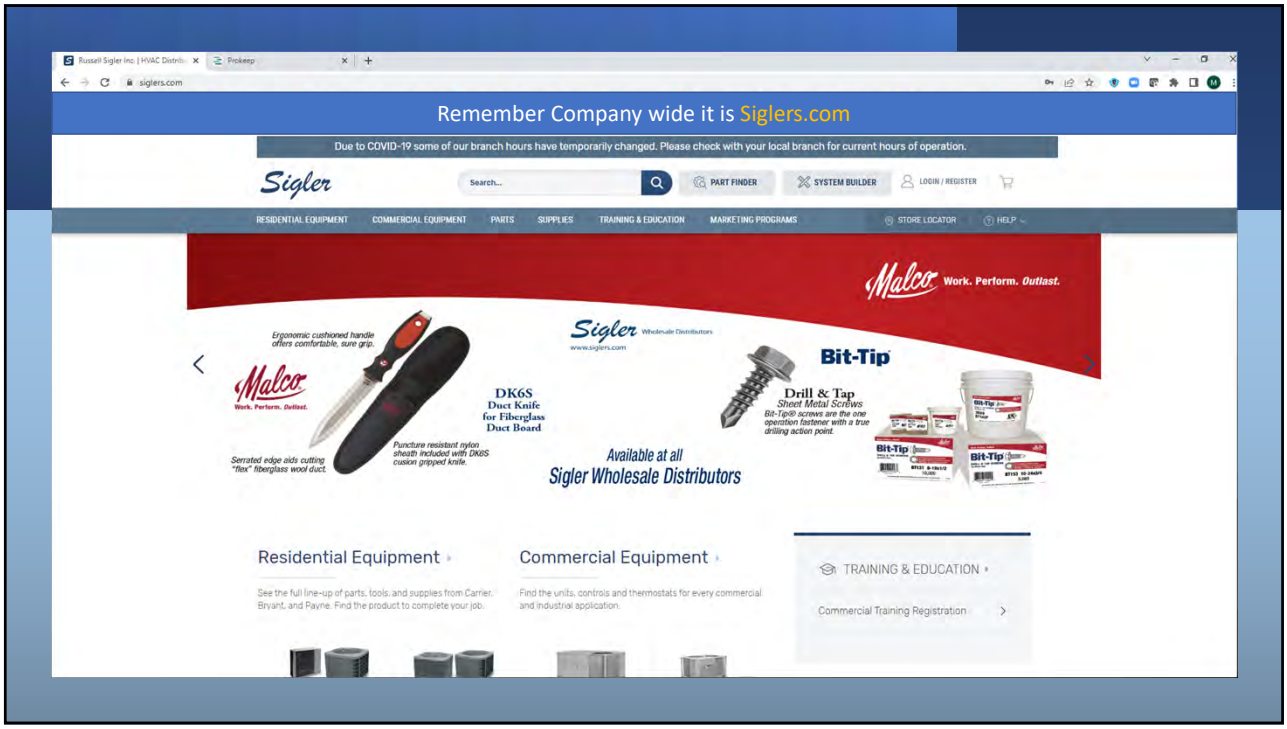
siglers.com
Remember Company wide it is Siglers.com
Due to COVID-19 some of our branch hours have temporarily changed. Please check with your local branch for current hours of operation.
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Serrated edge aids cutting "flex" fiberglass wool duct.
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for Fiberglass
Duct Board
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TRAINING & EDUCATION
Commercial Training Registration

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https://www.siglers.com/sca/norcal

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Residential Technical Support Direct Text and Voicemail Line!

415-330-6666

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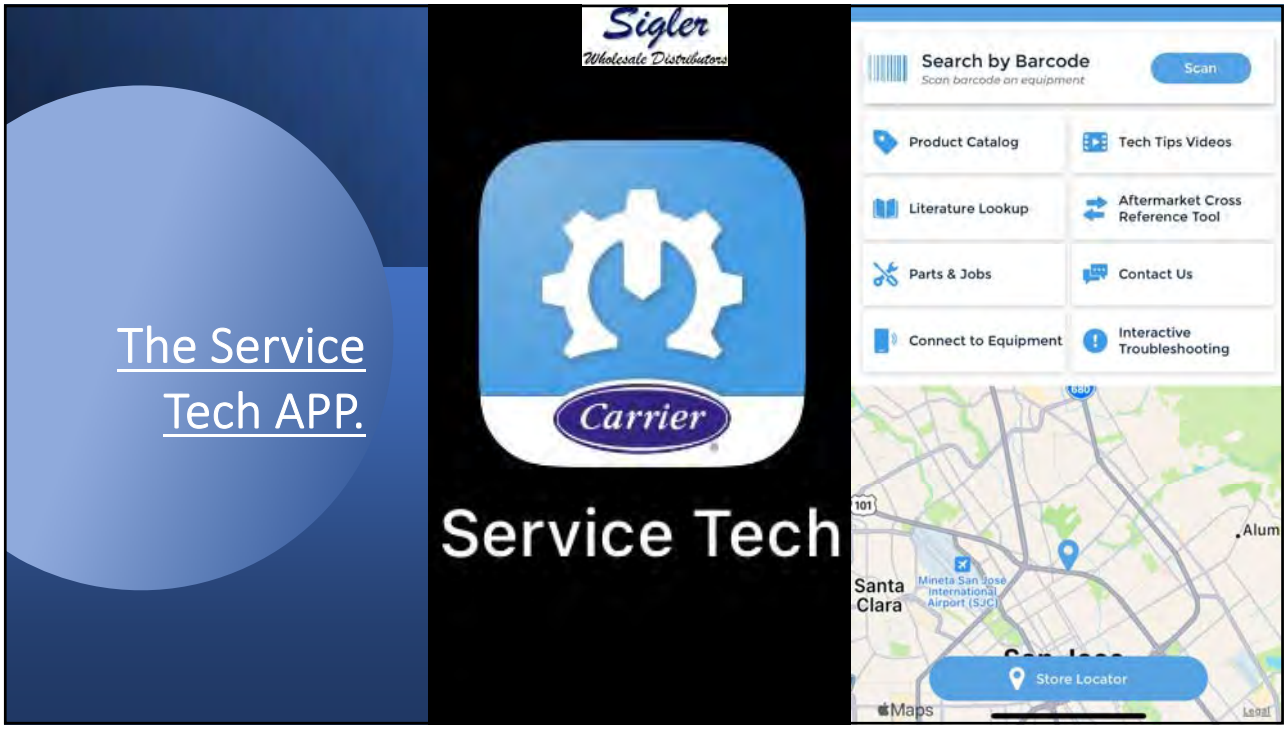

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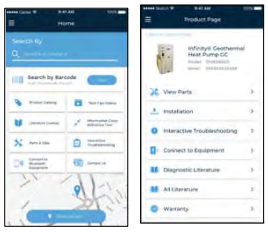
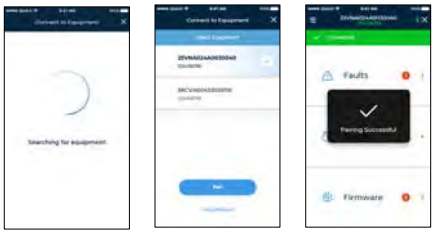
Infinity® 26/24 Service App Upgrades

Sigler Wholesale Distributors

Main Screens



Bluetooth Pairing

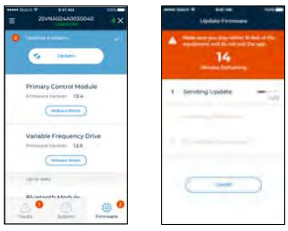


Interactive Troubleshooting

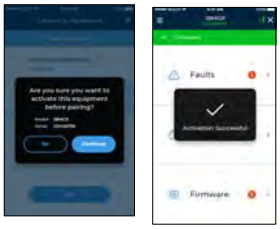
System Parameters

Fault Codes

Over-The-Air Software Update



Bluetooth Activation



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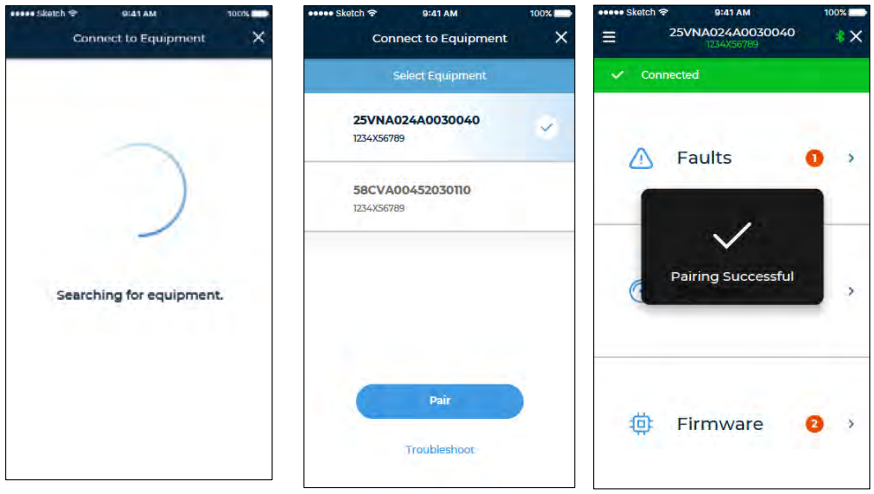
26/24 Specific Service App Upgrades

Bluetooth® Pairing Process



Bluetooth® is a registered trademark of Bluetooth SIG, Inc.

turn to the experts

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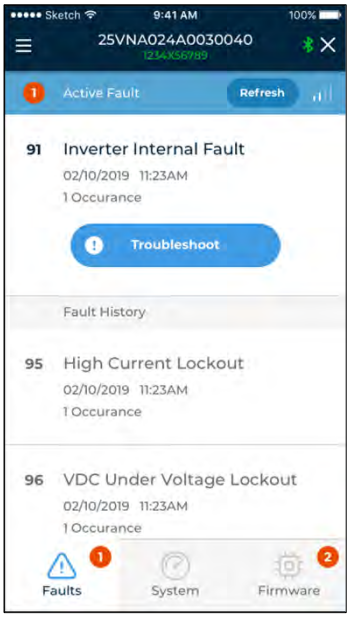
26/24 Specific Service App Upgrades

System Parameters
Fault Codes

26/24 System Parameters

26/24 Fault Codes



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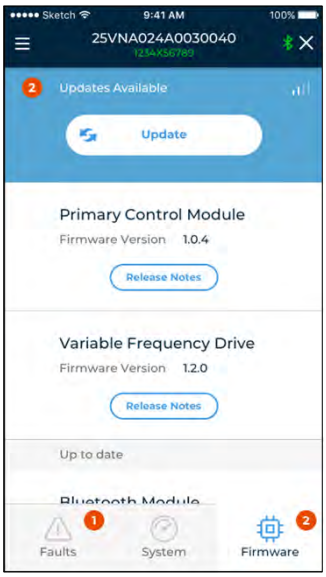
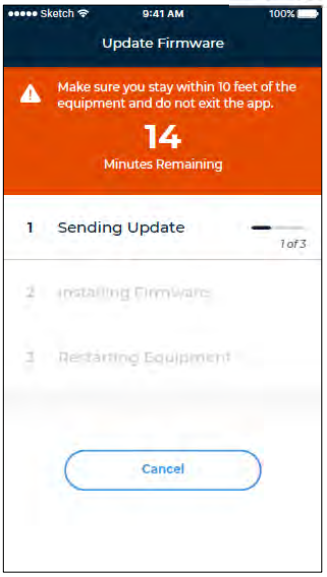
Sigler Wholesale Distributors

Over-The-Air Software Update

26/24 Specific Service App Upgrades





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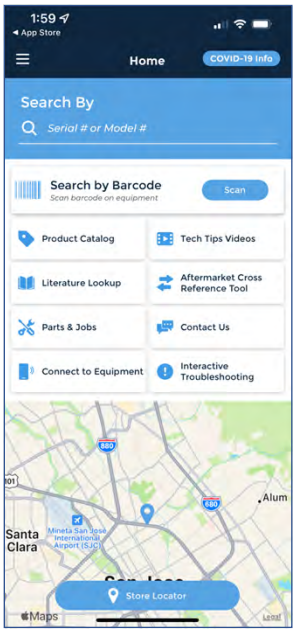
Sigler Wholesale Distributors

Let's take a quick Look



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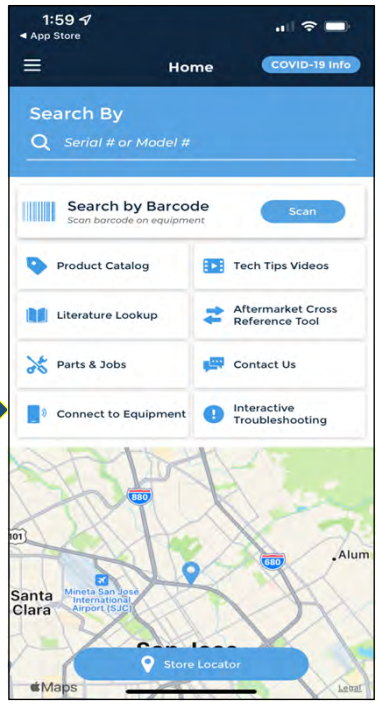
Connect to Equipment



Sigler Wholesale Distributors

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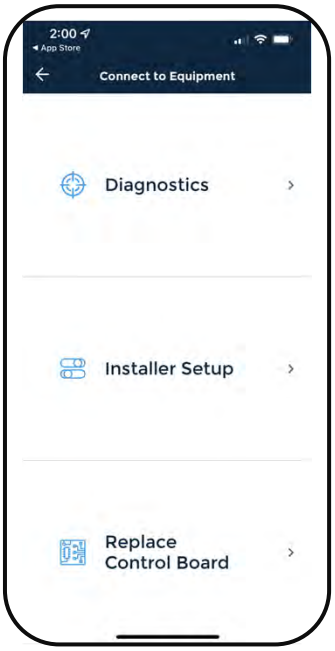
Furnace Board



Sigler Wholesale Distributors

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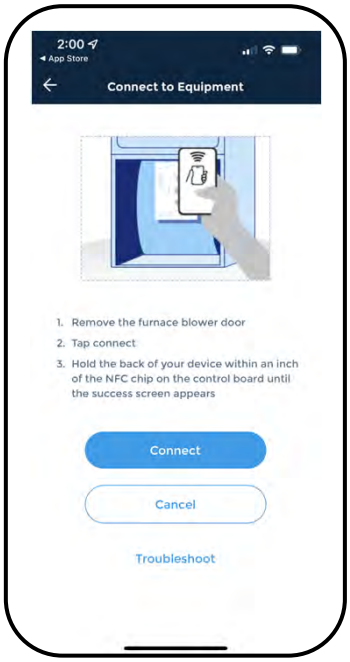
Place your Phone within 6 inc. of the P/C board.

POWER DOUSE NOT NEED TO BE ON!



Sigler Wholesale Distributors

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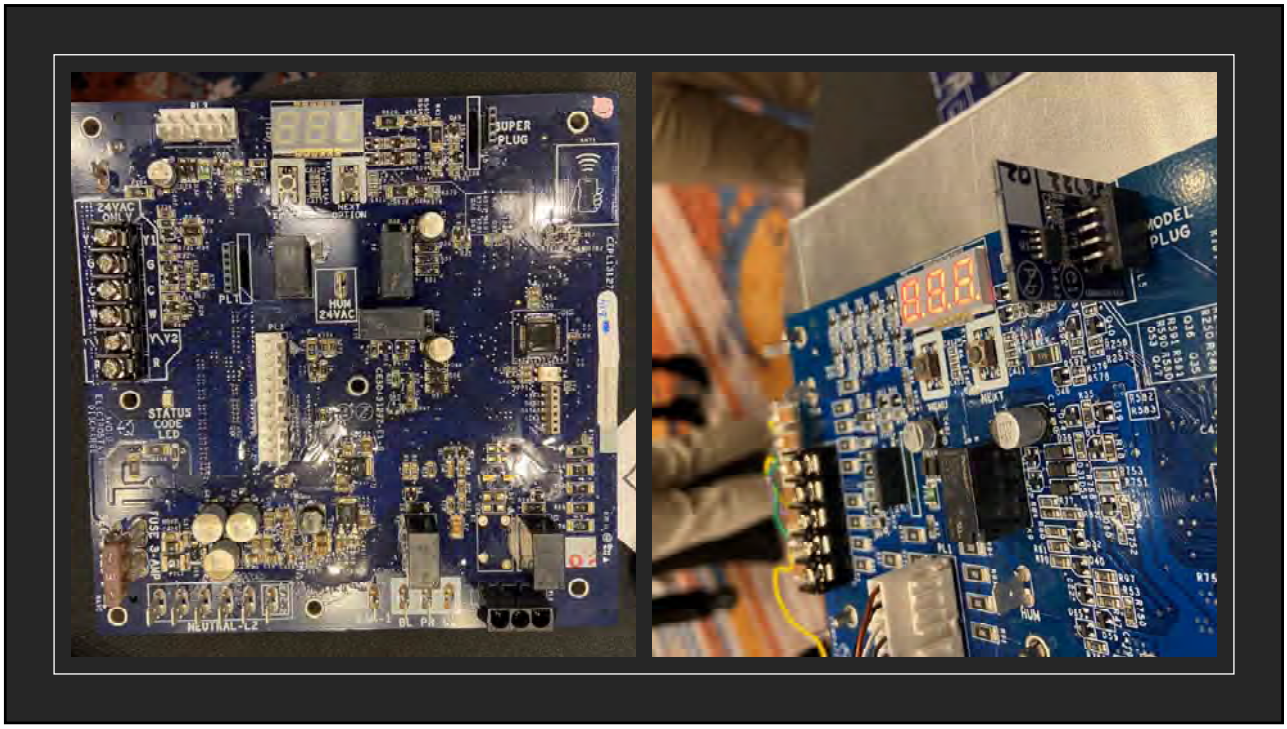

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Entry Tier Furnace Control

Rating plate QR and bar codes

- QR Code
  - link to page in HVACPartners
  - Training video
  - Registration
  - App link
- 2D Bar Code
  - Contains unit serial number

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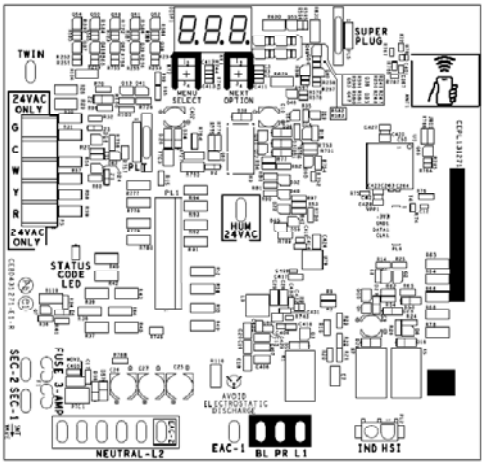
Entry Tier Furnace Control

Increased flexibility



- New control for all entry tier units to better align with 2023 cooling products
- Will convert blower motors to PWM driven units – 18speeds
  - Greatly increased airflow selections for all modes of operation
  - Reduced motor stocking
- Will utilize Near-Field communication or pushbuttons to allow for adjustments
- Service controls will be blank
  - Requires Service app or Super Plug to load run “recipe” into control
- First production planned May 2022

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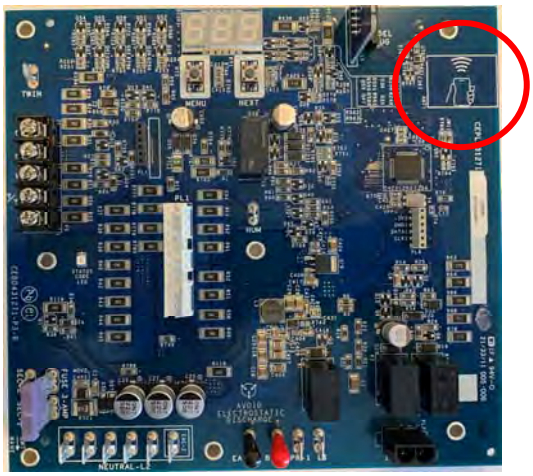
Entry Tier Furnace Control

Near Field Communication



- Near Field Communication allows two devices placed within a few centimeters of one another to exchange information
- Used by Apple Pay and other contactless payment systems
- Installer recipe and user settings can be read, adjusted, and loaded into furnace control without switches or contact with the furnace control
- Non-powered, so information can be exchanged with furnace power in OFF state
- Allows for information transfer from existing control to new control easily
- Allows for runtime data
  - Fault code history
  - Runtime cycles/hours

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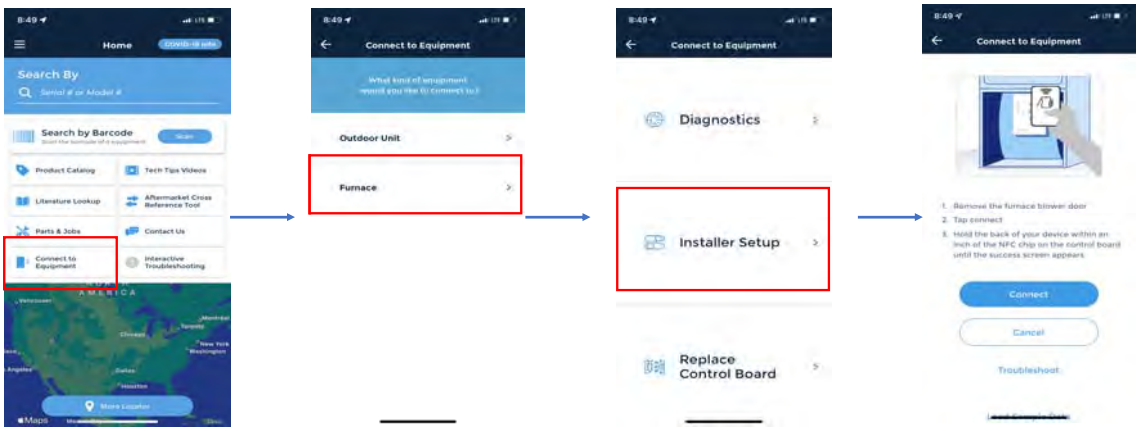
Entry Tier Furnace Control

2023 Entry Furnace App Integration

Utilizing existing Service Tech App featuring patent-pending Near Field Communication (NFC)



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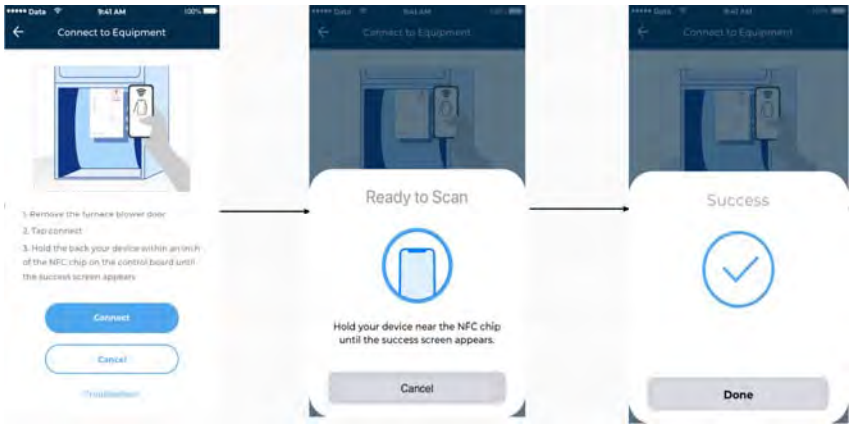
Entry Tier Furnace Control

2023 Entry Furnace App Integration

Utilizing existing Service Tech App featuring patent-pending Near Field Communication (NFC)



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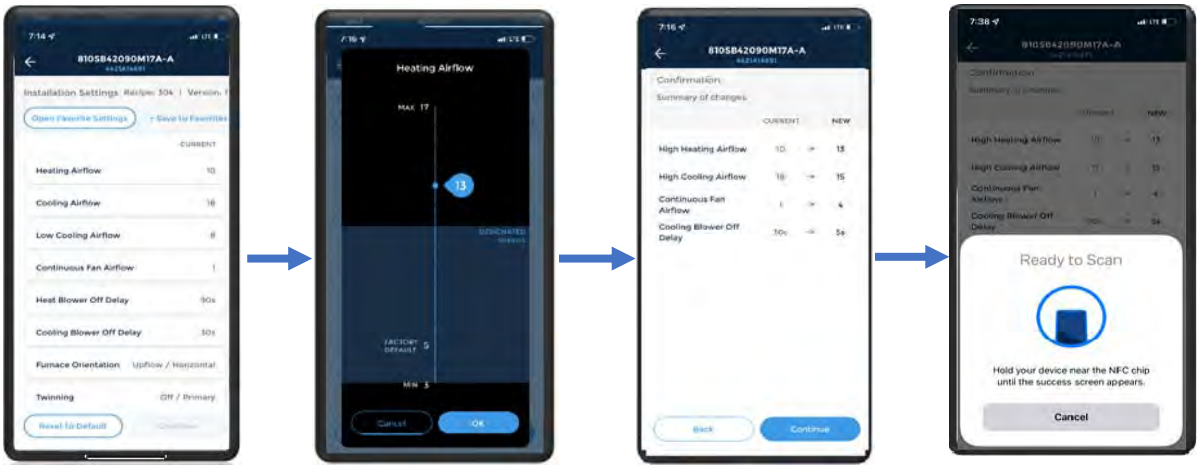
Entry Tier Furnace Control

Entry Furnace App Set Up



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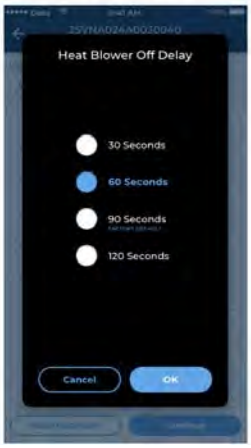
Entry Tier Furnace Control

App Screen Examples

Slider Type

Choice Type



On/Off + Choice Type

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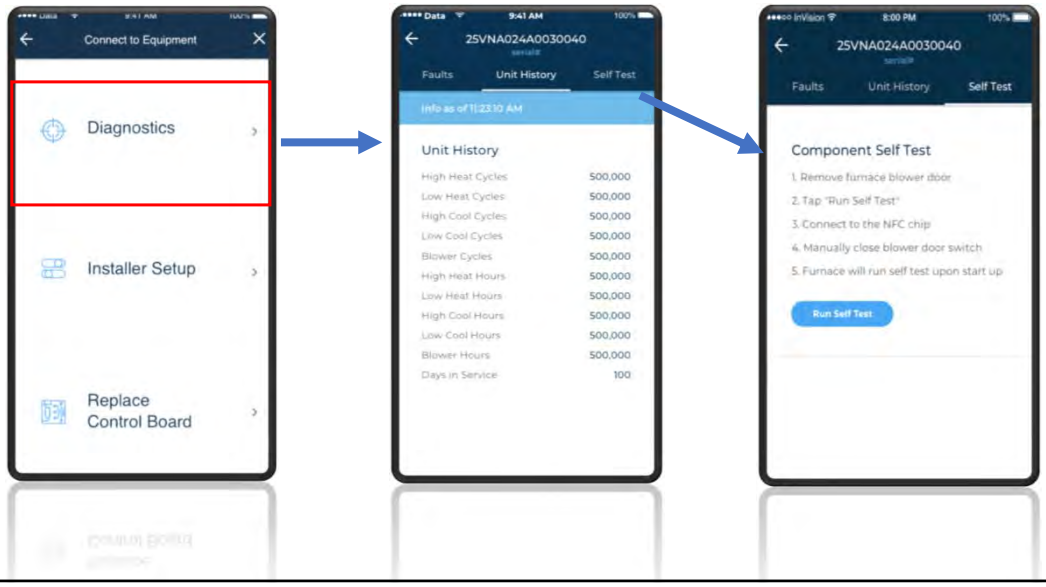
2023 Entry Furnace App Diagnostics



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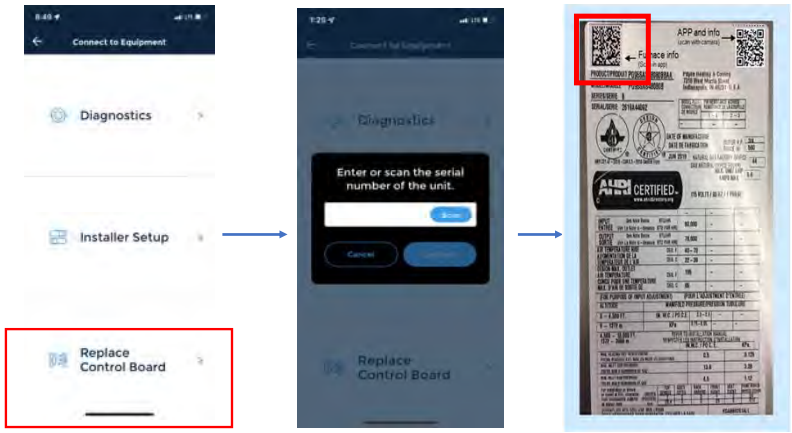
Entry Tier Furnace Control

2023 Entry Furnace App Integration

Utilizing existing Service Tech App featuring patent-pending Near Field Communication (NFC)



- Unit serial can be scanned or entered manually
- Scan or Manual entry will do a model look up for that serial #
- Model and serial number will be transferred into the new furnace control

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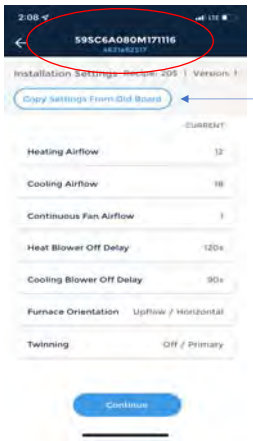
Entry Tier Furnace Control

2023 Entry Furnace App Integration

Utilizing existing Service Tech App featuring patent-pending Near Field Communication (NFC)



- Shows Model, serial, and recipe for that model
- Shows Default settings for the specific model
- Will allow the default setting for the model to be used
- Or will allow adjustment settings to be copied over from faulty control

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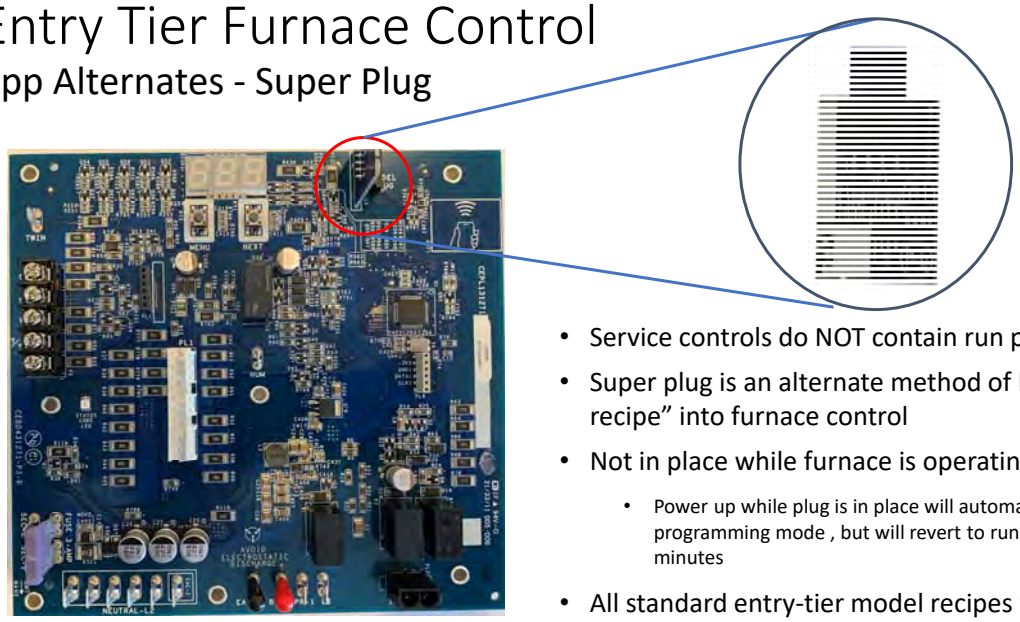
Entry Tier Furnace Control

App Alternates - Super Plug



- Service controls do NOT contain run parameters
- Super plug is an alternate method of loading “run recipe” into furnace control
- Not in place while furnace is operating
  - Power up while plug is in place will automatically initiate programming mode , but will revert to run mode after 2 minutes
- All standard entry-tier model recipes will be contained on one Super Plug

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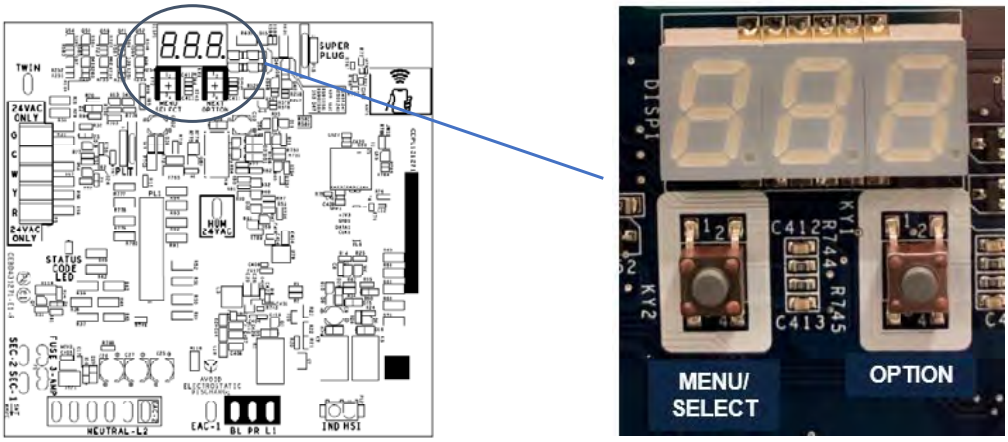
Entry Tier Furnace Control

App Alternate - Pushbuttons and 7 segment Display



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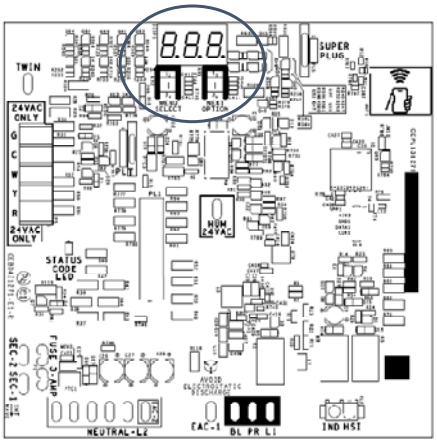
Entry Tier Furnace Control

App Alternate Pushbuttons and 7 segment Display



- Allows for manual selection for recipe load on new "blank" furnace controls
- Allows for manual adjustment of run parameters
  - Heating, cooling, and cont. fan speeds
  - Heating cooling off delays
  - Orientation
  - Twinning master and slave
- Used to initiate component self test
- 3 number display allows for more defined fault codes
  - Like NGIP, fault codes will have a base code and index allowing more concise troubleshooting

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Entry Tier Furnace Control

App Alternate Pushbuttons ,7 segment Display

3-digit 7 segment display w/ 2 push buttons

- Setup Options
- Fault Code Communication

Main Menu		
Display	**7-Segment Visual**	**Function**
FLt	FLt	Fault History Retrieval Menu
Ht	Ht	Heating Blower Speed Index
CL	CL	Cooling Blower Speed Index
CFn	CFn	Continuous Fan Blower Speed Index
Hod	Hod	Heating Blower Off Delay
Cod	Cod	Cooling Blower Off Delay
dir	dir	Direction; Unit Orientation Menu
CFn	CFn	Continuous Fan Blower Speed Index
tnn	tnn	Twinning Furnace Select
inF	inF	Startup Information (Software Version)
Ct	Ct	Component Test
rSt	rSt	Reset to Default Settings

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Entry Tier Furnace Control

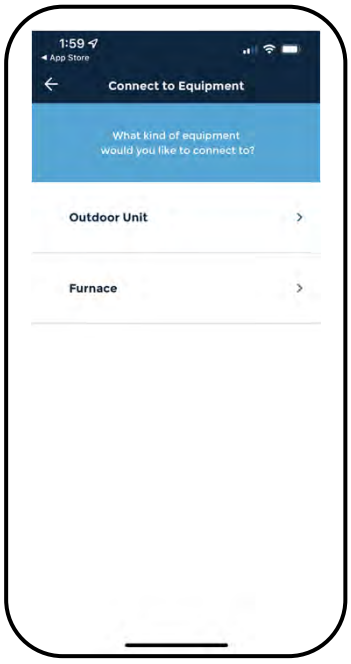
Fault Code Improvements

59SC2D	Description
11	No Previous Code
12	Blower on after power up
13	Limit circuit lockout
14	Ignition lockout
21	Gas heating lockout
22	Abnormal Flame-proving signal
23	Pressure switch did not open
24	Secondary voltage fuse is open
31	HPS pressure switch did not close or reopened
32	LPS pressure switch did not close
33	Limit circuit fault
34	Ignition proving failure
45	Control circuit lockout

Future Fault Codes

Major status code	Minor status code	Functional status code
Show "rF" on 7 Segment Display	N/A	L1 Polarity Fault
12	1	W on at power up
13	1	Limit Lockout
14	1	Ignition Lockout for 4 consecutive ignition tries
	2	Flame rollout algo lockout
21	1	Gas valve fault
22	1	False Flame
23	1	Stuck Main Pressure switch
	2	Stuck Secondary Pressure switch (condensing)
24	1	Fuse fault
25	1	No recipe info in local tag chip
	2	Corrupted recipe info in local tag chip
	3	Twinned units do not have same recipe number
	4	Primary recipe invalid, using secondary recipe to operate.
	5	Installer settings corrupted, using default installer settings.
	6	Incompatible Recipe
	7	Incompatible Recipe - Condensing
27	1	No recipe info in model plug
	2	Corrupted recipe info in model plug
	3	Failed to copy recipe from super model plug.
31	1	Open main pressure switch (in series with gas valve voltage) on non-condensing
	2	Open secondary pressure switch on A90 models
	3	Secondary PS Lockout mode, is in a 3 hr lockout
32	1	Open main pressure switch (A90 models)
33	1	Limit Fault
34	1	Ignition fault - four consecutive tries or before blower on-delay
	2	Ignition fault before on-delay
	3	Ignition fault after on-delay
	4	Ignition fault - any Self Healing mode
45	1	Control failure – Flame circuit fault, memory mismatch or sequence error
	2	Control failure – Gas valve relay will not close
	3	Control Failure – EEPROM Memory issue

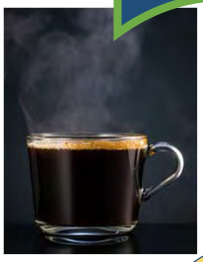
45



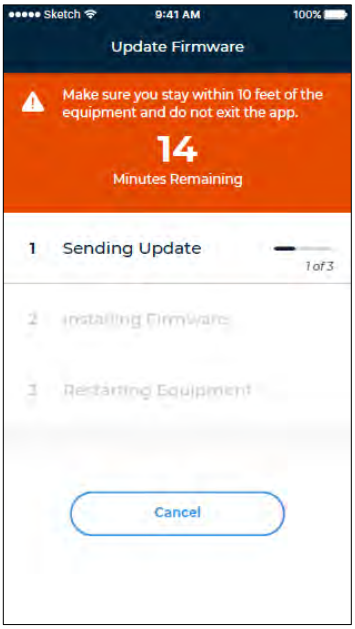
Best way to update The Evolution Condensers.

46

Please have your beverage of choice Handy!



This will take 30 min.



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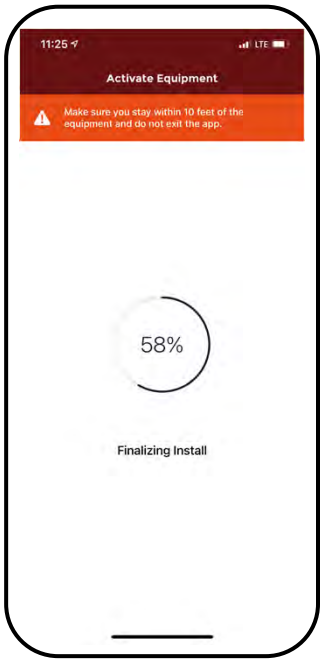
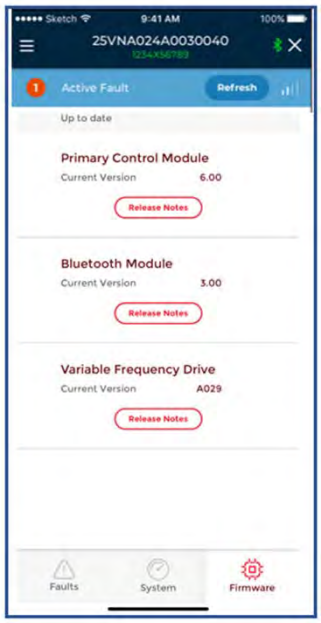
Finalizing Install
The Infinity Condensers.



48

You successfully updated The INFINITY Condensers.



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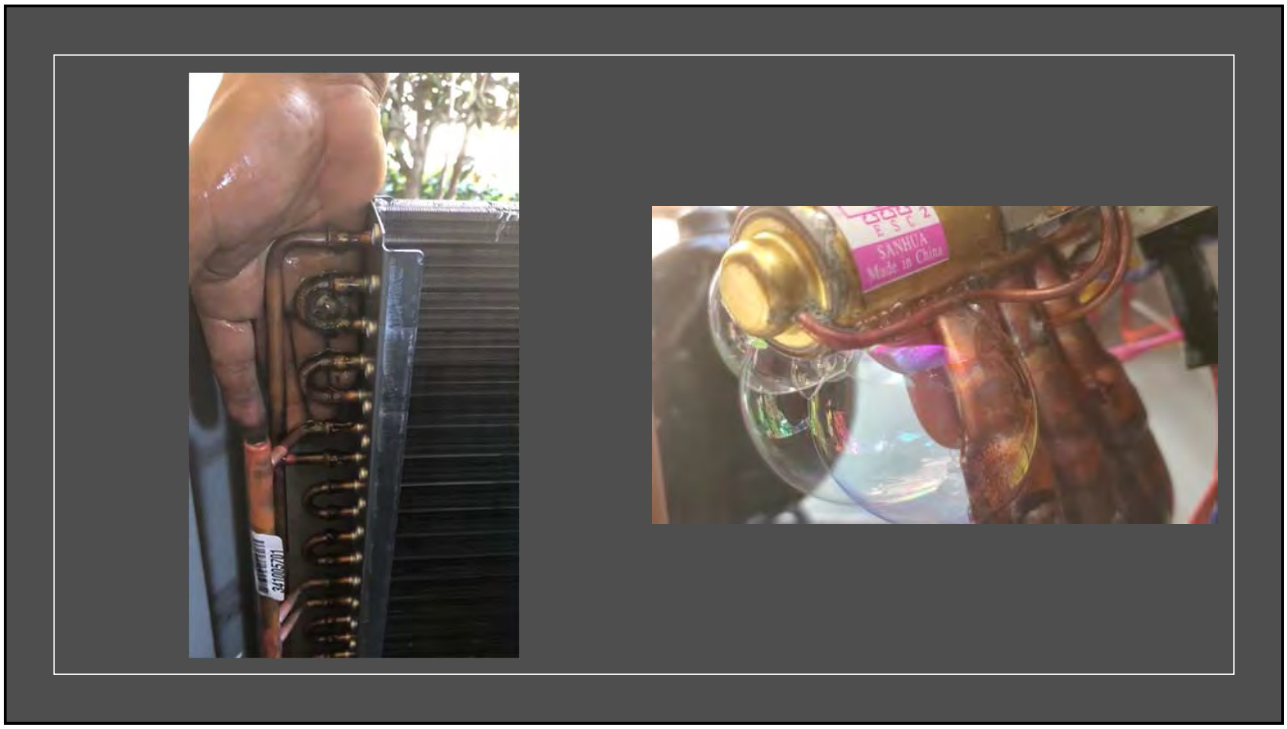
- Let's Talk about production oil verses refrigeration oil.
- **IF** you come across a unit that is covered in oil do not panic and think
- that you have a unit that has a leak.
- One easy step, rub the oil on your fingers if the oil dissipates from you fingers after 5 min it is production oil!

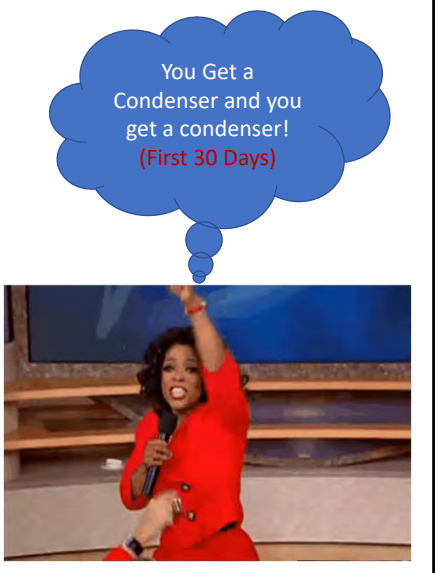
50

50



51

Absolute Perfect Warranty Video!



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Class Corse

- Setting gas Pressure
- Configuring Dual Fuel Systems
- Setting up blower speeds
- Understanding and testing PWM Motors.
- Understand communication and trouble shooting communication for Infinity Systems.
- Installation good practices for furnaces, fan coils and evaporator coils.
- Installing mini split systems good practices and trouble shooting.

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Sigler
Wholesale Distributors

Setting gas Pressure

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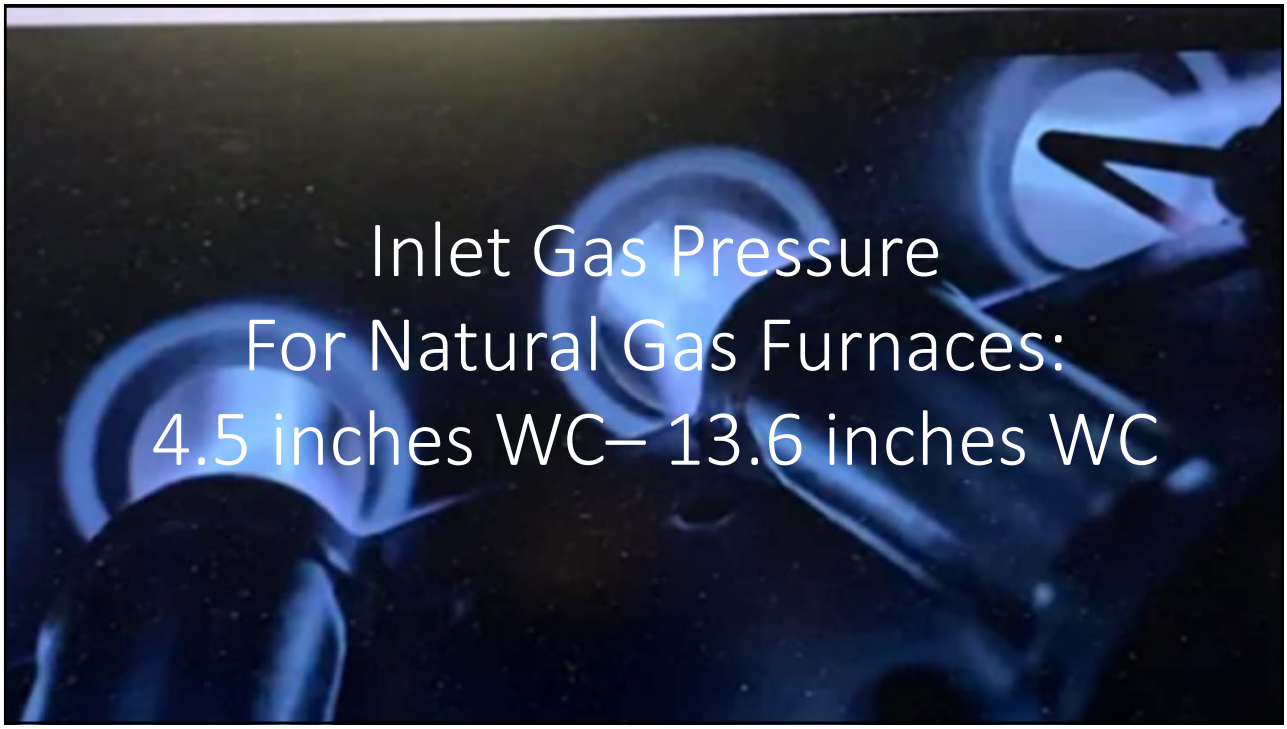
Gas pressure set up…. Factory done?

Basic start up check is done after production, however, a correct start up (gas pressure/airflow verification), is our responsibility on **EVERY** install. Most common thoughts are "shouldn't have that been done at factory?", "I've been installing for a long time and never had to set gas pressure".

Changes, improvements, are just a couple reasons why we need to crack that install manual on every job. Sometimes the installs are all the same, but things are overlooked by assuming.

55



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Inlet Gas Pressure For LP Furnaces: 12 inches WC– 13.6 inches WC

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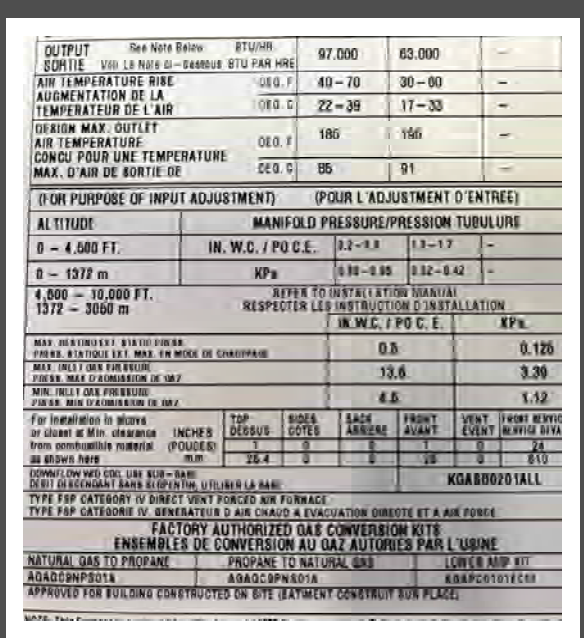


OUTPUT / SORTIE — See Note Below / Voir la Note ci-dessous — BTU/HR / BTU PAR HRE		97,000	63,000	–
AIR TEMPERATURE RISE / AUGMENTATION DE LA TEMPERATEUR DE L'AIR	DEG. F	40 – 70	30 – 60	–
	DEG. C	22 – 39	17 – 33	–
DESIGN MAX. OUTLET AIR TEMPERATURE / CONCU POUR UNE TEMPERATURE MAX. D'AIR DE SORTIE DE	DEG. F	185	155	–
	DEG. C	85	91	–

(FOR PURPOSE OF INPUT ADJUSTMENT) (POUR L'ADJUSTMENT D'ENTRÉE)			
ALTITUDE	MANIFOLD PRESSURE/PRESSION TUBULURE		
0 – 4,500 FT.	IN. W.C. / PO C.E.	3.2 – 3.8	1.3 – 1.7
0 – 1372 m	KPa	0.80 – 0.95	0.32 – 0.42
4,500 – 10,000 FT. / 1372 – 3050 m	REFER TO INSTALLATION MANUAL / RESPECTER LES INSTRUCTION D'INSTALLATION		

	IN.W.C. / PO C. E.	KPa
MAX. HEATING ELEV. STATIC PRESS. / PRESS. STATIQUE EXT. MAX. EN MODE DE CHAUFFAGE	0.5	0.125
MAX. INLET GAS PRESSURE / PRESS. MAX D'ADMISSION DE GAZ	13.6	3.39
MIN. INLET GAS PRESSURE / PRESS. MIN D'ADMISSION DE GAZ	4.5	1.12

For installation in alcove or closet at Min. clearance from combustible material as shown here	INCHES (POUCES)	TOP DESSUS	SIDES COTES	BACK ARRIERE	FRONT AVANT	VENT EVENT	FRONT SERVICE DIVA
	1	0	0	1	0	24	
	25.4	0	0	25	0	610	

DOWNFLOW WED COIL USE SUB – BASE
DEBIT DESCENDANT SANS SERPENTIN, UTILISER LA BASE — KGASB0201ALL

TYPE FSP CATEGORY IV DIRECT VENT FORCED AIR FURNACE
TYPE FSP CATÉGORIE IV, GÉNÉRATEUR D AIR CHAUD A EVACUATION DIRECTE ET A AIR FORCE

FACTORY AUTHORIZED GAS CONVERSION KITS
ENSEMBLES DE CONVERSION AU GAZ AUTORISES PAR L'USINE

NATURAL GAS TO PROPANE	PROPANE TO NATURAL GAS	LOWER AMP KIT
AGAQCONPS01A	AGAQCOPNA01A	KGAPC0101ECOM

APPROVED FOR BUILDING CONSTRUCTED ON SITE (BATIMENT CONSTRUIT SUR PLACE)

58

MODULATING FURNACE

(TABULATED DATA BASED ON 20,000 BTUH MAX-HEAT / 8,000 BTUH MIN-HEAT PER BURNER, DERATED 2%/1000 FT (305M) ABOVE SEA LEVEL)

ALTITUDE RANGE		AVG. GAS HEAT VALUE AT ALTITUDE	SPECIFIC GRAVITY OF NATURAL GAS							
			0.58		0.60		0.62		0.64	
	Ft (m)	(Btu/cu ft)	Orifice No.	Mnfld Press Max/Min	Orifice No.	Mnfld Press Max/Min	Orifice No.	Mnfld Press Max/Min	Orifice No.	Mnfld Press Max/Min
U.S.A. and Canada	0 (0) to 2000 (610)	900	43	3.8 /0.60	42	3.2 /0.50	42	3.3 /0.55	42	3.4 /0.55
		925	43	3.6 /0.55	43	3.7 /0.60	43	3.8 /0.60	42	3.2 /0.50
		950	43	3.4 /0.55	43	3.5 /0.55	43	3.6 /0.60	43	3.7 /0.60
		975	**44**	**3.7 /0.60**	**44**	**3.8 /0.60**	43	3.4 /0.55	43	3.6 /0.55
		1000	**44**	**3.5 /0.55**	**44**	**3.6 /0.60**	**44**	**3.8 /0.60**	43	3.4 /0.55
		1025	**44**	**3.3 /0.55**	**44**	**3.5 /0.55**	**44**	**3.6 /0.55**	**44**	**3.7 /0.60**
		1050	**44**	**3.2 /0.50**	**44**	**3.3 /0.55**	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**
		1075	45	3.7 /0.60	45	3.8 /0.60	**44**	**3.3 /0.50**	**44**	**3.4 /0.55**
		1100	46	3.7 /0.60	46	3.8 /0.60	45	3.8 /0.60	**44**	**3.2 /0.50**
U.S.A. and Canada	U.S.A. 2001 (611) to 3000 (914)	800	42	3.4 /0.55	42	3.5 /0.55	42	3.6 /0.55	42	3.7 /0.60
		825	43	3.6 /0.60	42	3.3 /0.50	42	3.4 /0.55	42	3.5 /0.55
		850	43	3.6 /0.60	43	3.7 /0.60	42	3.2 /0.50	42	3.3 /0.55
		875	43	3.4 /0.55	43	3.5 /0.55	43	3.7 /0.60	43	3.8 /0.60
		900	**44**	**3.7 /0.60**	**44**	**3.8 /0.60**	43	3.5 /0.55	43	3.6 /0.55
	Canada 2001 (611) to 4500 (1372)	925	**44**	**3.5 /0.55**	**44**	**3.6 /0.60**	**44**	**3.8 /0.60**	43	3.4 /0.55
		950	**44**	**3.3 /0.55**	**44**	**3.4 /0.55**	**44**	**3.6 /0.55**	**44**	**3.7 /0.60**
		975	**44**	**3.2 /0.50**	**44**	**3.3 /0.50**	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**
		1000	46	3.8 /0.60	45	3.8 /0.60	**44**	**3.2 /0.50**	**44**	**3.3 /0.55**
U.S.A. Only	3001 (915) to 4000 (1219)	775	42	3.3 /0.55	42	3.4 /0.55	42	3.5 /0.55	42	3.6 /0.60
		800	43	3.6 /0.60	42	3.2 /0.50	42	3.3 /0.55	42	3.4 /0.55
		825	43	3.6 /0.55	43	3.7 /0.60	43	3.8 /0.60	42	3.2 /0.50
		850	**44**	**3.8 /0.60**	43	3.5 /0.55	43	3.6 /0.55	43	3.7 /0.60
		875	**44**	**3.6 /0.60**	**44**	**3.7 /0.60**	43	3.4 /0.55	43	3.5 /0.55
		900	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**	**44**	**3.7 /0.60**	**44**	**3.8 /0.60**
		925	**44**	**3.2 /0.50**	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**	**44**	**3.6 /0.55**
		950	45	3.7 /0.60	**44**	**3.2 /0.50**	**44**	**3.3 /0.55**	**44**	**3.4 /0.55**
U.S.A. Only	4001 (1220) to 5000 (1524)	750	42	3.3 /0.55	42	3.4 /0.55	42	3.5 /0.55	42	3.6 /0.55
		775	43	3.7 /0.60	43	3.8 /0.60	42	3.3 /0.50	42	3.4 /0.55
		800	43	3.5 /0.55	43	3.6 /0.60	43	3.7 /0.60	43	3.8 /0.60
		825	**44**	**3.8 /0.60**	43	3.4 /0.55	43	3.5 /0.55	43	3.6 /0.60
		850	**44**	**3.5 /0.55**	**44**	**3.7 /0.60**	**44**	**3.8 /0.60**	43	3.4 /0.55
		875	**44**	**3.3 /0.55**	**44**	**3.5 /0.55**	**44**	**3.6 /0.55**	**44**	**3.7 /0.60**
		900	**44**	**3.2 /0.50**	**44**	**3.3 /0.50**	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**
		925	46	3.8 /0.60	45	3.7 /0.60	**44**	**3.2 /0.50**	**44**	**3.3 /0.55**
U.S.A. Only	5001 (1525) to 6000 (1829)	725	42	3.2 /0.50	42	3.3 /0.55	42	3.4 /0.55	42	3.5 /0.55
		750	43	3.7 /0.60	43	3.8 /0.60	42	3.2 /0.50	42	3.3 /0.55
		775	43	3.4 /0.55	43	3.5 /0.55	43	3.7 /0.60	43	3.8 /0.60
		800	**44**	**3.7 /0.60**	**44**	**3.8 /0.60**	43	3.4 /0.55	43	3.5 /0.55
		825	**44**	**3.5 /0.55**	**44**	**3.6 /0.55**	**44**	**3.7 /0.60**	**44**	**3.8 /0.60**
		850	**44**	**3.3 /0.50**	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**	**44**	**3.6 /0.60**
		875	45	3.7 /0.60	**44**	**3.2 /0.50**	**44**	**3.3 /0.55**	**44**	**3.4 /0.55**
		900	46	3.7 /0.60	46	3.8 /0.60	45	3.8 /0.60	**44**	**3.2 /0.50**
U.S.A. Only	6001 (1830) to 7000 (2133)	675	42	3.4 /0.55	42	3.5 /0.55	42	3.6 /0.60	42	3.8 /0.60
		700	42	3.2 /0.50	42	3.3 /0.50	42	3.4 /0.55	42	3.5 /0.55
		725	43	3.6 /0.60	43	3.7 /0.60	43	3.8 /0.60	42	3.3 /0.50
		750	43	3.4 /0.55	43	3.5 /0.55	43	3.6 /0.55	43	3.7 /0.60
		775	**44**	**3.6 /0.60**	**44**	**3.7 /0.60**	43	3.4 /0.55	43	3.5 /0.55
		800	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**	**44**	**3.6 /0.60**	**44**	**3.7 /0.60**
		825	**44**	**3.2 /0.50**	**44**	**3.3 /0.55**	**44**	**3.4 /0.55**	**44**	**3.5 /0.55**
		850	46	3.8 /0.60	45	3.8 /0.60	**44**	**3.2 /0.50**	**44**	**3.3 /0.55**

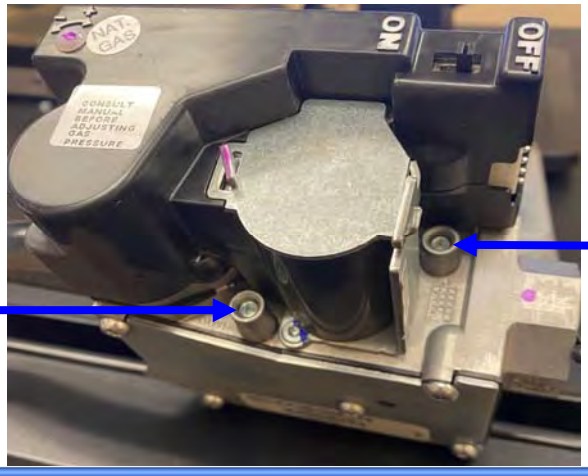
Sigler Wholesale Distributors

- Information can also be found in the installation book.

59

Sigler Wholesale Distributors

Understanding the gas valve.

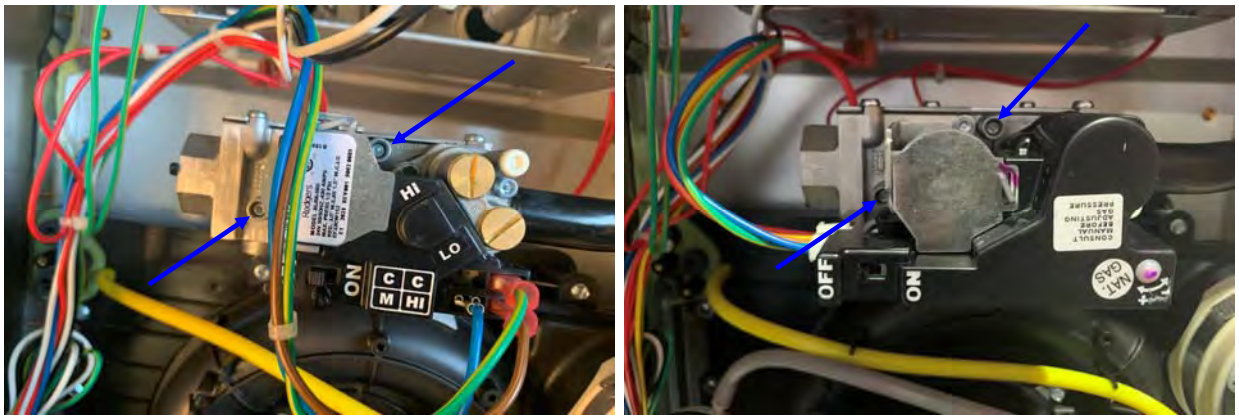


Inlet Tower Port.
Main connection side of valve

Outlet Tower Port.
Main connection side of valve

60

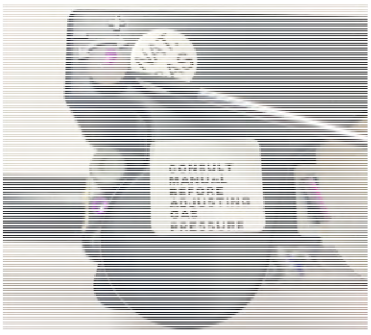
Tower Ports



61

Adjust Manifold Pressure - Maximum Heat For proper operation and long-term reliability, the manifold pressure must be adjusted within +/-2 percent of input rate on furnace rating plate. The modulating furnace manifold pressure is set at two points. The first point is Maximum Heat. The second point is Minimum Heat. Do not adjust Intermediate Heat manifold pressure. Intermediate Heat manifold pressure is checked as part of the temperature rise but is not adjustable. Always adjust Maximum Heat first, then Minimum Heat.

Remove Plastic Cap



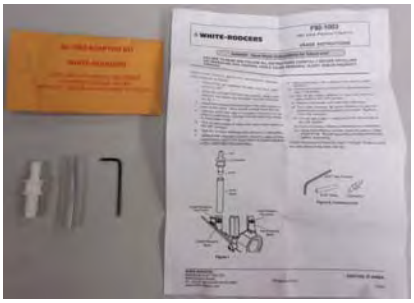
Use Flat blade screwdriver to adjust.
ONE CLICK AT A TIME!!!!!

62

Manometer Adapter Kit

- Used with manometers using ¼-in. hoses
- Available from RC
- RC part number is 92-1003

- Kit Contents:
- 3/32-in. Hex Wrench
- ¼-in. X 5/16-in. Adapter
- 5/16-in. x 2-in. Tube



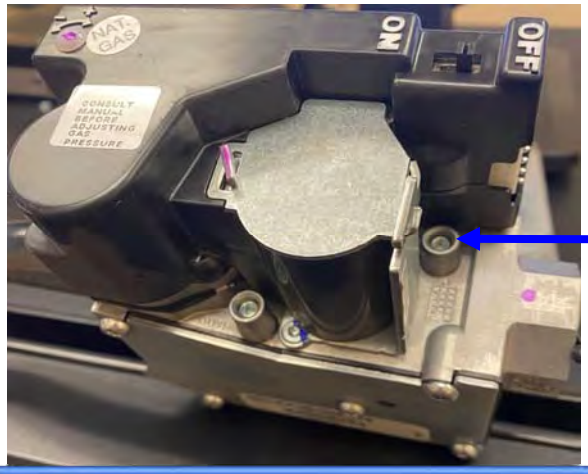
63

Required tools to perform proper gas setting start up.
"Manometer"

White-Rodgers F92-1003 Adapter Kit

64

1st Step



.Turn off main gas shut off valve at furnace.

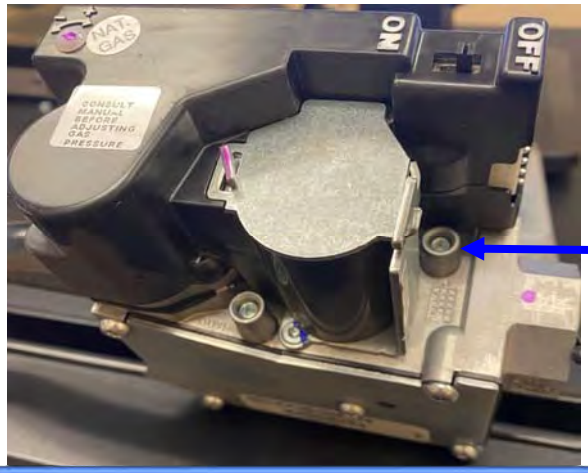
*Remember disconnect electrical to furnace.

Inlet Tower Port.
Main connection side of valve

*Do not remove the hex screw!!!!!

65

2nd Step



Loosen set screw on inlet tower pressure tap no more than one full turn with a 3/32-in. hex wrench.

*Do not remove the hex screw!!!!!

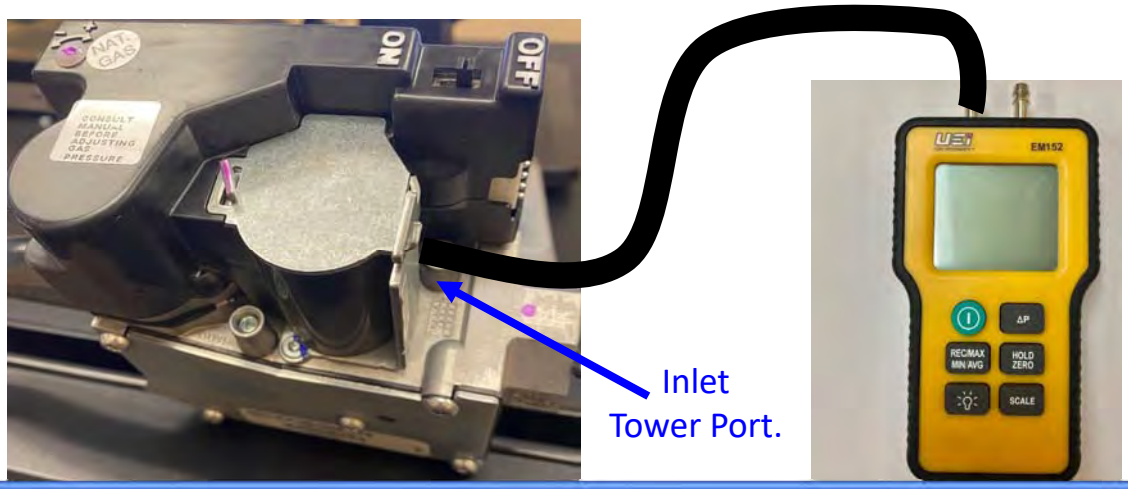
Or remove the 1/8 in. NPT plug from the inlet pressure tap on the gas valve.

Inlet Tower Port.
Main connection side of valve

66

3rd Step

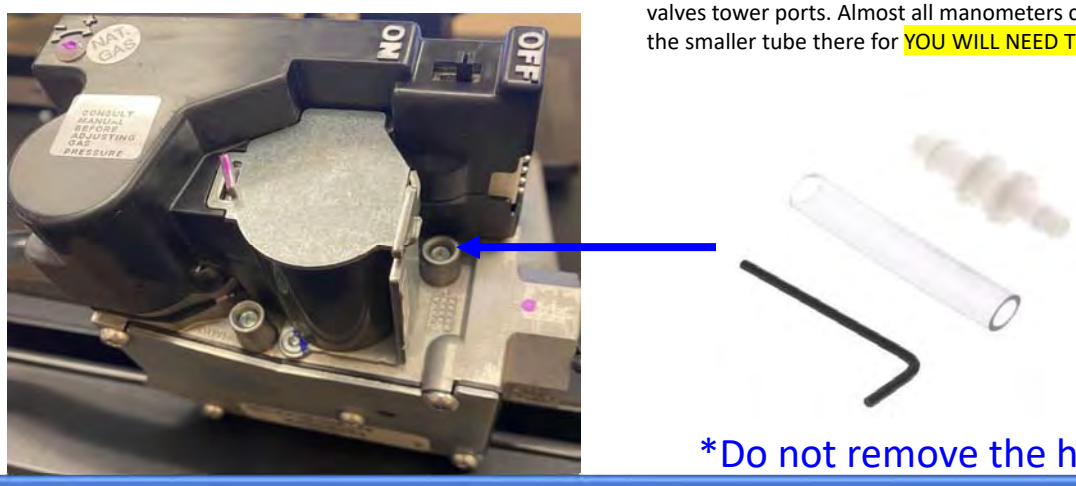
Connect a manometer to the inlet pressure tap on gas valve.



67

3rd Step – 2# Side Note

Description:
Pressure Tube, 3/16 to 5/16 to fit the inlet and outlet valves tower ports. Almost all manometers come with the smaller tube there for YOU WILL NEED THE ADAPTER.



*Do not remove the hex

68

What it looks like inside the valve .
Please note how small the screw is! If you drop it, good luck.

No more than one full turn with

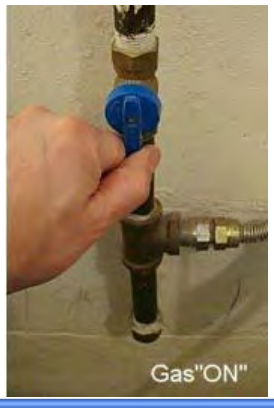
a 3/32-in. hex wrench.

*Do not remove the hex screw!!!!!

69

4th Step

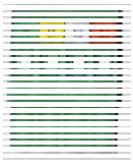
Turn on gas. /// Turn furnace gas witch to ON position /// Turn on the power



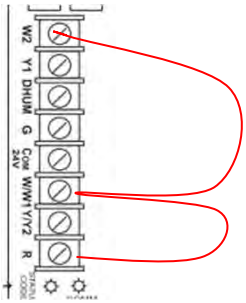
70

5th Step

Remove the Green ABCD Communication Plug



Jumper the R to W/W1 and W2 thermostat connections at the furnace control board.



71

6th Step

Checking supply gas pressure to furnace

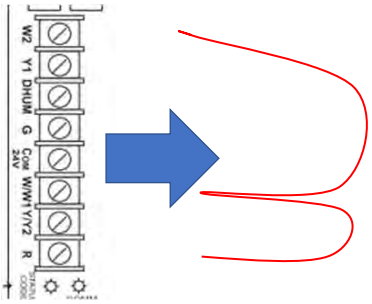
When main burners ignite, confirm inlet gas pressure is Between 4.5 in. w.c. and 13.6in. w.c.
Inlet gas pressure can not fall below the minimum pressure of 4.5 // maximum inlet pressure is 13.6
You will not be able to adjust the manifold pressure if the inlet pressure is too low.

72

7th Step

After incoming pressure has proven to be stable and within specs. Disconnect your thermostat jumper wire from W2, W1 and Red. Wait for furnace to come to a complete stop.

Remove the R to W/W1 and W2 thermostat connections at the furnace control board.



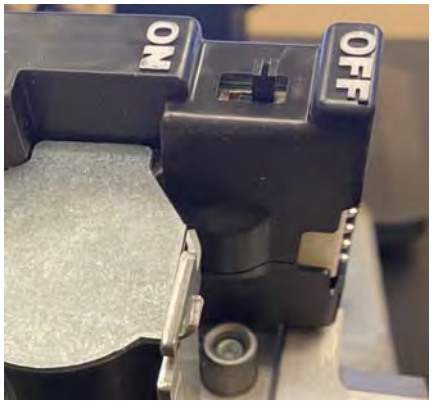
73

8th Step

Turn Off gas.

Disconnect the power.

Turn furnace gas switch to off position



74

9th Step

*Remove manometer from inlet pressure tap of the gas valve.

*Tighten screw on inlet port.

75

10th Step

With the power, gas and gas valve control switch still in the off position at this time we are going to move over to the outlet port on the gas valve and start checking and adjusting the manifold gas pressure in high and low heat.

Only turn the 3/32-in.hex
One Full Turn CCW.

76

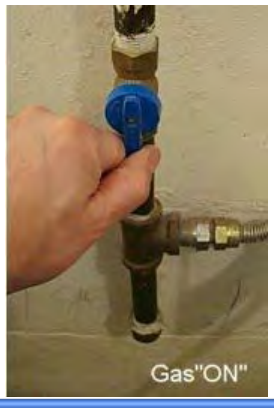
11th Step

Connect a manometer to the outlet pressure tap on gas valve.

77

12th Step

Turn on gas. //// Turn furnace gas witch to ON position //// Plug in power



78

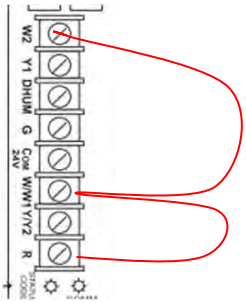
13th Step

"Confirm Green ABCD Com. Plug is not connected."

Remove the Green ABCD Communication Plug

"Reconnect Jumper wire on furnace control board."

Jumper the R to W/W1 and W2 thermostat connections at the furnace control board.



79

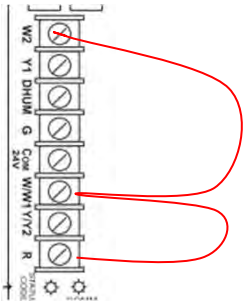
13th Step

"Confirm Green ABCD Com. Plug is not connected."

Remove the Green ABCD Communication Plug

"Reconnect Jumper wire on furnace control board."

Jumper the R to W/W1 and W2 thermostat connections at the furnace control board.

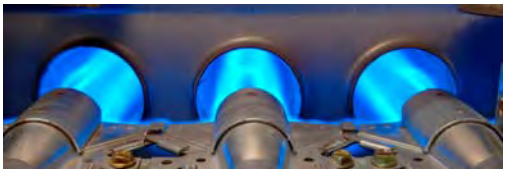


80

14th Step

After the main burners ignite and the blower starts, confirm Maximum Heat manifold pressure is correct, based on the manifold pressure tables in the installation instructions.

3.4-in. w.c for maximum

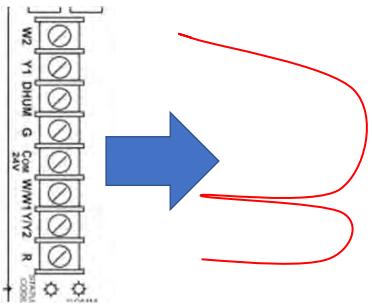


81

15th Step

After manifold pressure has proven to be stable and within specs. Disconnect your thermostat jumper wire from W2, W1 and Red. Wait for furnace to come to a complete stop.

Remove the R to W/W1 and W2 thermostat connections at the furnace control board.



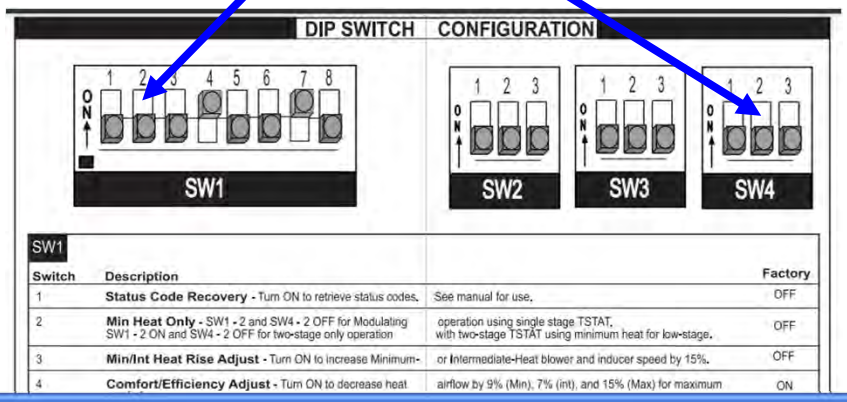
82

16th Step

Adjust Manifold Pressure - Minimum Heat

1. Turn SW1-2 ON and SW4-2 must be OFF.

Document how SW4-2 was found before you start.



SW1

Switch	Description		Factory
1	**Status Code Recovery** - Turn ON to retrieve status codes.	See manual for use.	OFF
2	**Min Heat Only** - SW1 - 2 and SW4 - 2 OFF for Modulating SW1 - 2 ON and SW4 - 2 OFF for two-stage only operation	operation using single stage TSTAT, with two-stage TSTAT using minimum heat for low-stage.	OFF
3	**Min/Int Heat Rise Adjust** - Turn ON to increase Minimum-	or Intermediate-Heat blower and inducer speed by 15%.	OFF
4	**Comfort/Efficiency Adjust** - Turn ON to decrease heat	airflow by 9% (Min), 7% (int), and 15% (Max) for maximum	ON

83

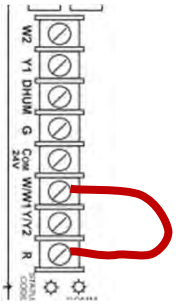
17th Step

"Confirm Green ABCD Com. Plug is not connected."

Remove the Green ABCD Communication Plug

"Reconnect Jumper wire on furnace control board."

Jumper the R to W/W1 thermostat connections at the furnace control board.

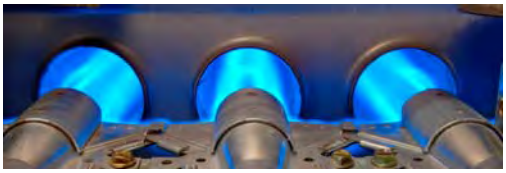


84

18th Step

After the main burners ignite and the blower starts, confirm Minimum Heat manifold pressure is correct, based on the manifold pressure tables in the installation instructions.

.55-in. W.C. for minimum

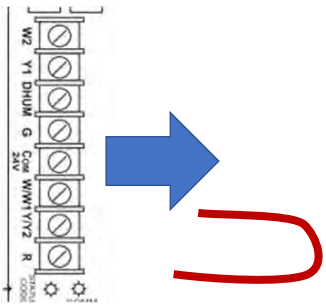


85

19th Step

After manifold pressure has proven to be stable and within specs. Disconnect your thermostat jumper wire from W1 and Red. Wait for furnace to come to a complete stop.

Remove the R to W/W1 and thermostat connections at the furnace control board.



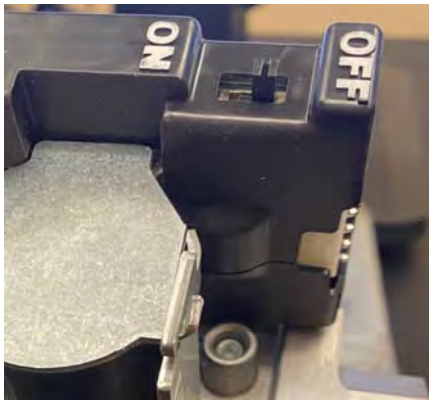
86

20th Step

Turn Off gas.

Disconnect the power.

Turn furnace gas switch to off position

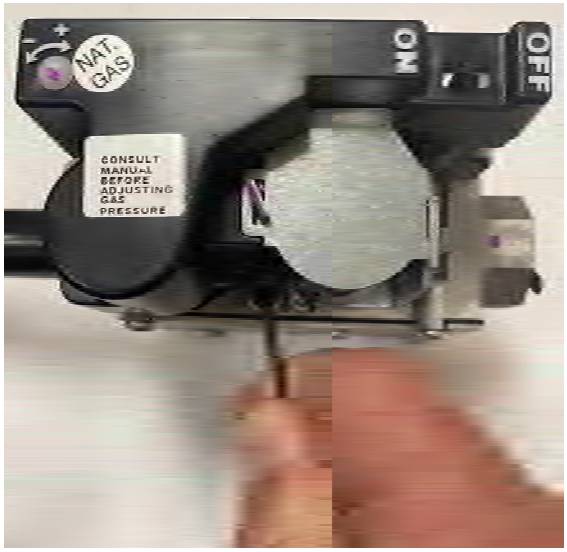


87

21st Step

*Remove manometer from outlet pressure tap of the gas valve.

*Tighten screw on outlet port ***CW. until snug***



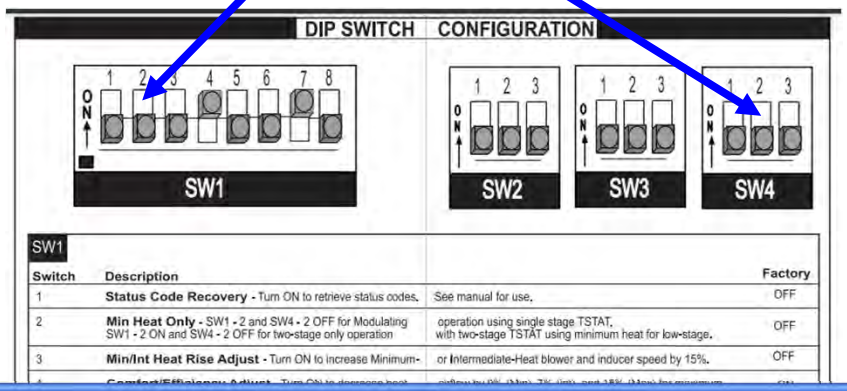
88

22nd. Step

Return System Back to normal operation.

1. Turn SW1-2 OFF and SW4-2 must be OFF.

Document how SW4-2 was found before you start.



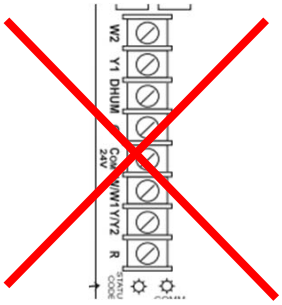
SW1

Switch	Description		Factory
1	**Status Code Recovery** - Turn ON to retrieve status codes.	See manual for use.	OFF
2	**Min Heat Only** - SW1 - 2 and SW4 - 2 OFF for Modulating SW1 - 2 ON and SW4 - 2 OFF for two-stage only operation	operation using single stage TSTAT, with two-stage TSTAT using minimum heat for low-stage.	OFF
3	**Min/Int Heat Rise Adjust** - Turn ON to increase Minimum-	or Intermediate-Heat blower and inducer speed by 15%.	OFF

89

23rd Step

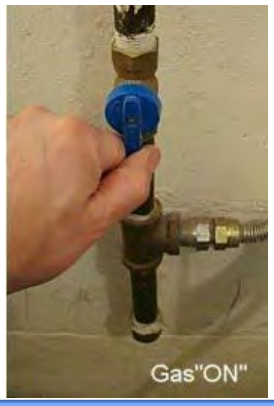
Reconnect the ABCD Communication Plug.



90

24th Step

Turn on gas. //// Turn furnace gas witch to ON position //// Plug in power



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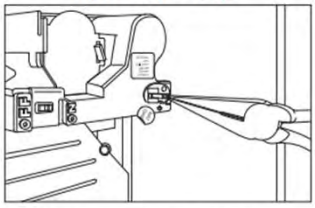
LP- Change Over

Fig. 14 – Propane Jumper



A11375

Fig. 15 – Installing Propane Jumper

NOTE: The Propane jumper for the modulating gas valve is very small. Needle-nose pliers are required to insert the jumper into the valve. If the jumper is not installed, the valve will not operate properly on propane.

1. Locate the round "NAT GAS" sticker on the top of the gas valve.
2. Peel the sticker off and discard.
3. Note the small square opening in the top of the gas valve.
4. Note the two jumper pins inside the modulating gas valve.
5. Remove the small black plastic propane jumper from the envelope.
6. Use needle-nosed pliers to hold the jumper by the tab on the end.
7. Insert the jumper on the pins inside the gas valve.
8. Cover the opening in the gas valve with the label marked "LP GAS"

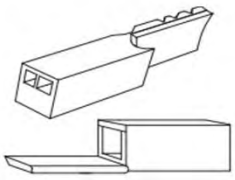
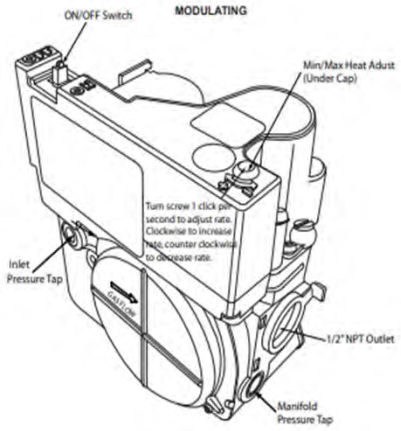


Fig. 14 – Propane Jumper



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59MN7

Infinity® 98 Gas Furnace With Greenspeed® Intelligence

Sigler Wholesale Distributors

CONVERSION KIT RATING PLATE

THIS APPLIANCE HAS BEEN CONVERTED TO USE PROPANE GAS FOR FUEL. REFER TO KIT INSTRUCTIONS FOR CONVERSION PROCEDURES. USE PARTS SUPPLIED BY MANUFACTURER AND INSTALLED BY QUALIFIED PERSONNEL.
SEE EXISTING RATING PLATE FOR APPLIANCE MODEL NO. AND INPUT RATING.

NOTE: Furnace gas input rate on rating plate is for installations up to 2000 ft. (610m) above sea level. In U.S.A. the input rating for altitudes above 2000 ft. (610m) must be derated by 2% for each 1000 ft. (305m) above sea level. In Canada the input rating must be derated by 5% for altitudes of 2000 ft. (610m) to 4500 ft. (1372m) above sea level.

KIT NO.: **AGAGC9NPS01B** (SUPERSEDES: KGBNP50011SP, KGANP51012SP, KGCNP5201VSP, NAHD00901LP, NAHB01001LP, AGAGC9NPS01A)

FUEL USED: PROPANE GAS
INLET PRESSURE (min - max): 12.0 - 13.6 in. wc

APPLIANCE MODELS Δ		ALTITUDE OF INSTALLATION (FT. ABOVE SEA LEVEL) U.S.A. *								
		0 to 2000	2001 * to 3000	3001 to 4000	4001 to 5000	5001 to 6000	6001 to 7000	7001 to 8000	8001 to 9000	9001 to 10000
59MN, 987M, (F/G)9MA, (F/G)97C	Orifice No.	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm	1.25mm
		Manifold Pressure								
	MAX	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
	INT	5.8	5.5	5.5	5.5	5.4	5.4	5.4	5.3	5.3
	MIN	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0

* For Canadian Installations from 2000 to 4500 ft. (610m to 1373m) use U.S.A. column 2001 to 3000 ft. (611m to 914m).
Δ THIS KIT IS FOR 40K THROUGH 140K INPUT MODELS ONLY

346161-206 REV.A

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Sigler Wholesale Distributors

Table 21 – Orifice Size and Manifold Pressure (In. W.C.) for Gas Input Rate

TWO-STAGE FURNACE

(TABULATED DATA BASED ON 20,000 BTUH HIGH-HEAT / 13,000 BTUH LOW-HEAT PER BURNER, DERATED 2%/1000 FT (305M) ABOVE SEA LEVEL)

ALTITUDE RANGE		AVG. GAS HEAT VALUE AT ALTITUDE	SPECIFIC GRAVITY OF NATURAL GAS							
			0.58		0.60		0.62		0.64	
	ft (m)	(Btu/cu ft)	Orifice No.	Mnfld Press High/Low	Orifice No.	Mnfld Press High/Low	Orifice No.	Mnfld Press High/Low	Orifice No.	Mnfld Press High/Low
U.S.A. and Canada	0 (0) to 2000 (610)	900	43	3.8 / 1.6	42	3.2 / 1.4	42	3.3 / 1.4	42	3.4 / 1.4
		925	43	3.6 / 1.5	43	3.7 / 1.6	43	3.8 / 1.6	42	3.2 / 1.4
		950	43	3.4 / 1.4	43	3.5 / 1.5	43	3.6 / 1.5	43	3.7 / 1.6
		975	**44**	**3.7 / 1.6**	**44**	**3.8 / 1.6**	43	3.4 / 1.5	43	3.6 / 1.5
		1000	**44**	**3.5 / 1.5**	**44**	**3.6 / 1.5**	**44**	**3.8 / 1.6**	43	3.4 / 1.4
		1025	**44**	**3.3 / 1.4**	**44**	**3.5 / 1.5**	**44**	**3.6 / 1.5**	**44**	**3.7 / 1.6**
		1050	**44**	**3.2 / 1.3**	**44**	**3.3 / 1.4**	**44**	**3.4 / 1.4**	**44**	**3.5 / 1.5**
		1075	45	3.7 / 1.6	45	3.8 / 1.6	**44**	**3.3 / 1.4**	**44**	**3.4 / 1.4**
		1100	46	3.7 / 1.6	46	3.8 / 1.6	45	3.8 / 1.6	**44**	**3.2 / 1.4**
U.S.A. and Canada	U.S.A. 2001 (611) to 3000 (914) Canada 2001 (611) to 4500 (1372)	800	42	3.4 / 1.4	42	3.5 / 1.5	42	3.6 / 1.5	42	3.7 / 1.6
		825	43	3.8 / 1.6	42	3.3 / 1.4	42	3.4 / 1.4	42	3.5 / 1.5
		850	43	3.6 / 1.5	43	3.7 / 1.6	42	3.2 / 1.3	42	3.3 / 1.4
		875	43	3.4 / 1.4	43	3.5 / 1.5	43	3.7 / 1.5	43	3.8 / 1.6
		900	**44**	**3.7 / 1.6**	**44**	**3.8 / 1.6**	43	3.5 / 1.5	43	3.6 / 1.5
		925	**44**	**3.5 / 1.5**	**44**	**3.6 / 1.5**	**44**	**3.8 / 1.6**	43	3.4 / 1.4
		950	**44**	**3.3 / 1.4**	**44**	**3.4 / 1.5**	**44**	**3.6 / 1.5**	**44**	**3.7 / 1.6**
		975	**44**	**3.2 / 1.3**	**44**	**3.3 / 1.4**	**44**	**3.4 / 1.4**	**44**	**3.5 / 1.5**
		1000	46	3.8 / 1.6	45	3.8 / 1.6	**44**	**3.2 / 1.4**	**44**	**3.3 / 1.4**

94

AGAGC9NPS01B Gas Conversion Kit, Natural to Propane
Condensing (90%+) Furnaces
40,000 BTUH to 140,000 BTUH Models Only

TWO-STAGE & MODULATING GAS VALVE

Condensing Furnaces with 40,000 through 120,000 Btuh gas input rate and a.) Modulating gas valve with Variable-Speed Constant Airflow ECM (VCA), b.) Two-Stage gas valve with Variable-Speed Constant Airflow ECM (VCA), or c.) Two-Stage gas valve with Variable-Speed Constant Torque ECM (VCT) blower motor.

Table 1 – Kit Contents

QUANTITY	DESCRIPTION
2	VALVE CVRSN KIT - W/R SPRING 92-0659
1	JUMPER PLUG
7	ORIFICE - 1.25mm
7	MIXER SCREW - CONDENSING FURNACES
1	CONNECTOR - BRASS 1/8" NPT X2"
1	CONNECTOR, SPLC - 3/16"
1	CONNECTOR - 1/4QC ME BOTH ENDS
1	ELBOW,STREET - 150# 1/8" NPT
1	ELBOW,STREET - BRASS 1/8" NPT
1	NIPPLE - HEX (BRASS)
1	SWITCH,PRESSURE
1	TEE - MALE BRANCH (BRASS)
1	TEE, STREET - MALE BRANCH (BRASS)
1	BIT, DRILL 7/64" CONDENSING
1	WIRE ASSY - ORANGE
1	WIRE ASSY - ORANGE
1	LABEL 346161-201 through 346161-205
1	INSTRUCTIONS

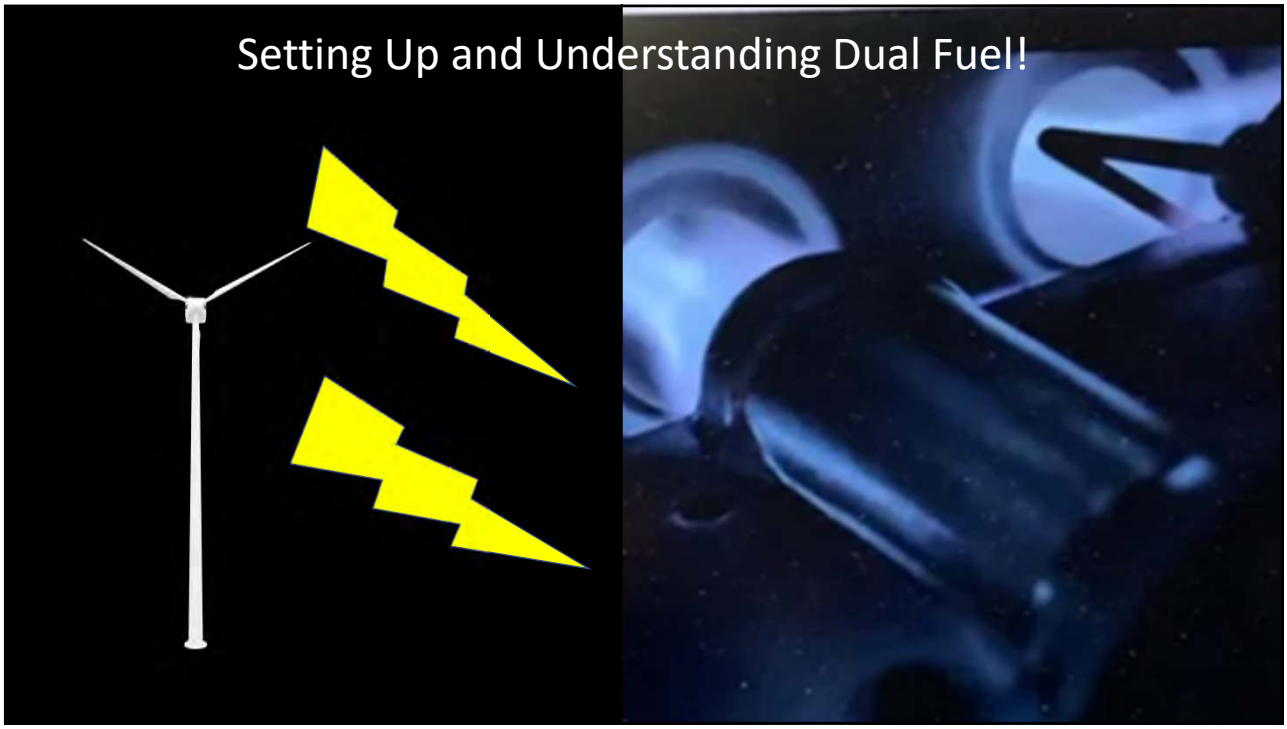
Table 3 – TWO-STAGE & MODULATING CONDENSING FURNACES

MODEL NUMBERS BEGINNING WITH:			
59MN	59T(N/P)	PG96V	PG95X
987M	988T	925T	926T
(F/G)97C	(F/G)9MA	(F/G)9MV	(F/G)96V
(F/G)9MXT		(F/G)96C	

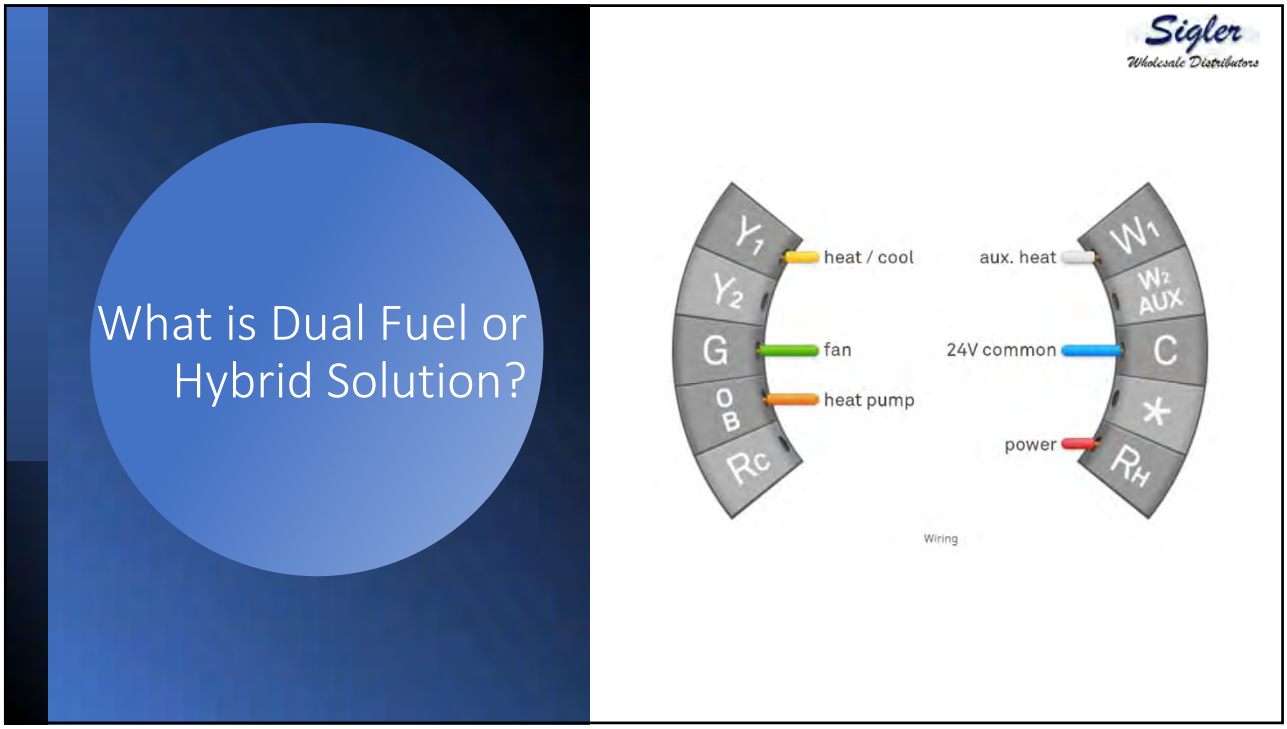
The 830C and 935C ULN furnace is not LP compatible

95

96


Setting Up and Understanding Dual Fuel!

97


What is Dual Fuel or Hybrid Solution?
Sigler
Wholesale Distributors
Y1
Y2
G
O B
Rc
heat / cool
fan
heat pump
W1
W2 AUX
C
*
RH
aux. heat
24V common
power
Wiring

98

- **What is a dual fuel heating system?**
- A dual fuel heating system is a hybrid system made-up of both an electric heat pump and a gas furnace. The system alternates between using each of the two devices, depending on the season, temperature and the function needed, to maximize efficiency and effectively heat and cool your home all year long

Dual fuel systems

As we mentioned earlier, dual fuel systems are a combination HVAC system with both a heat pump and a furnace. The dual fuel system uses the heat pump in hot or mild temperatures (about 40°F and higher) and the furnace in colder temperatures (about 39°F and below). It switches between the two depending on which is more efficient for the circumstances, which saves time and energy in getting your home to the desired temperature. Dual fuel systems are great for any type of climate and function year-round. Plus, because each piece only works when its optimal, dual fuel systems have a life expectancy between 20 and 25 years!

99

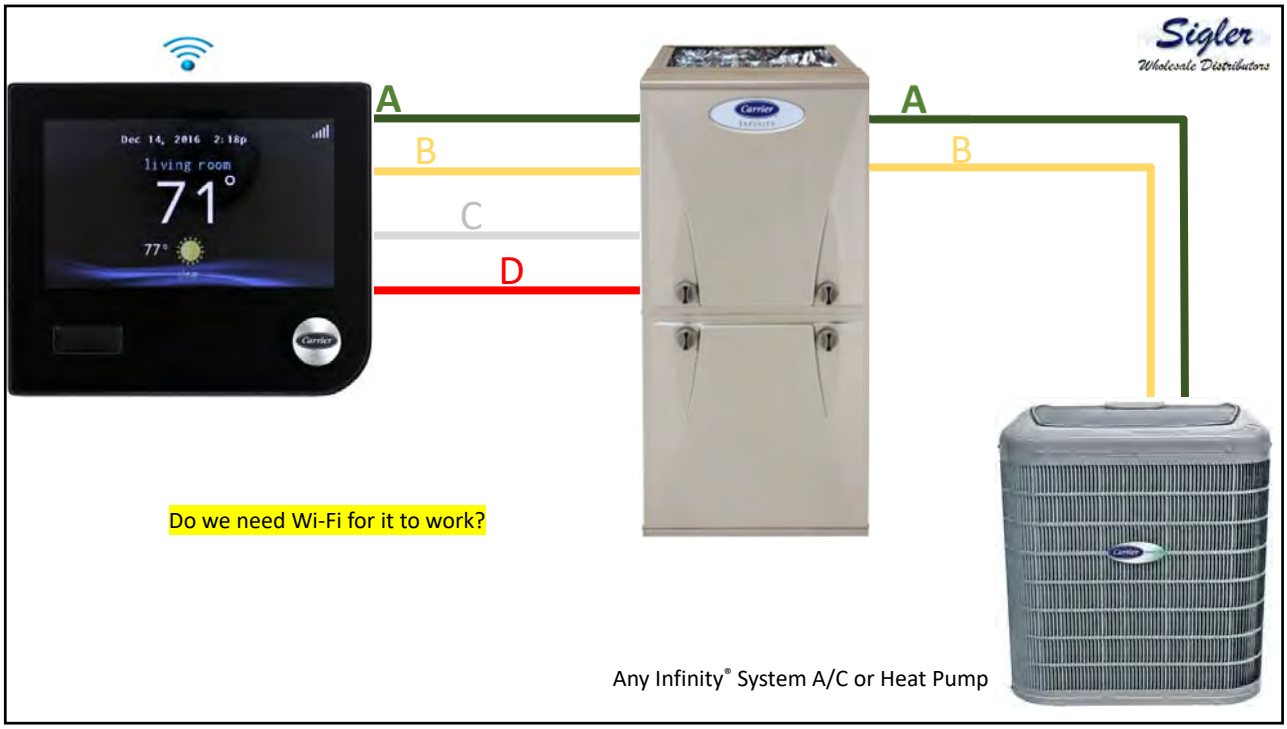
Requirement for Dual Fuel!

The thermostat must have an outdoor Thermistor

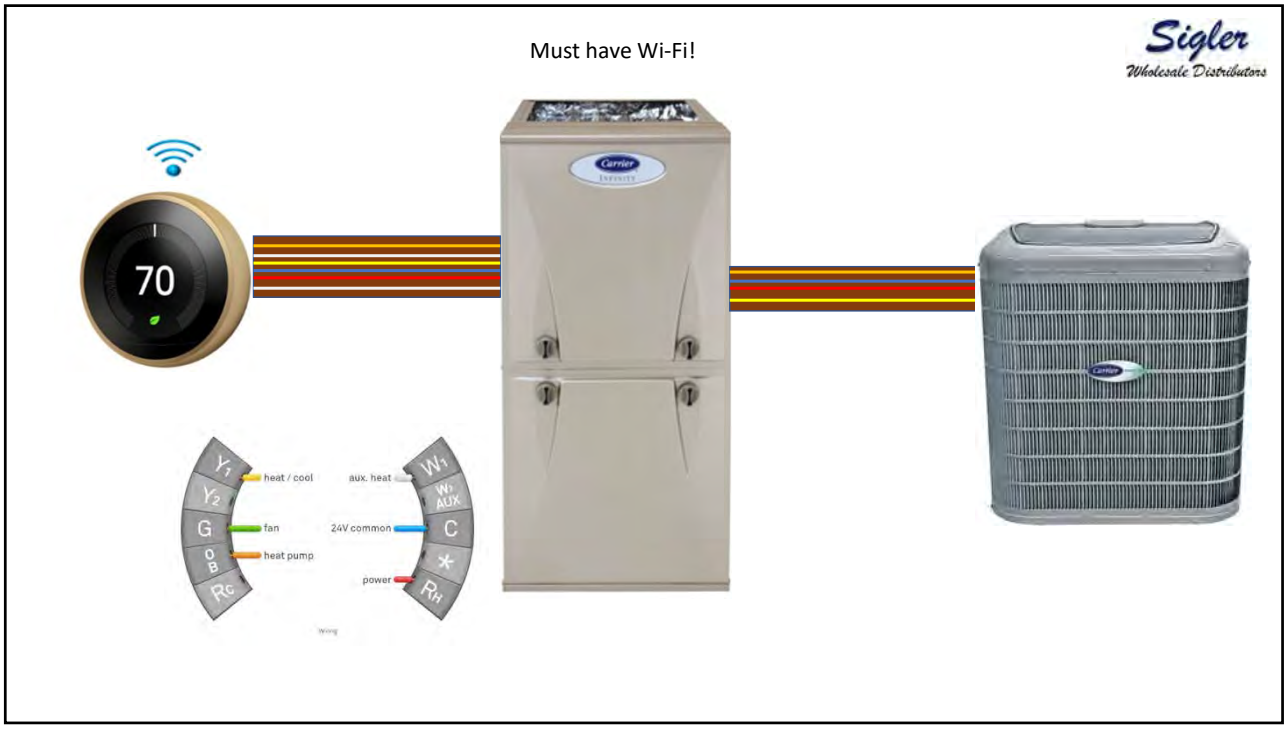
Or

A Smart THERMOSTAT THAT IS CONNECTED TO Wi-Fi

100


Sigler
Wholesale Distributors
A
B
C
D
A
B
Dec 14, 2016 2:18p
living room
71°
77°
Do we need Wi-Fi for it to work?
Any Infinity® System A/C or Heat Pump

101


Must have Wi-Fi!
Sigler
Wholesale Distributors
70
heat / cool
fan
heat pump
aux. heat
24V common
power

102

Must have Wi-Fi!

103

Non-Wi-Fi must have outdoor thermistor!

104

Compressor and Auxiliary Heat Lockout Temperatures for Heat Pumps Requires Wi-Fi

Both auxiliary and compressor lockout temperatures can be changed in the Heat Pump section of the Equipment menu.

The lockout temperatures are only enforced when the Nest Thermostat is connected to Wi-Fi so it can track outdoor temperatures. If Wi-Fi is not enabled, Auxiliary heat will come on automatically when it takes longer than expected to reach the current target temperature.

Search nest.com/support for **auxiliary heat** for more details.

105

Use a spare wire as common wire

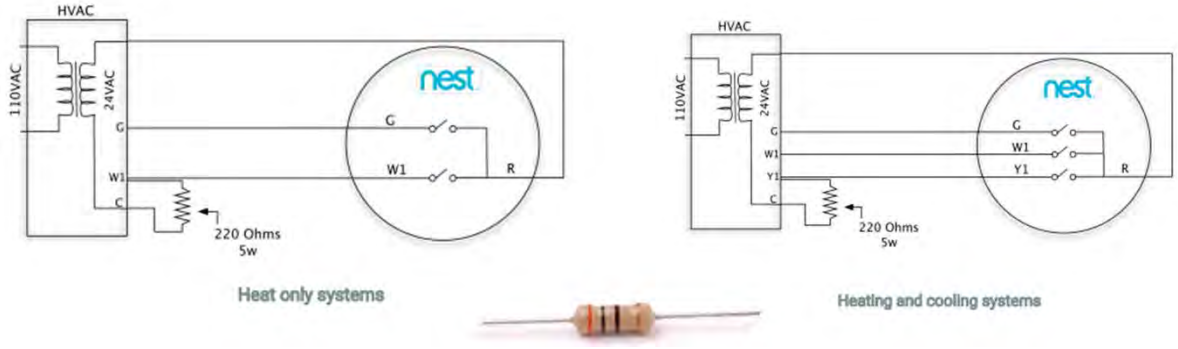
The easiest way to solve the problem is by using a spare wire in the thermostat wire as a common wire. Simply connect one end of the the unused wire to the Common ("C") terminal in the HVAC controller and the other end to the thermostat's C connector.

Add a resistor to an existing Y or W wire

We've found that many Y and W wire circuits that cannot supply enough power can be strengthened by bridging the Common terminal at the HVAC equipment to W or Y through a 220-ohm, 5W resistor.

106

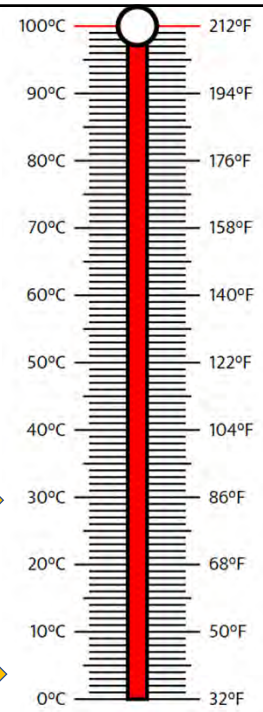
In a heat-only system, you need to bridge from common C to W. In a HVAC system with a Y wire, you must bridge from common C to Y.
(Nest can only charge from W when Y is not connected.)



107

Let's talk about latching.
What is latching?

Latching is a word that was created By Carrier:
Definition: Set points that equipment will switch from heat pump to gas heat.



Heat Pump/ A/C High stage COOLING Latch 86 deg.

Heat Pump/ High stage HEATING Latch 60 deg.

Heat Pump Drops Out Gas Furnace starts 45 deg.

108

Setting up blower speeds.

109

58SB0A045E14--12

58SB0A045E17--12
58SB0A070E14--12
58SB0A070E17--12
58SB0A070E17--16
58SB0A070E21--16
58SB0A090E17--14
58SB0A090E21--16
58SB0A090E21--20
58SB0A090E24--20
58SB0A110E21--20
58SB0A110E24--20
58SB0A135E24--20
58SB0A155E24--20
58SB1A045E14--12
58SB1A045E17--12

58SB1A070E17--16
58SB1A070E21--16
58SB1A090E17--14
58SB1A090E21--16
58SB1A090E21--20
58SB1A090E24--20
58SB1A110E21--20
58SB1A110E24--20
58SB1A135E24--20
58SB1A155E24--20

Sigler
Wholesale Distributors

58SB0A/58SB1A
80% AFUE, Single Stage, Multi-Speed ECM,
4-Way Multipoise, Non–Condensing Gas Furnace

Carrier
Turn to the experts

CARRIER	FER	PAYNE	FER	DESCRIPTION
		GAS FURNACES		
58STX	58SC1A	PG8JAA	PG8E	80% SINGLE stage PSC motor
58DLX	58SC1A			80% SINGLE stage PSC motor w/Insultated Cabinet
58PHY	58SC1A			80% SINGLE stage X13 motor SEER Boost
58CTY	58TP1A			80% Performance TWO stage PWM motor
58CVX	58TN1A			80% Infinity TWO stage Communicating ECM motor

110

58SB0A/58SB1A
80% AFUE, Single Stage, Multi-Speed ECM,
4-Way Multipoise, Non–Condensing Gas Furnace

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Table 5 – Air Delivery - CFM (With Filter)*

Furnace	Wire Lead Color	Function	Test Airflow Delivery @ Various External Static Pressures									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
045E14--12	Gray	Cooling. Do not use for heating.	1230	1190	1155	1120	1080	1045	1010	975	935	895
	Yellow	Alt Cooling or alt Heating	980	945	920	890	855	815	770	735	690	645
	Orange	Alt Cooling or alt Heating	770	720	685	640	600	560	520	475	430	385
	Blue	Heating or alt Cooling	710	660	620	580	540	490	455	415	375	335
	Red	Alt Cooling. Do not use for heating.	600	540	500	455	415	385	345	305	235	-
045E17--12	Gray	Cooling. Do not use for heating.	1370	1335	1295	1255	1215	1175	1135	1095	1055	1020
	Yellow	Alt Cooling or alt Heating	1130	1085	1040	995	955	910	865	825	780	730
	Orange	Alt Cooling or alt Heating	930	885	835	795	745	700	655	600	545	495
	Blue	Heating or alt Cooling	760	720	670	625	580	515	460	410	335	300
	Red	Alt Cooling. Do not use for heating.	610	500	445	375	320	260	200	135	-	-
070E14--12	Gray	Cooling. Do not use for heating.	1205	1170	1143	1105	1070	1035	1000	960	925	885
	Blue	Heating or alt Cooling	1095	1060	1030	995	960	925	885	840	800	735
	Yellow	Alt Cooling or alt Heating	920	880	845	805	765	730	685	620	560	510
	Orange	Alt Cooling. Do not use for heating.	715	650	610	575	520	465	410	380	305	245
	Red	Alt Cooling. Do not use for heating.	635	490	445	375	315	270	205	230	190	140
070E17--12	Gray	Cooling. Do not use for heating.	1185	1140	1095	1055	1005	960	915	865	820	780
	Yellow	Alt Cooling or alt Heating	1000	940	895	850	800	750	695	650	600	555
	Blue	Heating or alt Cooling	990	935	895	845	790	740	690	640	590	535
	Orange	Alt Cooling or alt Heating	855	775	720	660	605	560	495	435	385	335
	Red	Alt Cooling. Do not use for heating.	860	685	515	445	385	340	275	205	-	-
070E17--16	Gray	Cooling. Do not use for heating.	1650	1615	1580	1545	1515	1480	1445	1415	1380	1350
	Yellow	Alt Cooling. Do not use for heating	1405	1365	1325	1285	1250	1215	1175	1140	1100	1065
	Orange	Alt Cooling or alt Heating	1255	1215	1175	1130	1090	1090	1010	970	930	895
	Blue	Heating or alt Cooling	1185	1140	1095	1050	1005	1005	920	880	840	800
	Red	Alt Cooling. Do not use for heating.	1100	1050	1005	960	915	915	825	785	740	700
070E21--16	Gray	Cooling. Do not use for heating.	1735	1685	1640	1595	1545	1495	1450	1405	1360	1310
	Yellow	Alt Cooling or alt Heating	1480	1435	1395	1340	1790	1740	1190	1135	1085	1030
	Blue	Heating or alt Cooling	1315	1275	1225	1180	1135	1085	1030	975	915	860
	Orange	Alt Cooling or alt Heating	1135	1080	1030	985	935	885	835	770	705	645
	Red	Alt Cooling. Do not use for heating.	980	930	873	820	775	713	665	593	530	455
090E17--14	Gray	Cooling. Do not use for heating.	1353	1320	1283	1243	1210	1165	1125	1080	1023	815
	Yellow	Alt Cooling or alt Heating	1295	1255	1220	1185	1140	1100	1055	1005	955	815
	Blue	Heating or alt Cooling	1220	1185	1150	1105	1065	1025	975	915	840	740
	Orange	Alt Cooling or alt Heating	1030	985	940	900	845	790	715	655	590	535
	Red	Alt Cooling. Do not use for heating.	945	905	855	800	750	670	600	540	490	435
090E21--16	Gray	Cooling. Do not use for heating.	1625	1580	1535	1490	1445	1395	1340	1260	1135	995
	Yellow	Alt Cooling or alt Heating	1425	1380	1335	1290	1235	1185	1125	1075	1020	640
	Blue	Heating or alt Cooling	1440	1395	1350	1305	1255	1200	1145	1090	1040	950
	Orange	Alt Cooling or alt Heating	1760	1710	1660	1105	1050	990	935	880	870	755
	Red	Alt Cooling. Do not use for heating.	1095	1040	980	905	845	780	720	650	585	520
090E21--20	Gray	Cooling. Do not use for heating.	2180	2130	2080	2030	1980	1925	1870	1805	1745	1680
	Yellow	Alt Cooling or alt Heating	1900	1845	1795	1740	1685	1635	1570	1500	1435	1375
	Blue	Heating or alt Cooling	1685	1620	1565	1505	1455	1385	1320	1260	1200	1140
	Orange	Alt Cooling or alt Heating	1360	1315	1240	1175	1095	1030	970	900	825	760
	Red	Alt Cooling. Do not use for heating.	1240	1155	1075	990	915	835	765	690	615	555
090E24--20	Gray	Cooling. Do not use for heating.	2190	2135	2075	2015	1960	1900	1835	1775	1705	1630
	Yellow	Alt Cooling or alt Heating	1870	1810	1745	1685	1675	1565	1495	1470	1345	1780
	Blue	Heating or alt Cooling	1580	1510	1445	1385	1320	1240	1175	1115	1050	970
	Orange	Alt Cooling or alt Heating	1305	1220	1160	1075	1000	930	865	770	690	610
	Red	Alt Cooling. Do not use for heating.	1210	1075	1000	915	845	765	675	595	515	425
110E21--20	Gray	Cooling. Do not use for heating.	2355	2205	2150	2100	2040	1985	1920	1835	1735	1615
	Blue	Heating or alt Cooling	1945	1890	1830	1770	1715	1655	1600	1545	1480	1430
	Yellow	Alt Cooling or alt Heating	1600	1525	1465	1400	1335	1275	1210	1150	1080	1015
	Orange	Alt Cooling. Do not use for heating.	1420	1340	1280	1200	1140	1065	1005	925	865	790
	Red	Alt Cooling. Do not use for heating.	1280	1205	1140	1055	990	910	840	760	695	630
110F24--20	Gray	Cooling. Do not use for heating.	2250	2190	2130	2070	2005	1950	1885	1820	1755	1685
	Blue	Heating or alt Cooling	1995	1930	1865	1800	1740	1670	1605	1535	1465	1400
	Yellow	Alt Cooling or alt Heating	1540	1460	1385	1305	1235	1165	1095	1035	955	880
	Orange	Alt Cooling. Do not use for heating.	1345	1195	1135	1055	980	920	845	770	695	620
	Red	Alt Cooling. Do not use for heating.	1335	1075	965	890	820	735	660	580	505	440
135E24--20	Gray	Cooling. Do not use for heating.	2065	2005	1940	1875	1810	1740	1670	1600	1530	1470
	Blue	Heating or alt Cooling	1825	1760	1695	1630	1560	1490	1420	1350	1275	1205
	Yellow	Alt Cooling or alt Heating	1760	1690	1625	1555	1485	1415	1345	1275	1200	1130
	Orange	Alt Cooling. Do not use for heating.	1620	1550	1480	1405	1335	1260	1195	1130	1065	995
	Red	Alt Cooling. Do not use for heating.	1325	1260	1185	1100	1025	955	885	805	735	670
135E24--20	Gray	Cooling. Do not use for heating.	2205	2130	2090	2030	1963	1905	1840	1780	1710	1645
	Blue	Heating or alt Cooling	2055	1995	1935	1875	1810	1750	1690	1615	1540	1460
	Yellow	Alt Cooling or alt Heating	1860	1795	1730	1670	1605	1540	1470	1395	1320	1230
	Orange	Alt Cooling. Do not use for heating.	1495	1430	1355	1285	1210	1130	1065	995	930	850
	Red	Alt Cooling. Do not use for heating.	1295	1085	1000	910	835	765	670	600	530	465

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58SB0A/58SB1A
80% AFUE, Single Stage, Multi-Speed ECM,
4-Way Multipoise, Non–Condensing Gas Furnace

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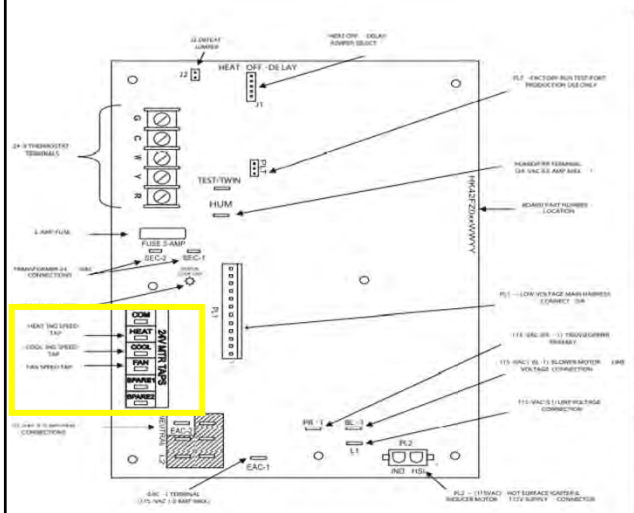

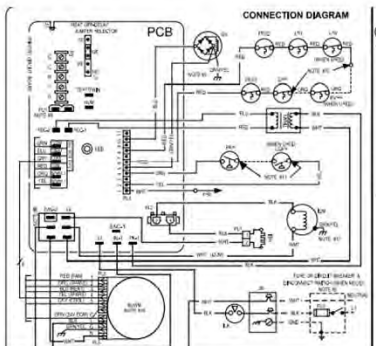

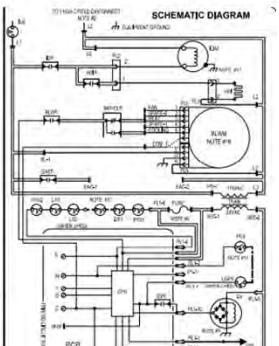

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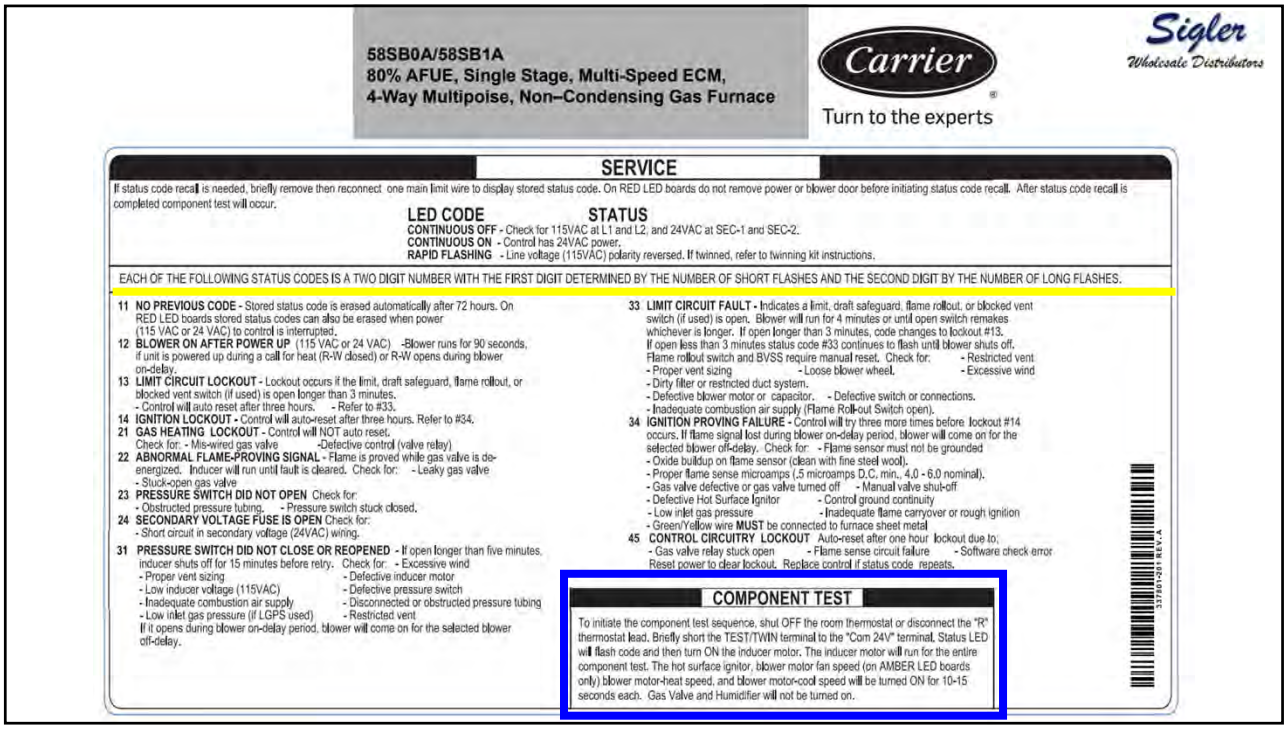

58SB0A/58SB1A
80% AFUE, Single Stage, Multi-Speed ECM,
4-Way Multipoise, Non–Condensing Gas Furnace

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SERVICE

If status code recall is needed, briefly remove then reconnect one main limit wire to display stored status code. On RED LED boards do not remove power or blower door before initiating status code recall. After status code recall is completed component test will occur.

LED CODE **STATUS**
CONTINUOUS OFF - Check for 115VAC at L1 and L2, and 24VAC at SEC-1 and SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed. If twinned, refer to twinning kit instructions.

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 NO PREVIOUS CODE - Stored status code is erased automatically after 72 hours. On RED LED boards stored status codes can also be erased when power (115 VAC or 24 VAC) to control is interrupted.
12 BLOWER ON AFTER POWER UP (115 VAC or 24 VAC) -Blower runs for 90 seconds, if unit is powered up during a call for heat (R-W closed) or R-W opens during blower on-delay.
13 LIMIT CIRCUIT LOCKOUT - Lockout occurs if the limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open longer than 3 minutes.
- Control will auto reset after three hours. - Refer to #33.
14 IGNITION LOCKOUT - Control will auto-reset after three hours. Refer to #34.
21 GAS HEATING LOCKOUT - Control will NOT auto reset.
Check for: - Mis-wired gas valve -Defective control (valve relay)
22 ABNORMAL FLAME-PROVING SIGNAL - Flame is proved while gas valve is de-energized. Inducer will run until fault is cleared. Check for: - Leaky gas valve
- Stuck-open gas valve
23 PRESSURE SWITCH DID NOT OPEN Check for:
- Obstructed pressure tubing. - Pressure switch stuck closed.
24 SECONDARY VOLTAGE FUSE IS OPEN Check for:
- Short circuit in secondary voltage (24VAC) wiring.
31 PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If open longer than five minutes, inducer shuts off for 15 minutes before retry. Check for: - Excessive wind
- Proper vent sizing - Defective inducer motor
- Low inducer voltage (115VAC) - Defective pressure switch
- Inadequate combustion air supply - Disconnected or obstructed pressure tubing
- Low inlet gas pressure (if LGPS used) - Restricted vent
If it opens during blower on-delay period, blower will come on for the selected blower off-delay.
33 LIMIT CIRCUIT FAULT - Indicates a limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open. Blower will run for 4 minutes or until open switch remakes whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch and BVSS require manual reset. Check for: - Restricted vent
- Proper vent sizing - Loose blower wheel. - Excessive wind
- Dirty filter or restricted duct system.
- Defective blower motor or capacitor. - Defective switch or connections.
- Inadequate combustion air supply (Flame Roll-out Switch open).
34 IGNITION PROVING FAILURE - Control will try three more times before lockout #14 occurs. If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay. Check for: - Flame sensor must not be grounded
- Oxide buildup on flame sensor (clean with fine steel wool).
- Proper flame sense microamps (.5 microamps D.C. min., 4.0 - 6.0 nominal).
- Gas valve defective or gas valve turned off - Manual valve shut-off
- Defective Hot Surface Ignitor - Control ground continuity
- Low inlet gas pressure - Inadequate flame carryover or rough ignition
- Green/Yellow wire **MUST** be connected to furnace sheet metal
45 CONTROL CIRCUITRY LOCKOUT Auto-reset after one hour lockout due to:
- Gas valve relay stuck open - Flame sense circuit failure - Software check error
Reset power to clear lockout. Replace control if status code repeats.

COMPONENT TEST

To initiate the component test sequence, shut OFF the room thermostat or disconnect the "R" thermostat lead. Briefly short the TEST/TWIN terminal to the "Com 24V" terminal. Status LED will flash code and then turn ON the inducer motor. The inducer motor will run for the entire component test. The hot surface ignitor, blower motor fan speed (on AMBER LED boards only) blower motor-heat speed, and blower motor-cool speed will be turned ON for 10-15 seconds each. Gas Valve and Humidifier will not be turned on.

337801-201 REV. A

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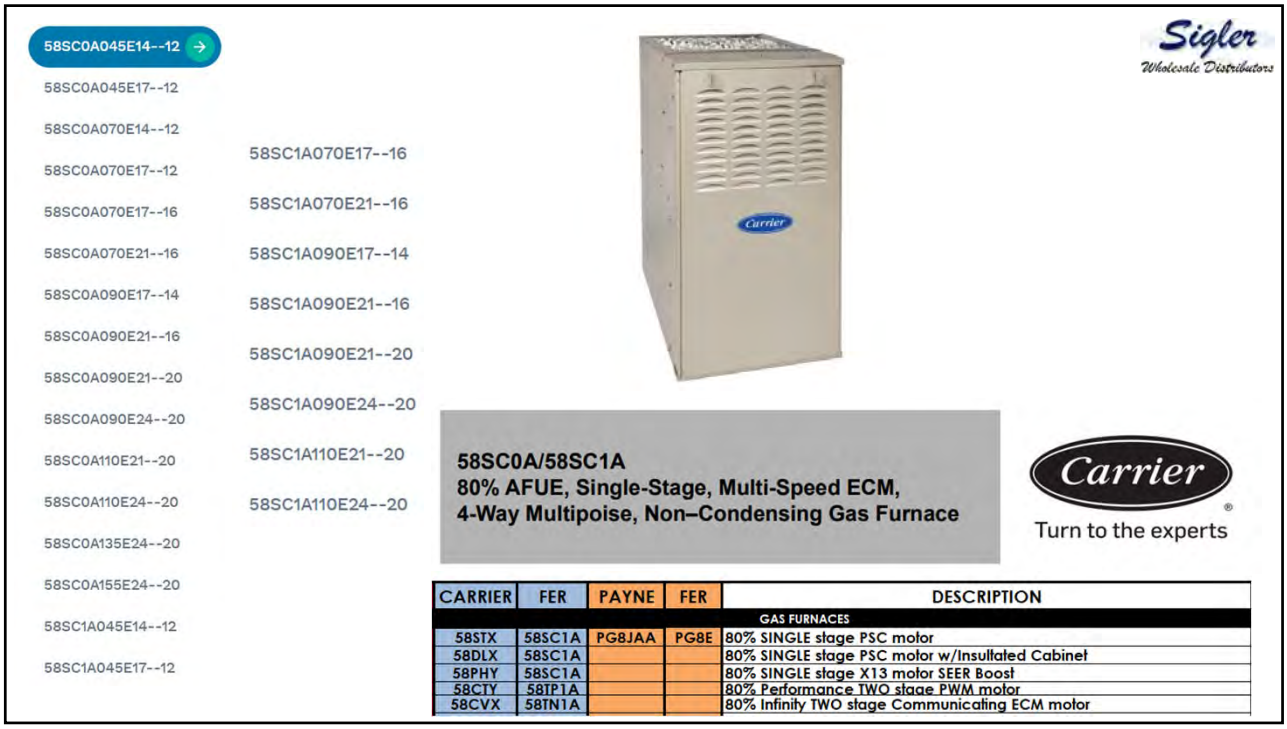

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58SC0A070E14--12
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58SC0A070E21--16
58SC0A090E17--14
58SC0A090E21--16
58SC0A090E21--20
58SC0A090E24--20
58SC0A110E21--20
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58SC0A135E24--20
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58SC1A045E14--12
58SC1A045E17--12

58SC1A070E17--16
58SC1A070E21--16
58SC1A090E17--14
58SC1A090E21--16
58SC1A090E21--20
58SC1A090E24--20
58SC1A110E21--20
58SC1A110E24--20

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58SC0A/58SC1A
80% AFUE, Single-Stage, Multi-Speed ECM,
4-Way Multipoise, Non–Condensing Gas Furnace

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CARRIER	FER	PAYNE	FER	DESCRIPTION
				GAS FURNACES
58STX	58SC1A	PG8JAA	PG8E	80% SINGLE stage PSC motor
58DLX	58SC1A			80% SINGLE stage PSC motor w/Insultated Cabinet
58PHY	58SC1A			80% SINGLE stage X13 motor SEER Boost
58CTY	58TP1A			80% Performance TWO stage PWM motor
58CVX	58TN1A			80% Infinity TWO stage Communicating ECM motor

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58SC0A/58SC1A
80% AFUE, Single-Stage, Multi-Speed ECM, 4-Way Multipoise, Non–Condensing Gas Furnace

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Table 5 – Air Delivery - CFM (With Filter)*

Furnace	Wire Lead Color	Function	Test Airflow Delivery @ Various External Static Pressures									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
045E14--12	Gray	Cooling. Do not use for heating.	1230	1190	1155	1120	1080	1045	1010	975	935	895
	Yellow	Alt Cooling or alt Heating	980	945	920	890	855	815	770	735	690	645
	Orange	Alt Cooling or alt Heating	770	720	685	640	600	560	520	475	430	385
	Blue	Heating or alt Cooling	710	660	620	580	540	490	455	415	375	335
	Red	Alt Cooling. Do not use for heating.	600	540	500	455	415	385	345	305	235	-
045E17--12	Gray	Cooling. Do not use for heating.	1370	1335	1295	1255	1215	1175	1135	1095	1055	1020
	Yellow	Alt Cooling or alt Heating	1130	1085	1040	995	955	910	865	825	780	730
	Orange	Alt Cooling or alt Heating	930	885	835	795	745	700	655	600	545	495
	Blue	Heating or alt Cooling	760	720	670	625	580	515	460	410	355	300
	Red	Alt Cooling. Do not use for heating.	610	560	445	375	320	260	200	135	-	-
070E14--12	Gray	Cooling. Do not use for heating.	1205	1170	1143	1105	1070	1035	1000	960	925	885
	Blue	Heating or alt Cooling	1095	1060	1030	995	960	925	885	840	800	735
	Yellow	Alt Cooling or alt Heating	920	880	845	805	765	730	685	620	560	510
	Orange	Alt Cooling. Do not use for heating.	715	650	610	575	520	465	410	380	305	245
	Red	Alt Cooling. Do not use for heating.	635	490	445	375	315	270	205	230	190	140
070E17--12	Gray	Cooling. Do not use for heating.	1185	1140	1095	1055	1005	960	915	865	820	780
	Yellow	Alt Cooling or alt Heating	1000	940	895	850	800	750	695	650	600	555
	Blue	Heating or alt Cooling	990	935	895	845	790	740	690	640	590	535
	Orange	Alt Cooling or alt Heating	855	775	720	660	605	560	495	435	385	335
	Red	Alt Cooling. Do not use for heating.	860	685	515	445	385	340	275	205	-	-
070E17--16	Gray	Cooling. Do not use for heating.	1650	1615	1580	1545	1515	1480	1445	1415	1380	1350
	Yellow	Alt Cooling. Do not use for heating	1405	1365	1325	1285	1250	1215	1175	1140	1100	1065
	Orange	Alt Cooling or alt Heating	1255	1215	1175	1130	1090	1090	1010	970	930	895
	Blue	Heating or alt Cooling	1185	1140	1095	1050	1005	1005	920	880	840	800
	Red	Alt Cooling. Do not use for heating.	1100	1050	1005	960	915	915	825	785	740	700
070E21--16	Gray	Cooling. Do not use for heating.	1735	1685	1640	1595	1545	1495	1450	1405	1360	1310
	Yellow	Alt Cooling or alt Heating	1480	1435	1395	1340	1290	1240	1190	1135	1085	1030
	Blue	Heating or alt Cooling	1315	1275	1225	1180	1135	1085	1030	975	915	860
	Orange	Alt Cooling or alt Heating	1135	1080	1030	985	935	885	835	770	705	645
	Red	Alt Cooling. Do not use for heating.	980	930	875	820	775	715	665	595	530	455
090E17--14	Gray	Cooling. Do not use for heating.	1355	1320	1285	1245	1210	1165	1125	1080	1025	815
	Yellow	Alt Cooling or alt Heating	1295	1255	1220	1185	1140	1100	1055	1005	955	815
	Blue	Heating or alt Cooling	1220	1185	1150	1105	1065	1025	975	915	840	740
	Orange	Alt Cooling or alt Heating	1030	985	940	900	845	790	715	655	590	535
	Red	Alt Cooling. Do not use for heating.	945	905	855	800	750	670	600	540	490	435
090E21--16	Gray	Cooling. Do not use for heating.	1625	1580	1535	1490	1445	1395	1340	1260	1135	995
	Yellow	Alt Cooling or alt Heating	1425	1380	1335	1290	1235	1185	1125	1075	1020	640
	Blue	Heating or alt Cooling	1440	1395	1350	1305	1255	1200	1145	1090	1040	950
	Orange	Alt Cooling or alt Heating	1260	1210	1160	1105	1050	990	935	880	820	755
	Red	Alt Cooling. Do not use for heating.	1095	1040	980	905	845	780	720	650	585	520
090E21--20	Gray	Cooling. Do not use for heating.	2180	2130	2080	2030	1980	1925	1870	1805	1745	1680
	Yellow	Alt Cooling or alt Heating	1900	1845	1795	1740	1685	1635	1570	1500	1435	1375
	Blue	Heating or alt Cooling	1685	1620	1565	1505	1455	1385	1320	1260	1200	1140
	Orange	Alt Cooling or alt Heating	1390	1315	1240	1175	1095	1030	970	900	825	760
	Red	Alt Cooling. Do not use for heating.	1240	1155	1075	990	915	835	765	690	615	555
090E24--20	Gray	Cooling. Do not use for heating.	2190	2135	2075	2015	1960	1900	1835	1775	1705	1630
	Yellow	Alt Cooling or alt Heating	1870	1810	1745	1685	1625	1565	1495	1420	1345	1280
	Blue	Heating or alt Cooling	1580	1510	1445	1385	1320	1240	1175	1115	1050	970
	Orange	Alt Cooling or alt Heating	1305	1220	1160	1075	1000	930	865	770	690	610
	Red	Alt Cooling. Do not use for heating.	1210	1075	1000	915	845	765	675	595	515	425
110E21--20	Gray	Cooling. Do not use for heating.	2255	2205	2150	2100	2040	1985	1920	1835	1735	1615
	Blue	Heating or alt Cooling	1945	1890	1830	1770	1715	1655	1600	1545	1480	1430
	Yellow	Alt Cooling or alt Heating	1600	1525	1465	1400	1335	1275	1210	1150	1080	1015
	Orange	Alt Cooling. Do not use for heating.	1420	1340	1280	1200	1140	1065	1005	925	865	790
	Red	Alt Cooling. Do not use for heating.	1280	1205	1140	1055	990	910	840	760	695	630
110E24--20	Gray	Cooling. Do not use for heating.	2250	2190	2130	2070	2005	1950	1885	1820	1755	1685
	Blue	Heating or alt Cooling	1995	1930	1865	1800	1740	1670	1605	1535	1465	1400
	Yellow	Alt Cooling or alt Heating	1540	1460	1385	1305	1235	1165	1095	1035	955	890
	Orange	Alt Cooling. Do not use for heating.	1345	1195	1135	1055	980	920	845	770	695	620
	Red	Alt Cooling. Do not use for heating.	1335	1075	965	890	820	735	660	580	505	440
135E24--20	Gray	Cooling. Do not use for heating.	2065	2005	1940	1875	1810	1740	1670	1600	1530	1470
	Blue	Heating or alt Cooling	1825	1760	1695	1630	1560	1490	1420	1350	1275	1205
	Yellow	Alt Cooling or alt Heating	1760	1690	1625	1555	1485	1415	1345	1275	1200	1130
	Orange	Alt Cooling. Do not use for heating.	1620	1550	1460	1405	1335	1260	1195	1130	1065	995
	Red	Alt Cooling. Do not use for heating.	1325	1260	1185	1100	1025	955	885	805	735	670

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58SC0A/58SC1A
80% AFUE, Single-Stage, Multi-Speed ECM, 4-Way Multipoise, Non–Condensing Gas Furnace

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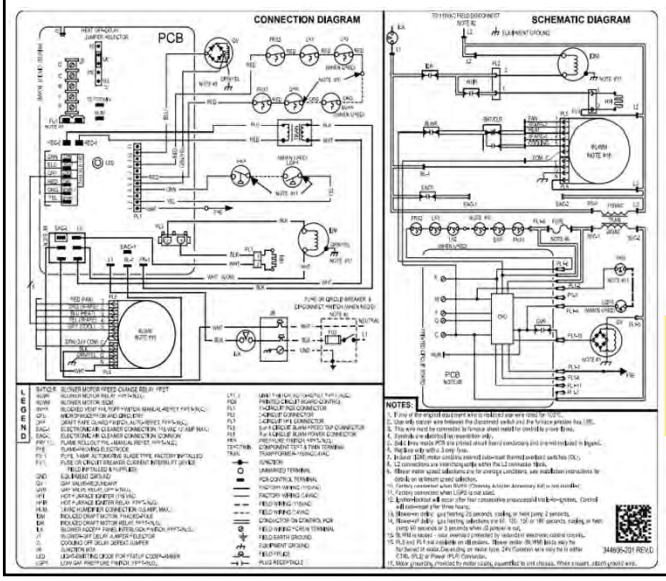

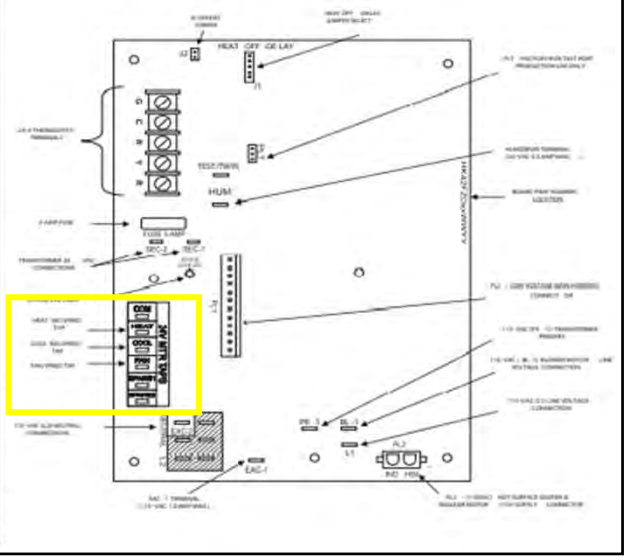

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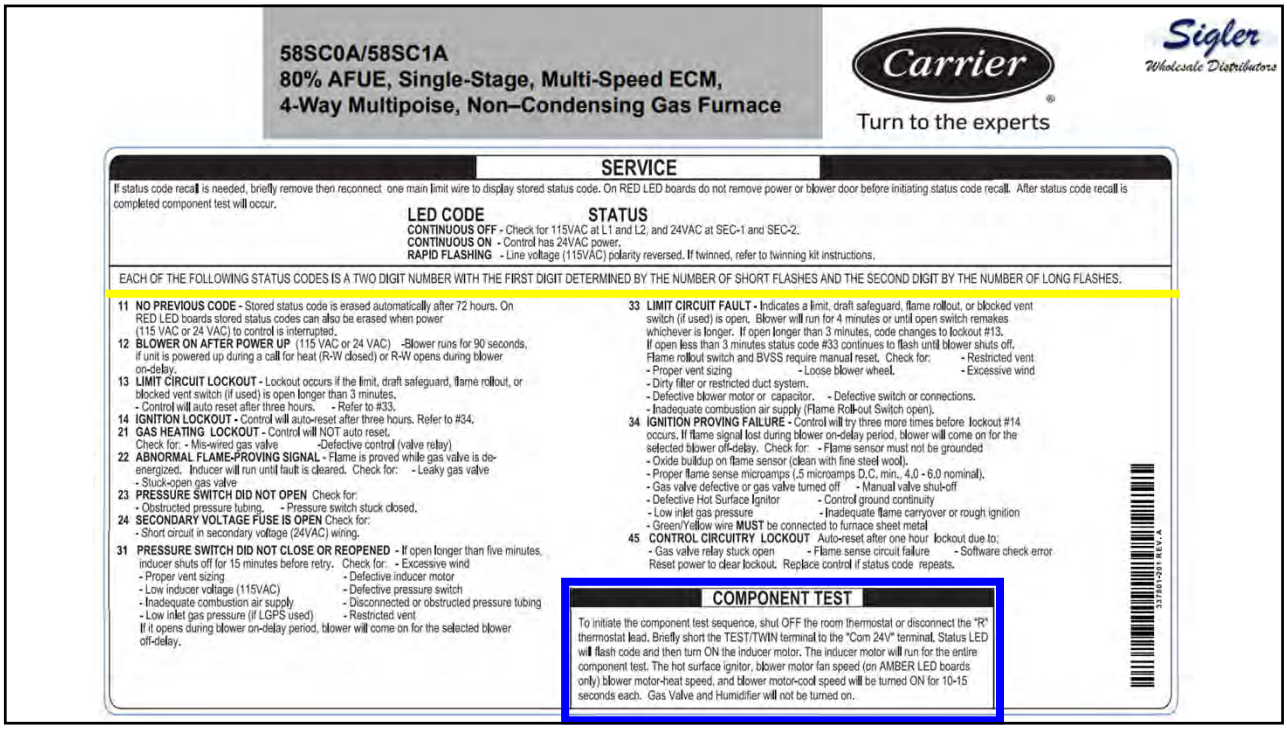

58SC0A/58SC1A
80% AFUE, Single-Stage, Multi-Speed ECM,
4-Way Multipoise, Non–Condensing Gas Furnace

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SERVICE

If status code recall is needed, briefly remove then reconnect one main limit wire to display stored status code. On RED LED boards do not remove power or blower door before initiating status code recall. After status code recall is completed component test will occur.

LED CODE **STATUS**
CONTINUOUS OFF - Check for 115VAC at L1 and L2, and 24VAC at SEC-1 and SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed. If twinned, refer to twinning kit instructions.

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 NO PREVIOUS CODE - Stored status code is erased automatically after 72 hours. On RED LED boards stored status codes can also be erased when power (115 VAC or 24 VAC) to control is interrupted.
12 BLOWER ON AFTER POWER UP (115 VAC or 24 VAC) -Blower runs for 90 seconds, if unit is powered up during a call for heat (R-W closed) or R-W opens during blower on-delay.
13 LIMIT CIRCUIT LOCKOUT - Lockout occurs if the limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open longer than 3 minutes.
- Control will auto reset after three hours. - Refer to #33.
14 IGNITION LOCKOUT - Control will auto-reset after three hours. Refer to #34.
21 GAS HEATING LOCKOUT - Control will NOT auto reset.
Check for: - Mis-wired gas valve -Defective control (valve relay)
22 ABNORMAL FLAME-PROVING SIGNAL - Flame is proved while gas valve is de-energized. Inducer will run until fault is cleared. Check for: - Leaky gas valve
- Stuck-open gas valve
23 PRESSURE SWITCH DID NOT OPEN Check for:
- Obstructed pressure tubing. - Pressure switch stuck closed.
24 SECONDARY VOLTAGE FUSE IS OPEN Check for:
- Short circuit in secondary voltage (24VAC) wiring.
31 PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If open longer than five minutes, inducer shuts off for 15 minutes before retry. Check for: - Excessive wind
- Proper vent sizing - Defective inducer motor
- Low inducer voltage (115VAC) - Defective pressure switch
- Inadequate combustion air supply - Disconnected or obstructed pressure tubing
- Low inlet gas pressure (if LGPS used) - Restricted vent
If it opens during blower on-delay period, blower will come on for the selected blower off-delay.
33 LIMIT CIRCUIT FAULT - Indicates a limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open. Blower will run for 4 minutes or until open switch remakes whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch and BVSS require manual reset. Check for: - Restricted vent
- Proper vent sizing - Loose blower wheel. - Excessive wind
- Dirty filter or restricted duct system.
- Defective blower motor or capacitor. - Defective switch or connections.
- Inadequate combustion air supply (Flame Roll-out Switch open).
34 IGNITION PROVING FAILURE - Control will try three more times before lockout #14 occurs. If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay. Check for: - Flame sensor must not be grounded
- Oxide buildup on flame sensor (clean with fine steel wool).
- Proper flame sense microamps (.5 microamps D.C. min., 4.0 - 6.0 nominal).
- Gas valve defective or gas valve turned off - Manual valve shut-off
- Defective Hot Surface Ignitor - Control ground continuity
- Low inlet gas pressure - Inadequate flame carryover or rough ignition
- Green/Yellow wire **MUST** be connected to furnace sheet metal
45 CONTROL CIRCUITRY LOCKOUT Auto-reset after one hour lockout due to:
- Gas valve relay stuck open - Flame sense circuit failure - Software check error
Reset power to clear lockout. Replace control if status code repeats.

COMPONENT TEST

To initiate the component test sequence, shut OFF the room thermostat or disconnect the "R" thermostat lead. Briefly short the TEST/TWIN terminal to the "Com 24V" terminal. Status LED will flash code and then turn ON the inducer motor. The inducer motor will run for the entire component test. The hot surface ignitor, blower motor fan speed (on AMBER LED boards only) blower motor-heat speed, and blower motor-cool speed will be turned ON for 10-15 seconds each. Gas Valve and Humidifier will not be turned on.

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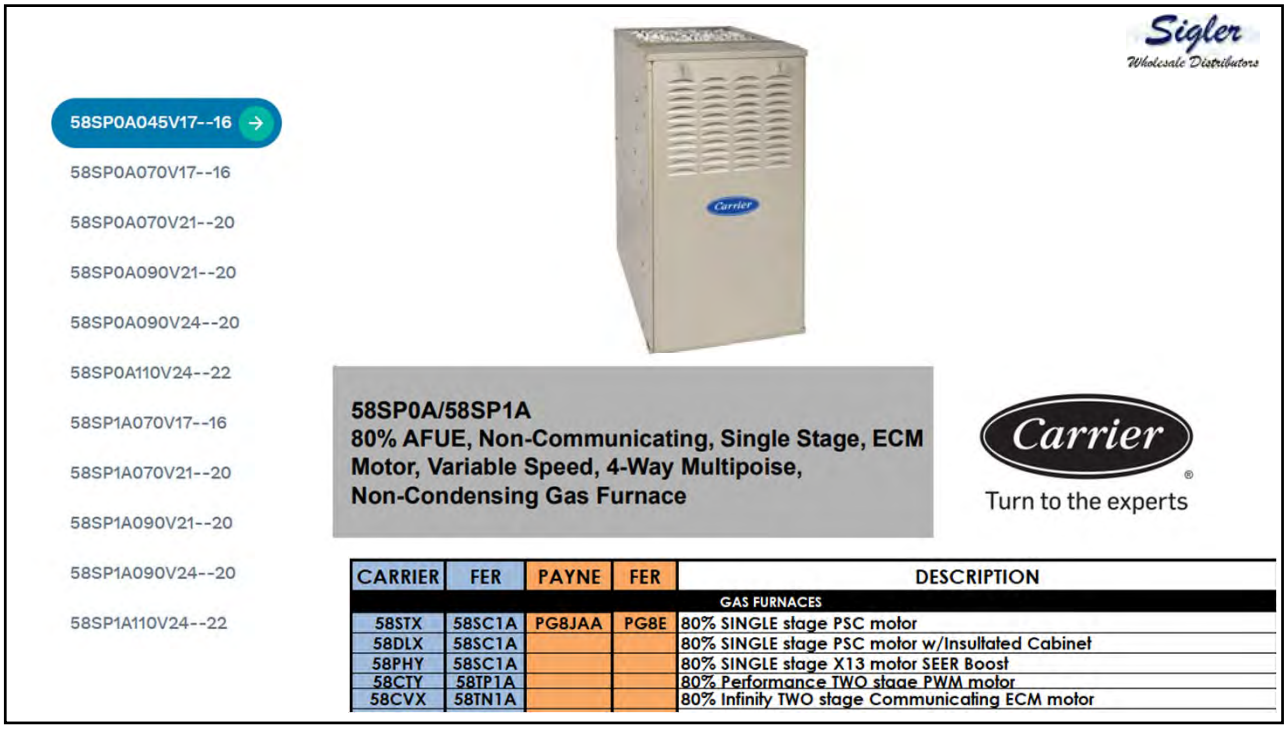

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- 58SP0A045V17--16
- 58SP0A070V17--16
- 58SP0A070V21--20
- 58SP0A090V21--20
- 58SP0A090V24--20
- 58SP0A110V24--22
- 58SP1A070V17--16
- 58SP1A070V21--20
- 58SP1A090V21--20
- 58SP1A090V24--20
- 58SP1A110V24--22

58SP0A/58SP1A
80% AFUE, Non-Communicating, Single Stage, ECM Motor, Variable Speed, 4-Way Multipoise, Non-Condensing Gas Furnace

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CARRIER	FER	PAYNE	FER	DESCRIPTION
		GAS FURNACES		
58STX	58SC1A	PG8JAA	PG8E	80% SINGLE stage PSC motor
58DLX	58SC1A			80% SINGLE stage PSC motor w/Insultated Cabinet
58PHY	58SC1A			80% SINGLE stage X13 motor SEER Boost
58CTY	58TP1A			80% Performance TWO stage PWM motor
58CVX	58TN1A			80% Infinity TWO stage Communicating ECM motor

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58SP0A/58SP1A
80% AFUE, Non-Communicating, Single Stage, ECM Motor, Variable Speed, 4-Way Multipoise, Non-Condensing Gas Furnace

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COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] with Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)												
Unit Size: 045V14--12	**Clg/CF Switch settings**			**External Static Pressure (ESP)**								
Clg Switches:	**SW2-8**	**SW2-7**	**SW2-6**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1175	1140	1105	1075	1040	1015	980	945	910	875
Cooling (SW2-8,7,6)	OFF	OFF	ON	610	560	500	440	380	See Note 4				
	OFF	ON	OFF	805	760	720	670	625	575	530	485	See Note 4	
	OFF	ON	ON	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	OFF	1175	1140	1105	1075	1040	1015	980	945	910	875
	ON	OFF	ON	1345	1310	1280	1250	1220	1190	1165	1140	1095	1015
	ON	ON	OFF	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
	ON	ON	ON	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
	Maximum Clg Airflow[2]			1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
CF Switches	**SW2-5**	**SW2-4**	**SW2-3**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Low-Clg Default:	OFF	OFF	OFF	610	560	500	440	380	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	610	560	500	440	380	See Note 4				
	OFF	ON	OFF	805	760	720	670	625	575	530	485	See Note 4	
	OFF	ON	ON	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	OFF	1175	1140	1105	1075	1040	1015	980	945	910	875
	ON	OFF	ON	1345	1310	1280	1250	1220	1190	1165	1140	1095	1015
	ON	ON	OFF	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
	ON	ON	ON	1480	1435	1395	1350	1310	1265	1220	1185	1115	1015
Cont. Fan Default:	OFF	OFF	OFF	610	560	500	440	380	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	610	560	500	440	380	See Note 4				
	OFF	ON	OFF	805	760	720	670	625	575	530	485	See Note 4	
	OFF	ON	ON	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	OFF	1010	970	930	895	860	825	785	745	705	665
	ON	OFF	ON	1010	970	930	895	860	825	785	745	705	665
	ON	ON	OFF	1010	970	930	895	860	825	785	745	705	665
	ON	ON	ON	1010	970	930	895	860	825	785	745	705	665
Heating (SW1)	Heat Airflow[3]			870	825	785	745	700	655	615	570	530	480

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58SP0A/58SP1A: Installation, Start–Up, Operating and Service and Maintenance Instructions

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Table 13 – Air Delivery - CFM (With Filter)* (Continued)

COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] with Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)												
Unit Size: 045V17--16	**Clg/CF Switch settings**			**External Static Pressure (ESP)**								
Clg Switches:	**SW2-8**	**SW2-7**	**SW2-6**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
Cooling (SW2-8,7,6)	OFF	OFF	ON	655	590	530	465	390	335	See Note 4			
	OFF	ON	OFF	825	770	715	665	615	560	495	445	395	350
	OFF	ON	ON	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	OFF	1200	1160	1125	1085	1050	1010	975	935	900	860
	ON	OFF	ON	1385	1350	1320	1285	1250	1215	1180	1145	1110	1030
	ON	ON	OFF	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
	ON	ON	ON	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
	Maximum Clg Airflow[2]			1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
CF Switches	**SW2-5**	**SW2-4**	**SW2-3**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Low-Clg Default:	OFF	OFF	OFF	655	590	530	465	390	335	See Note 4			
Low Cooling (SW2-5,4,3)	OFF	OFF	ON	655	590	530	465	390	335	See Note 4			
	OFF	ON	OFF	825	770	715	665	615	560	495	445	395	350
	OFF	ON	ON	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	OFF	1200	1160	1125	1085	1050	1010	975	935	900	860
	ON	OFF	ON	1385	1350	1320	1285	1250	1215	1180	1145	1110	1030
	ON	ON	OFF	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
	ON	ON	ON	1525	1490	1445	1400	1350	1300	1250	1200	1140	1035
Cont. Fan Default:	OFF	OFF	OFF	655	590	530	465	390	335	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	655	590	530	465	390	335	See Note 4			
	OFF	ON	OFF	825	770	715	665	615	560	495	445	395	350
	OFF	ON	ON	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	OFF	1025	980	940	895	850	810	765	725	680	630
	ON	OFF	ON	1025	980	940	895	850	810	765	725	680	630
	ON	ON	OFF	1025	980	940	895	850	810	765	725	680	630
	ON	ON	ON	1025	980	940	895	850	810	765	725	680	630
Heating (SW1)	Heat Airflow[3]			925	875	830	780	735	685	635	590	540	490

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Unit Size: 070V17--16	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	**SW2-8**	**SW2-7**	**SW2-6**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1595	1560	1520	1485	1445	1410	1375	1335	1300	1265
Cooling (SW2-8,7,6)	OFF	OFF	ON	660	585	515	445	370	See Note 4				
	OFF	ON	OFF	825	765	705	645	590	530	470	410	365	310
	OFF	ON	ON	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	OFF	1225	1180	1135	1085	1040	995	950	910	865	820
	ON	OFF	ON	1390	1350	1305	1265	1225	1180	1140	1100	1060	1020
	ON	ON	OFF	1595	1560	1520	1485	1445	1410	1375	1335	1300	1265
	ON	ON	ON	1855	1815	1785	1750	1720	1675	1625	1575	1525	1475
	Maximum Clg Airflow[2]			1855	1815	1785	1750	1720	1675	1625	1575	1525	1475
CF Switches	**SW2-5**	**SW2-4**	**SW2-3**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Low-Clg Default:	OFF	OFF	OFF	660	585	515	445	370	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	660	585	515	445	370	See Note 4				
	OFF	ON	OFF	825	765	705	645	590	530	470	410	365	310
	OFF	ON	ON	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	OFF	1225	1180	1135	1085	1040	995	950	910	865	820
	ON	OFF	ON	1390	1350	1305	1265	1225	1180	1140	1100	1060	1020
	ON	ON	OFF	1595	1560	1520	1485	1445	1410	1375	1335	1300	1265
	ON	ON	ON	1855	1815	1785	1750	1720	1675	1625	1575	1525	1475
Cont. Fan Default:	OFF	OFF	OFF	660	585	515	445	370	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	660	585	515	445	370	See Note 4				
	OFF	ON	OFF	825	765	705	645	590	530	470	410	365	310
	OFF	ON	ON	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	OFF	1025	970	915	860	810	760	705	640	585	530
	ON	OFF	ON	1025	970	915	860	810	760	705	640	585	530
	ON	ON	OFF	1025	970	915	860	810	760	705	640	585	530
	ON	ON	ON	1025	970	915	860	810	760	705	640	585	530

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Table 13 – Air Delivery - CFM (With Filter)* (Continued)

COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] with Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)													
Unit Size: 070V21–20	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	**SW2-8**	**SW2-7**	**SW2-6**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1930	1895	1855	1815	1775	1740	1700	1665	1630	1595
Cooling (SW2-8,7,6)	OFF	OFF	ON	810	735	660	585	505	See Note 4				
	OFF	ON	OFF	1010	945	885	820	760	695	625	565	510	455
	OFF	ON	ON	1205	1150	1090	1040	985	930	875	820	760	705
	ON	OFF	OFF	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	OFF	ON	1580	1540	1495	1445	1405	1360	1320	1275	1235	1190
	ON	ON	OFF	1930	1895	1855	1815	1775	1740	1700	1665	1630	1595
	ON	ON	ON	2245	2195	2145	2095	2045	1995	1935	1885	1835	1785
	Maximum Clg Airflow[2]			2245	2195	2145	2095	2045	1995	1935	1885	1835	1785
CF Switches	**SW2-5**	**SW2-4**	**SW2-3**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Low-Clg Default:	OFF	OFF	OFF	810	735	660	585	505	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	585	490	See Note 4							
	OFF	ON	OFF	810	735	660	585	505	See Note 4				
	OFF	ON	ON	1010	945	885	820	760	695	625	565	510	455
	ON	OFF	OFF	1205	1150	1090	1040	985	930	875	820	760	705
	ON	OFF	ON	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	ON	OFF	1580	1540	1495	1445	1405	1360	1320	1275	1235	1190
	ON	ON	ON	1930	1895	1855	1815	1775	1740	1700	1665	1630	1595
Cont. Fan Default:	OFF	OFF	OFF	810	735	660	585	505	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	585	490	See Note 4							
	OFF	ON	OFF	810	735	660	585	505	See Note 4				
	OFF	ON	ON	1010	945	885	820	760	695	625	565	510	455
	ON	OFF	OFF	1205	1150	1090	1040	985	930	875	820	760	705
	ON	OFF	ON	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	ON	OFF	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
	ON	ON	ON	1400	1345	1295	1245	1200	1155	1105	1060	1005	960
Heating (SW1)	Heat Airflow[3]			1435	1385	1335	1290	1245	1195	1145	1100	1050	1000

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Unit Size: 090V21--20	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	**SW2-8**	**SW2-7**	**SW2-6**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
Cooling (SW2-8,7,6)	OFF	OFF	ON	860	755	650	545	445	See Note 4				
	OFF	ON	OFF	1085	1000	910	830	735	655	565	485	405	310
	OFF	ON	ON	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	OFF	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	OFF	ON	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	OFF	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
	ON	ON	ON	2100	2055	2010	1960	1915	1870	1820	1775	1715	1640
	Maximum Clg Airflow[2]			2100	2055	2010	1960	1915	1870	1820	1775	1715	1640
CF Switches	**SW2-5**	**SW2-4**	**SW2-3**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	700	575	See Note 4							
	OFF	ON	OFF	860	755	650	545	445	See Note 4				
	OFF	ON	ON	1085	1000	910	830	735	655	565	485	405	310
	ON	OFF	OFF	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	ON	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	ON	OFF	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	ON	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
Cont. Fan Default:	OFF	OFF	OFF	860	755	650	545	445	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	700	575	See Note 4							
	OFF	ON	OFF	860	755	650	545	445	See Note 4				
	OFF	ON	ON	1085	1000	910	830	735	655	565	485	405	310
	ON	OFF	OFF	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	ON	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	ON	OFF	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	ON	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
Heating (SW1)	Heat Airflow[3]			1830	1775	1725	1675	1625	1570	1520	1465	1410	1360

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58SP0A/58SP1A: Installation, Start–Up, Operating and Service and Maintenance Instructions

Table 13 – Air Delivery - CFM (With Filter)* (Continued)

COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] with Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)													
Unit Size: 090V24--20	**Clg/CF Switch settings**			**External Static Pressure (ESP)**									
Clg Switches:	**SW2-8**	**SW2-7**	**SW2-6**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1970	1915	1865	1815	1765	1715	1660	1605	1545	1485
Cooling (SW2-8,7,6)	OFF	OFF	ON	980	885	770	675	585	See Note 4				
	OFF	ON	OFF	1115	1030	930	840	755	670	575	510	415	330
	OFF	ON	ON	1280	1205	1130	1045	960	885	810	740	670	595
	ON	OFF	OFF	1450	1380	1315	1250	1165	1090	1020	955	890	825
	ON	OFF	ON	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
	ON	ON	OFF	1970	1915	1865	1815	1765	1715	1660	1605	1545	1485
	ON	ON	ON	2135	2090	2035	1990	1940	1895	1850	1795	1745	1690
	Maximum Clg Airflow[2]			2175	2125	2080	2030	1980	1935	1890	1840	1795	1735
CF Switches	**SW2-5**	**SW2-4**	**SW2-3**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Low-Clg Default:	OFF	OFF	OFF	980	885	770	675	585	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	790	670	See Note 4							
	OFF	ON	OFF	980	885	770	675	585	See Note 4				
	OFF	ON	ON	1115	1030	930	840	755	670	575	510	415	330
	ON	OFF	OFF	1280	1205	1130	1045	960	885	810	740	670	595
	ON	OFF	ON	1450	1380	1315	1250	1165	1090	1020	955	890	825
	ON	ON	OFF	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
	ON	ON	ON	1970	1915	1865	1815	1765	1715	1660	1605	1545	1485
Cont. Fan Default:	OFF	OFF	OFF	980	885	770	675	585	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	790	670	See Note 4							
	OFF	ON	OFF	980	885	770	675	585	See Note 4				
	OFF	ON	ON	1115	1030	930	840	755	670	575	510	415	330
	ON	OFF	OFF	1280	1205	1130	1045	960	885	810	740	670	595
	ON	OFF	ON	1450	1380	1315	1250	1165	1090	1020	955	890	825
	ON	ON	OFF	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
	ON	ON	ON	1630	1570	1510	1450	1385	1320	1250	1185	1125	1070
Heating (SW1)	Heat Airflow[3]			1740	1680	1625	1570	1510	1445	1385	1325	1265	1205

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Unit Size:110V24--22	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	**SW2-8**	**SW2-7**	**SW2-6**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	2040	1980	1920	1865	1805	1750	1700	1640	1575	1525
Cooling (SW2-8,7,6)	OFF	OFF	ON	910	795	690	580	495	See Note 4				
	OFF	ON	OFF	1140	1050	955	865	775	See Note 4				
	OFF	ON	ON	1305	1220	1140	1055	975	895	815	745	680	605
	ON	OFF	OFF	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	OFF	ON	1680	1610	1540	1475	1415	1345	1275	1215	1150	1095
	ON	ON	OFF	2040	1980	1920	1865	1805	1750	1700	1640	1575	1525
	ON	ON	ON	2280	2230	2175	2125	2075	2025	1980	1930	1880	1830
	Maximum Clg Airflow[2]			2485	2430	2380	2330	2280	2230	2185	2140	2090	2030
CF Switches	**SW2-5**	**SW2-4**	**SW2-3**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Low-Clg Default:	OFF	OFF	OFF	910	795	690	580	495	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	730	665	See Note 4							
	OFF	ON	OFF	910	795	690	580	495	See Note 4				
	OFF	ON	ON	1140	1050	955	865	775	See Note 4				
	ON	OFF	OFF	1305	1220	1140	1055	975	895	815	745	680	605
	ON	OFF	ON	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	ON	OFF	1680	1610	1540	1475	1415	1345	1275	1215	1150	1095
	ON	ON	ON	2040	1980	1920	1865	1805	1750	1700	1640	1575	1525
Cont. Fan Default:	OFF	OFF	OFF	910	795	690	580	495	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	730	665	See Note 4							
	OFF	ON	OFF	910	795	690	580	495	See Note 4				
	OFF	ON	ON	1140	1050	955	865	775	See Note 4				
	ON	OFF	OFF	1305	1220	1140	1055	975	895	815	745	680	605
	ON	OFF	ON	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	ON	OFF	1480	1405	1325	1255	1180	1105	1035	975	895	830
	ON	ON	ON	1480	1405	1325	1255	1180	1105	1035	975	895	830
Heating (SW1)	Heat Airflow[3]			2120	2065	2005	1950	1895	1845	1790	1735	1680	1625

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WIRING DIAGRAM

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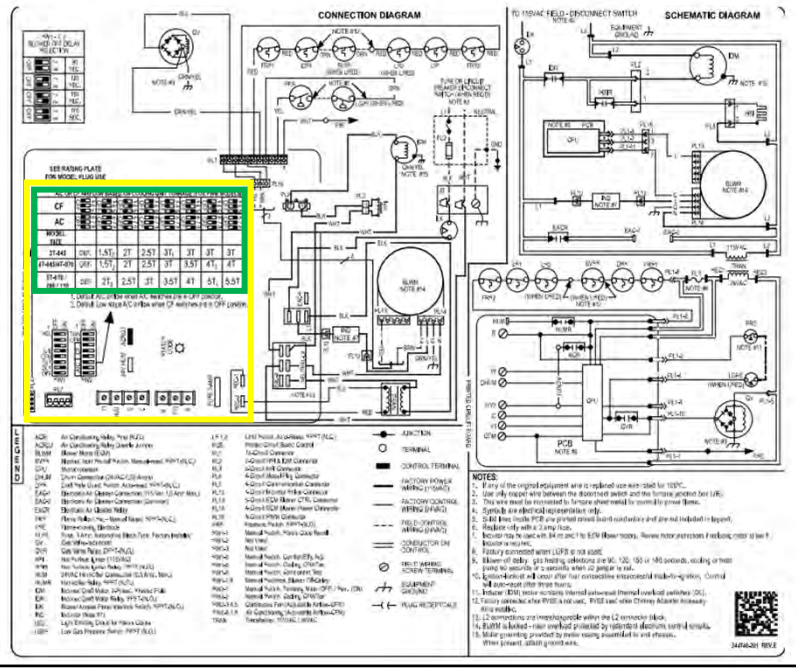
58SP0A/58SP1A
80% AFUE, Non-Communicating, Single Stage, ECM Motor, Variable Speed, 4-Way Multipoise, Non-Condensing Gas Furnace



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58SP0A/58SP1A
80% AFUE, Non-Communicating, Single Stage, ECM Motor, Variable Speed, 4-Way Multipoise, Non-Condensing Gas Furnace

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SERVICE

LED CODE **STATUS**
CONTINUOUS OFF - Check for 115VAC at L1 and L2, and 24VAC at SEC-1 and SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed.

If status code recall is needed disconnect the "R" thermostat lead, reset power, and put setup switch "SW1-1" in the ON position. To clear the status code history put setup switch "SW1-1" in the ON position and jumper thermostat terminals "R", "W" and "Y/Y2" simultaneously until status code #11 is flashed.

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 NO PREVIOUS CODE: Stored status code is erased automatically after 72 hours or as specified above.

12 BLOWER ON AFTER POWER UP (115 VAC or 24 VAC) -Blower runs for 90 seconds, if unit is powered up during a call for heat (R-W closed) or R-W opens during blower on-delay.

13 LIMIT CIRCUIT LOCKOUT - Lockout occurs if the limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open longer than 3 minutes. Control will auto reset after three hours.
- Refer to #33.

14 IGNITION LOCKOUT Control will auto reset after three hours. Refer to #34.

21 GAS HEATING LOCKOUT - Control will NOT auto reset. Check for:
- Mis-wired gas valve -Defective control (valve relay).

22 ABNORMAL FLAME-PROVING SIGNAL - Flame is proved while gas valve is de-energized. Inducer will run until fault is cleared. Check for: - Leaky gas valve
- Stuck-open gas valve.

23 PRESSURE SWITCH DID NOT OPEN. Check for:
-Obstructed pressure tubing -Pressure switch stuck closed.

24 SECONDARY VOLTAGE FUSE IS OPEN: Check for: - Short circuit in secondary voltage (24VAC) wiring.

25 INVALID MODEL SELECTION OR SETUP ERROR - Indicates either the model plug is missing or incorrect or, setup switch "SW1-1" or "SW1-6" is positioned improperly. If code flashes 4 times on power-up control is defaulting to model selection stored in memory. Check for: -Thermostat call with SW-1, SW1-6 or both SW1-1 & SW1-6 ON.

31 PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If open longer than five minutes, inducer shuts off for 15 minutes before retry. Check for: - Excessive wind
- Proper vent sizing - Defective inducer motor
- Low inducer voltage (115VAC) - Defective pressure switch
- Inadequate combustion air supply - Disconnected or obstructed pressure tubing
- Low inlet gas pressure (if LGPS used) - Restricted vent

If it opens during blower on-delay period, blower will come on for the selected blower off-delay.

33 LIMIT CIRCUIT FAULT - Indicates a limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open. Blower will run for 4 minutes or until open switch remakes, whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch and BVSS require manual reset.
Check for: - Restricted vent
- Proper vent sizing - Loose blower wheel. - Excessive wind
- Dirty filter or restricted duct system.
- Defective blower motor or capacitor. - Defective switch or connections.
- Inadequate combustion air supply (Flame Roll-out Switch open).

34 IGNITION PROVING FAILURE - Control will try four ignition trials before lockout #1 occurs. If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay. Check for:
- Oxide buildup on flame sensor (clean with fine steel wool).
- Proper flame sense microamps (.5 microamps D.C. min., 4.0 - 6.0 nominal).
- Manual valve shut-off -Low inlet gas pressure - Control ground continuity
- Gas valve defective or gas valve turned off - Flame sensor must not be grounded
- Inadequate flame carryover or rough ignition.

45 CONTROL CIRCUITRY LOCKOUT - Auto-reset after one hour lockout due to:
- Gas valve relay stuck open - Flame sense circuit failure
- Software check error

Reset power to clear lockout. Replace control if status code repeats.

COMPONENT TEST

To initiate the component test sequence, shut OFF the room thermostat or disconnect the "R" thermostat lead. Reset power and then put setup switch "SW1-6" in the ON position to start the component test sequence. Once initiated the furnace control will turn the inducer ON. The inducer motor will run for the entire test. The hot surface igniter and blower motor will be turned ON for 15 seconds each. When the component test is completed one or more of the following codes will flash.

CODE	DESCRIPTION
11	Indicates no errors detected. Visual check of inducer motor, hot surface igniter and blower motor required.
25	SETUP ERROR - Same as code 25 above.

To repeat component test turn setup switch "SW1-6" OFF and then back ON. After component test is completed put setup switch "SW1-6" in the OFF position and reconnect the "R" thermostat lead.

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58TN0A045C17--12
58TN0A070C14--12
58TN0A070C17--16
58TN0A070C21--20
58TN0A090C17--16
58TN0A090C21--20
58TN0A110C21--20
58TN0A135C24--22
58TN1A045C17--12
58TN1A070C14--12
58TN1A070C17--16
58TN1A070C21--20
58TN1A090C17--16
58TN1A090C21--20
58TN1A110C21--20
58TN1A135C24--22

Sigler
Wholesale Distributors

58TN0A/58TN1A
80% AFUE, Two-Stage, Variable–Speed
4–Way Multipoise, Non-Condensing Gas Furnace
Series A

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CARRIER	FER	PAYNE	FER	DESCRIPTION
				GAS FURNACES
58STX	58SC1A	PG8JAA	PG8E	80% SINGLE stage PSC motor
58DLX	58SC1A			80% SINGLE stage PSC motor w/Insultated Cabinet
58PHY	58SC1A			80% SINGLE stage X13 motor SEER Boost
58CTY	58TP1A			80% Performance TWO stage PWM motor
58CVX	58TN1A			80% Infinity TWO stage Communicating ECM motor

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58TN0A/58TN1A
80% AFUE, Two-Stage, Variable–Speed
4–Way Multipoise, Non-Condensing Gas Furnace
Series A

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Table 13 – Air Delivery - CFM (With Filter)

(SW1-5 and SW4-3 set to OFF, except as indicated. See Footnotes [1] and [2])

Unit Size:045C17-12	Clg/CF Switch Settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1070	1080	1085	1095	1095	1100	1095	1090	1080	1070
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	525	540	540	550	550	See Note [4]				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	525	540	540	550	550	See Note [4]				
	OFF	ON	OFF	700	720	715	730	735	745	745	745	735	725
	OFF	ON	ON	885	905	920	925	920	910	905	900	895	885
	ON	OFF	OFF	1070	1080	1085	1095	1095	1100	1095	1090	1080	1070
	ON	OFF	ON	1250	1265	1275	1280	1275	1265	1255	1240	1205	1170
	ON	ON	OFF	1425	1425	1410	1380	1340	1305	1270	1235	1200	1165
	ON	ON	ON	1425	1425	1410	1380	1340	1305	1270	1235	1200	1165
	Maximum Clg Airflow[2]			1480	1445	1415	1380	1345	1310	1275	1235	1200	1165
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	525	540	540	550	550	See Note [4]				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	525	540	540	550	550	See Note [4]				
	OFF	ON	OFF	700	720	715	730	735	745	745	745	735	725
	OFF	ON	ON	885	905	920	925	920	910	905	900	895	885
	ON	OFF	OFF	1070	1080	1085	1095	1095	1100	1095	1090	1080	1070
	ON	OFF	ON	1070	1080	1085	1095	1095	1100	1095	1090	1080	1070
	ON	ON	OFF	1070	1080	1085	1095	1095	1100	1095	1090	1080	1070
	ON	ON	ON	1070	1080	1085	1095	1095	1100	1095	1090	1080	1070
Heating (SW1)	High Heat Airflow[3]			730	730	735	750	765	770	770	770	760	750
	Low Heat Airflow[3]			605	625	635	630	635	635	630	625	615	605

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4–Way Multipoise, Non-Condensing Gas Furnace
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Unit Size: 070C14-12	Clg/CF Switch Settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1050	1050	1050	1050	1050	1050	1045	1035	1020	1000
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	515	500	500	490	485	See Note [4]				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	515	500	500	490	485	See Note [4]				
	OFF	ON	OFF	690	680	675	680	675	See Note [4]				
	OFF	ON	ON	875	875	875	870	865	855	850	835	825	820
	ON	OFF	OFF	1050	1050	1050	1050	1050	1050	1045	1035	1020	1000
	ON	OFF	ON	1220	1225	1225	1225	1225	1220	1205	1190	1185	1170
	ON	ON	OFF	1220	1225	1225	1225	1225	1220	1205	1190	1185	1170
	ON	ON	ON	1220	1225	1225	1225	1225	1220	1205	1190	1185	1170
	Maximum Clg Airflow[2]			1395	1400	1400	1400	1395	1385	1370	1340	1300	1245
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	515	500	500	490	485	See Note [4]				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	515	500	500	490	485	See Note [4]				
	OFF	ON	OFF	690	680	675	680	675	See Note [4]				
	OFF	ON	ON	875	875	875	870	865	855	850	835	825	820
	ON	OFF	OFF	1050	1050	1050	1050	1050	1050	1045	1035	1020	1000
	ON	OFF	ON	1220	1225	1225	1225	1225	1220	1205	1190	1185	1170
	ON	ON	OFF	1220	1225	1225	1225	1225	1220	1205	1190	1185	1170
	ON	ON	ON	1220	1225	1225	1225	1225	1220	1205	1190	1185	1170
Heating (SW1)	High Heat Airflow[3]			1160	1165	1175	1180	1180	1180	1180	1180	1180	1175
	Low Heat Airflow[3]			735	735	735	735	725	See Note [4]				

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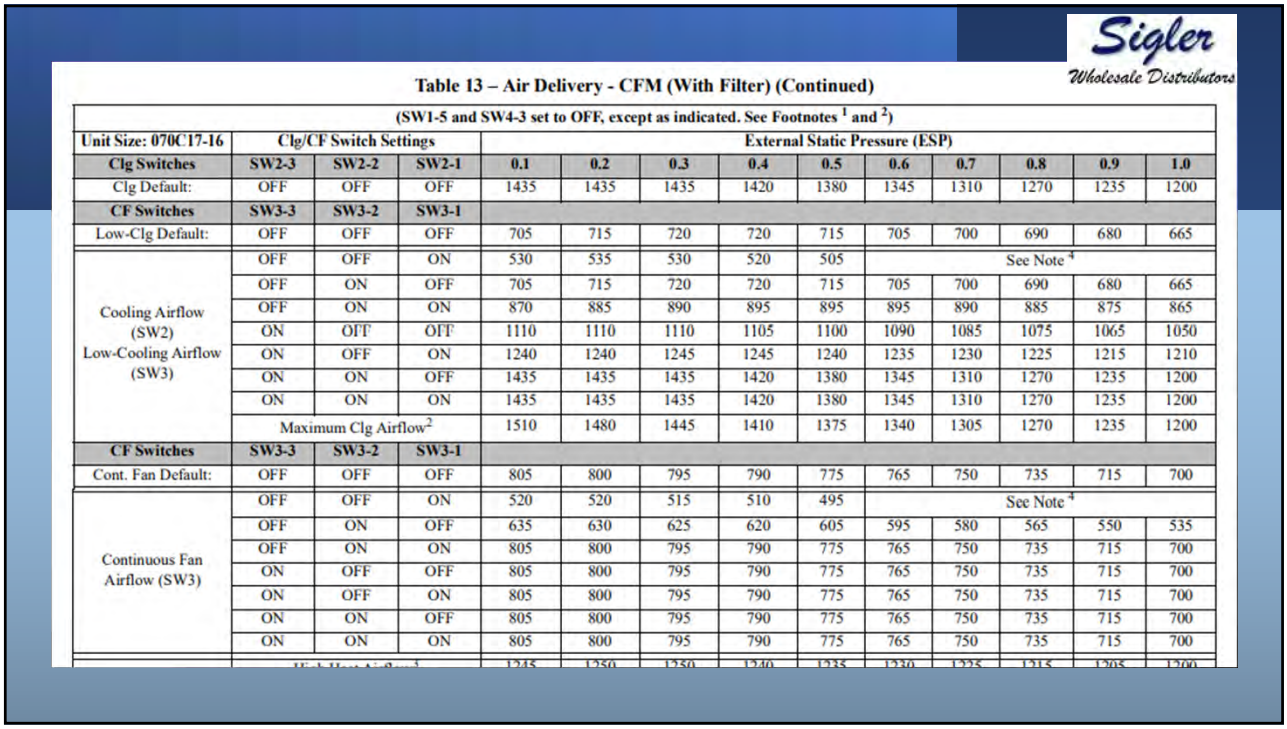

Sigler Wholesale Distributors

Table 13 – Air Delivery - CFM (With Filter) (Continued)

(SW1-5 and SW4-3 set to OFF, except as indicated. See Footnotes [1] and [2])

Unit Size: 070C17-16	Clg/CF Switch Settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1435	1435	1435	1420	1380	1345	1310	1270	1235	1200
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	705	715	720	720	715	705	700	690	680	665
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	530	535	530	520	505	See Note [4]				
	OFF	ON	OFF	705	715	720	720	715	705	700	690	680	665
	OFF	ON	ON	870	885	890	895	895	895	890	885	875	865
	ON	OFF	OFF	1110	1110	1110	1105	1100	1090	1085	1075	1065	1050
	ON	OFF	ON	1240	1240	1245	1245	1240	1235	1230	1225	1215	1210
	ON	ON	OFF	1435	1435	1435	1420	1380	1345	1310	1270	1235	1200
	ON	ON	ON	1435	1435	1435	1420	1380	1345	1310	1270	1235	1200
	Maximum Clg Airflow[2]			1510	1480	1445	1410	1375	1340	1305	1270	1235	1200
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	805	800	795	790	775	765	750	735	715	700
Continuous Fan Airflow (SW3)	OFF	OFF	ON	520	520	515	510	495	See Note [4]				
	OFF	ON	OFF	635	630	625	620	605	595	580	565	550	535
	OFF	ON	ON	805	800	795	790	775	765	750	735	715	700
	ON	OFF	OFF	805	800	795	790	775	765	750	735	715	700
	ON	OFF	ON	805	800	795	790	775	765	750	735	715	700
	ON	ON	OFF	805	800	795	790	775	765	750	735	715	700
	ON	ON	ON	805	800	795	790	775	765	750	735	715	700
	[illegible]			1245	1250	1250	1240	1235	1230	1225	1215	1205	1200

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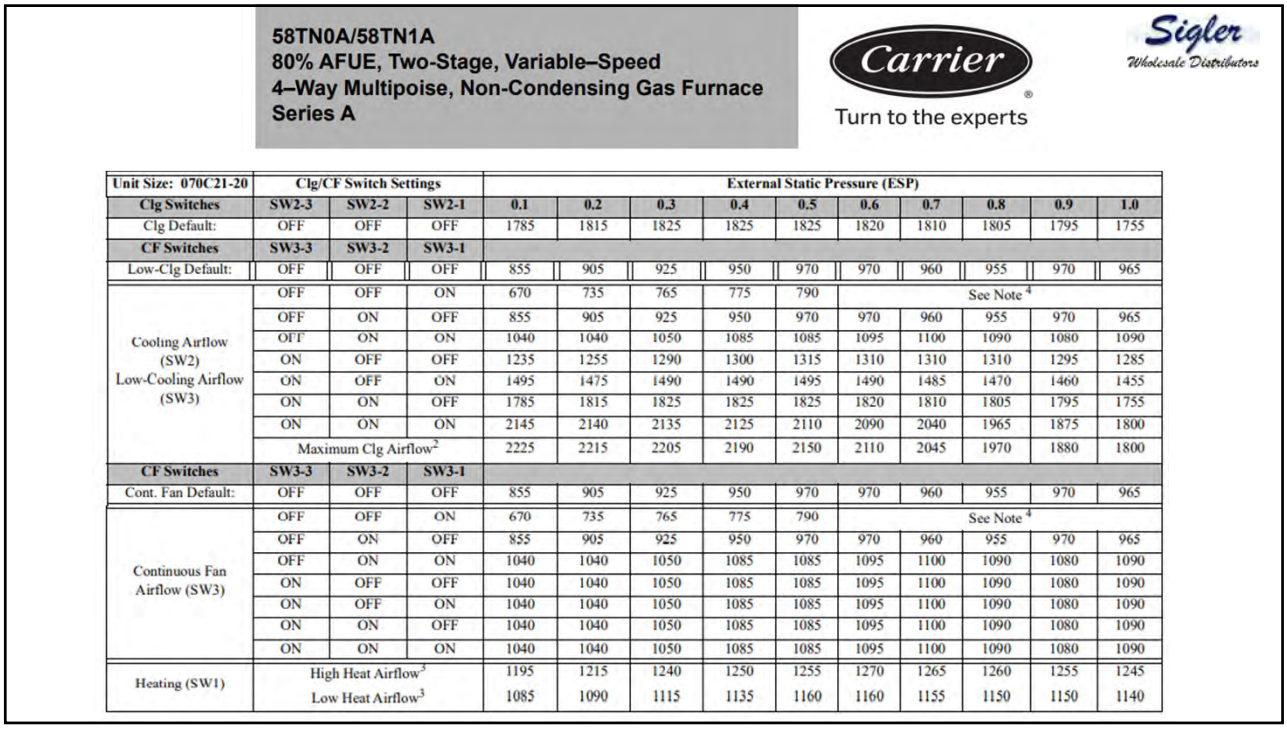

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4–Way Multipoise, Non-Condensing Gas Furnace
Series A

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Unit Size: 070C21-20	Clg/CF Switch Settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1785	1815	1825	1825	1825	1820	1810	1805	1795	1755
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	855	905	925	950	970	970	960	955	970	965
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	670	735	765	775	790	See Note [4]				
	OFF	ON	OFF	855	905	925	950	970	970	960	955	970	965
	OFF	ON	ON	1040	1040	1050	1085	1085	1095	1100	1090	1080	1090
	ON	OFF	OFF	1235	1255	1290	1300	1315	1310	1310	1310	1295	1285
	ON	OFF	ON	1495	1475	1490	1490	1495	1490	1485	1470	1460	1455
	ON	ON	OFF	1785	1815	1825	1825	1825	1820	1810	1805	1795	1755
	ON	ON	ON	2145	2140	2135	2125	2110	2090	2040	1965	1875	1800
	Maximum Clg Airflow[2]			2225	2215	2205	2190	2150	2110	2045	1970	1880	1800
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	855	905	925	950	970	970	960	955	970	965
Continuous Fan Airflow (SW3)	OFF	OFF	ON	670	735	765	775	790	See Note [4]				
	OFF	ON	OFF	855	905	925	950	970	970	960	955	970	965
	OFF	ON	ON	1040	1040	1050	1085	1085	1095	1100	1090	1080	1090
	ON	OFF	OFF	1040	1040	1050	1085	1085	1095	1100	1090	1080	1090
	ON	OFF	ON	1040	1040	1050	1085	1085	1095	1100	1090	1080	1090
	ON	ON	OFF	1040	1040	1050	1085	1085	1095	1100	1090	1080	1090
	ON	ON	ON	1040	1040	1050	1085	1085	1095	1100	1090	1080	1090
Heating (SW1)	High Heat Airflow[3]			1195	1215	1240	1250	1255	1270	1265	1260	1255	1245
	Low Heat Airflow[3]			1085	1090	1115	1135	1160	1160	1155	1150	1150	1140

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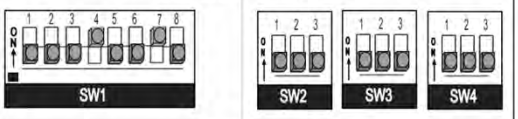
58TN0A/58TN1A: Installation, Start–Up, Operating and Service and Maintenance Instructions

Table 14 – Furnace Setup Switch Description

DIP SWITCH CONFIGURATION



SW1

Switch	Description		Factory
1	**Status Code Recovery** - Turn ON to retrieve status codes.	See manual for use.	OFF
2	**Low Heat Only** - SW1 - 2 OFF allows two-stage operation SW1 - 2 ON for two-stage operation using two-stage TSTAT.	using single stage TSTAT (Adaptive Heat Mode).	OFF
3	**Not Used**		OFF
4	**Comfort/Efficiency Adjust** - Turn ON to decrease low- & high-heat airflow 15% for 90%+ models or 10% for 80%	heat airflow 20% for 90%+ models or 16% for 80% models models	ON
5	**CFM per Ton Adjust** - See Airflow Tables in manual for	desired settings. Also see SW4 - 3.	OFF
6	**Component Self Test** - Turn ON to initiate Component disconnected. Turn OFF when Self Test is completed.	Self Test for troubleshooting assistance when R TSTAT lead is	OFF
7 & 8	**Blower Off Delay** - See manual or unit wiring diagram for Factory default is 120 Seconds.	settings. Adjustable 90 - 180 seconds.	7 - ON 8 - OFF

SW2

Switch	Description		Factory
1 - 3	**A/C Setup Switches** - The Air Conditioning setup switch (two-stage units) airflow. See Cooling Air Delivery Tables in	selects desired cooling or high-stage cooling manual for specific switch settings.	ALL OFF

SW3

Switch	Description		Factory
1 - 3	**CF Setup Switches** - The Continuous Fan setup switch airflow. See Cooling Air Delivery Tables and Continuous Fan	selects desired CF and low-stage cooling (two-stage A/C units) Air Delivery Tables (when present) for specific switch settings.	ALL OFF

SW4

Switch	Description		Factory
1	**Future Use** - Switch should remain in OFF position.		OFF
2	**Not Used**		OFF
3	**CFM per Ton Adjust** - See Airflow Tables for desired	settings. Also SW1 - 5.	OFF

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58TN0A/58TN1A: Installation, Start–Up, Operating and Service and Maintenance Instructions

Table 13 – Air Delivery - CFM (With Filter) (Continued)

(SW1-5 and SW4-3 set to OFF, except as indicated. See Footnotes [1] and [2])												
Unit Size: 090C17-16	**Clg/CF Switch Settings**			**External Static Pressure (ESP)**								
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1350	1370	1390	1390	1400	1390	1380	1380	1360	1340
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	680	680	680	675	670	See Note [4]				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	525	520	525	495	475	See Note [4]				
	OFF	ON	OFF	680	680	680	675	670	See Note [4]				
	OFF	ON	ON	815	845	845	855	850	850	845	835	820	805
	ON	OFF	OFF	1005	1005	1015	1035	1040	1040	1035	1030	1025	1010
	ON	OFF	ON	1190	1200	1200	1205	1205	1215	1205	1200	1185	1170
	ON	ON	OFF	1350	1370	1390	1390	1400	1390	1380	1380	1360	1340
	ON	ON	ON	1350	1370	1390	1390	1400	1390	1380	1380	1360	1340
	Maximum Clg Airflow[2]			1595	1600	1600	1600	1595	1555	1505	1465	1430	1390
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	680	680	680	675	670	See Note [4]				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	525	520	525	495	475	See Note [4]				
	OFF	ON	OFF	680	680	680	675	670	See Note [4]				
	OFF	ON	ON	815	845	845	855	850	850	845	835	820	805
	ON	OFF	OFF	1005	1005	1015	1035	1040	1040	1035	1030	1025	1010
	ON	OFF	ON	1190	1200	1200	1205	1205	1215	1205	1200	1185	1170
	ON	ON	OFF	1190	1200	1200	1205	1205	1215	1205	1200	1185	1170
	ON	ON	ON	1190	1200	1200	1205	1205	1215	1205	1200	1185	1170
Heating (SW1)	High Heat Airflow[3]			1190	1205	1210	1210	1210	1210	1210	1210	1210	1200
	Low Heat Airflow[3]			950	970	985	985	985	985	985	985	985	980

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Unit Size: 090C21-20	Clg/CF Switch Settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1785	1805	1815	1835	1840	1855	1860	1850	1845	1835
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	925	935	945	960	980	965	940	925	920	900
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	715	715	735	730	730	See Note [4]				
	OFF	ON	OFF	925	935	945	960	980	965	940	925	920	900
	OFF	ON	ON	1040	1045	1030	1055	1060	1045	1060	1045	1030	1005
	ON	OFF	OFF	1295	1320	1285	1335	1350	1340	1350	1335	1310	1300
	ON	OFF	ON	1505	1525	1480	1480	1490	1475	1465	1455	1450	1445
	ON	ON	OFF	1785	1805	1815	1835	1840	1855	1860	1850	1845	1835
	ON	ON	ON	2250	2265	2270	2265	2255	2245	2220	2175	2120	2060
	Maximum Clg Airflow[2]			2375	2375	2375	2365	2330	2285	2235	2185	2140	2075
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	925	935	945	960	980	965	940	925	920	900
Continuous Fan Airflow (SW3)	OFF	OFF	ON	715	715	735	730	730	See Note [4]				
	OFF	ON	OFF	925	935	945	960	980	965	940	925	920	900
	OFF	ON	ON	1040	1045	1030	1055	1060	1045	1060	1045	1030	1005
	ON	OFF	OFF	1295	1320	1285	1335	1350	1340	1350	1335	1310	1300
	ON	OFF	ON	1505	1525	1480	1480	1490	1475	1465	1455	1450	1445
	ON	ON	OFF	1505	1525	1480	1480	1490	1475	1465	1455	1450	1445
	ON	ON	ON	1505	1525	1480	1480	1490	1475	1465	1455	1450	1445
Heating (SW1)	High Heat Airflow[3]			1590	1610	1605	1605	1600	1605	1610	1610	1615	1620
	Low Heat Airflow[3]			1425	1450	1440	1465	1470	1455	1450	1440	1435	1430

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Table 13 – Air Delivery - CFM (With Filter) (Continued)

(SW1-5 and SW4-3 set to OFF, except as indicated. See Footnotes [1] and [2])

Unit Size: 110C21-20	Clg/CF Switch Settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1750	1750	1750	1750	1750	1750	1750	1750	1740	1725
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	875	875	875	875	875	See Note [4]				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	700	700	700	700	700	See Note [4]				
	OFF	ON	OFF	875	875	875	875	875	See Note [4]				
	OFF	ON	ON	1050	1050	1050	1050	1050	See Note [4]				
	ON	OFF	OFF	1225	1225	1225	1225	1225	1225	1225	1225	1225	1225
	ON	OFF	ON	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
	ON	ON	OFF	1750	1750	1750	1750	1750	1750	1750	1750	1740	1725
	ON	ON	ON	2100	2100	2100	2100	2090	2075	2055	2040	2005	1970
	Maximum Clg Airflow[2]			2200	2190	2190	2180	2155	2145	2125	2100	2080	2020
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	875	875	875	875	875	See Note [4]				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	700	700	700	700	700	See Note [4]				
	OFF	ON	OFF	875	875	875	875	875	See Note [4]				
	OFF	ON	ON	1050	1050	1050	1050	1050	See Note [4]				
	ON	OFF	OFF	1225	1225	1225	1225	1225	1225	1225	1225	1225	1225
	ON	OFF	ON	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
	ON	ON	OFF	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400
	ON	ON	ON	1400	1400	1400	1400	1400	1400	1400	1400	1400	1400

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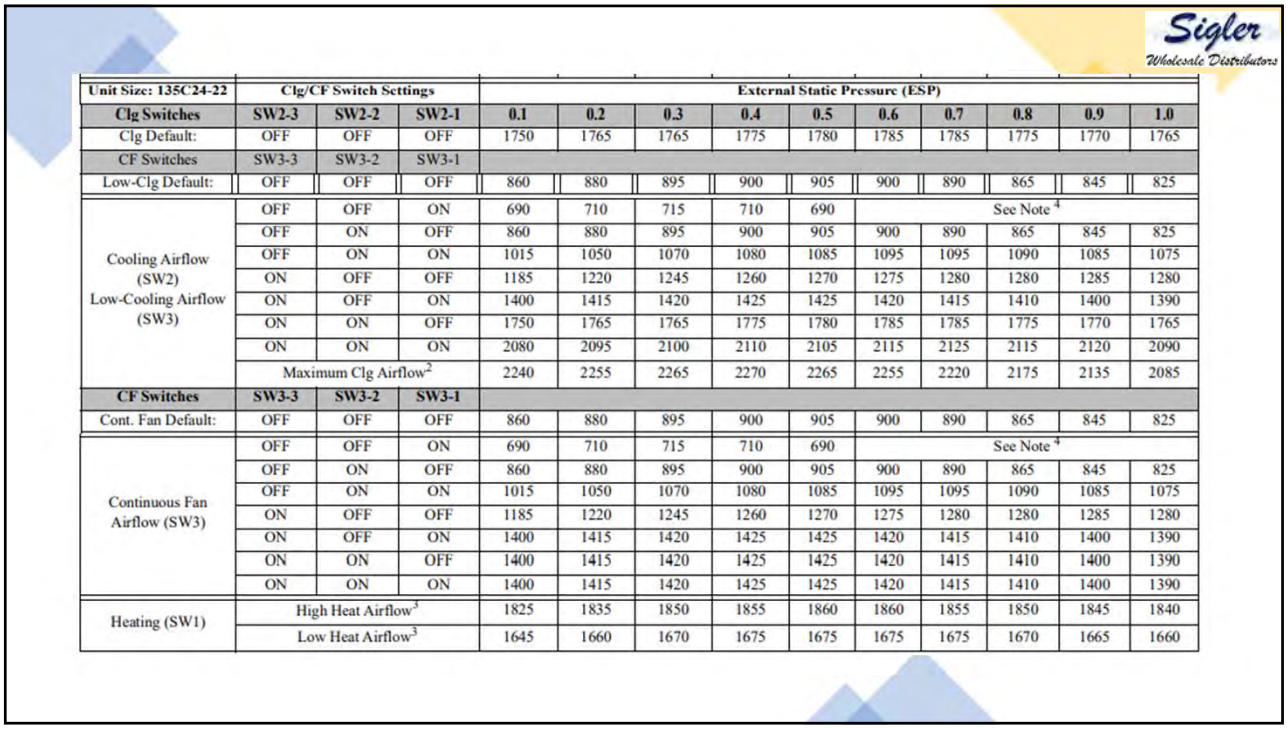

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Unit Size: 135C24-22	Clg/CF Switch Settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1750	1765	1765	1775	1780	1785	1785	1775	1770	1765
CF Switches	SW3-3	SW3-2	SW3-1										
Low-Clg Default:	OFF	OFF	OFF	860	880	895	900	905	900	890	865	845	825
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	690	710	715	710	690	See Note [4]				
	OFF	ON	OFF	860	880	895	900	905	900	890	865	845	825
	OFF	ON	ON	1015	1050	1070	1080	1085	1095	1095	1090	1085	1075
	ON	OFF	OFF	1185	1220	1245	1260	1270	1275	1280	1280	1285	1280
	ON	OFF	ON	1400	1415	1420	1425	1425	1420	1415	1410	1400	1390
	ON	ON	OFF	1750	1765	1765	1775	1780	1785	1785	1775	1770	1765
	ON	ON	ON	2080	2095	2100	2110	2105	2115	2125	2115	2120	2090
	Maximum Clg Airflow[2]			2240	2255	2265	2270	2265	2255	2220	2175	2135	2085
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	860	880	895	900	905	900	890	865	845	825
Continuous Fan Airflow (SW3)	OFF	OFF	ON	690	710	715	710	690	See Note [4]				
	OFF	ON	OFF	860	880	895	900	905	900	890	865	845	825
	OFF	ON	ON	1015	1050	1070	1080	1085	1095	1095	1090	1085	1075
	ON	OFF	OFF	1185	1220	1245	1260	1270	1275	1280	1280	1285	1280
	ON	OFF	ON	1400	1415	1420	1425	1425	1420	1415	1410	1400	1390
	ON	ON	OFF	1400	1415	1420	1425	1425	1420	1415	1410	1400	1390
	ON	ON	ON	1400	1415	1420	1425	1425	1420	1415	1410	1400	1390
Heating (SW1)	High Heat Airflow[3]			1825	1835	1850	1855	1860	1860	1855	1850	1845	1840
	Low Heat Airflow[3]			1645	1660	1670	1675	1675	1675	1675	1670	1665	1660

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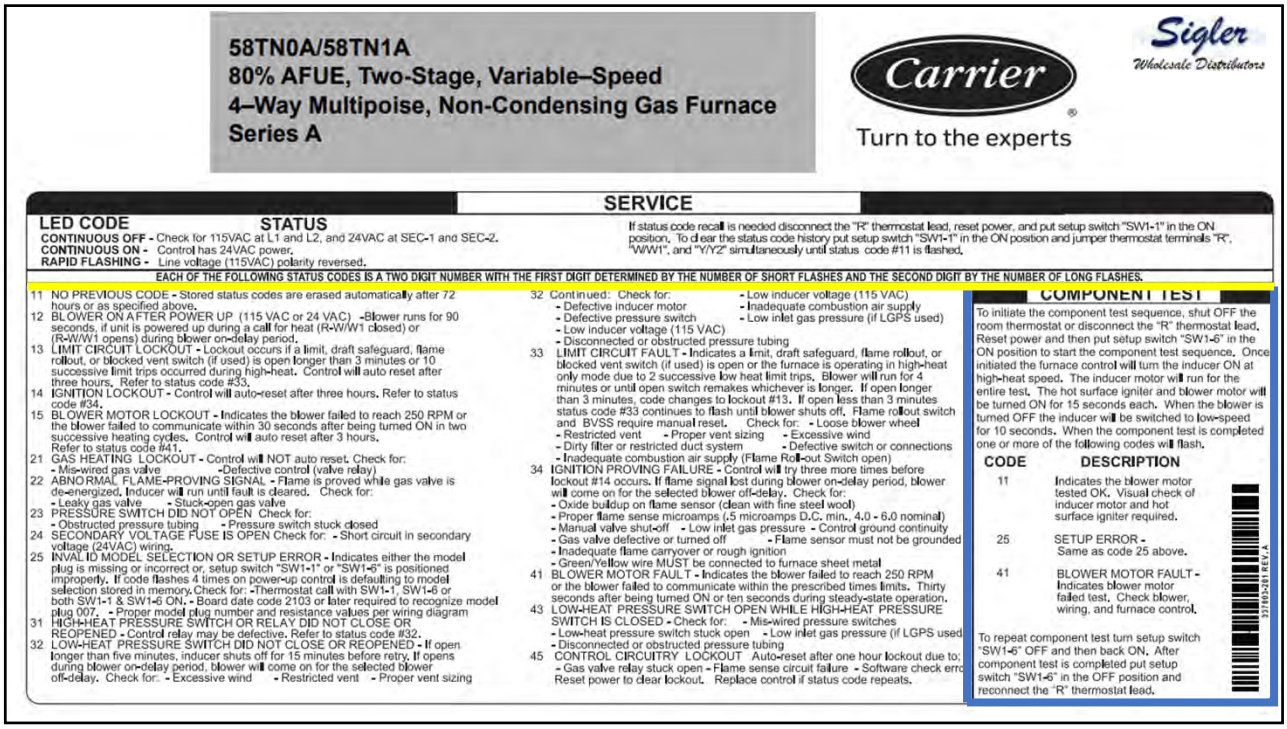

58TN0A/58TN1A
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4–Way Multipoise, Non-Condensing Gas Furnace
Series A

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SERVICE

LED CODE **STATUS**
CONTINUOUS OFF - Check for 115VAC at L1 and L2, and 24VAC at SEC-1 and SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed.

If status code recall is needed disconnect the "R" thermostat lead, reset power, and put setup switch "SW1-1" in the ON position. To clear the status code history put setup switch "SW1-1" in the ON position and jumper thermostat terminals "R", "W/W1", and "Y/Y2" simultaneously until status code #11 is flashed.

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 NO PREVIOUS CODE - Stored status codes are erased automatically after 72 hours or as specified above.
12 BLOWER ON AFTER POWER UP (115 VAC or 24 VAC) -Blower runs for 90 seconds, if unit is powered up during a call for heat (R-W/W1 closed) or (R-W/W1 opens) during blower on-delay period.
13 LIMIT CIRCUIT LOCKOUT - Lockout occurs if a limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open longer than 3 minutes or 10 successive limit trips occurred during high-heat. Control will auto reset after three hours. Refer to status code #33.
14 IGNITION LOCKOUT - Control will auto-reset after three hours. Refer to status code #34.
15 BLOWER MOTOR LOCKOUT - Indicates the blower failed to reach 250 RPM or the blower failed to communicate within 30 seconds after being turned ON in two successive heating cycles. Control will auto reset after 3 hours. Refer to status code #41.
21 GAS HEATING LOCKOUT - Control will NOT auto reset. Check for:
- Mis-wired gas valve - Defective control (valve relay)
22 ABNORMAL FLAME-PROVING SIGNAL - Flame is proved while gas valve is de-energized. Inducer will run until fault is cleared. Check for:
- Leaky gas valve - Stuck-open gas valve
23 PRESSURE SWITCH DID NOT OPEN Check for:
- Obstructed pressure tubing - Pressure switch stuck closed
24 SECONDARY VOLTAGE FUSE IS OPEN Check for: - Short circuit in secondary voltage (24VAC) wiring.
25 INVALID MODEL SELECTION OR SETUP ERROR - Indicates either the model plug is missing or incorrect or, setup switch "SW1-1" or "SW1-6" is positioned improperly. If code flashes 4 times on power-up control is defaulting to model selection stored in memory. Check for: -Thermostat call with SW1-1, SW1-6 or both SW1-1 & SW1-6 ON. - Board date code 2103 or later required to recognize model plug 007. - Proper model plug number and resistance values per wiring diagram
31 HIGH-HEAT PRESSURE SWITCH OR RELAY DID NOT CLOSE OR REOPENED - Control relay may be defective. Refer to status code #32.
32 LOW-HEAT PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If open longer than five minutes, inducer shuts off for 15 minutes before retry. If opens during blower on-delay period, blower will come on for the selected blower off-delay. Check for: - Excessive wind - Restricted vent - Proper vent sizing
32 Continued: Check for: - Low inducer voltage (115 VAC)
- Defective inducer motor - Inadequate combustion air supply
- Defective pressure switch - Low inlet gas pressure (if LGPS used)
- Low inducer voltage (115 VAC)
- Disconnected or obstructed pressure tubing
33 LIMIT CIRCUIT FAULT - Indicates a limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open or the furnace is operating in high-heat only mode due to 2 successive low heat limit trips. Blower will run for 4 minutes or until open switch remakes whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch and BVSS require manual reset. Check for: - Loose blower wheel
- Restricted vent - Proper vent sizing - Excessive wind
- Dirty filter or restricted duct system - Defective switch or connections
- Inadequate combustion air supply (Flame Roll-out Switch open)
34 IGNITION PROVING FAILURE - Control will try three more times before lockout #14 occurs. If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay. Check for:
- Oxide buildup on flame sensor (clean with fine steel wool)
- Proper flame sense microamps (.5 microamps D.C. min., 4.0 - 6.0 nominal)
- Manual valve shut-off - Low inlet gas pressure - Control ground continuity
- Gas valve defective or turned off - Flame sensor must not be grounded
- Inadequate flame carryover or rough ignition
- Green/Yellow wire MUST be connected to furnace sheet metal
41 BLOWER MOTOR FAULT - Indicates the blower failed to reach 250 RPM or the blower failed to communicate within the prescribed times limits. Thirty seconds after being turned ON or ten seconds during steady-state operation.
43 LOW-HEAT PRESSURE SWITCH OPEN WHILE HIGH-HEAT PRESSURE SWITCH IS CLOSED - Check for: - Mis-wired pressure switches
- Low-heat pressure switch stuck open - Low inlet gas pressure (if LGPS used)
- Disconnected or obstructed pressure tubing
45 CONTROL CIRCUITRY LOCKOUT Auto-reset after one hour lockout due to:
- Gas valve relay stuck open - Flame sense circuit failure - Software check error
Reset power to clear lockout. Replace control if status code repeats.

COMPONENT TEST

To initiate the component test sequence, shut OFF the room thermostat or disconnect the "R" thermostat lead. Reset power and then put setup switch "SW1-6" in the ON position to start the component test sequence. Once initiated the furnace control will turn the inducer ON at high-heat speed. The inducer motor will run for the entire test. The hot surface igniter and blower motor will be turned ON for 15 seconds each. When the blower is turned OFF the inducer will be switched to low-speed for 10 seconds. When the component test is completed one or more of the following codes will flash.

CODE	DESCRIPTION
11	Indicates the blower motor tested OK. Visual check of inducer motor and hot surface igniter required.
25	SETUP ERROR - Same as code 25 above.
41	BLOWER MOTOR FAULT - Indicates blower motor failed test. Check blower, wiring, and furnace control.

To repeat component test turn setup switch "SW1-6" OFF and then back ON. After component test is completed put setup switch "SW1-6" in the OFF position and reconnect the "R" thermostat lead.

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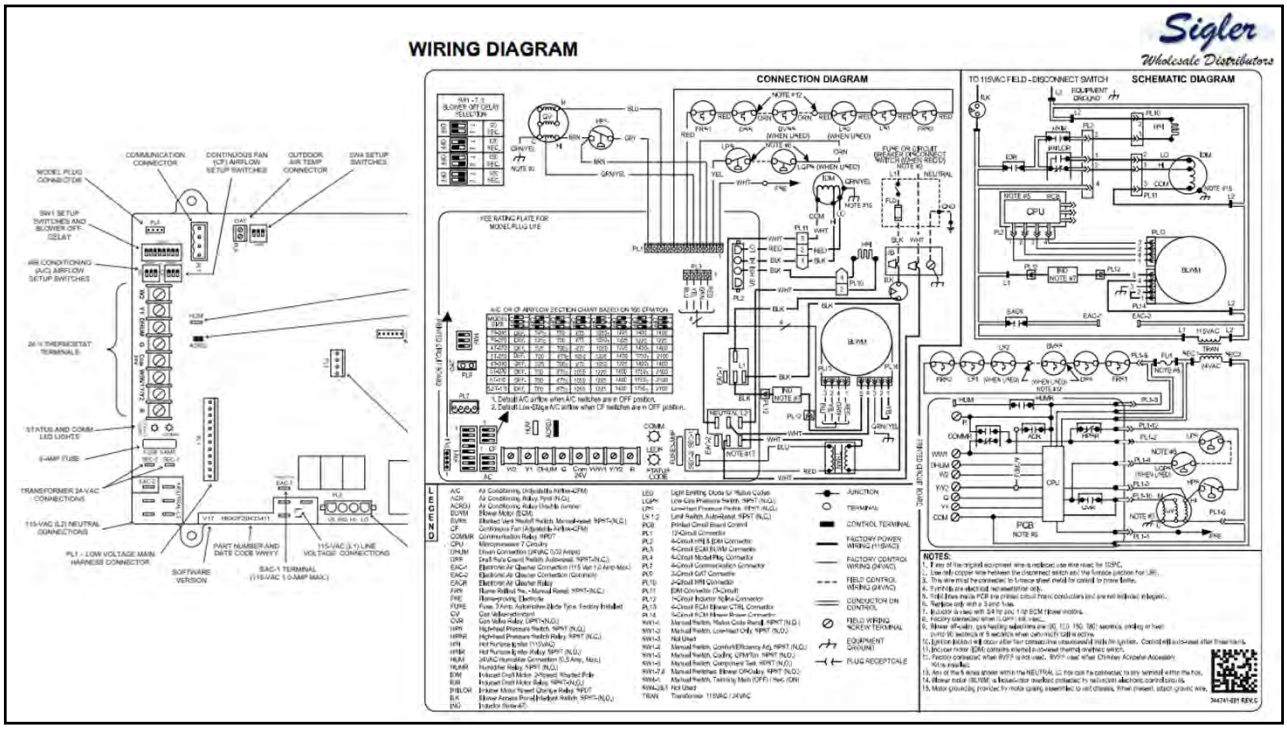

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58TP0A045V14--12
58TP0A070V14--12
58TP0A070V17--16
58TP0A090V17--16
58TP0A090V21--20
58TP0A110V21--22
58TP0A135V24--22
58TP1A045V14--12
58TP1A070V14--12
58TP1A070V17--16
58TP1A090V17--16
58TP1A090V21--20
58TP1A110V21--22
58TP1A135V24--22

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58TP0A/58TP1A
80% AFUE, Variable-Speed, ECM Motor,
Two-Stage, 4-Way Multipoise,
Non-Condensing Gas Furnace, Series A

CARRIER	FER	PAYNE	FER	DESCRIPTION
GAS FURNACES				
58STX	58SC1A	PG8JAA	PG8E	80% SINGLE stage PSC motor
58DLX	58SC1A			80% SINGLE stage PSC motor w/Insultated Cabinet
58PHY	58SC1A			80% SINGLE stage X13 motor SEER Boost
58CTY	58TP1A			80% Performance TWO stage PWM motor
58CVX	58TN1A			80% Infinity TWO stage Communicating ECM motor

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Table 12 – Air Delivery - CFM (With Filter)*

COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] With Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)													
Unit Size: 045V14-12	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1190	1140	1100	1065	1020	985	905	800	665	525
Cooling (SW2-8,7,6)	OFF	OFF	ON	620	560	520	455	410	355	305	255	See Note 4	
	OFF	ON	OFF	795	755	705	670	615	585	530	490	440	405
	OFF	ON	ON	1020	955	930	890	840	805	755	715	645	490
	ON	OFF	OFF	1190	1140	1100	1065	1020	985	905	800	665	525
	ON	OFF	ON	1455	1390	1325	1255	1175	1085	1000	880	755	575
	ON	ON	OFF	1455	1390	1325	1255	1175	1085	1000	880	755	575
	ON	ON	ON	1455	1390	1325	1255	1175	1085	1000	880	755	575
	Maximum Clg Airflow2			1455	1390	1325	1255	1175	1085	1000	880	755	575
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	620	560	520	455	410	355	305	255	See Note 4	
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	620	560	520	455	410	355	305	255	See Note 4	
	OFF	ON	OFF	795	755	705	670	615	585	530	490	440	405
	OFF	ON	ON	1020	955	930	890	840	805	755	715	645	490
	ON	OFF	OFF	1190	1140	1100	1065	1020	985	905	800	665	525
	ON	OFF	ON	1455	1390	1325	1255	1175	1085	1000	880	755	575
	ON	ON	OFF	1455	1390	1325	1255	1175	1085	1000	880	755	575
	ON	ON	ON	1455	1390	1325	1255	1175	1085	1000	880	755	575
Cont. Fan Default:	OFF	OFF	OFF	620	560	520	455	410	355	305	255	See Note 4	
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	620	560	520	455	410	355	305	255	See Note 4	
	OFF	ON	OFF	795	755	705	670	615	585	530	490	440	405
	OFF	ON	ON	1020	955	930	890	840	805	755	715	645	490
	ON	OFF	OFF	1020	955	930	890	840	805	755	715	645	490
	ON	OFF	ON	1020	955	930	890	840	805	755	715	645	490
	ON	ON	OFF	1020	955	930	890	840	805	755	715	645	490
	ON	ON	ON	1020	955	930	890	840	805	755	715	645	490
Heating (SW1)	High Heat Airflow[3]			915	860	825	790	735	700	650	610	550	450
	Low Heat Airflow[3]			780	730	685	635	585	545	495	450	400	370

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Unit Size: 070V14-12	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1155	1125	1095	1065	1035	1005	975	950	915	875
Cooling (SW2-8,7,6)	OFF	OFF	ON	605	555	500	440	375	320	265	See Note 4		
	OFF	ON	OFF	775	735	690	650	600	550	500	450	405	365
	OFF	ON	ON	980	950	915	880	845	810	775	735	695	655
	ON	OFF	OFF	1155	1125	1095	1065	1035	1005	975	950	915	875
	ON	OFF	ON	1370	1340	1310	1285	1260	1235	1210	1140	1025	880
	ON	ON	OFF	1505	1480	1455	1420	1380	1335	1250	1155	1045	900
	ON	ON	ON	1505	1480	1455	1420	1380	1335	1250	1155	1045	900
	Maximum Clg Airflow[2]			1505	1480	1455	1420	1380	1335	1250	1155	1045	900
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	605	555	500	440	375	320	265	See Note 4		
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	605	555	500	440	375	320	265	See Note 4		
	OFF	ON	OFF	775	735	690	650	600	550	500	450	405	365
	OFF	ON	ON	980	950	915	880	845	810	775	735	695	655
	ON	OFF	OFF	1155	1125	1095	1065	1035	1005	975	950	915	875
	ON	OFF	ON	1370	1340	1310	1285	1260	1235	1210	1140	1025	880
	ON	ON	OFF	1505	1480	1455	1420	1380	1335	1250	1155	1045	900
	ON	ON	ON	1505	1480	1455	1420	1380	1335	1250	1155	1045	900
Cont. Fan Default:	OFF	OFF	OFF	605	555	500	440	375	320	265	See Note 4		
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	605	555	500	440	375	320	265	See Note 4		
	OFF	ON	OFF	775	735	690	650	600	550	500	450	405	365
	OFF	ON	ON	980	950	915	880	845	810	775	735	695	655
	ON	OFF	OFF	1155	1125	1095	1065	1035	1005	975	950	915	875
	ON	OFF	ON	1370	1340	1310	1285	1260	1235	1210	1140	1025	880
	ON	ON	OFF	1370	1340	1310	1285	1260	1235	1210	1140	1025	880
	ON	ON	ON	1370	1340	1310	1285	1260	1235	1210	1140	1025	880
Heating (SW1)	High Heat Airflow[3]			1190	1160	1130	1100	1070	1045	1015	985	955	900
	Low Heat Airflow[3]			725	680	635	585	530	475	425	375	330	285

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58TP0A/58TP1A: Installation, Start-up, Operating and Service and Maintenance Instructions

Table 12 – Air Delivery - CFM (With Filter)* (Continued)

COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] With Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)													
Unit Size: 070V17-16	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1600	1570	1535	1500	1465	1430	1400	1365	1335	1300
Cooling (SW2-8,7,6)	OFF	OFF	ON	590	520	440	365	300	235	See Note 4			
	OFF	ON	OFF	790	730	670	610	550	485	430	380	330	275
	OFF	ON	ON	1025	980	930	880	835	785	735	690	635	590
	ON	OFF	OFF	1230	1190	1150	1105	1065	1025	980	940	900	860
	ON	OFF	ON	1390	1355	1315	1280	1240	1200	1165	1125	1090	1055
	ON	ON	OFF	1600	1570	1535	1500	1465	1430	1400	1365	1335	1300
	ON	ON	ON	1855	1830	1800	1770	1740	1695	1645	1600	1520	1415
	Maximum Clg Airflow[2]			1855	1830	1800	1770	1740	1695	1645	1600	1520	1415
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	590	520	440	365	300	235	See Note 4			
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	590	520	440	365	300	235	See Note 4			
	OFF	ON	OFF	790	730	670	610	550	485	430	380	330	275
	OFF	ON	ON	1025	980	930	880	835	785	735	690	635	590
	ON	OFF	OFF	1230	1190	1150	1105	1065	1025	980	940	900	860
	ON	OFF	ON	1390	1355	1315	1280	1240	1200	1165	1125	1090	1055
	ON	ON	OFF	1600	1570	1535	1500	1465	1430	1400	1365	1335	1300
	ON	ON	ON	1855	1830	1800	1770	1740	1695	1645	1600	1520	1415
Cont. Fan Default:	OFF	OFF	OFF	590	520	440	365	300	235	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	590	520	440	365	300	235	See Note 4			
	OFF	ON	OFF	685	625	565	505	445	385	325	265	See Note 4	
	OFF	ON	ON	790	730	670	610	550	485	430	380	330	275
	ON	OFF	OFF	790	730	670	610	550	485	430	380	330	275
	ON	OFF	ON	790	730	670	610	550	485	430	380	330	275
	ON	ON	OFF	790	730	670	610	550	485	430	380	330	275
	ON	ON	ON	790	730	670	610	550	485	430	380	330	275
Heating (SW1)	High Heat Airflow[3]			1410	1375	1340	1300	1260	1225	1190	1155	1120	1085
	Low Heat Airflow[3]			1235	1195	1155	1110	1070	1025	985	945	905	865

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Heating (SW1)	High Heat Airflow[3]			1410	1375	1340	1300	1260	1225	1190	1155	1120	1085
	Low Heat Airflow[3]			1235	1195	1155	1110	1070	1025	985	945	905	865
Unit Size: 090V17-16	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1560	1520	1485	1450	1415	1380	1340	1300	1260	1115
Cooling (SW2-8,7,6)	OFF	OFF	ON	680	605	495	415	345	275	See Note 4			
	OFF	ON	OFF	835	770	700	600	535	465	410	350	285	240
	OFF	ON	ON	1035	980	930	870	795	720	665	605	555	505
	ON	OFF	OFF	1210	1165	1125	1080	1030	975	905	845	790	740
	ON	OFF	ON	1375	1335	1300	1260	1220	1175	1125	1075	1010	955
	ON	ON	OFF	1560	1520	1485	1450	1415	1380	1340	1300	1260	1115
	ON	ON	ON	1640	1605	1570	1540	1505	1470	1435	1390	1325	1110
	Maximum Clg Airflow[2]			1640	1605	1570	1540	1505	1470	1435	1390	1325	1110
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	680	605	495	415	345	275	See Note 4			
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	680	605	495	415	345	275	See Note 4			
	OFF	ON	OFF	835	770	700	600	535	465	410	350	285	240
	OFF	ON	ON	1035	980	930	870	795	720	665	605	555	505
	ON	OFF	OFF	1210	1165	1125	1080	1030	975	905	845	790	740
	ON	OFF	ON	1375	1335	1300	1260	1220	1175	1125	1075	1010	955
	ON	ON	OFF	1560	1520	1485	1450	1415	1380	1340	1300	1260	1115
	ON	ON	ON	1640	1605	1570	1540	1505	1470	1435	1390	1325	1110
Cont. Fan Default:	OFF	OFF	OFF	680	605	495	415	345	275	See Note 4			
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	680	605	495	415	345	275	See Note 4			
	OFF	ON	OFF	835	770	700	600	535	465	410	350	285	240
	OFF	ON	ON	1035	980	930	870	795	720	665	605	555	505
	ON	OFF	OFF	1210	1165	1125	1080	1030	975	905	845	790	740
	ON	OFF	ON	1375	1335	1300	1260	1220	1175	1125	1075	1010	955
	ON	ON	OFF	1560	1520	1485	1450	1415	1380	1340	1300	1260	1115
	ON	ON	ON	1560	1520	1485	1450	1415	1380	1340	1300	1260	1115
Heating (SW1)	High Heat Airflow[3]			1400	1360	1325	1285	1245	1200	1155	1110	1045	995
	Low Heat Airflow[3]			1035	980	930	870	795	720	665	605	555	505

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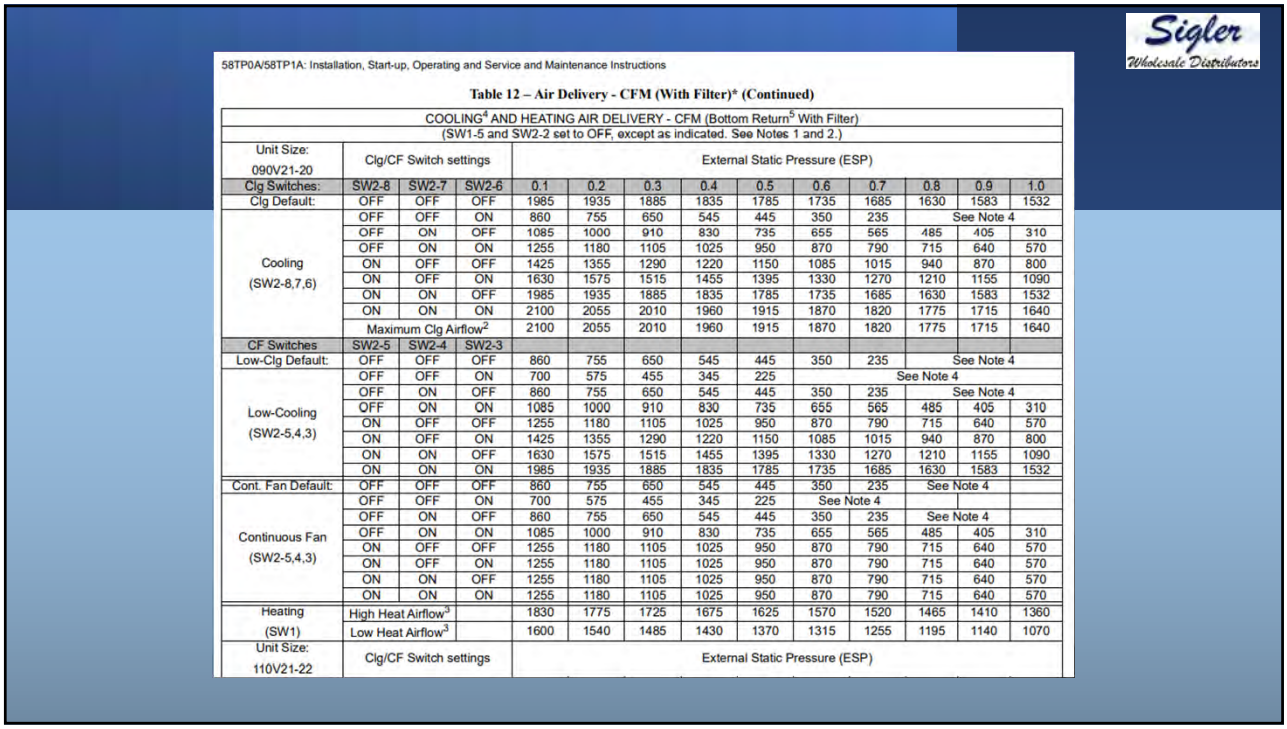

58TP0A/58TP1A: Installation, Start-up, Operating and Service and Maintenance Instructions

Table 12 – Air Delivery - CFM (With Filter)* (Continued)

COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] With Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)													
Unit Size: 090V21-20	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
Cooling (SW2-8,7,6)	OFF	OFF	ON	860	755	650	545	445	350	235	See Note 4		
	OFF	ON	OFF	1085	1000	910	830	735	655	565	485	405	310
	OFF	ON	ON	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	OFF	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	OFF	ON	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	OFF	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
	ON	ON	ON	2100	2055	2010	1960	1915	1870	1820	1775	1715	1640
	Maximum Clg Airflow[2]			2100	2055	2010	1960	1915	1870	1820	1775	1715	1640
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	860	755	650	545	445	350	235	See Note 4		
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	700	575	455	345	225	See Note 4				
	OFF	ON	OFF	860	755	650	545	445	350	235	See Note 4		
	OFF	ON	ON	1085	1000	910	830	735	655	565	485	405	310
	ON	OFF	OFF	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	ON	1425	1355	1290	1220	1150	1085	1015	940	870	800
	ON	ON	OFF	1630	1575	1515	1455	1395	1330	1270	1210	1155	1090
	ON	ON	ON	1985	1935	1885	1835	1785	1735	1685	1630	1583	1532
Cont. Fan Default:	OFF	OFF	OFF	860	755	650	545	445	350	235	See Note 4		
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	700	575	455	345	225	See Note 4				
	OFF	ON	OFF	860	755	650	545	445	350	235	See Note 4		
	OFF	ON	ON	1085	1000	910	830	735	655	565	485	405	310
	ON	OFF	OFF	1255	1180	1105	1025	950	870	790	715	640	570
	ON	OFF	ON	1255	1180	1105	1025	950	870	790	715	640	570
	ON	ON	OFF	1255	1180	1105	1025	950	870	790	715	640	570
	ON	ON	ON	1255	1180	1105	1025	950	870	790	715	640	570
Heating (SW1)	High Heat Airflow[3]			1830	1775	1725	1675	1625	1570	1520	1465	1410	1360
	Low Heat Airflow[3]			1600	1540	1485	1430	1370	1315	1255	1195	1140	1070
Unit Size: 110V21-22	Clg/CF Switch settings			External Static Pressure (ESP)									

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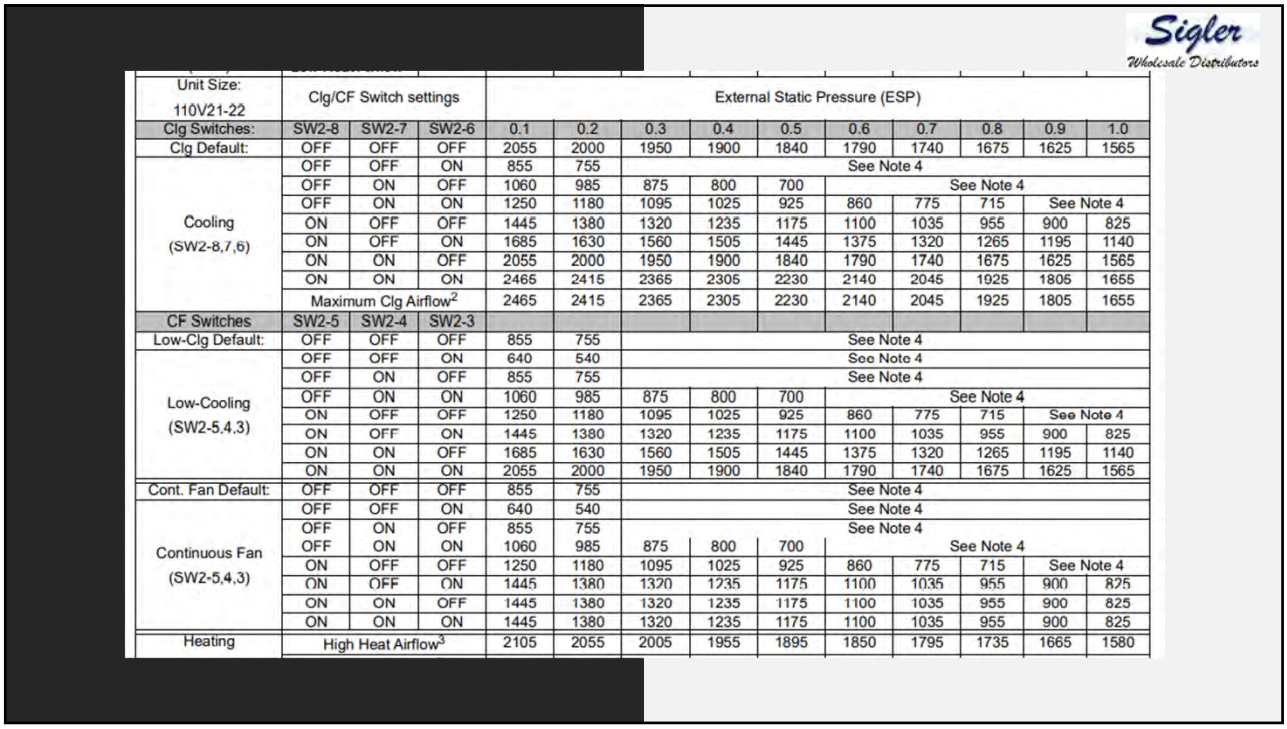

Unit Size: 110V21-22	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	2055	2000	1950	1900	1840	1790	1740	1675	1625	1565
Cooling (SW2-8,7,6)	OFF	OFF	ON	855	755	See Note 4							
	OFF	ON	OFF	1060	985	875	800	700	See Note 4				
	OFF	ON	ON	1250	1180	1095	1025	925	860	775	715	See Note 4	
	ON	OFF	OFF	1445	1380	1320	1235	1175	1100	1035	955	900	825
	ON	OFF	ON	1685	1630	1560	1505	1445	1375	1320	1265	1195	1140
	ON	ON	OFF	2055	2000	1950	1900	1840	1790	1740	1675	1625	1565
	ON	ON	ON	2465	2415	2365	2305	2230	2140	2045	1925	1805	1655
	Maximum Clg Airflow[2]			2465	2415	2365	2305	2230	2140	2045	1925	1805	1655
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	855	755	See Note 4							
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	640	540	See Note 4							
	OFF	ON	OFF	855	755	See Note 4							
	OFF	ON	ON	1060	985	875	800	700	See Note 4				
	ON	OFF	OFF	1250	1180	1095	1025	925	860	775	715	See Note 4	
	ON	OFF	ON	1445	1380	1320	1235	1175	1100	1035	955	900	825
	ON	ON	OFF	1685	1630	1560	1505	1445	1375	1320	1265	1195	1140
	ON	ON	ON	2055	2000	1950	1900	1840	1790	1740	1675	1625	1565
Cont. Fan Default:	OFF	OFF	OFF	855	755	See Note 4							
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	640	540	See Note 4							
	OFF	ON	OFF	855	755	See Note 4							
	OFF	ON	ON	1060	985	875	800	700	See Note 4				
	ON	OFF	OFF	1250	1180	1095	1025	925	860	775	715	See Note 4	
	ON	OFF	ON	1445	1380	1320	1235	1175	1100	1035	955	900	825
	ON	ON	OFF	1445	1380	1320	1235	1175	1100	1035	955	900	825
	ON	ON	ON	1445	1380	1320	1235	1175	1100	1035	955	900	825
Heating	High Heat Airflow[3]			2105	2055	2005	1955	1895	1850	1795	1735	1665	1580

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58TP0A/58TP1A: Installation, Start-up, Operating and Service and Maintenance Instructions

Table 12 – Air Delivery - CFM (With Filter)* (Continued)

COOLING[4] AND HEATING AIR DELIVERY - CFM (Bottom Return[5] With Filter) (SW1-5 and SW2-2 set to OFF, except as indicated. See Notes 1 and 2.)													
Unit Size: 135V24-22	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches:	SW2-8	SW2-7	SW2-6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Clg Default:	OFF	OFF	OFF	2105	2050	1995	1940	1880	1820	1765	1705	1650	1590
Cooling (SW2-8,7,6)	OFF	OFF	ON	990	885	780	665	570	See Note 4				
	OFF	ON	OFF	1180	1090	995	900	815	715	635	555	475	400
	OFF	ON	ON	1355	1270	1190	1105	1020	940	855	775	700	630
	ON	OFF	OFF	1535	1465	1395	1320	1245	1165	1095	1025	945	875
	ON	OFF	ON	1735	1670	1605	1535	1470	1405	1335	1270	1205	1140
	ON	ON	OFF	2105	2050	1995	1940	1880	1820	1765	1705	1650	1590
	ON	ON	ON	2280	2225	2175	2120	2065	2010	1955	1905	1850	1800
	Maximum Clg Airflow[2]			2360	2310	2265	2215	2160	2115	2060	2010	1960	1870
CF Switches	SW2-5	SW2-4	SW2-3										
Low-Clg Default:	OFF	OFF	OFF	990	885	780	665	570	See Note 4				
Low-Cooling (SW2-5,4,3)	OFF	OFF	ON	800	670	540	410	280	See Note 4				
	OFF	ON	OFF	990	885	780	665	570	See Note 4				
	OFF	ON	ON	1180	1090	995	900	815	715	635	555	475	400
	ON	OFF	OFF	1355	1270	1190	1105	1020	940	855	775	700	630
	ON	OFF	ON	1535	1465	1395	1320	1245	1165	1095	1025	945	875
	ON	ON	OFF	1735	1670	1605	1535	1470	1405	1335	1270	1205	1140
	ON	ON	ON	2105	2050	1995	1940	1880	1820	1765	1705	1650	1590
Cont. Fan Default:	OFF	OFF	OFF	740	605	470	360	255	See Note 4				
Continuous Fan (SW2-5,4,3)	OFF	OFF	ON	740	605	470	360	255	See Note 4				
	OFF	ON	OFF	900	775	650	525	400	See Note 4				
	OFF	ON	ON	1080	980	885	785	680	595	510	430	345	260
	ON	OFF	OFF	1080	980	885	785	680	595	510	430	345	260
	ON	OFF	ON	1080	980	885	785	680	595	510	430	345	260
	ON	ON	OFF	1080	980	885	785	680	595	510	430	345	260
	ON	ON	ON	1080	980	885	785	680	595	510	430	345	260
Heating (SW1)	High Heat Airflow[3]			2130	2075	2020	1970	1910	1855	1805	1745	1690	1630
	Low Heat Airflow[3]			1855	1795	1730	1670	1605	1545	1480	1420	1360	1300

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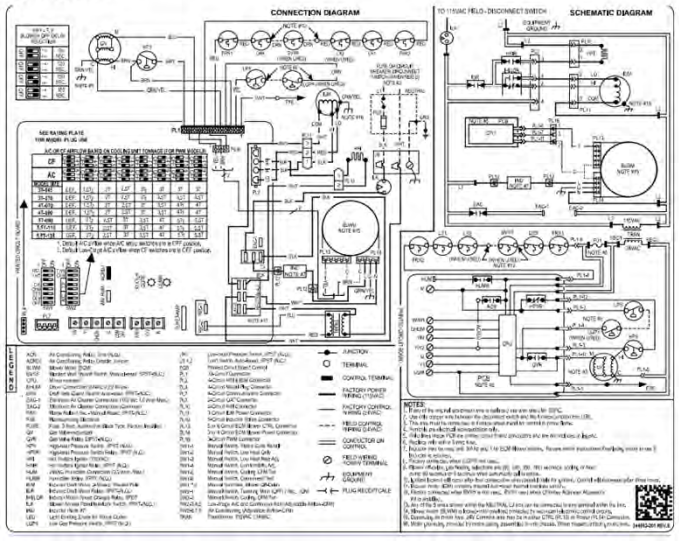
WIRING DIAGRAM



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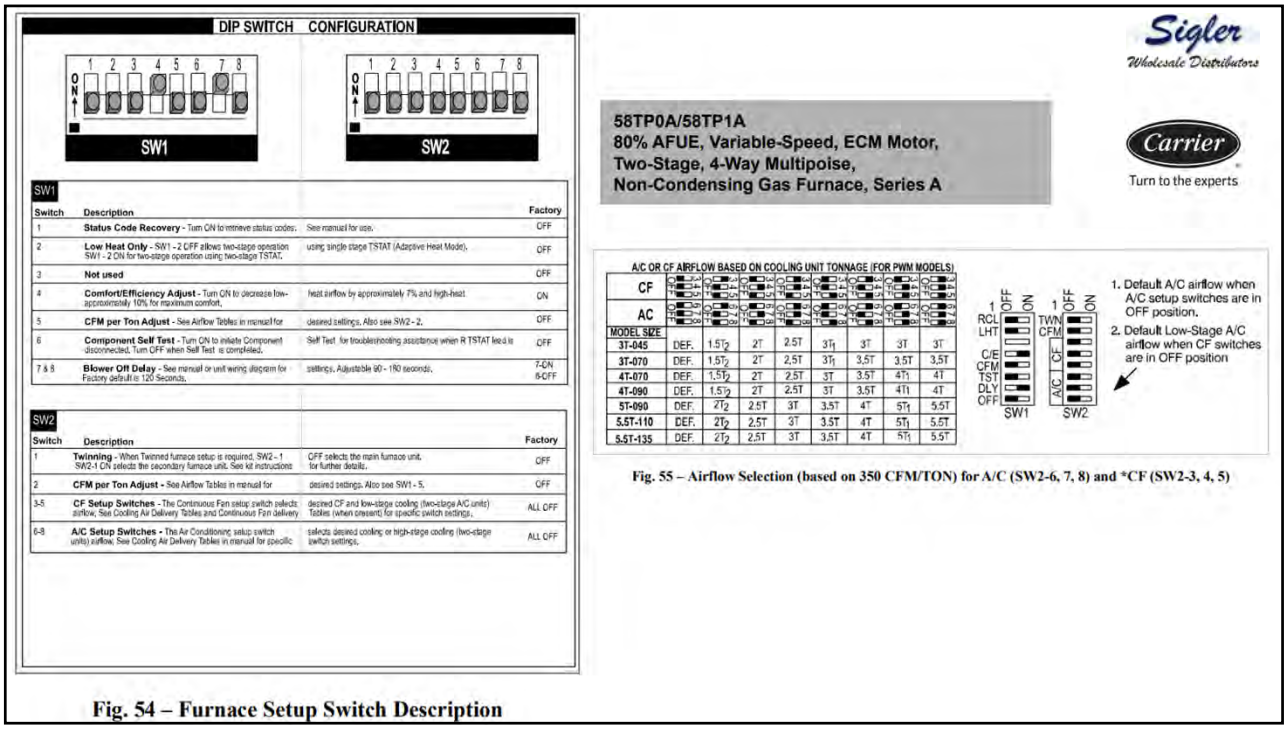

DIP SWITCH CONFIGURATION

SW1

SW2

SW1

Switch	Description		Factory
1	**Status Code Recovery** - Turn ON to retrieve status codes.	See manual for use.	OFF
2	**Low Heat Only** - SW1 - 2 OFF allows two-stage operation SW1 - 2 ON for two-stage operation using two-stage TSTAT.	using single stage TSTAT (Adaptive Heat Mode).	OFF
3	**Not used**		OFF
4	**Comfort/Efficiency Adjust** - Turn ON to decrease low- approximately 10% for maximum comfort.	heat airflow by approximately 7% and high-heat	ON
5	**CFM per Ton Adjust** - See Airflow Tables in manual for	desired settings. Also see SW2- 2.	OFF
6	**Component Self Test** - Turn ON to initiate Component disconnected. Turn OFF when Self Test is completed.	Self Test for troubleshooting assistance when R TSTAT lead is	OFF
7 & 8	**Blower Off Delay** - See manual or unit wiring diagram for Factory default is 120 Seconds.	settings. Adjustable 90 - 180 seconds.	7-ON 8-OFF

SW2

Switch	Description		Factory
1	**Twinning** - When Twinned furnace setup is required, SW2 - 1 SW2-1 ON selects the secondary furnace unit. See kit instructions	OFF selects the main furnace unit. for further details.	OFF
2	**CFM per Ton Adjust** - See Airflow Tables in manual for	desired settings. Also see SW1 - 5.	OFF
3-5	**CF Setup Switches** - The Continuous Fan setup switch selects airflow. See Cooling Air Delivery Tables and Continuous Fan delivery	desired CF and low-stage cooling (two-stage A/C units) Tables (when present) for specific switch settings.	ALL OFF
6-8	**A/C Setup Switches** - The Air Conditioning setup switch units) airflow. See Cooling Air Delivery Tables in manual for specific	selects desired cooling or high-stage cooling (two-stage switch settings.	ALL OFF

Fig. 54 – Furnace Setup Switch Description

Sigler Wholesale Distributors

58TP0A/58TP1A
80% AFUE, Variable-Speed, ECM Motor,
Two-Stage, 4-Way Multipoise,
Non-Condensing Gas Furnace, Series A

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A/C OR CF AIRFLOW BASED ON COOLING UNIT TONNAGE (FOR PWM MODELS)

MODEL SIZE		CF	AC
3T-045	DEF.	$1.5T_2$	2T	2.5T	$3T_1$	3T	3T	3T
3T-070	DEF.	$1.5T_2$	2T	2.5T	$3T_1$	3.5T	3.5T	3.5T
4T-070	DEF.	$1.5T_2$	2T	2.5T	3T	3.5T	$4T_1$	4T
4T-090	DEF.	$1.5T_2$	2T	2.5T	3T	3.5T	$4T_1$	4T
5T-090	DEF.	$2T_2$	2.5T	3T	3.5T	4T	$5T_1$	5.5T
5.5T-110	DEF.	$2T_2$	2.5T	3T	3.5T	4T	$5T_1$	5.5T
5.5T-135	DEF.	$2T_2$	2.5T	3T	3.5T	4T	$5T_1$	5.5T

SW1 SW2

1. Default A/C airflow when A/C setup switches are in OFF position.
2. Default Low-Stage A/C airflow when CF switches are in OFF position

Fig. 55 – Airflow Selection (based on 350 CFM/TON) for A/C (SW2-6, 7, 8) and *CF (SW2-3, 4, 5)

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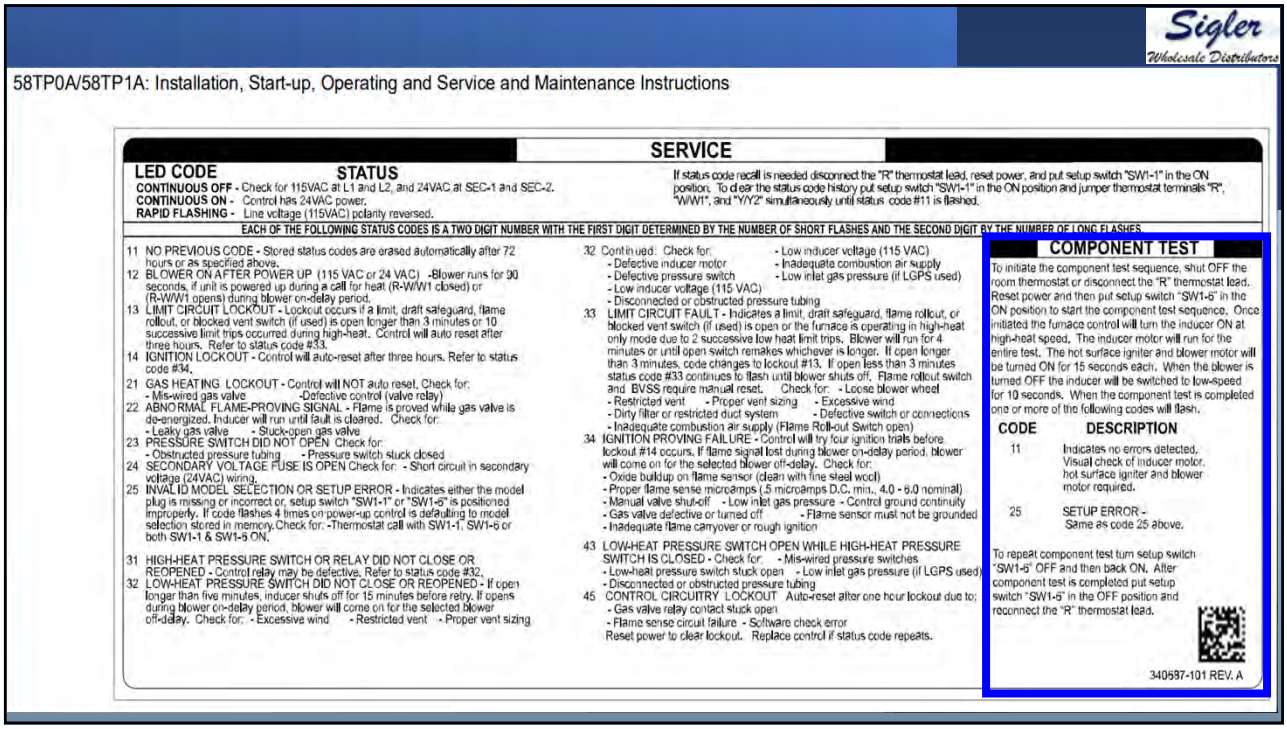

Sigler Wholesale Distributors

58TP0A/58TP1A: Installation, Start-up, Operating and Service and Maintenance Instructions

SERVICE

LED CODE STATUS
CONTINUOUS OFF - Check for 115VAC at L1 and L2, and 24VAC at SEC-1 and SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed.

If status code recall is needed disconnect the "R" thermostat lead, reset power, and put setup switch "SW1-1" in the ON position. To clear the status code history put setup switch "SW1-1" in the ON position and jumper thermostat terminals "R", "W/W1", and "Y/Y2" simultaneously until status code #11 is flashed.

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 NO PREVIOUS CODE - Stored status codes are erased automatically after 72 hours or as specified above.
12 BLOWER ON AFTER POWER UP (115 VAC or 24 VAC) -Blower runs for 90 seconds, if unit is powered up during a call for heat (R-W/W1 closed) or (R-W/W1 opens) during blower on-delay period.
13 LIMIT CIRCUIT LOCKOUT - Lockout occurs if a limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open longer than 3 minutes or 10 successive limit trips occurred during high-heat. Control will auto reset after three hours. Refer to status code #33.
14 IGNITION LOCKOUT - Control will auto-reset after three hours. Refer to status code #34.
21 GAS HEATING LOCKOUT - Control will NOT auto reset. Check for:
- Mis-wired gas valve -Defective control (valve relay)
22 ABNORMAL FLAME-PROVING SIGNAL - Flame is proved while gas valve is de-energized. Inducer will run until fault is cleared. Check for:
- Leaky gas valve - Stuck-open gas valve
23 PRESSURE SWITCH DID NOT OPEN Check for:
- Obstructed pressure tubing - Pressure switch stuck closed
24 SECONDARY VOLTAGE FUSE IS OPEN Check for: - Short circuit in secondary voltage (24VAC) wiring.
25 INVALID MODEL SELECTION OR SETUP ERROR - Indicates either the model plug is missing or incorrect or, setup switch "SW1-1" or "SW1-6" is positioned improperly. If code flashes 4 times on power-up, control is defaulting to model selection stored in memory. Check for: -Thermostat call with SW1-1, SW1-6 or both SW1-1 & SW1-6 ON.

31 HIGH-HEAT PRESSURE SWITCH OR RELAY DID NOT CLOSE OR REOPENED - Control relay may be defective. Refer to status code #32.
32 LOW-HEAT PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If open longer than five minutes, inducer shuts off for 15 minutes before retry. If opens during blower on-delay period, blower will come on for the selected blower off-delay. Check for: - Excessive wind - Restricted vent - Proper vent sizing

32 Continued: Check for: - Low inducer voltage (115 VAC)
- Defective inducer motor - Inadequate combustion air supply
- Defective pressure switch - Low inlet gas pressure (if LGPS used)
- Low inducer voltage (115 VAC)
- Disconnected or obstructed pressure tubing
33 LIMIT CIRCUIT FAULT - Indicates a limit, draft safeguard, flame rollout, or blocked vent switch (if used) is open or the furnace is operating in high-heat only mode due to 2 successive low heat limit trips. Blower will run for 4 minutes or until open switch remakes whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch and BVSS require manual reset. Check for: - Loose blower wheel
- Restricted vent - Proper vent sizing - Excessive wind
- Dirty filter or restricted duct system - Defective switch or connections
- Inadequate combustion air supply (Flame Roll-out Switch open)
34 IGNITION PROVING FAILURE - Control will try four ignition trials before lockout #14 occurs. If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay. Check for:
- Oxide buildup on flame sensor (clean with fine steel wool)
- Proper flame sense microamps (.5 microamps D.C. min., 4.0 - 6.0 nominal)
- Manual valve shut-off - Low inlet gas pressure - Control ground continuity
- Gas valve defective or turned off - Flame sensor must not be grounded
- Inadequate flame carryover or rough ignition

43 LOW-HEAT PRESSURE SWITCH OPEN WHILE HIGH-HEAT PRESSURE SWITCH IS CLOSED - Check for: - Mis-wired pressure switches
- Low-heat pressure switch stuck open - Low inlet gas pressure (if LGPS used)
- Disconnected or obstructed pressure tubing
45 CONTROL CIRCUITRY LOCKOUT Auto-reset after one hour lockout due to:
- Gas valve relay contact stuck open
- Flame sense circuit failure - Software check error
Reset power to clear lockout. Replace control if status code repeats.

COMPONENT TEST

To initiate the component test sequence, shut OFF the room thermostat or disconnect the "R" thermostat lead. Reset power and then put setup switch "SW1-6" in the ON position to start the component test sequence. Once initiated the furnace control will turn the inducer ON at high-heat speed. The inducer motor will run for the entire test. The hot surface igniter and blower motor will be turned ON for 15 seconds each. When the blower is turned OFF the inducer will be switched to low-speed for 10 seconds. When the component test is completed one or more of the following codes will flash.

CODE	DESCRIPTION
11	Indicates no errors detected. Visual check of inducer motor, hot surface igniter and blower motor required.
25	SETUP ERROR - Same as code 25 above.

To repeat component test turn setup switch "SW1-6" OFF and then back ON. After component test is completed put setup switch "SW1-6" in the OFF position and reconnect the "R" thermostat lead.

340597-101 REV. A

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59MN7B060C17--14

59MN7B060C21--20

59MN7B080C17--14

59MN7B080C21--20

59MN7B100C21--22

59MN7B120C24--22

59MN7B
Modulating, High Efficiency Condensing Gas Furnace, 4-Way Multipoise

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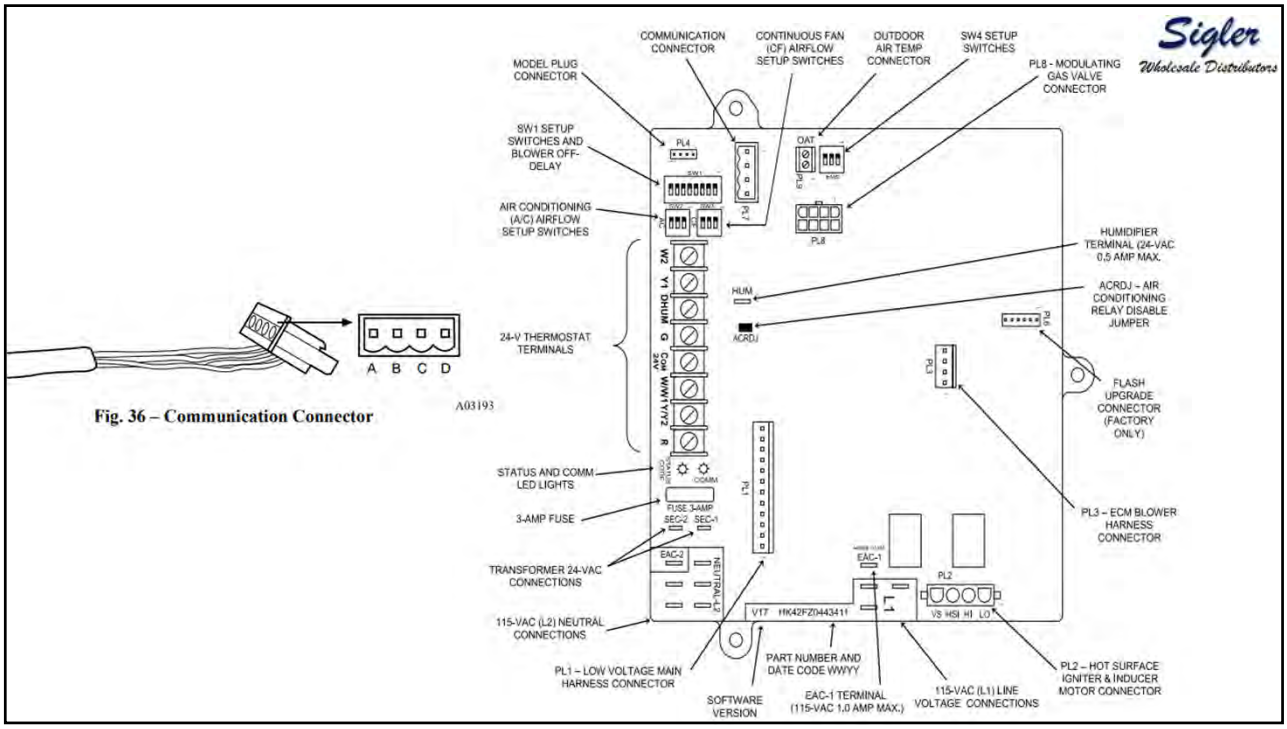

Fig. 36 – Communication Connector

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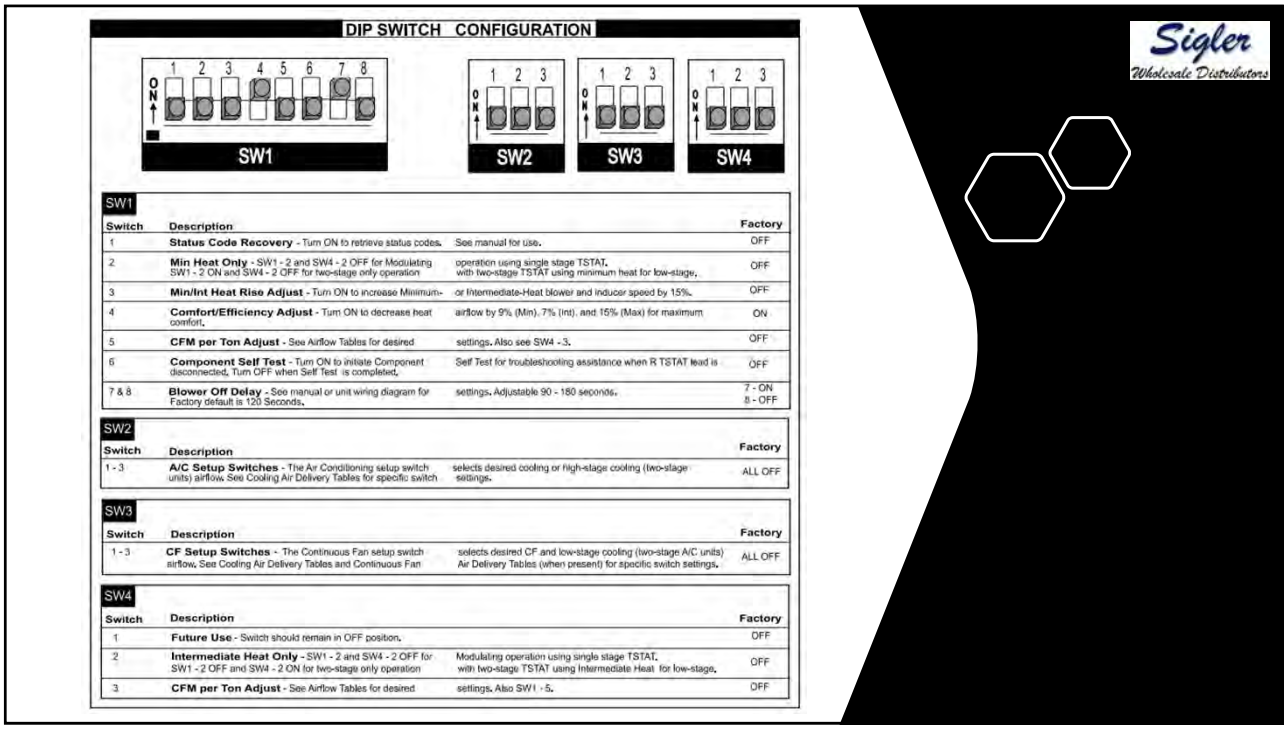

DIP SWITCH CONFIGURATION

SW1

Switch	Description		Factory
1	**Status Code Recovery** - Turn ON to retrieve status codes.	See manual for use.	OFF
2	**Min Heat Only** - SW1 - 2 and SW4 - 2 OFF for Modulating SW1 - 2 ON and SW4 - 2 OFF for two-stage only operation	operation using single stage TSTAT. with two-stage TSTAT using minimum heat for low-stage.	OFF
3	**Min/Int Heat Rise Adjust** - Turn ON to increase Minimum-	or Intermediate-Heat blower and inducer speed by 15%.	OFF
4	**Comfort/Efficiency Adjust** - Turn ON to decrease heat comfort.	airflow by 9% (Min), 7% (Int), and 15% (Max) for maximum	ON
5	**CFM per Ton Adjust** - See Airflow Tables for desired	settings. Also see SW4 - 3.	OFF
6	**Component Self Test** - Turn ON to initiate Component disconnected, Turn OFF when Self Test is completed.	Self Test for troubleshooting assistance when R TSTAT lead is	OFF
7 & 8	**Blower Off Delay** - See manual or unit wiring diagram for Factory default is 120 Seconds.	settings. Adjustable 90 - 180 seconds.	7 - ON 8 - OFF

SW2

Switch	Description		Factory
1 - 3	**A/C Setup Switches** - The Air Conditioning setup switch units) airflow. See Cooling Air Delivery Tables for specific switch	selects desired cooling or high-stage cooling (two-stage settings.	ALL OFF

SW3

Switch	Description		Factory
1 - 3	**CF Setup Switches** - The Continuous Fan setup switch airflow. See Cooling Air Delivery Tables and Continuous Fan	selects desired CF and low-stage cooling (two-stage A/C units) Air Delivery Tables (when present) for specific switch settings.	ALL OFF

SW4

Switch	Description		Factory
1	**Future Use** - Switch should remain in OFF position.		OFF
2	**Intermediate Heat Only** - SW1 - 2 and SW4 - 2 OFF for SW1 - 2 OFF and SW4 - 2 ON for two-stage only operation	Modulating operation using single stage TSTAT. with two-stage TSTAT using Intermediate Heat for low-stage.	OFF
3	**CFM per Ton Adjust** - See Airflow Tables for desired	settings. Also SW1 - 5.	OFF

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SERVICE

If status code recall is needed, disconnect the "R" thermostat lead, reset power, and put setup switch "SW1-1" in the ON position. To clear the status code history put setup switch "SW1-1" in the ON position and jumper thermostat terminals "R", "W/W1", and "Y/Y2" simultaneously until status code #11 is flashed.

LED CODE

CONTINUOUS OFF - Check for 115VAC at L1 & L2, & 24VAC at SEC-1 & SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed.

STATUS

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 **NO PREVIOUS CODE** - Stored status codes are erased automatically after 72 hours or as specified above.
12 **BLOWER ON AFTER POWER UP (115VAC or 24VAC)** - Blower runs for 90 seconds, if unit is powered up during a call for heat (R-W/W1 closed) or (R-W/W1) opens during blower on-delay period.
13 **LIMIT CIRCUIT LOCKOUT** - Lockout occurs if a limit or flame rollout switch is open longer than 3 minutes or 10 successive limit trips occurred during maximum heat. - Control will auto reset after 3 hours. - Refer to #33
14 **IGNITION LOCKOUT** - Control will auto-reset after 3 hours. Refer to #34.
15 **BLOWER MOTOR LOCKOUT** - Indicates the blower failed to reach 250 RPM or the blower failed to communicate within 30 seconds after being turned ON in two successive heating cycles. Control will auto reset after 3 hours. Refer to status code #41.
21 **GAS HEATING LOCKOUT** - Control will NOT auto reset. Check for: - Mis-wired gas valve - Defective control (valve relay)
22 **ABNORMAL FLAME-PROVING SIGNAL** - Flame is proved while gas valve is de-energized. Inducer will run until fault is cleared. Check for: - Leaky gas valve - Stuck-open gas valve
23 **PRESSURE SWITCH DID NOT OPEN** - Check for: -Obstructed pressure tubing - Pressure switch stuck closed
24 **SECONDARY VOLTAGE FUSE IS OPEN** - Check for: - Short circuit in secondary voltage (24VAC) wiring.
25 **MODEL SELECTION OR SETUP ERROR** - Either indicates the model plug (PL4) is missing or incorrect or setup switch "SW1-1" or "SW1-6" is positioned improperly. If code flashes only 4 times on power-up control is defaulting to model selection stored in memory. Check the following: - Thermostat call with "SW1-1" ON - Thermostat call with "SW1-6" ON - SW1-1 and SW1-6 both ON together - Two different furnace models twinned - See Rating Plate for model plug number and resistance values if code flashes continuously
31 **MEDIUM PRESSURE SWITCH, HIGH PRESSURE SWITCH OR PSR RELAY DID NOT CLOSE OR REOPENED** - Indicates the medium or high pressure switch failed to close on a call for intermediate or maximum heat, or opened during heat cycle. PSR relay may be defective. Refer to status code #32.
32 **LOW PRESSURE SWITCH DID NOT CLOSE OR REOPENED** - Indicates the low pressure switch input failed to close on a call for heat, or opened during minimum heat. If opens during 5 minutes after ignition the next heating cycle will be restricted to maximum heat. Check for: - Proper vent sizing - Plugged condensate drain - Low inlet gas pressure (if LGPS used) - Improper pressure switch wiring - Restricted vent - Disconnected or obstructed pressure tubing - Excessive wind - Water in vent piping, possible sagging pipe - Failed or "Out-of-Calibration" pressure switches
33 **LIMIT CIRCUIT FAULT** - Indicates a limit or flame rollout, or the furnace is operating in maximum heat due to 2 successive low or medium range limit trips. Blower will run for 4 minutes or until open switch remakes whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch requires manual reset. Check for: - Improper limit switch or no limit gasket - Defective switch or connections - Improper gas input adjustment - Loose blower wheel
34 **IGNITION PROVING FAULT** - Control will try three more times before lockout #14 occurs. If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay. Check for: - Oxide buildup on flame sensor (clean with fine steel wool) - Proper flame sense microamps (5 microamps D.C. min., 4.0 - 6.0 nominal) - Manual valve shut-off - Control ground continuity - Gas valve defective turned "OFF" - Low inlet gas pressure - Inadequate flame carryover or rough ignition - Defective Hot Surface Ignitor - Flame sensor must not be grounded - Green/yellow wire MUST be connected to furnace sheet metal
35 **GAS VALVE FAULT** - Indicates the modulating gas valve failed to communicate. Check connection to furnace control and gas valve.
41 **BLOWER MOTOR FAULT** - Indicates the blower failed to reach 250 RPM or the blower failed to communicate within the prescribed time limits. Thirty seconds after being turned ON or ten seconds during steady-state operation.
42 **INDUCER MOTOR FAULT** - Indicates the inducer has not started within 20 seconds after a call for heat, the inducer motor RPM is outside its valid range of operation, or the inducer RPM signal was lost for 5 seconds during operation. Check for: -Proper vent sizing -Restricted combustion air supply -Failed inducer motor -Improper motor wiring
43 **LOW OR MEDIUM PRESSURE SWITCH OPEN WHILE MEDIUM OR HIGH PRESSURE SWITCH IS CLOSED** Check for: - Plugged condensate drain - HPS closes before LPS - HPS closes before MPS. - MPS closes before LPS - low inlet gas pressure (if LGPS used) - Improper pressure switch wiring - Water in vent piping, possibly sagging pipe - Stuck open low or medium pressure switch - Disconnected or obstructed pressure tubing
45 **CONTROL CIRCUITRY LOCKOUT** - Auto-reset after 1 hour lockout due to: - Gas valve relay stuck open - Flame sense circuit failure - Software check error

COMPONENT TEST

To initiate the component test sequence shut OFF the room thermostat or disconnect the "R" thermostat lead. Reset power and then put setup switch "SW1-6" in the ON position to start the component test sequence. Once initiated the furnace control will turn the inducer ON. The inducer motor will run for the entire test. The hot surface igniter and blower motor will be turned ON for 15 seconds each. When the blower is turned OFF the inducer will be turned OFF. When the component test is completed one or more of the following codes will flash.

CODE	DESCRIPTION
11	Indicates the inducer and blower motor tested OK. Visual check of hot surface igniter required.
25	SETUP ERROR - Same as code 25 above.
35	GAS VALVE FAULT - same as code 35 above
41	BLOWER MOTOR FAULT - Indicates blower motor failed test. Check blower, wiring, and furnace control.
42	INDUCER MOTOR FAULT - Indicates inducer motor failed test. Check inducer, wiring and furnace control.

To repeat component test turn setup switch "SW1-6" OFF and then back ON. After component test is completed put setup switch "SW1-6" in the OFF position and reconnect the "R" thermostat lead.

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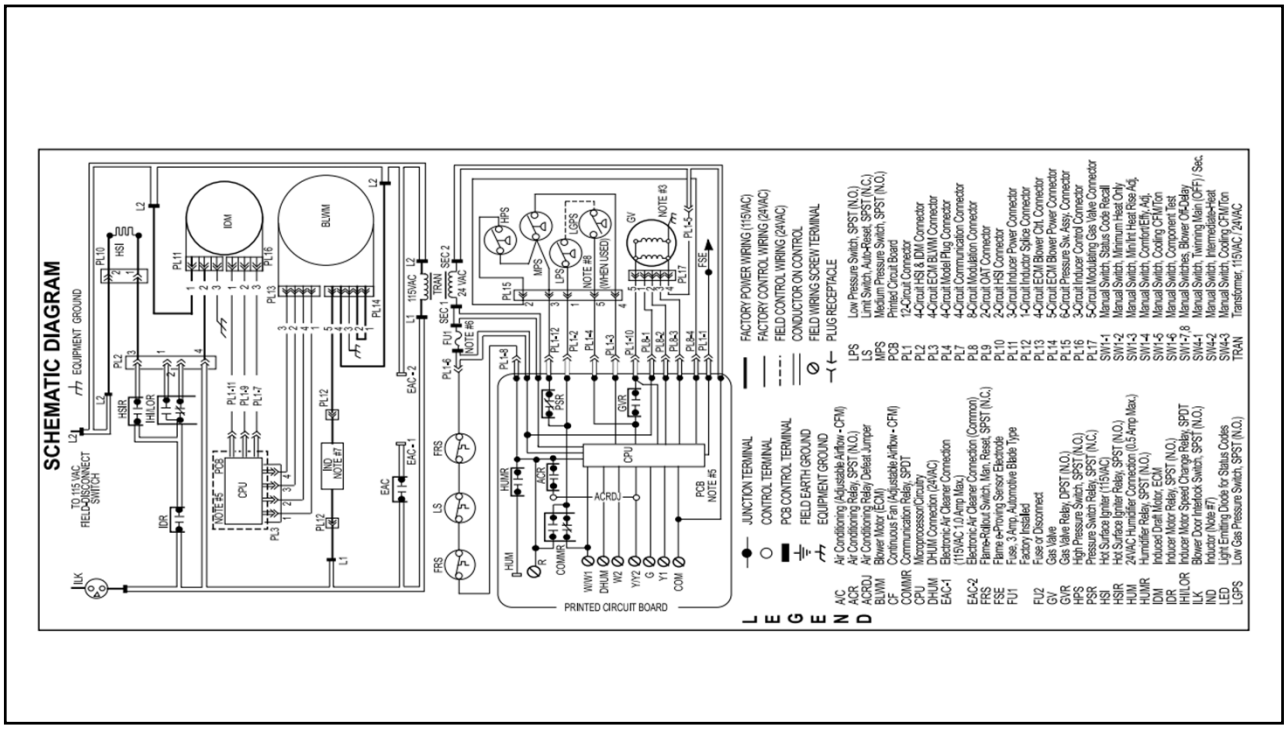
SCHEMATIC DIAGRAM
TO 115 VAC FIELD DISCONNECT SWITCH
EQUIPMENT GROUND
PRINTED CIRCUIT BOARD
LEGEND
JUNCTION TERMINAL
CONTROL TERMINAL
PCB CONTROL TERMINAL
FIELD EARTH GROUND
EQUIPMENT GROUND
FACTORY POWER WIRING (115VAC)
FACTORY CONTROL WIRING (24VAC)
FIELD CONTROL WIRING (24VAC)
CONDUCTOR ON CONTROL
FIELD WIRING SCREW TERMINAL
PLUG RECEPTACLE
A/C Air Conditioning (Adjustable Airflow - CFM)
ACR Air Conditioning Relay, SPST (N.O.)
ACRDJ Air Conditioning Relay Defeat Jumper
BLWM Blower Motor (ECM)
CF Continuous Fan (Adjustable Airflow - CFM)
COMMR Communication Relay, SPDT
CPU Microprocessor Control
DHUM Connection (24VAC)
EAC-1 Electronic Air Cleaner Connection (115VAC 1.0 Amp Max.)
EAC-2 Electronic Air Cleaner Connection (Common)
FRS Flame-Rollout Switch, Man. Reset, SPST (N.C.)
FSE Flame e-Proving Sensor Electrode
FU1 Fuse, 3 Amp, Automotive Blade Type Factory Installed
FU2 Fuse or Disconnect
GV Gas Valve
GVR Gas Valve Relay, DPST (N.O.)
HPS High Pressure Switch, SPST (N.O.)
PSR Pressure Switch Relay, SPST (N.C.)
HSI Hot Surface Igniter (115VAC)
HSIR Hot Surface Igniter Relay, SPST (N.O.)
HUM 24VAC Humidifier Connection (0.5 Amp Max.)
HUMR Humidifier Relay, SPST (N.O.)
IDM Inducer Motor (ECM)
IDR Inducer Motor Relay, SPST (N.O.)
IHILOR Inducer Motor Speed Change Relay, SPDT
ILK Blower Door Interlock Switch, SPST (N.O.)
IND Inducer (Note #7)
LED Light Emitting Diode for Status Codes
LGPS Low Gas Pressure Switch, SPST (N.O.)
LPS Low Pressure Switch, SPST (N.O.)
LS Limit Switch, Auto-Reset, SPST (N.C.)
MPS Medium Pressure Switch, SPST (N.O.)
PCB Printed Circuit Board
PL1 2-Circuit Control Connector
PL2 4-Circuit A/C & IDM Connector
PL3 4-Circuit ECM BLWM Connector
PL4 4-Circuit Model Plug Connector
PL7 4-Circuit Communication Connector
PL8 8-Circuit Modulation Connector
PL9 2-Circuit OAT Connector
PL10 2-Circuit HSI Connector
PL11 3-Circuit Inducer Power Connector
PL12 1-Circuit Inductor Splice Connector
PL13 4-Circuit ECM Blower Ctrl. Connector
PL14 5-Circuit ECM Blower Power Connector
PL15 6-Circuit Pressure Sw. Assy. Connector
PL16 3-Circuit Inducer Control Connector
PL17 5-Circuit Modulating Gas Valve Connector
SW1-1 Manual Switch, Status Code Recall
SW1-2 Manual Switch, Minimum Heat Only
SW1-3 Manual Switch, Min/Int Heat Rise Adj.
SW1-4 Manual Switch, Comfort/Eff. Adj.
SW1-5 Manual Switch, Cooling CFM/Ton
SW1-6 Manual Switch, Dehumidification Test
SW1-7 & 8 Manual Switches, Blower Off/Delay
SW4-1 Manual Switch, Twinning Main (OFF) / Sec.
SW4-2 Manual Switch, Intermediate-Heat
SW4-3 Manual Switch, Cooling CFM/Ton
TRAN Transformer, 115VAC / 24VAC

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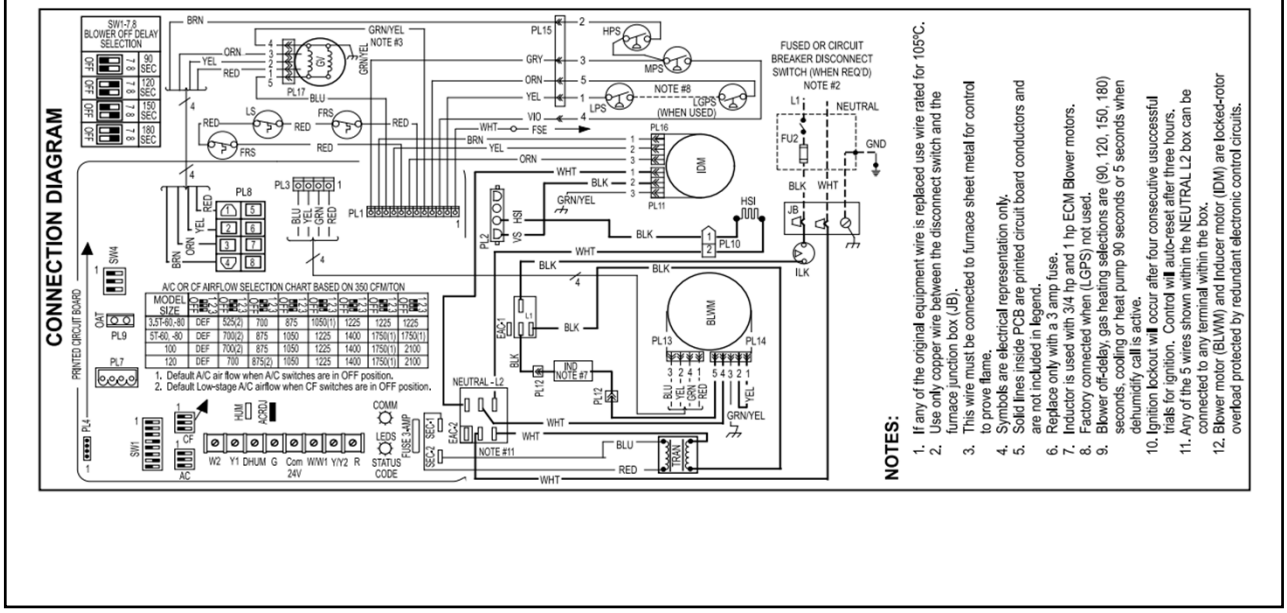
CONNECTION DIAGRAM
PRINTED CIRCUIT BOARD
SW1-7,8 BLOWER OFF DELAY SELECTION
A/C OR CF AIRFLOW SELECTION CHART BASED ON 350 CFM/TON
MODEL SIZE
1. Default A/C air flow when A/C switches are in OFF position.
2. Default Low-stage A/C airflow when CF switches are in OFF position.
FUSED OR CIRCUIT BREAKER DISCONNECT SWITCH (WHEN REQ'D) NOTE #2
NOTE #8 (WHEN USED)
NEUTRAL - L2
NOTES:
1. If any of the original equipment wire is replaced use wire rated for 105°C.
2. Use only copper wire between the disconnect switch and the furnace junction box (JB).
3. This wire must be connected to furnace sheet metal for control to prove flame.
4. Symbols are electrical representation only.
5. Solid lines inside PCB are printed circuit board conductors and are not included in legend.
6. Replace only with a 3 amp fuse.
7. Inductor is used with 3/4 hp and 1 hp ECM Blower motors.
8. Factory connected when (LGPS) not used.
9. Blower off-delay, gas heating selections are (90, 120, 150, 180) seconds, cooling or heat pump 90 seconds or 5 seconds when dehumidify call is active.
10. Ignition lockout will occur after four consecutive usuccessful trials for ignition. Control will auto-reset after three hours.
11. Any of the 5 wires shown within the NEUTRAL L2 box can be connected to any terminal within the box.
12. Blower motor (BLWM) and Inducer motor (IDM) are locked-rotor overload protected by redundant electronic control circuits.

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NOTES:

1. Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW4-3 set to OFF.
   Set SW1-5 to ON for nominal 400 CFM/ton (+15% airflow).
   Set SW4-3 to ON for nominal 325 CFM/ton (-7% airflow).
   Set both SW1-5 and SW4-3 to ON for nominal 370 CFM/ton (+7% airflow).
   This applies to Cooling and Low-Cooling airflow, but does not affect continuous fan airflow.

The above adjustments in airflow are subject to motor horsepower range/capacity.

2. Maximum cooling airflow is achieved when switches SW2-1, SW2-2, SW2-3 and SW1-5 are set to ON, and SW4-3 is set to OFF.
3. All heating CFM's are when low/medium heat rise adjustment switch (SW1-3) and comfort/efficiency adjustment switch (SW1-4) are both set to OFF.
4. Ductwork must be sized for high-heating CFM within the operational range of ESP. Operation within the blank areas of the chart is not recommended because high-heat operation will be above 1.0 ESP.
5. All airflow on 21" casing size furnaces are 5% less on side return only installations.
6. Return air above 1800 CFM on 24.5" casing sizes requires two sides, one side and bottom or bottom only, to allow sufficient airflow to the furnace.

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(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2.)

Unit Size: 060C17--14	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	545	530	520	525	510	See note 4				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	545	530	520	525	510	See note 4				
	OFF	ON	OFF	710	710	710	695	690	See note 4				
	OFF	ON	ON	875	880	890	895	895	890	885	880	870	855
	ON	OFF	OFF	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
	ON	OFF	ON	1235	1240	1250	1255	1255	1250	1230	1190	1155	1115
	ON	ON	OFF	1235	1240	1250	1255	1255	1250	1230	1190	1155	1115
	ON	ON	ON	1235	1240	1250	1255	1255	1250	1230	1190	1155	1115
	Maximum Clg Airflow[2]			1425	1425	1405	1370	1335	1300	1260	1225	1190	1155
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	545	530	520	525	510	See note 4				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	545	530	520	525	510	See note 4				
	OFF	ON	OFF	710	710	710	695	690	See note 4				
	OFF	ON	ON	875	880	890	895	895	890	885	880	870	855
	ON	OFF	OFF	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
	ON	OFF	ON	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
	ON	ON	OFF	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
	ON	ON	ON	1060	1070	1080	1080	1075	1065	1050	1035	1025	1010
Heating (SW1)	**Maximum Heat Airflow[3]**			1075	1085	1095	1095	1090	1080	1065	1050	1035	1020
	Intermediate Heat Airflow[3]			535	515	505	515	495	See note 4				
	Minimum Heat Airflow[3]			420	410	415	400	380	See note 4				

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(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2.)

Unit Size: 060C21--20	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1735	1735	1725	1715	1700	1685	1665	1650	1625	1605
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	540	525	525	520	540	See note 4				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	540	525	525	520	540	See note 4				
	OFF	ON	OFF	680	725	725	720	720	See note 4				
	OFF	ON	ON	925	915	910	895	900	890	875	865	860	855
	ON	OFF	OFF	1070	1075	1080	1070	1080	1075	1055	1045	1030	1020
	ON	OFF	ON	1215	1245	1235	1220	1220	1210	1200	1195	1185	1175
	ON	ON	OFF	1380	1385	1395	1390	1395	1390	1380	1365	1355	1340
	ON	ON	ON	1735	1735	1725	1715	1700	1685	1665	1650	1625	1605
	Maximum Clg Airflow[2]			1955	1950	1940	1925	1905	1885	1855	1815	1745	1685
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	540	525	525	520	540	See note 4				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	540	525	525	520	540	See note 4				
	OFF	ON	OFF	680	725	725	720	720	See note 4				
	OFF	ON	ON	925	915	910	895	900	890	875	865	860	855
	ON	OFF	OFF	925	915	910	895	900	890	875	865	860	855
	ON	OFF	ON	925	915	910	895	900	890	875	865	860	855
	ON	ON	OFF	925	915	910	895	900	890	875	865	860	855
	ON	ON	ON	925	915	910	895	900	890	875	865	860	855
Heating (SW1)	**Maximum Heat Airflow[3]**			1080	1085	1095	1090	1095	1085	1070	1055	1045	1030
	Intermediate Heat Airflow[3]			685	725	730	725	730	See note 4				
	Minimum Heat Airflow[3]			560	555	555	550	565	See note 4				

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Unit Size: 080C17--14	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1055	1065	1080	1075	1065	1050	1045	1035	1025	1005
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	520	505	505	495	490	See note 4				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	520	505	505	495	490	See note 4				
	OFF	ON	OFF	665	685	680	660	665	See note 4				
	OFF	ON	ON	885	895	905	900	900	895	885	875	860	845
	ON	OFF	OFF	1055	1065	1080	1075	1065	1050	1045	1035	1025	1005
	ON	OFF	ON	1245	1245	1255	1255	1260	1255	1250	1235	1220	1185
	ON	ON	OFF	1245	1245	1255	1255	1260	1255	1250	1235	1220	1185
	ON	ON	ON	1245	1245	1255	1255	1260	1255	1250	1235	1220	1185
	Maximum Clg Airflow[2]			1520	1485	1450	1415	1375	1335	1300	1265	1225	1190
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	520	505	505	495	490	See note 4				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	520	505	505	495	490	See note 4				
	OFF	ON	OFF	665	685	680	660	665	See note 4				
	OFF	ON	ON	885	895	905	900	900	895	885	875	860	845
	ON	OFF	OFF	885	895	905	900	900	895	885	875	860	845
	ON	OFF	ON	885	895	905	900	900	895	885	875	860	845
	ON	ON	OFF	885	895	905	900	900	895	885	875	860	845
	ON	ON	ON	885	895	905	900	900	895	885	875	860	845
Heating (SW1)	**Maximum Heat Airflow[3]**			1520	1485	1450	1415	1375	1335	1300	1265	1225	1190
	Intermediate Heat Airflow[3]			755	745	755	755	765	See note 4				
	Minimum Heat Airflow[3]			620	625	630	620	610	See note 4				

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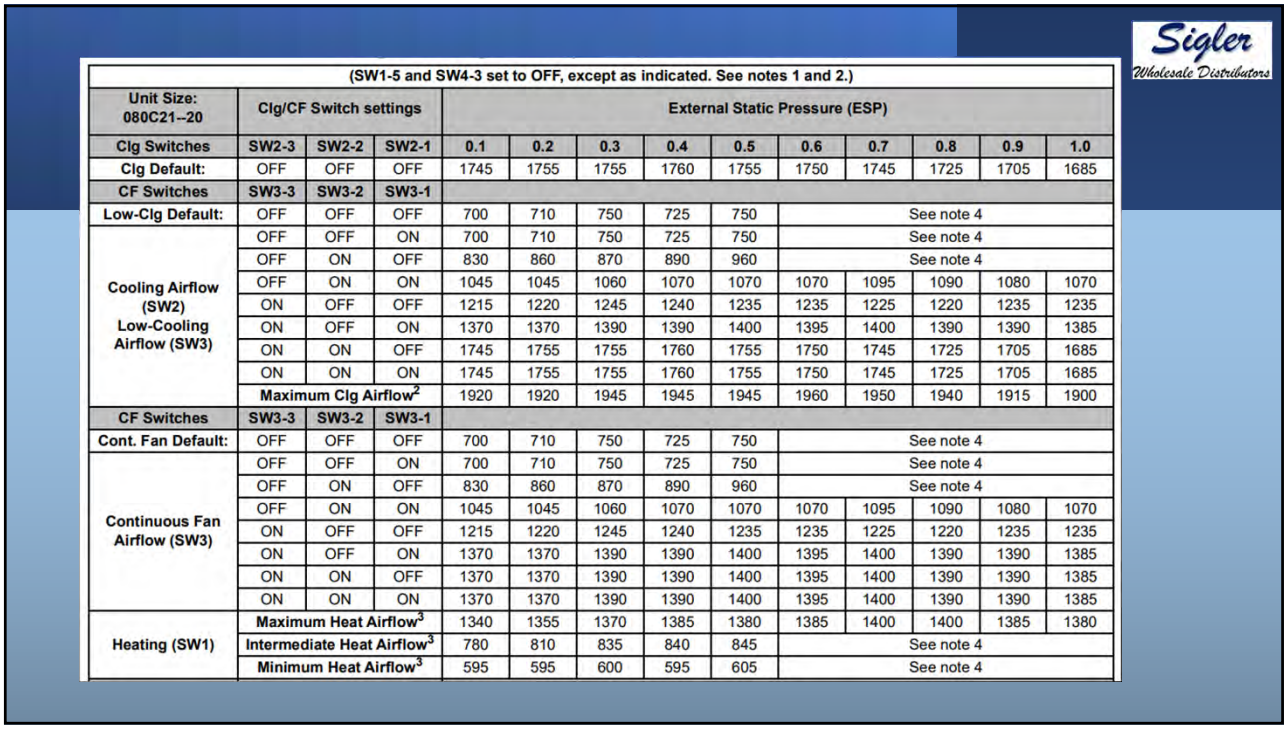

(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2.)

Unit Size: 080C21--20	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1745	1755	1755	1760	1755	1750	1745	1725	1705	1685
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	700	710	750	725	750	See note 4				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	700	710	750	725	750	See note 4				
	OFF	ON	OFF	830	860	870	890	960	See note 4				
	OFF	ON	ON	1045	1045	1060	1070	1070	1070	1095	1090	1080	1070
	ON	OFF	OFF	1215	1220	1245	1240	1235	1235	1225	1220	1235	1235
	ON	OFF	ON	1370	1370	1390	1390	1400	1395	1400	1390	1390	1385
	ON	ON	OFF	1745	1755	1755	1760	1755	1750	1745	1725	1705	1685
	ON	ON	ON	1745	1755	1755	1760	1755	1750	1745	1725	1705	1685
	Maximum Clg Airflow[2]			1920	1920	1945	1945	1945	1960	1950	1940	1915	1900
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	700	710	750	725	750	See note 4				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	700	710	750	725	750	See note 4				
	OFF	ON	OFF	830	860	870	890	960	See note 4				
	OFF	ON	ON	1045	1045	1060	1070	1070	1070	1095	1090	1080	1070
	ON	OFF	OFF	1215	1220	1245	1240	1235	1235	1225	1220	1235	1235
	ON	OFF	ON	1370	1370	1390	1390	1400	1395	1400	1390	1390	1385
	ON	ON	OFF	1370	1370	1390	1390	1400	1395	1400	1390	1390	1385
	ON	ON	ON	1370	1370	1390	1390	1400	1395	1400	1390	1390	1385
Heating (SW1)	**Maximum Heat Airflow[3]**			1340	1355	1370	1385	1380	1385	1400	1400	1385	1380
	Intermediate Heat Airflow[3]			780	810	835	840	845	See note 4				
	Minimum Heat Airflow[3]			595	595	600	595	605	See note 4				

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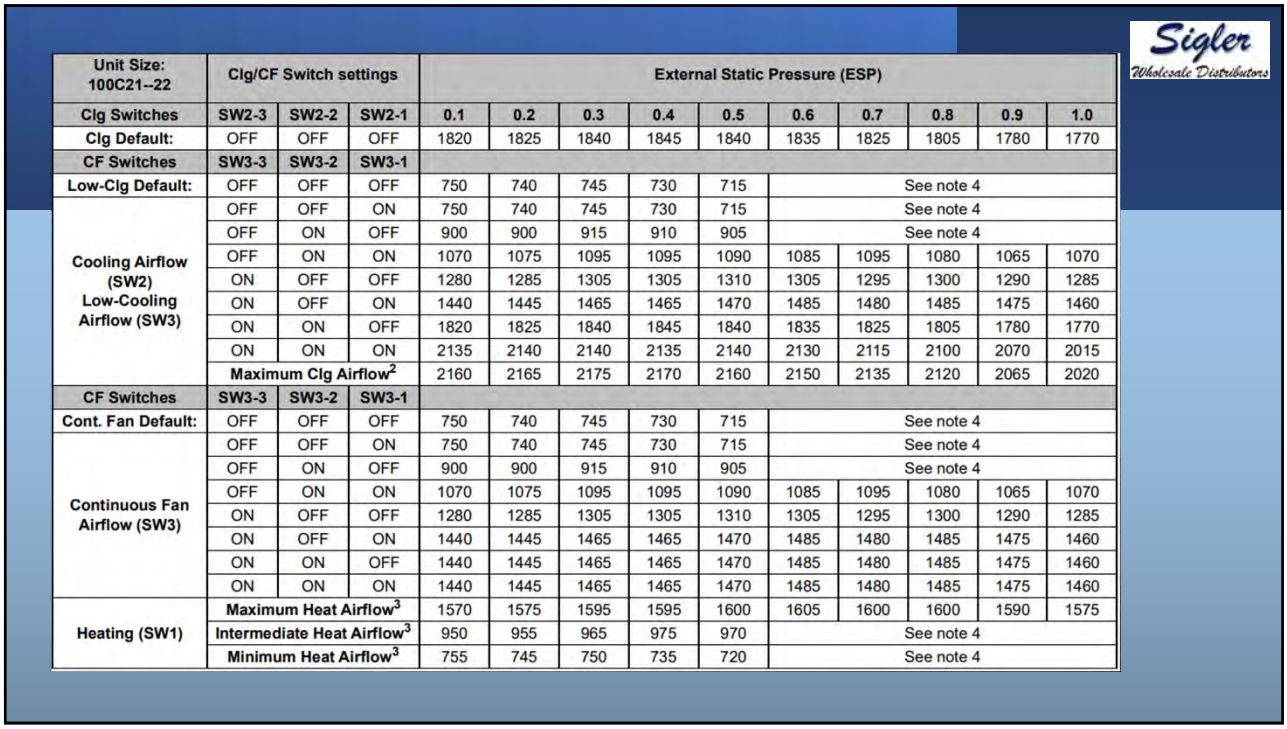

Unit Size: 100C21--22	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1820	1825	1840	1845	1840	1835	1825	1805	1780	1770
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	750	740	745	730	715	See note 4				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	750	740	745	730	715	See note 4				
	OFF	ON	OFF	900	900	915	910	905	See note 4				
	OFF	ON	ON	1070	1075	1095	1095	1090	1085	1095	1080	1065	1070
	ON	OFF	OFF	1280	1285	1305	1305	1310	1305	1295	1300	1290	1285
	ON	OFF	ON	1440	1445	1465	1465	1470	1485	1480	1485	1475	1460
	ON	ON	OFF	1820	1825	1840	1845	1840	1835	1825	1805	1780	1770
	ON	ON	ON	2135	2140	2140	2135	2140	2130	2115	2100	2070	2015
	Maximum Clg Airflow[2]			2160	2165	2175	2170	2160	2150	2135	2120	2065	2020
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	750	740	745	730	715	See note 4				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	750	740	745	730	715	See note 4				
	OFF	ON	OFF	900	900	915	910	905	See note 4				
	OFF	ON	ON	1070	1075	1095	1095	1090	1085	1095	1080	1065	1070
	ON	OFF	OFF	1280	1285	1305	1305	1310	1305	1295	1300	1290	1285
	ON	OFF	ON	1440	1445	1465	1465	1470	1485	1480	1485	1475	1460
	ON	ON	OFF	1440	1445	1465	1465	1470	1485	1480	1485	1475	1460
	ON	ON	ON	1440	1445	1465	1465	1470	1485	1480	1485	1475	1460
Heating (SW1)	**Maximum Heat Airflow[3]**			1570	1575	1595	1595	1600	1605	1600	1600	1590	1575
	Intermediate Heat Airflow[3]			950	955	965	975	970	See note 4				
	Minimum Heat Airflow[3]			755	745	750	735	720	See note 4				

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(SW1-5 and SW4-3 set to OFF, except as indicated. See notes 1 and 2.)

Unit Size: 120C24--22	Clg/CF Switch settings			External Static Pressure (ESP)									
Clg Switches	**SW2-3**	**SW2-2**	**SW2-1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
Clg Default:	OFF	OFF	OFF	1850	1855	1860	1855	1850	1830	1805	1775	1750	1730
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Low-Clg Default:	OFF	OFF	OFF	930	925	915	900	885	See note 4				
Cooling Airflow (SW2) Low-Cooling Airflow (SW3)	OFF	OFF	ON	765	745	740	705	680	See note 4				
	OFF	ON	OFF	930	925	915	900	885	See note 4				
	OFF	ON	ON	1095	1100	1110	1105	1085	See note 4				
	ON	OFF	OFF	1265	1255	1265	1280	1275	1285	1270	1260	1250	1230
	ON	OFF	ON	1465	1455	1470	1465	1465	1470	1455	1450	1435	1415
	ON	ON	OFF	1850	1855	1860	1855	1850	1830	1805	1775	1750	1730
	ON	ON	ON	2200	2200	2200	2190	2185	2170	2145	2085	1990	1890
	Maximum Clg Airflow[2]			2200	2200	2200	2190	2185	2170	2145	2085	1990	1890
CF Switches	**SW3-3**	**SW3-2**	**SW3-1**										
Cont. Fan Default:	OFF	OFF	OFF	930	925	915	900	885	See note 4				
Continuous Fan Airflow (SW3)	OFF	OFF	ON	765	745	740	705	680	See note 4				
	OFF	ON	OFF	930	925	915	900	885	See note 4				
	OFF	ON	ON	1095	1100	1110	1105	1085	See note 4				
	ON	OFF	OFF	1265	1255	1265	1280	1275	1285	1270	1260	1250	1230
	ON	OFF	ON	1465	1455	1470	1465	1465	1470	1455	1450	1435	1415
	ON	ON	OFF	1465	1455	1470	1465	1465	1470	1455	1450	1435	1415
	ON	ON	ON	1465	1455	1470	1465	1465	1470	1455	1450	1435	1415
Heating (SW1)	**Maximum Heat Airflow[3]**			1815	1820	1825	1820	1815	1795	1775	1745	1720	1700
	Intermediate Heat Airflow[3]			1095	1100	1110	1105	1085	See note 4				
	Minimum Heat Airflow[3]			905	900	890	875	855	See note 4				

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59SC2D
Single-Stage, 35-in. (889 mm) Tall, 4-Way Multipoise High Efficiency Condensing Gas Furnace

Carrier
Turn to the experts

- 59SC2D040E14--10
- 59SC2D040E17--12
- 59SC2D060E14--12
- 59SC2D060E17--14
- 59SC2D080E17--16
- 59SC2D080E21--20
- 59SC2D100E21--20
- 59SC2D120E24--20

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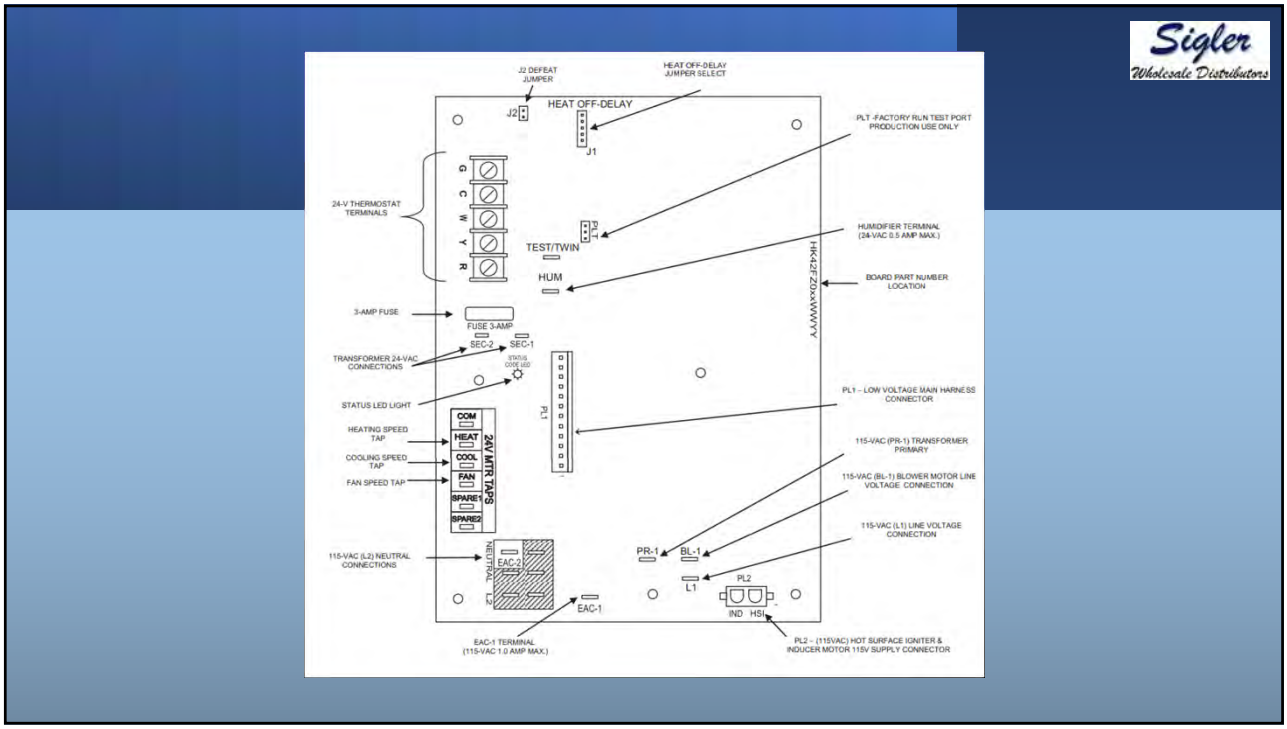

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SERVICE

If status code recall is needed, briefly remove then reconnect one main limit wire to display last stored status code. After one status code recall is completed component test will occur.

LED CODE

STATUS

CONTINUOUS OFF - Check for 115VAC at L1 & L2, & 24VAC at SEC-1 & SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed. If twinned, refer to twinning kit instructions.

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 NO PREVIOUS CODE - Stored status codes are erased automatically after 72 hours.

12 BLOWER ON AFTER POWER UP (115VAC or 24VAC) - Blower runs for 90 seconds if unit is powered up during a call for heat (R-W closed) or R-W opens during blower on-delay.

13 LIMIT CIRCUIT LOCKOUT - Lockout occurs if a limit or flame rollout switch is open longer than 3 minutes.
- Control will auto reset after three hours. - Refer to #33

14 IGNITION LOCKOUT - Control will auto-reset after three hours. Refer to #34.

21 GAS HEATING LOCKOUT - Control will NOT auto reset. Check for:
- Mis-wired gas valve - Defective control (valve relay)

22 ABNORMAL FLAME-PROVING SIGNAL - Flame is proved while gas valve is de-energized.
Inducer will run until fault is cleared. Check for: - Leaky gas valve - Stuck-open gas valve

23 PRESSURE SWITCH DID NOT OPEN - Check for: -Obstructed pressure tubing
- Pressure switch stuck closed

24 SECONDARY VOLTAGE FUSE IS OPEN - Check for: - Short circuit in secondary voltage (24VAC) wiring.

31 HPS PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If HPS remains open for one minute after gas valve closes (after three successive trials), then furnace control will lockout for 3 hours before retry.
Check for: - Excessive wind - Restricted vent - Defective inducer motor
- Low inlet gas pressure (if LGPS used) - Defective pressure switch - Low inducer voltage (115VAC)
- Inadequate combustion air supply - Proper vent sizing - Disconnected or obstructed pressure tubing
- Condensate drainage restricted or blocked

If it opens during blower on-delay period, blower will come on for the selected blower off-delay.

32 LPS PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If LPS open longer than five minutes, inducer shuts off for 15 minutes before retry. See Code 31 for troubleshooting.

33 LIMIT CIRCUIT FAULT - Indicates a limit or flame rollout. switch is open. Blower will run for 4 minutes or until open switch remakes whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch requires manual reset. Check for: - Dirty filter or restricted duct system - Proper vent sizing
- Restricted vent - Loose blower wheel - Excessive wind - Defective blower motor
- Defective switch or connections - Inadequate combustion air supply (Flame Roll-out Switch open).

34 IGNITION PROVING FAILURE - Control will try three more times before lock out #14 occurs.
If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay.
Check for: - Oxide buildup on flame sensor (clean with fine steel wool)
- Proper flame sense microamps (.5 microamps D.C. min., 4.0 - 6.0 nominal)
- Manual valve shut-off - Control grounding continuity - Gas valve defective or gas valve turned off
- Low inlet gas pressure - Inadequate flame carryover or rough ignition - Defective Hot Surface Ignitor
- Flame sensor must not be grounded - Green/yellow wire **MUST** be connected to furnace sheet metal

45 CONTROL CIRCUITRY LOCKOUT - Auto-reset after one hour lockout due to: - Gas valve relay stuck open
- Flame sense circuit failure - Software check error
Reset power to clear lockout. Replace control if status code repeats.

COMPONENT TEST

To initiate the component test sequence shut OFF the room thermostat or disconnect the "R" thermostat lead. Briefly short the TEST/TWIN terminal to the "Com 24V" terminal. Status LED will flash last status code and then turn ON the inducer motor. The inducer motor will run for the entire component test. The hot surface ignitor, blower motor FAN speed (if equipped) blower motor HEAT speed, and blower motor COOL speed will be turned ON for 10-15 seconds each. Gas Valve and Humidifier will not be turned on.

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FURNACE SIZE	SPEED TAPS	Function	EXTERNAL STATIC PRESSURE (IN.W.C.)									
			0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
040E14--10	Gray	Cooling. Do not use for heating	1120	1085	1055	1015	985	950	915	880	850	815
	Yellow	Cooling. Do not use for heating	925	885	850	810	775	735	695	660	620	580
	Blue [3]	Heating or alt Cooling	765	725	685	640	605	565	525	475	430	375
	Orange [3]	Alt Cooling or alt Heating	750	710	665	625	585	545	500	455	405	350
	Red [3, 7]	Alt Cooling. Do not use for heating	510	435	400	345	290	230	190	145	-	-
040E17--12	Gray	Cooling. Do not use for heating	1120	1090	1055	1020	985	950	915	875	840	805
	Yellow	Cooling. Do not use for heating	910	880	845	800	760	720	680	640	595	555
	Orange	Alt Cooling or alt Heating	835	795	760	720	680	630	585	540	505	475
	Blue [3]	Heating or alt Cooling	740	700	660	610	565	520	475	440	405	365
	Red [3, 7]	Alt Cooling. Do not use for heating	555	500	445	395	350	315	260	205	-	-
060E14--12	Gray	Cooling. Do not use for heating	1165	1140	1110	1080	1035	1000	960	920	870	825
	Blue	Heating or alt Cooling	1105	1085	1050	1010	975	930	890	845	795	755
	Yellow	Alt Cooling or alt Heating	1040	1000	960	920	880	840	785	740	690	640
	Orange [3]	Alt Cooling or alt Heating	840	795	750	705	655	610	555	500	450	395
	Red [3]	Alt Cooling. Do not use for heating	745	615	555	510	450	390	340	290	230	195
060E17--14	Gray	Cooling. Do not use for heating	1335	1300	1275	1230	1190	1135	1090	1040	985	925
	Yellow	Alt Cooling or alt Heating	1170	1135	1095	1045	995	940	890	825	770	700
	Blue [3]	Heating or alt Cooling	1010	965	910	855	800	735	675	615	555	505
	Orange [3]	Alt Cooling or alt Heating	960	905	855	800	740	675	615	555	505	460
	Red [3]	Alt Cooling. Do not use for heating	910	735	675	605	535	485	430	375	330	265
080E17--16	Gray	Cooling. Do not use for heating	1545	1505	1460	1420	1365	1320	1275	1225	1180	1135
	Blue	Heating or alt Cooling	1375	1330	1275	1225	1175	1125	1075	1025	970	920
	Yellow [3]	Alt Cooling or alt Heating	1195	1140	1090	1040	985	930	875	815	765	705
	Orange [3]	Alt Cooling. Do not use for heating	1015	955	900	845	780	730	670	615	550	490
	Red [3, 7]	Alt Cooling. Do not use for heating	945	735	575	520	450	375	325	260	-	-

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Wholesale Distributors

FURNACE SIZE	SPEED TAPS	Function	EXTERNAL STATIC PRESSURE (IN.W.C.)									
			0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
080E21--20	Gray [5, 6]	Cooling. Do not use for heating	2020	1965	1920	1865	1815	1760	1705	1650	1595	1545
	Yellow	Alt Cooling or alt Heating	1650	1590	1535	1475	1425	1370	1315	1260	1205	1145
	Blue	Heating or alt Cooling	1495	1430	1365	1310	1260	1200	1145	1085	1030	970
	Orange	Alt Cooling or alt Heating	1420	1355	1290	1235	1175	1120	1060	1005	945	890
	Red [3]	Alt Cooling. Do not use for heating	1200	1120	1060	995	940	875	810	750	685	625
100E21--20	Gray [5, 6]	Cooling. Do not use for heating	2060	2010	1955	1905	1850	1800	1750	1690	1630	1565
	Blue	Heating or alt Cooling	1730	1675	1620	1565	1510	1455	1385	1325	1270	1210
	Yellow	Alt Cooling or alt Heating	1685	1630	1570	1515	1460	1410	1345	1280	1225	1170
	Orange [3]	Alt Cooling or alt Heating	1445	1370	1310	1250	1185	1115	1055	1005	950	875
	Red [3]	Alt Cooling. Do not use for heating	1235	1155	1090	1020	945	900	835	755	690	635
100E21--22	Gray [5, 6]	Cooling. Do not use for heating.	2205	2160	2120	2085	2045	2005	1965	1925	1885	1840
	Yellow [5, 6]	Alt Cooling. Do not use for heating.	2120	2080	2035	1995	1955	1915	1875	1830	1790	1745
	Orange	Alt Cooling or alt Heating	1800	1755	1710	1665	1615	1570	1520	1470	1420	1375
	Blue	Heating or alt Cooling	1680	1630	1580	1535	1485	1435	1380	1330	1275	1225
	Red [3]	Alt Cooling or alt Heating	1500	1445	1390	1340	1285	1225	1170	1110	1055	1000
120E24--20	Gray [5, 6]	Cooling. Do not use for heating	2070	2020	1965	1910	1850	1790	1725	1660	1605	1550
	Blue	Heating or alt Cooling	1795	1735	1680	1620	1560	1495	1440	1375	1315	1255
	Yellow [3]	Alt Cooling or alt Heating	1465	1400	1340	1270	1210	1150	1090	1030	950	880
	Orange [3]	Alt Cooling. Do not use for heating	1295	1235	1165	1095	1030	970	905	825	760	700
	Red [3]	Alt Cooling. Do not use for heating	1095	1020	945	875	805	730	660	585	525	465

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59SC5B
Single-Stage, High Efficiency, 4-Way Multipoise
35-in. (889 mm), Condensing Gas Furnace

Carrier
Turn to the experts

Sigler Wholesale Distributors

- 59SC5B026E14--10
- 59SC5B040E14--10
- 59SC5B040E17--12
- 59SC5B060E14--12
- 59SC5B060E17--14
- 59SC5B080E17--16
- 59SC5B080E21--20
- 59SC5B100E21--20
- 59SC5B120E24--22
- 59SC5B140E24--22

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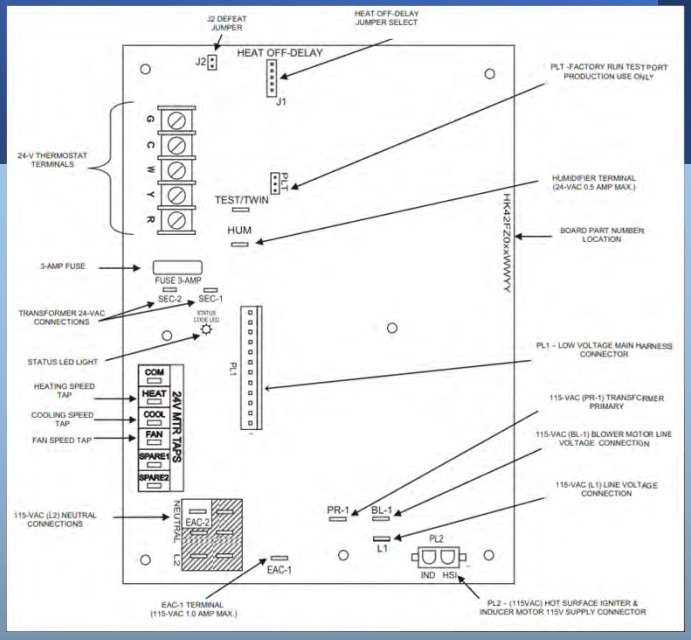

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SERVICE

If status code recall is needed, briefly remove then reconnect one main limit wire to display last stored status code. After one status code recall is completed component test will occur.

LED CODE

CONTINUOUS OFF - Check for 115VAC at L1 & L2, & 24VAC at SEC-1 & SEC-2.
CONTINUOUS ON - Control has 24VAC power.
RAPID FLASHING - Line voltage (115VAC) polarity reversed. If twinned, refer to twinning kit instructions.

STATUS

EACH OF THE FOLLOWING STATUS CODES IS A TWO DIGIT NUMBER WITH THE FIRST DIGIT DETERMINED BY THE NUMBER OF SHORT FLASHES AND THE SECOND DIGIT BY THE NUMBER OF LONG FLASHES.

11 NO PREVIOUS CODE - Stored status codes are erased automatically after 72 hours.

12 BLOWER ON AFTER POWER UP (115VAC or 24VAC) - Blower runs for 90 seconds. If unit is powered up during a call for heat (R-W closed) or R-W opens during blower on-delay.

13 LIMIT CIRCUIT LOCKOUT - Lockout occurs if a limit or flame rollout switch is open longer than 3 minutes.
- Control will auto reset after three hours. - Refer to #33

14 IGNITION LOCKOUT - Control will auto-reset after three hours. Refer to #34.

21 GAS HEATING LOCKOUT - Control will NOT auto reset. Check for:
- Mis-wired gas valve - Defective control (valve relay)

22 ABNORMAL FLAME-PROVING SIGNAL - Flame is proved while gas valve is de-energized.
Inducer will run until fault is cleared. Check for: - Leaky gas valve - Stuck-open gas valve

23 PRESSURE SWITCH DID NOT OPEN - Check for: -Obstructed pressure tubing
- Pressure switch stuck closed

24 SECONDARY VOLTAGE FUSE IS OPEN - Check for: - Short circuit in secondary voltage (24VAC) wiring.

31 HPS PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If HPS remains open for one minute after gas valve closes (after three successive trials), then furnace control will lockout for 3 hours before retry.
Check for: - Excessive wind - Restricted vent - Defective inducer motor
- Low inlet gas pressure (if LGPS used) - Defective pressure switch - Low inducer voltage (115VAC)
- Inadequate combustion air supply - Proper vent sizing - Disconnected or obstructed pressure tubing
- Condensate drainage restricted or blocked
If it opens during blower on-delay period, blower will come on for the selected blower off-delay.

32 LPS PRESSURE SWITCH DID NOT CLOSE OR REOPENED - If LPS open longer than five minutes, inducer shuts off for 15 minutes before retry. See Code 31 for troubleshooting.

33 LIMIT CIRCUIT FAULT - Indicates a limit or flame rollout switch is open. Blower will run for 4 minutes or until open switch remakes whichever is longer. If open longer than 3 minutes, code changes to lockout #13. If open less than 3 minutes status code #33 continues to flash until blower shuts off. Flame rollout switch requires manual reset. Check for: - Dirty filter or restricted duct system - Proper vent sizing
- Restricted vent - Loose blower wheel - Excessive wind - Defective blower motor
- Defective switch or connections - Inadequate combustion air supply (Flame Roll-out Switch open).

34 IGNITION PROVING FAILURE - Control will try three more times before lock out #14 occurs.
If flame signal lost during blower on-delay period, blower will come on for the selected blower off-delay.
Check for: - Oxide buildup on flame sensor (clean with fine steel wool)
- Proper flame sense microamps (.5 microamps D.C. min., 4.0 - 6.0 nominal)
- Manual valve shut-off - Control ground continuity - Gas valve defective or gas valve turned off
- Low inlet gas pressure - Inadequate flame carryover or rough ignition - Defective Hot Surface Ignitor
- Flame sensor must not be grounded - Green/yellow wire **MUST** be connected to furnace sheet metal

45 CONTROL CIRCUITRY LOCKOUT - Auto-reset after one hour lockout due to: - Gas valve relay stuck open
- Flame sense circuit failure - Software check error
Reset power to clear lockout. Replace control if status code repeats.

COMPONENT TEST

To initiate the component test sequence shut OFF the room thermostat or disconnect the "R" thermostat lead. Briefly short the TEST/TWIN terminal to the "Com 24V" terminal. Status LED will flash last status code and then turn ON the inducer motor. The inducer motor will run for the entire component test. The hot surface ignitor, blower motor FAN speed (if equiped) blower motor HEAT speed, and blower motor COOL speed will be turned ON for 10-15 seconds each. Gas Valve and Humidifier will not be turned on.

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UNIT SIZE	WIRE LEAD COLOR	SPEED TAPS [2, 3] (Function)	EXTERNAL STATIC PRESSURE (IN.W.C.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
026E14--10	Black	Cooling. Do not use for heating	1045	1010	975	935	895	855	810	760	715	670
	Yellow	Alt Cooling or alt Heating	820	770	730	680	630	585	530	480	435	385
	Orange	Alt Cooling or alt Heating	655	600	550	495	435	385	335	265	-	-
	Blue [7]	Heating or alt Cooling	605	545	490	435	375	335	255	-	-	-
	Red [7]	Alt Cooling. Do not use for heating	480	415	360	305	235	-	-	-	-	-
040E14--10	Gray	Cooling. Do not use for heating	1050	1025	1000	975	950	920	895	870	845	820
	Yellow	Alt Cooling. Do not use for heating	920	890	860	830	805	775	745	715	690	660
	Orange	Alt Cooling or alt Heating	735	700	665	630	595	555	525	490	450	415
	Blue	Heating or alt Cooling	695	660	625	590	555	515	480	445	405	370
	Red [7]	Alt Cooling. Do not use for heating	540	495	455	410	365	320	280	235	-	-
040E17--12	Gray	Cooling. Do not use for heating	1180	1140	1100	1055	1010	960	915	860	805	735
	Yellow	Alt Cooling. Do not use for heating	880	845	810	780	745	710	675	640	600	570
	Blue	Heating or alt Cooling	650	610	560	515	470	435	395	360	325	265
	Orange [7]	Alt Cooling. Do not use for heating	525	460	405	350	320	275	210	-	-	-
	Red [7]	Alt Cooling. Do not use for heating	515	420	350	310	270	205	-	-	-	-
060E14--12	Gray	Cooling. Do not use for heating	1225	1200	1175	1145	1120	1095	1065	1040	1015	990
	Yellow	Alt Cooling. Do not use for heating	1105	1080	1050	1020	990	965	935	905	880	850
	Blue	Heating or alt Cooling	940	910	875	845	810	775	745	710	680	645
	Orange	Alt Cooling or alt Heating	725	690	650	610	570	530	490	445	405	365
	Red [7]	Alt Cooling. Do not use for heating	545	495	445	395	345	295	245	-	-	-
060E17--14	Gray	Cooling. Do not use for heating	1475	1445	1405	1370	1330	1290	1255	1215	1175	1140
	Yellow	Alt Cooling or alt Heating	1230	1190	1155	1120	1085	1050	1005	970	925	885
	Orange	Alt Cooling or alt Heating	1070	1030	990	950	920	875	840	800	755	715
	Blue	Heating or alt Cooling	1020	975	940	900	860	820	775	740	690	650
	Red	Alt Cooling. Do not use for heating	700	590	535	485	460	390	340	300	275	210
080E17--16	Gray [5, 6]	Cooling. Do not use for heating	1820	1790	1755	1710	1665	1620	1570	1525	1480	1435
	Yellow	Alt Cooling or alt Heating	1455	1420	1380	1345	1310	1275	1240	1205	1170	1135
	Blue	Heating or alt Cooling	1335	1295	1260	1220	1185	1150	1110	1075	1040	1005
	Orange	Alt Cooling or alt Heating	1110	1065	1020	980	935	895	850	810	770	725
	Red [7]	Alt Cooling. Do not use for heating	425	335	240	-	-	-	-	-	-	-

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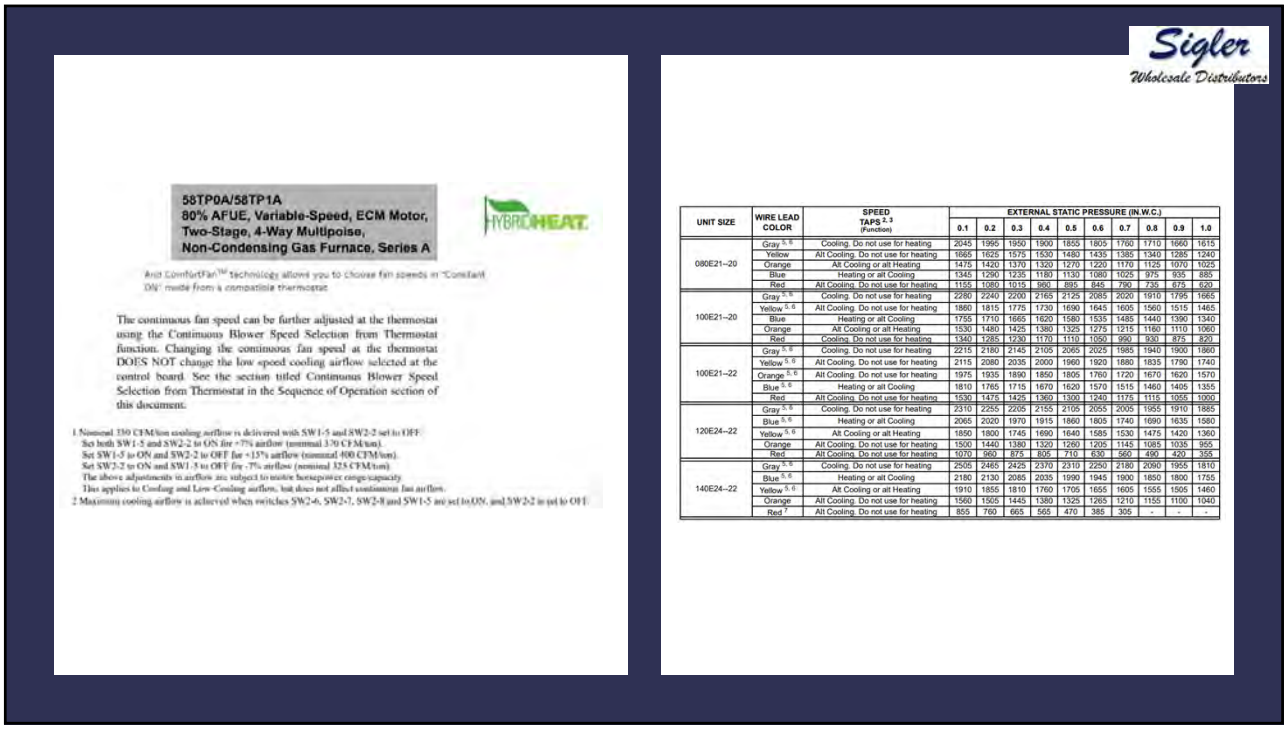
58TP0A/58TP1A
80% AFUE, Variable-Speed, ECM Motor,
Two-Stage, 4-Way Multipoise,
Non-Condensing Gas Furnace, Series A
HYBRIDHEAT
And ComfortFan™ technology allows you to choose fan speeds in "Constant ON" mode from a compatible thermostat.
The continuous fan speed can be further adjusted at the thermostat using the Continuous Blower Speed Selection from Thermostat function. Changing the continuous fan speed at the thermostat DOES NOT change the low speed cooling airflow selected at the control board. See the section titled Continuous Blower Speed Selection from Thermostat in the Sequence of Operation section of this document.
1. Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW2-2 set to OFF.
Set both SW1-5 and SW2-2 to ON for +7% airflow (nominal 370 CFM/ton).
Set SW1-5 to ON and SW2-2 to OFF for +15% airflow (nominal 400 CFM/ton).
Set SW2-2 to ON and SW1-5 to OFF for -7% airflow (nominal 325 CFM/ton).
The above adjustments in airflow are subject to motor horsepower range/capacity.
This applies to Cooling and Low-Cooling airflow, but does not affect continuous fan airflow.
2. Maximum cooling airflow is achieved when switches SW2-6, SW2-7, SW2-8 and SW1-5 are set to ON, and SW2-2 is set to OFF.
Sigler
Wholesale Distributors
UNIT SIZE
WIRE LEAD COLOR
SPEED TAPS 2, 3 (Function)
EXTERNAL STATIC PRESSURE (IN.W.C.)
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
080E21–20
Gray 5, 6 Cooling. Do not use for heating 2045 1995 1950 1900 1855 1805 1760 1710 1660 1615
Yellow Alt Cooling. Do not use for heating 1665 1625 1575 1530 1480 1435 1385 1340 1285 1240
Orange Alt Cooling or alt Heating 1475 1420 1370 1320 1270 1220 1170 1125 1070 1025
Blue Heating or alt Cooling 1345 1290 1235 1180 1130 1080 1025 975 935 885
Red Alt Cooling. Do not use for heating 1155 1080 1015 980 895 845 790 735 675 620
100E21–20
Gray 5, 6 Cooling. Do not use for heating 2280 2240 2200 2165 2125 2085 2020 1910 1795 1665
Yellow 5, 6 Alt Cooling. Do not use for heating 1860 1815 1775 1730 1690 1645 1605 1560 1515 1465
Blue Heating or alt Cooling 1755 1710 1665 1620 1580 1535 1485 1440 1390 1340
Orange Alt Cooling or alt Heating 1530 1480 1425 1380 1325 1275 1215 1160 1110 1060
Red Cooling. Do not use for heating 1340 1285 1230 1170 1110 1050 990 930 875 820
100E21–22
Gray 5, 6 Cooling. Do not use for heating 2215 2180 2145 2105 2065 2025 1985 1940 1900 1860
Yellow 5, 6 Alt Cooling. Do not use for heating 2115 2080 2035 2000 1960 1920 1880 1835 1790 1740
Orange 5, 6 Alt Cooling. Do not use for heating 1975 1935 1890 1850 1805 1760 1720 1670 1620 1570
Blue 5, 6 Heating or alt Cooling 1810 1765 1715 1670 1620 1570 1515 1460 1405 1355
Red Alt Cooling. Do not use for heating 1530 1475 1425 1360 1300 1240 1175 1115 1055 1000
120E24–22
Gray 5, 6 Cooling. Do not use for heating 2310 2255 2205 2155 2105 2055 2005 1955 1910 1865
Blue 5, 6 Heating or alt Cooling 2065 2020 1970 1915 1860 1805 1740 1690 1635 1580
Yellow 5, 6 Alt Cooling or alt Heating 1850 1800 1745 1690 1640 1585 1530 1475 1420 1360
Orange Alt Cooling. Do not use for heating 1500 1440 1380 1320 1260 1205 1145 1085 1035 955
Red Alt Cooling. Do not use for heating 1070 960 875 805 710 630 560 490 420 355
140E24–22
Gray 5, 6 Cooling. Do not use for heating 2505 2465 2425 2370 2310 2250 2180 2090 1955 1810
Blue 5, 6 Heating or alt Cooling 2180 2130 2085 2035 1990 1945 1900 1850 1800 1755
Yellow 5, 6 Alt Cooling or alt Heating 1910 1855 1810 1760 1705 1655 1605 1555 1505 1460
Orange Alt Cooling. Do not use for heating 1560 1505 1445 1380 1325 1265 1210 1155 1100 1040
Red 7 Alt Cooling. Do not use for heating 855 760 665 565 470 385 305 - - -

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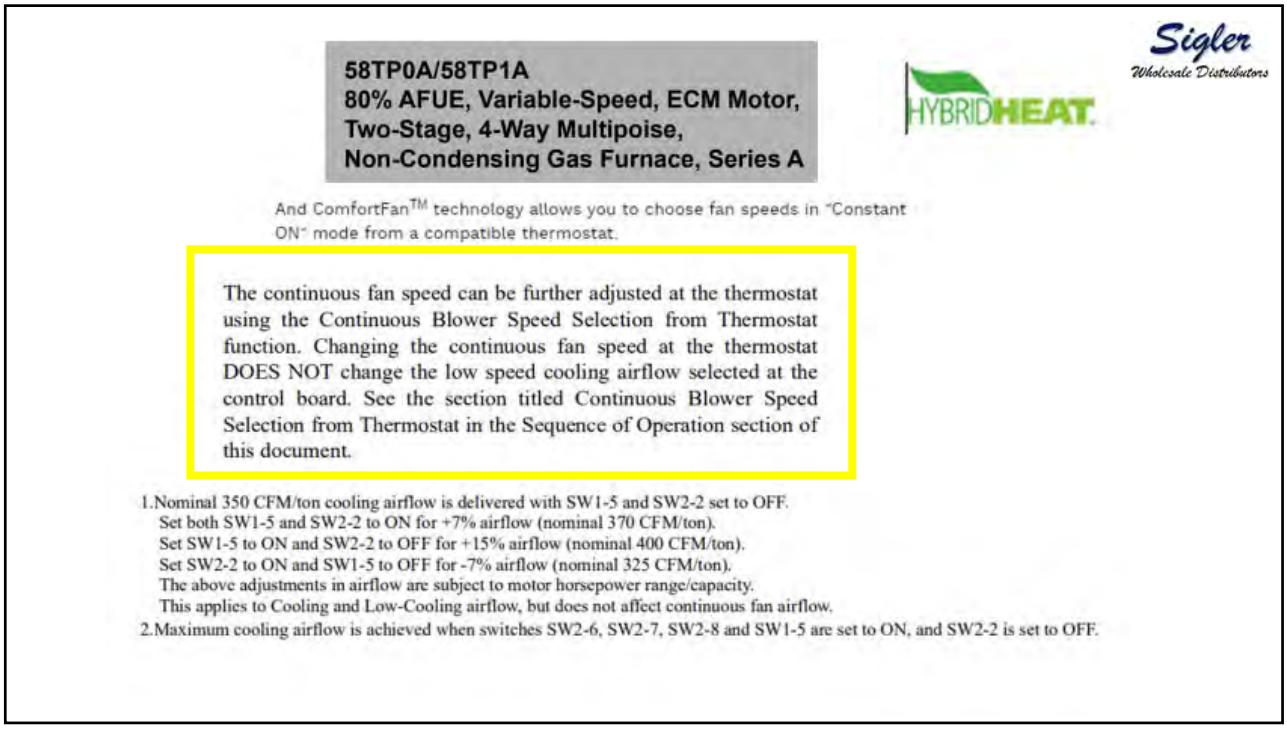
58TP0A/58TP1A
80% AFUE, Variable-Speed, ECM Motor,
Two-Stage, 4-Way Multipoise,
Non-Condensing Gas Furnace, Series A
HYBRIDHEAT
Sigler
Wholesale Distributors
And ComfortFan™ technology allows you to choose fan speeds in "Constant ON" mode from a compatible thermostat.
The continuous fan speed can be further adjusted at the thermostat using the Continuous Blower Speed Selection from Thermostat function. Changing the continuous fan speed at the thermostat DOES NOT change the low speed cooling airflow selected at the control board. See the section titled Continuous Blower Speed Selection from Thermostat in the Sequence of Operation section of this document.
1. Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW2-2 set to OFF.
Set both SW1-5 and SW2-2 to ON for +7% airflow (nominal 370 CFM/ton).
Set SW1-5 to ON and SW2-2 to OFF for +15% airflow (nominal 400 CFM/ton).
Set SW2-2 to ON and SW1-5 to OFF for -7% airflow (nominal 325 CFM/ton).
The above adjustments in airflow are subject to motor horsepower range/capacity.
This applies to Cooling and Low-Cooling airflow, but does not affect continuous fan airflow.
2. Maximum cooling airflow is achieved when switches SW2-6, SW2-7, SW2-8 and SW1-5 are set to ON, and SW2-2 is set to OFF.

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Continuous Blower Speed Selection from Thermostat:

To select different continuous-blower airflow from the room thermostat, momentarily turn off the FAN switch or push button on the room thermostat for 1-3 seconds after the blower motor BLWM is operating. The furnace control CPU will shift the continuous-blower airflow from the factory setting to the next highest CF selection airflow. (See Table 12 and Fig. 55). Momentarily turning off the FAN switch again at the thermostat will shift the continuous-blower airflow up one more increment. If you repeat this procedure enough, you will eventually shift the continuous-blower airflow to the lowest CF selection. (See Table 12 and Fig. 55). The selection can be changed as many times as desired and is stored in the memory to be automatically used following a power interruption.

175

PWM Motor Troubleshooting

- To discuss troubleshooting procedures for PWM blower motors
- To discuss basic PWM motor control operation

176

What is a PWM Motors?

177

July 3, 2019,
Department of energy will not allow you to use these on new furnace equipment.

PSC
Permanent Split Capacitor

About $300.00 constant on per year.

These number are for comparatives! This number depends on your location and electrical rate!*

178

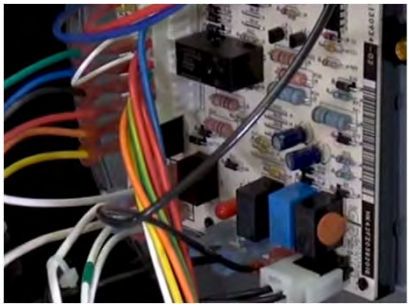
Fixed – Speed
Constant Torque (FCT)

Electricality Commutated Motors Much mor efficient than a PSC.

About $120.00 to $150.00 constant on per year.

These number are for comparatives! This number depends on your location and electrical rate!*

Fixed-Speed Constant Torque (FCT) ECM
Non communicating.
5 speeds, programmed into motor.
Low voltage from control board to motor.
Airflow reductions as ESP increases (constant torque).



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Variable – Speed
Constant Torque (VCT)

Basically, an infinite number of speeds Constant CFM.
If the duct work changes where it is restricted or is been changed to have more airflow that is ok, it will always provide the same CFM.
It reports back to the board the CFM and static pressure also reports back the RPM.
And If you have an Infinity, we report this info back to the thermostat.

About $80.00 to $100.00 per year.

These number are for comparatives! This number depends on your location and electrical rate!*

Variable-Speed Constant Torque (VCT) ECM
Control board communicates PWM signals to motor. One-way communication.
Variable-speed motor, speed selections through DIP switches on control board.
Control board communicates torque to motor based on DIP switches.
Airflow reductions as ESP increases (constant torque).

180

Variable – Speed
Constant Airflow (VCA)

This is not a constant CFM it is a constant Torque
If static changes it will not adjust. If the filter is dirty this motor will not adjust. 9 plus speed motor.

About $100.00 to $120.00 per year.

These number are for comparatives! This number depends on your location and electrical rate!*

Variable-Speed Constant Airflow (VCA) ECM
Fully Communicating.
Variable-speed communicating motor maintains constant airflow.
Airflow selection through Infinity wall control.
Constant airflow, even as ESP increases.
Control board communicates to and from motor to maintain constant CFM.

181

As its name suggests, pulse width modulation speed control works by driving the motor with a series of “ON-OFF” pulses and varying the duty cycle, the fraction of time that the output voltage is “ON” compared to when it is “OFF”, of the pulses while keeping the frequency constant.

182

Warnings

- Proper Personal Protective Equipment (PPE) should be utilized at all times
- Caution should be used at all times when performing the procedures outlined in this presentation
- Read and Follow all Warnings and cautions outlined in the Installation, Start-up Operating and Maintenance Instruction manual

⚠ WARNING

ELECTRICAL SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings 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.

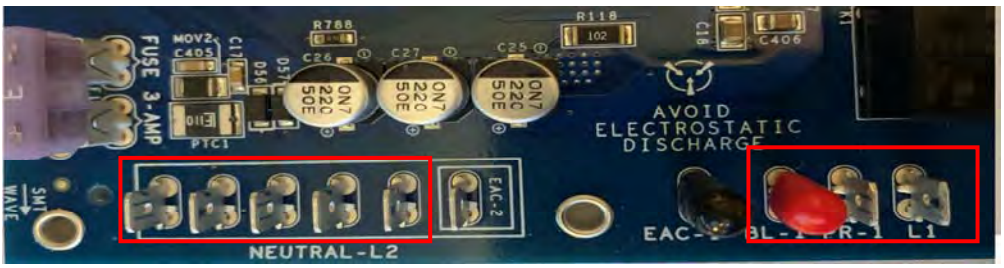
– When servicing controls, label all wires prior to disconnection. Reconnect wires correctly.

– Verify proper operation after servicing.

– Always reinstall access doors after completing service and maintenance.

183

Checking Line Voltage



Blower motor has 115 VAC applied to it anytime furnace is powered

Manually close blower door switch.

Verify 115 VAC power between L1 and Neutral L2 Wires

- (L1 and Neutral L2 removed for clarity)

184

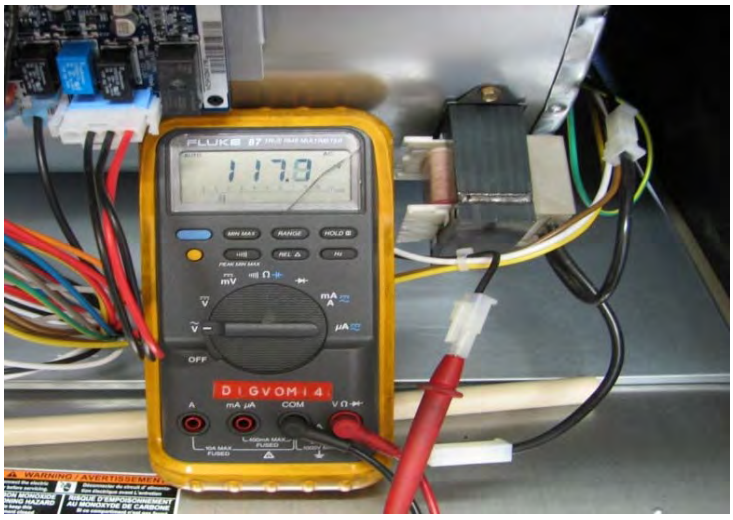
Checking Line Voltage - Power Choke

- ¾ hp & 1 hp PWM blower motors have a power choke located on the blower housing
- Power chokes are used to filter line power and to reduce current draw of the motor
- Power choke may be bypassed for troubleshooting purposes

185

Checking Line Voltage - Power Choke

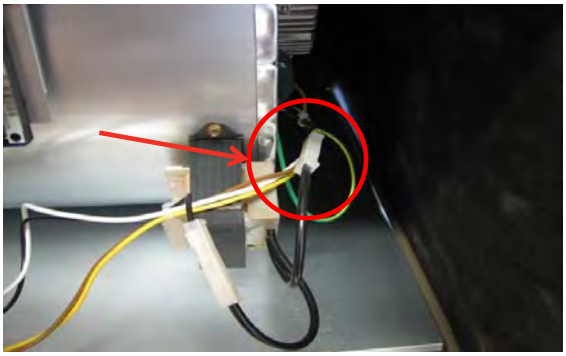
- Open the blower door switch
- Disconnect L1 feed to power choke
- Insert meter probe into the L1 connector from the furnace control
- Manually close blower door switch and verify 115 VAC power
- Release blower door switch
- Reconnect L1 to power choke



186

Checking Line Voltage - Power Choke

- Open the blower door switch
- Disconnect black lead between power choke and motor
- Insert meter lead into disconnected power choke lead
- Manually close blower door switch and verify 115 VAC power from power choke
- Release blower door switch
- Reconnect power choke leads

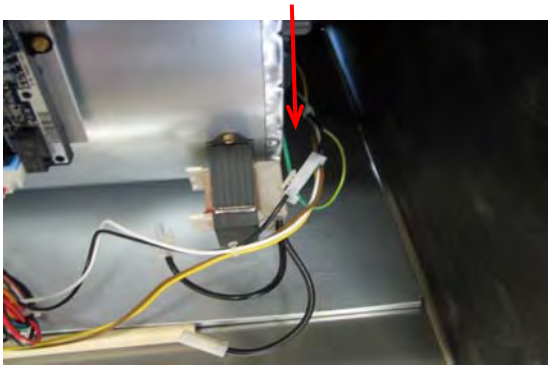


187

Power Choke Bypass-Quick Test

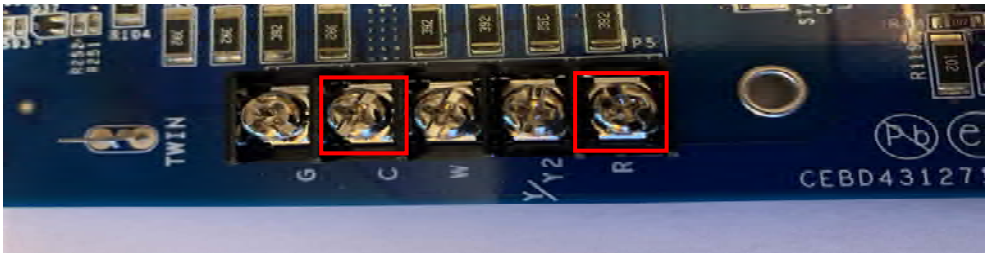
- Power choke may be temporarily bypassed for troubleshooting
- Open blower door switch
- Disconnect power choke between L1 harness and blower motor
- Connect L1 harness to blower motor harness
- Close blower door switch
- Continue with troubleshooting
- Remember to reconnect power choke when completed!

L1 harness connected to blower motor



188

Checking for Secondary Voltage

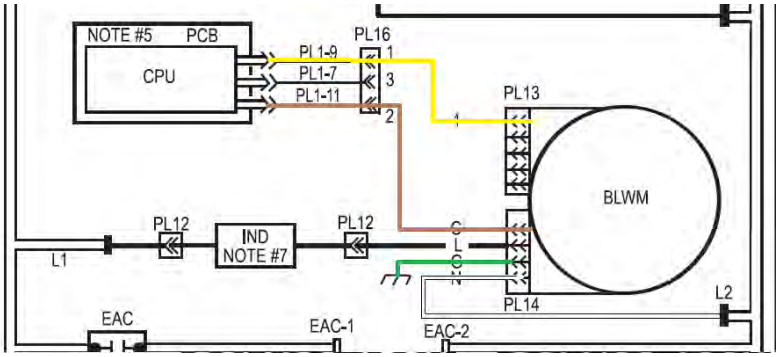


- Manually close blower door switch and verify 24 VAC between R and C at thermostat terminals of furnace control
- The PWM blower motor used in the current furnaces is controlled by ON/OFF switching of the DC voltage circuit (and resultant current) through the motor controller

189

PWM Motor Circuit

- Only two wires to the control motor speed
  - Brown wire feeds constant 15VDC to motor
  - Yellow wire feeds back FROM motor to furnace control



190

Checking 15 VDC Power To Blower (Brown)

- Verify all harnesses are connected
- and 115 VAC power is ON
- Close Blower door switch
- Set meter to volts DC (VDC)
- Insert (+) meter probe into the back of brown lead at PL16
- Touch other (-) meter probe to COM on furnace control
- Voltage from furnace control should be about 15 VDC at the brown wire
- Note: a reading of approximately 35V (or higher) indicates the green ground wire on the motor is disconnected- repair as needed.

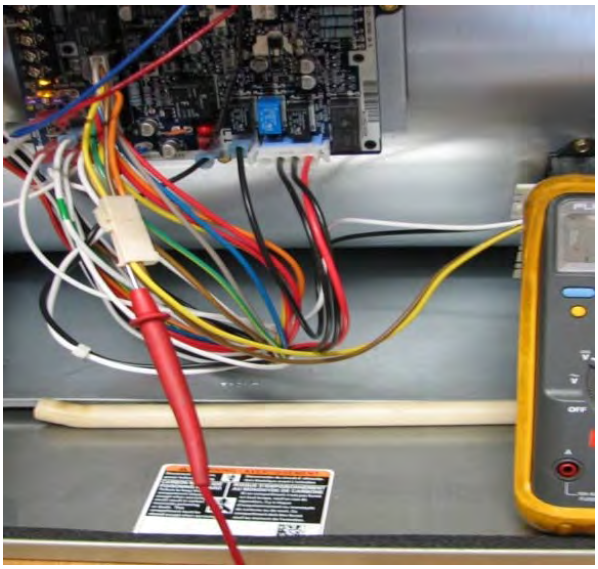
Note: All low voltage troubleshooting is done with PL13 at the blower motor and PL16 connected

191

Checking 15 VDC Power To Blower (Brown)

- 15 VDC is nominal
- May be slightly higher or lower
  - Actual line voltage affects low voltage
  - Meter type affects reading
- If reading is unstable or scrolling
  - Check harness connectors and pins
  - Clean meter probes
  - Try a probe with a finer point to improve contact inside the connector

192



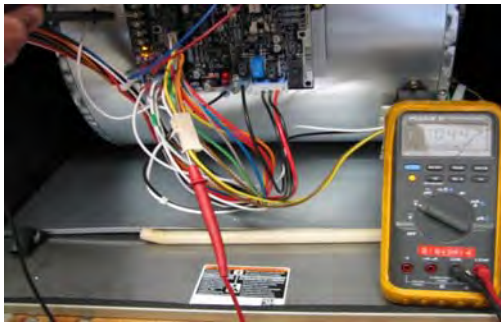
Checking Motor Torque Control Signal (Yellow)

- 115 VAC power should be ON
- No call at the thermostat terminals (Remove R thermostat lead)
- Close Blower door switch
- With meter set to volts DC (VDC), insert + meter probe into the back of yellow lead of PL16
- Touch other (-) meter probe to COM on furnace control
- With no motor operation, voltage will be 10 to 15 VDC
  - Actual voltage will depend on meter being used and manufacturer of the motor

193

Checking Motor Torque Control Signal

- If voltage is 0 VDC or significantly below 10VDC
  - Voltage for speed control is fed from the furnace control at the brown wire, through the motor circuitry, and back on the yellow wire.
  - 0 VDC indicates a likely “no connection” issue with the harness connector plugs at either PL13 (Motor) or PL16 (Harness)
  - Voltage significantly below 10VDC indicates partial connection of harness connectors, or a damaged motor controller
  - Harness updates are being implemented to reduce likelihood of connector with yellow wire from being dislodged from motor



194

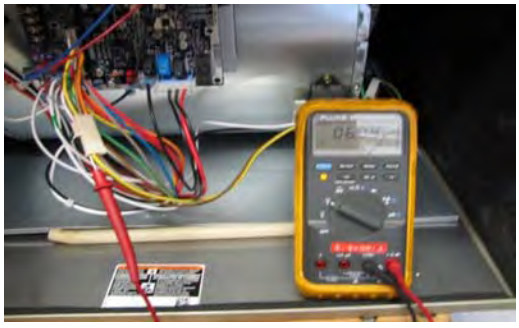
Checking Motor Torque Control Signal

- Initiate Component Self Test using Service Tech App or pushbuttons on control
- (+) Meter probe remains in the back of the yellow lead of PL16
- Touch other (-) meter probe to C on furnace control
- Initially, voltage will be about 10 to 15 VDC (blower off) as Component Self Test Starts

195

Checking Motor Torque Control Signal

- Voltage will remain constant on the yellow lead of PL16 Until Component Self Test starts the main blower
  - After approximately 25 seconds
  - After hot surface igniter turns off
- As blower starts, Voltage on PL16 will drop
- Nominal voltage on yellow lead of PL16 decreases to 5 to 8 VDC
  - Voltage is stable until blower shuts down
- Voltage will return to 10 to 15 VDC when blower turns off



196

Motor Control Voltages Component Self Test

1. Remove blower door.
2. Remove the wire from the thermostat "R" terminal from the control board or disconnect the communication connector from the control board
3. Initiate Component test from Service App or from pushbuttons

Function during Component Self Test	Start Time	End Time	Voltage	
	0 Sec	0 Sec	Yellow wire of PL16 to Com	Brown wire of PL16 to Com
Inducer starts in high speed and stays running	0 Sec	---	10 to 15VDC	15 VDC
Hot surface igniter turns on	10 Sec	25 Sec	10 to 15 VDC	15 VDC
Blower motor turns on at 50% PWM	25 Sec	35 Sec	5 to 8 VDC	15 VDC
Inducer turns off	---	45 Sec	10 to 15 VDC	15 VDC

197

Motor Control Voltages

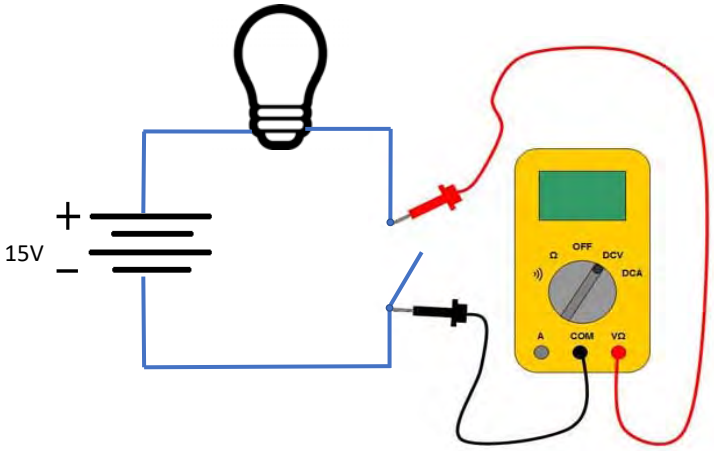
As shown in the previous slide, as motor speed increases, voltage measured on the yellow wire will decrease

The voltage measured at the yellow wire shows a voltage reverse of what may be intuitive –

Let's discuss why

198

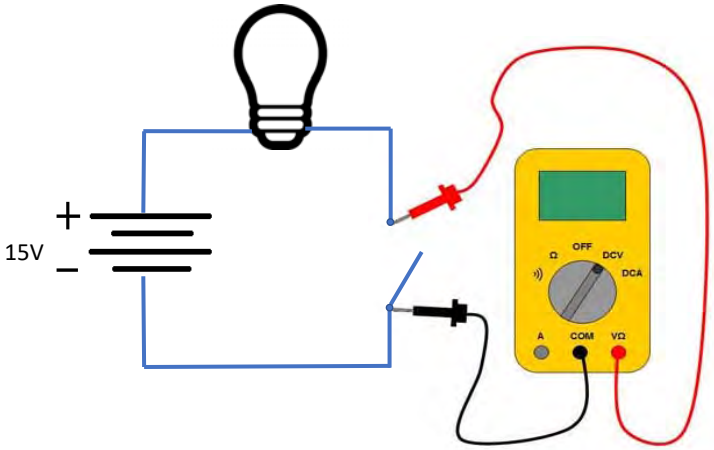
Motor Control Voltages



What will be indicated on this meter?

199

Motor Control Voltages



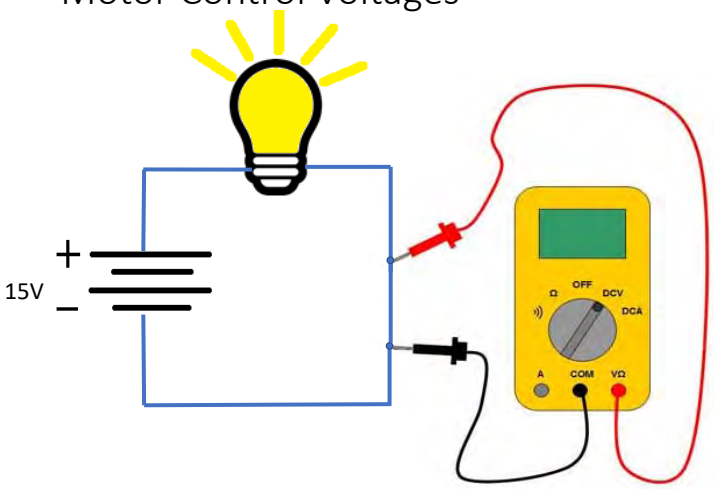
What will be indicated on this meter?

~15 VDC

Because the switch is open, the circuit is completed by the meter. Because the meter has very high impedance when measuring voltage, current flow in circuit will be extremely low and the voltage drop (Current x Resistance) at the bulb will be near 0VDC. The voltage drop in the circuit is in the meter - resulting in ~15VDC being shown on the meter

200

Motor Control Voltages

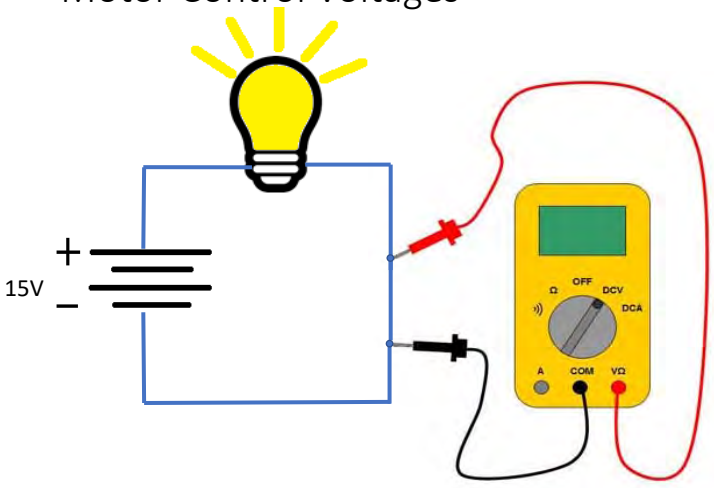


Switch is now closed

What will be indicated on this meter?

201

Motor Control Voltages



Switch is now closed

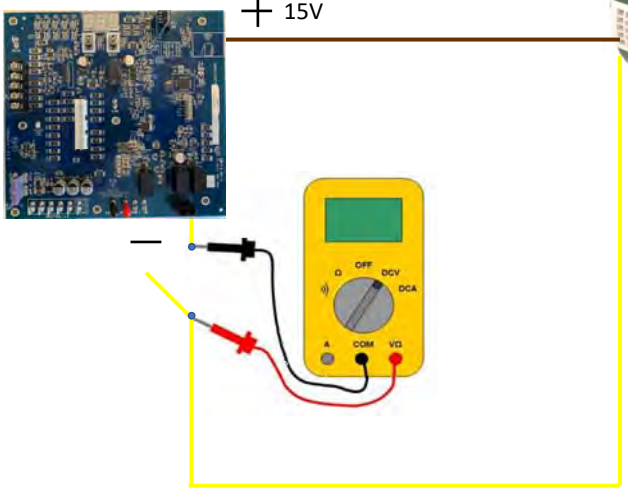
What will be indicated on this meter?

0 VDC

There is no voltage drop on the wire between the leads, and no difference in voltage potential from one side of the closed switch to the other. The current flow is normal, and the voltage drop is at the bulb

202

Motor Control Voltages

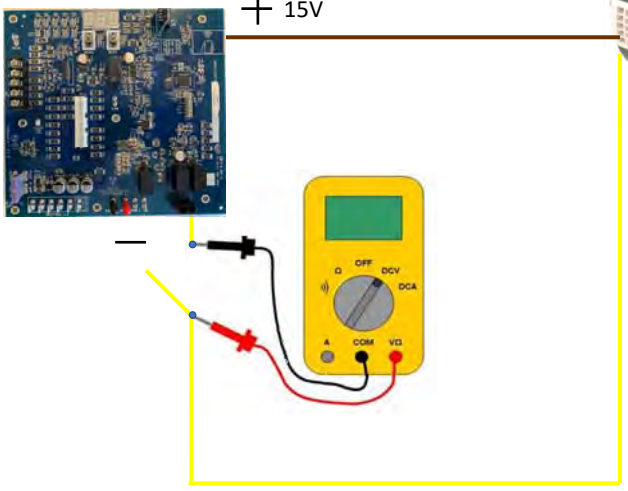


What will be indicated on this meter?

This is the same type of DC circuit- the bulb is being replaced by the motor

203

Motor Control Voltages

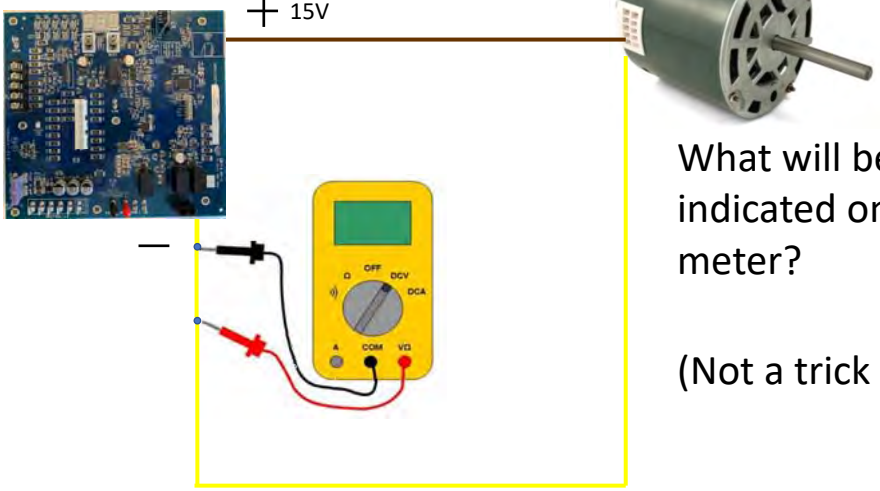


What will be indicated on this meter? 10 –15VDC

It's a bit of a trick question – While the lightbulb is a purely resistive load, there are components and circuitry in the motor that will cause a voltage drop through the motor any time current flows. How much drop depends on the manufacturer of the motor

204

Motor Control Voltages

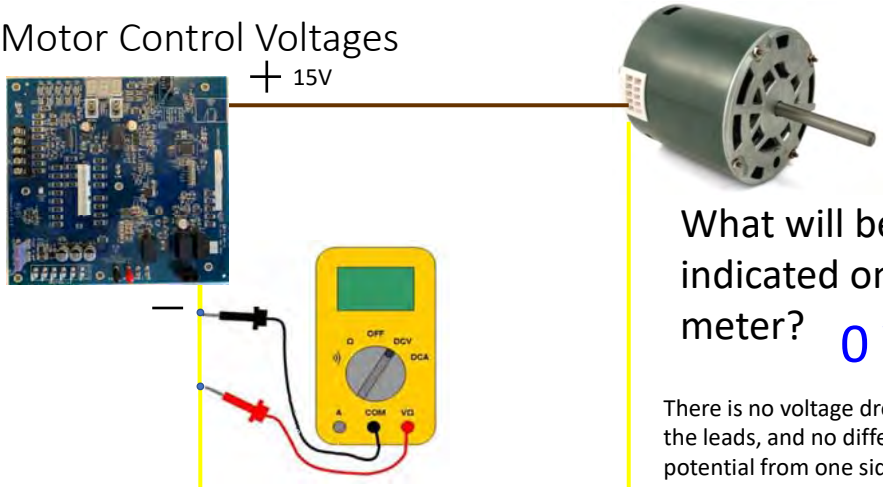


What will be indicated on this meter?

(Not a trick question)

205

Motor Control Voltages

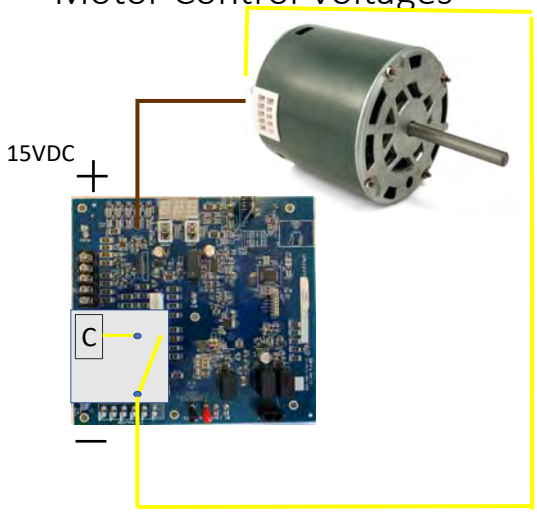


What will be indicated on this meter? 0 VDC

There is no voltage drop on the wire between the leads, and no difference in voltage potential from one side of the closed switch to the other

206

Motor Control Voltages



The Furnace control creates the switching

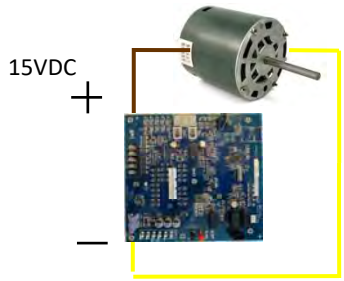
Turning current on by closing the switch (Furnace control shorts yellow to common of control) indicates the “ON” portion of the signal.

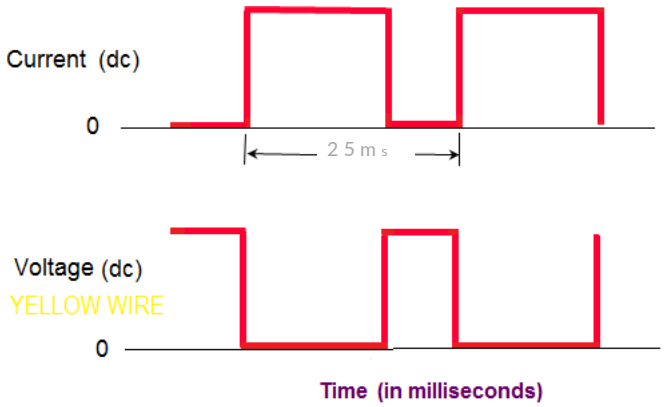
Turning current off by opening the switch indicates the “OFF” portion of the signal

The motor speed (and the voltage measured on the yellow wire) is determined by the ratio of ON/OFF

207

Motor Control Voltages





208

Motor Control Voltages

As the motor current is turned on to run the motor at a higher speed, the voltage measured on the yellow wire (as an average) will go down.

Increase in motor speed = less voltage measured on yellow wire

209

After Component Self Test

- Open blower door switch
- Remove meter lead from PL16
- Reconnect thermostat “R” lead
- Re-install outer doors
- Verify furnace operation

210

Line and Control Voltage correct– Does Not Run

- Separate electronic control module from motor (only for motors offered with separate control module)

Warning

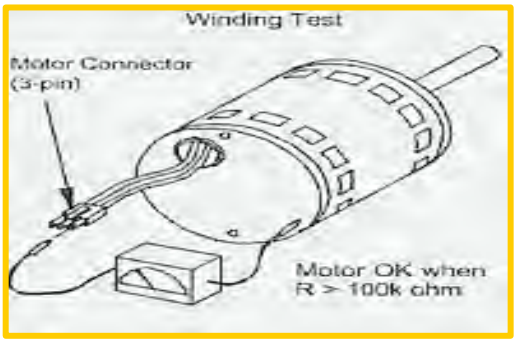
- remove power and allow a minimum of 5 minutes prior to separating motor and control

Courtesy of Genteq

211

Testing Motor – shorted to housing

- Three Phase Style Windings
- Ohm each of the three motor leads to unpainted part of end shield
- Resistance test to ground should be over 100K ohms
- Replace Motor if under 100K



Courtesy of Genteq

212

Testing Motor – Winding resistance

- Check motor winding resistance
- All windings should have resistance values less than 20 Ohms
- Winding resistance should be equal +/- 10%

A->B

B->C

C->A

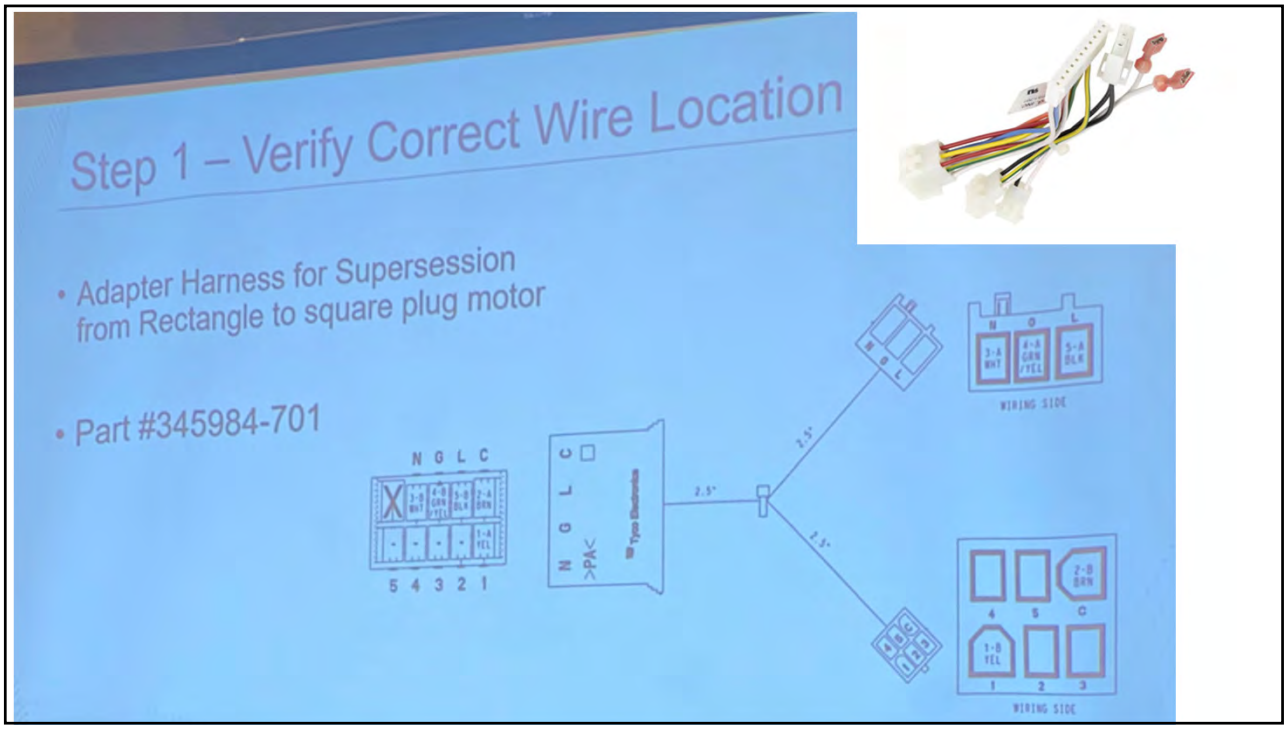
213

Factory Authorized Parts™ - KGBSD0301FMS ECM Motor Simulator Kit

Item: KGBSD0301FMS MFR: KGBSD0301FMS

https://vimeo.com/304938726

214



215

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Wholesale Distributors

Understand communication and trouble shooting communication for Infinity Systems.

216

Infinity® Systems and Control

AC / HP

DGAPA

Ventilator

Gas Furnace
/ Fan Coil

Infinity® System Control

UV Lights

Geothermal

Humidifier

Infinity® Damper Control

217

Infinity® Communicating

Utility
Company

Open ADR

Connectivity

Web and Mobile
Servers

Communicating Indoor

Communication bus

Wall Control

Wired Remote Room Sensor
(1 or 4, for zone 1 only)

Communicating
AC or Heat Pump

Communicating Control

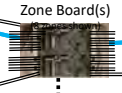
Ventilator
with fan

NIM
Network
Interface
Module

Communicating Control
can Control all of this

Humidifier

Zone Board(s)



Zone Sensors or
Smart Sensors
(Up to 8 zones)

and/or

Zone Damper Actuator Motor
(Up to 5 Dampers wired in parallel per zone)

Smart App
•Android OS
•Apple IOS
•Windows

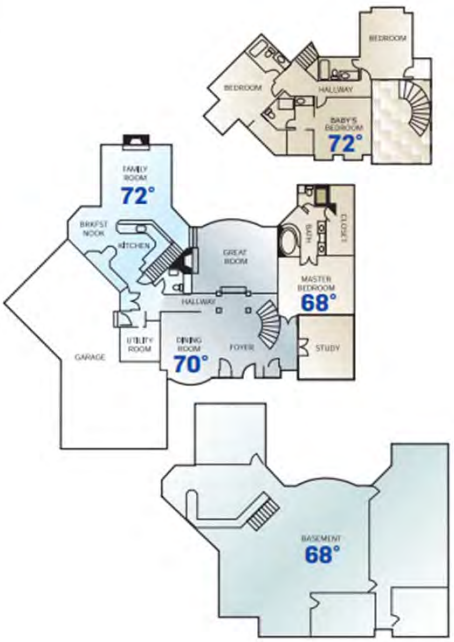
218

Room-to-Room Control

When you install the Infinity® system control as part of a Carrier Infinity zoning system, you have one-to control in up to eight separate rooms or zones within your home.

One Infinity system can only Have Eight Zones

INFINITY SYSTEM



Sigler Wholesale Distributors

219

SYSTXCCITC01-B,
SYSTXCCITC01-C,
SYSTXCCWIC01-B,
SYSTXCCICF01-B,
SYSTXCCWIF01-B
Infinity® System Control

Two color options for main controllers only!

Sigler Wholesale Distributors

220

-C Features/Functions

Same as the current system controls with the following differences:

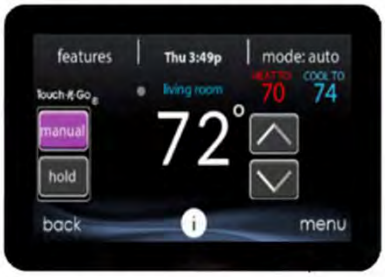
1. Existing screens (resized) - same menus
2. New Processor chip
3. Improved connectivity - new Wi-Fi chip and Wi-Fi stack.
4. OTA updates only - No MicroSD card slot.
5. Proximity sensor used as the occupancy sensor.
   a. Shorter distance from control
   b. Shipped with Occupancy turned off, same as -B

- Dual source processor chips allow building controls at a higher production rate by the end of 2021 to work down the backlog of orders

221

-C System Control

- Improved aesthetics
- Firmware prototypes are currently in development
- Existing screens/menus will be ported over to the new control
- Slightly smaller overall size but slightly larger screen size.



222

Product Features and Benefits

- Quick-read icons and simple, on-screen prompts for ease of service
- Seven-day programmability with Lifestyle Comfort Profiles and Touch-N-Go® feature
- Complies with California Title 24 programmability requirements
- Wi-Fi® remote access capability
- Amazon® Alexa® compatible
- Easy timed-override schedule and simplified vacation schedules
- Day-at-a-glance programming for simplified ease of use
- Routine maintenance reminders

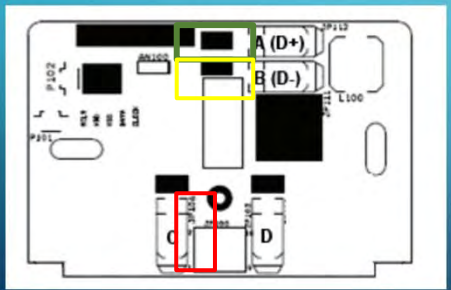
Sigler
Wholesale Distributors

Model	Size L x W x H (in.)	Unit Weight
SYSTXCCITC01-C	5.3" x 3.8" x 0.8"	0.75 lbs.

223

SMART ZONING SENSORS
SYSTXZNSMS01

Only in **Black for Now!**



FEATURES:
- Full glass touch screen
- 2.8" Color display
- Small size (3.5" x 2.5" x 0.85")
- Intuitive user experience
- Temperature Accuracy
- Display of outdoor temperature and indoor humidity
- Change temperature or fan speed from the zone

224

Zone Smart Sensor

Smart Sensor Setup

After successful communications with the Master Thermostat has occurred, the screen shall change to the Home Screen. However, if the Zone Address has never been set, the Enter Zone Address Screen is displayed instead with an initial zone number of 2.

A200274

Use the up/down buttons to select the correct zone address number 1 through 8. If only one Damper Control Module exists, the zone address selection will only be 1 through 4. Once the zone number is selected, press the save button to store the zone address and exit the setup menu. The Smart Sensor is ready to operate.

Changing Zone Address

To change an existing zone address, enter the setup menu by swiping from Left to Right on the Home Screen to display the Fan Screen, pressing and holding the Fan button for 6 seconds, and then pressing on the Zone Address Line. Use the up/down buttons to select the correct zone address and then press "Done" and exit the setup menu. If no buttons are pressed for approximately 30 minutes, the screen will automatically save and exit back to a normal display.

To ensure that all changes are recognized by the main control, perform the "Full Installation" function in the Installation & Service Menu of the Touch Control after zone addresses are changed.

225

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Wholesale Distributors

SYSTXCCRRS01

Height	0.75"
Item	Remote Room Sensor
Length	3.25"
Type	Evolution
Weight	0.1 lb
Width	2.5"

REMOTE ROOM SENSORS
SYSTXCCRRS01

10 K Resister*

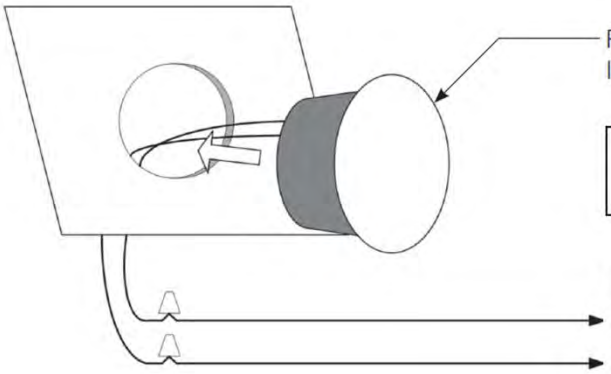
226

Can you use any 10 K Resisters?

Sigler Wholesale Distributors

APRILAIRE® MODEL 8051 FLUSH MOUNT SENSOR INSTALLATION INSTRUCTIONS

Step 1: Use a 1" paddle bit to drill a 1" dia. hole in the drywall/sheetrock. Keep the drill steady and horizontal to ensure a clean finished hole.



PRESS FLUSH MOUNT TEMPERATURE SENSOR INTO 1" HOLE. NO FASTENERS REQUIRED.

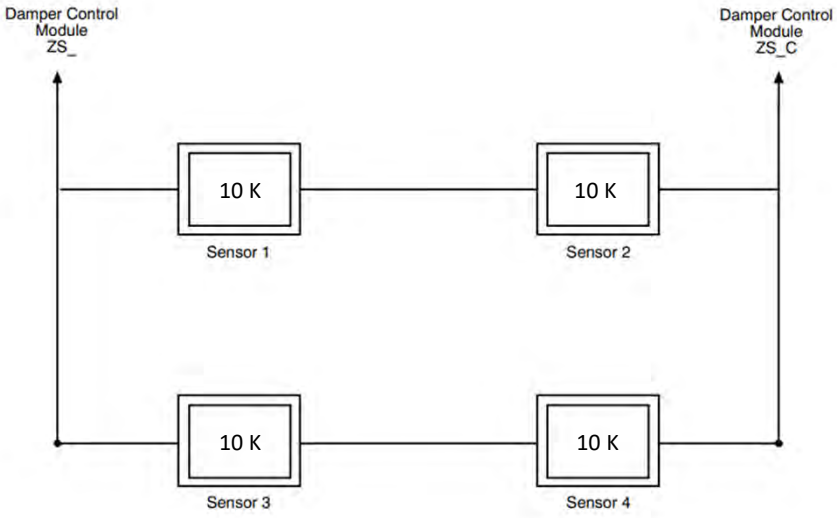
NOTE: Paint or apply wall paper to the sensor disk prior to installing the sensor into the wall.

Sensor Specifications	
Voltage	20-30 VAC
Resistance @ 25°C (77°F)	10 kΩ
Tolerance @ 25°C (77°F)	±3%

227

Sigler Wholesale Distributors

- Remote Room Sensor Averaging 4- Sensor Application (series - parallel)

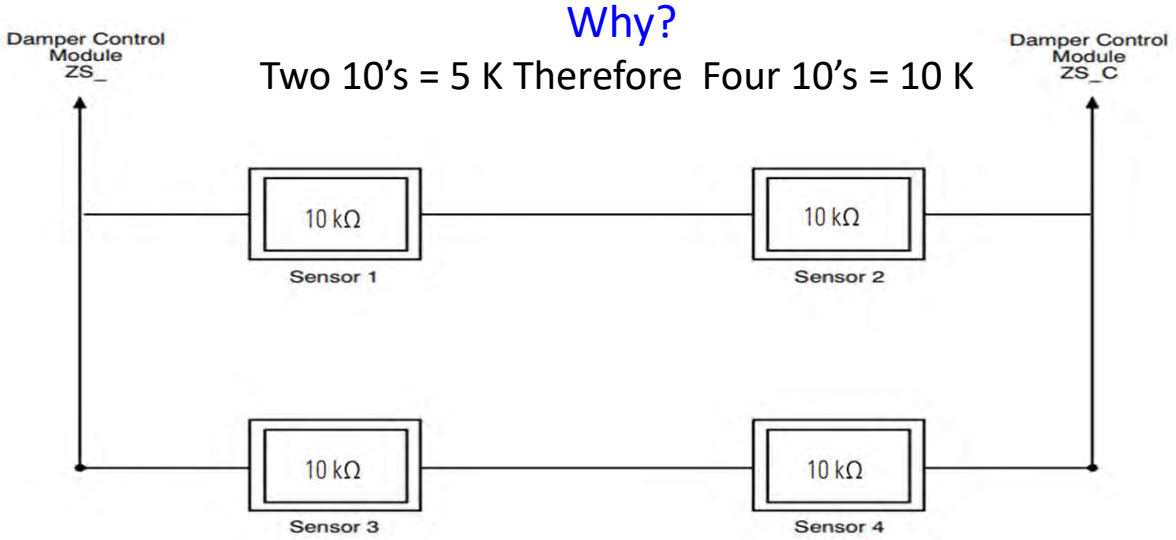


228

If you are going to average a room, you must use four (4) Sensors. 10 kΩ

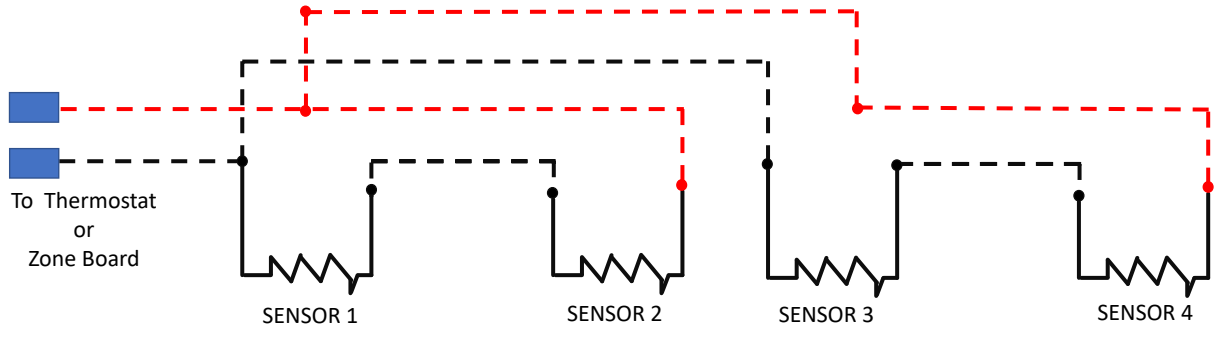
Why?

Two 10's = 5 K Therefore Four 10's = 10 K



229

Infinity Temperature Averaging with Room Sensors



230

How do I check my 10 K sensors?

The following table shows the correct resistance at various ambient temperatures without the sensor wires attached to a thermostat or support module.

Temperature (°F)	Resistance (kΩ)
30	34.6
40	26.1
50	19.9
60	15.3
70	11.9
80	9.4
90	7.4
100	5.9

231

Eliminating Wiring Communication Noise

01

DO NOT route control wires parallel to high voltage wires

- Creates electrical noise
- Generates nuisance fault codes

02

ONLY cross low-voltage control and high voltage wires at perpendicular angles

- Eliminates line noise

03

USE SHIELDED wiring/cable install accessories if communication issues exist

- Shielding grounded at one end of the wire only

232




233

Shielded Wire

In areas with high voltage wiring, it may be wise to use shielded wiring.

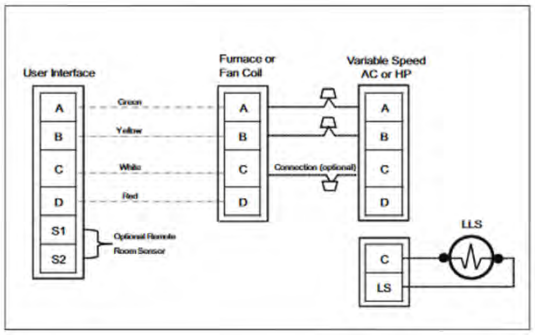
Ground wire should be connected only at the indoor unit "C" terminal or equipment ground.

Daisy Chain wiring is preferred

- Runs over 100' should terminate with a 100ohm resistor to help mitigate electrical noise

234

Wiring the Wall Control

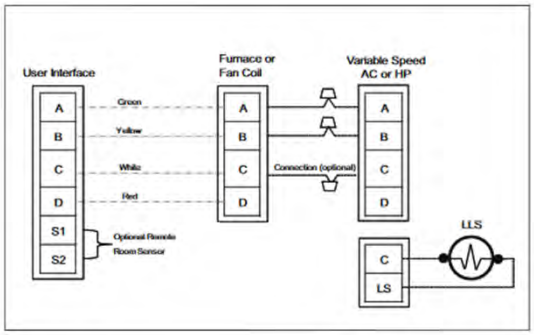


Wiring Requirements

- Use #18 AWG or larger color-coded, insulated (35°C minimum) wire for low voltage
- All wiring must be NEC Class 2
- Separate wires from incoming power leads
- Low voltage wiring
- Runs of greater than 200 feet, consult wall control manual

235

Wiring the Wall Control

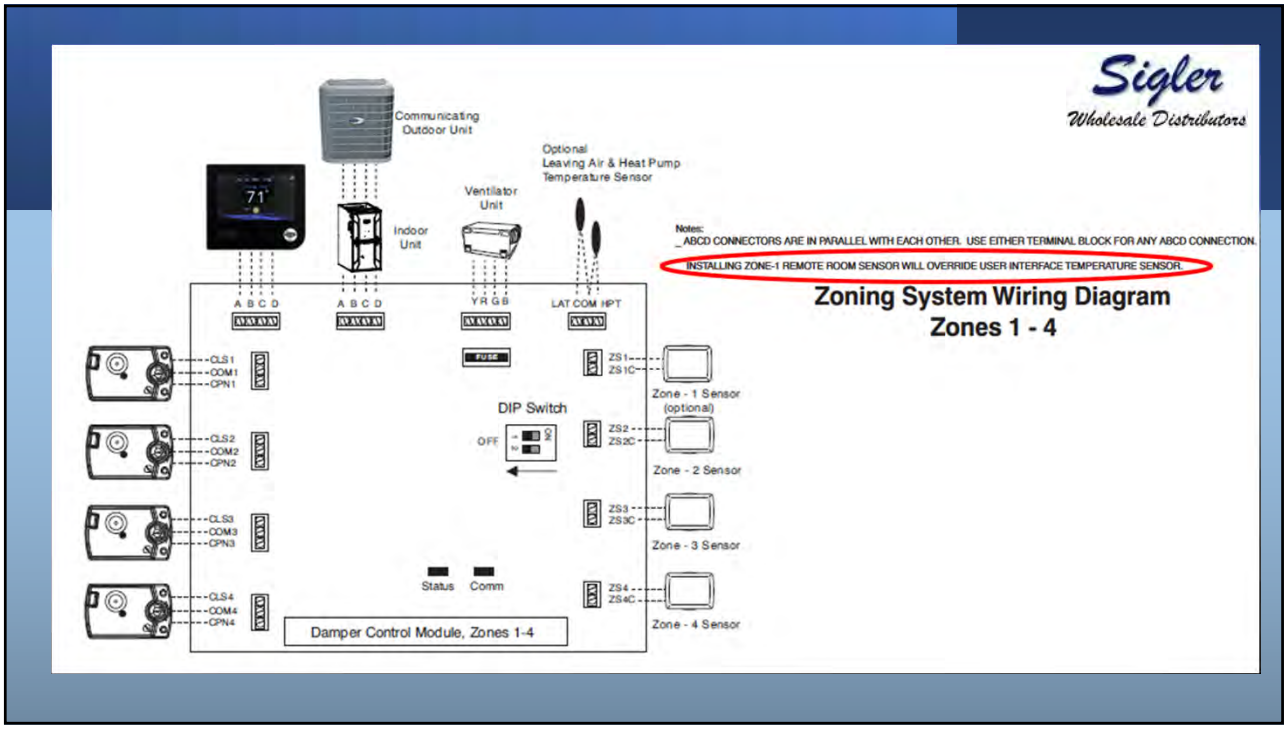


Connect Control Wiring

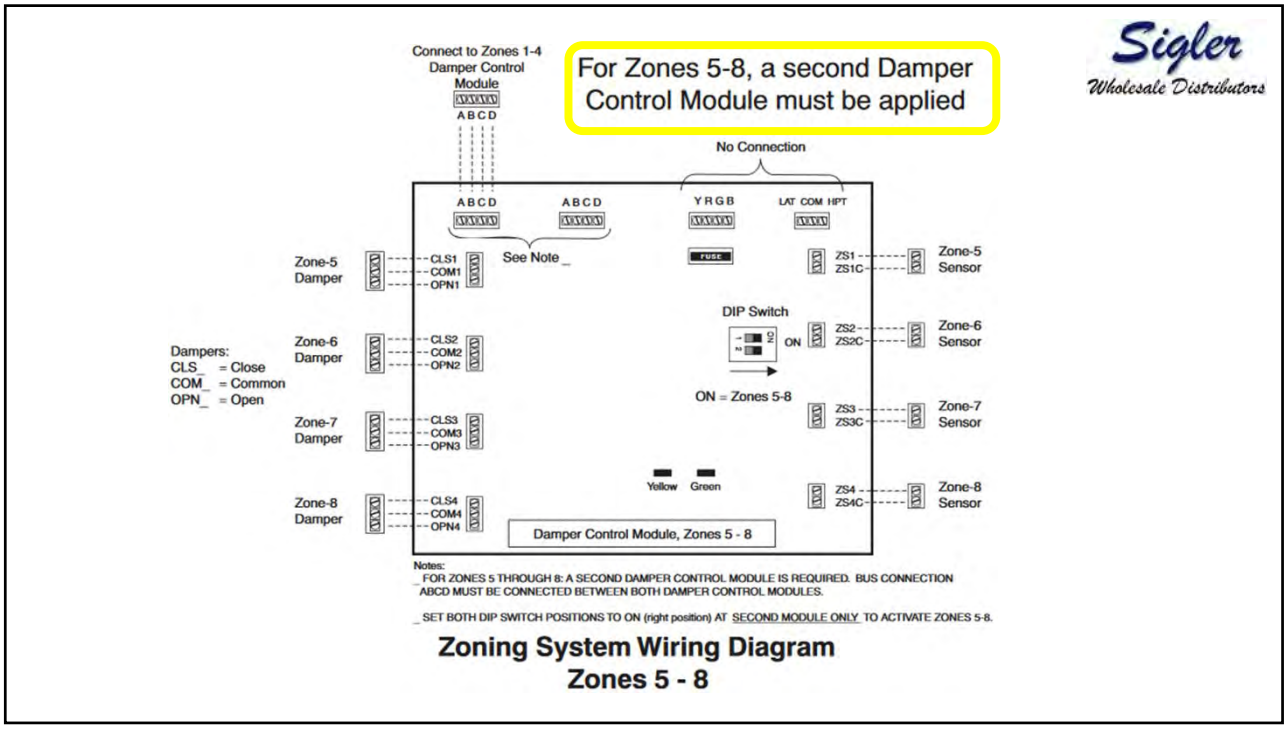
- Typical 4-wire (ABCD) from controller to furnace or fan coil
- Only two wires (AB) to Evolution™ capable outdoor units are required

Prior to 2013 there were 4 wires to the outdoor unit

236


Sigler
Wholesale Distributors
Communicating Outdoor Unit
Optional Leaving Air & Heat Pump Temperature Sensor
Ventilator Unit
Indoor Unit
Notes:
_ ABCD CONNECTORS ARE IN PARALLEL WITH EACH OTHER. USE EITHER TERMINAL BLOCK FOR ANY ABCD CONNECTION.
INSTALLING ZONE-1 REMOTE ROOM SENSOR WILL OVERRIDE USER INTERFACE TEMPERATURE SENSOR.
Zoning System Wiring Diagram
Zones 1 - 4
A B C D
A B C D
Y R G B
LAT COM HPT
FUSE
CLS1
COM1
OPN1
CLS2
COM2
OPN2
CLS3
COM3
OPN3
CLS4
COM4
OPN4
DIP Switch
OFF
ON
ZS1
ZS1C
Zone - 1 Sensor (optional)
ZS2
ZS2C
Zone - 2 Sensor
ZS3
ZS3C
Zone - 3 Sensor
ZS4
ZS4C
Zone - 4 Sensor
Status
Comm
Damper Control Module, Zones 1-4

237

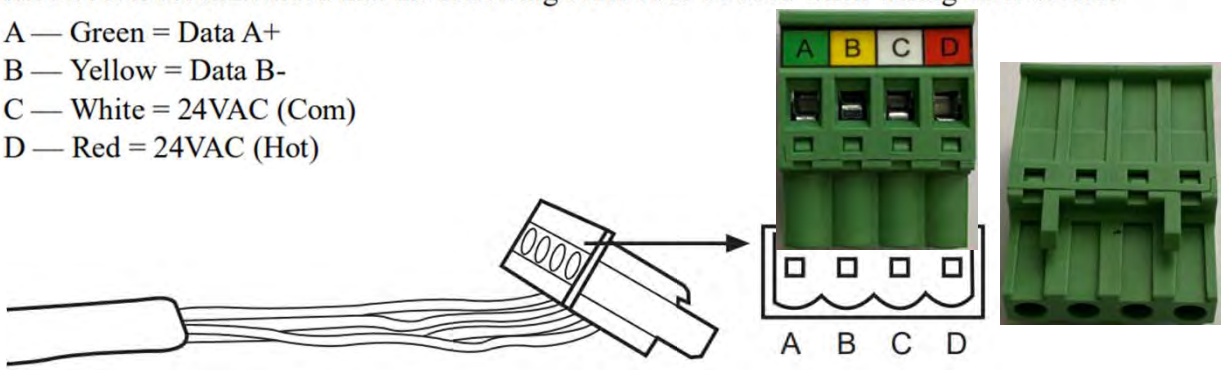

Sigler
Wholesale Distributors
Connect to Zones 1-4 Damper Control Module
A B C D
For Zones 5-8, a second Damper Control Module must be applied
No Connection
A B C D
A B C D
Y R G B
LAT COM HPT
See Note _
FUSE
Zone-5 Damper
CLS1
COM1
OPN1
ZS1
ZS1C
Zone-5 Sensor
DIP Switch
ON
Zone-6 Damper
CLS2
COM2
OPN2
ZS2
ZS2C
Zone-6 Sensor
Dampers:
CLS_ = Close
COM_ = Common
OPN_ = Open
ON = Zones 5-8
Zone-7 Damper
CLS3
COM3
OPN3
ZS3
ZS3C
Zone-7 Sensor
Yellow
Green
Zone-8 Damper
CLS4
COM4
OPN4
ZS4
ZS4C
Zone-8 Sensor
Damper Control Module, Zones 5 - 8
Notes:
_ FOR ZONES 5 THROUGH 8: A SECOND DAMPER CONTROL MODULE IS REQUIRED. BUS CONNECTION ABCD MUST BE CONNECTED BETWEEN BOTH DAMPER CONTROL MODULES.
_ SET BOTH DIP SWITCH POSITIONS TO ON (right position) AT SECOND MODULE ONLY TO ACTIVATE ZONES 5-8.
Zoning System Wiring Diagram
Zones 5 - 8

238

NOTE: ABCD bus wiring only requires a four-wire connection; however, it is good practice to run thermostat cable having more than four wires in the event of a damaged or broken wire during installation.

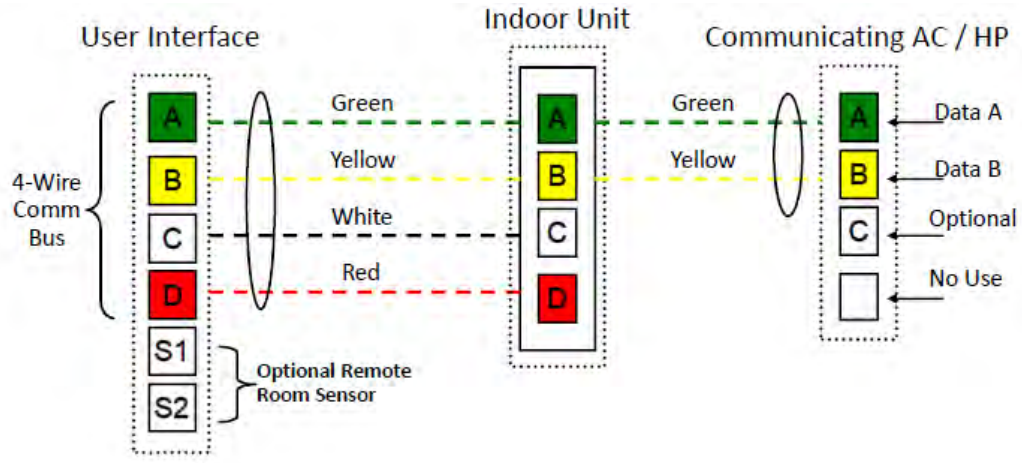
Each communicating device in the Evolution Zone System has a four-pin connector labeled ABCD. It is recommended that the following color code be used when wiring each device:

A — Green = Data A+
B — Yellow = Data B-
C — White = 24VAC (Com)
D — Red = 24VAC (Hot)

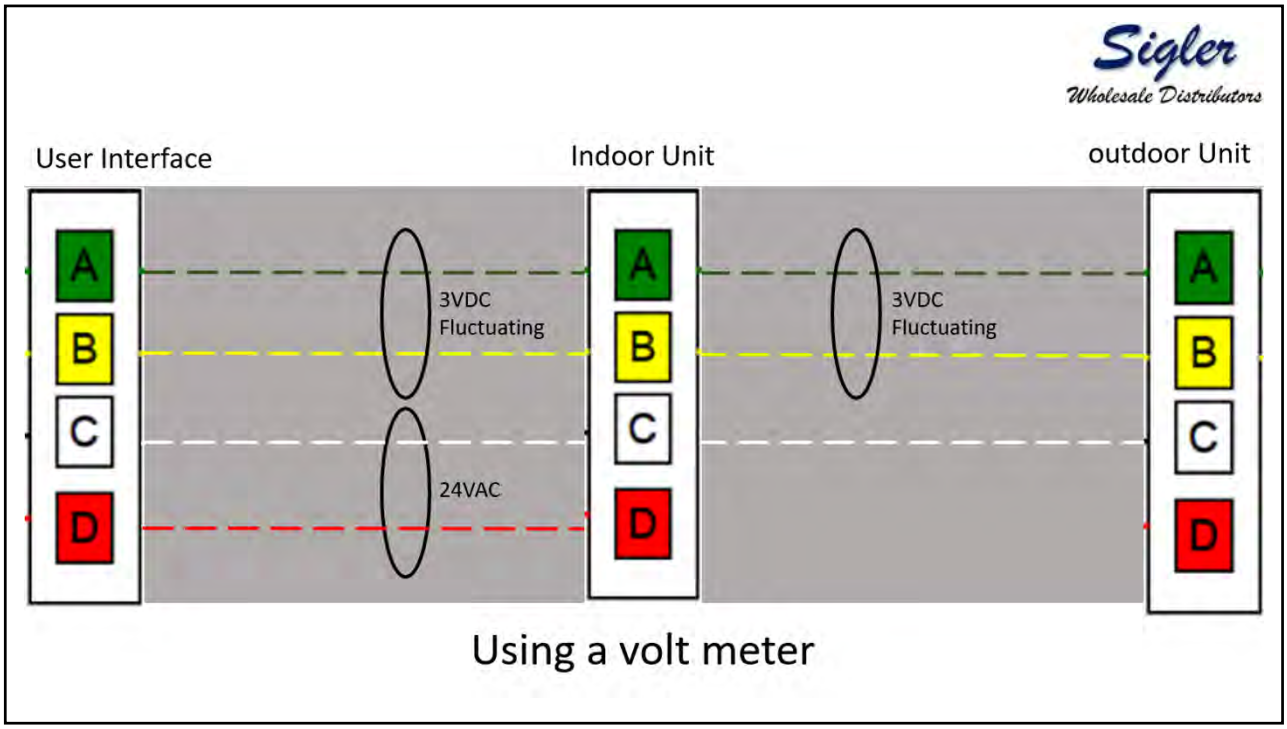


239

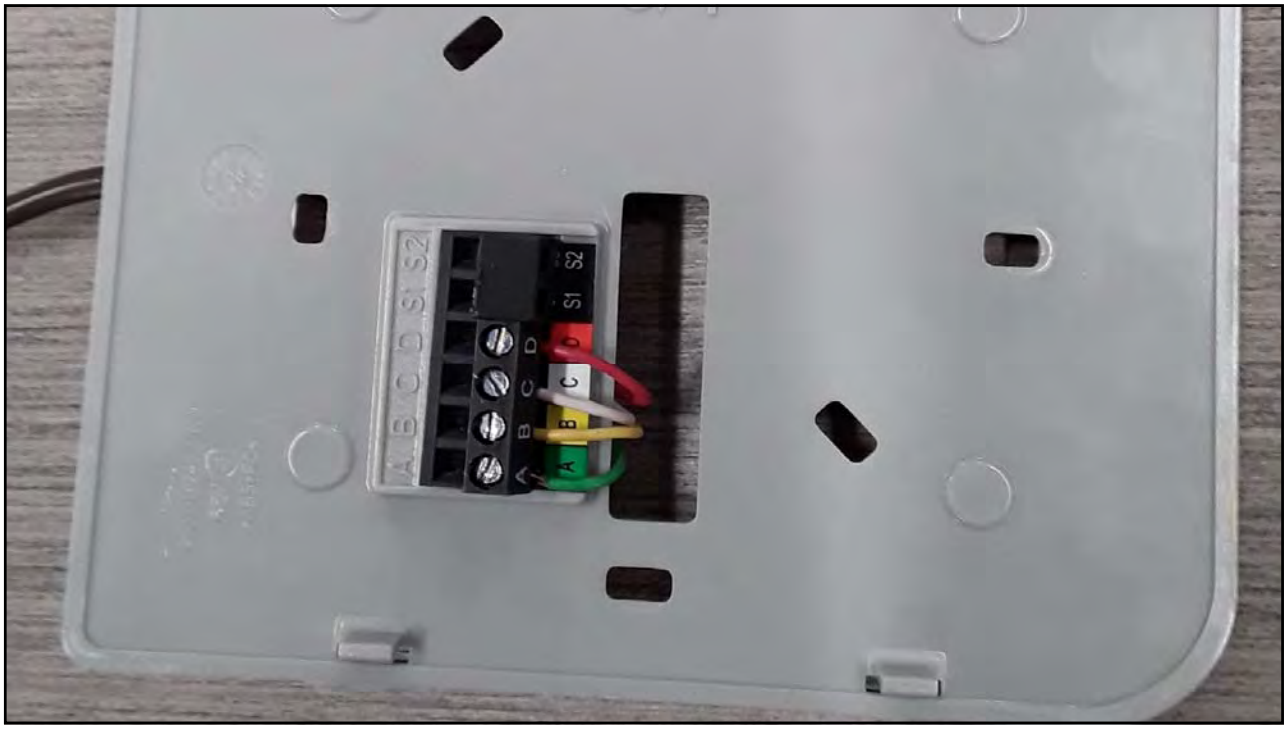
Communication Bus



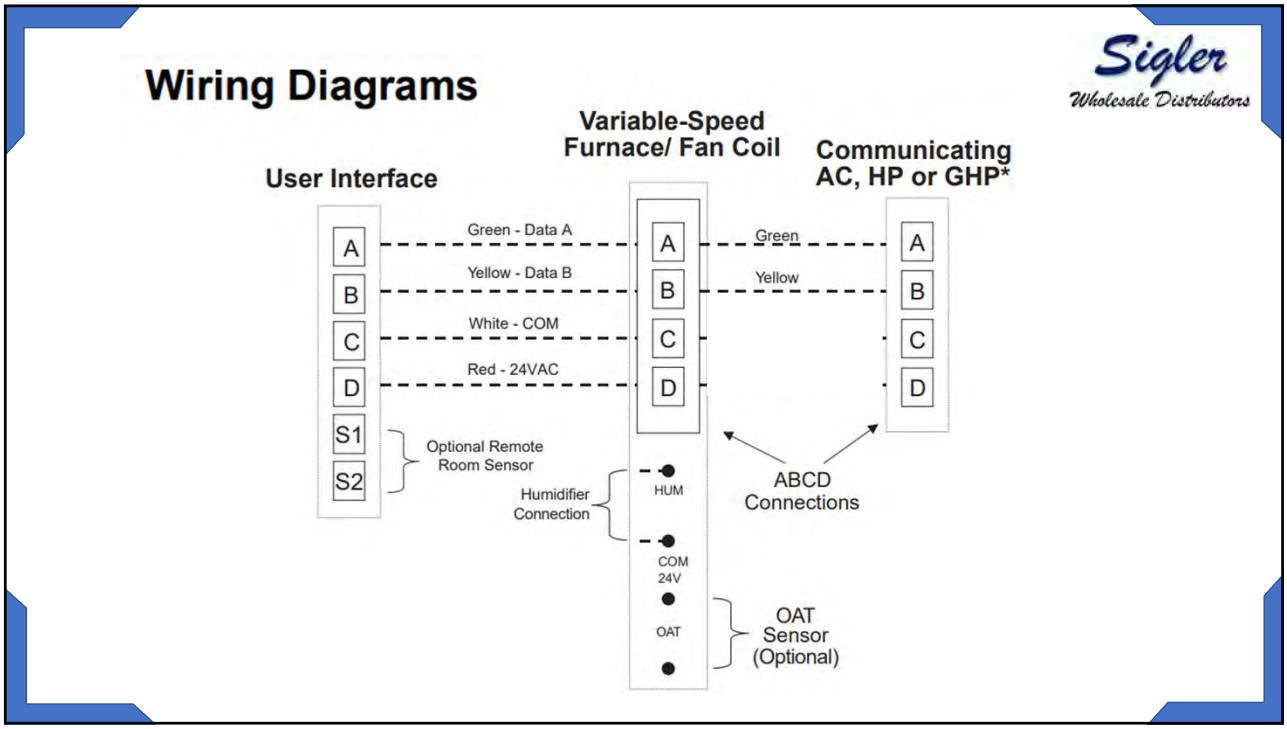
240


Sigler
Wholesale Distributors
User Interface
Indoor Unit
outdoor Unit
A
B
C
D
3VDC
Fluctuating
24VAC
3VDC
Fluctuating
Using a volt meter

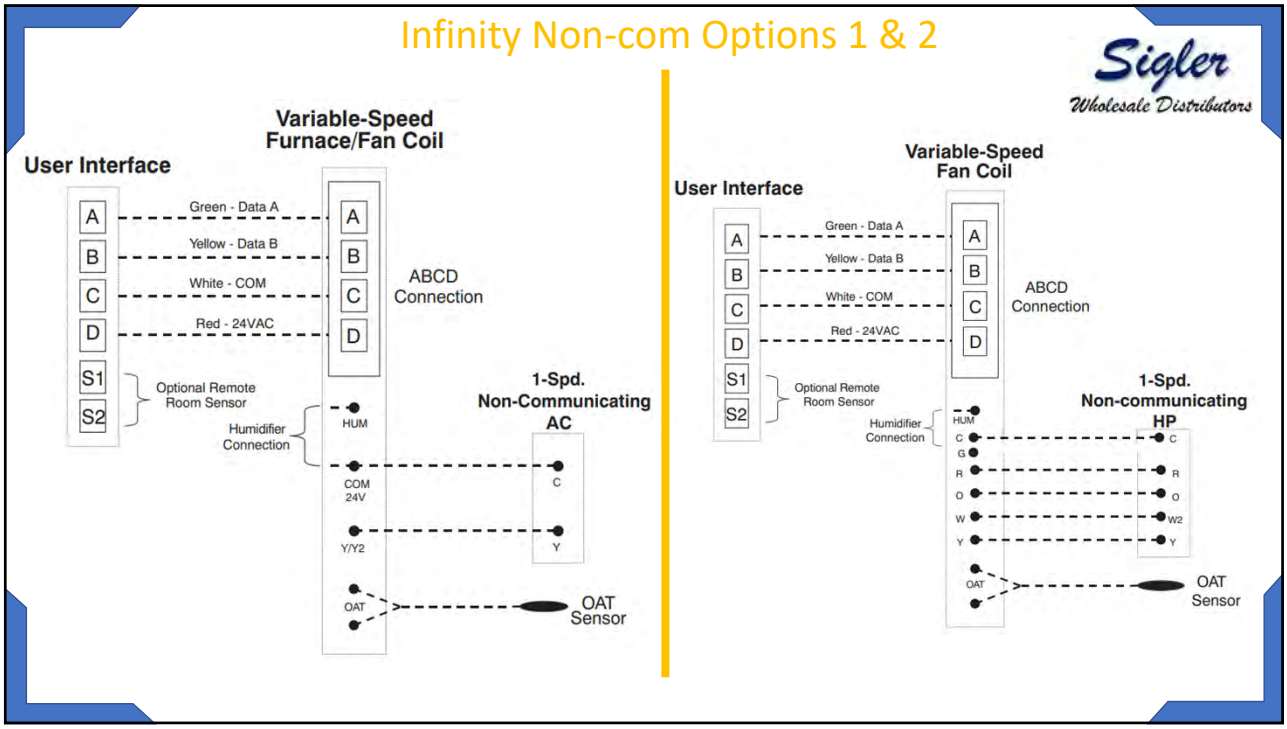
241


A B C D S1 S2
S2
S1
D
C
B
A

242


Wiring Diagrams
Sigler
Wholesale Distributors
User Interface
Variable-Speed
Furnace/ Fan Coil
Communicating
AC, HP or GHP*
A
B
C
D
S1
S2
Green - Data A
Yellow - Data B
White - COM
Red - 24VAC
Green
Yellow
Optional Remote
Room Sensor
Humidifier
Connection
HUM
COM
24V
OAT
ABCD
Connections
OAT
Sensor
(Optional)

243

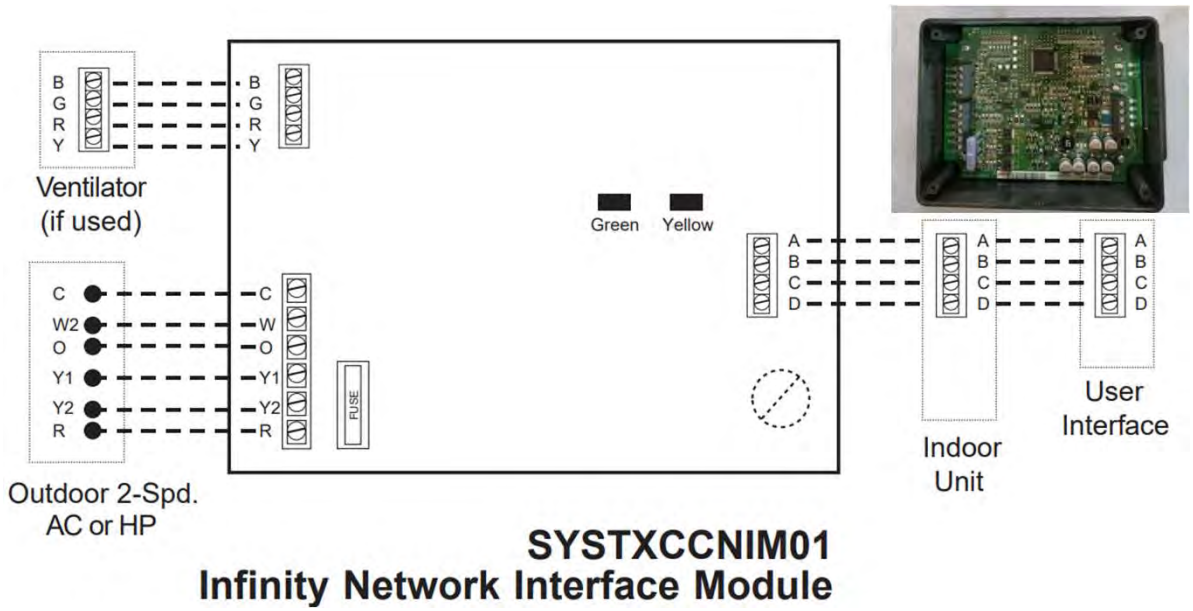

Infinity Non-com Options 1 & 2
Sigler
Wholesale Distributors
Variable-Speed
Furnace/Fan Coil
User Interface
A
B
C
D
S1
S2
Green - Data A
Yellow - Data B
White - COM
Red - 24VAC
ABCD
Connection
Optional Remote
Room Sensor
Humidifier
Connection
HUM
COM
24V
Y/Y2
OAT
1-Spd.
Non-Communicating
AC
C
Y
OAT
Sensor
Variable-Speed
Fan Coil
User Interface
ABCD
Connection
1-Spd.
Non-communicating
HP
G
R
O
W
W2
Y
OAT
Sensor

244

AC1Stage —	1-stage air conditioner
*AC2Stage —	2-stage air conditioner
*HP1Stage —	1-stage heat pump
*HP2Stage —	2-stage heat pump
None —	No outdoor unit installed

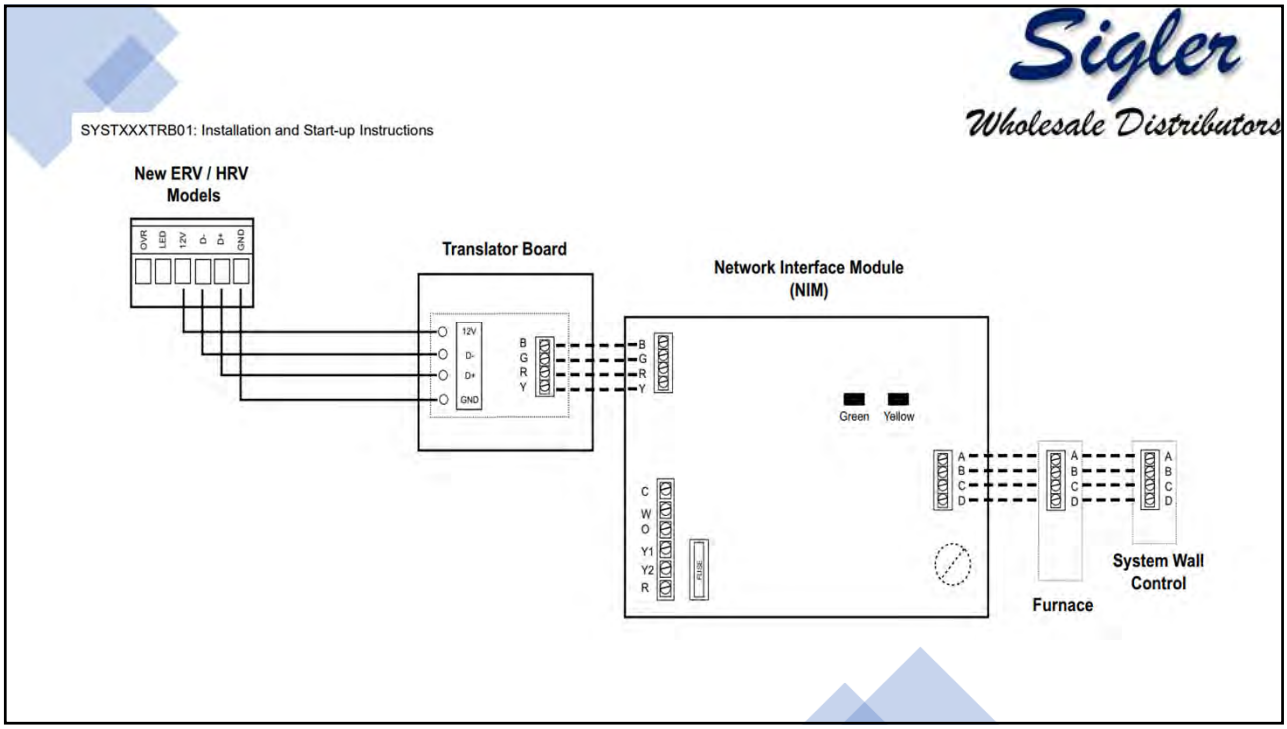
*. Network Interference Module (NIM) may be required for these selections to be displayed.

245

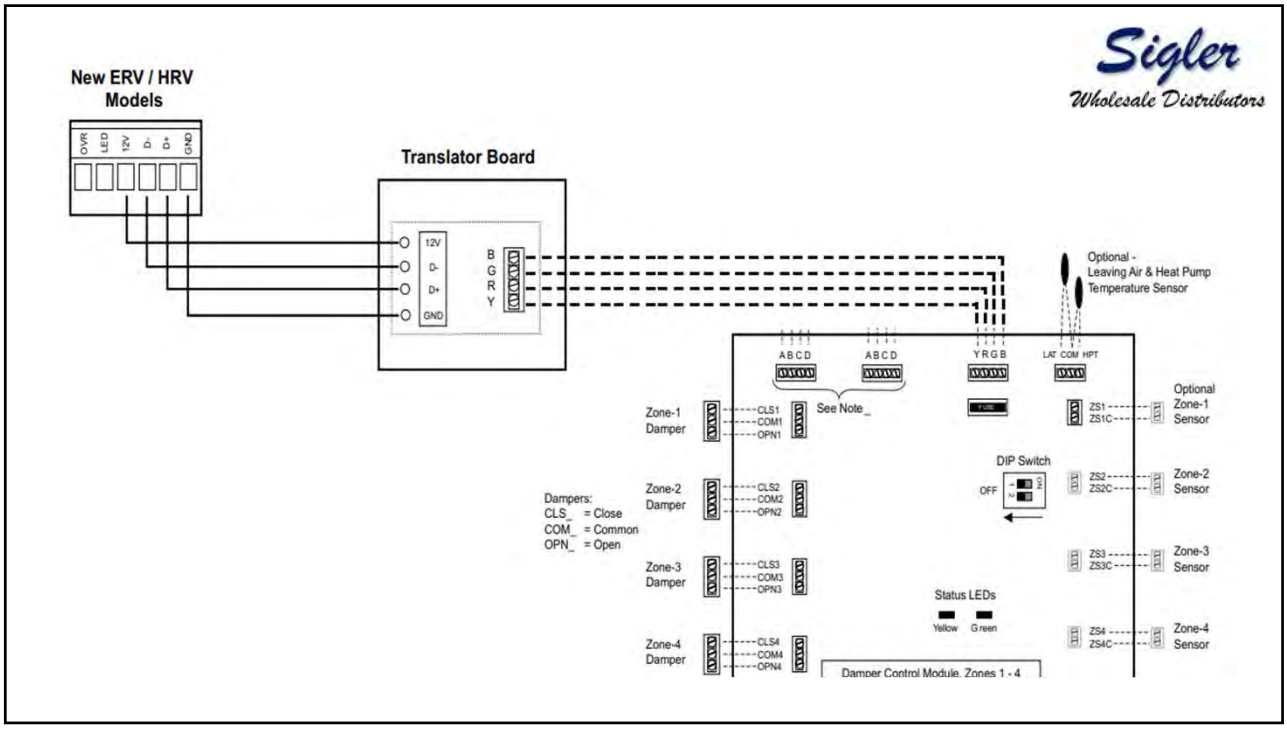


SYSTXCCNIM01
Infinity Network Interface Module

246


Sigler
Wholesale Distributors
SYSTXXXTRB01: Installation and Start-up Instructions
New ERV / HRV Models
OVR
LED
12V
D-
D+
GND
Translator Board
12V
D-
D+
GND
B
G
R
Y
Network Interface Module (NIM)
Green
Yellow
A
B
C
D
C
W
O
Y1
Y2
R
FUSE
System Wall Control
Furnace

247


Sigler
Wholesale Distributors
New ERV / HRV Models
OVR
LED
12V
D-
D+
GND
Translator Board
12V
D-
D+
GND
B
G
R
Y
Optional - Leaving Air & Heat Pump Temperature Sensor
A B C D
A B C D
Y R G B
LAT COM HPT
See Note _
Zone-1 Damper
CLS1
COM1
OPN1
Optional Zone-1 Sensor
ZS1
ZS1C
DIP Switch
OFF
Zone-2 Damper
CLS2
COM2
OPN2
ZS2
ZS2C
Zone-2 Sensor
Dampers:
CLS_ = Close
COM_ = Common
OPN_ = Open
Zone-3 Damper
CLS3
COM3
OPN3
ZS3
ZS3C
Zone-3 Sensor
Status LEDs
Yellow
Green
Zone-4 Damper
CLS4
COM4
OPN4
ZS4
ZS4C
Zone-4 Sensor
Damper Control Module, Zones 1 - 4

248

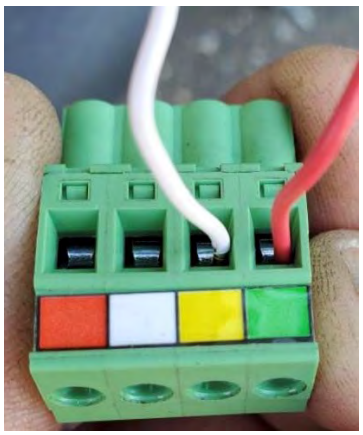
Table 1 – NIM and TRB Requirements for Newest ERV/HRV

Infinity® System Control / Evolution® Connex™ Control	ERV Product	HRV Product	Network Interface Module SYSTXCCNIM01	Translator Board SYSTXXXTRB01
SYSTXCCITC01-B SYSTXCCITC01-C SYSTXCCWIC01-B SYSTXCCICF01-B SYSTXCCWIF01-B SYSTXBBECC01-B SYSTXBBECC01-C SYSTXBBWEC01-B SYSTXBBECF01-B SYSTXBBWEF01-B	ERVXXSVA1130	HRVXXSVA1130	Required	Required
	ERVXXSHA1130	HRVXXSHA1130	Required	Required
	ERVXXSVB1145	HRVXXSVA1160	Required	Required
	ERVXXSHB1145	HRVXXSHA1160	Required	Required
	ERVXXSVA1150	HRVXXSVB1160	Required	Required
	ERVXXSHA1150	HRVXXSHB1160	Required	Required
	ERVCRLHB1200	HRVCRLHB1250	Required	Not Required
Infinity® Zone Panel / Evolution® Zone Panel	**ERV Product**	**HRV Product**	**Network Interface Module SYSTXCCNIM01**	**Translator Board SYSTXXXTRB01**
SYSTXCC4ZC01 SYSTXBB4ZC01	ERVXXSVA1130	HRVXXSVA1130	Not Required	Required
	ERVXXSHA1130	HRVXXSHA1130	Not Required	Required
	ERVXXSVB1145	HRVXXSVA1160	Not Required	Required
	ERVXXSHB1145	HRVXXSHA1160	Not Required	Required
	ERVXXSVA1150	HRVXXSVB1160	Not Required	Required
	ERVXXSHA1150	HRVXXSHB1160	Not Required	Required
	ERVCRLHB1200	HRVCRLHB1250	Not Required	Not Required

249

What is going on? Has the factory lost its head?

Let's talk about what is new for 2020 / 2021

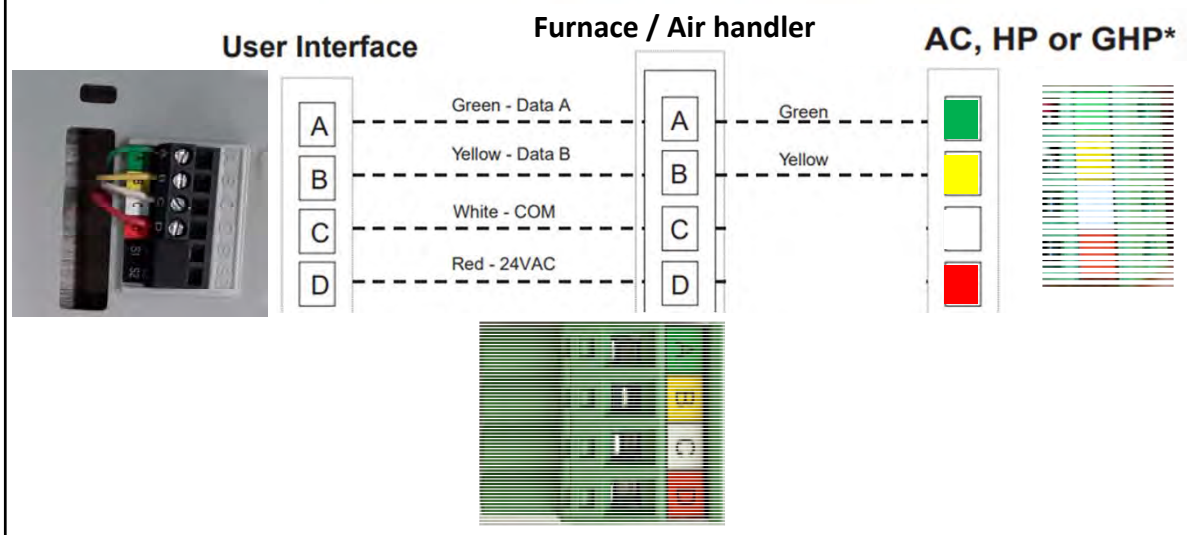


Some
Of
The
New
Condensers
Use
Just
Color Codes
No **A, B, C, D**

250

Infinity Basics

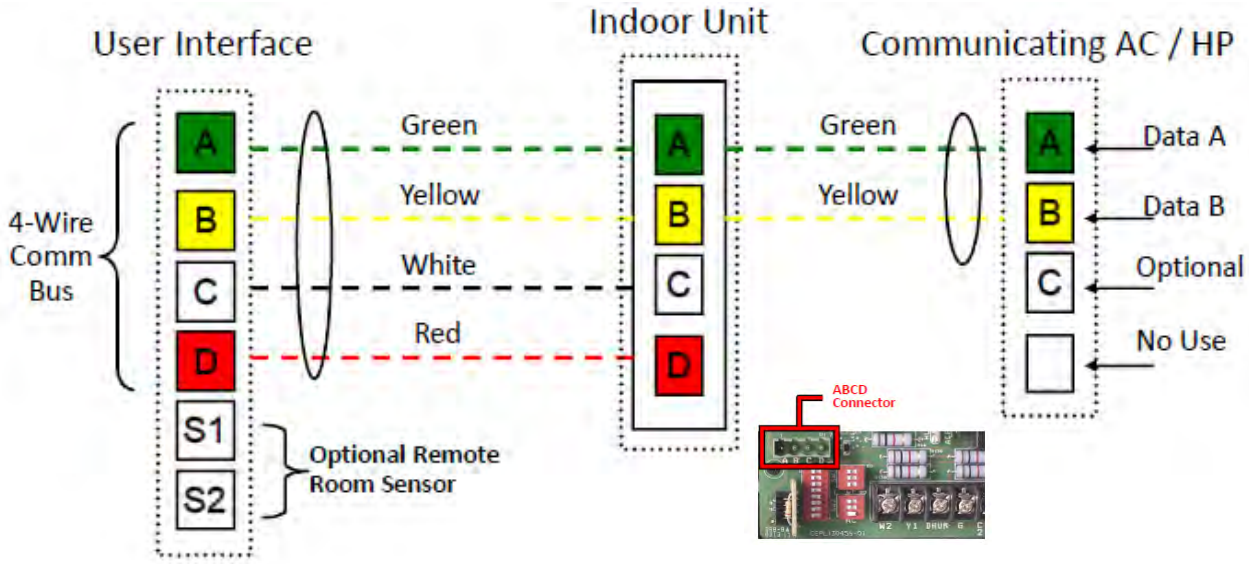
Sigler Wholesale Distributors



251

Sigler Wholesale Distributors

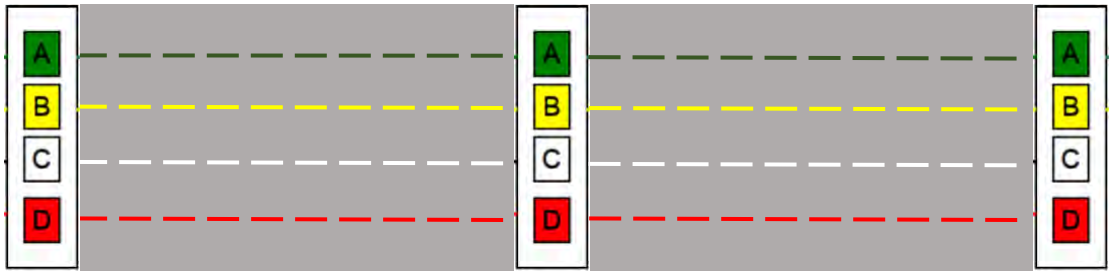
Communication Bus



252

Communication Troubleshooting

User Interface | Indoor Unit | outdoor Unit



Prior to 2013 there were 4 wires to the outdoor unit

253

Communication Troubleshooting

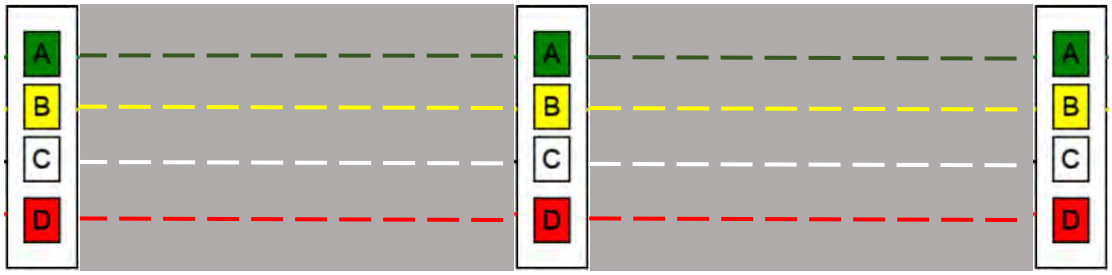
Voltmeter capable of reading VDC

Ohmmeter capable of reading 100k ohms

254

Communication Troubleshooting

User Interface | Indoor Unit | outdoor Unit

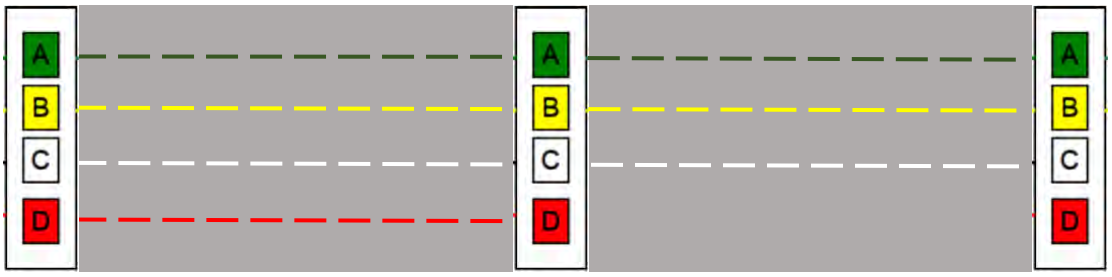


Prior to 2013 there were 4 wires to the outdoor unit

255

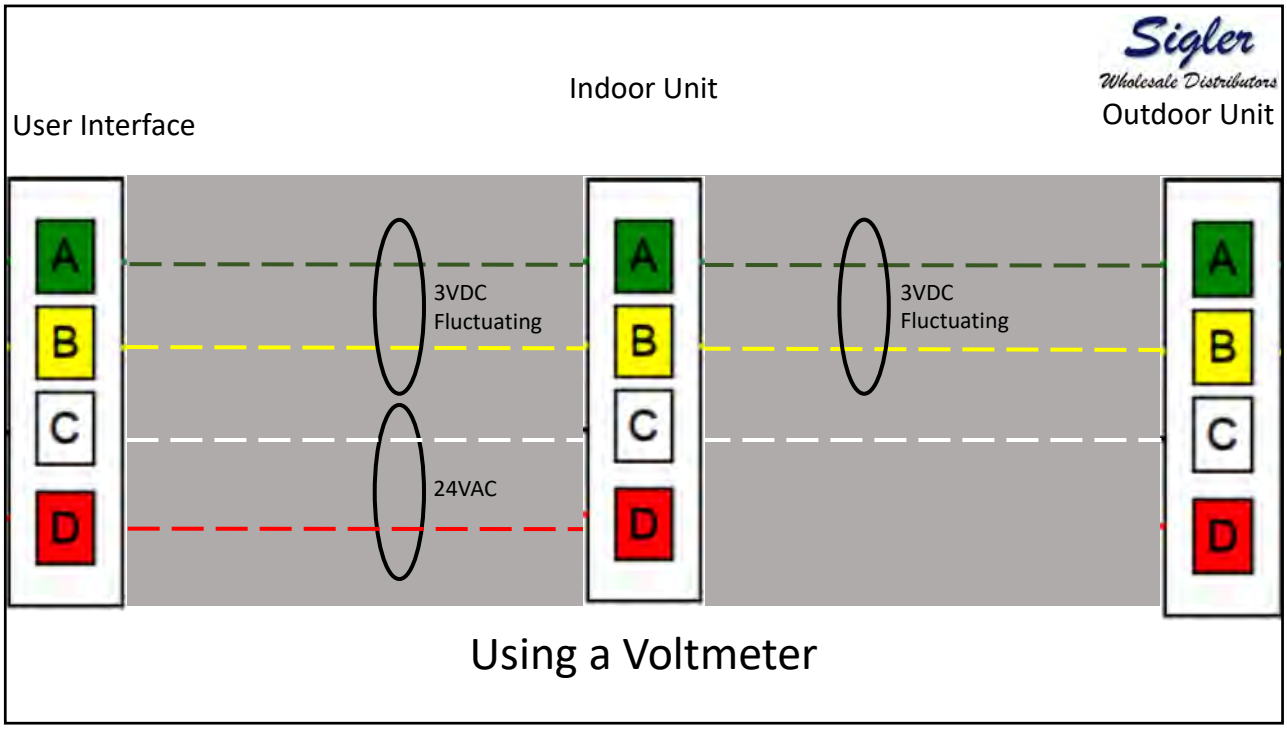
Communication Troubleshooting

User Interface | Indoor Unit | outdoor Unit

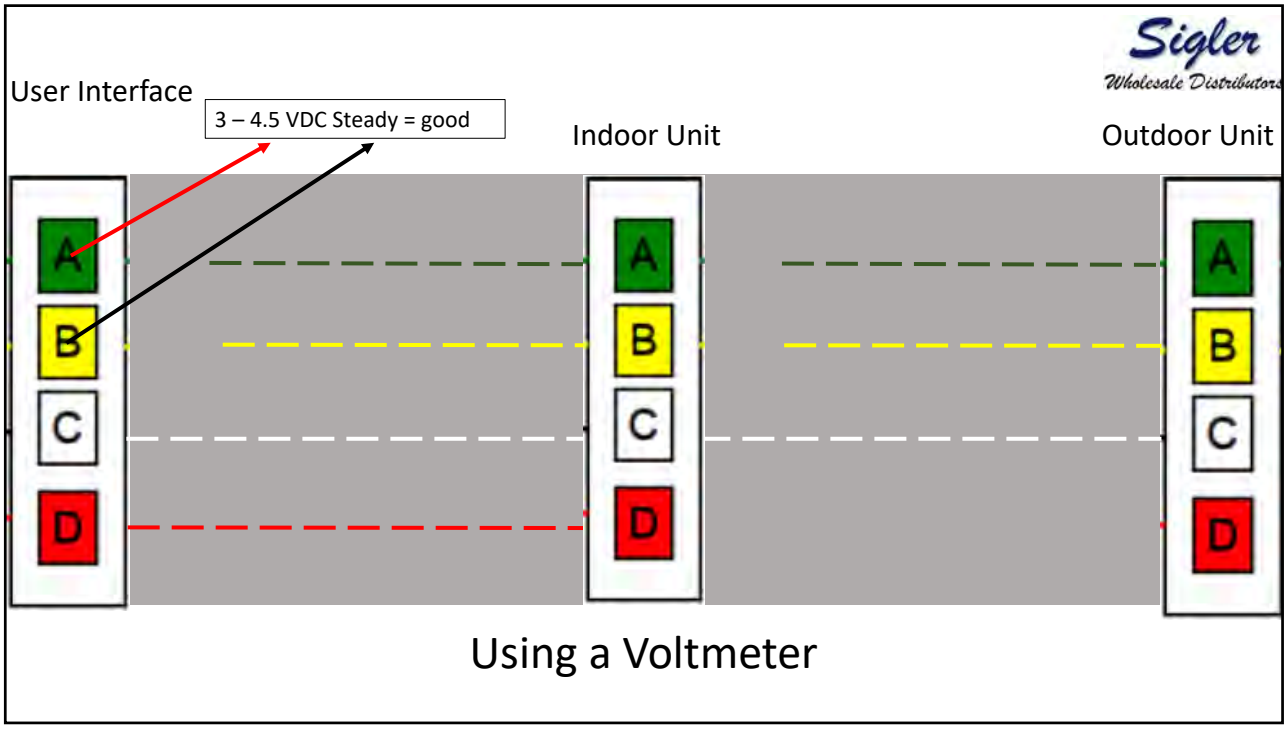


Circumstances may need a third wire to the outdoor unit

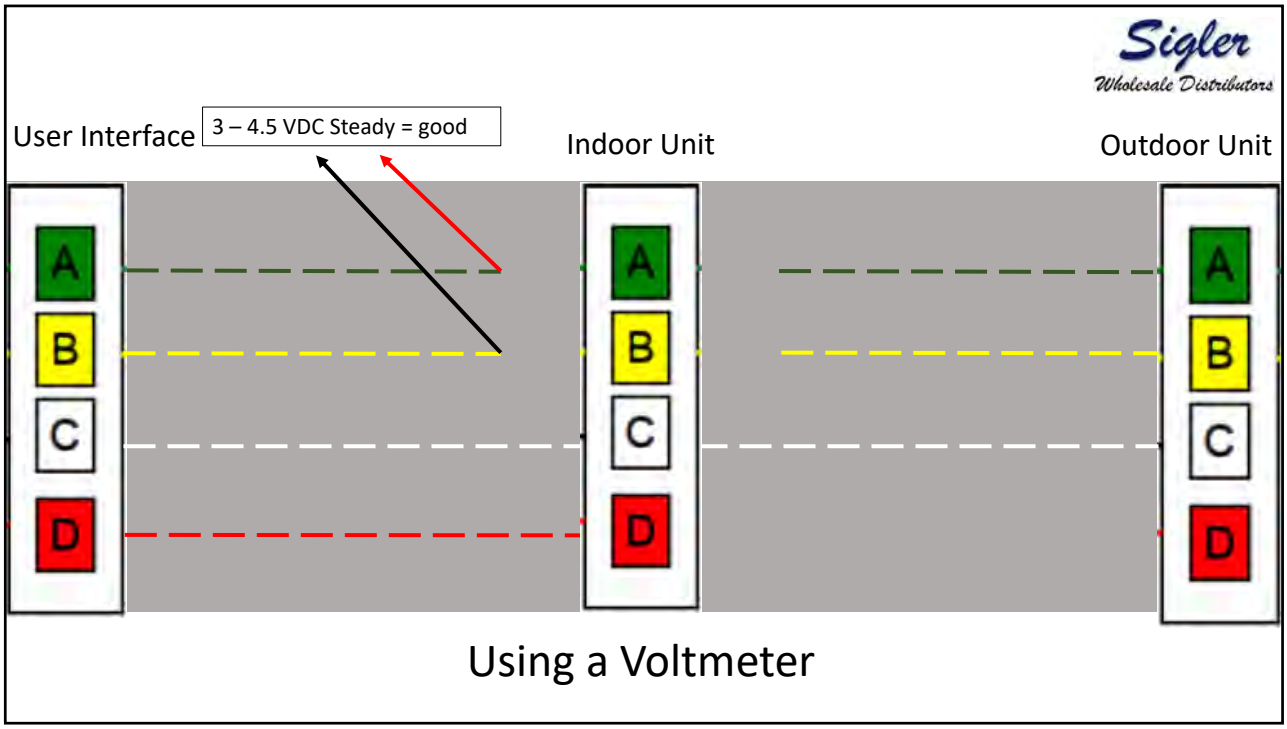
256


Sigler
Wholesale Distributors
User Interface
Indoor Unit
Outdoor Unit
A
B
C
D
3VDC
Fluctuating
24VAC
3VDC
Fluctuating
Using a Voltmeter

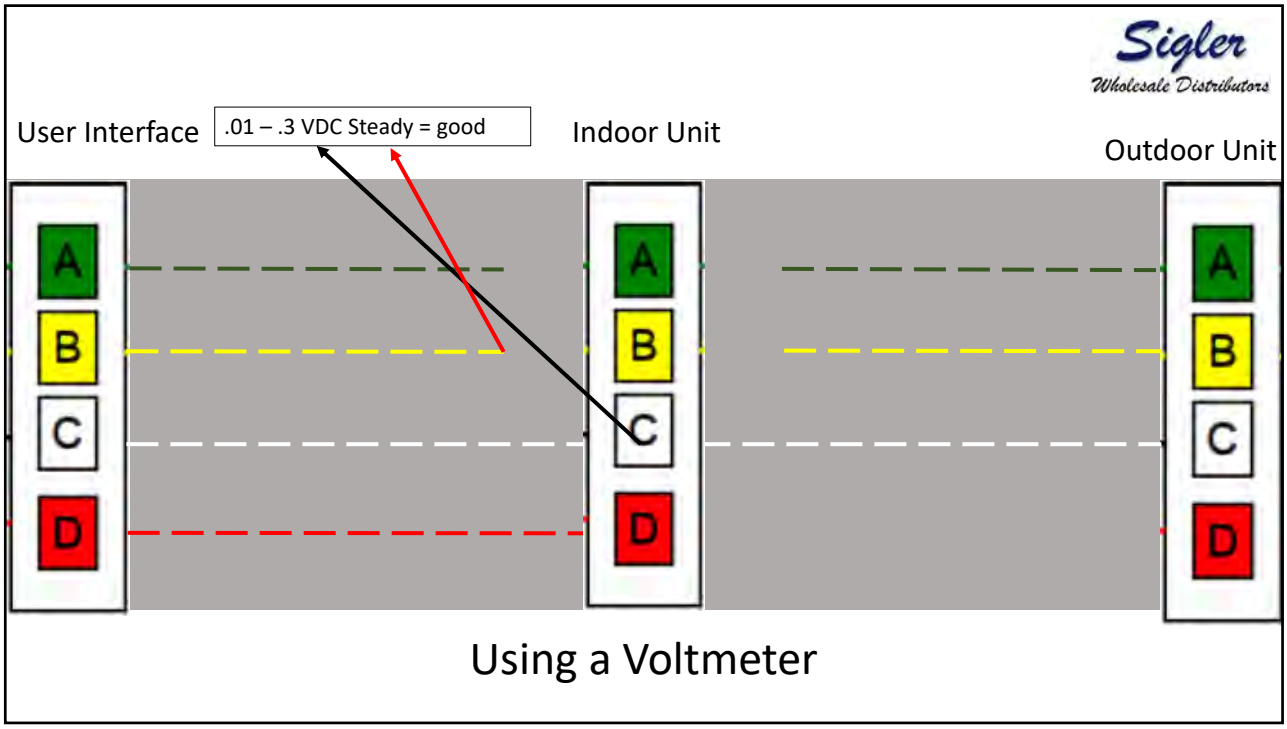
257


Sigler
Wholesale Distributors
User Interface
3 – 4.5 VDC Steady = good
Indoor Unit
Outdoor Unit
A
B
C
D
Using a Voltmeter

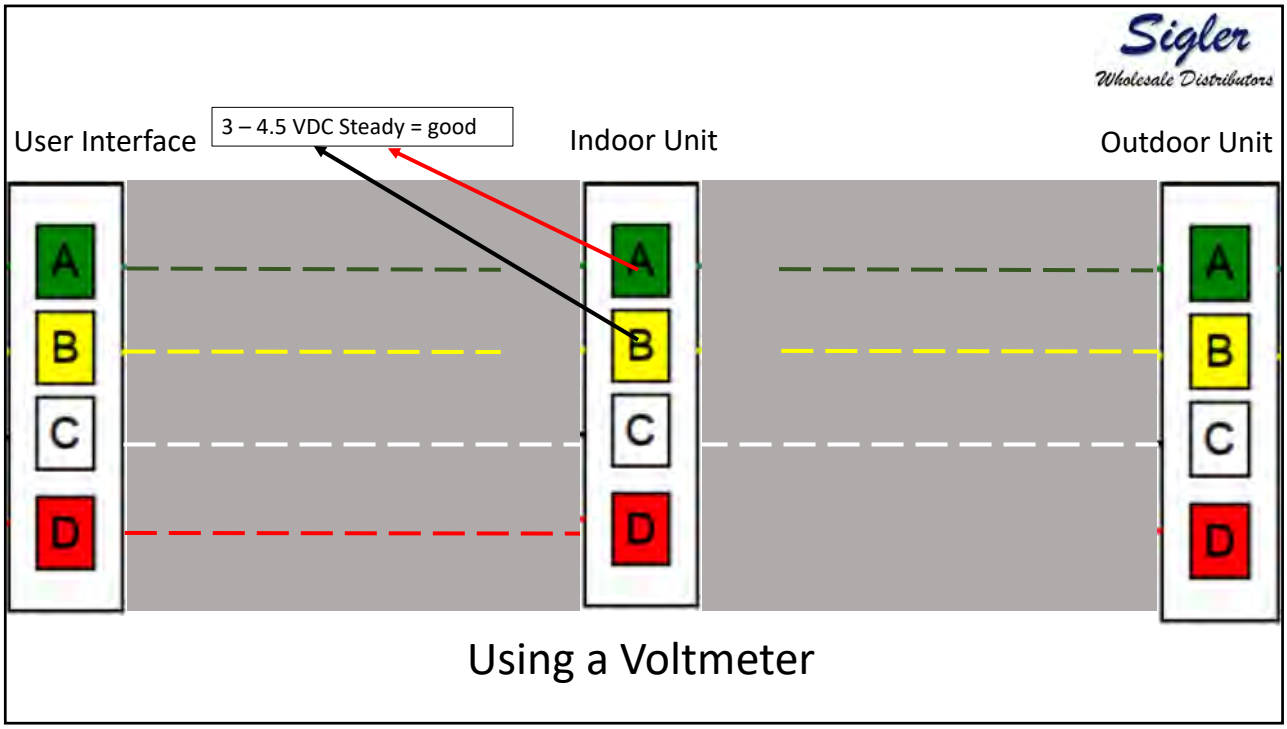
258


Sigler
Wholesale Distributors
User Interface
3 – 4.5 VDC Steady = good
Indoor Unit
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D
Using a Voltmeter

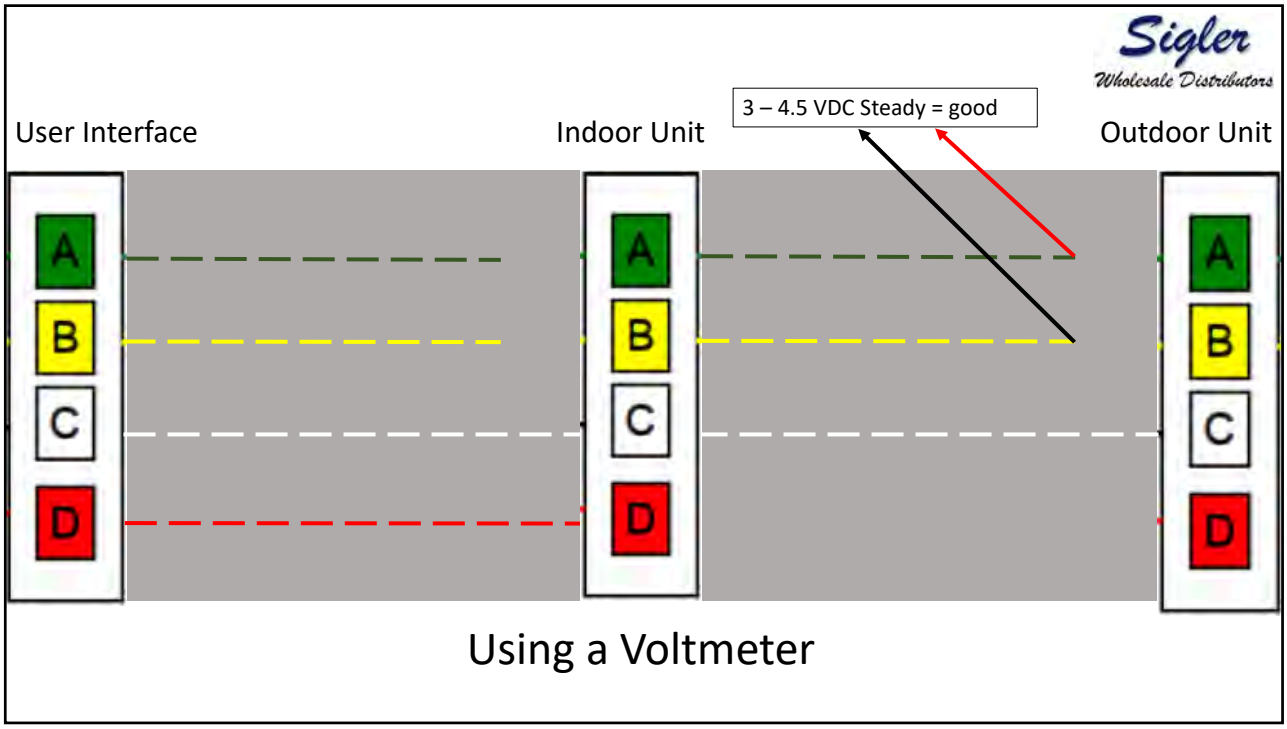
259


Sigler
Wholesale Distributors
User Interface
.01 – .3 VDC Steady = good
Indoor Unit
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D
Using a Voltmeter

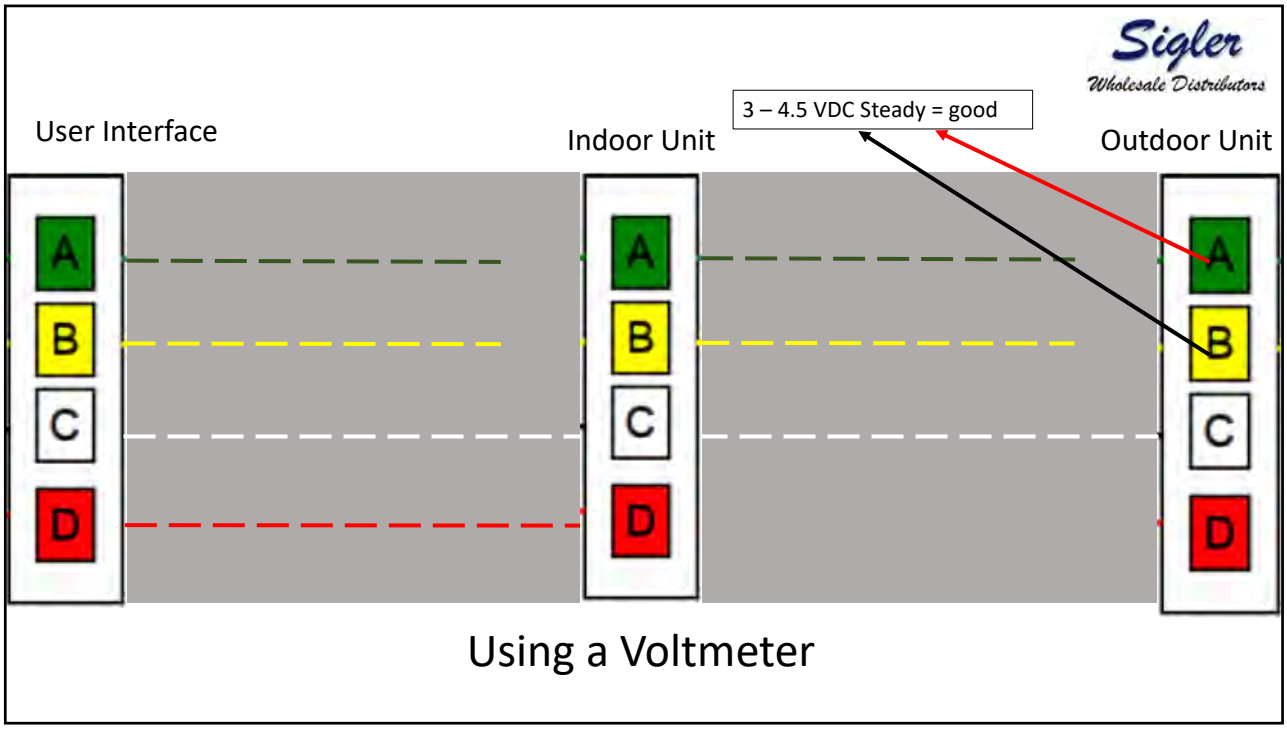
260


Sigler
Wholesale Distributors
User Interface
3 – 4.5 VDC Steady = good
Indoor Unit
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D
Using a Voltmeter

261


Sigler
Wholesale Distributors
User Interface
Indoor Unit
3 – 4.5 VDC Steady = good
Outdoor Unit
A
B
C
D
A
B
C
D
A
B
C
D
Using a Voltmeter

262



263

Sigler
Wholesale Distributors

Turn off power. Isolate the ABCD wires from the board being tested. Use an Ohmmeter to check the condition of the comm driver. Resistance readings should be in the range shown.

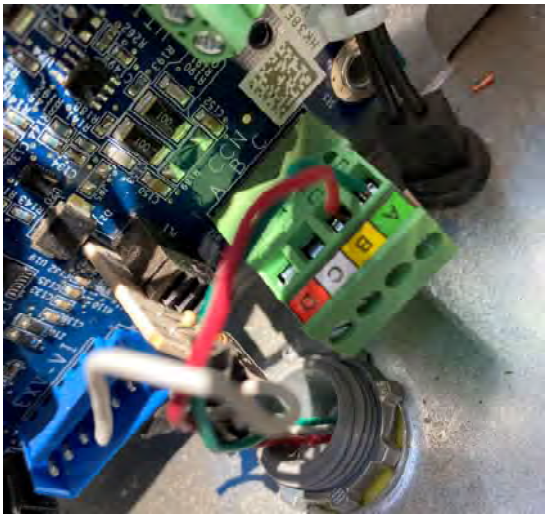
	A to B	A to C	B to C
Outdoor	31K	18.6K	14.3K
Furnace	29.6k	15.8k	13.8k
Touch	71-74.7k	42-47.5k	41k
Smart	71.5k	43.3k	41k
UI (button)	71.1k	42.9k	41k
Zone Brd	72.5	43-44k	41k
FE4	18.3		
Older Furnace	17.5	9.1	8.5

Make sure you meter can read resistances in this range before condemning a device.

264

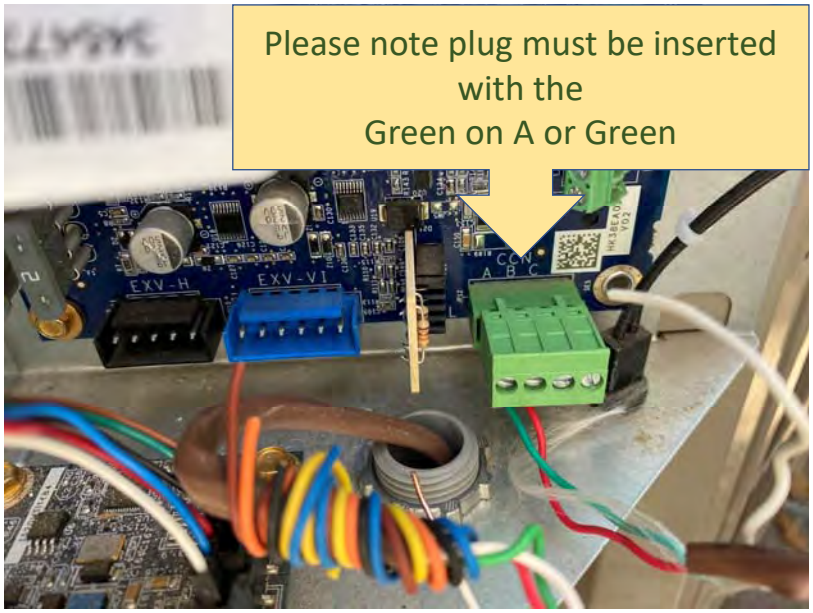
Sigler
Wholesale Distributors

What is wrong in these photos? Do you see it?



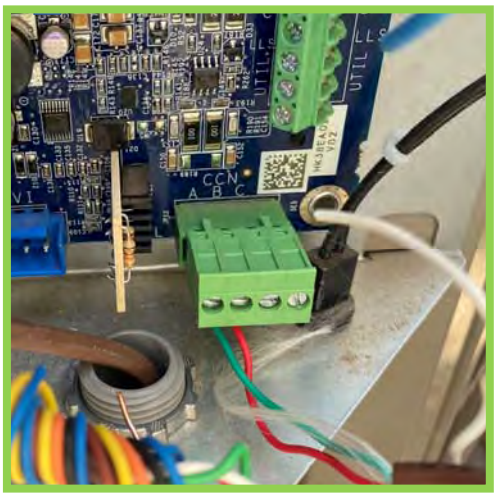
265

Sigler
Wholesale Distributors

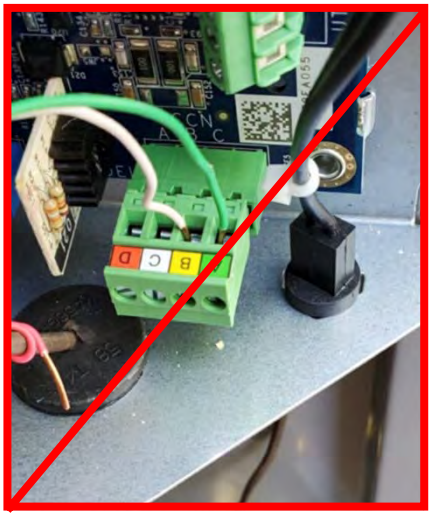


266

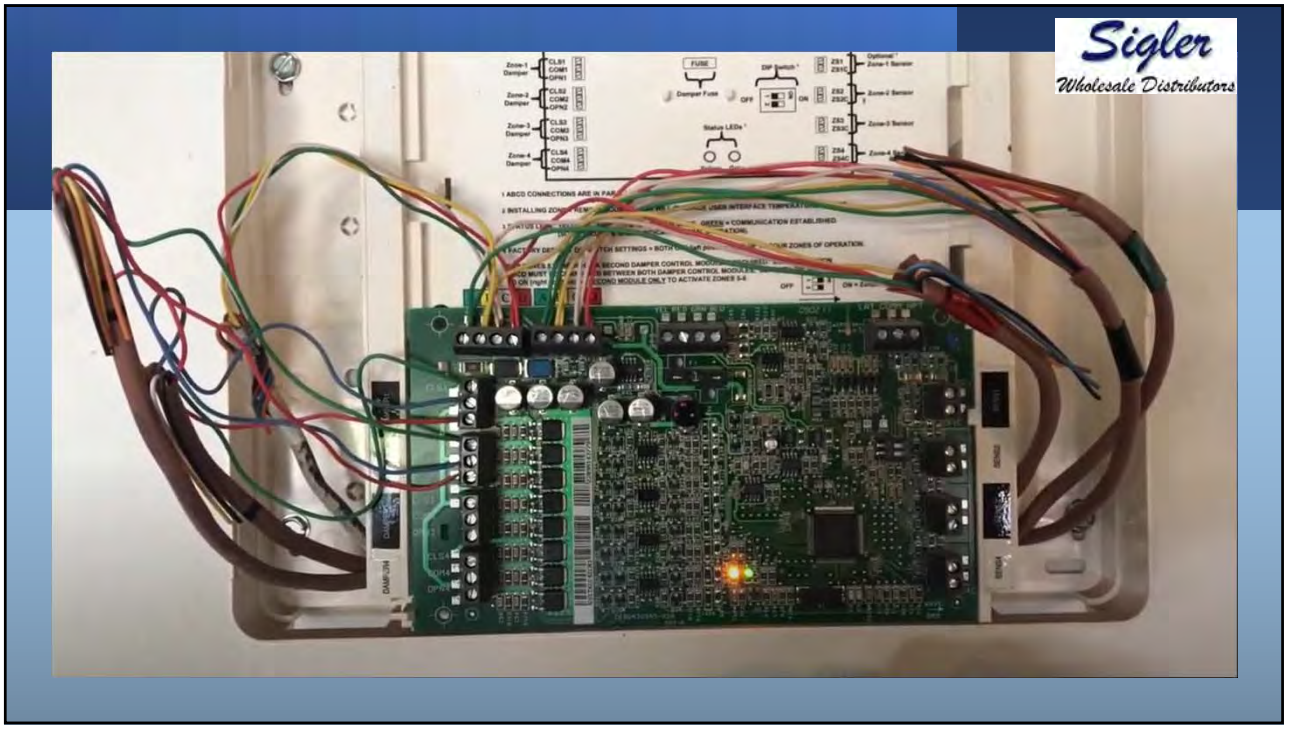
This plug is inserted Correctly



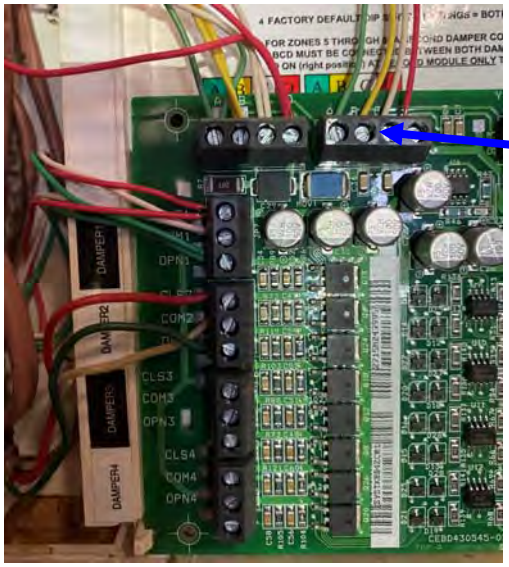
This plug is inserted Incorrectly

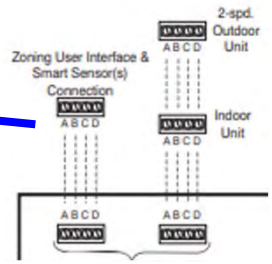


267



268

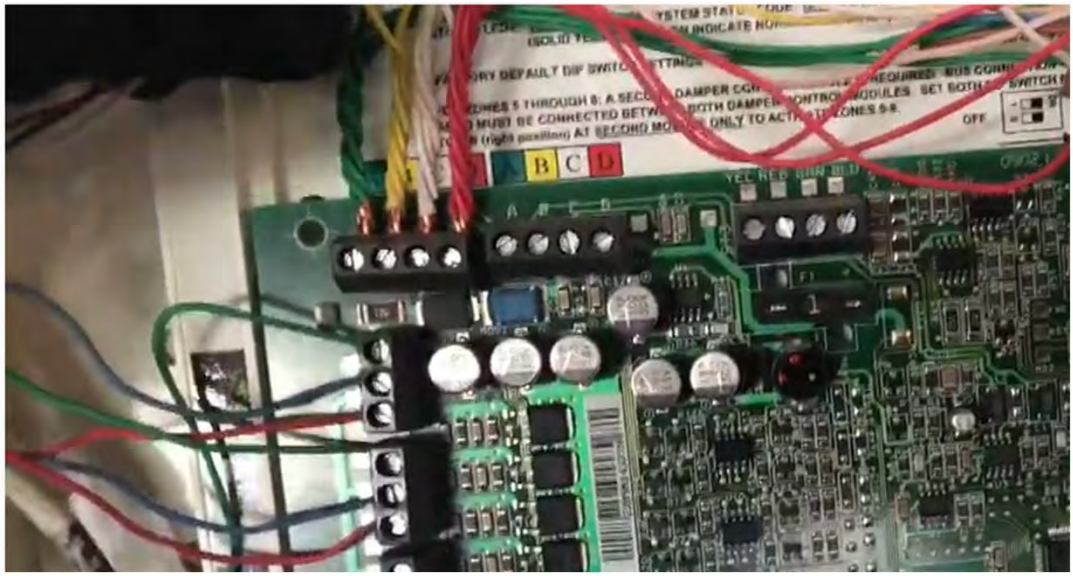




Note: the wires are clean and tidy!

No wire nuts!

269



270

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Wholesale Distributors

Led Indicators

Under normal operation, the Yellow and Green LEDs will be on continuously (solid). If the Evolution® Damper Control does not receive communications with the Evolution® Connex™ Wall Control, the Green LED will **not** be on. If there are faults present, the Yellow LED indicator will blink a two-digit status code. The first digit will blink at a fast rate, and the second at a slow rate.

Status Code	Description
16 =	Communication Failure
24 =	Damper Fuse Failed
45 =	Board Failure
46 =	Low Input Voltage

271

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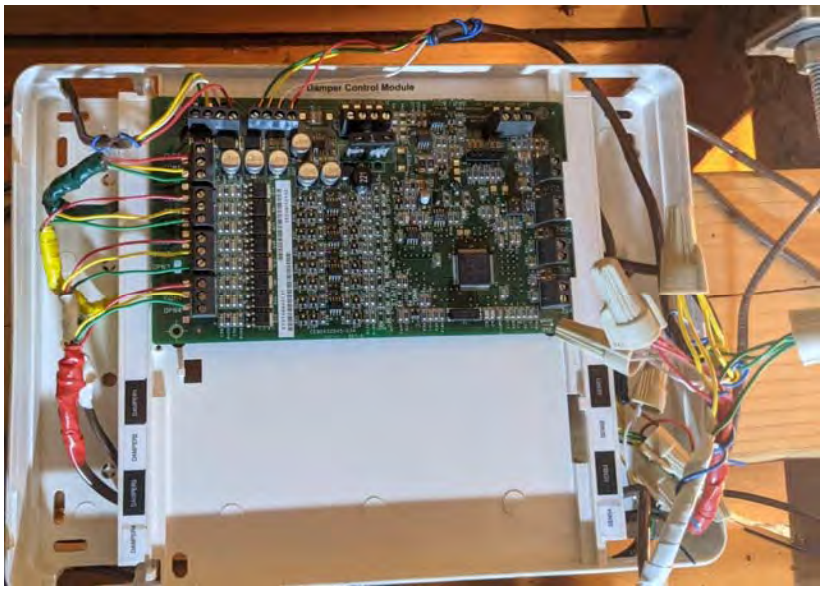
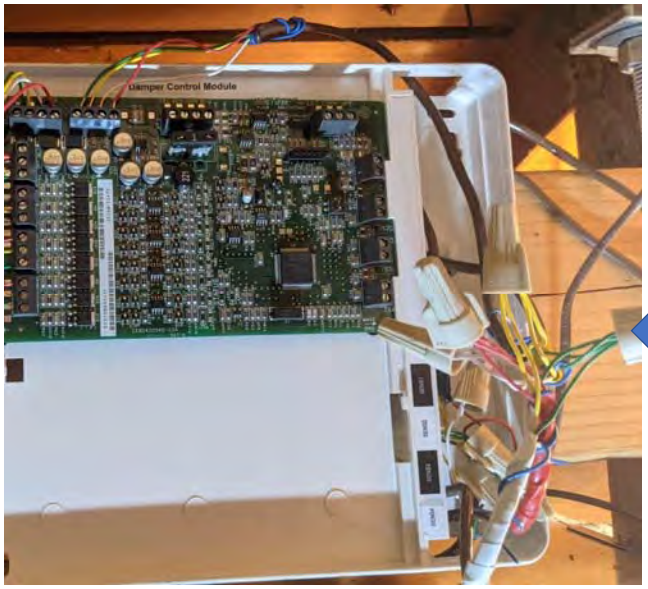
Wholesale Distributors

This Job Looks Great But Do You See The Problem?

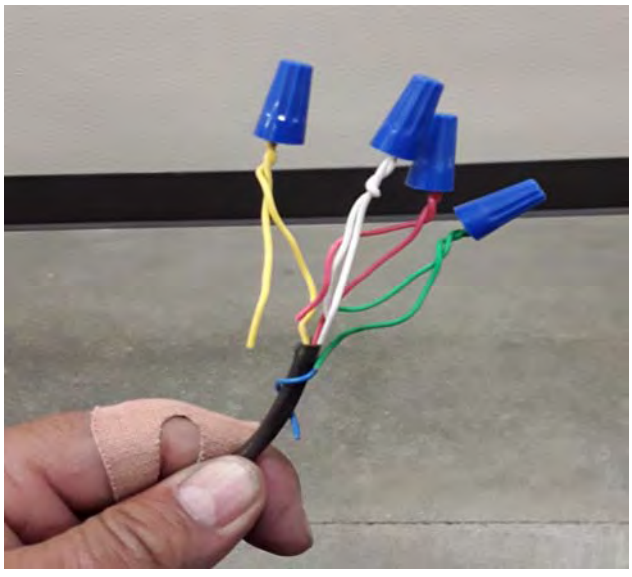


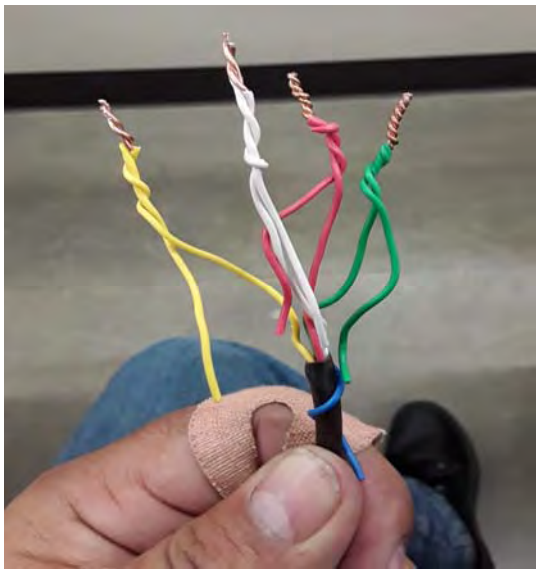
272



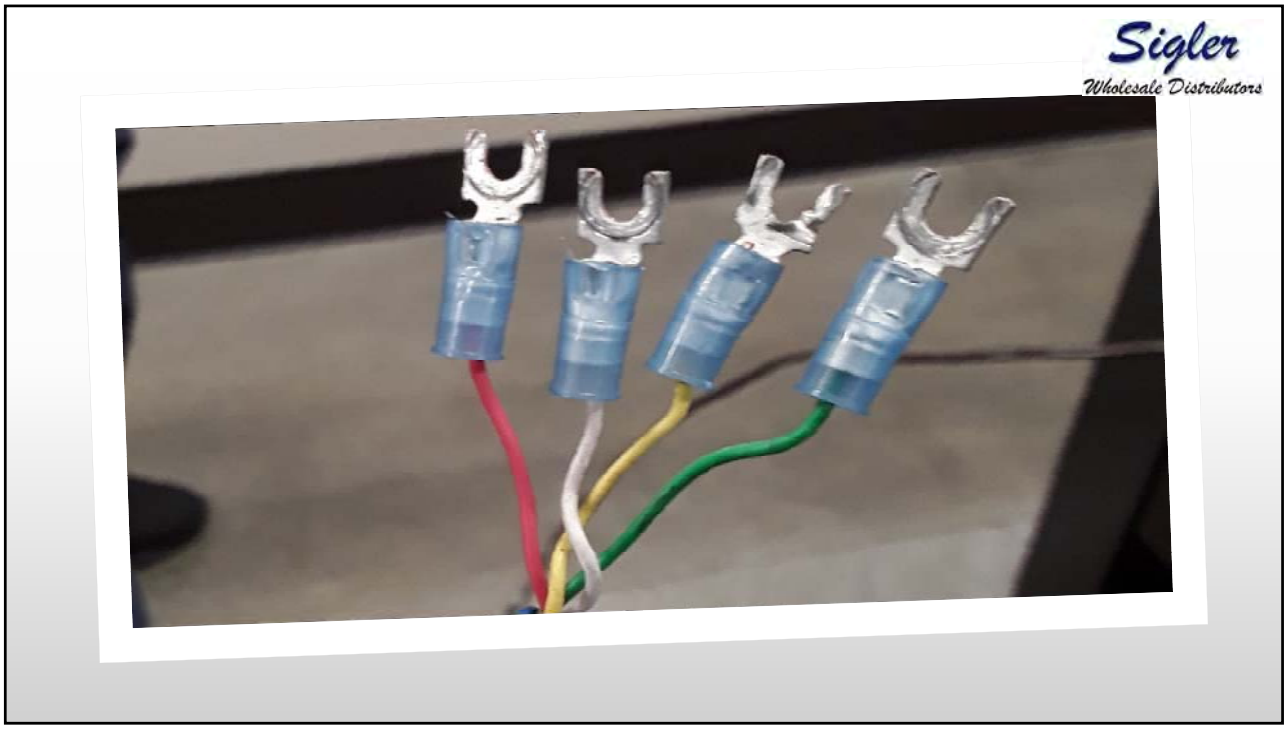
A Communication I Connections Are Not Expectable Communication Connections

273





274



275

276

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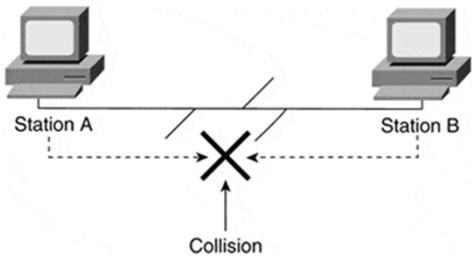
Wholesale Distributors

Let's talk about data collision

Data travels around the network in order to arrive at its destination. Data may be sent simultaneously from different computers or devises. When this happens, the data may collide and become corrupted. The data must then be destroyed and retransmitted. If there is a lot of data collision, the network can appear to slow down as the data has to be retransmitted or never get to its destination.



277

277

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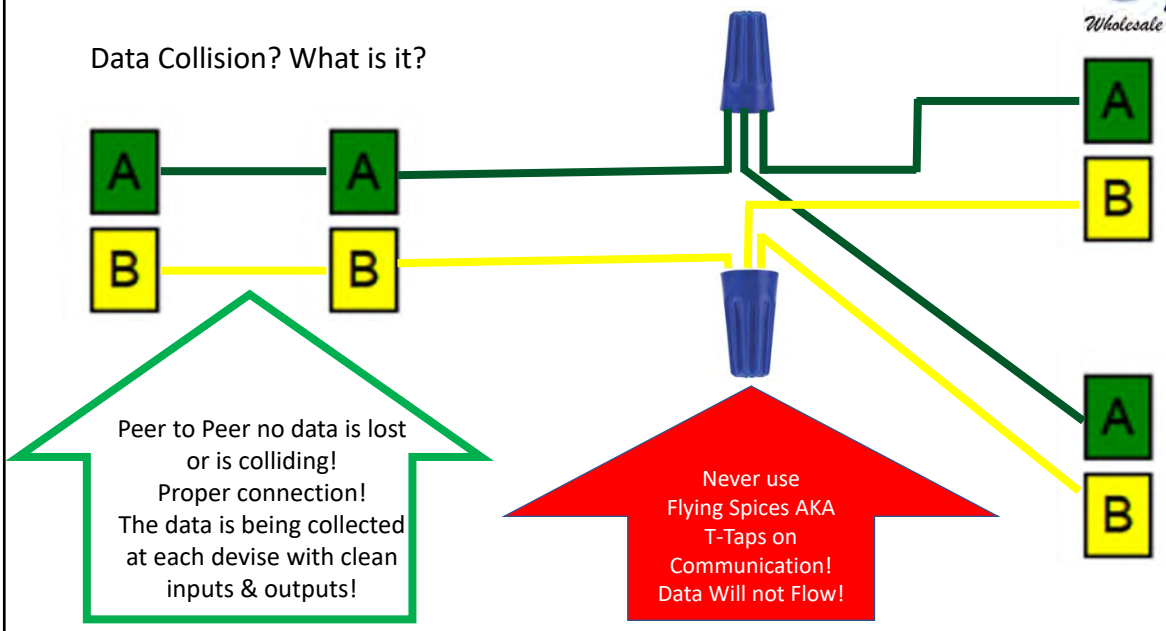
Data Collision? What is it?



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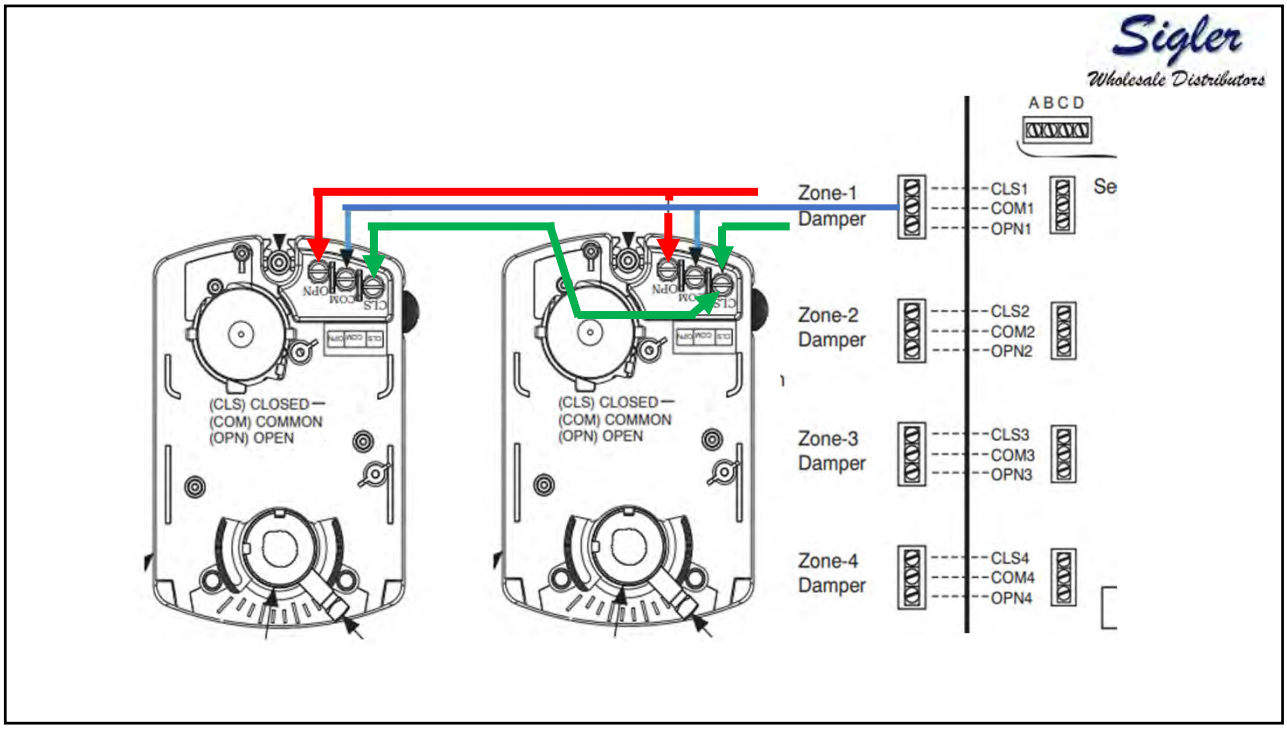
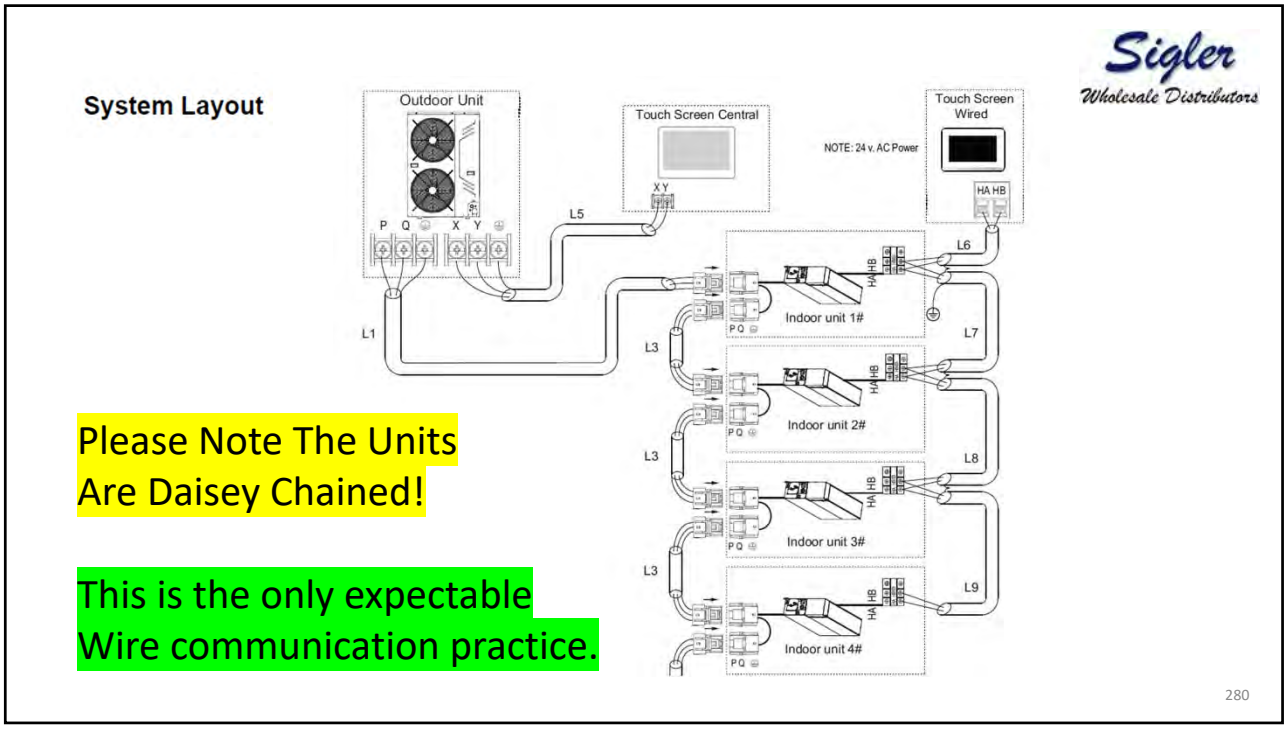
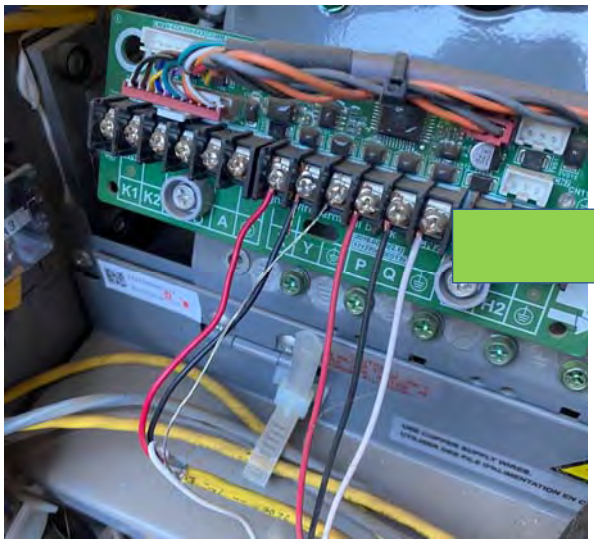

Sigler
Wholesale Distributors
A B C D
Zone-1 Damper
CLS1
COM1
OPN1
Zone-2 Damper
CLS2
COM2
OPN2
Zone-3 Damper
CLS3
COM3
OPN3
Zone-4 Damper
CLS4
COM4
OPN4
(CLS) CLOSED
(COM) COMMON
(OPN) OPEN
(CLS) CLOSED
(COM) COMMON
(OPN) OPEN

279

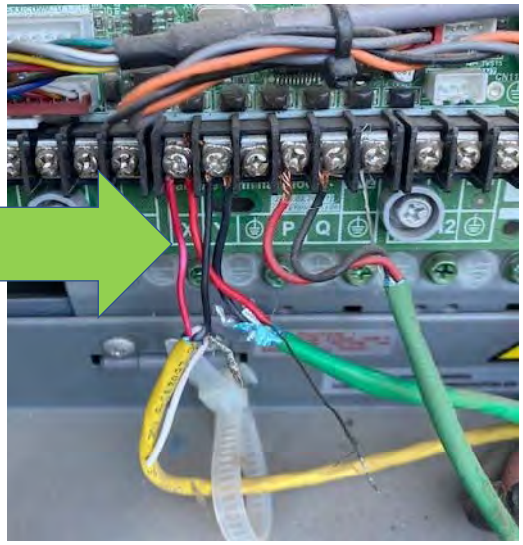

Sigler
Wholesale Distributors
System Layout
Outdoor Unit
Touch Screen Central
Touch Screen Wired
NOTE: 24 v. AC Power
P Q X Y
X Y
HA HB
L1
L3
L5
L6
L7
L8
L9
Indoor unit 1#
Indoor unit 2#
Indoor unit 3#
Indoor unit 4#
Please Note The Units Are Daisey Chained!
This is the only expectable Wire communication practice.
280

280

Start at the furthest unit and
Daisey Chane back



Send the wire over to the next conder
And so, on ending back at the Interface



281

281

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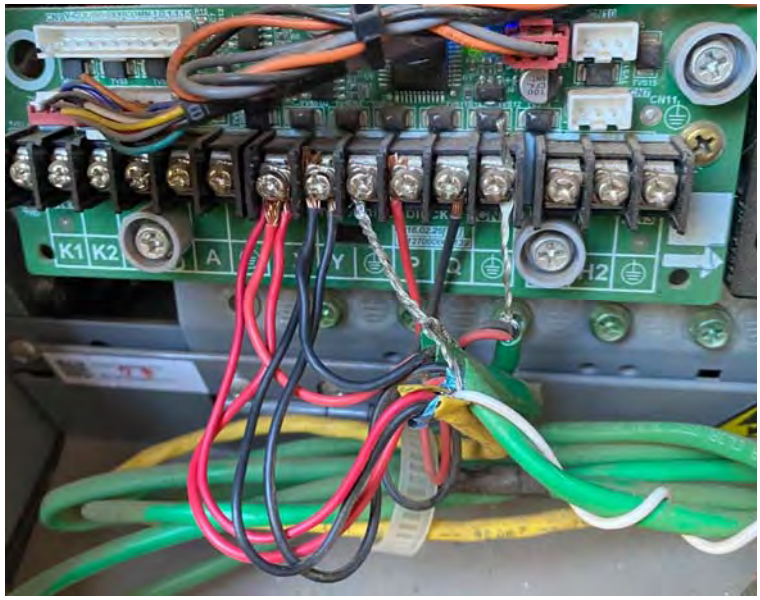
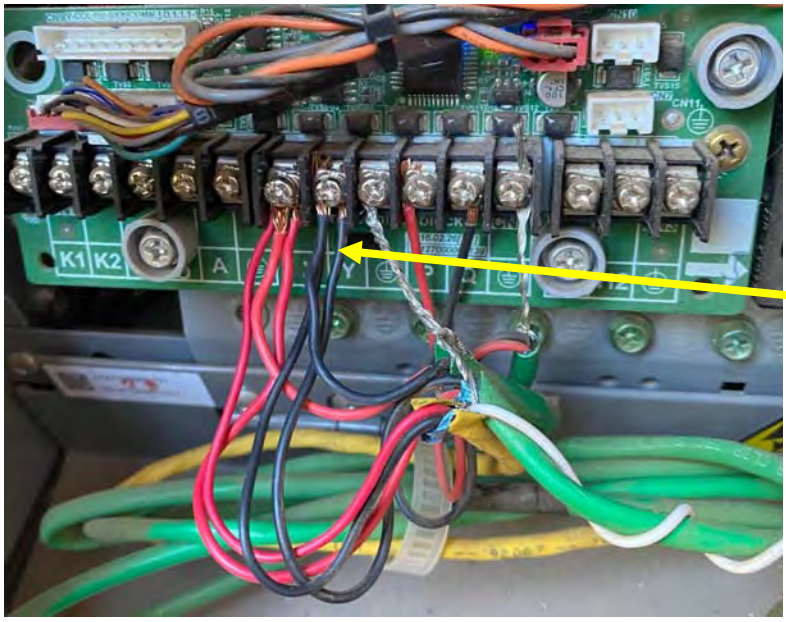
Wholesale Distributors

What Is Wrong With This Photo?



282

282



No

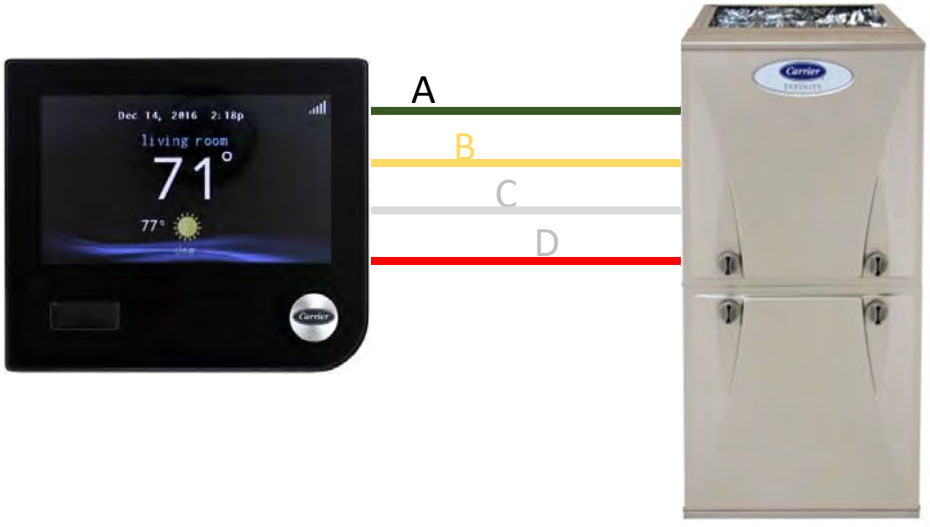
T

Taps

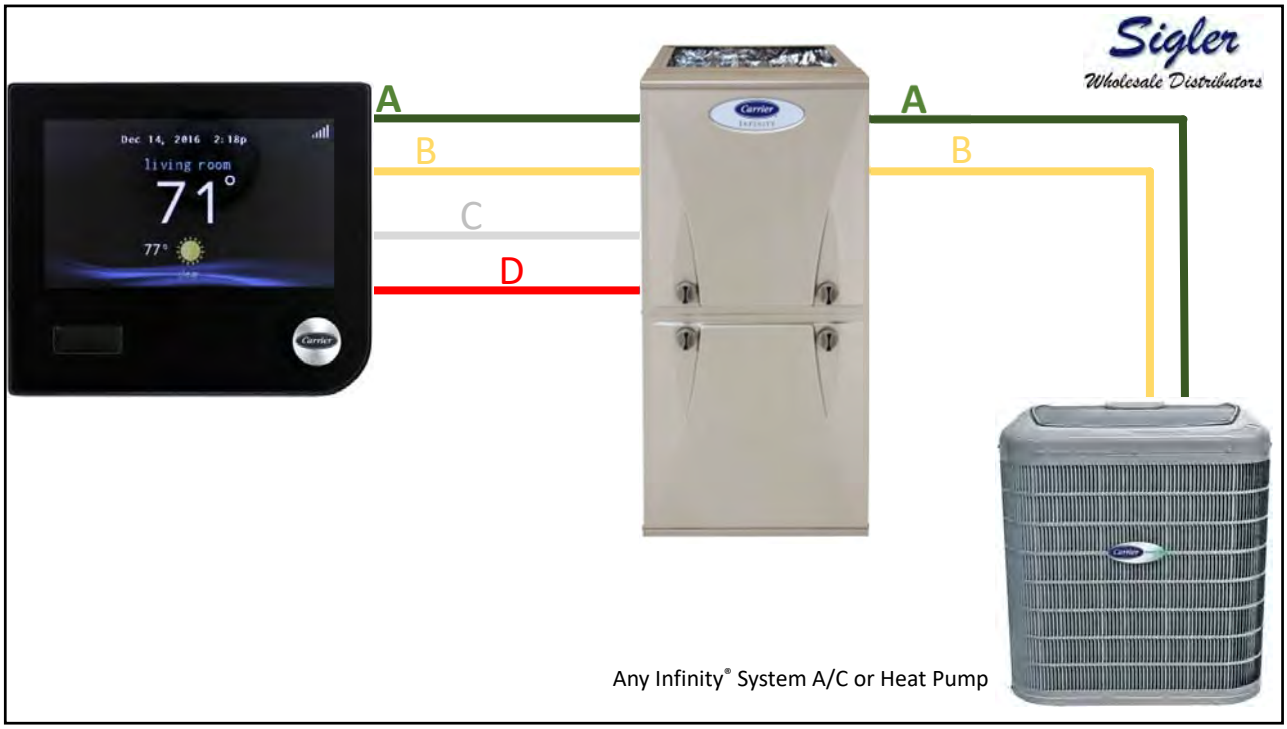
283

283

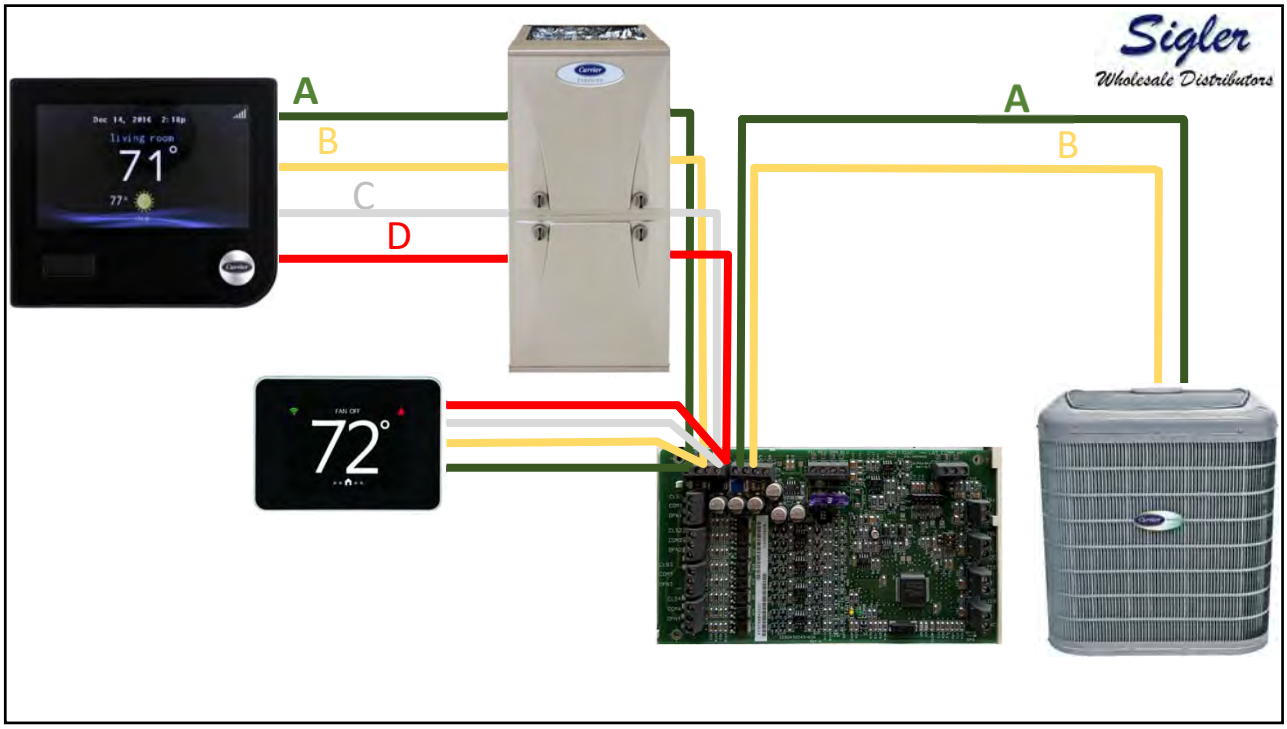
Let's start Basic!



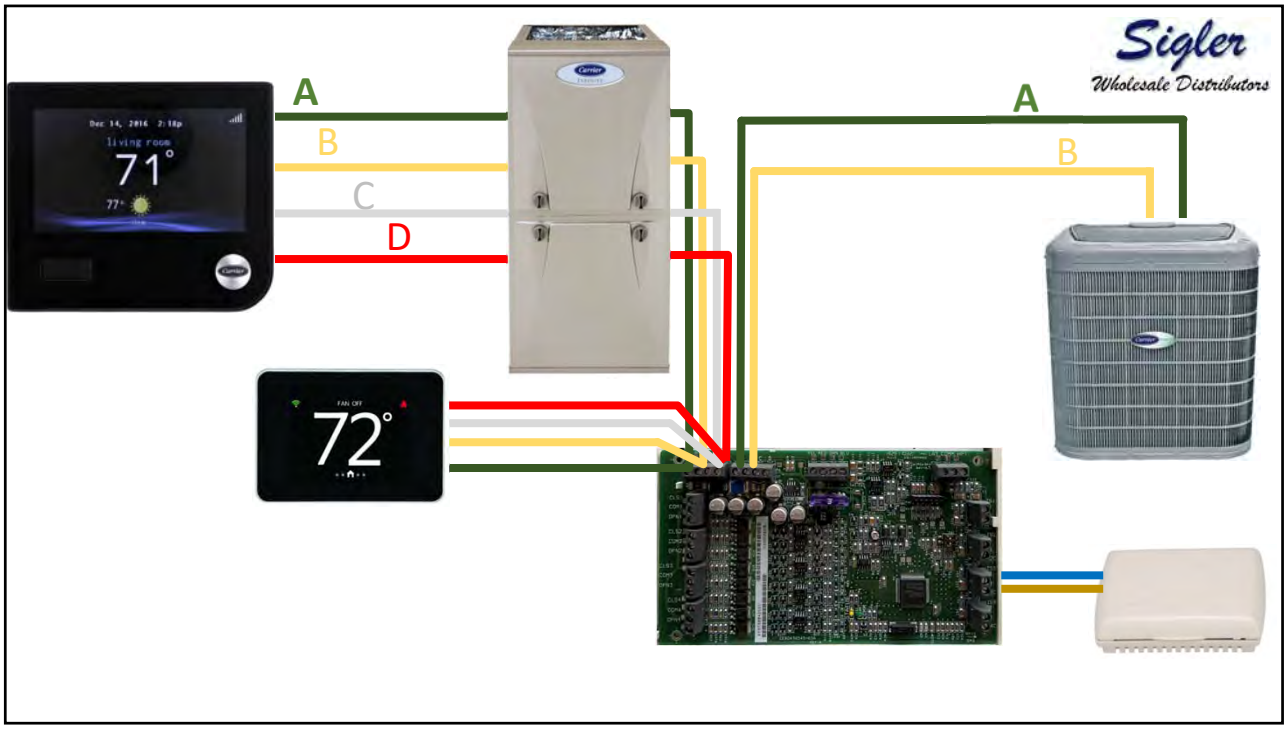
284


Sigler
Wholesale Distributors
A
B
C
D
A
B
Any Infinity® System A/C or Heat Pump

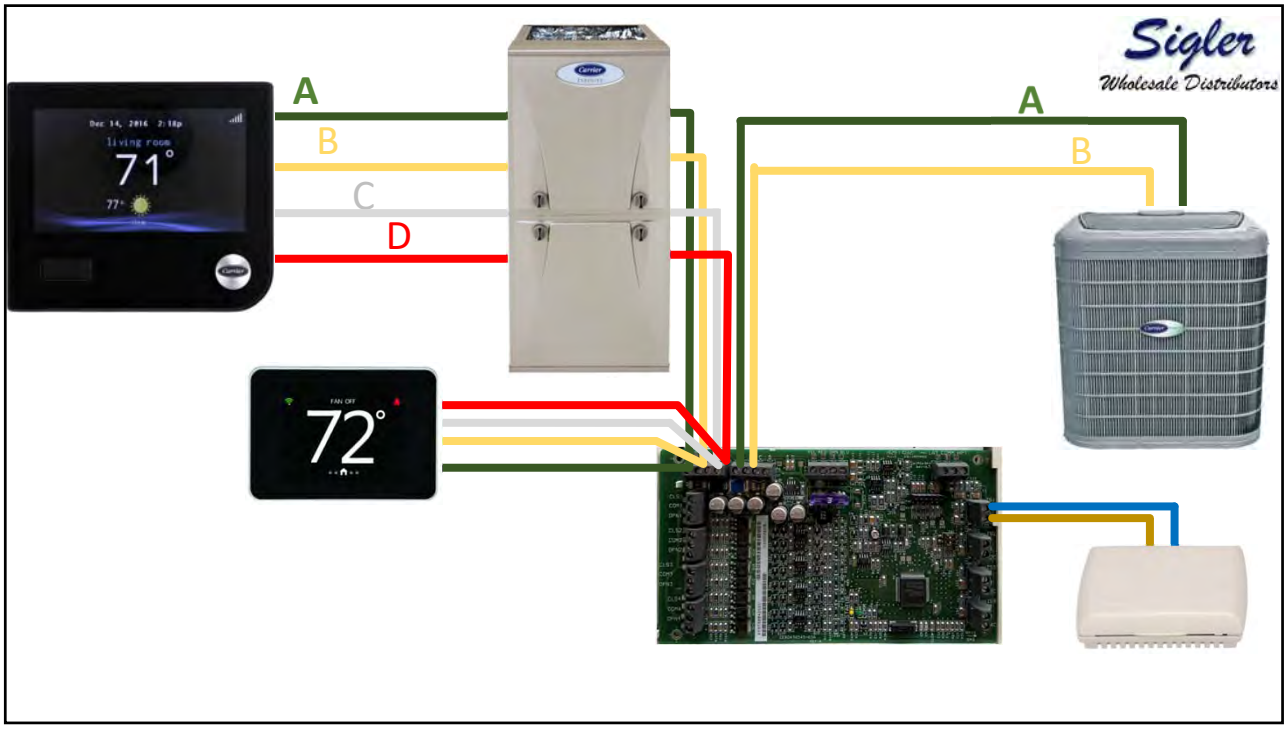
285


Sigler
Wholesale Distributors
A
B
C
D
A
B
72°

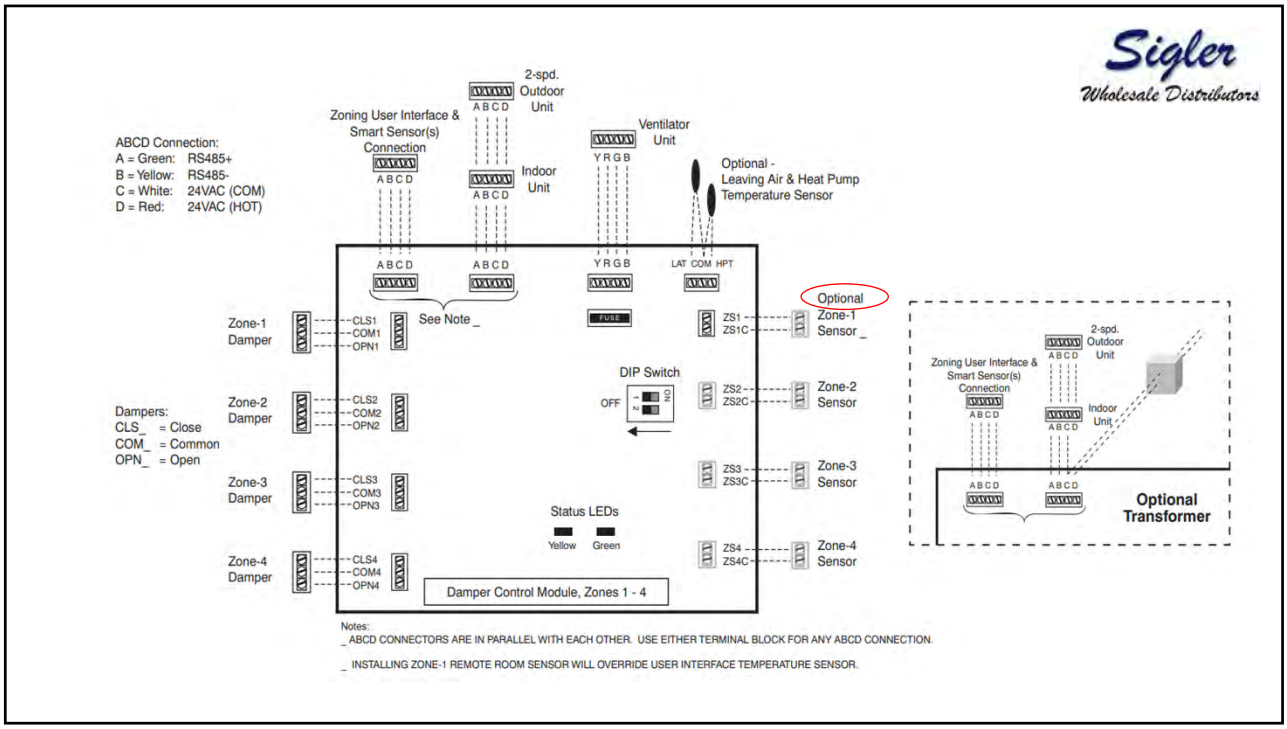
286


Sigler
Wholesale Distributors
A
B
C
D
A
B
71°
72°

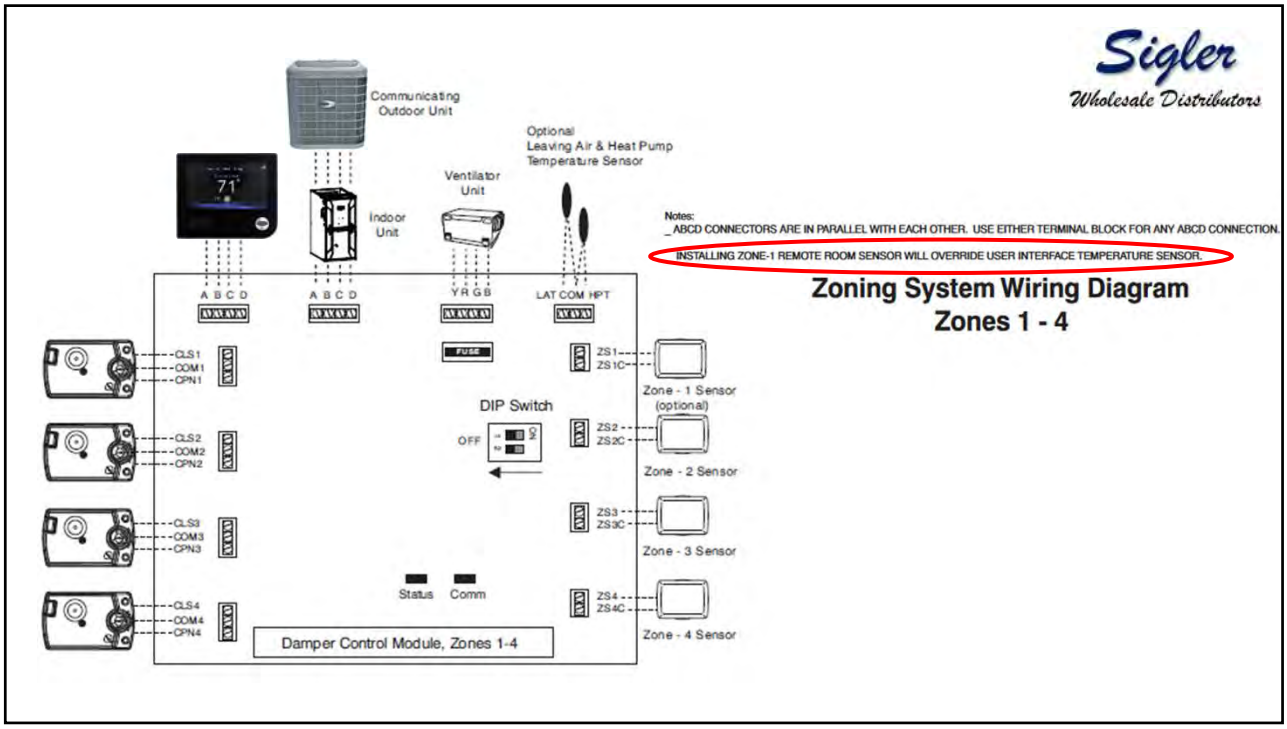
287


Sigler
Wholesale Distributors
A
B
C
D
A
B
71°
72°

288


Sigler
Wholesale Distributors
ABCD Connection:
A = Green: RS485+
B = Yellow: RS485-
C = White: 24VAC (COM)
D = Red: 24VAC (HOT)
2-spd. Outdoor Unit
Zoning User Interface & Smart Sensor(s) Connection
Indoor Unit
Ventilator Unit
Optional - Leaving Air & Heat Pump Temperature Sensor
A B C D
Y R G B
LAT COM HPT
Optional
Zone-1 Damper
CLS1
COM1
OPN1
See Note _
ZS1
ZS1C
Zone-1 Sensor _
DIP Switch
OFF
Zone-2 Damper
CLS2
COM2
OPN2
ZS2
ZS2C
Zone-2 Sensor
Dampers:
CLS_ = Close
COM_ = Common
OPN_ = Open
Zone-3 Damper
CLS3
COM3
OPN3
ZS3
ZS3C
Zone-3 Sensor
Status LEDs
Yellow
Green
Zone-4 Damper
CLS4
COM4
OPN4
ZS4
ZS4C
Zone-4 Sensor
Damper Control Module, Zones 1 - 4
Optional Transformer
Notes:
_ ABCD CONNECTORS ARE IN PARALLEL WITH EACH OTHER. USE EITHER TERMINAL BLOCK FOR ANY ABCD CONNECTION.
_ INSTALLING ZONE-1 REMOTE ROOM SENSOR WILL OVERRIDE USER INTERFACE TEMPERATURE SENSOR.

289

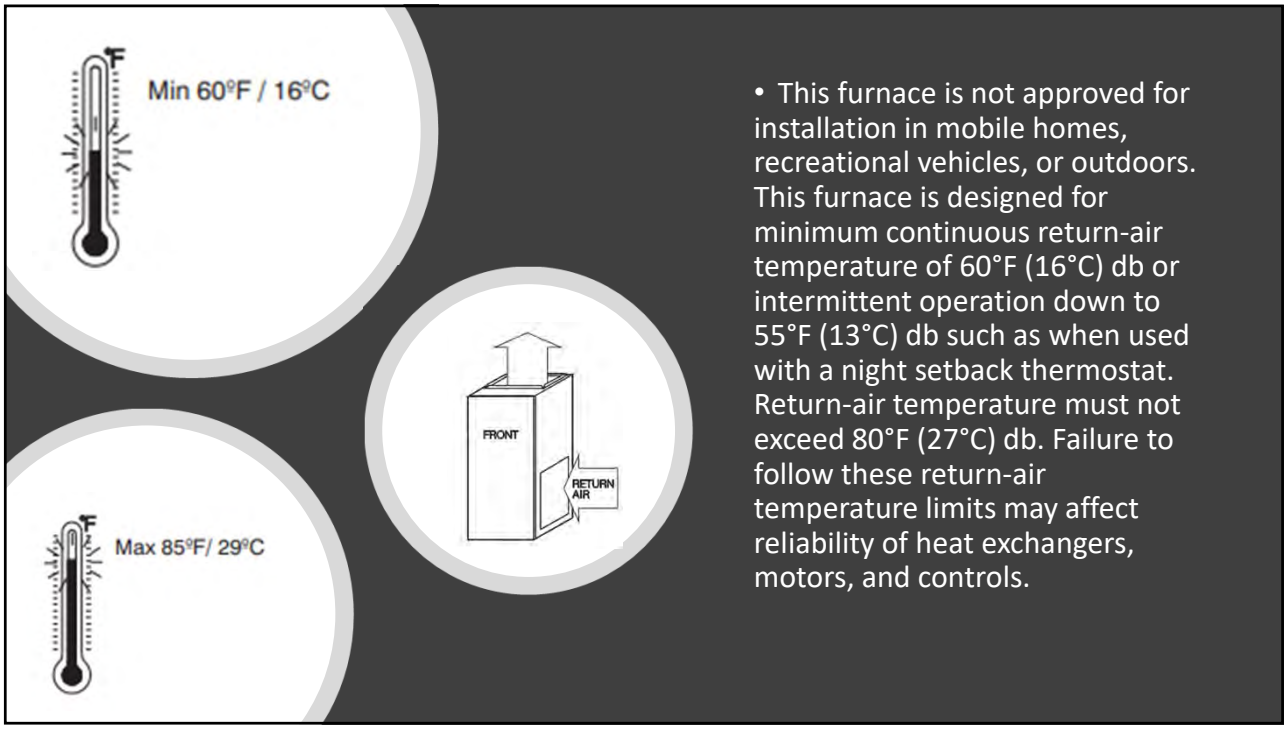

Sigler
Wholesale Distributors
Communicating Outdoor Unit
Optional Leaving Air & Heat Pump Temperature Sensor
Ventilator Unit
Indoor Unit
A B C D
Y R G B
LAT COM HPT
CLS1
COM1
OPN1
ZS1
ZS1C
Zone - 1 Sensor (optional)
DIP Switch
OFF
CLS2
COM2
OPN2
ZS2
ZS2C
Zone - 2 Sensor
CLS3
COM3
OPN3
ZS3
ZS3C
Zone - 3 Sensor
Status
Comm
CLS4
COM4
OPN4
ZS4
ZS4C
Zone - 4 Sensor
Damper Control Module, Zones 1-4
Notes:
_ ABCD CONNECTORS ARE IN PARALLEL WITH EACH OTHER. USE EITHER TERMINAL BLOCK FOR ANY ABCD CONNECTION.
INSTALLING ZONE-1 REMOTE ROOM SENSOR WILL OVERRIDE USER INTERFACE TEMPERATURE SENSOR.
Zoning System Wiring Diagram
Zones 1 - 4

290

Installation good practices for furnaces, fan coils and evaporator coils.

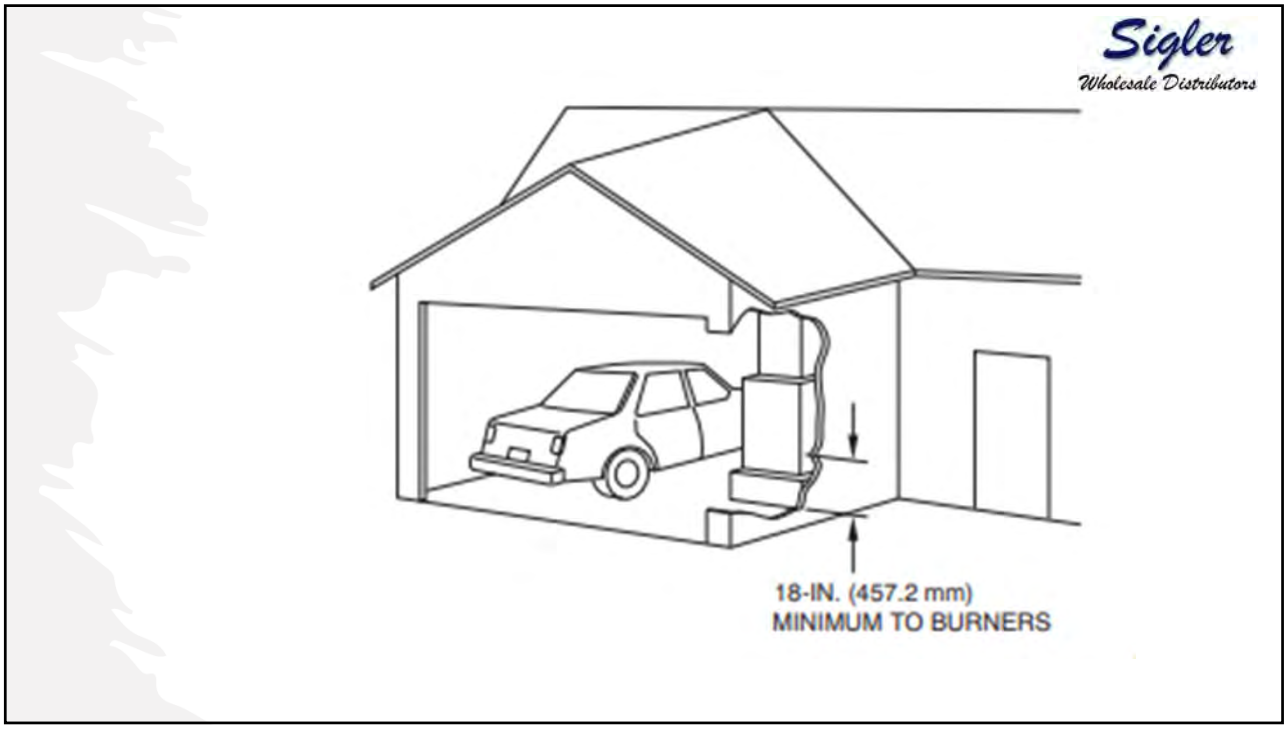
291

292



- This furnace is not approved for installation in mobile homes, recreational vehicles, or outdoors. This furnace is designed for minimum continuous return-air temperature of 60°F (16°C) db or intermittent operation down to 55°F (13°C) db such as when used with a night setback thermostat. Return-air temperature must not exceed 80°F (27°C) db. Failure to follow these return-air temperature limits may affect reliability of heat exchangers, motors, and controls.

293



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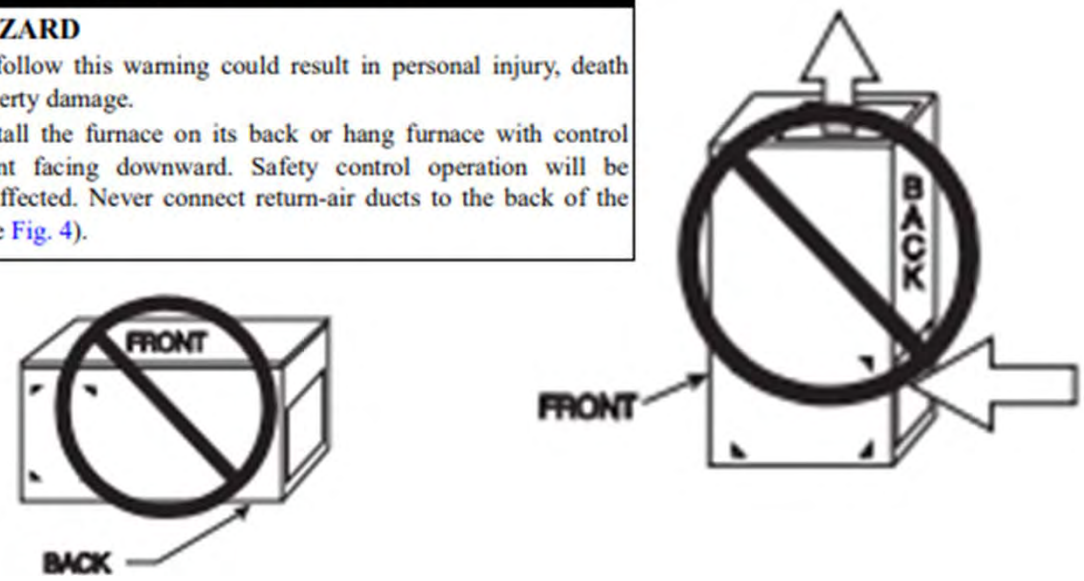
⚠ WARNING

FIRE HAZARD

Failure to follow this warning could result in personal injury, death and/or property damage.

Do not install the furnace on its back or hang furnace with control compartment facing downward. Safety control operation will be adversely affected. Never connect return-air ducts to the back of the furnace (see Fig. 4).



295

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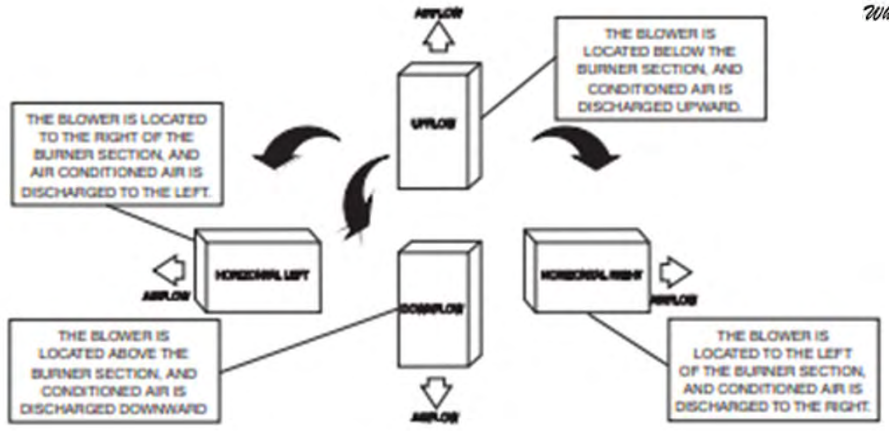


GENERAL:

This multipoise furnace is shipped in packaged configuration. Some assembly and modifications are required when used in any of the four applications

296

The following types of furnace installations may require OUTDOOR AIR for combustion due to chemical exposures:

• COMMERCIAL BUILDINGS

• BUILDINGS WITH INDOOR POOLS

• LAUNDRY ROOMS

• HOBBY OR CRAFT ROOMS, AND •

CHEMICAL STORAGE AREAS

297

If air is exposed to the following substances, it should not be used for combustion air, and outdoor air may be required for combustion:

- Permanent wave solutions
- Chlorinated waxes and cleaners
- Chlorine based swimming pool chemicals
- Water softening chemicals
- De-icing salts or chemicals
- Carbon tetrachloride
- Halogen type refrigerants
- Printing inks, paint removers, varnishes, etc.
- Hydrochloric acid
- Cements and glues
- Antistatic fabric softeners for clothes dryers
- Masonry acid washing materials
- Cleaning solvents (such as perchloroethylene)

298

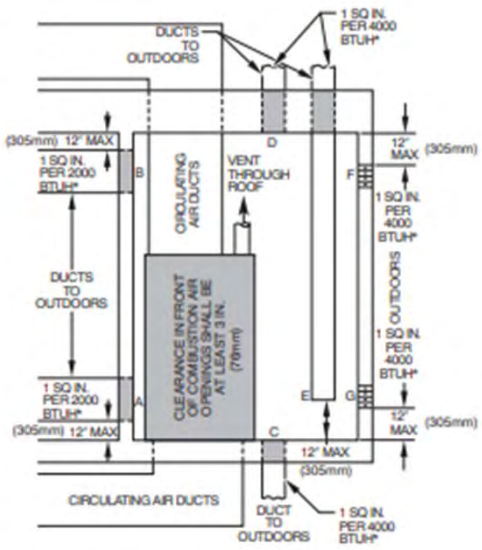
All fuel-burning equipment must be supplied with air for fuel combustion. Sufficient air must be provided to avoid negative pressure in the equipment room or space. A positive seal must be made between the furnace cabinet and the return-air duct to prevent pulling air from the burner area and from draft safeguard opening.

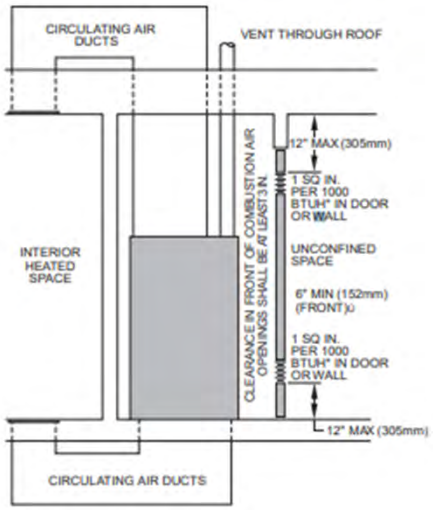
299

The requirements for combustion and ventilation air depend upon whether or not the furnace is located in a space having a volume of at least 50 cubic feet per 1,000 BTU input rating for all gas appliances installed in the space. • Spaces having less than 50 cubic feet per 1,000 BTU require the OUTDOOR COMBUSTION AIR METHOD. • Spaces having at least 50 cubic feet per 1,000 BTU may use the INDOOR COMBUSTION AIR, STANDARD or KNOWN AIR INFILTRATION METHOD.

300

a. 1 square inch of free area per 3,000 BTU (734 mm2/kW) for combined input of all gas appliances in the space per Table 2 and
b. b. Not less than the sum of the areas of all vent connectors in the space.





301

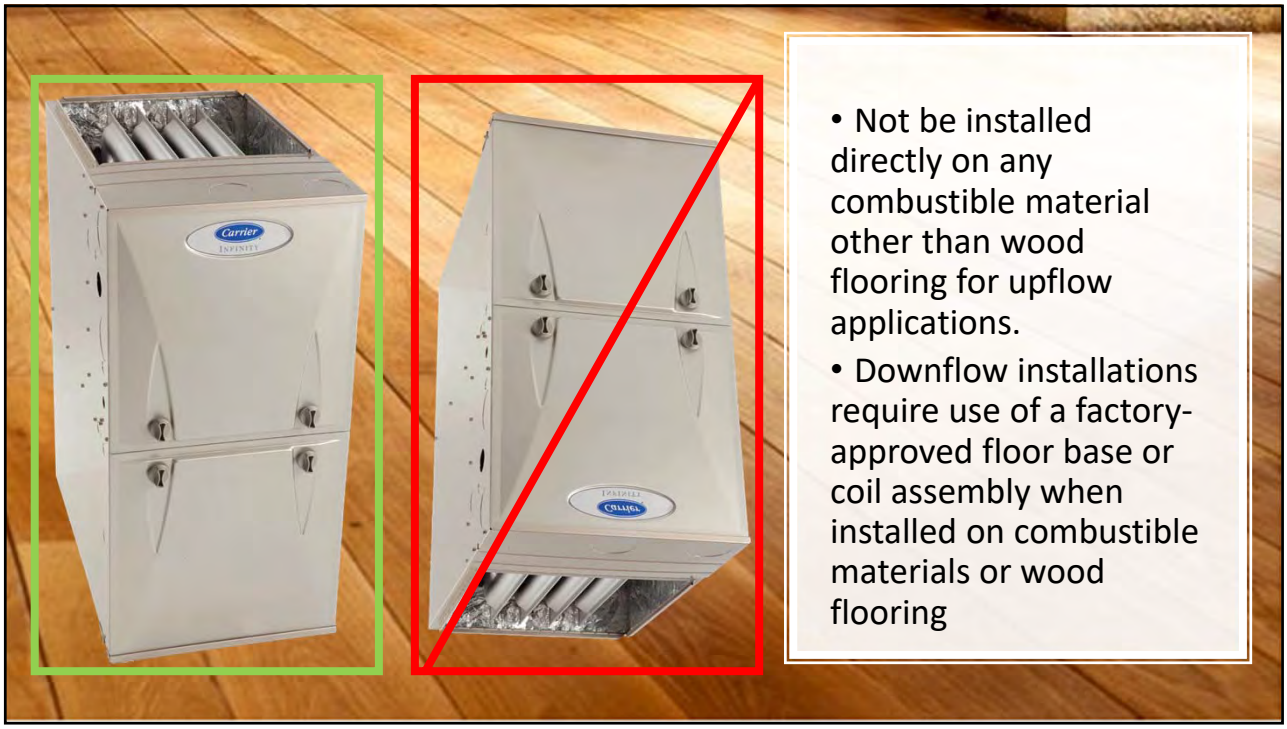
Table 2 – Minimum Free Area Required for Each Combustion Air Opening or Duct to Outdoors

FURNACE INPUT (BTUH)	TWO HORIZONTAL DUCTS (1 SQ. IN./2,000 BTUH) (1,100 SQ. MM/KW)		SINGLE DUCT OR OPENING (1 SQ. IN./3,000 BTUH) (734 SQ. MM/KW)		TWO OPENINGS OR VERTICAL DUCTS (1 SQ. IN./4,000 BTUH) (550 SQ. MM/KW)	
	Free Area of Opening and Duct (sq. in. / sq. mm)	Round Duct Diameter (in./mm)	Free Area of Opening and Duct (sq. In. / sq. mm)	Round Duct Diameter (in. / mm)	Free Area of Opening and Duct (sq. In. / sq. mm)	Round Duct Diameter (In./mm)
44,000	22 (14193)	6 (152)	14.7 (9484)	5 (127)	11 (7097)	4 (102)
66,000	33 (21290)	7 (178)	22 (14193)	6 (152)	16.5 (10645)	5 (127)
88,000	44 (28387)	8 (203)	29.3 (18903)	7 (178)	22 (14193)	6 (152)
110,000	55 (35484)	9 (229)	36.7 (23677)	7 (178)	27.5 (17742)	6 (152)
132,000	66 (42581)	10 (254)	44 (28387)	8 (203)	33 (21290)	7 (178)
154,000	77 (49677)	10 (254)	51.3 (33096)	9 (229)	38.5 (24839)	8 (203)

EXAMPLES: Determining Free Area

FURNACE		WATER HEATER		TOTAL INPUT		
110,000	+	30,000	=	(140,000 divided by 4,000)	=	35.0 Sq. In. for each two Vertical Ducts or Openings
66,000	+	40,000	=	(106,000 divided by 3,000)	=	35.3 Sq. In. for a Single Duct or Opening
88,000	+	30,000	=	(118,000 divided by 2,000)	=	59.0 Sq. In. for each of two Horizontal Ducts

302



303

DOWNFLOW INSTALLATION

- • Special Base, KGASB
- • Cased Coil Assembly Part No. CNPV, CNRV, CAP, or CAR
- • Coil Box Part No. KCAKC EMPTY COIL CASINGS

304

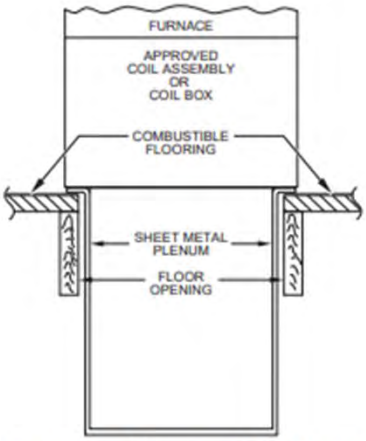
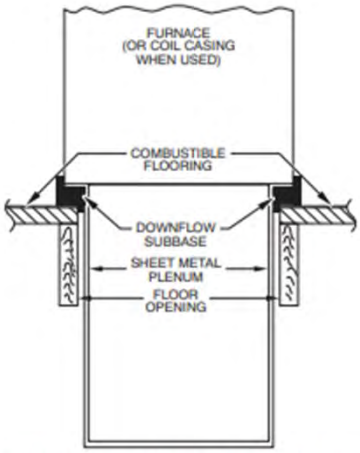


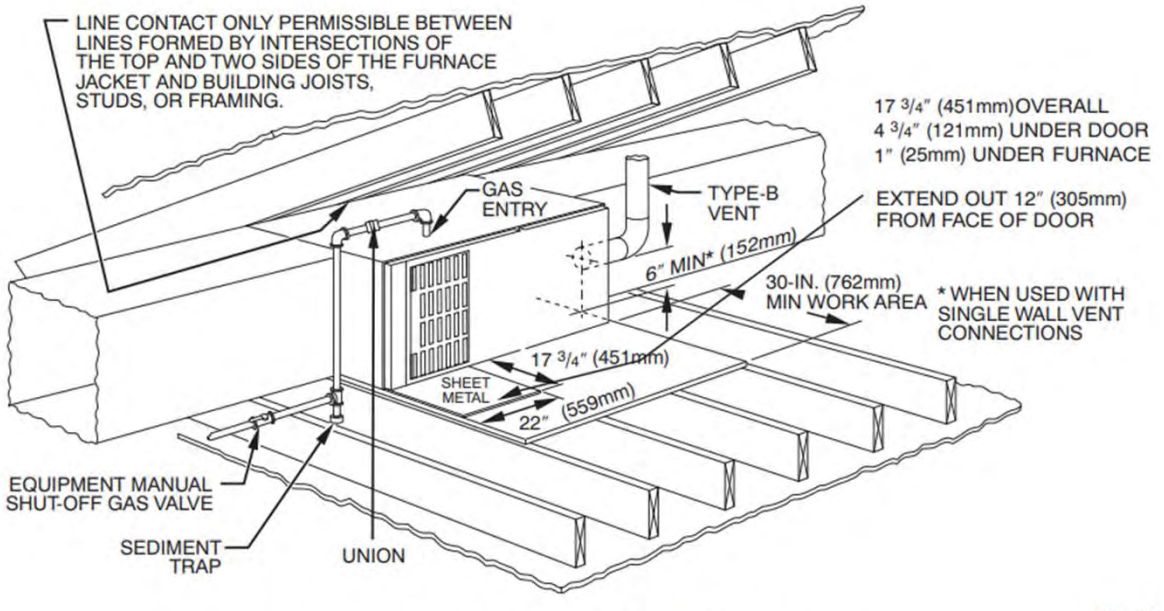
Fig. 13 – Furnace, Plenum, and Coil Assembly or Coil Box Installed on a Combustible Floor



A96285

Fig. 12 – Furnace, Plenum, and Subbase Installed on a Combustible Floor

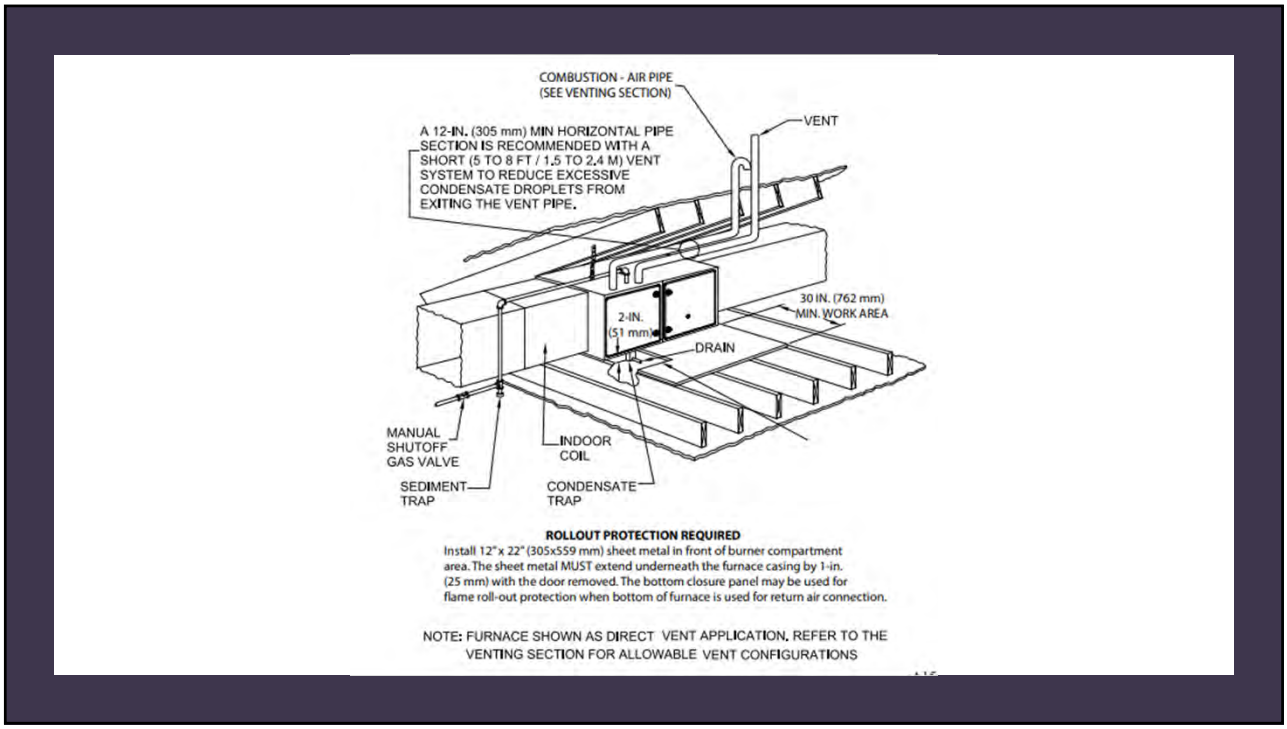
305



A1016

Fig. 14 – Typical Attic Installation

306



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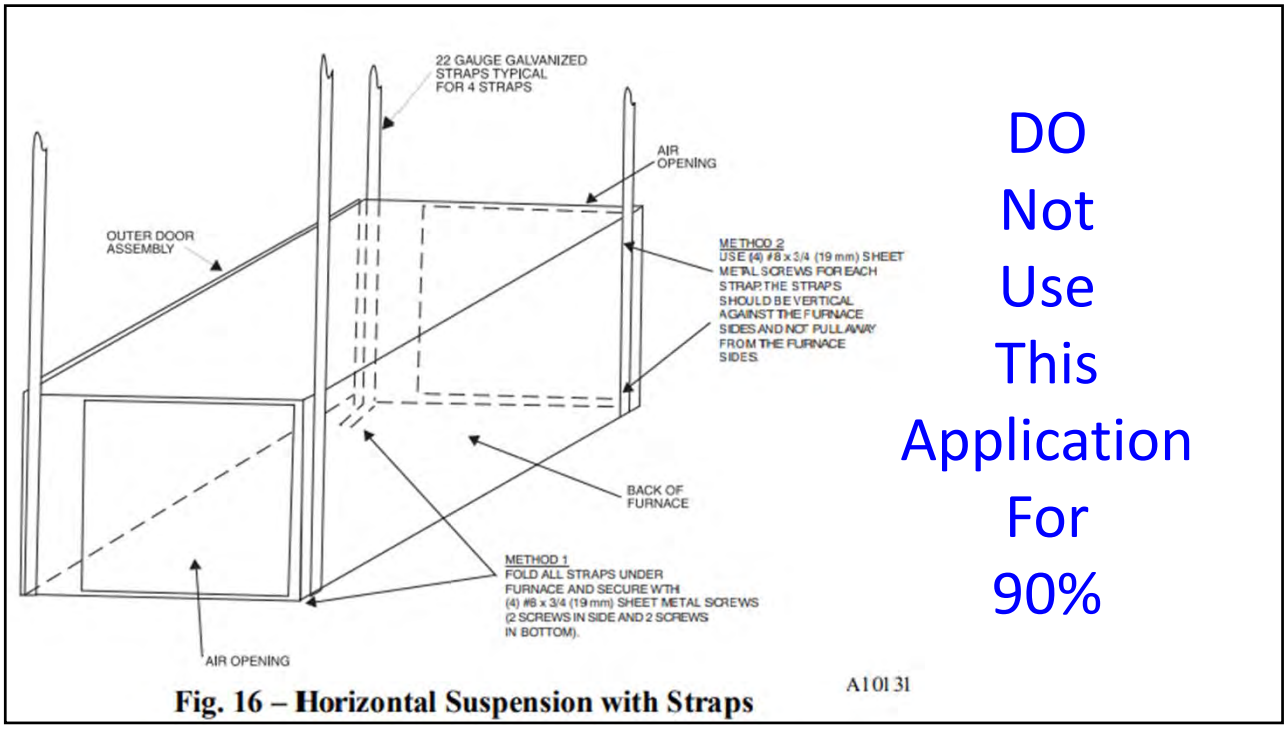


DO Not Use This Application For 90%

308

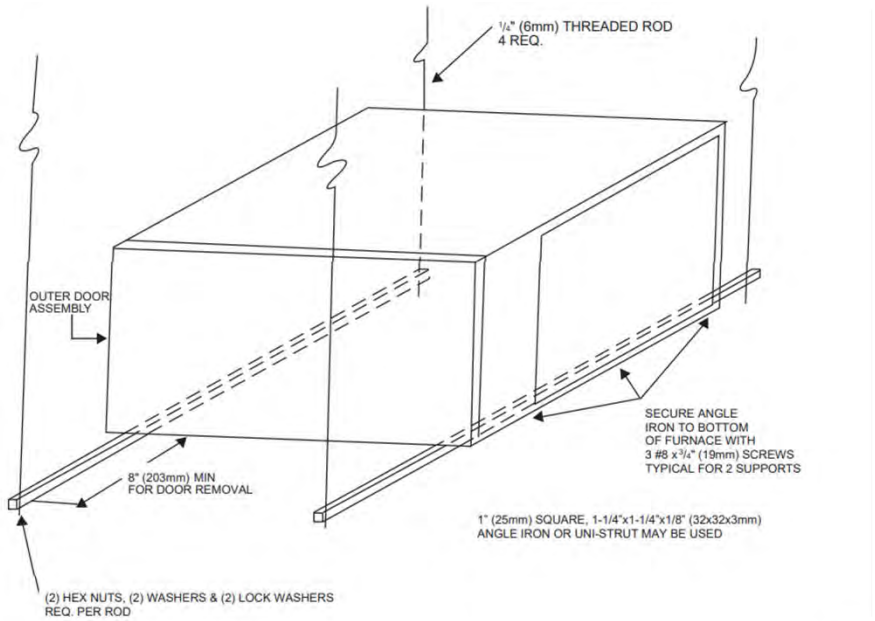
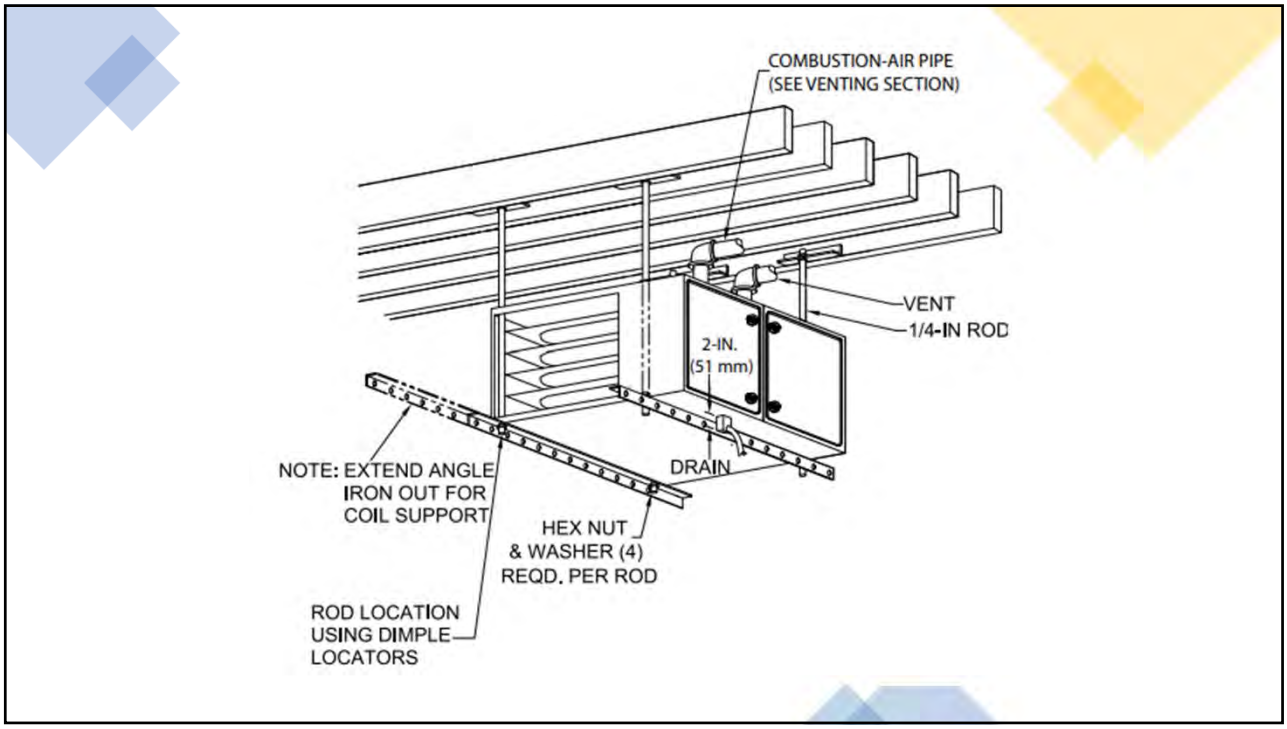


Fig. 15 – Horizontal Unit Suspension

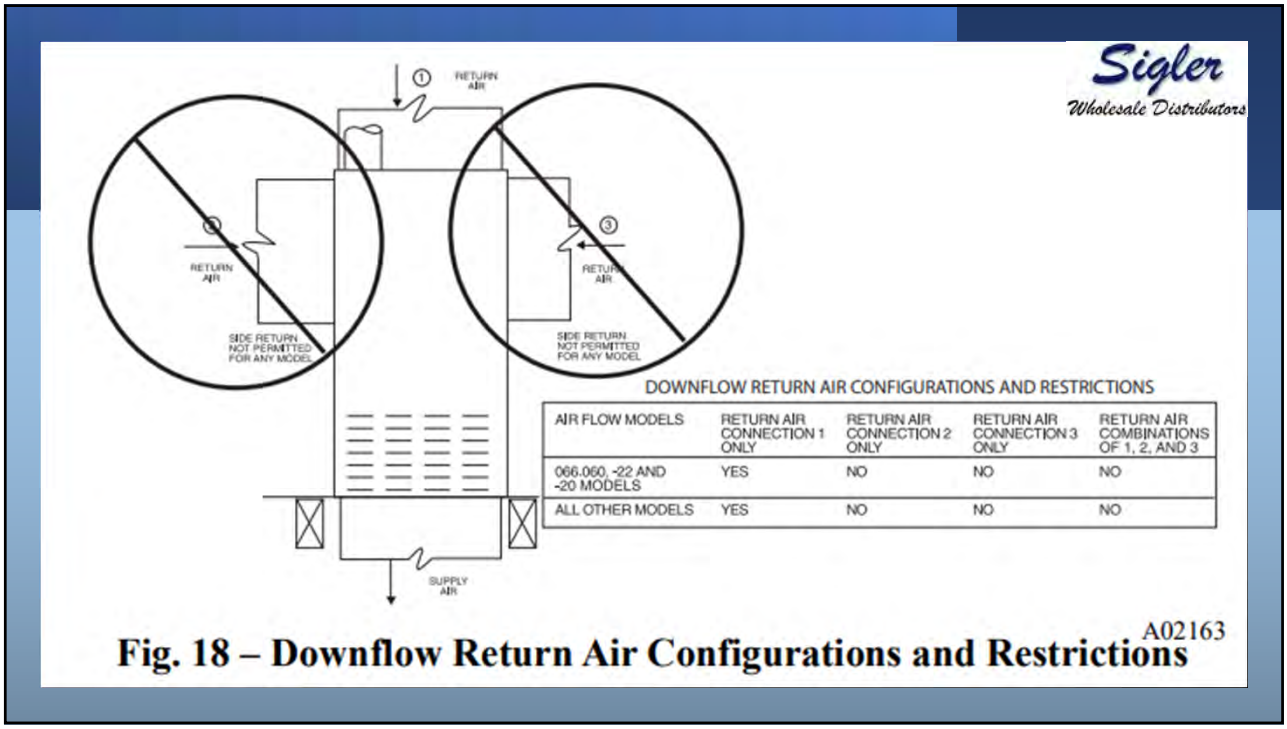
309



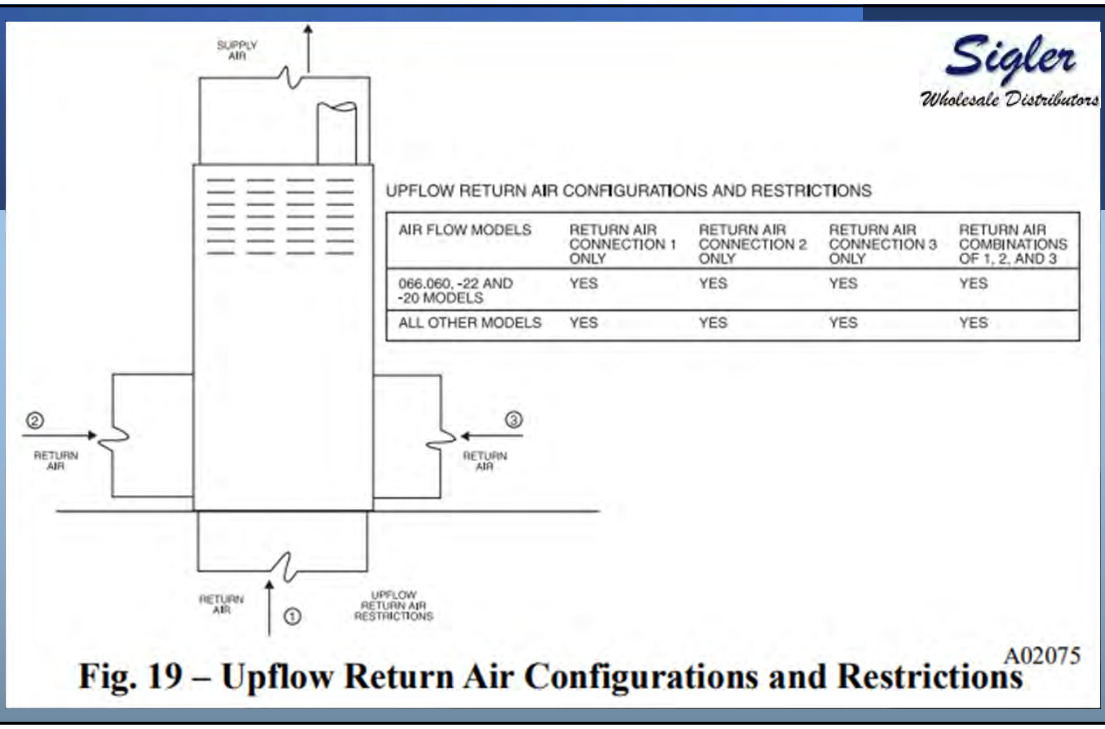
310


Do Not Hang the Furnace Like This!
GAS VALVE
HEAT EXCHANGER
BLOWER

311


Sigler
Wholesale Distributors
RETURN AIR
SIDE RETURN NOT PERMITTED FOR ANY MODEL
SUPPLY AIR
DOWNFLOW RETURN AIR CONFIGURATIONS AND RESTRICTIONS
AIR FLOW MODELS | RETURN AIR CONNECTION 1 ONLY | RETURN AIR CONNECTION 2 ONLY | RETURN AIR CONNECTION 3 ONLY | RETURN AIR COMBINATIONS OF 1, 2, AND 3
066,060, -22 AND -20 MODELS | YES | NO | NO | NO
ALL OTHER MODELS | YES | NO | NO | NO
A02163
Fig. 18 – Downflow Return Air Configurations and Restrictions

312

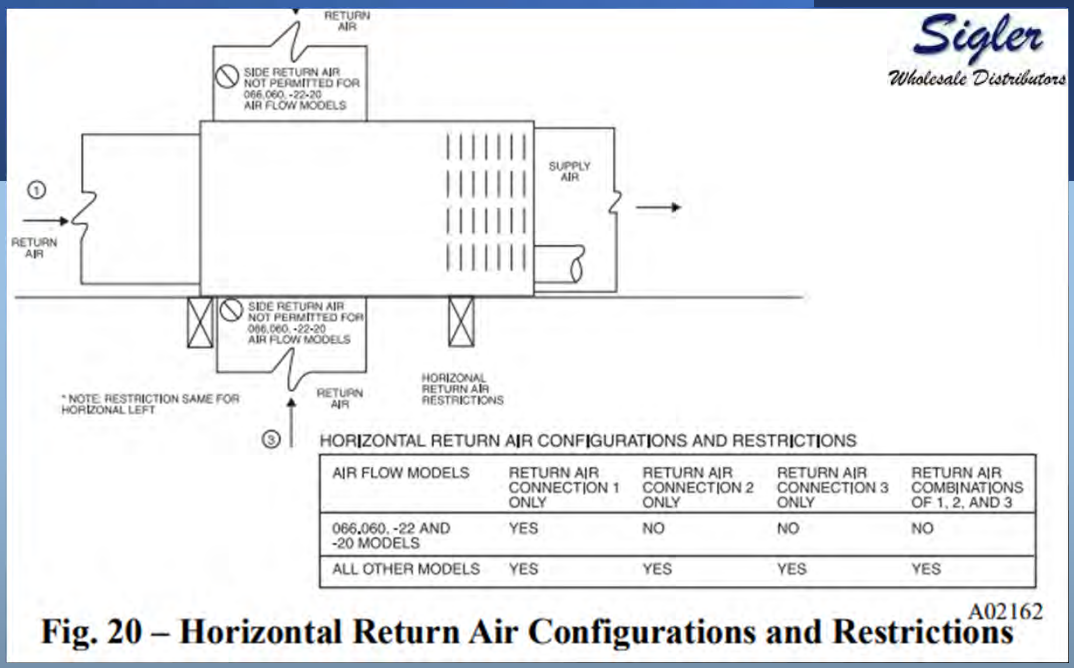


UPFLOW RETURN AIR CONFIGURATIONS AND RESTRICTIONS

AIR FLOW MODELS	RETURN AIR CONNECTION 1 ONLY	RETURN AIR CONNECTION 2 ONLY	RETURN AIR CONNECTION 3 ONLY	RETURN AIR COMBINATIONS OF 1, 2, AND 3
066,060, -22 AND -20 MODELS	YES	YES	YES	YES
ALL OTHER MODELS	YES	YES	YES	YES

Fig. 19 – Upflow Return Air Configurations and Restrictions

313



HORIZONTAL RETURN AIR CONFIGURATIONS AND RESTRICTIONS

AIR FLOW MODELS	RETURN AIR CONNECTION 1 ONLY	RETURN AIR CONNECTION 2 ONLY	RETURN AIR CONNECTION 3 ONLY	RETURN AIR COMBINATIONS OF 1, 2, AND 3
066,060, -22 AND -20 MODELS	YES	NO	NO	NO
ALL OTHER MODELS	YES	YES	YES	YES

Fig. 20 – Horizontal Return Air Configurations and Restrictions

314

VENTING The furnace shall be connected to a listed factory-built chimney or vent, or a clay-tile lined masonry or concrete chimney. Venting into an unlined masonry chimney or concrete chimney is prohibited. When an existing Category I furnace is removed or replaced, the original venting system may no longer be sized to properly vent the attached appliances. An improperly sized Category I venting system could cause the formation of condensate in the furnace and vent, leakage of condensate and combustion products, and spillage of combustion products into the living space. Vent system or vent connectors may need to be resized. Vent systems or vent connectors, must be sized to approach minimum size as determined using appropriate table found in the NFGC.

315

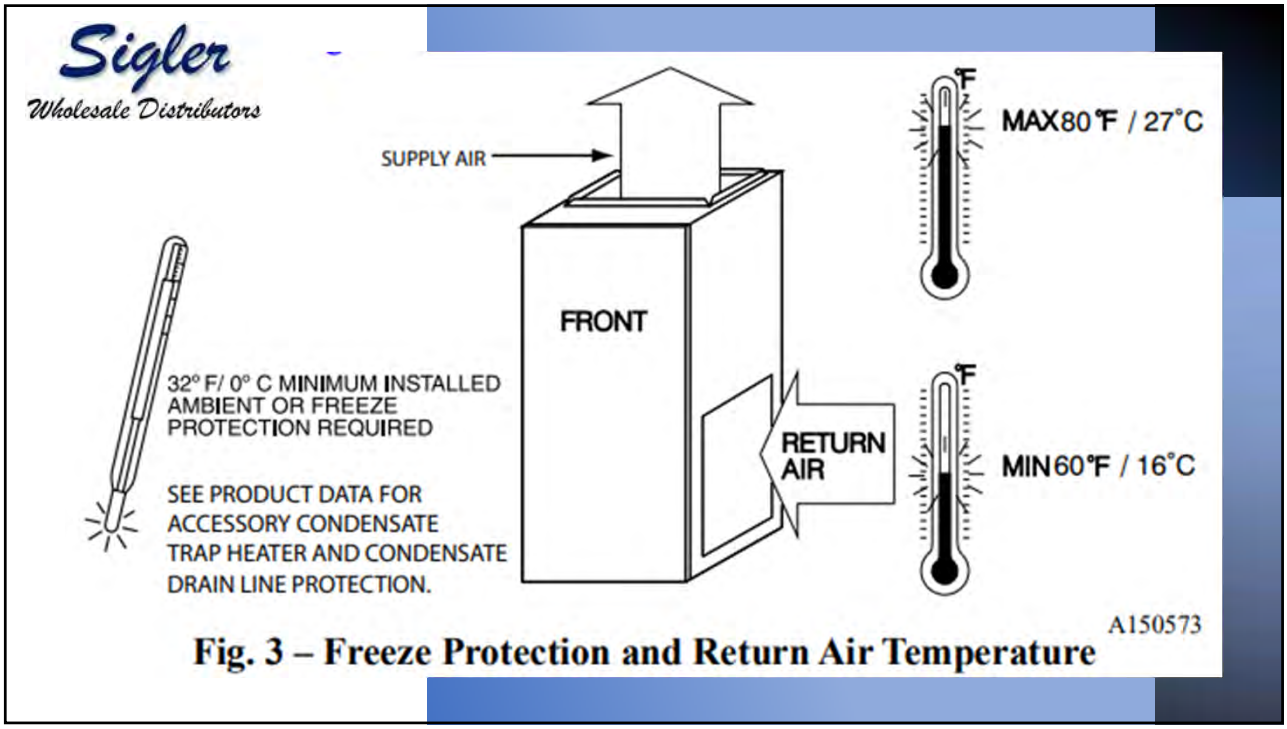


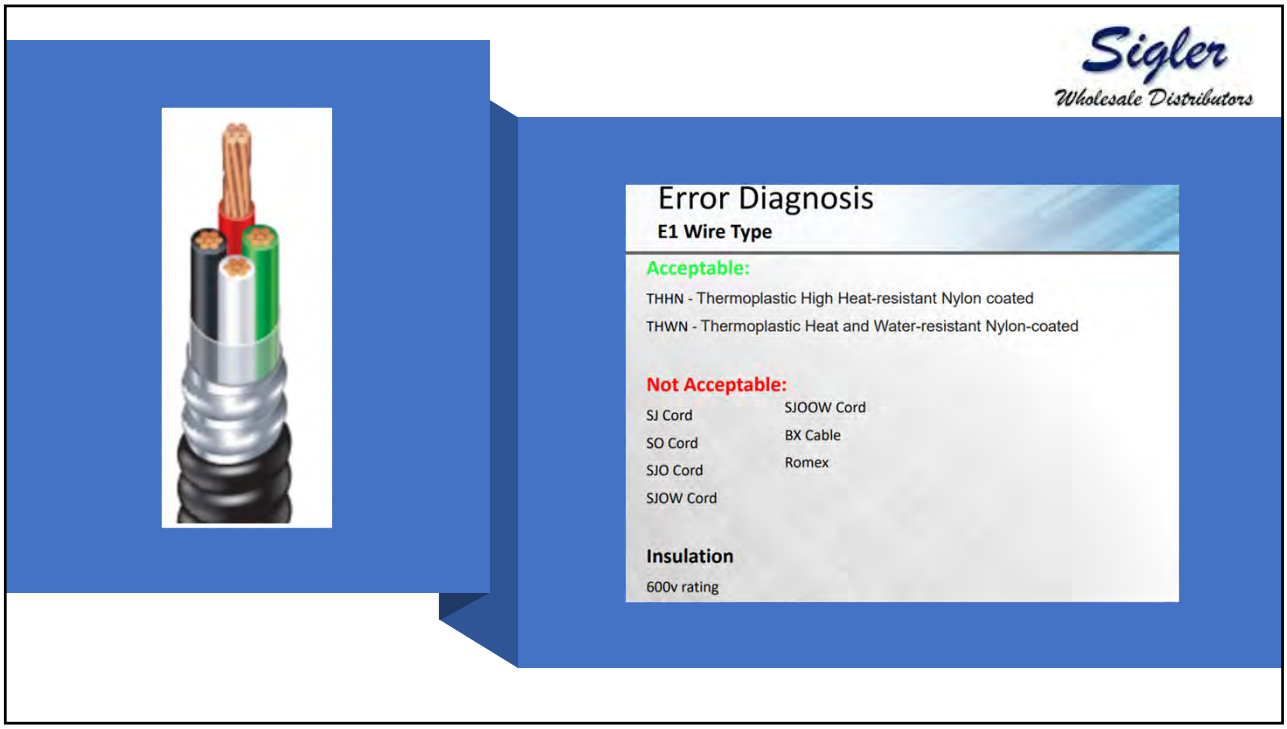
Fig. 3 – Freeze Protection and Return Air Temperature

316

Installing mini split systems good practices and trouble shooting.

317

318



319

Why are we talking about this?

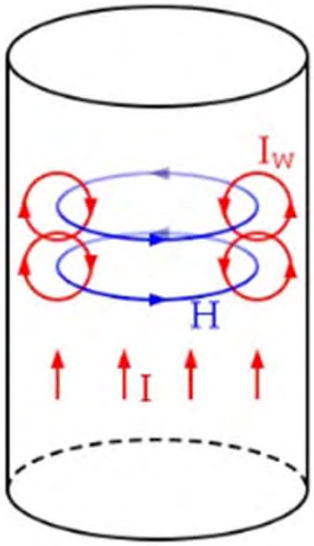
Because this will be the key to a successful mini split AKA ductless system. Knowing this info will save you time and $$$$$.

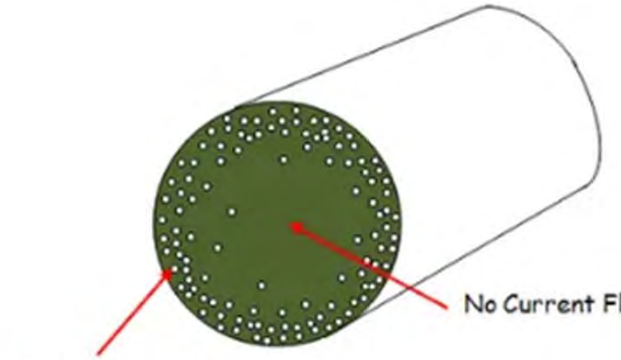
Do you Know
The number one question we
deal with in Tech Support?

Communication Error Codes

320

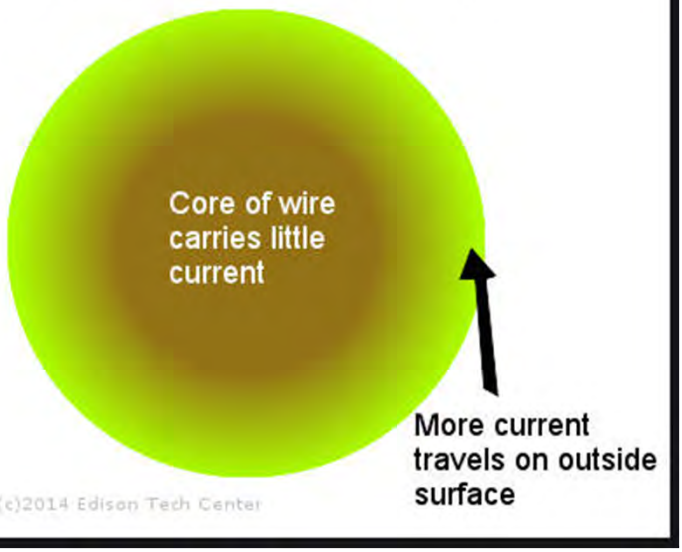
What is Skin Effect in Transmission Lines?





321

Skin effect in a solid wire



322

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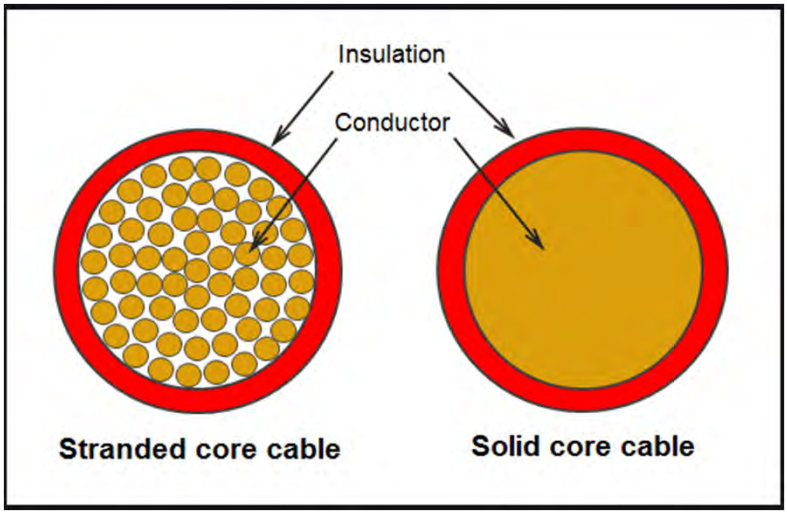
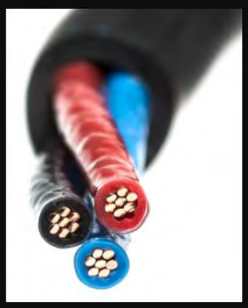


323

SJO CORD

Do Not Use!

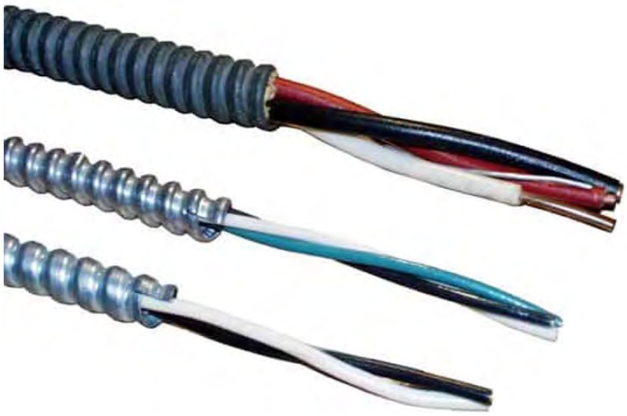


324

BX Cable

Sigler Wholesale Distributors

- **Do not use these cord**



325

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Acceptable

ODU to IDU
14/3 power or 14/4 600v stranded mini split cable (L1,L2,S, ground)

Power ODU to IDU
14/2 w/ground stranded: L1,L2, ground

326

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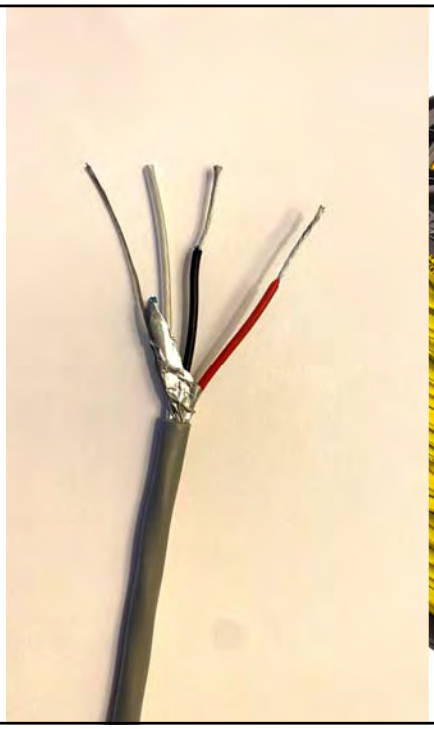

327

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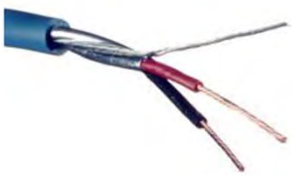
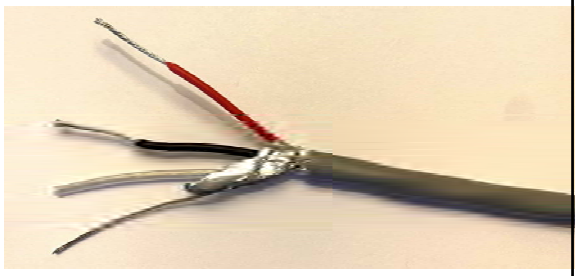


Regular 16-2 shielded cable

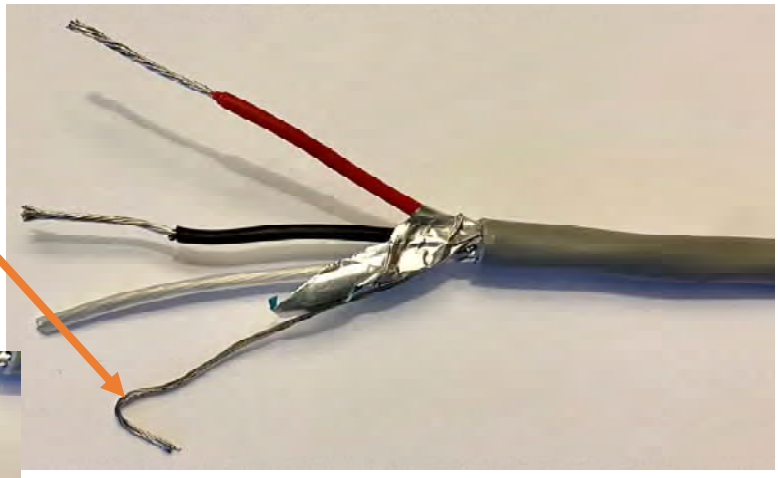
It also features a foil **shielding** that will ensure your signals are protected from any external interference. The **16-2 or 16-3 shielded cable** is ideal for access control, control systems, signaling, security systems, communications, intercom/PA systems, sound/audio, and nurse call installations.

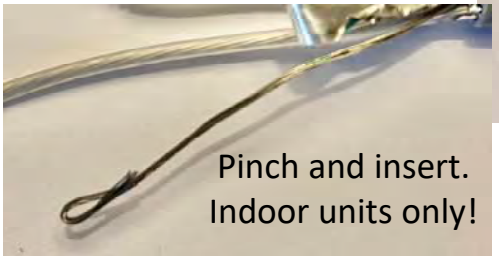
High end 16-3 shielded cable.



328

Factory Recommendation with connecting the Internal Ground! Fold over One Time Before inserting into socket.





Pinch and insert.
Indoor units only!

329

Ducted

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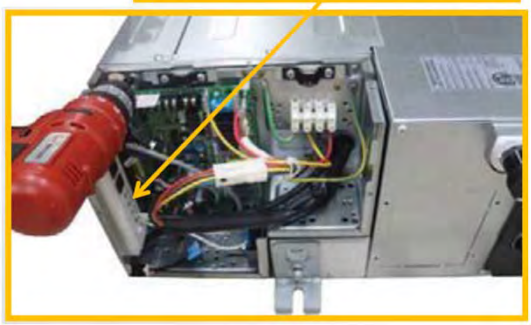
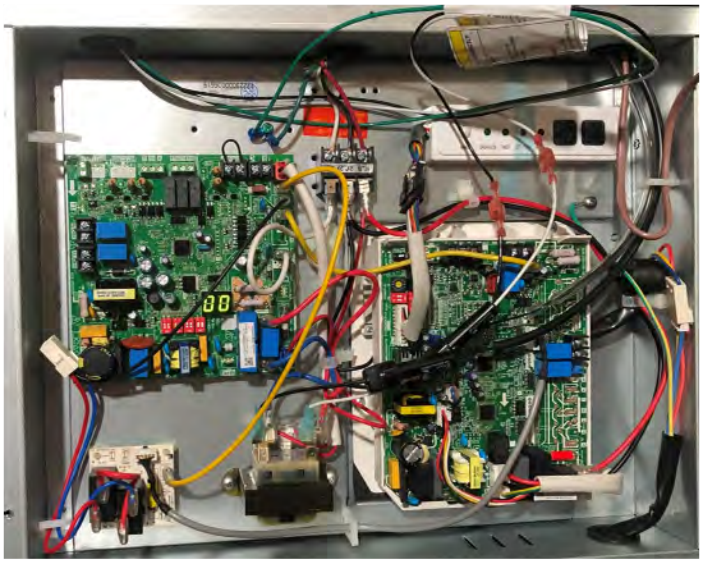
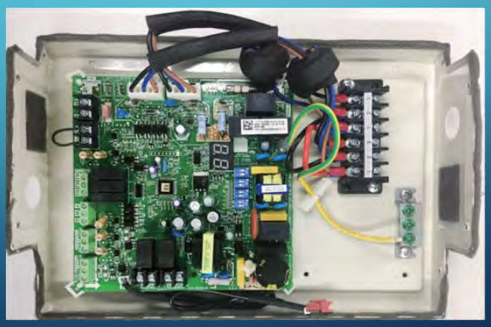




330

KSAIC0301230

24V Interface Kit
for Ductless Systems and Hybrid Solutions



331

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Wholesale Distributors

DIP SWITCHES CONFIGURATION

The **24V INTERFACE KIT** must be configured to operate properly with the system components with which it is installed. To successfully configure the system, adjust the DIP Switches to match the components and functions used.

NOTE: Properly identify the DIP Switch number marked on the board of the 24V interface as SW1 through SW4 before selecting the options. On each DIP Switch block, the numbers 1 and 2 are marked.

332

Display tube		
SW1-1	ON 1	ON 2
Mode	OFF	ON
Factory default	✓	

Set/outdoor only		
SW1-2	ON 1	ON 2
Mode	Outdoor only	Set
Factory default	✓	

Unit type		
SW2-1	ON 1	ON 2
Mode	Heat pump	Cooling only
Factory default	✓	

Anti-cold		
SW2-2	ON 1	ON 2
Mode	YES	NO
Factory default	✓	

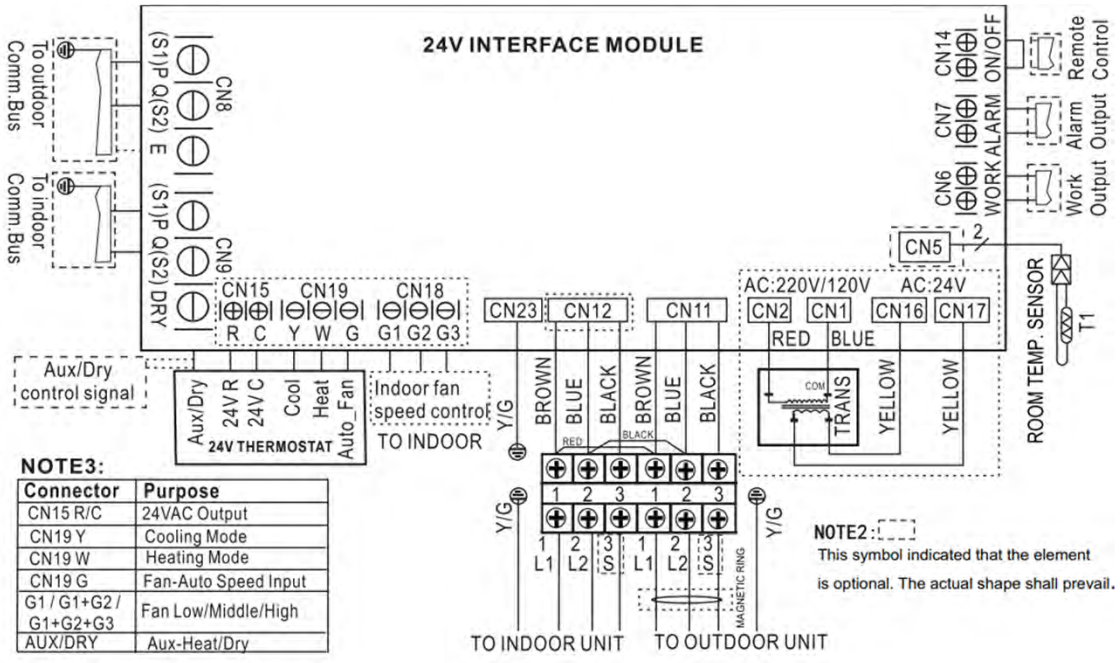
Aux-heat/dry		
SW3-1	ON 1	ON 2
Mode	Aux-heat	Dry
Factory default	✓	

Frequency Time		
SW3-2	ON 1	ON 2
Mode	30min	1H
Factory default	✓	

Set/indoor only		
SW4-1	ON 1	ON 2
Mode	Set/out-door only	Indoor only
Factory default	✓	

Indoor control		
SW4-2	ON 1	ON 2
Mode	Fan High	Fan Middle
Factory default	✓	

333



334

DIP Switch 1-1

Used to turn **ON** or **OFF** the diagnostic code display LED on the 24V Interface control board (see Fig. 20).

Table 8 — DIP Switch 1-1

SW1-1	Result	Note
ON	Display on	
OFF	Display off	Default

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NOTES*:

1. **Need to remove the indoor unit throttle (piston/TXV/ orifice);**
2. **The indoor fan stops during the DEFROST mode and starts again 30 seconds after the defrost cycle is complete on the outdoor unit. G1, G2 and G3 on the 24V interface will not provide any fan output signal to the indoor fan during the DEFROST cycle plus 30 seconds.**

NOTE: If this 24V interface is matched with a non-ductless indoor unit, the DIP Switch must be set to **OFF**.

DIP Switch 1-2

Use for the indoor unit type selection.

Table 9 — DIP Switch 1-2

SW1-2	Result	Note
ON	Sets - Both Ductless Indoor and Outdoor Units (For Scenarios 1-3)	
OFF	Outdoor only (Hybrid Solution) -Scenarios 4, 5, 6 ----- Compatible with other 24V indoor units Fan Coil/Furnace/Cased Coil	Default (see **NOTES*** below)

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DIP Switch 2-1

Use for selection of the system: **Cooling Only** or **Heat Pump.**

Table 10 — DIP Switch 2-1

SW2-1	Result	Note
ON	Cooling Only	
OFF	Heat Pump	Default

337

DIP Switch 2-2

Use for freeze protection of the indoor coil (scenarios 1 through 3 **only**).

Table 11 — DIP Switch 2-2

SW2-2	Result	Note
ON	Fan does not stop	
OFF	Fan stops if the indoor coil temperature is low	Default

NOTE: Applicable only to the Ductless Style Indoor Heat Pump units in the HEATING mode.

338

DIP Switch 3-1

On Ductless systems, **Dry** is used with thermostats with a **Dry Function** output.

Table 12 — DIP Switch 3-1

SW3-1	Result	Note
ON	Dry Mode	
OFF	Used on future applications	Default

339

DIP Switch 3-2

Use to increase the compressor frequency in case the set point has not been reached after 1 hour or half hour of operation. The unit keeps operating at **Variable Speed** in both instances.

Table 13 — DIP Switch 3-2

SW3-2	Result	Note
ON	1h	
OFF	0.5h	Default

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Table 14 — DIP Switch 4-1

SW4-1	Result	Note
ON	The SW4-2 is available under fan only mode	
OFF	The SW1-2 is available	Default

DIP Switch 4-2

Not required (planned for future applications). Select the indoor unit's fan speed (when selecting DIP switch 4-1).

Table 15 — DIP Switch 4-2

SW4-2	Result	Note
ON	Medium fan speed	
OFF	High fan speed	Default

NOTE: If the SW4-1 is ON, the SW4-2 takes effect, otherwise the SW1-2 takes effect.

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ERROR CODES

For ease of service, the 24V Interface is equipped with a diagnostic code display LED on the control board (ensure the 24V interface is installed with the directional arrow pointing up to successfully read the error code). Refer to the indoor or outdoor unit's service manual as listed in Table 16 for a troubleshooting breakdown.

Table 16 — Error Codes

Display	Malfunction and Protection Indication	Service Manual Reference
E0	Indoor EEPROM error	Indoor Service Manual
E2	Cross-zero detection error	Indoor or Outdoor Service Manual
E3	Indoor fan speed malfunction	Indoor Service Manual
E4	Indoor room temperature sensor error	Indoor Service Manual
E5	Evaporator coil temperature sensor error	Indoor Service Manual
EC	Refrigerant leak detection system malfunction	Indoor or Outdoor Service Manual
F0	Current overload protection	Outdoor Service Manual
F1	Outdoor ambient temperature sensor (T4) malfunction	Outdoor Service Manual
F2	Condenser coil temperature sensor (T3) malfunction	Outdoor Service Manual
F3	Condenser coil temperature sensor (T5) malfunction	Outdoor Service Manual
F4	Outdoor unit EEPROM parameter error	Outdoor Service Manual
F5	Outdoor fan speed has been out of control	Outdoor Service Manual
F6	T2b sensor error	Indoor or Outdoor Service Manual
P0	Inverter module (IPM) malfunction	Outdoor Service Manual
P1	Over-voltage or under-voltage protection	Outdoor Service Manual

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P2	Compressor top high temperature protection (OLP)	Outdoor Service Manual
P3	Low ambient temperature cut off in heating	Outdoor Service Manual
P4	Compressor drive malfunction	Outdoor Service Manual
--	Mode conflict (when connected to a multi-zone)	Indoor Service Manual
P6	Compressor low-pressure protection	Outdoor Service Manual
IN	24V Interface and indoor unit communication malfunction	Indoor Service Manual (E1)
0U	24V Interface (indoor unit) and outdoor unit communication malfunction	Indoor Service Manual (E1)
00	24V Interface successful power up and in standby	Operational Code
01	System operating in cooling mode	Operational Code
02	System operating in heating mode	Operational Code
03	System operating in fan mode	Operational Code
04	System operating in dehumidify mode (not a recommended application for FV4C units)	Operational Code
05	System operating with Auxiliary heater active (not a recommended application)	Operational Code

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SYSTEM CONFIGURATION SCENARIOS

Based on the system, utilize the appropriate configuration scenario:

Scenario 1: Single Zone Ductless System with 38MPRA, 38MARB, 38MHR

Scenario 2: Single Zone Ductless System with 38MBR/38MBRB

Scenario 3: Multi-zone Ductless System with 38MGR

Scenario 4: Single Zone Fan Coils FMA/FX4D/FB4C with 38MARB

Scenario 5: Single Zone Fan Coils FV4C with 38MARB

Scenario 6: Compatible Single Zone Furnace with 38MARB

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SCENARIO 1: SINGLE ZONE OUTDOOR UNITS (38MPRA, 38MARB, 38MHR) WITH APPROVED DUCTLESS INDOOR UNITS

- High Wall (sizes 6K-36K)[208-230V]**
- Cassette (sizes 9K-24K)
- Ducted (sizes 9K-24K) (*refer to **NOTES** in the adjacent column)
- Console (sizes 18K-24K)

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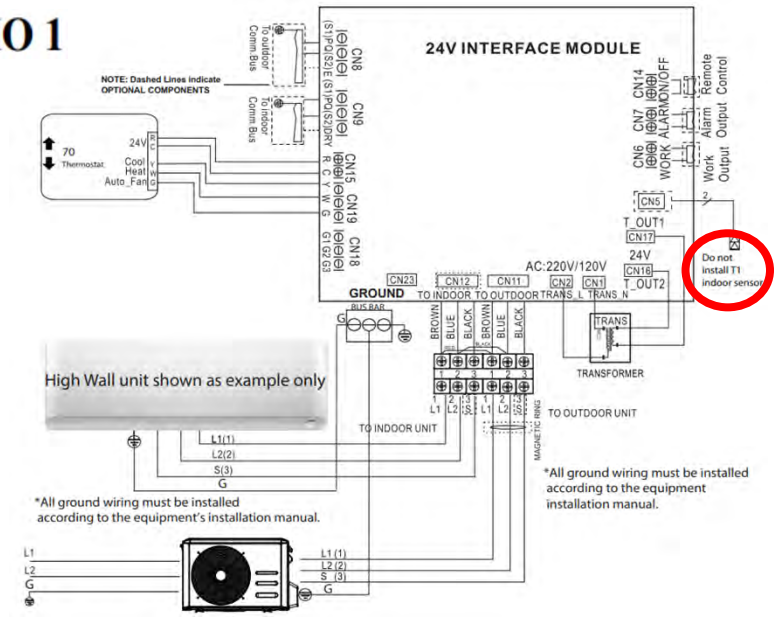
SCENARIO 1



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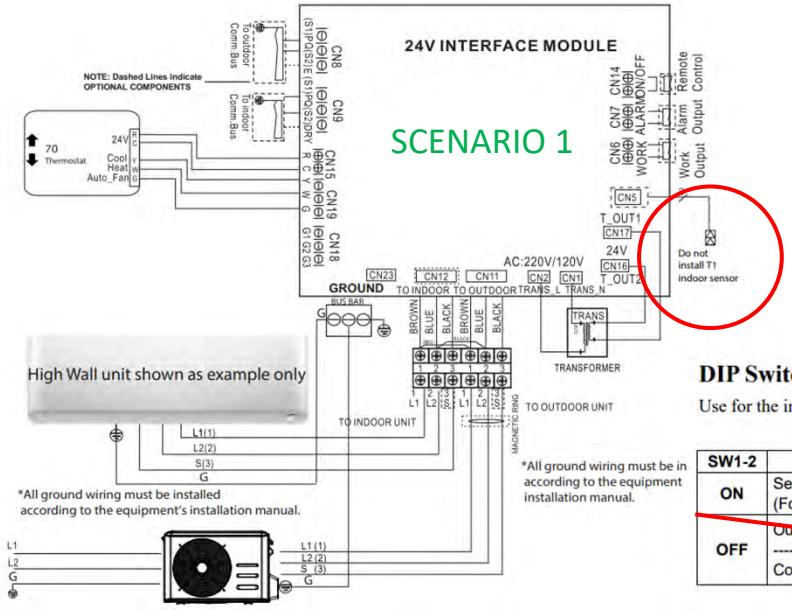
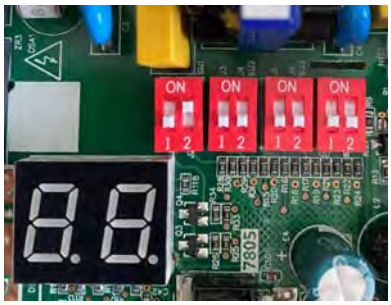
KSAIC0301230 24V Interface Kit for Ductless Systems & Hybrid Solutions





DIP Switch 1-2

Use for the indoor unit type selection.

Table 9 — DIP Switch 1-2

SW1-2	Result	Note
ON	Sets - Both Ductless Indoor and Outdoor Units (For Scenarios 1-3)	✓
OFF	Outdoor only (Hybrid Solution) -Scenarios 4, 5, 6 ----- Compatible with other 24V indoor units Fan Coil/Furnace/Cased Coil	Default (see **NOTES*** below)

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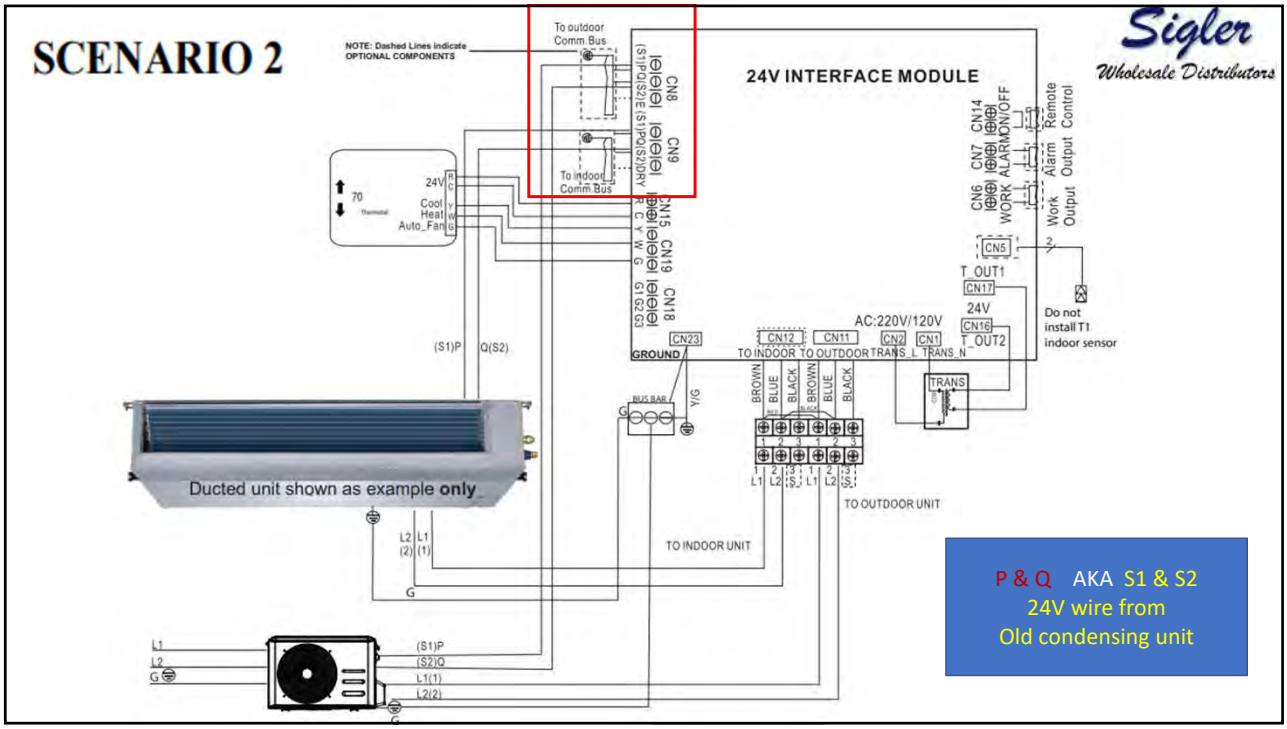
SCENARIO 2: SINGLE ZONE OUTDOOR UNITS (38MBRC) WITH APPROVED DUCTLESS INDOOR UNITS

- Cassette (sizes 36K-48K)
- Ducted (sizes 36K-58K) (*refer to **NOTES** in the adjacent column)
- Console (sizes 36K-58K)

348


SCENARIO 2
NOTE: Dashed Lines indicate OPTIONAL COMPONENTS
To outdoor Comm.Bus
To indoor Comm.Bus
24V INTERFACE MODULE
Sigler
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CN8
CN9
CN15
CN19
CN18
CN14
CN7
CN6
Remote Control
Alarm Output
Work Output
CN5
T_OUT1
CN17
24V
CN16
T_OUT2
Do not install T1 indoor sensor
AC:220V/120V
CN23
GROUND
CN12
CN11
CN2
CN1
TO INDOOR
TO OUTDOOR
TRANS_L
TRANS_N
TRANS
BUS BAR
BROWN
BLUE
BLACK
TO OUTDOOR UNIT
TO INDOOR UNIT
Ducted unit shown as example only
(S1)P
Q(S2)
L1
L2
G
L1(1)
L2(2)
P & Q AKA S1 & S2
24V wire from
Old condensing unit

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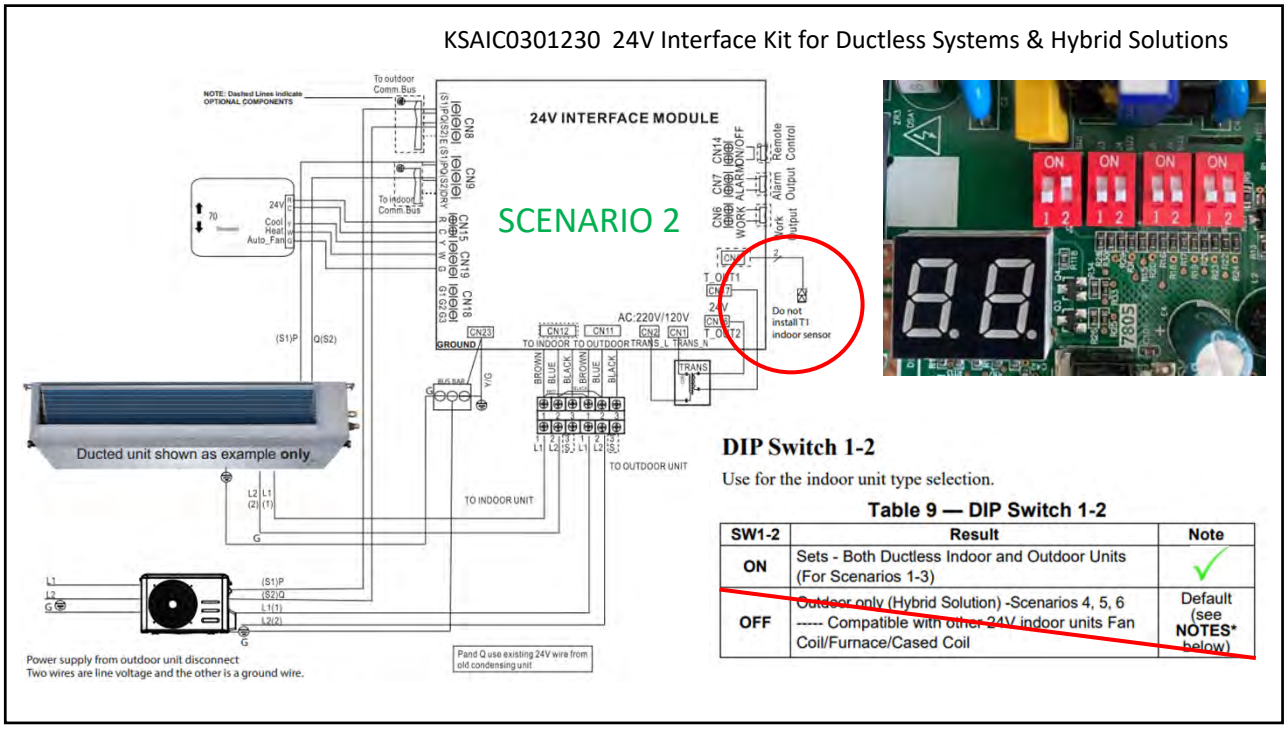
KSAIC0301230 24V Interface Kit for Ductless Systems & Hybrid Solutions
SCENARIO 2
24V INTERFACE MODULE
Ducted unit shown as example only
TO INDOOR UNIT
TO OUTDOOR UNIT
Do not install T1 indoor sensor
Pand Q use existing 24V wire from old condensing unit
Power supply from outdoor unit disconnect
Two wires are line voltage and the other is a ground wire.
ON
DIP Switch 1-2
Use for the indoor unit type selection.
Table 9 — DIP Switch 1-2
SW1-2
Result
Note
ON
Sets - Both Ductless Indoor and Outdoor Units (For Scenarios 1-3)
OFF
Outdoor only (Hybrid Solution) -Scenarios 4, 5, 6 ----- Compatible with other 24V indoor units Fan Coil/Furnace/Cased Coil
Default (see NOTES* below)

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SCENARIO 3: MULTI-ZONE OUTDOOR UNITS (38MGR*) WITH APPROVED DUCTLESS INDOOR UNITS

- High Wall (Sizes 6K-24K)
- Cassette (Sizes 9K-24K)
- Ducted (Sizes 9K-24K) (*refer to **NOTES** in the adjacent column)
- Console (Sizes 12K-24K)
- Air Handler (Size 18K-36K)

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SCENARIO 3: MULTI-ZONE OUTDOOR UNITS (38MGR) WITH APPROVED DUCTLESS INDOOR UNITS

- High Wall (Sizes 6K-24K)
- Cassette (Sizes 9K-24K)
- Ducted (Sizes 9K-24K) (*refer to **NOTES** in the adjacent column)
- Console (Sizes 12K-24K)
- Air Handler (Size 24K)

AUTO mode is recommended for use on single zone applications only. Using **AUTO** changeover on multi-zone applications could set an indoor unit to **STANDBY** mode, indicated with two dashes (--) on the display. Should this occur, the indoor unit powers off until all the indoor units are in the same mode (**COOLING** or **HEATING**). **HEATING** is the system's priority mode. Simultaneous **HEATING** and **COOLING** is not allowed.

352

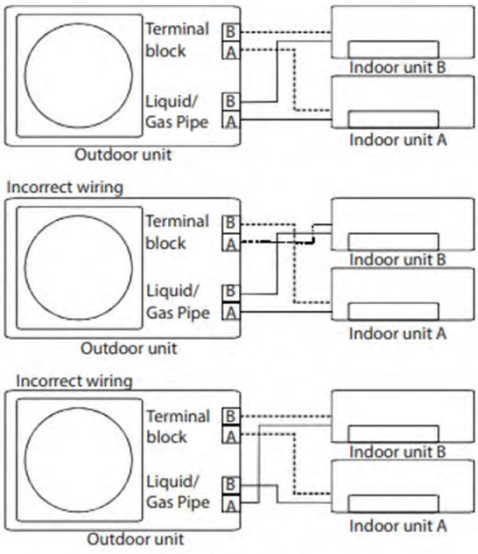

Fig. 13 — Automatic Wiring/Piping Correction

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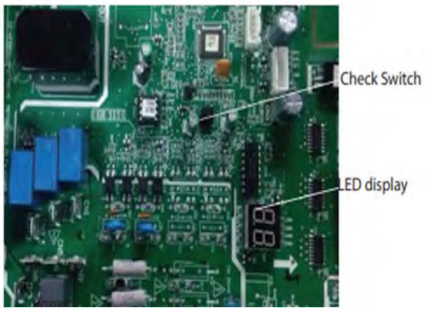
AUTOMATIC WIRING/PIPING CORRECTION

The unit is capable of automatically correcting a wiring/piping error. Indoor units do not have to be in the run mode. The outdoor temperature should be above 41°F (5°C) to use this feature. Press the **CHECK** button on the outdoor unit PCB board for 6 seconds until the display shows "CE" ("FA" may appear first – continue to press **CHECK**).

The outdoor unit takes control of the indoor units and adjust fan speed(s) according to the program. Setpoint display (if available) will be "76" and outdoor unit will start the compressor and fan to dispense refrigerant to the indoor heads to determine piping setup versus physical wiring. When the controller has adjusted control so that each indoor unit is synced to its piping port (approximately 5-10 minutes, depending on temperature, unit size, etc.), "CE" is replaced with "00" on the display and the control program terminates.

NOTE: The indoor units will not automatically release from the "76" setting or return to previous control. Use the indoor units' remote controllers to restore them to normal function.



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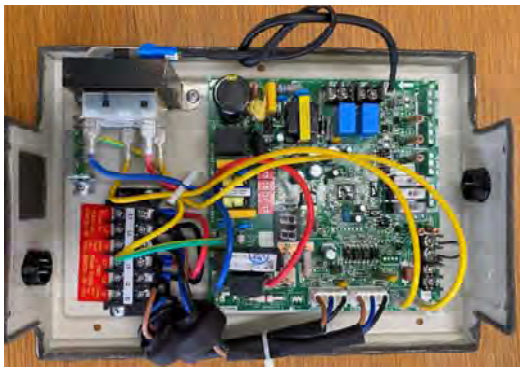
Please Note If you use a 24-volt interface board
It will not auto correct the Pipping.



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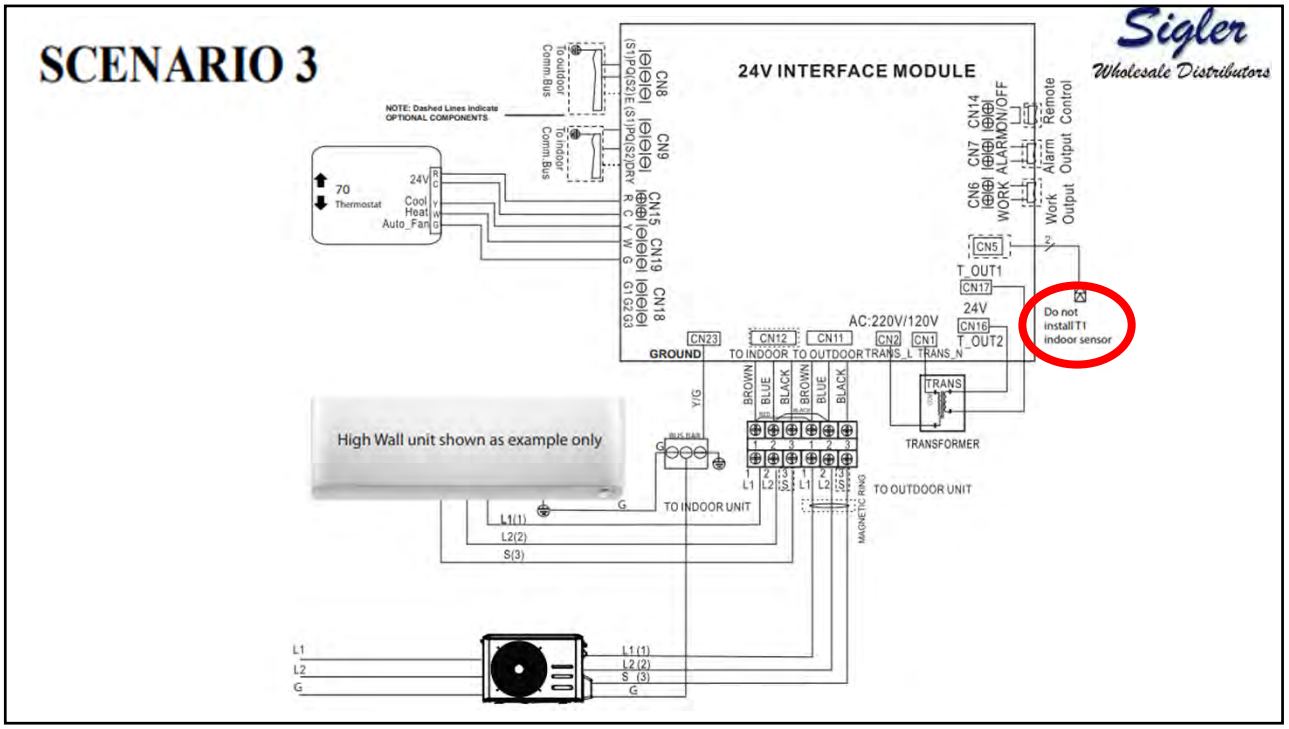
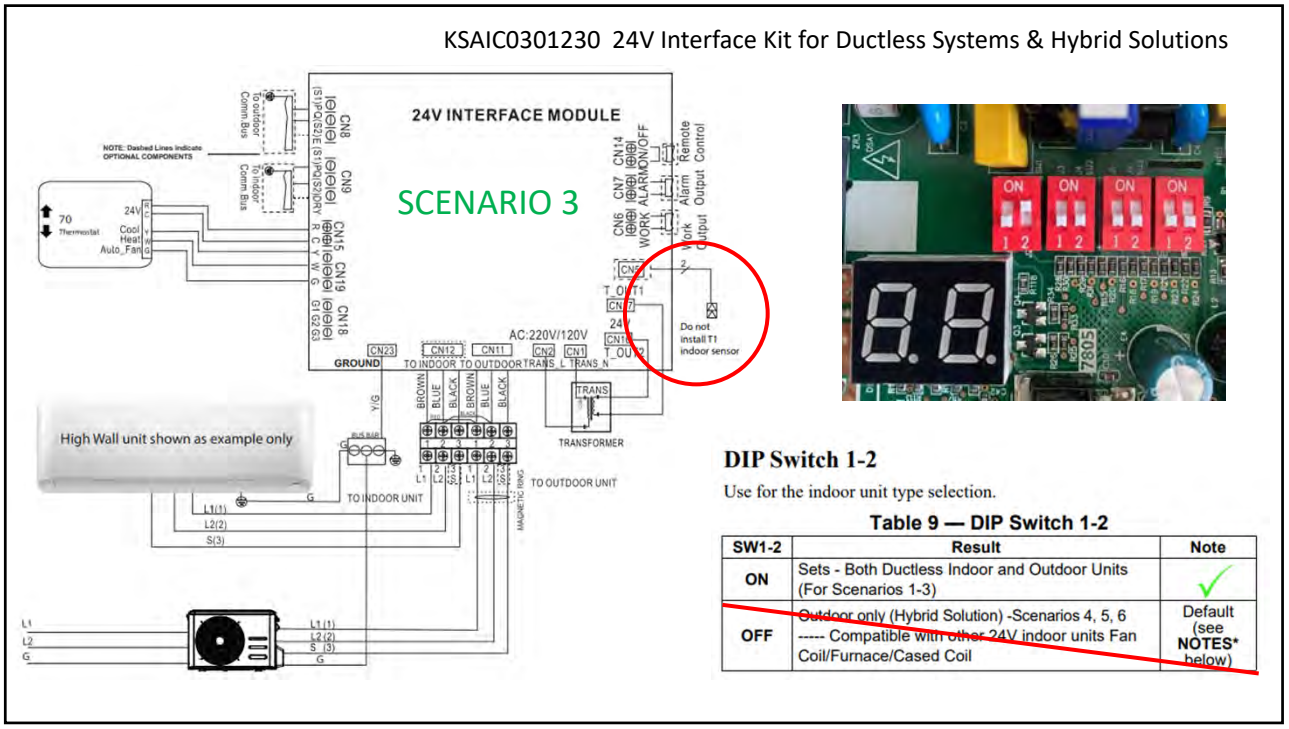


355



DIP Switch 1-2

Use for the indoor unit type selection.

Table 9 — DIP Switch 1-2

SW1-2	Result	Note
ON	Sets - Both Ductless Indoor and Outdoor Units (For Scenarios 1-3)	✓
OFF	Outdoor only (Hybrid Solution) -Scenarios 4, 5, 6 ----- Compatible with other 24V indoor units Fan Coil/Furnace/Cased Coil	Default (see **NOTES*** below)

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Sigler
Wholesale Distributors

SCENARIO 4: SINGLE ZONE OUTDOOR UNIT 38MARB and 38MBRC (4 & 5 TON ONLY) WITH APPROVED MULTI-FAMILY 24V FAN COILS FMA/ FX4D/FB4C/FMC/FMU

357

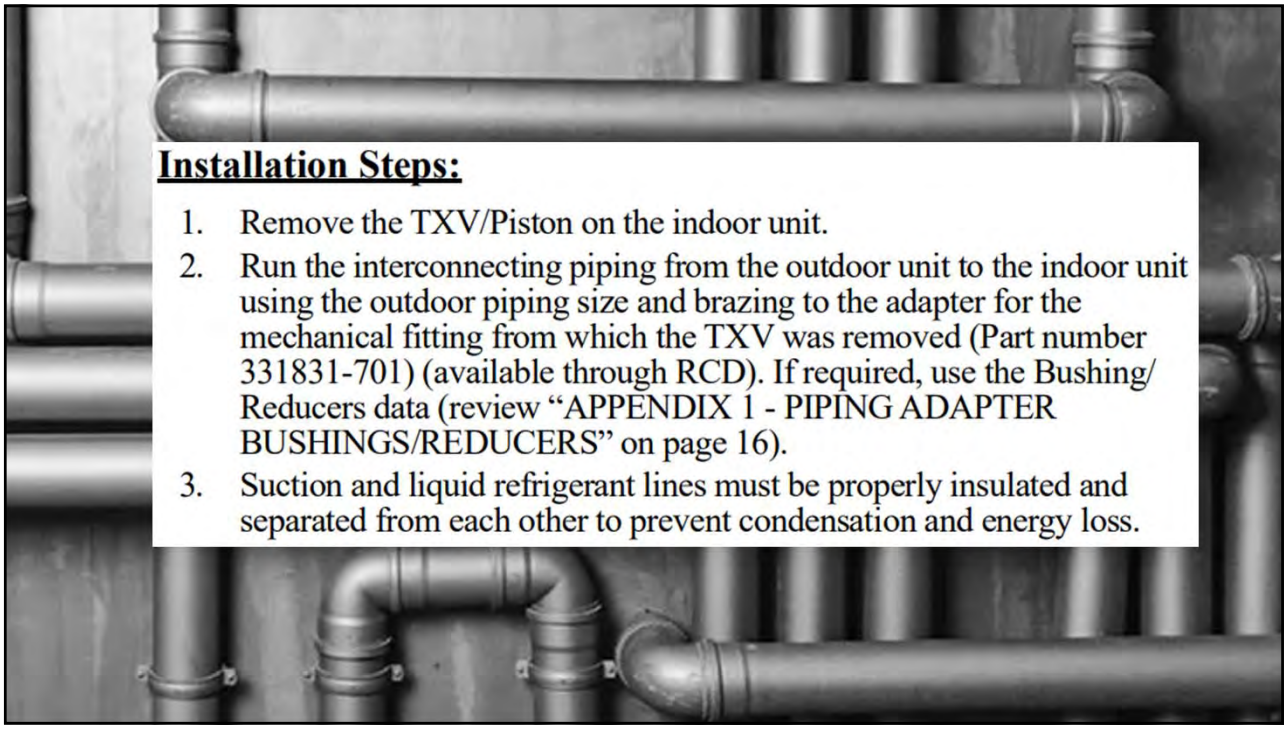
FMA4P, FMA4X
Apartment Fan Coils
Sizes 18 To 36
1-1/2 To 3 Nominal Tons

FX4D
Comfort™ Series Fan Coil
Sizes 019 thru 061

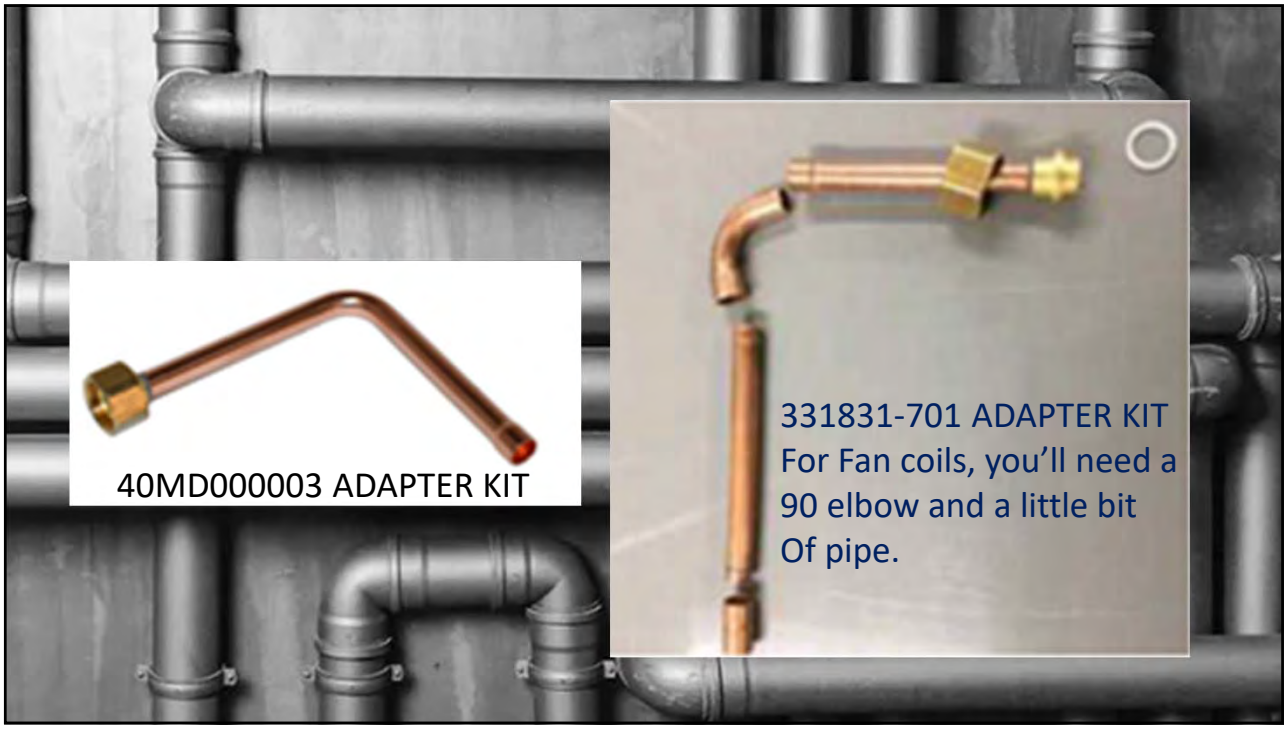
FMC4X, FMC4Z
APARTMENT FAN COIL UNIT

APARTMENT FAN COIL UNIT
FMU4X, FMU4Z

358

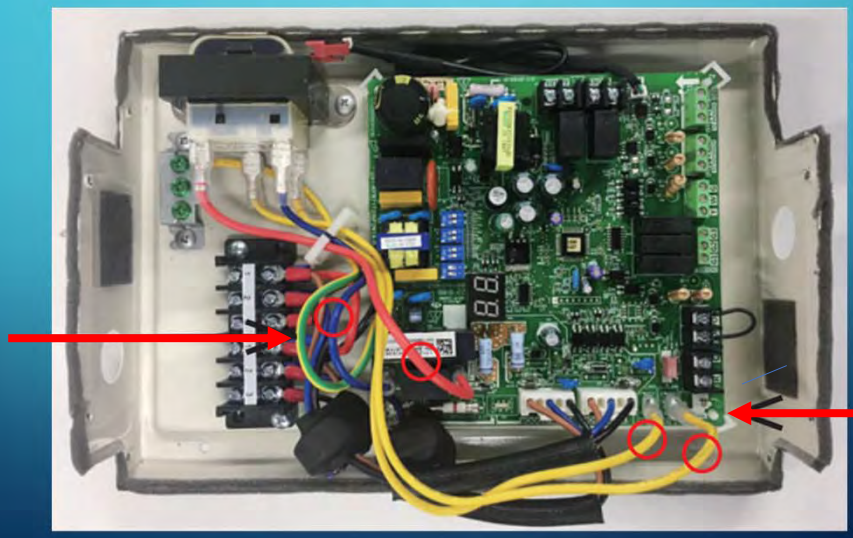

Installation Steps:
1. Remove the TXV/Piston on the indoor unit.
2. Run the interconnecting piping from the outdoor unit to the indoor unit using the outdoor piping size and brazing to the adapter for the mechanical fitting from which the TXV was removed (Part number 331831-701) (available through RCD). If required, use the Bushing/ Reducers data (review "APPENDIX 1 - PIPING ADAPTER BUSHINGS/REDUCERS" on page 16).
3. Suction and liquid refrigerant lines must be properly insulated and separated from each other to prevent condensation and energy loss.

359


40MD000003 ADAPTER KIT
331831-701 ADAPTER KIT
For Fan coils, you'll need a 90 elbow and a little bit Of pipe.

360

Disconnect and remove the 24-volt transformer from the 24 Volt Interface. Run the 2-conductor 18 AWG cable from R and C of the indoor unit terminal board. Connect "R" to CN17 and "C" to CN16 on the 24 Volt Interface. Be sure to connect the primary (high voltage) wire to the correct terminal (tap) on the FV4C transformer

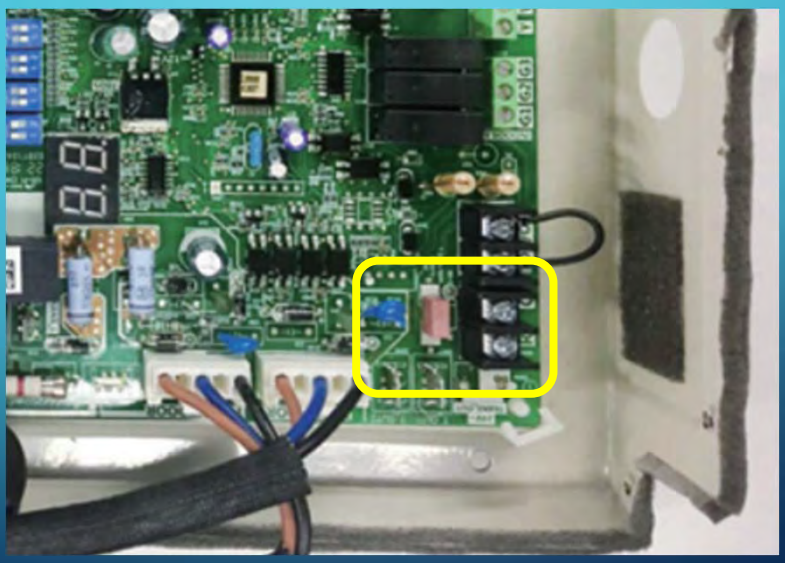


361

This is what it should look like in the end!

362

Pro Tip!



363

115 Volt Question

Compatibility Controls

	Indoor unit type		HIGH WALL					CASSETTE		DUCTED	CONSOLE	AIR HANDLER	
	Indoor Family Name	Single Zone / Multi-zone	40MPHA	40MPHB	40MAQ	40MAHB	40MHH	40MBCQ	40MBCAQ	40MBDQ	40MBFQ	40MBAA	40MBAB
WIRED CONTROLLERS	KSACN0101AAA	Single Zone & Multi-zone		○ 18k	○	○	○	○	○	○	○		
	KSACN0401AAA	Single Zone & Multi-zone	○		○ †		○				○ 9 -12 ‡		
	KSACN0501AAA	Single Zone & Multi-zone						○		•	○ 18-58		
	KSACN0601AAA	Single Zone & Multi-zone	○	○ 9-12k	○ †		○				○ 9 -12 ‡		
	KSACN0701AAA	Single Zone & Multi-zone						○	○	•**	○ 18-58		
	KSACN0801AAA	Single Zone & Multi-zone		○ 18k		○							
	KSACN1001AAA	Single Zone & Multi-zone											•
24V INTERFACE*	KSAIC0101115	Single Zone Only			○ 115V		○ 115V						
	KSAIC0101230	Single Zone Only	○		○ 230V		○ 230V	○		○	○ 12-58 ⊦		
	KSAIC0301230	Single Zone & Multi-zone	○	○	○ 230V	○ 230V	○ 230V	○	○	○	○ 12-58 ⊦	BUILT-IN	BUILT-IN
WI-FI KITS	KSAIF0101AAA	Single Zone & Multi-zone					○ 9/12/24k						
	KSAIF0201AAA	Single Zone & Multi-zone					○ 18k						
	KSAIF0301AAA	Single Zone & Multi-zone	⌋	⌋	○	⌋	⌋						
	KSAIF0401AAA	Single Zone & Multi-zone						○		○	○ 18-58		○
	KSAIF0601AAA	Single Zone & Multi-zone	•	•		▭			○				

PHASED OUT

NOT AVAILABLE / COMPATIBLE

CURRENT MODELS

Edition Date: 07/2022

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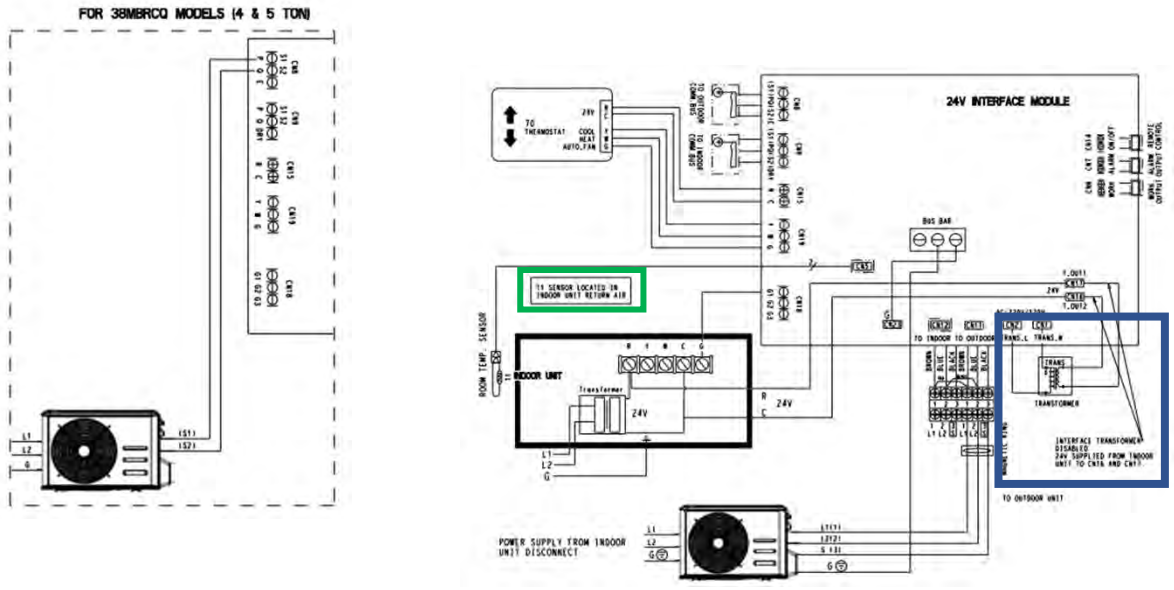
SCENARIO 1: SINGLE ZONE OUTDOOR UNITS (38MPRA, 38MARB, 38MHR) WITH APPROVED DUCTLESS INDOOR UNITS

- High Wall (sizes 6K-36K)[208-230V]**
- Cassette (sizes 9K-24K)
- Ducted (sizes 9K-24K) (*refer to **NOTES** in the adjacent column)
- Console (sizes 18K-24K)

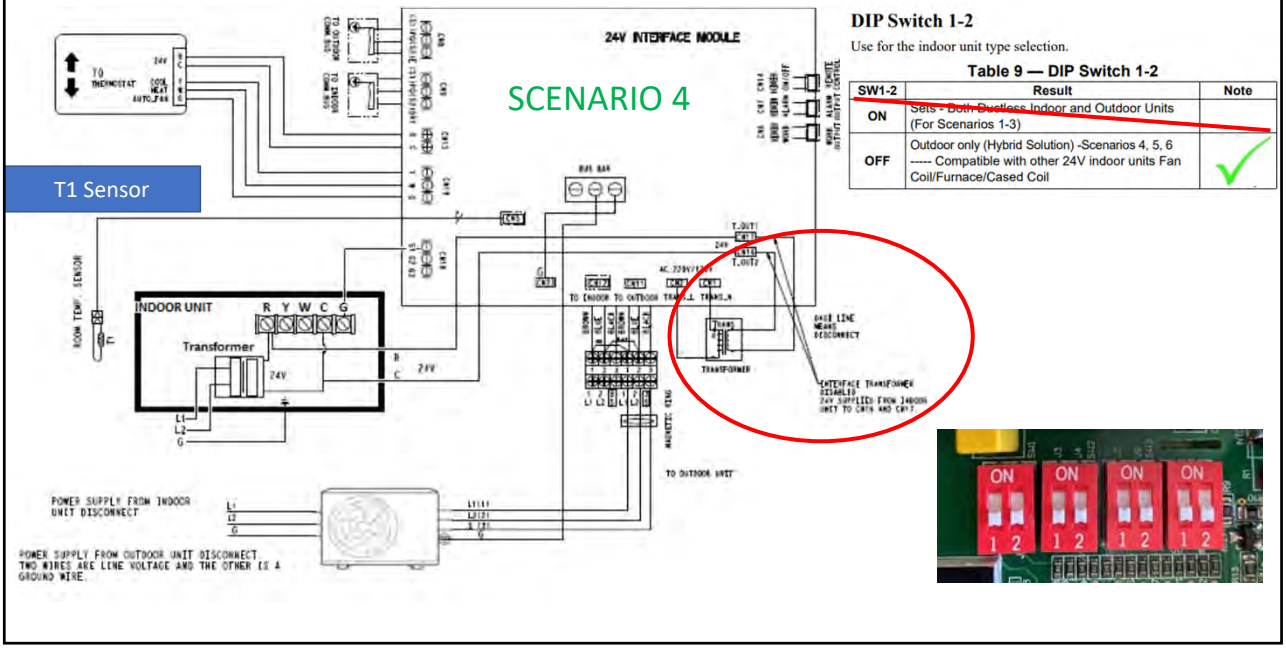
**For 115V Ductless applications, the 24V transformer must be replaced in the field. This part is available through RCD (part number 11203103000393).

365



366

KSAIC0301230 24V Interface Kit for Ductless Systems & Hybrid Solutions



DIP Switch 1-2

Use for the indoor unit type selection.

Table 9 — DIP Switch 1-2

SW1-2	Result	Note
ON	Sets - Both Ductless Indoor and Outdoor Units (For Scenarios 1-3)	
OFF	Outdoor only (Hybrid Solution) -Scenarios 4, 5, 6 ----- Compatible with other 24V indoor units Fan Coil/Furnace/Cased Coil	✓

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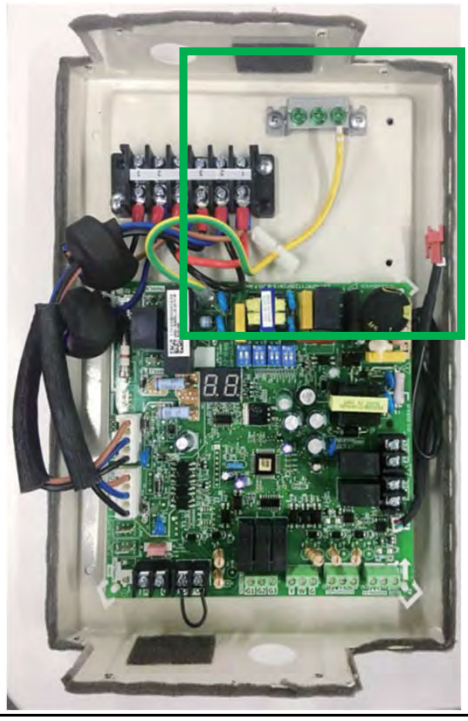
SCENARIO 5: SINGLE ZONE OUTDOOR UNIT 38MARB and 38MBRC (4 AND 5 TON ONLY) WITH APPROVED 24V FAN COILS FV4

368

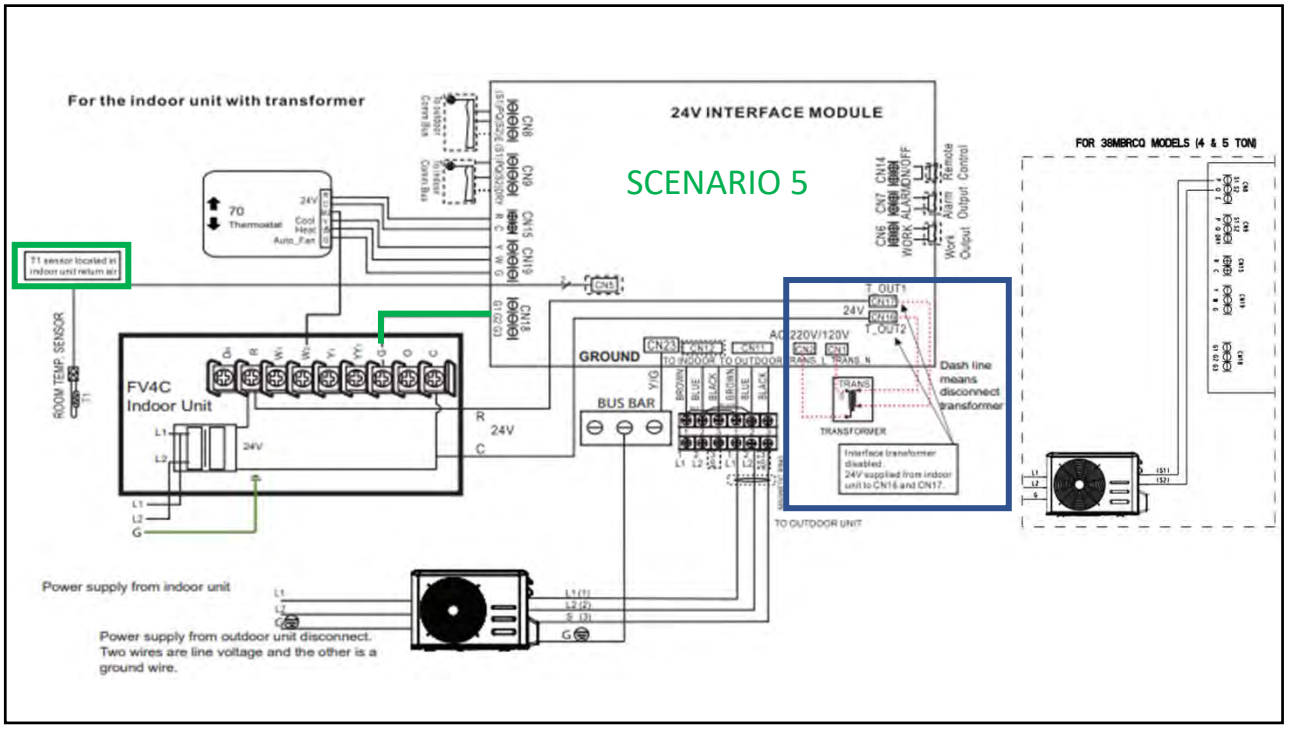
Things that are needed to remove and install!

40MD000003 ADAPTER KIT

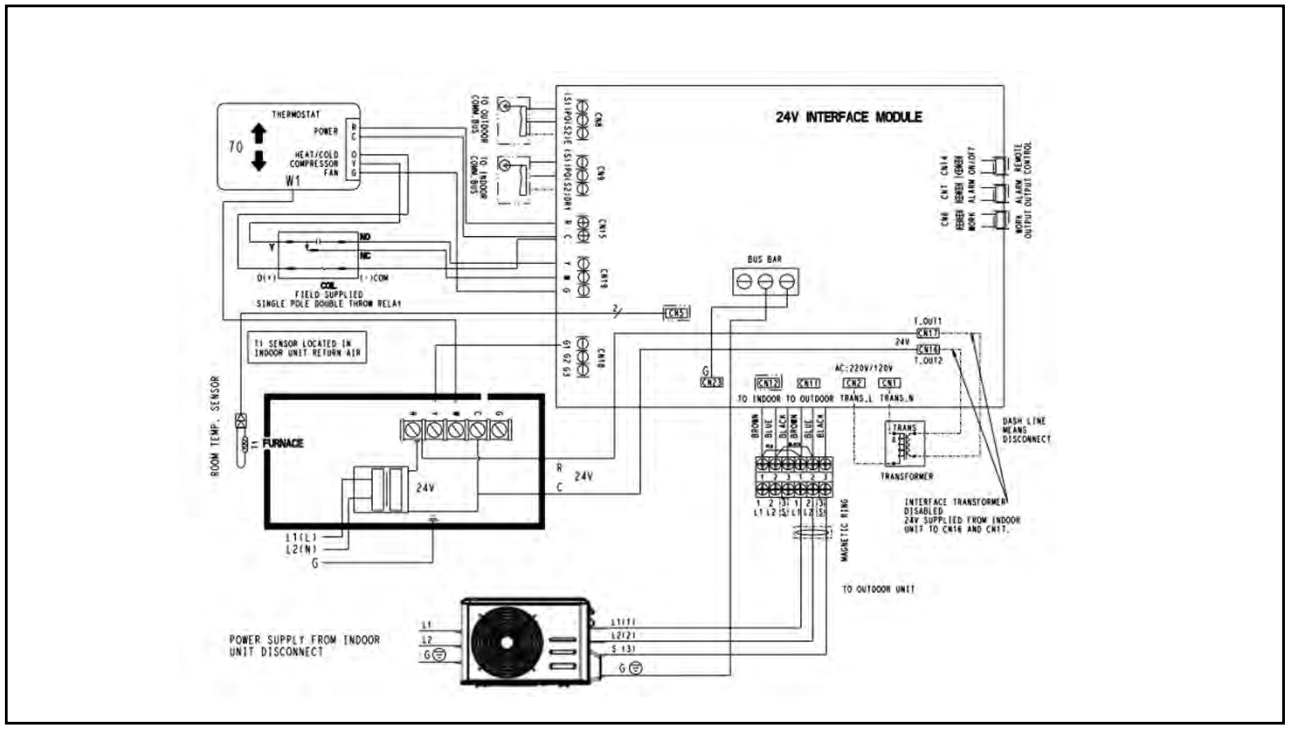
331831-701 ADAPTER KIT
For Fan coils, you'll need a 90 elbow and a little bit Of pipe.



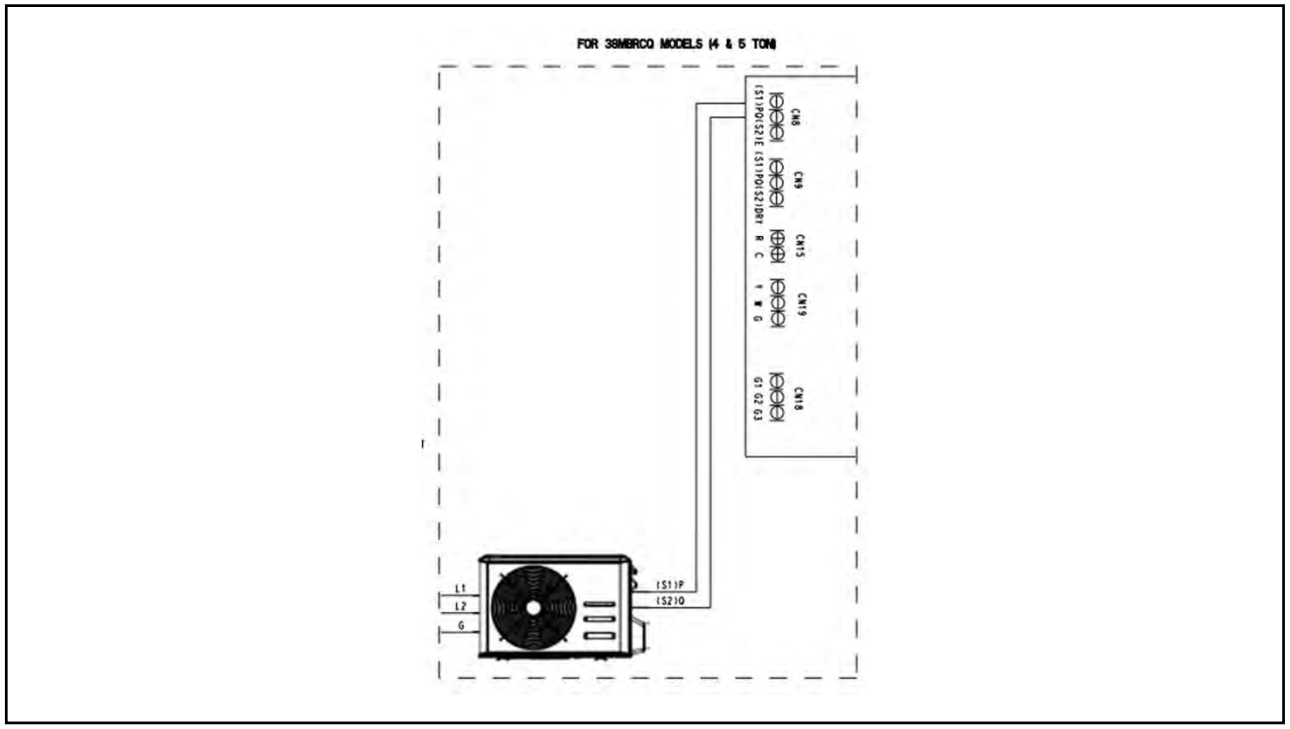
369



370


24V INTERFACE MODULE
THERMOSTAT
POWER
HEAT/COLD
COMPRESSOR
FAN
W1
BUS BAR
FIELD SUPPLIED
SINGLE POLE DOUBLE THROW RELAY
T1 SENSOR LOCATED IN
INDOOR UNIT RETURN AIR
ROOM TEMP. SENSOR
FURNACE
24V
AC:220V/120V
TO INDOOR
TO OUTDOOR TRANS.L
TRANS.N
TRANSFORMER
DASH LINE
MEANS
DISCONNECT
INTERFACE TRANSFORMER
DISABLED
24V SUPPLIED FROM INDOOR
UNIT TO CN16 AND CN17.
MAGNETIC RING
TO OUTDOOR UNIT
POWER SUPPLY FROM INDOOR
UNIT DISCONNECT

371


FOR 38MBRCQ MODELS (4 & 5 TON)

372

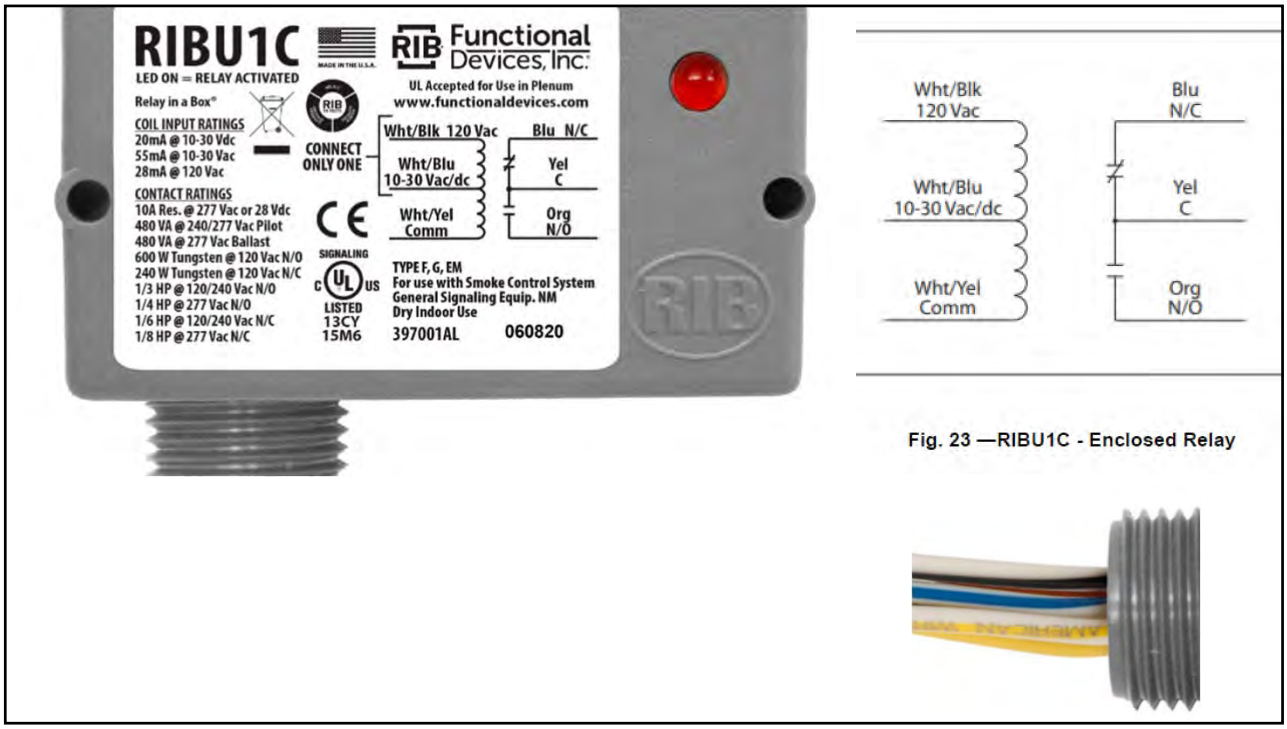
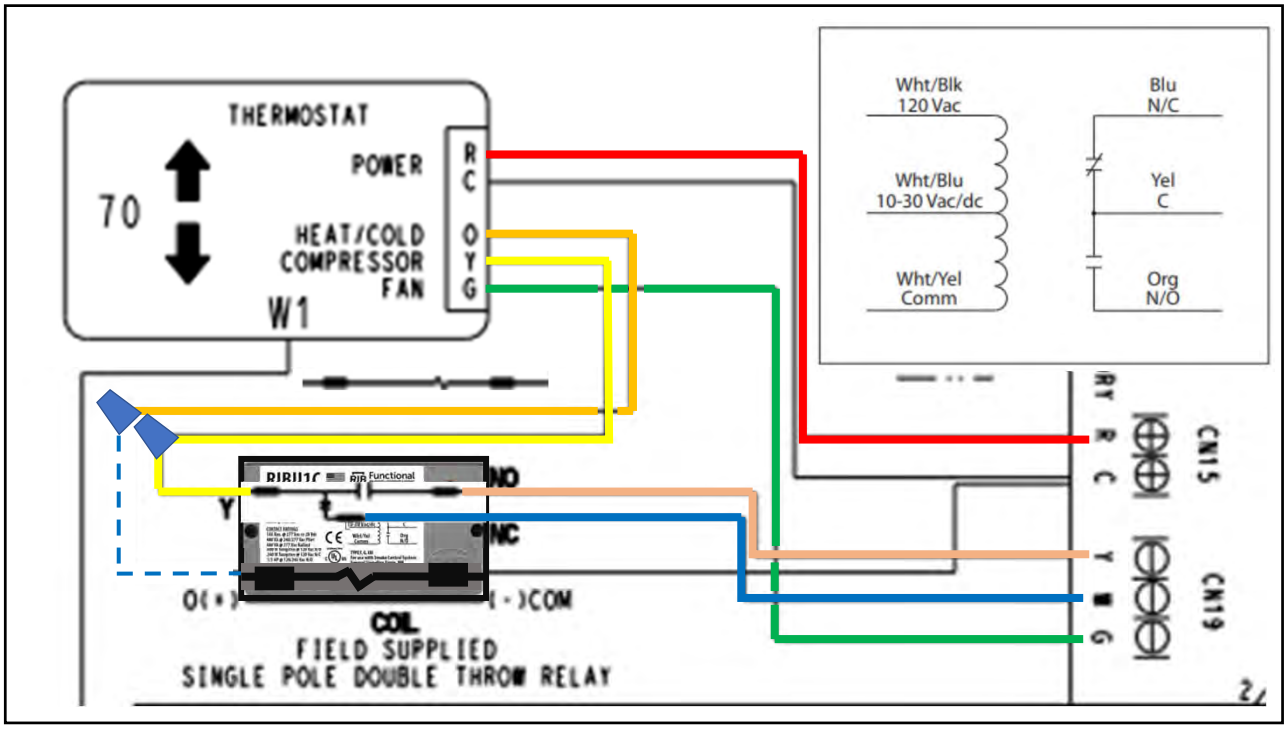
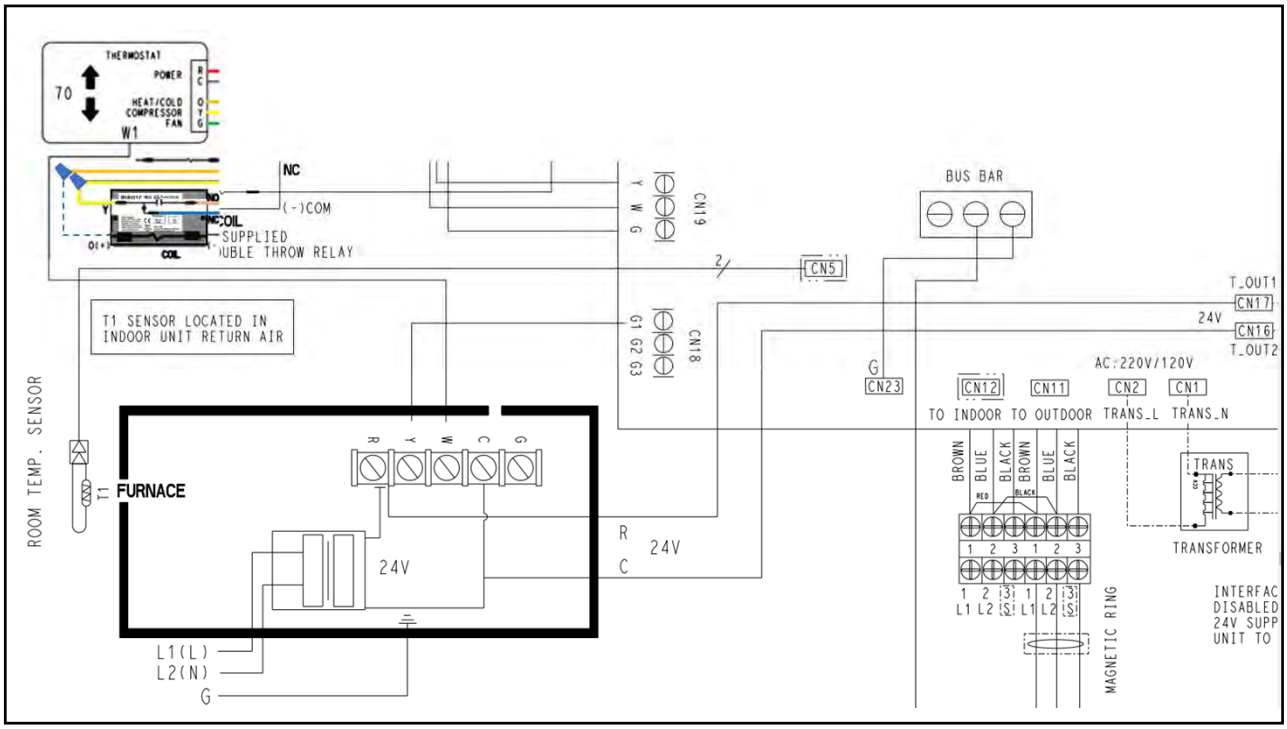


Fig. 23 —RIBU1C - Enclosed Relay

373



374



375

FAN SPEED

For applications where multiple speeds are needed, the fan outputs are G1(Low), G1+G2(Medium) and G1+G2+G3(High) and must be connected by running thermostat wiring from the 24V interface to the indoor unit using output connections G1, G1+G2, G1+G2+G3 as shown in Figure 19. Fan motor connections must be made according to the fan coil installation manual.

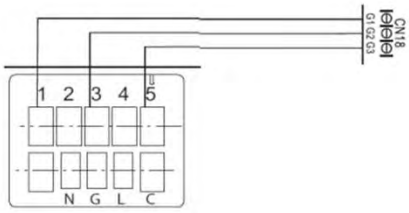


Table 7 — Fan Speed Setting

Unit ON/OFF	G	Setting Fan Speed
√	X	Auto Fan Speed
√	√	Auto Fan Speed
X	X	Fan OFF

LEGEND

√	ON
X	OFF
☆	ON or OFF

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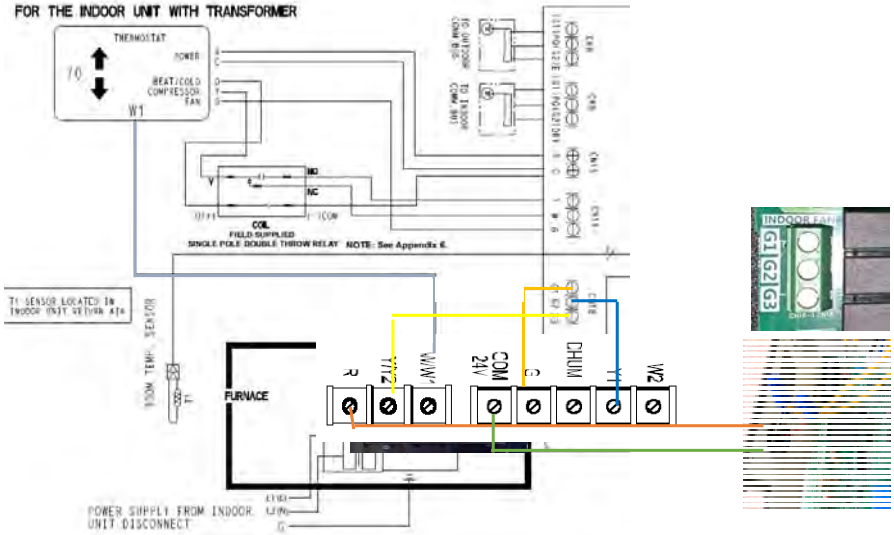
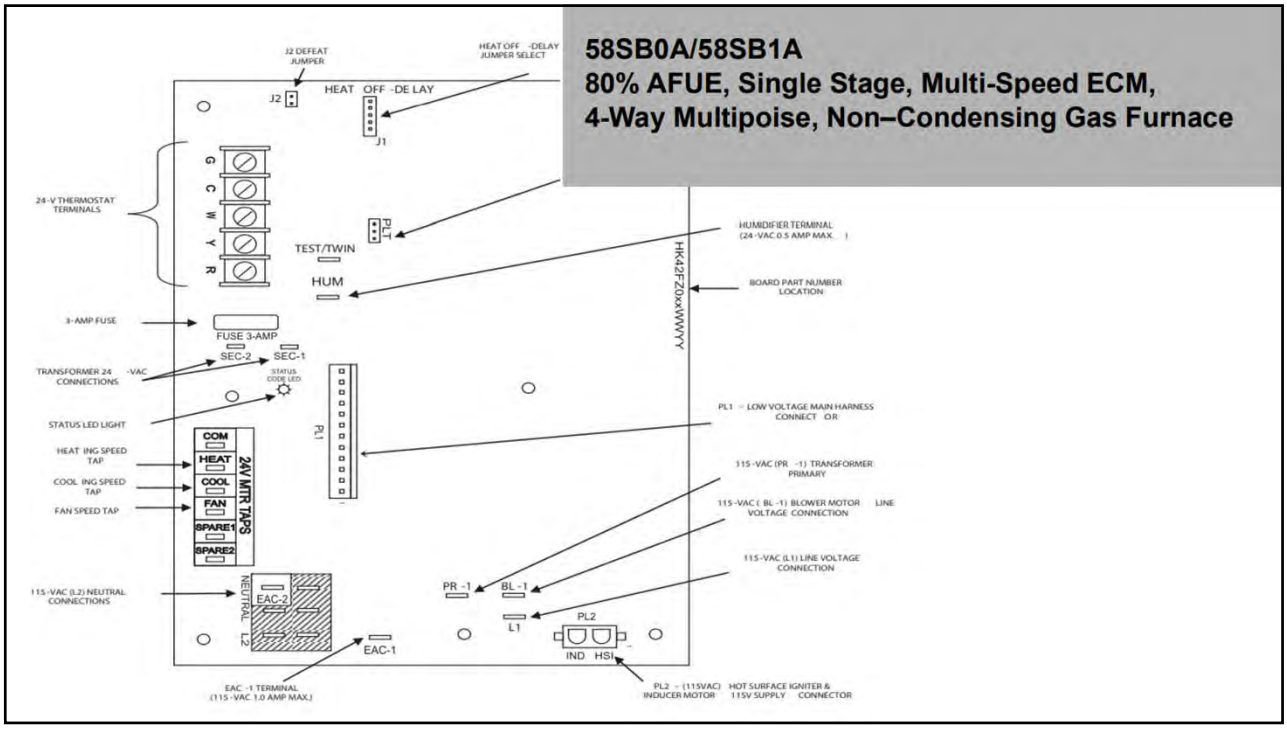
Fan Outputs-- Scenario 6-- G1, G2, G3.



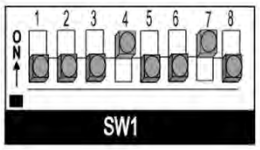
377

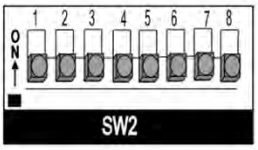


378

58TP0A/58TP1A
80% AFUE, Variable-Speed, ECM Motor, Two-Stage, 4-Way Multipoise, Non-Condensing Gas Furnace, Series A

DIP SWITCH CONFIGURATION





SW1

Switch	Description		Factory
1	**Status Code Recovery** - Turn ON to retrieve status codes.	See manual for use.	OFF
2	**Low Heat Only** - SW1 - 2 OFF allows two-stage operation SW1 - 2 ON for two-stage operation using two-stage TSTAT.	using single stage TSTAT (Adaptive Heat Mode).	OFF
3	**Not used**		OFF
4	**Comfort/Efficiency Adjust** - Turn ON to decrease low- approximately 10% for maximum comfort.	heat airflow by approximately 7% and high-heat	ON
5	**CFM per Ton Adjust** - See Airflow Tables in manual for	desired settings. Also see SW2 - 2.	OFF
6	**Component Self Test** - Turn ON to initiate Component disconnected. Turn OFF when Self Test is completed.	Self Test for troubleshooting assistance when R TSTAT lead is	OFF
7 & 8	**Blower Off Delay** - See manual or unit wiring diagram for Factory default is 120 Seconds.	settings. Adjustable 90 - 180 seconds.	7-ON 8-OFF

SW2

Switch	Description		Factory
1	**Twinning** - When Twinned furnace setup is required. SW2 - 1 SW2-1 ON selects the secondary furnace unit. See kit instructions	OFF selects the main furnace unit. for further details.	OFF
2	**CFM per Ton Adjust** - See Airflow Tables in manual for	desired settings. Also see SW1 - 5.	OFF
3-5	**CF Setup Switches** - The Continuous Fan setup switch selects airflow. See Cooling Air Delivery Tables and Continuous Fan delivery	desired CF and low-stage cooling (two-stage A/C units) Tables (when present) for specific switch settings.	ALL OFF
6-8	**A/C Setup Switches** - The Air Conditioning setup switch units) airflow. See Cooling Air Delivery Tables in manual for specific	selects desired cooling or high-stage cooling (two-stage switch settings.	ALL OFF

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58TP0A/58TP1A
80% AFUE, Variable-Speed, ECM Motor, Two-Stage, 4-Way Multipoise, Non-Condensing Gas Furnace, Series A

HYBRIDHEAT

And ComfortFan™ technology allows you to choose fan speeds in "Constant ON" mode from a compatible thermostat.

The continuous fan speed can be further adjusted at the thermostat using the Continuous Blower Speed Selection from Thermostat function. Changing the continuous fan speed at the thermostat DOES NOT change the low speed cooling airflow selected at the control board. See the section titled Continuous Blower Speed Selection from Thermostat in the Sequence of Operation section of this document.

1.Nominal 350 CFM/ton cooling airflow is delivered with SW1-5 and SW2-2 set to OFF.
Set both SW1-5 and SW2-2 to ON for +7% airflow (nominal 370 CFM/ton).
Set SW1-5 to ON and SW2-2 to OFF for +15% airflow (nominal 400 CFM/ton).
Set SW2-2 to ON and SW1-5 to OFF for -7% airflow (nominal 325 CFM/ton).
The above adjustments in airflow are subject to motor horsepower range/capacity.
This applies to Cooling and Low-Cooling airflow, but does not affect continuous fan airflow.
2.Maximum cooling airflow is achieved when switches SW2-6, SW2-7, SW2-8 and SW1-5 are set to ON, and SW2-2 is set to OFF.

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Continuous Blower Speed Selection from Thermostat:

To select different continuous-blower airflow from the room thermostat, momentarily turn off the FAN switch or push button on the room thermostat for 1-3 seconds after the blower motor BLWM is operating. The furnace control CPU will shift the continuous-blower airflow from the factory setting to the next highest CF selection airflow. (See Table 12 and Fig. 55). Momentarily turning off the FAN switch again at the thermostat will shift the continuous-blower airflow up one more increment. If you repeat this procedure enough, you will eventually shift the continuous-blower airflow to the lowest CF selection. (See Table 12 and Fig. 55). The selection can be changed as many times as desired and is stored in the memory to be automatically used following a power interruption.

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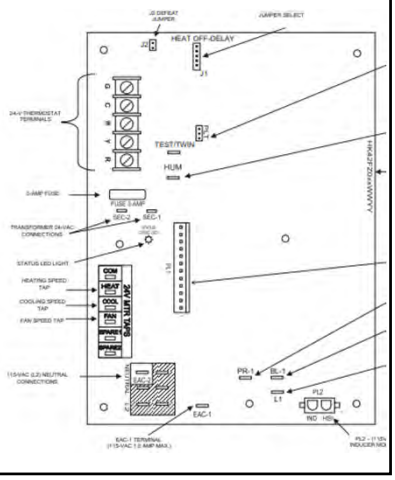
59SC2D
Single-Stage, 35-in. (889 mm) Tall, 4-Way Multipoise High Efficiency Condensing Gas Furnace

59SC5B
Single-Stage, High Efficiency, 4-Way Multipoise 35-in. (889 mm), Condensing Gas Furnace

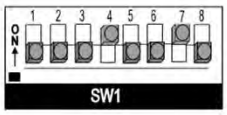
FURNACE SIZE	SPEED TAPS	Function	EXTERNAL STATIC PRESSURE (IN.W.C.)									
			0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
040E14--10	Gray	Cooling. Do not use for heating	1120	1085	1055	1015	985	950	915	880	850	815
	Yellow	Cooling. Do not use for heating	925	885	850	810	775	735	695	660	620	580
	Blue [3]	Heating or alt Cooling	765	725	685	640	605	565	525	475	430	375
	Orange [3]	Alt Cooling or alt Heating	750	710	665	625	585	545	500	455	405	350
	Red [3, 7]	Alt Cooling. Do not use for heating	510	435	400	345	290	230	190	145	-	-
040E17--12	Gray	Cooling. Do not use for heating	1120	1090	1055	1020	985	950	915	875	840	805
	Yellow	Cooling. Do not use for heating	910	880	845	800	760	720	680	640	595	555
	Orange	Alt Cooling or alt Heating	835	795	760	720	680	630	585	540	505	475
	Blue [3]	Heating or alt Cooling	740	700	660	610	565	520	475	440	405	365
	Red [3, 7]	Alt Cooling. Do not use for heating	555	500	445	395	350	315	260	205	-	-
060E14--12	Gray	Cooling. Do not use for heating	1165	1140	1110	1080	1035	1000	960	920	870	825
	Blue	Heating or alt Cooling	1105	1085	1050	1010	975	930	890	845	795	755
	Yellow	Alt Cooling or alt Heating	1040	1000	960	920	880	840	785	740	690	640
	Orange [3]	Alt Cooling or alt Heating	840	795	750	705	655	610	555	500	450	395
	Red [3]	Alt Cooling. Do not use for heating	745	615	555	510	450	390	340	290	230	195
060E17--14	Gray	Cooling. Do not use for heating	1335	1300	1275	1230	1190	1135	1090	1040	985	925
	Yellow	Alt Cooling or alt Heating	1170	1135	1095	1045	995	940	890	825	770	700
	Blue [3]	Heating or alt Cooling	1010	965	910	855	800	735	675	615	555	505
	Orange [3]	Alt Cooling or alt Heating	960	905	855	800	740	675	615	555	505	460
	Red [3]	Alt Cooling. Do not use for heating	910	735	675	605	535	485	430	375	330	265
080E17--16	Gray	Cooling. Do not use for heating	1545	1505	1460	1420	1365	1320	1275	1225	1180	1135
	Blue	Heating or alt Cooling	1375	1330	1275	1225	1175	1125	1075	1025	970	920
	Yellow [3]	Alt Cooling or alt Heating	1195	1140	1090	1040	985	930	875	815	765	705
	Orange [3]	Alt Cooling. Do not use for heating	1015	955	900	845	780	730	670	615	550	490
	Red [3, 7]	Alt Cooling. Do not use for heating	945	735	575	520	450	375	325	260	-	-

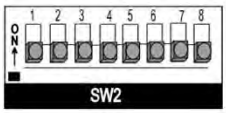


382

59TP6B
Two-Stage, Non-Communicating, Variable-Speed ECM, Multipoise, Condensing Gas Furnace

DIP SWITCH CONFIGURATION



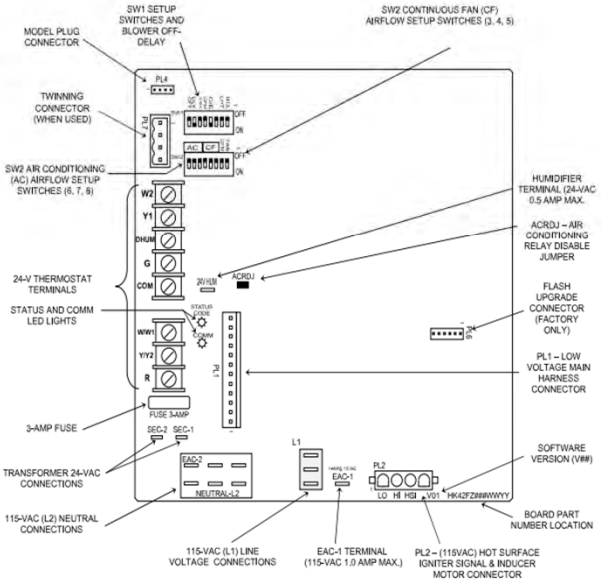


SW1

Switch	Description		Factory
1	**Status Code Recovery** - Turn ON to retrieve status codes.	See manual for use.	OFF
2	**Low Heat Only** - SW1 - 2 OFF allows two-stage operation SW1 - 2 ON for two-stage operation using two-stage TSTAT.	using single stage TSTAT (Adaptive Heat Mode).	OFF
3	**Not used**		OFF
4	**Comfort/Efficiency Adjust** - Turn ON to decrease low- approximately 10% for maximum comfort.	heat airflow by approximately 7% and high-heat	ON
5	**CFM per Ton Adjust** - See Airflow Tables in manual for	desired settings. Also see SW2 - 2.	OFF
6	**Component Self Test** - Turn ON to initiate Component disconnected. Turn OFF when Self Test is completed.	Self Test for troubleshooting assistance when R TSTAT lead is	OFF
7 & 8	**Blower Off Delay** - See manual or unit wiring diagram for Factory default is 120 Seconds.	settings. Adjustable 90 - 180 seconds.	7-ON 8-OFF

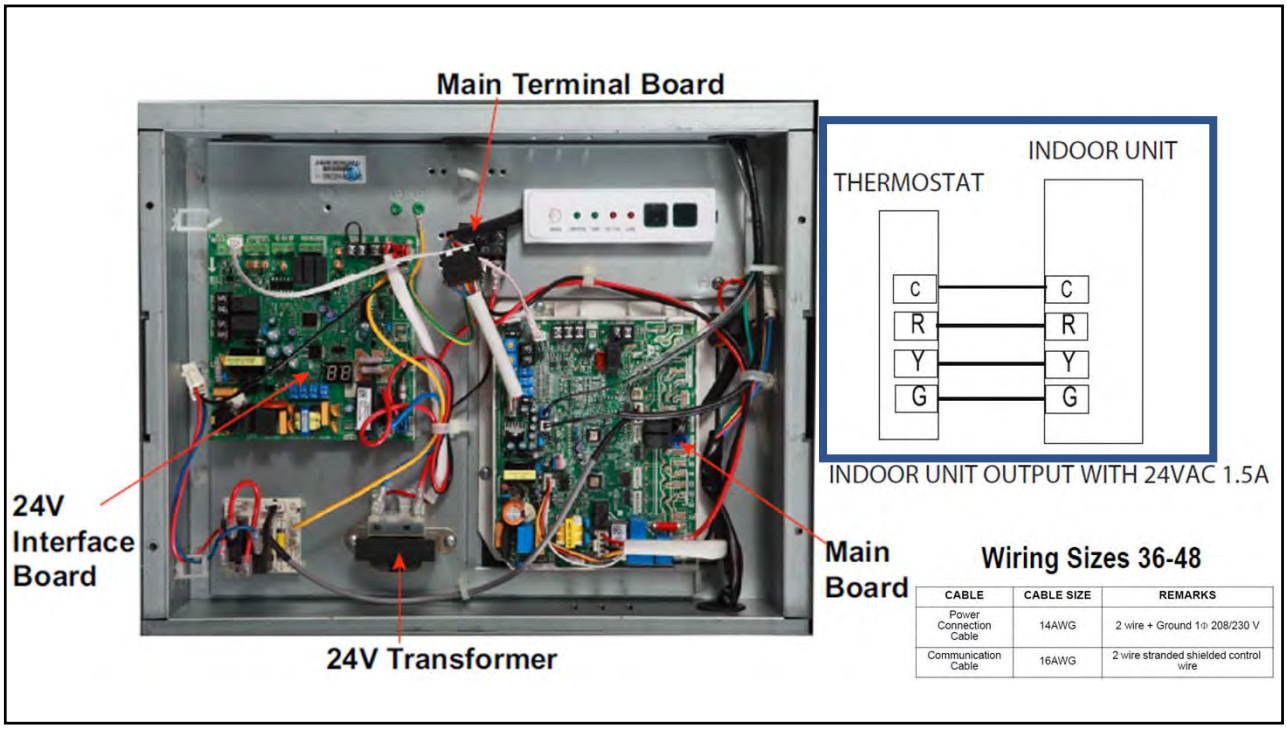
SW2

Switch	Description		Factory
1	**Twinning** - When Twinned furnace setup is required, SW2 - 1 SW2-1 ON selects the secondary furnace unit. See kit instructions	OFF selects the main furnace unit. for further details.	OFF
2	**CFM per Ton Adjust** - See Airflow Tables in manual for	desired settings. Also see SW1 - 5.	OFF
3-5	**CF Setup Switches** - The Continuous Fan setup switch selects airflow. See Cooling Air Delivery Tables and Continuous Fan delivery	desired CF and low-stage cooling (two-stage A/C units) Tables (when present) for specific switch settings.	ALL OFF
6-8	**A/C Setup Switches** - The Air Conditioning setup switch units) airflow. See Cooling Air Delivery Tables in manual for specific	selects desired cooling or high-stage cooling (two-stage switch settings.	ALL OFF

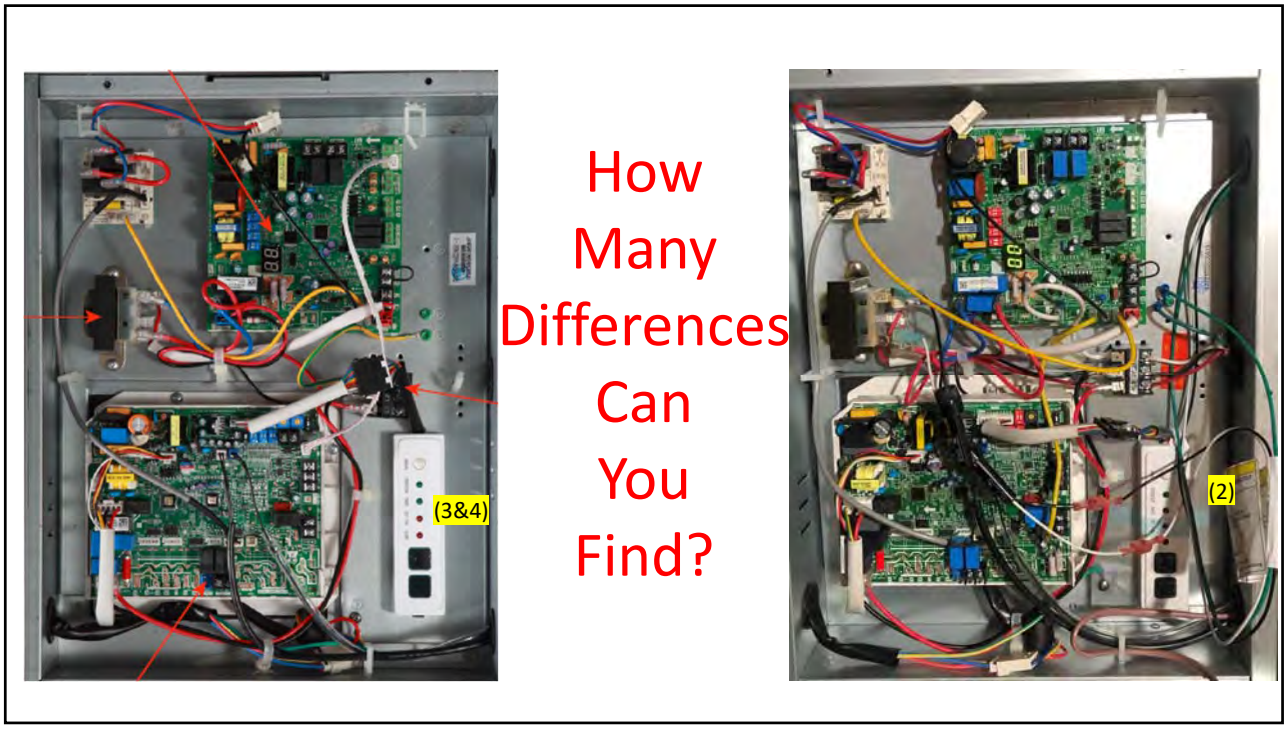


383

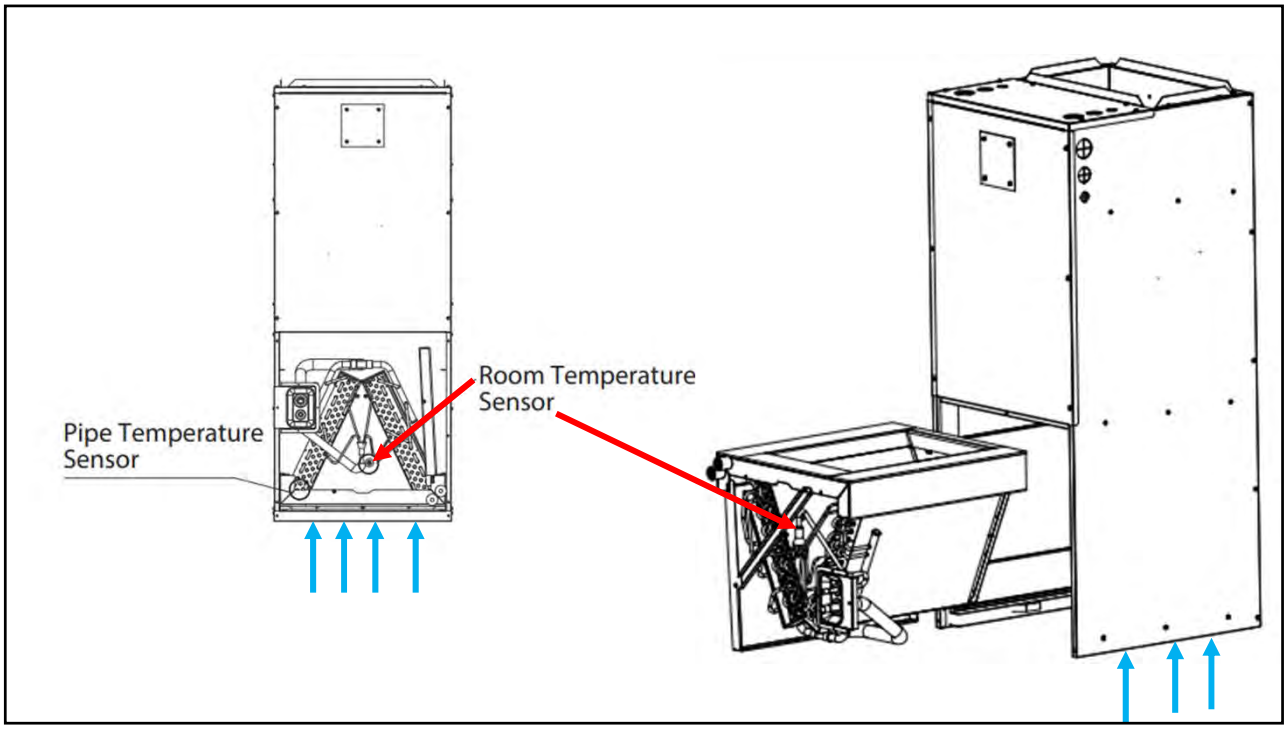
384


Main Terminal Board
24V
Interface
Board
24V Transformer
INDOOR UNIT
THERMOSTAT
C
R
Y
G
C
R
Y
G
INDOOR UNIT OUTPUT WITH 24VAC 1.5A
Main
Board
Wiring Sizes 36-48
CABLE
CABLE SIZE
REMARKS
Power Connection Cable
14AWG
2 wire + Ground 1Φ 208/230 V
Communication Cable
16AWG
2 wire stranded shielded control wire

385


(3&4)
How
Many
Differences
Can
You
Find?
(2)

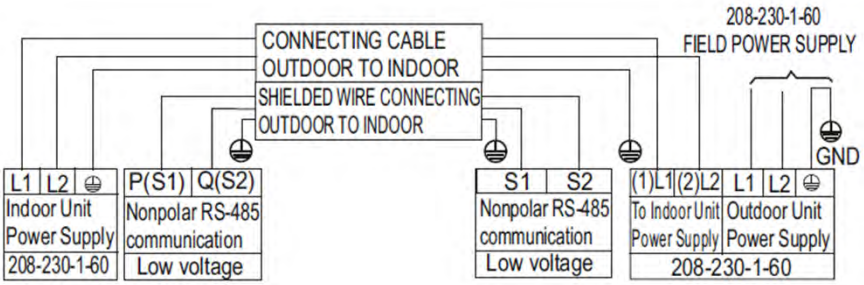
386

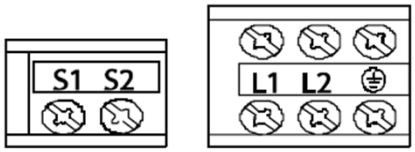


387

CONNECTION DIAGRAMS

Connection Diagram sizes 36-48



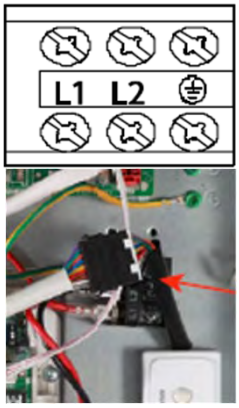


Do not use the thermostat wire for any connection between indoor and outdoor units.

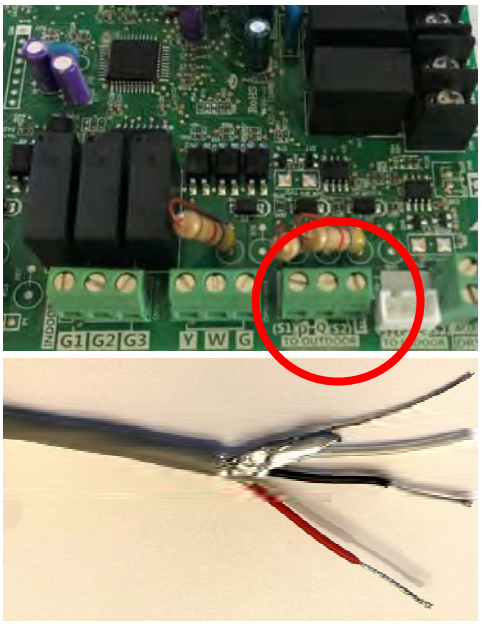
388

New High Static Fan coils. Communication Changes Depending on unit size!

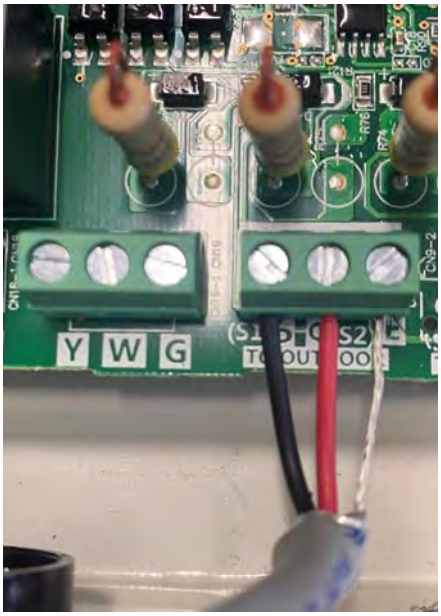
Hi Voltage Side!



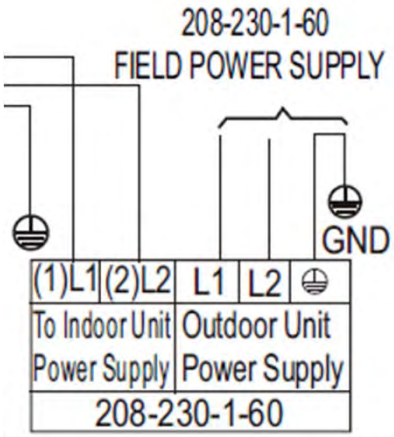
Communication Side



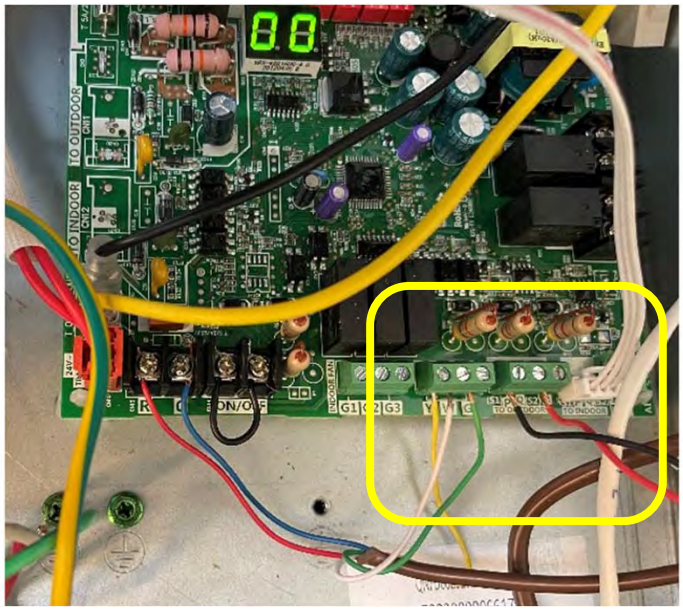
389



Please Note Outdoor Unit Grounded the Chassis of the Condenser!
Indoor unit Ground is connected to E!



390



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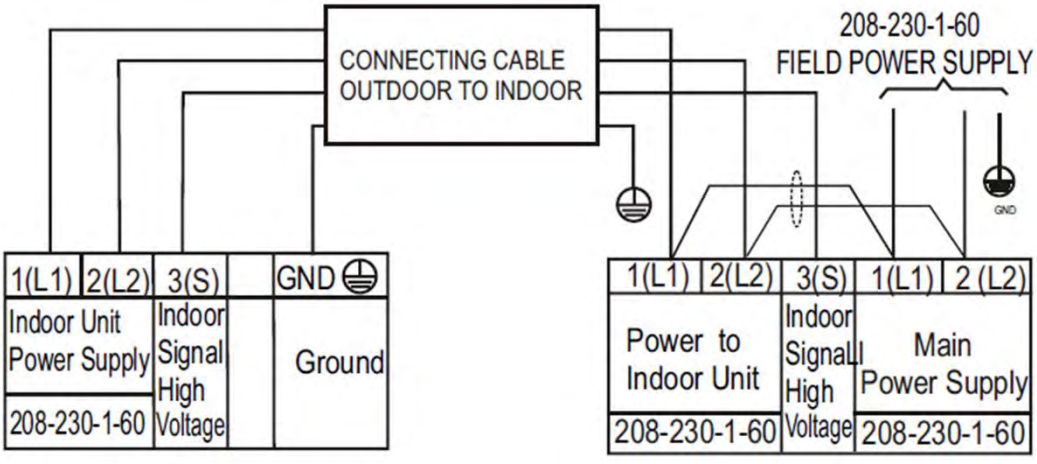
CONNECTION DIAGRAMS

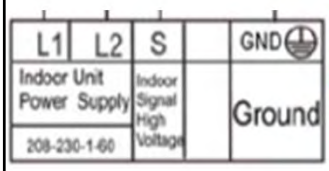
Connection Diagram (size 24K)



392

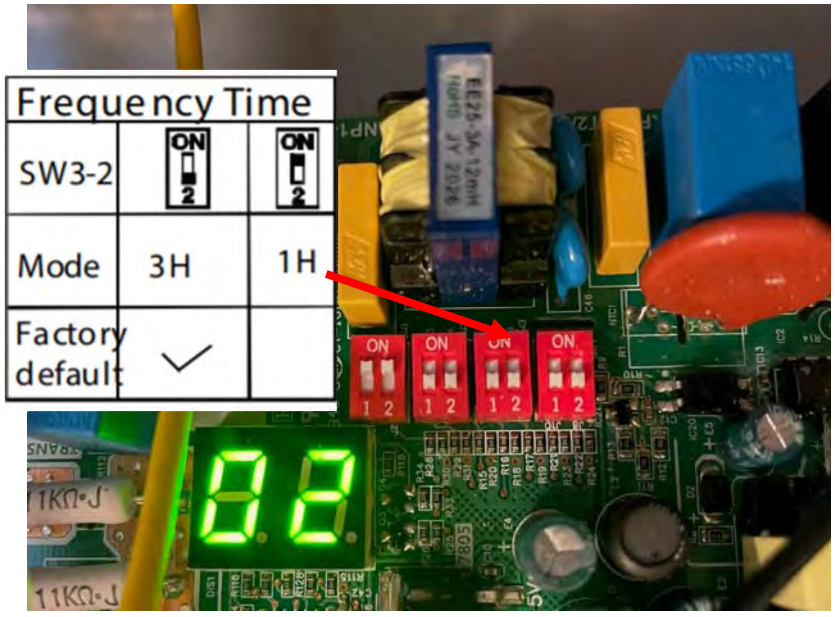
New High Static Fan coils. Communication Changes Depending on unit size!

Hi Voltage Side & Communication Side!



Communication Side On 24 Volt interface

393



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End Of class for today!
Have a fantastic day!

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