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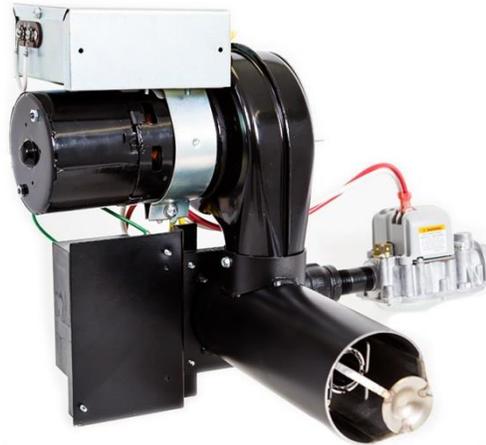
MODEL

SC80

GAS BURNERS

Manual 101285-001 | Revision J | Publication Date: 05/16/19

NOTE: Dimensions in () are informational only. English values take priority.



SPECIFICATIONS

BURNER MODEL

SC80

MINIMUM INPUT

20,000 Btu/hr (6 kW)

MAXIMUM INPUT

80,000 Btu/hr (23 kW)

FUELS

Natural & L.P. Gas

ELECTRICAL Power Supply – 120V/60Hz 1 Ph.

MOUNTING: Adjustable flange is standard

INSTALLATION OF BURNER

INSTALLATION OF THE BURNER MUST BE DONE BY A QUALIFIED INSTALLER IN ACCORDANCE WITH REGULATIONS OF THE NATIONAL FUEL GAS CODE ANSI Z223.1/NFPA 54, AND IN COMPLETE ACCORDANCE WITH ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.

INCORRECT INSTALLATION, ADJUSTMENT, OR MISUSE OF THIS BURNER WILL VOID THE WARRANTY AND COULD RESULT IN DEATH, SEVERE PERSONAL INJURY, OR SUBSTANTIAL PROPERTY DAMAGE.

A QUALIFIED INSTALLER IS THE PERSON WHO IS RESPONSIBLE FOR THE INSTALLATION AND ADJUSTMENT OF THE EQUIPMENT AND WHO IS LICENSED TO INSTALL GAS-BURNING EQUIPMENT IN ACCORDANCE WITH ALL CODES AND ORDINANCES.

BURNER IS SHIPPED AT LOW RATE AND MAX AIR. BURNER MAY NOT LIGHT IN THIS CONFIGURATION AND WILL NEED AIR ADJUSTMENT.

Overview of Safety Warning System and Your Responsibilities

The safety of you and others depends upon you thoroughly reading and understanding this manual. If you have questions or do not understand the information presented in this manual, **please call Wayne Combustion System or see www.waynecombustion.com**.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. The meaning of this safety alert symbol is as follows: **Attention! Become alert! Your safety may be at risk. The message that appears next to the warning describes the hazard, which can be either written or pictorially presented. NEVER remove or tamper with the warning labels, safety devices or guards fitted on the unit.**

Wayne Combustion Systems is **NOT** responsible for any bodily injury and/or property damage that may result from operation outside of the stated operating conditions for which this unit was intended.

Hazard Definitions:



Indicates a hazardous situation, which, if not avoided, will result in **death or serious bodily injury**.



Indicates a hazardous situation, which, if not avoided, could result in **death or serious bodily injury**.



Indicates a hazardous situation, which, if not avoided may result in **minor or moderate bodily injury**.



Indicates a situation that may result in equipment-related damage.

Hazard Level	Pictogram	Type	Hazard Explanation
 WARNING		Fire or Explosion	<p>Failure to follow safety warnings exactly could result in serious injury, death or property damage. Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.</p> <p>WHAT TO DO IF YOU SMELL GAS:</p> <ul style="list-style-type: none"> • Open windows. • Do not try to light any appliances. • Do not touch electrical switches; do not use any phone in your building. • Extinguish any open flame. • Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. • If you cannot reach your gas supplier, call the fire department.
 WARNING		Electric shock or burn	<p>High voltages are present in this equipment. Follow these rules to avoid electric shock:</p> <ul style="list-style-type: none"> • Use only a properly grounded circuit. A ground fault interrupter is recommended. • Do not spray water directly on burner. • Turn off power before servicing. • Read the owner's manual before using.
 WARNING		Overheating	<p>Should overheating occur:</p> <ul style="list-style-type: none"> • Shut off the manual gas control to the appliance. • DO NOT shut off power to the equipment, allow blower to continue running.
 WARNING		Carbon Monoxide Poisoning	<p>Carbon monoxide is a colorless, odorless gas that can kill. Follow these rules to control carbon monoxide:</p> <ul style="list-style-type: none"> • Do not use this burner if in an unvented, enclosed area. Carbon monoxide may accumulate. • Do not adjust the pressure regulator. High pressures produce carbon monoxide. • Check flue gases for carbon monoxide. This check requires specialized equipment. • Allow only qualified burner service persons to adjust the burner. Special instruments and training are required. • Read the burner manual before using. <p>CARBON MONOXIDE POISONING: Early signs of carbon monoxide poisoning are similar to the flu with headaches, dizziness, weakness, nausea, vomiting, sleepiness, and confusion. If you suspect carbon monoxide poisoning, get outside to fresh air immediately, and then call 911. Some people are more affected by carbon monoxide than others. These include pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol, and those at high altitudes. Propane/LP gas and natural gas are both odorless. An odor-making agent is added to each of these gases. The odor helps you detect a gas leak. However, the odor added to these gases can fade. Gas may be present even though no odor exists.</p>

Hazard Level	Pictogram	Type	Hazard Explanation
 WARNING		Proposition 65 material	This product can expose you to chemicals, including lead, nickel, carbon monoxide and sulfur dioxide, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information, go to www.p65Warnings.ca.gov .
 NOTICE		Special Requirements	When contacting Wayne Combustion Systems for service information, please have the burner specification number and model number when calling or writing.
 NOTICE		Flame Spreader Position	For shipping purposes, the flame spreader, if adjustable, is fully retracted. Flame spreader adjustment is mandatory and affects burner ignition and performance.

If any instructions in the manual are not clear, contact Wayne Combustion Systems at 1-260-425-9200 for assistance.

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SECTION I: INSTALLATION AND SETUP

This manual is a guide for the installation and operation of the Wayne Combustion Systems SC80 burner. The SC80 is a natural gas or LP fired burner capable of firing in the range of 20,000 – 80,000 Btu/hr. Due consideration was given to making the SC80 as simple and easy to install and service as possible without weakening its durability or efficiency. The burner is supplied as a completely assembled package unit.

NOTE: The burner must be installed in such a manner that all controls will be readily accessible for inspection, cleaning, adjustment and repairs.

INSTALLATION OF MOUNTING FLANGE

Position the mounting flange on the appliance wall, adjusting orientation as necessary until the bolt pattern of the appliance allows the flange to sit flush. (See Figure 1 for flange dimensions.)

Note the orientation of the flange and remove it so that the flange gasket may be placed between the appliance wall and the flange. Tighten the flange to the appliance wall.

Insert the burner tube into the flange and position the burner in the appliance. Tighten the flange onto the burner tube.

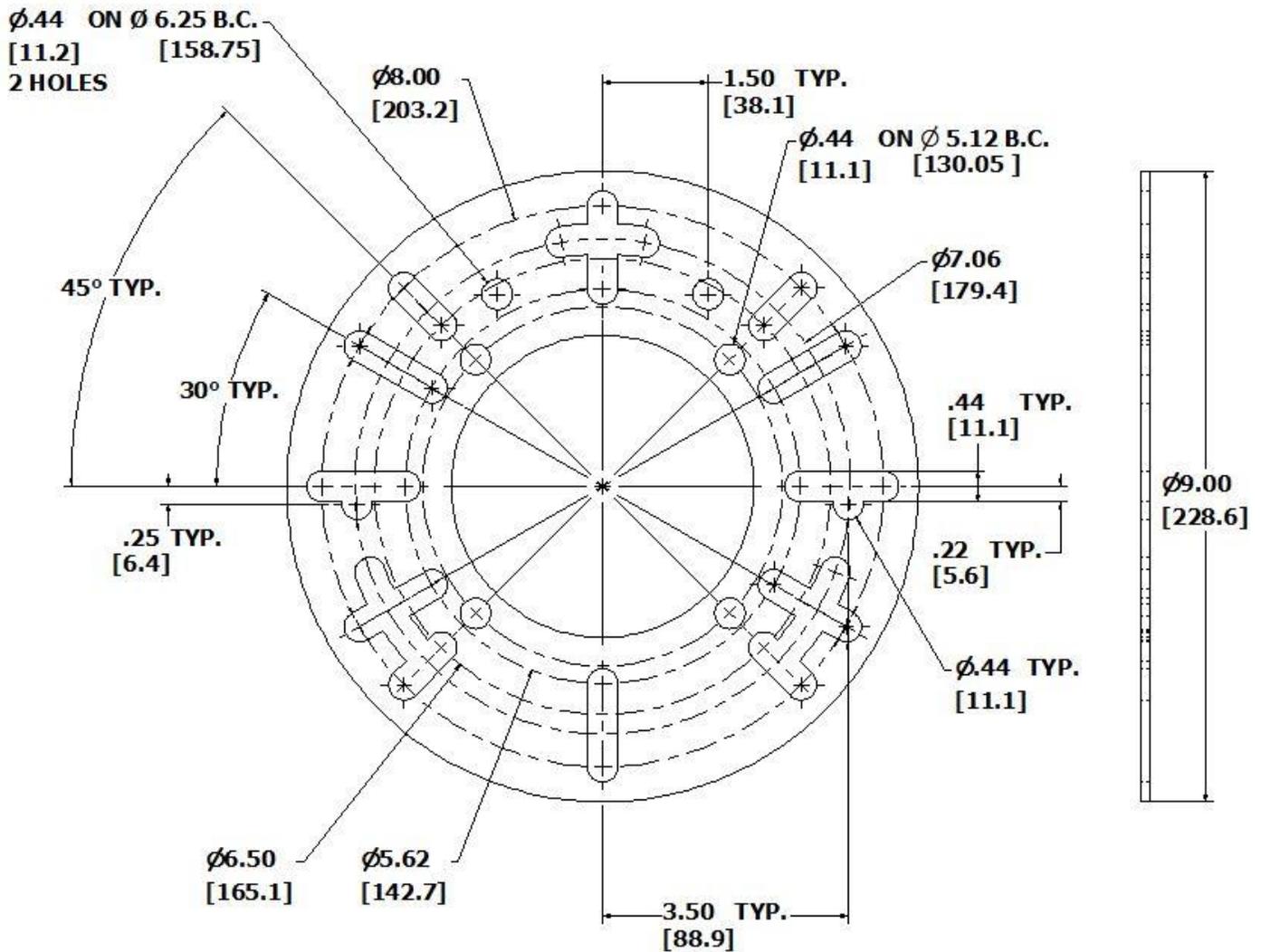


Figure 1: Adjustable Mounting Flange Dimensions
DETERMINE ORIFICE SIZE AND RATE

Once the desired heat output of the burner has been determined, the gas orifice must be properly sized. Stock burners come with an orifice near the low end of the burner's firing range (.0846" diameter for natural gas fired burners or .047" diameter for propane fired burners). Burners produced for OEM applications will have their orifices sized per customer specifications.

To determine the proper orifice size for the application, refer to Table 1 below. Locate the drill size by selecting the proper column based on the gas to be used. Example: To fire 80,000 Btu/hr on natural gas requires an orifice drilled with a #19 drill bit (0.166").

NOTE: Numbered drill bit sizes are valid bit sizes. They are machinist's drill bits. Decimal values have been provided in Table 1 as assistance in determining closest fractional drill bit size to the numbered drill bit size.

The correct manifold pressure for natural gas is 3.5" w.c (8.7 mbar). Only minor adjustments in the input rate should be made by adjusting the pressure regulator. The minimum manifold pressure should be 3.0" w.c. (7.5 mbar) and the maximum pressure should be 3.5" w.c. (8.7 mbar). The next size larger or smaller orifice size should be used if the desired input rating cannot be obtained within the above manifold pressure adjustment range.

The correct manifold pressure for L.P. gas is 3.5" w.c. (8.7 mbar). Only minor adjustments in the input rate should be made by adjusting the pressure regulator. The minimum manifold pressure should be 3.0" w.c. (7.5 mbar), the maximum pressure 3.5" w.c. (8.7 mbar). If the desired input rating cannot be obtained within the above manifold pressure and adjustment range then the next size larger or smaller orifice size should be used.

 <b style="font-size: 1.2em;">WARNING	GAS LEAK HAZARD
<p>Liquefied petroleum gas is heavier than air. All connections should be checked for leaks using a soapy solution applied to gas connections. Leaking gas will settle in low lying areas such as basements and trenches. This can lead to asphyxiation and explosion.</p>	

Table 1: Orifice Size and Drill Bit Chart

Btu/hr(kW) Input	Natural Gas: 3.5" w.c. (8.7 mbar)		Propane Gas: 3.5" w.c. (8.7 mbar)	
	Number/ Letter/Fraction	Decimal (in)	Number/Fraction	Decimal (in)
20,000 (5.9)	#45	0.082	#50	0.071
25,000 (7.3)	3/32"	0.094	5/64"	0.078
30,000 (8.8)	#38	0.101	#44	0.086
35,000 (10.3)	7/64"	0.109	#43	0.089
40,000 (11.7)	#32	0.116	#41	0.096
45,000 (13.2)	1/8"	0.125	#38	0.1015
50,000 (14.7)	#30	0.129	#36	0.107
55,000 (16.1)	#29	0.136	7/64"	0.109
60,000 (17.6)	#27	0.144	#32	0.116
65,000 (19.0)	#25	0.150	#31	0.120
70,000 (20.5)	5/32"	0.156	1/8"	0.125
75,000 (22.0)	#20	0.161	#30	0.1285
80,000 (23.4)	#19	0.166	#29	0.136

NOTE: The Btu/hr input values in Table 1 show the approximate hourly input of the burner for the various drill bit sizes shown. To determine the actual input of the burner by using the gas meter, follow these steps:

- 1) Turn off all other gas appliances.
- 2) The hand with the lowest cubic feet value (fastest revolving dial) should be clocked for one complete revolution.
- 3) Divide 3,600 by the time in seconds for one complete revolution and multiply by the dial value (1, 2, or 5 cubic feet depending on size of meter.)
- 4) Multiply the number from step (3) by the heating value of the gas to obtain the input rate in Btu per hour.

EXAMPLE: Time in seconds for one complete revolution of dial is 72. 3,600 divided by 72 is 50, 2 cubic foot was timed therefore 50 x 2 is 100. Multiply 100 by heating value of gas which is 1,075 for natural gas; and this will give you an input of 107,500 Btu/hr (31.5 kW). Use a heating value of 2500 for LP gas.

IMPORTANT: The minimum supply pressure is 4.5" w.c. (11 mbar) for natural gas and 4.5" w.c. (11 mbar) for L.P. gas. The maximum supply pressure is 14" w.c. (35 mbar) for natural gas and 14" w.c. (35 mbar) for L.P. gas.

Valve is rated for 0.5 PSI or 14" w.c. Over pressurizing valve may cause damage to the valve.

CHANGING THE ORIFICE

When leaving the factory, each stock burner is sent out firing close to the minimum Btu/hr rating.

To increase the Btu/hr rating (increase the heating output) the orifice must either be changed or drilled out to the correct size. To determine drill bit size for required rate, see Table 1.

Before replacing the orifice, gas supply and power must be shut off. To replace the orifice, locate and remove the four screws that hold the orifice holder and gas pipe train to the back of the burner (Figure 2).

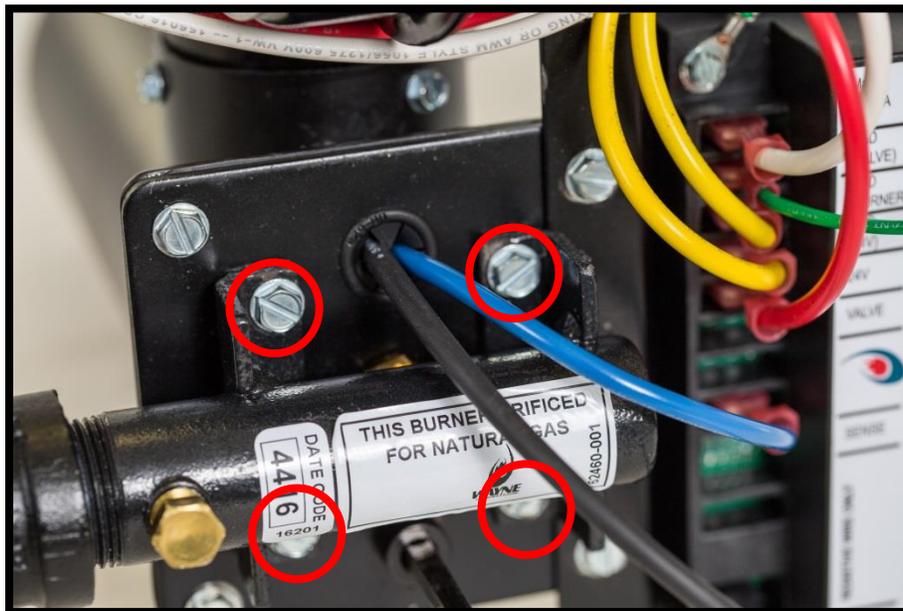


Figure 2: Orifice Holder/Gas Pipe Train Screw Location

Pull the gas train out of the burner. The orifice is located on the end of the gas train and looks like a brass plug. Remove the orifice with a 9/16" wrench (Figure 3).

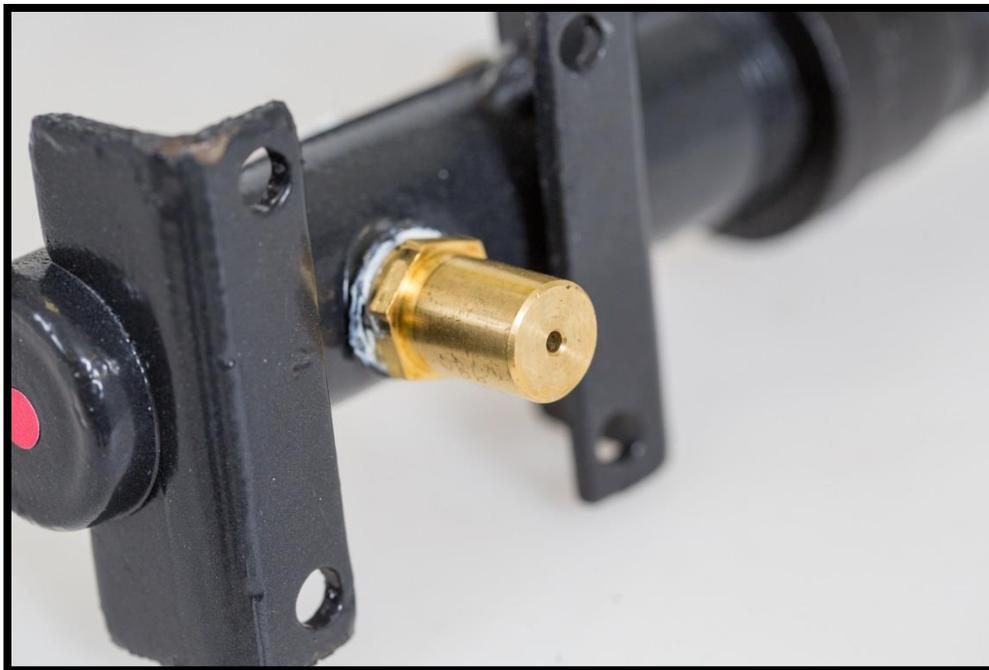


Figure 3: Orifice Location

To drill the orifice, place it face down in a vice and drill through the back side. The back side is tapered and will make lining up the drill bit easier. Deburr the orifice and mark new size on orifice with permanent marker. Reinstall the orifice and secure the gas pipe train to the back of the burner using the nuts. **Record drilled orifice size in installation log in manual.**

NOTE: Numbered and lettered drill sizes are valid bit sizes. They are machinist's drill bits.

The burner is now ready to be connected to the gas supply piping; see instructions in next section.

INSPECTION AND SIZING OF GAS PIPING

All piping must comply with local codes and ordinances or the National Fuel Gas Code ANSI Z223.1/NFPA No. 54. A sediment trap or drip leg must be installed in the supply line to the burner. A union shall be installed in the gas line upstream from the control manifold and downstream from the sediment trap or drip leg (See Figure 5). A 1/8" NPT plugged tapping pressure gauge port shall be installed immediately upstream of the gas supply connection for the purpose of determining the gas supply pressure to the burner. A manual shutoff valve shall be installed in the gas supply line external to the appliance (See Figure 4).

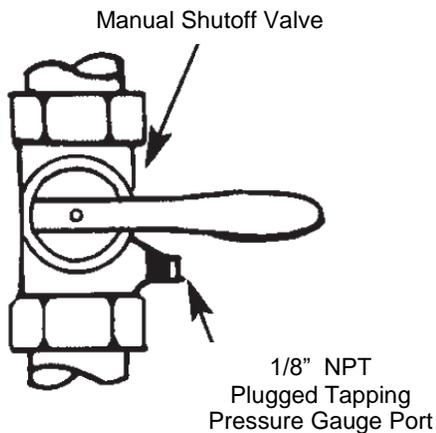
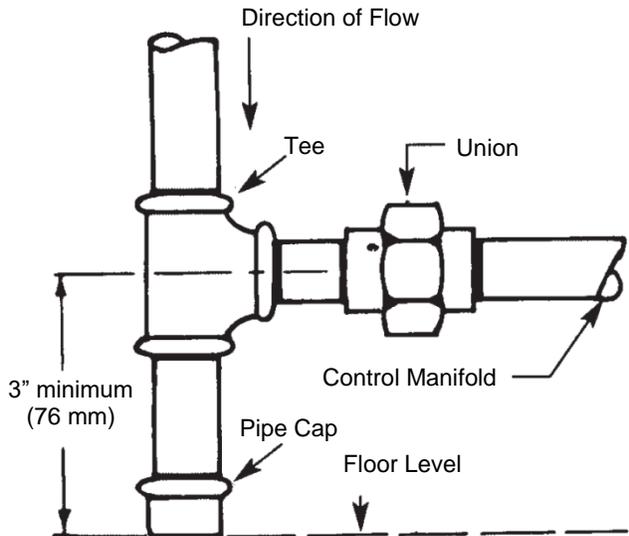


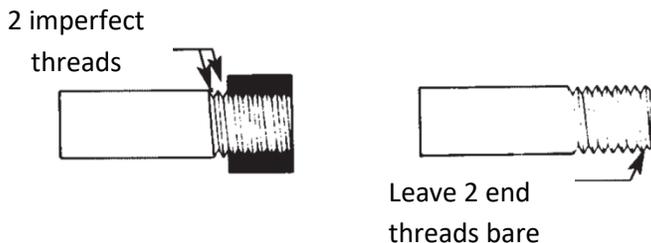
Figure 4: Manual Shut off Valve and Pressure Tap



Location of union and drip leg for connecting conversion burner to house piping.

Figure 5: Pipe Union and Fittings

The gas line should be a separate supply direct from the meter to the burner. It is recommended that new pipe be used and located so that a minimum amount of work will be required in future servicing. The piping should be so installed as to be durable, substantial, and gas tight. It should be clear and free from cutting burrs and defects in structure or threading. Aluminum tubing should not be used for the main gas supply. Joint compounds (pipe dope) should be used sparingly on male threads only and be approved for all gases.



Pipe Size Inch (mm)	Effective Length of Thread Inch (mm)	Overall Length of Thread Inch (mm)
3/8 (9.5)	3/8 (9.5)	9/16 (14.3)
1/2 (12.7)	1/2 (12.7)	3/4 (19.1)
3/4 (19.1)	1/2 – 9/16 (14.3)	13/16 (20.6)
1 (25.4)	9/16 (14.3)	1 (25.4)

Figure 6: Proper Piping Practice

It is recommended that tables 2, 3, and 4 be used to determine the size pipe to use from the meter to the burner. The building structure should not be weakened by installation for the gas piping. The piping should not be supported by the other piping, but should be firmly supported with pipe hooks, straps, bands or hangers. Butt or lap welded pipe should not be bent. **Note: Each elbow, union, and tee adds approximately 2.5 feet of pipe.**

The gas piping should be so installed so as to prevent an accumulation of condensation and it must be protected against freezing. A horizontal pipe should be pitched so that it grades toward the meter and is free from sags. The pipe should not be run through or in an air duct or clothes chute. The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of the system at test pressure in excess of 1/2 psig (34 mbar gauge). The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff

valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (34 mbar gauge).

Table 2: Pipe Sizing Chart for Natural Gas (0-0.5 psi) with Straight Schedule 40 Metal Pipe

The following chart is based on **0-0.5 psi** inlet pressure, specific gravity of **0.6**, and a pressure loss of **0.5" w.c.**.

Maximum Capacity of Pipe Size in Btu per Hour

Length of Pipe (ft)	1/2"	3/4"	1"	1 1/4"	1 1/2"
10	175,000	360,000	680,000	1,400,000	2,100,000
20	120,000	250,000	465,000	950,000	1,460,000
30	97,000	200,000	375,000	770,000	1,180,000
40	82,000	170,000	320,000	660,000	990,000
50	73,000	151,000	285,000	580,000	900,000
60	66,000	138,000	260,000	530,000	810,000
70	61,000	125,000	240,000	490,000	750,000
80	57,000	118,000	220,000	460,000	690,000
90	53,000	110,000	205,000	430,000	650,000
100	50,000	103,000	195,000	400,000	620,000
150	40,000	84,000	160,000	325,000	500,000
200	35,000	72,000	135,000	280,000	430,000

Table 3: Pipe Sizing Chart for Liquid Propane (11" w.c.) with Straight Schedule 40 Metal Pipe

The following chart is based on **11" w.c.** inlet pressure and a pressure drop of **0.5" w.c.**

Special use: Piping sizing between single or second stage (low pressure regulator) and appliance.

Maximum Capacity of Pipe Size in Btu per Hour

Pipe Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	3"
Actual ID	0.622	0.824	1.049	1.38	1.61	2.067	3.068
Length of Pipe (feet)	Maximum Capacity in Btu/hr						
10	291,000	608,000	1,145,000	2,352,000	3,523,000	6,786,000	19,119,000
20	200,000	418,000	787,000	1,616,000	2,422,000	4,664,000	13,141,000
30	160,000	336,000	632,000	1,298,000	1,945,000	3,745,000	10,552,000
40	137,000	287,000	541,000	1,111,000	1,664,000	3,205,000	9,031,000
50	122,000	255,000	480,000	984,000	1,475,000	2,841,000	8,004,000
60	110,000	231,000	434,000	892,000	1,337,000	2,574,000	7,253,000
80	94,000	197,000	372,000	763,000	1,144,000	2,203,000	6,207,000
100	84,000	175,000	330,000	677,000	1,014,000	1,952,000	5,501,000
125	74,000	155,000	292,000	600,000	899,000	1,730,000	4,876,000
150	67,000	140,000	265,000	543,000	814,000	1,568,000	4,418,000
200	58,000	120,000	227,000	465,000	697,000	1,342,000	3,781,000
250	51,000	107,000	201,000	412,000	618,000	1,189,000	3,351,000
300	46,000	97,000	182,000	373,000	560,000	1,078,000	3,036,000
350	42,000	89,000	167,000	344,000	515,000	991,000	2,793,000
400	40,000	83,000	136,000	320,000	479,000	922,000	2,599,000

Table 4: Pipe Sizing Chart for Liquid Propane (11" w.c.) with Copper Tubing
 The following chart is based on 11" w.c. inlet pressure and a pressure drop of 0.5" w.c.

Maximum Capacity of Tube Size in Btu per Hour				
Pipe Size	1/2"	5/8"	3/4"	7/8"
Length (feet)	Maximum Capacity in Btu/hr			
10	110,000	206,000	348,000	536,000
20	76,000	141,000	239,000	368,000
30	61,000	114,000	192,000	296,000
40	52,000	97,000	164,000	253,000
50	46,000	86,000	146,000	224,000
60	42,000	78,000	132,000	203,000
70	38,000	71,000	120,000	185,000
80	36,000	67,000	113,000	174,000
90	33,000	62,000	105,000	161,000
100	32,000	59,000	100,000	154,000

NOTE: Copper tubing shall comply with standard type K or L of ASTM B 88 or ASTM B 280.

TESTING PIPING FOR LEAKS

Before turning gas under pressure into piping, all openings from which gas can escape should be closed. Immediately after turning on gas, the system should be checked for leaks. This can be done by watching the 1/2 cubic feet test dial and allowing 5 minutes to show any movement, or by soaping each pipe connection and watching for bubbles. If a leak is found, make the necessary repairs and repeat the above test. Defective pipes or fittings should be replaced and not repaired. **Never use a flame** or fire in any form to locate gas leaks, use a soap solution.

After the piping and meter have been checked completely, purge the system of air. Do not bleed the air inside the furnace. Be sure to relight all the gas pilots on other appliances.

ELECTRICAL WIRING OF BURNER

The SC80 burner is shipped completely wired. It is only necessary to supply the 120 volt circuit, thermostat and limit circuit. All wiring must conform with the National Electric Code or the code legally authorized in the locality where the installation is being made. The burner, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the latest edition of the National Electrical Code, ANSI/NFPA No. 70. See wiring diagrams in the Section V: Service and Troubleshooting for reference on wiring, thermostat connection, and limit circuit. If an external electrical source is utilized, the conversion burner, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the latest edition of the National Electrical Code ANSI/NFPA No. 70.

The burner ships with a jumper wire on the thermostat (T-T) terminals. The jumper needs to be removed for remote thermostat control and the thermostat needs to be connected per wiring diagrams. T-T terminal is an open/close switch for the burner and no voltage should be connected to it. For boilers it may be necessary to leave the T-T terminal jumped as the aquastat may be providing the voltage to the burner and controlling when voltage is sent to the burner. The burner is controlled by the appliance. Once wiring is complete between burner and appliance, verify appliance is controlling the burner's on/off operation. When connecting the burner to the 120 volt electrical supply, utilize the knockout provided on the burner's junction box.

NOTICE

The burner is equipped with its own 24 Vac transformer. Do not add any 24 Vac power consuming device to the 24 Vac control circuit of the burner, as it could overload the transformer. Overloading the transformer will damage the transformer.

Set the room thermostat "heat anticipator" for the total current draw of the 24 Vac burner operation circuit (HSG200 0.55 amps, HSG400 0.7 amps).

CAUTION



Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

NOTICE

If any of the original burner wiring must be replaced, it must be replaced with #18 AWG 105° C wire or equivalent.

INSPECTION OF LIMIT CONTROL SWITCHES

Warm air furnaces (gravity and forced air) should be equipped with an automatic temperature limit control switch. Hot water boilers (forced or gravity) should be equipped with an automatic temperature limit control switch. Steam or vapor boilers should be provided with means to guard against firing a dry boiler or one in which the water is dangerously low.

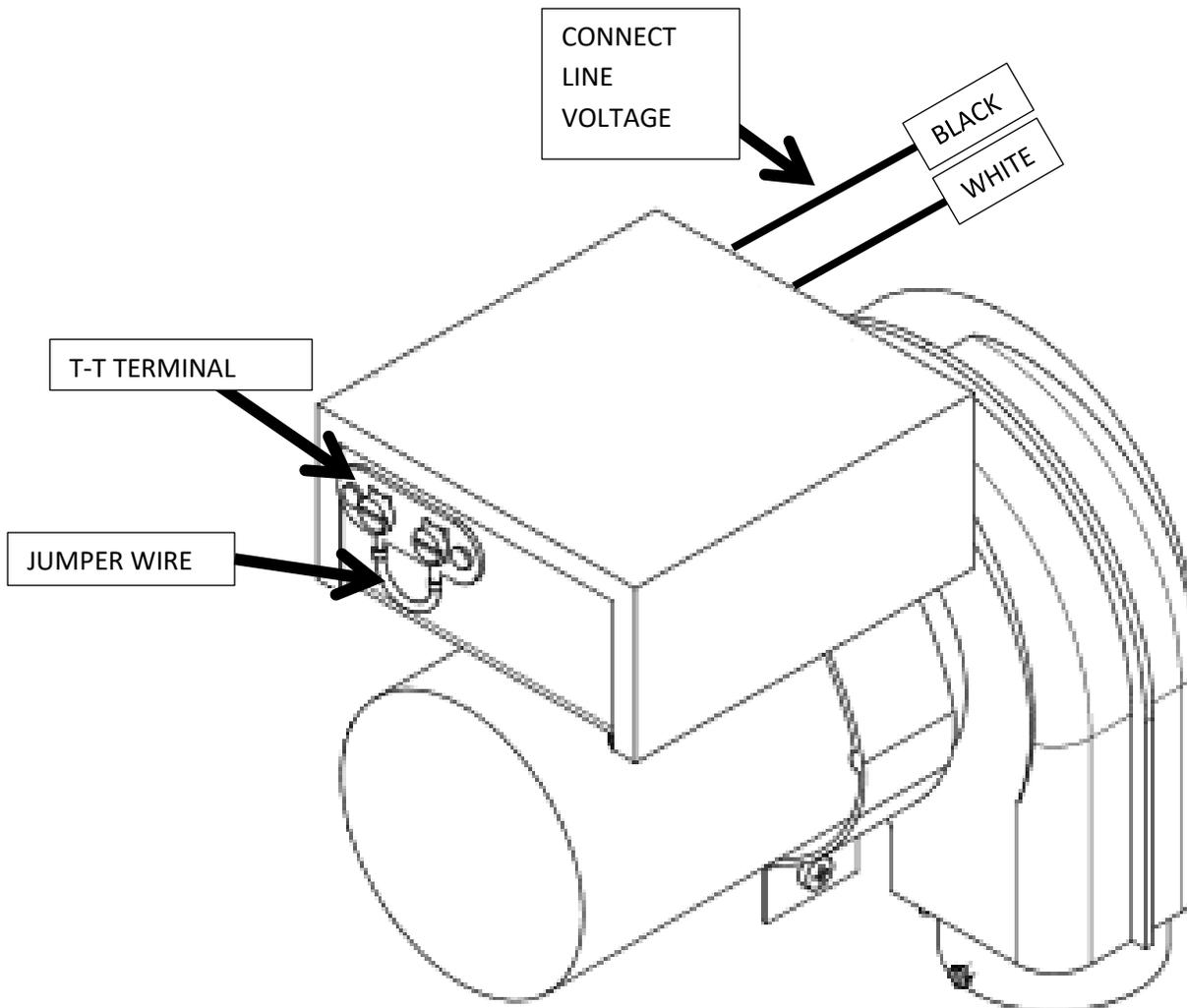


Figure 7: T-T Terminal Location

LOW/HIGH SC80 MODEL

The SC80 Low/High model operates at different gas pressures than the standard SC80 model. This model has a special gas valve marked “LO HI” near the solenoid and has four terminals connected to the gas valve instead of just two. The SC80 Low/High model contains a low firing rate and a high firing rate. The Low/High SC80 operates at 3.5 in. w.c. on both natural and propane gas. The table below lists orifice sizes based on the manifold pressure of 3.5 in. w.c. for the high fire mode. Low fire mode utilizes the same orifice as high fire mode but uses a reduced pressure to achieve its lower rate. The pressure required to achieve a desired low mode firing rate is dependent on the orifice selected so it can vary depending the high rate required for the application.

Table 5: High Fire Mode Orifice Size and Drill Bit Chart

Btu/hr(kW) Input	Natural Gas: 3.5" w.c. (8.7 mbar)		Propane Gas: 3.5" w.c. (8.7 mbar)	
	Number/Fraction	Decimal (in)	Number/Fraction	Decimal (in)
30,000 (8.8)	#38	0.101	2.15 mm	0.085
40,000 (11.7)	#32	0.116	#41	0.096
50,000 (14.7)	#30	0.129	#36	0.107
60,000 (17.6)	#27	0.144	3.00 mm	0.118
70,000 (20.5)	5/32"	0.156	3.20 mm	0.126
80,000 (23.4)	#19	0.166	#29	0.136

ELECTRICAL WIRING OF LOW/HIGH SC80

The Low/High SC80 is wired similar to the standard SC80, but utilizes a different valve. The low fire mode operates the same as the standard SC80 and utilizes the same (T-T) terminals mentioned for the standard SC80. High fire mode requires a separate 24VAC thermostat to power the high fire side of the gas valve and low fire mode to be energized. The separate thermostat controls when high fire mode is energized, but high fire mode will not operate unless low fire mode is energized which is controlled by the SC80’s ignition control. A wiring diagram is shown below. The yellow wire is connected to the high terminal and the brown wire is connected to the common wire. The yellow and brown wires are to be connected to the separate 24VAC thermostat and require 24VAC.

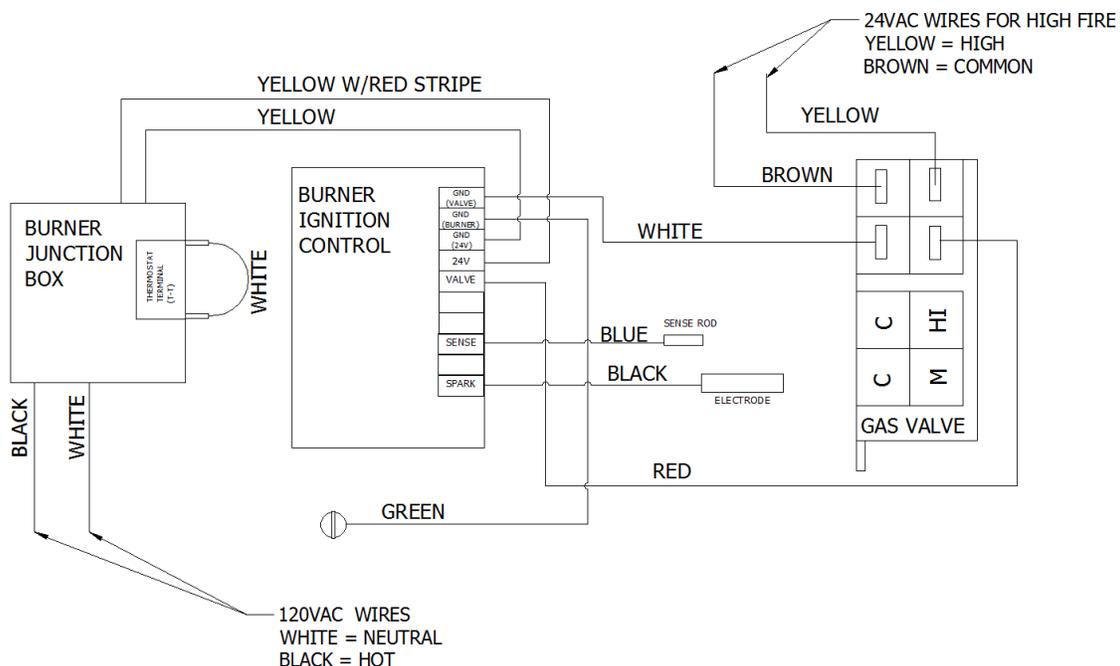


Figure 8: Wiring Diagram for Low/High SC80

SECTION II: INITIAL START UP

OPERATION OF BURNER

Starting the burner:

- Ensure power and gas are being supplied to the burner.
- Have the appliance thermostat call for heat. Burner should start after progressing through the startup sequence described in the section below.

To put burner out of operation:

- Turn off electrical supply.

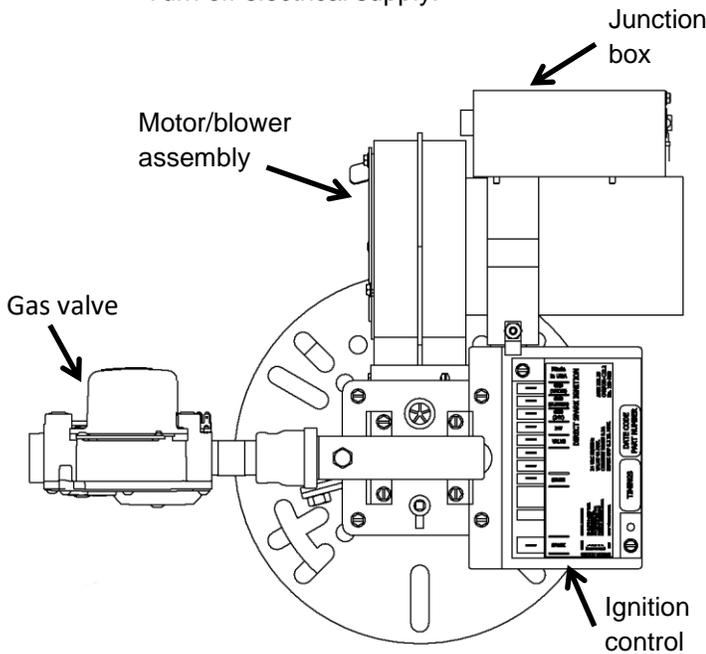


Figure 9: Burner Component Locations

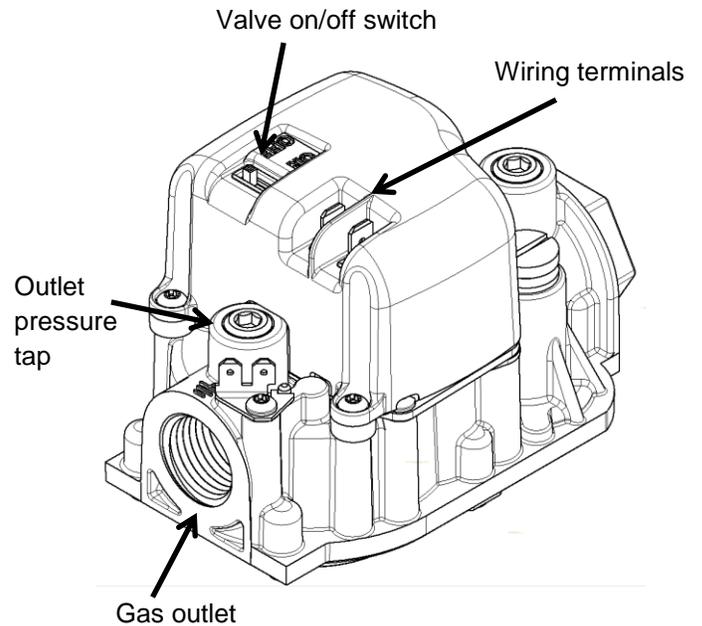


Figure 10: Detailed View of Gas Valve

BURNER OPERATION

On every call for heat (system start), the ignition control performs a 30 second pre-purge. Upon completion of the pre-purge, the ignition control opens the gas valve operator in the gas control. This allows gas to flow to the burner. Simultaneously, the electronic spark generator in the control produces a spark pulse output. This voltage produces a spark at the burner spark electrode, igniting the gas flowing around the electrode. If flame is not detected during the trial for ignition, the burner will try to light two more times, each preceded by another 30 second pre-purge. If flame is not detected after the third trial for ignition, the ignition control will go into a “lock-out” condition. If this occurs, proceed to the section titled SAFETY LOCK-OUT TIME.

SAFETY LOCK-OUT TIME

The trial for ignition timer circuit starts timing the moment the trial for ignition starts. If the designated trial for ignition time expires prior to the detection of a flame, the ignition control will attempt to light again. After failing to light three times, the control will go into a “lock-out” condition. Before another attempt to start the burner can be made, the ignition control must be reset by removing the call for heat or powering off the appliance. Wait at least one (1) minute and then turn the system “ON”. If normal ignition does not occur, use Section V: Servicing and Troubleshooting to determine the problem.

OPTIONAL ALARM CONTACT

Some SC80 burners have an alarm contact that can be used to notify equipment operators in case of a lockout. This contact is available on Wayne controls with P/N 64578-001. The “alarm” contact will be energized with 24 Vac anytime the ignition control locks out. The alarm voltage can only be disabled by cycling power to the ignition control, for example, by turning the power to the burner off, then on again. If an OEM is using this contact, it will be connected to a light or alarm. Consult OEM literature for proper wiring of this contact into their equipment and what actions to take if alarm activates.

COMBUSTION ADJUSTMENT OF BURNER

All adjustments below must be made with the following equipment:

1. Draft Gauge
2. O₂ or CO₂ Analyzer
3. CO Tester
4. Water Column Gauge

Air Shutter Adjustment

To adjust the air shutter, loosen the indicated nut and then spin the disc to either increase or decrease the size of the openings. Increasing the air shutter opening will usually lower the CO₂ and CO readings. To determine the correct air shutter adjustment a combustion analyzer capable of measuring CO₂ (or O₂) and CO must be used.

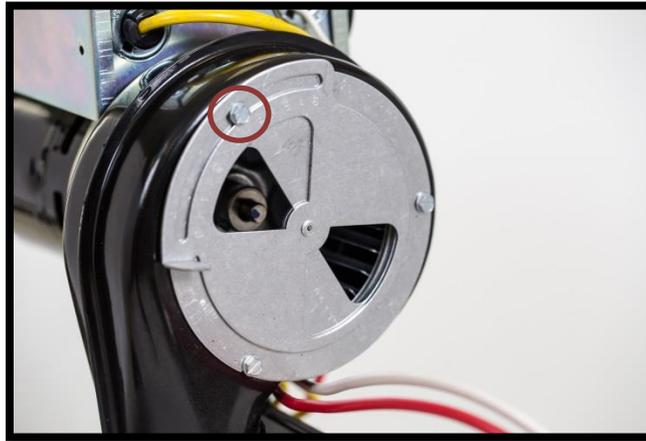


Figure 11: Air Shutter Lock Nut Location

For natural gas applications, best performance will be achieved with a CO₂ setting of 8% to 10% (3% to 6.5% O₂) and CO should be minimized with a goal of 100 ppm or less. **In no case should CO be above 400 ppm.**

For propane gas applications, best performance will be achieved with a CO₂ setting of 9.5% to 11.8% (3% to 6.5% O₂) and CO should be minimized with a goal of 100 ppm or less. **In no case should CO be above 400 ppm.**

Stack temperatures for furnaces and boilers are recommended to be between 350 and 400 degrees Fahrenheit. Tighten the lock nut to secure the air shutter. After the air is adjusted and the burner is running properly, be sure to record all set up information and leave it with the burner.

FINAL INSTALLATION INSTRUCTIONS

Once adjustments to the burner are complete and burner is set up per the manual, record combustion numbers measured during setup, burner model number, model specification number, inlet gas pressure, date of installation, and contractor contact information in the Installation Log. Leave the manual with appliance.

SECTION III: GAS CONVERSION

NATURAL GAS AND LP CONVERSION INSTRUCTIONS

In order to allow SC80 burners to be converted from natural gas to LP gas operation, or from LP to natural gas operation, Wayne Combustion Systems has created gas conversion kits that contain all the parts necessary for any burner model. The part numbers for these kits are as follows:

- 64594-001 Kit for converting natural gas burners to LP gas.
- 64595-001 Kit for converting LP gas burners to natural gas.

In addition to the necessary parts to complete the gas conversion, each kit contains detailed instructions for the conversion. To order the appropriate gas conversion kit, please contact a local wholesaler. The Wayne Combustion Customer Service Department can assist in locating the nearest wholesaler.

The conversion will require drilling a new gas orifice, properly adjusting the gas pressure, and applying new labels to the burner. In order to assist with the planning of a conversion from natural to LP gas, or LP gas to natural, a list of necessary tools/equipment is shown below:

Equipment (Both Kits):

- | | | |
|----------------------------------|--|------------------------------|
| 1. Slack tube manometer | 7. 1/8" Diameter clear or rubber tubing | 13. Drill Index (drill bits) |
| 2. Flat head screw driver | 8. An Instrument to measure CO ₂ -% | 14. Drill |
| 3. 3/16" Allen wrench | 9. An Instrument to measure CO-ppm | 15. Conversion kit |
| 4. 1/2" Open end wrench | 10. Orifice chart | 16. Soapy water bottle |
| 5. 9/16" Open end wrench | 11. Stop watch | 17. Two 10" pipe wrenches |
| 6. 1/8" NPT brass barbed fitting | 12. Burner manual | |

To complete the conversion, follow the directions provided with the kit.

SECTION IV: CONSUMER INSTRUCTIONS

GENERAL INSTRUCTIONS FOR SERVICING BURNER

Gas burners require the services of an experienced technician for proper setting and adjustment. If the burner does not appear to be operating properly, **DO NOT ATTEMPT TO ADJUST THE BURNER YOURSELF**, but call in a competent serviceman. An OEM should be able to check several possible causes of shutdown before calling in a serviceman. The following check list may eliminate the need for a service call or at least provide information for the serviceman.

1. Check thermostat. Make sure that it is set at the desired temperature.
2. Check fuses in service box for the burner circuit. Replaceable type fuses should not be loose in the socket. If a fuse is blown out or if in doubt, replace with the same size and type. If circuit breaker is in the service box, check position of indicator. If tripped, reset.
3. Check on-off switch for the burner circuit, it may have been accidentally turned off.
4. With the thermostat set 10 degrees above room temperature, the burner should start automatically.

It is advisable, periodically, to visually inspect the burner. Check air inlet blower to make sure it is not clogged or blocked. Check air shutter to make sure that it has not been tampered with, make sure that it is in the same position as when final adjustments were made. Check blower wheel to see if it is dirty or full of lint. If the flame does not appear normal or if in doubt, call a serviceman. The areas around the burner should be kept clear and free of combustible materials, gasoline and other flammable vapors and liquids. The flow of combustion and ventilating air to the burner must not be blocked or obstructed in any manner.

CLEANING OF BURNERS (BY SERVICEMAN ONLY): Remove the burner from the appliance and visually inspect the blast tube for any deterioration. Check thermocouples, electrodes, etc. with illustrations in the owner's manual for proper locations. Check flame spreader for any deterioration and replace if necessary. Visually inspect the inside of the venturi for any excessive rust or corrosion and clean if necessary.

SECTION V: SERVICE AND TROUBLESHOOTING

NORMAL OPERATION CHECK OF BURNER

1. Appliance calls for heat by raising the thermostat to the desired setting. Note the transformer is always energized with 120 volts.
2. When the thermostat circuit is complete, this allows 24 volts to coil side of the fan relay which are the bottom terminals.
3. Now that 24 volts (yellow wires) are applied to the coil, this in turn allows the 120 volt contacts to close thus allowing 120 volts to flow to the fan across terminals #2 and #4 which are in series with the fan motor.
4. The combustion fan motor should now be energized.
5. With the fan energized, there will be a 30 second pre-purge.
6. The fan motor will develop 3400 rpm quickly causing the centrifugal endswitch to close. The endswitch can be identified by the two red wires coming from the end cap of the fan motor.
7. After the endswitch makes, this allows 24 volts to the direct ignition control.
8. Now the ignition process will follow.
9. The direct ignition control will generate a high frequency spark at the same time the gas valve opens. The ignition control has a 4 second trial for ignition period. If after four seconds the control does not sense a minimum flame signal of 0.1 microamps then the control will enter into another 30 second pre-purge period followed by a second trial for ignition. This process will be repeated a third time if necessary. If after three tries for ignition, the control does not sense a flame, it will go into lockout. To reset the control simply cycle the thermostat off and then set it to the desired temperature.
10. After the burner is operational, the control shifts into a rectification mode constantly monitoring the flame signal.
11. The burner will now cycle off and on based on the thermostat setting.

TROUBLESHOOTING GUIDE

NOTE 1: BURNERS ARE NOT PRESET FROM THE FACTORY AND MUST BE ADJUSTED AT THE SITE.

NOTE 2: NEW GAS LINE INSTALLATIONS WILL HAVE AIR IN THE LINES AND REQUIRE SEVERAL IGNITION ATTEMPTS TO PURGE ALL THE AIR FROM THE LINES.

NOTE 3: DO NOT ATTEMPT TO PERFORM ANY WORK ON THIS BURNER UNLESS THE FOLLOWING TOOLS ARE AVAILABLE AND YOU ARE A CERTIFIED INSTALLER:

1. Volt meter-volts, ohms, continuity
2. Amp meter-clamp type
3. Burner manual
4. Manometer
5. O₂ or CO₂ analyzer
6. CO tester
7. Blade screw drivers
8. Nut drivers
9. Open end wrenches
10. Tape measure

The Wayne burner that you are troubleshooting has the following electrical single phase components:

1. 120 Volt Combustion Fan Motor with End Switch
2. Fan Relay-24 volt coil side and 120 volt fan side
3. Ignition Control (24 volt)
4. Honeywell Gas Valve (24 volt)
5. Transformer- 120 volt side and 24 volt side
6. Ignition Rod/Sensing Rod
7. Ignition Lead
8. T-T (24 volt) terminal

PRELIMINARY CHECKS, DIAGNOSIS AND SERVICE HINTS

Although the following tests can be made using standard volt meter, it is quicker and more convenient to use a Fenwal Model 05-125539-001 Test Adapters.

1. Input Polarity

If a spark is present and the gas valve opens for the flame establishing period but the control locks without sensing flame, check the input voltage at terminals 1 and 6 for the proper polarity. Terminal TH or 24V should be "hot"; 24VAC (05-16) with respect to ground. Terminal GND is neutral, or zero voltage, with respect to ground.

2. Improper Grounding

If a flame is present during the Trial for Ignition period but the system shuts down, ensure that the burner is properly grounded. If the burner is not grounded, the flame monitoring signal will not function and the system will go into lockout. Check for loose or corroded terminals and replace if necessary. Ensure good electric connection by scraping paint or any other foreign matter off the area where ground connection is made.

It is equally important to be certain that the electrode bracket assembly is properly grounded. The bracket should be common with the ground lead on the input connector (ground terminal 6). If the bracket is not properly grounded, damage to the ignitor can result.

3. Inoperative High Voltage

If there is no spark or sparking is intermittent, check the following after disconnecting voltage to the system.

- a. Check spark gap. Reference Flame Rod and Spark Electrode drawings later in this section and ensure the gaps are correct.

NOTICE

Do not replace the component board without first checking to ensure that the electrode has the proper gap. If the gap is too wide, damage to the ignitor may result.

- b. Check electrode leads and determine there is no corrosion at the terminals. If there is corrosion, clean it off. **DO NOT USE LIQUIDS TO CLEAN TERMINALS.** Use steel wool or emery cloth to clean.
- c. Check ceramic insulators for cracks, foreign matter, and carbon. If there are cracks, replace electrodes. If there is carbon or foreign matter, clean it off. **DO NOT USE LIQUIDS TO CLEAN.** Use steel wool or emery cloth to clean.
- d. Check high voltage lead wire for cracks or breaks. If there are cracks, breaks or chafing, replace high voltage wire.
- e. Check to ensure that the high voltage terminal is clear of dust, moisture or any foreign matter that could create high voltage leakage to ground.

4. Valve Malfunction

With power applied to the ignitor, sparking should occur and the gas valve should open simultaneously. If sparking occurs but the valve does not open, place a volt meter between the Valve terminal on the ignition control and ground (or across valve). If valve does not function with voltage, it should be replaced. If the voltage is not present across Valve terminal and ground (or across valve), the control should be replaced.

5. Electrode Placement

- a. Electrode should be placed so optimum flame current is achieved for proper application.
- b. Flame should not impinge on any portion of ceramic insulator.

6. Flame Current

The flame detector circuit uses the ionized gas flame to conduct the flame signal. This signal is a small DC current which can be measured directly with a 0 to 50 microamp meter.

Typical flame current readings with the Wayne control range from .4-.8 μ A. Although this control is able to sense flame with a signal as low as .1 μ A, we recommend replacing the electrode assembly if the signal is .1 μ A or less in order to avoid future nuisance lockouts.

To measure flame current, first shut off the power to the system and then connect a DC micro amp meter between the blue flame sense wire and the terminal marked "SENSE" on the ignition control. Light the burner. If the meter reads below zero, shut the system off and reverse the meter leads.

Once the flame is established, assure that the flame current is above the minimum specified. If not, assure that the system has the proper input voltage. During service, a scale may build up on the flame sensing rod, which may also reduce flame current readings. **DO NOT USE LIQUIDS TO CLEAN.** Use steel wool or emery cloth to clean.

Once the flame is has been established and the system is in its heat cycle, occasional sparking may occur. This is common in some installations and is not significant. Sparking will not damage the ignitor.

Table 6: Service Hints

What's Wrong	Why	What To Do
<ul style="list-style-type: none"> • Lockout occurs 3-10 seconds after ignition. 	<ul style="list-style-type: none"> • Reverse polarity. • System improperly grounded. • Gas pressure too high, causing flame to lift off burner. 	<ul style="list-style-type: none"> • See Input Polarity (See 1) • See Improperly Grounding (See 2) • Check to ensure input pressure as specified on manufacturer's data plate. • See Flame Current (See 6)
<ul style="list-style-type: none"> • Flame not established. Arcing to ground. • No spark. • Arcing other than across gap. 	<ul style="list-style-type: none"> • Sensor probe incorrectly positioned in flame pattern. Spark gap too small. Spark too large. Corroded connector. • Cracked or dirty insulator. 	<ul style="list-style-type: none"> • See Inoperative High Voltage (See 3a)
<ul style="list-style-type: none"> • Weak spark. 	<ul style="list-style-type: none"> • Broken high voltage lead. High voltage lead too close to metal surface. Valve malfunction. Electrode improperly placed. 	<ul style="list-style-type: none"> • See Valve Malfunction (See 4) • See Electrode Placement (See 5) • See Flame Current (See 6) • Check to ensure that manifold pressure meets manufacturer's specifications
<ul style="list-style-type: none"> • No flame. • Low flame current and/or nuisance lockouts. 	<ul style="list-style-type: none"> • Flame current falls below 0.1 μA. • Low gas pressure. 	

COMPONENT TROUBLESHOOTING AND DIAGNOSIS

24 VOLT TRANSFORMER MALFUNCTION

The 24 volt transformer has a 120 volt primary side with a 24 volt secondary circuit. To check the transformer, simply apply 120 volts to the black and white leads. If the transformer is working correctly, 24 volts will be present across the two yellow leads. If the multimeter does not register 24 volts then the transformer needs to be replaced. The transformer will not function unless 120 volts are present across L1 and neutral.

COMBUSTION FAN ENDSWITCH

The 120 volt motor is equipped with a centrifugal endswitch. The purpose of the endswitch is to ensure that the combustion fan motor has reached the proper operating rpm which is generally about 3400 rpm. If the endswitch fails to close then the 24 volt circuit to the gas primary is interrupted and the gas valve will not open. If the blower

motor has 120 volts applied but is not rotating then the motor assembly must be replaced. Lastly if the motor is not rotating, the centrifugal switch will not make and 24 volts will not be present at the gas primary control.

IGNITER ROD

The igniter rod is responsible for conveying the spark to the venturi in an appropriate location to ignite the gas and air mix. The igniter rod gap should be as shown in Fig. 13, larger gaps will create ignition problems. If the igniter rod is cracked, sparking sound will be heard inside the burner air tube but ignition will not occur and lockout will occur.

MORE SERVICE HINTS

THERMOSTAT CALLS FOR HEAT AND THE FOLLOWING CONDITIONS OCCUR:

1. PROBLEM: The combustion fan motor is not operating.
Possible Reasons:
 - a. Power is not on.
 - b. Circuit breaker tripped.
 - c. Thermostat in the off position.
 - d. Thermostat connections to T-T terminals on junction box have shorted to the junction box.
 - e. Bad thermostat.
 - f. Blower wheel jammed
 - g. Debris stuck in blower wheel blades.
 - h. 24 volt transformer is not functioning properly.
 - i. Thermostat leads not connected to the T-T terminals.
 - j. Motor shorted out due to overvoltage.
 - k. Motor start relay not functioning properly.

2. PROBLEM: Combustion fan motor runs but ignition sequence does not occur.
Possible Reasons:
 - a. Blower motor endswitch not closed which completes the 24 volt circuit to the gas primary.
 - b. The blower motor is not reaching full rpm due to debris on wheel.
 - c. Low voltage to the blower motor.
 - d. Loose connections on the 24 volt circuit after the endswitch or between fan relay and the 24 volt side of the gas primary.
 - e. The gas ignition control is defective and must be replaced.

3. PROBLEM: Combustion fan motor runs and ignition sequence initiated but goes into lockout.
Possible Reasons:
 - a. Spark electrode rod is cracked shorting spark to ground.
 - b. Loose connection on spark electrode rod.
 - c. Gas primary control not allowing 24 volts to gas valve.
 - d. Gas valve shorted out or defective.
 - e. No ground between burner and appliance.
 - f. Spark electrode location shifted.
 - g. Ignition control not generating spark.
 - h. Ignition wire insulation melted and is grounding out on burner.
 - i. Gas supply is not turned on.
 - j. Gas manifold pressure is too high.
 - k. Gas manifold pressure is too low.
 - l. High negative draft conditions.
 - m. Gas supply line is undersized.
 - n. Multiple appliances operating on undersized line.
 - o. Insufficient combustion air flow.
 - p. Incorrect air shutter adjustment allowing too much combustion air to enter burner.

FLAME ROD AND SPARK ELECTRODE SPACING

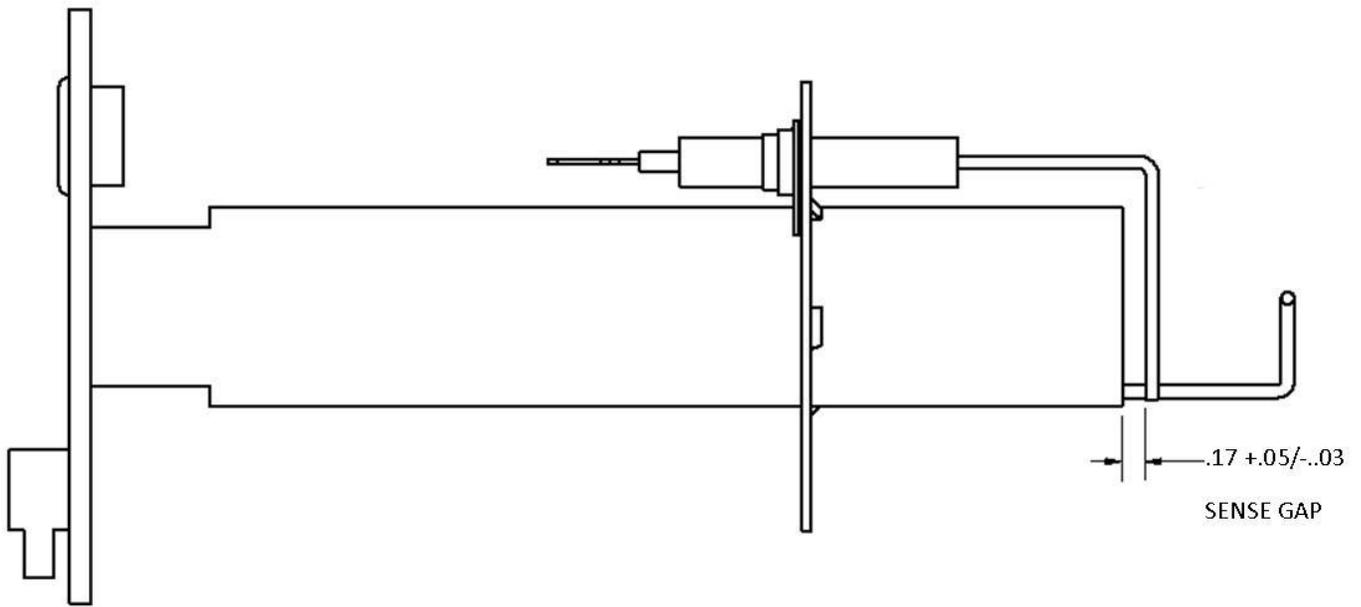


Figure 12: Spacing of Flame Sensor Rod

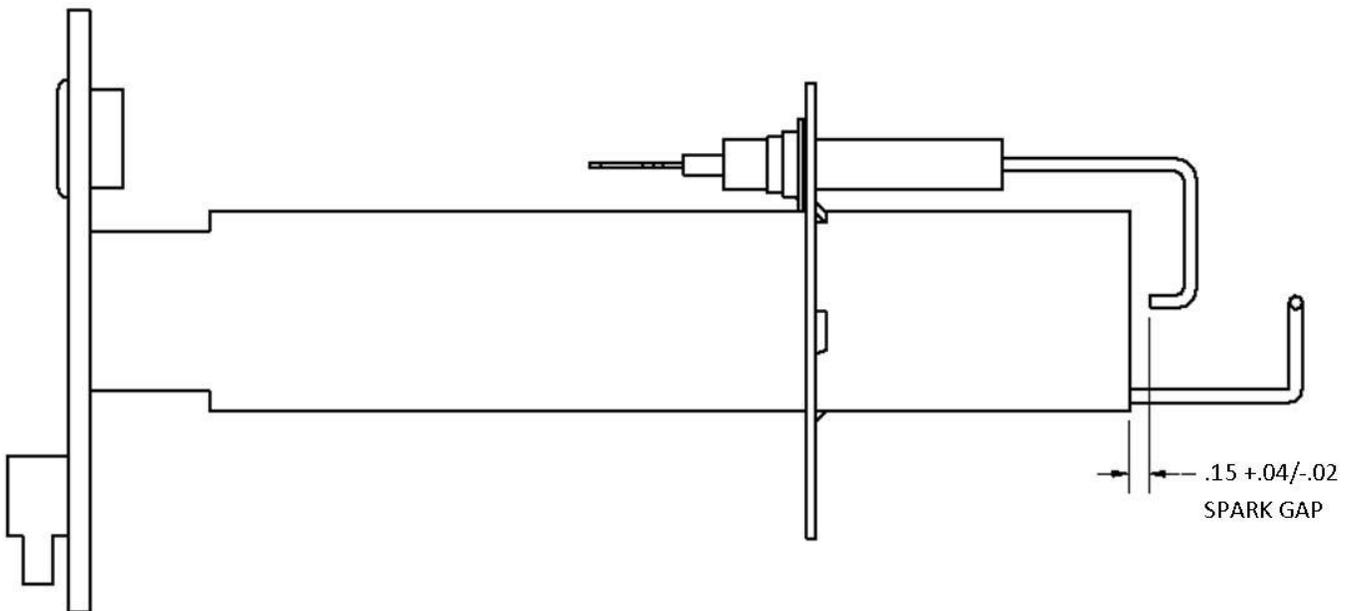


Figure 13: Spacing of Spark Electrode

Note: Flame rod and spark electrode positions are fixed by their dimensions and the welded locating flange. If either gap is out of the tolerances noted above, contact Wayne Combustion Systems support for further guidance.

WIRING DIAGRAMS

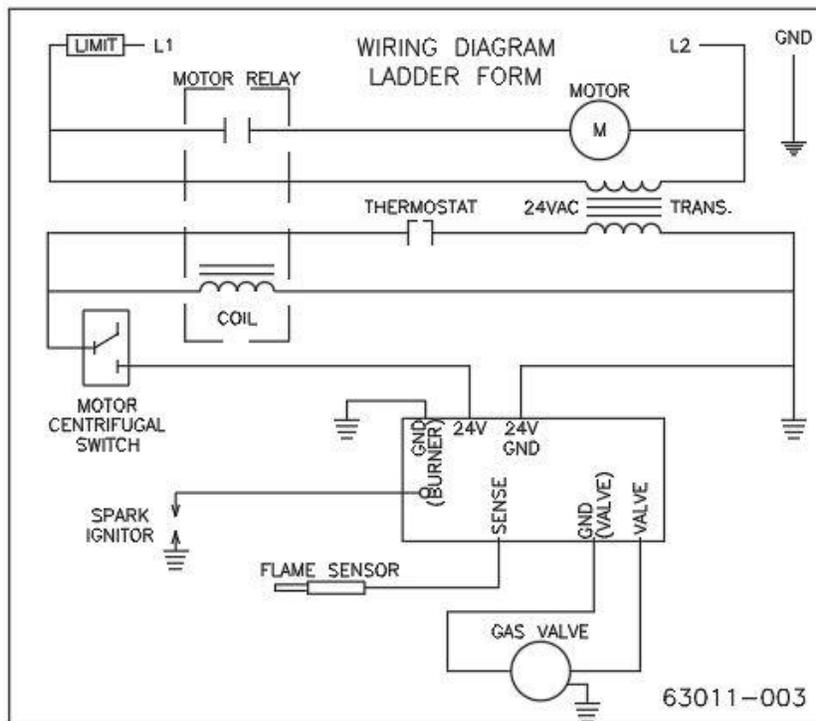
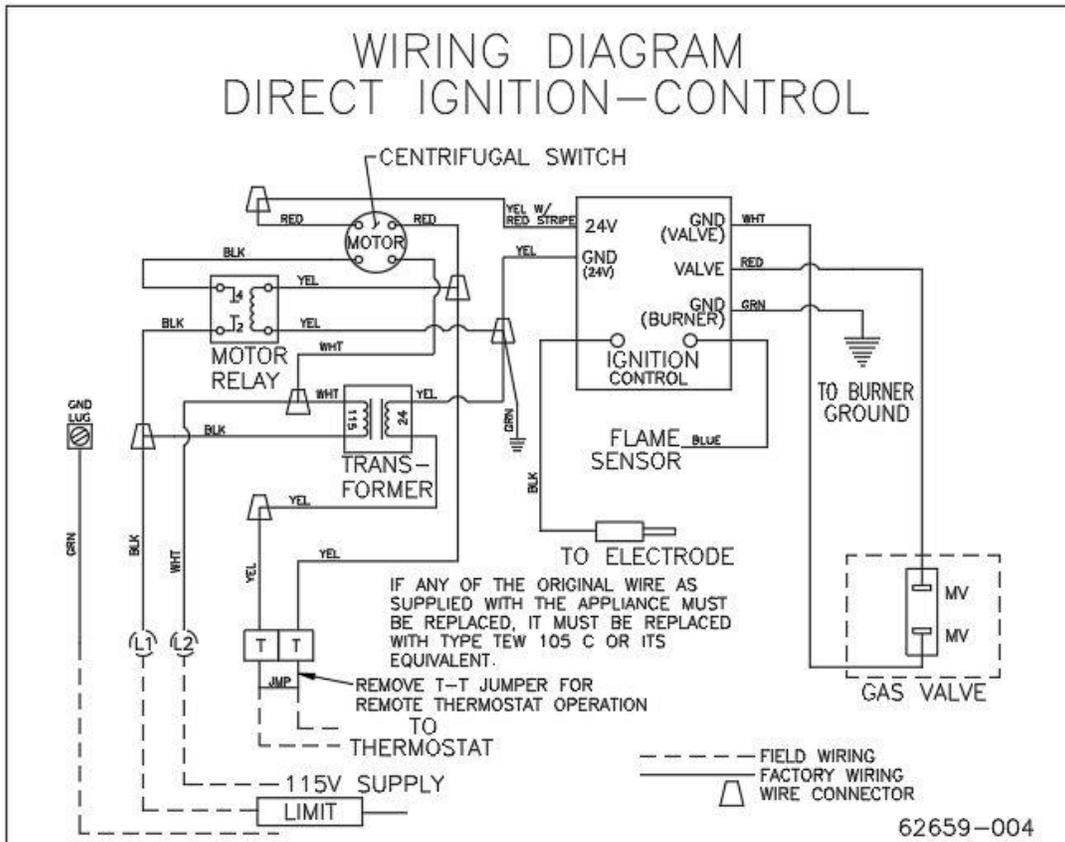


Figure 14: Wiring Diagram for SC80 Burner

CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

SECTION VI: PARTS LIST AND EXPLODED VIEWS

EXPLODED VIEWS

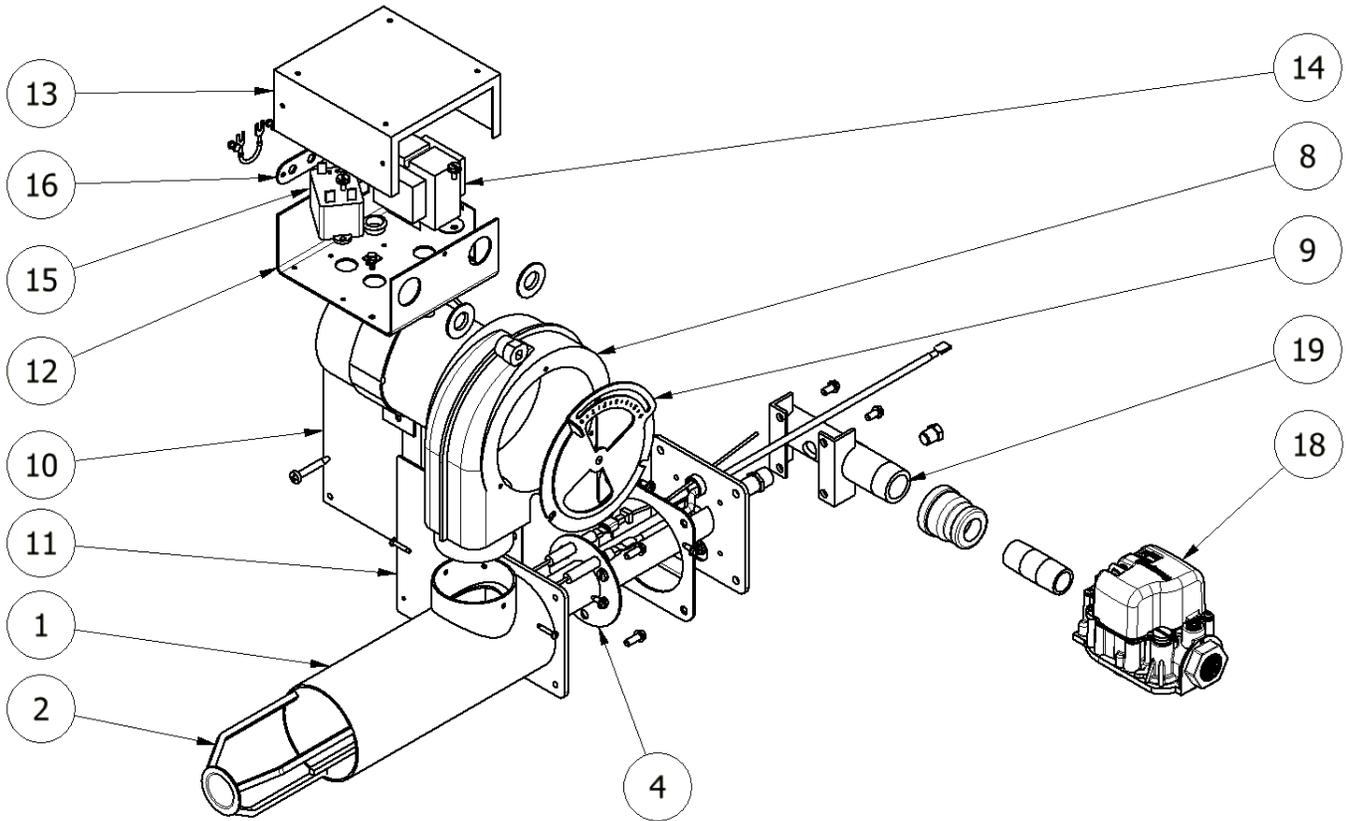


Figure 15: Right Side Exploded View of SC80

Parts in Exploded View

1. Tube/Flange Weldment – Painted
2. Flame Spreader
4. Venturi Assembly
8. Motor/Blower Assembly
9. Air Shutter
10. Ignition Control
11. Ignition Control bracket
12. Box, Control with Strap
13. Control Box Lid, Plated
14. Transformer
15. Relay
16. T-T Terminal
18. Gas Valve
19. Manifold

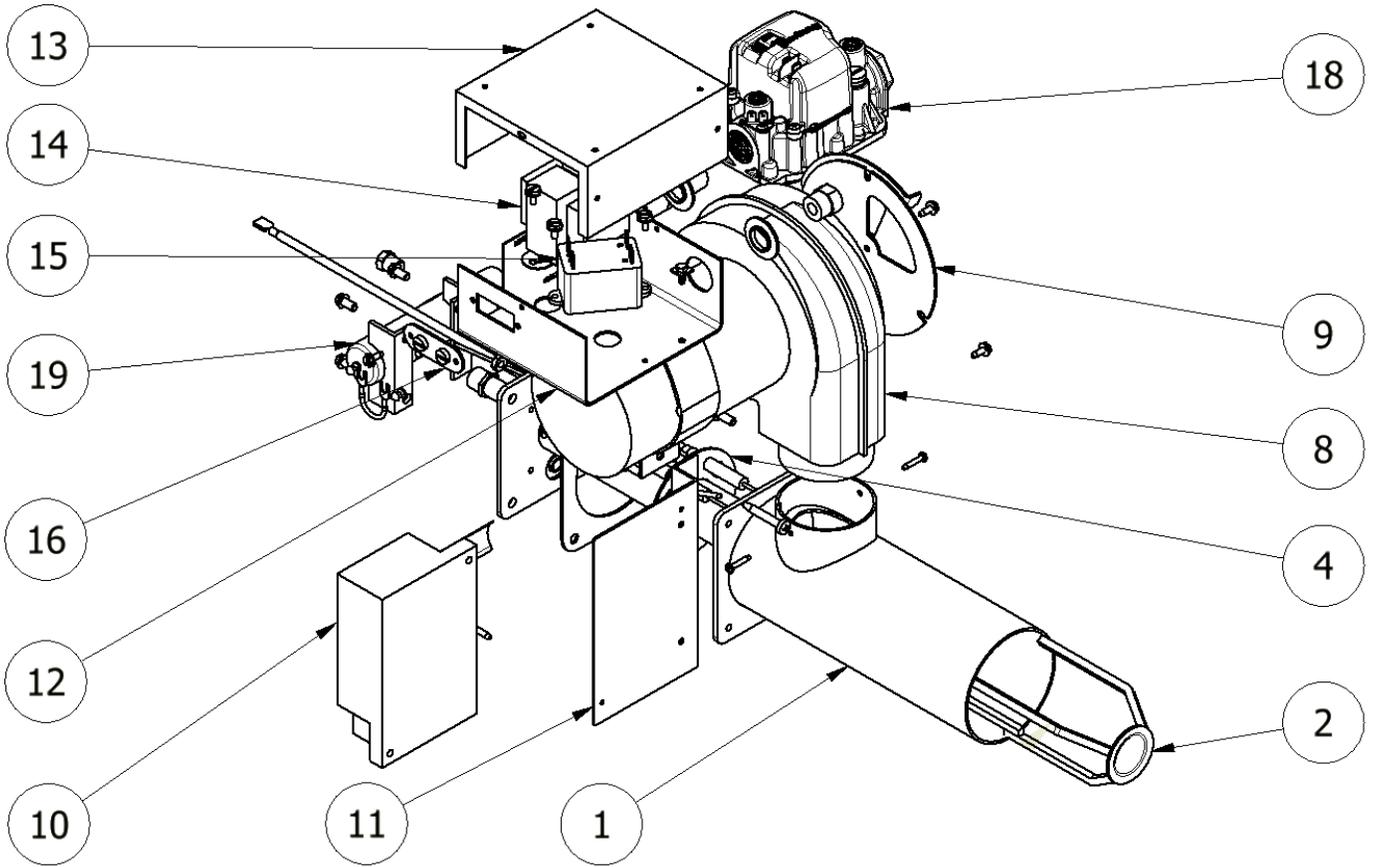
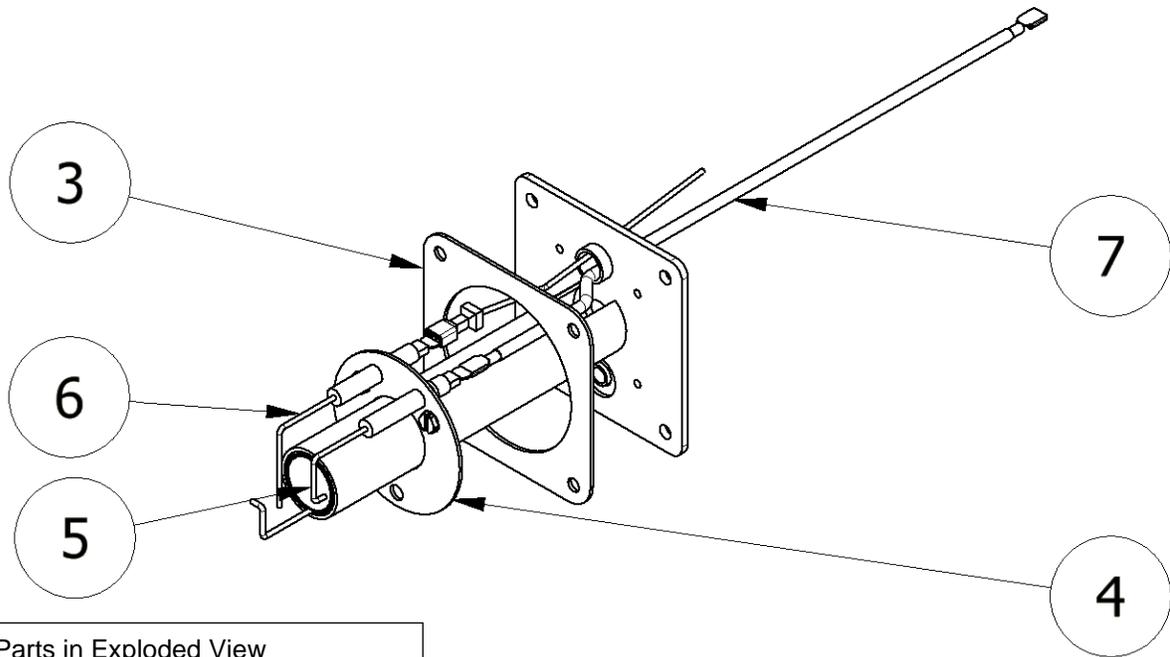


Figure 16: Left Side Exploded View of SC80

Parts in Exploded View

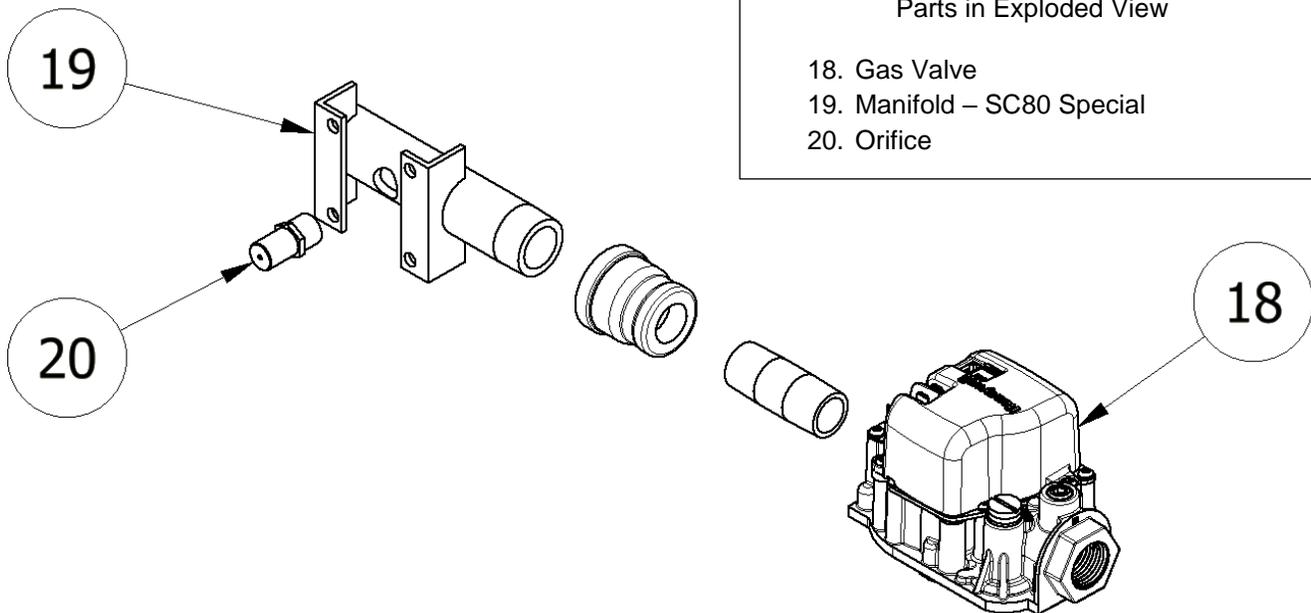
1. Tube/Flange Weldment – Painted
2. Flame Spreader
4. Venturi Assembly
8. Motor/Blower Assembly
9. Air Shutter
10. Ignition Control
11. Ignition Control bracket
12. Box, Control with Strap
13. Control Box Lid, Plated
14. Transformer
15. Relay
16. T-T Terminal
18. Gas Valve
19. Manifold



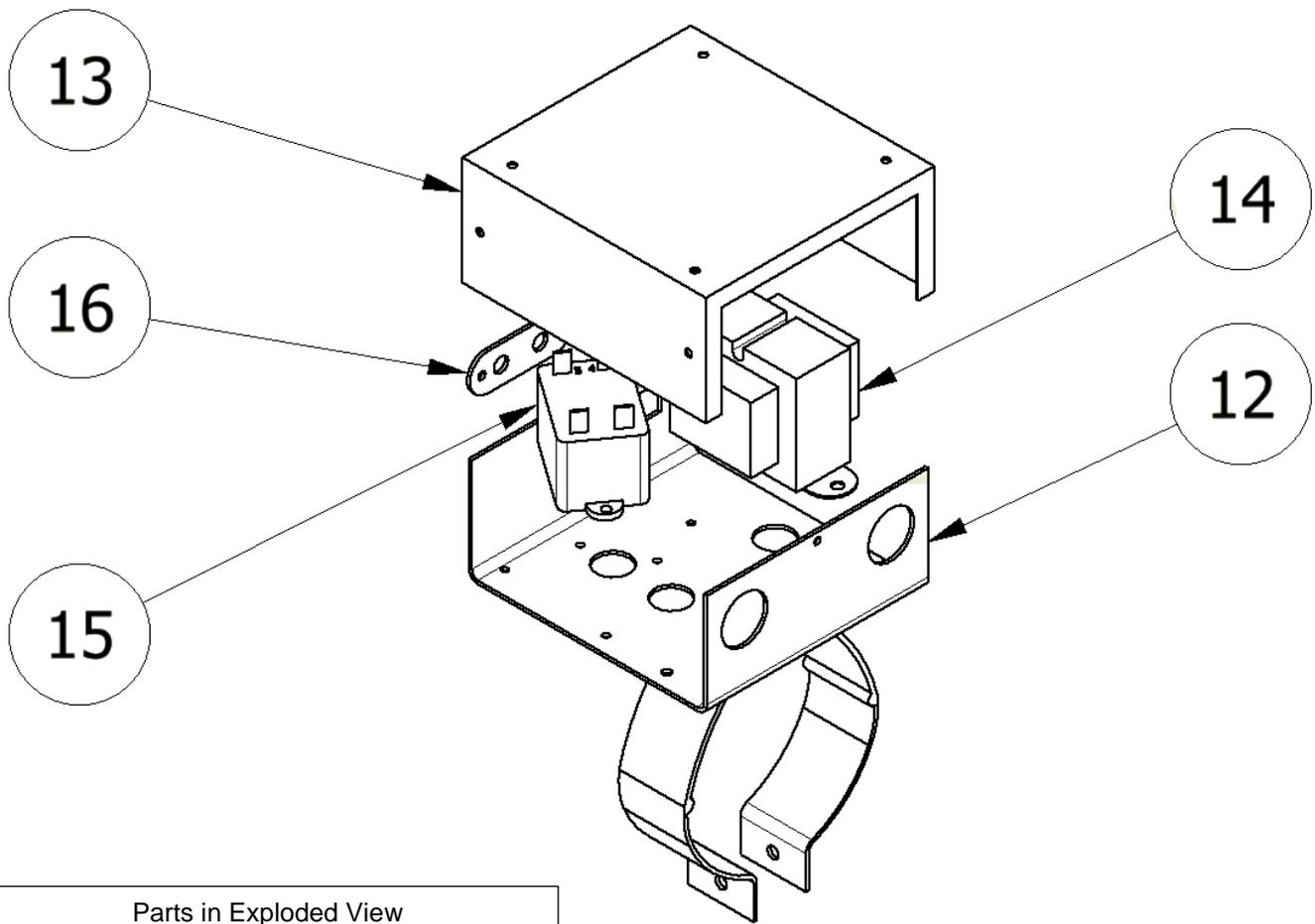
- Parts in Exploded View
- 3. Gasket, End Cap
 - 4. Venturi Assembly
 - 5. Spark Electrode
 - 6. Flame Sense Rod
 - 7. Ignition Wire

Figure 17: Exploded View of SC80 Venturi Assembly

Figure 18: Exploded View of SC80 Gas Train



- Parts in Exploded View
- 18. Gas Valve
 - 19. Manifold – SC80 Special
 - 20. Orifice



- Parts in Exploded View
- 12. Box, Control with Strap
 - 13. Control Box Lid, Plated
 - 14. Transformer
 - 15. Relay
 - 16. T-T Terminal

Figure 19: Exploded View of SC80 Junction Box

SC80 PARTS LIST

Item	Part No.	Description	Qty
1	64504-001	Tube/Flange Weldment – Painted	1
2	63622-001	Flame Spreader	1
3	63620-001	Gasket, End Cap	1
4	63693-001	Venturi Assembly	1
5	63696-001	Spark Electrode	1
6	63697-001	Flame Sense Rod	1
7	64411-002	Ignition Wire	1
8	60172-002	Motor/Blower Assembly 115V / 50 – 60 Hz	1
9	63566-001	Air Shutter – Crown	1
10	64395-001	Ignition Control, Wayne-Series 5-DI	1
10	64578-001	Ignition Control, Wayne-Series 5-DI w/ Alarm	1
11	64423-001	Ignition Control Mounting Bracket	1
12	62903-001	Box, Control with Strap	1
13	62899	Control Box Lid, Plated	1
14	60186-004	Transformer, 120V 24V 50/60 Hz	1
15	62406-002	Relay, 24V 50/60 Hz	1
16	60178-002	T-T Terminal	1
17	63375-001	Wire Harness – SC80	1
18	64518-001	Gas Valve, VR8215S1206	1
19	63913-001	Manifold – SC80 Special	1
20	62815-000	Blank orifice	1
21	64594-001	Conversion Kit: Natural Gas → Propane	1
22	64595-001	Conversion Kit: Propane → Natural Gas	1

ORIFICE CHART

Btu/hr(kW) Input	Natural Gas: 3.5" w.c. (8.7 mbar)			Propane Gas: 3.5" w.c. (8.7 mbar)		
	Number/Fraction	Decimal (in)	Wayne P/N	Number/Fraction	Decimal (in)	Wayne P/N
20,000 (5.9)	#45	0.082	*	#50	0.071	62815-071
25,000 (7.3)	3/32"	0.094	*	5/64"	0.078	*
30,000 (8.8)	#38	0.101	*	#44	0.086	62815-086
35,000 (10.3)	7/64"	0.109	*	#43	0.089	*
40,000 (11.7)	#32	0.116	62815-116	#41	0.096	62815-096
45,000 (13.2)	1/8"	0.125	*	#38	0.1015	*
50,000 (14.7)	#30	0.129	62815-128	#36	0.107	62815-107
55,000 (16.1)	#29	0.136	62815-136	7/64"	0.109	*
60,000 (17.6)	#27	0.144	*	#32	0.116	62815-116
65,000 (19.0)	#25	0.150	*	#31	0.120	62815-120
70,000 (20.5)	5/32"	0.156	*	1/8"	0.125	*
75,000 (22.0)	#20	0.161	*	#30	0.1285	*
80,000 (23.4)	#19	0.166	62815-166	#29	0.136	62815-136

*Drill out in the field from a smaller sized orifice or a blank orifice (P/N 62815-000).

SECTION VII: WARRANTY



LIMITED WARRANTIES FOR OIL AND GAS BURNERS, MADE BY WAYNE AND USED IN RESIDENTIAL INSTALLATIONS

WAYNE COMBUSTION SYSTEMS ("WAYNE") warrants to those who purchase its **Oil Burner Models** for resale or for incorporation into a product of resale, that its burner is free from defects in material and workmanship under normal use and service for thirty-six (36) months from the date of manufacture. **ALL GAS BURNERS** manufactured by "WAYNE" will be similarly warranted for eighteen(18) months from date of manufacture except where original manufacture offers a greater warranty. (Reference #6 below) **THESE LIMITED WARRANTIES DO NOT APPLY UNLESS THE BURNER COVERED BY IT IS PROPERLY INSTALLED BY A QUALIFIED, COMPETENT TECHNICIAN, WHO IS LICENSED WHERE STATE AND/OR LOCAL CODES PREVAIL, AND WHO IS EXPERIENCED IN MAKING SUCH INSTALLATIONS,** in accordance with NFPA #31 of the national fire protection association and in accordance with all local, state and national codes.

Any **IN-WARRANTY** burner component which is defective in material or workmanship will be either repaired or replaced as follows:

1. Fuel pumps, motors, transformers, gas valves, and controls should be returned to an authorized service station or distributor of WAYNE for determination of applicability of this LIMITED WARRANTY as to either repair or replacement, where said service station or distributor is reasonably available in the customer's locality. The manufacturers of burner components regularly publish and distribute listings showing the locations of their network of service stations. Where such local service is NOT available for the burner components described above or other burner parts are involved, these items should be returned, freight prepaid, to WAYNE Service Department, 801 Glasgow Ave, Fort Wayne, Indiana 46803.
2. Burners and/or component(s) determined to be covered under this LIMITED WARRANTY by WAYNE shall be repaired or replaced at WAYNE's sole option.
3. WAYNE is not responsible for any labor cost for the removal and replacement of said burner or burner components and equipment associated therewith.

4. A burner so repaired will then carry the LIMITED WARRANTY equal to the unexpired portion of the original burner LIMITED WARRANTY.
5. If inspection by WAYNE does **NOT** disclose any defect covered by this LIMITED WARRANTY, the burner or burner component(s) will be either repaired or replaced at the expense of the customer and WAYNE'S regular charges will apply.
6. If the original manufacturer of a burner component offers a warranty greater than either of our LIMITED WARRANTIES described above, then this portion will be added to our LIMITED WARRANTY.

This LIMITED WARRANTY does **NOT** cover products which have been damaged as the result of accident, abuse, misuse, neglect, improper installations, improper maintenance or failure to operate in accordance with WAYNE's written instructions.

These LIMITED WARRANTIES do not extend to anyone except the first purchaser at retail and only when the burner is in the original installation site.

IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED TO THE DURATION OF THE LIMITED EXPRESS WARRANTIES CONTAINED HEREIN. WAYNE EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY NATURE FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you. Also, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. WAYNE neither assumes or authorizes any person to assume for WAYNE any other liability or obligation in connection with the sale of these products. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

