Combustor Catalog

24”, 30”, 48”, 60”, 80” Bodies

Documenting Control Efficiencies of:

95%

≤ 98%, and

≤ 99%

Table of Contents

1 | INTRODUCTION

SpiralX LLC offers 24”, 30”, 48”, 60” or 80” enclosed flare combustors as an efficient method of destroying BTEX. They are compliant with regulations governing upstream oil and gas facilities (40 CFR 60, Subpart OOOOa) and gas dehydration facilities (40 CFR 63, Subparts HH and HHH). Based on the **Texas Air Quality Act (2015)**, they are designed for the destruction of volatile organic compounds (VOCs) at the following efficiencies:

- ≤ 98% claimed where the pilot flame is continuously monitored with a thermocouple or equivalent device (40 CFR §60.18).
- ≤ 99% claimed when compounds contain only carbon, hydrogen, and oxygen with no more than three carbon atoms. [TAQA (2015), Appendix A]

They can be built on-skid with the condenser as a single unit, or separately on an independent skid. All our combustion units use a Profire™ Burner Management System for the most reliable and efficient means of monitoring the pilot flame. Please look over the many types of units and accessories available within this catalog to see which combustor assembly is right for you. Please call us at 469-480-8802 for any questions you may have.

For more information on SpiralX combustors and other products, visit our YouTube channel: https://youtu.be/UEUGKs_EYhE

1.1 | Competitive Advantage

SpiralX has modified product design per customer feedback and includes:

- Stainless steel burner grids for increased product life. Shown to outlast standard carbon steel and ceramic burner grids.
- Lifting supports located at the top of the combustor for easier handling during transport and a top ring bracket for adding optional accessories such as rain/snow caps and body extensions.
- Dual burner grid option for burning exhaust from two different sources.
- Precision laser cutting for more precise and consistent designs.
- Multi-piece combustor design allows for faster fabrication and easier shipping methods.

1.2 | Important Safety Information

Combustors are an explosion and fire hazard and must always be handled and inspected with caution.

Combustors should always be level or at a slight incline from their condenser units to avoid condensate from entering the combustion chamber.

Condensate fluid is extremely flammable; all safety precautions must be used when operating this system. All outlet piping of BTEX exhaust must slope upward towards method of destruction/collection to allow condensate to fall back into accumulator tank.

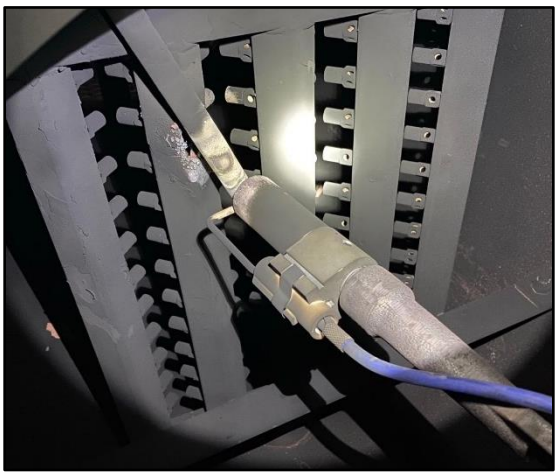
Positions of components shown within this document may differ slightly from your actual unit.

EXPLOSION HAZARD

Do not attempt to service or open access panel unless proper safety precautions have been taken.

All pressure values detailed in this document or in SpiralX general arrangements (GAs) and piping and instrumentation diagrams (P&IDs) must be followed. Setting pressure regulators to incorrect values can result in components not being able to function and/or component damage.

In regards to SpiralX combustors, the fuel gas regulator must be set to 5-7 PSI. Higher values can produce too extreme of a flame, damaging the burner grid as seen in the figure shown here. Always make sure the fuel gas regulator is set to the correct value and the burner jet is positioned in between the burner rails (use access panel to easily reposition pilot assembly).



2 | SIZING

SpiralX LLC combustors are made from A36 structural steel and come in 24”, 30”, 48”, 60” or 80” diameter bodies, depending on the amount of BTEX destruction required. These bodies are surrounded by a steel grate to protect objects from coming is direct contact with the combustion section during operation. The sizes are listed below with their respective dimensions. Note that the on-site dimensions can change depending on the type of skid utilized for the combustor.

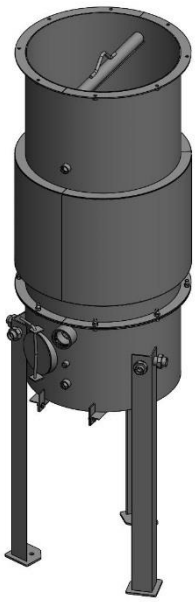
2.1 | 24” Combustor

HEIGHT: 97”

WEIGHT: 900 LBS. w/ internals & rain cap

DIAMETER: 28” with grate. 32.17” max with legs.

2.2 | 30” Combustor

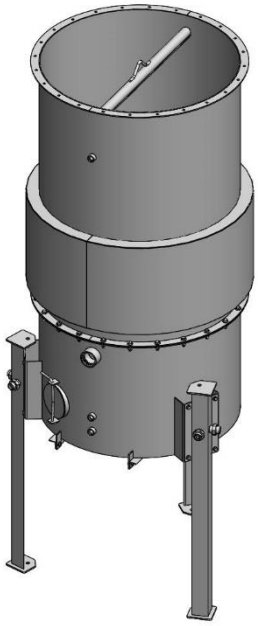


HEIGHT: 113.00”

WEIGHT: 980 LBS. w/ internals & rain cap

DIAMETER: 34.125” with grate. 37.86” max with legs.

2.3 | 48” Combustor



HEIGHT: 139.38”

WEIGHT: 1500 LBS. w/ internals & rain cap

DIAMETER: 54” with grate. 63.61” max with legs.

2.4 | 60” Combustor

HEIGHT: 161”

WEIGHT: 1000 LBS.

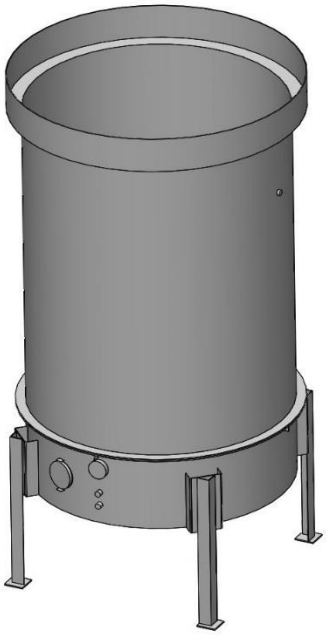
DIAMETER: 64” with grate. 76.25” max with legs.

2.5 | 80” Combustor

HEIGHT: 161”

WEIGHT: 1200 LBS.

DIAMETER: 80” 98” max with legs.

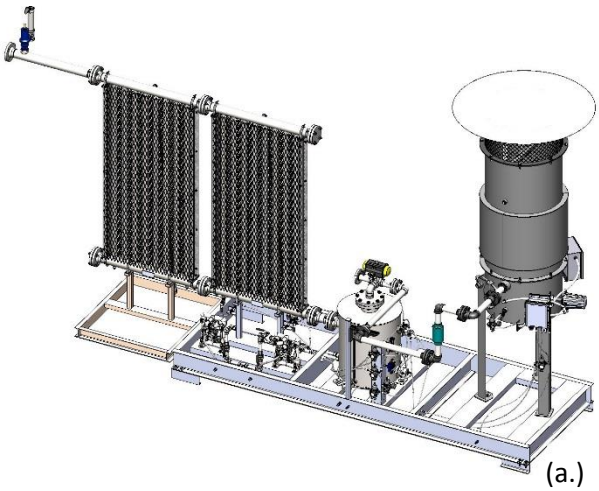


3 | CONFIGURATIONS AND ACCESSORIES

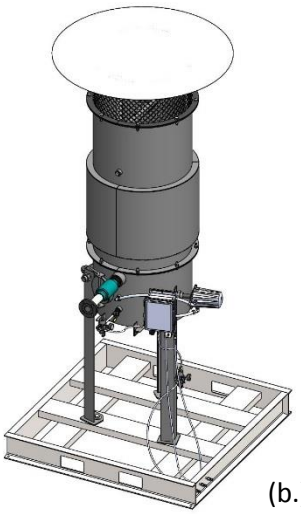
SpiralX combustors are made to suit many environments and regulations within the industry. Here is a list of different designs SpiralX offers.

3.1 | Skid Options

Spatial restrictions can sometimes limit the required footprint of the BTEX system, so SpiralX offers combustor designs that can be attached to or separate from the condenser system.



(a.)

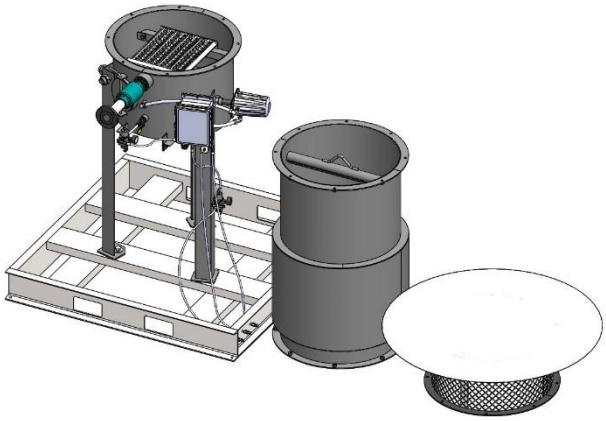


(b.)

Example of combustor attached to condenser skid (a.) and a stand-alone combustor skid that can be set close by on site (b.).

Modular configuration:

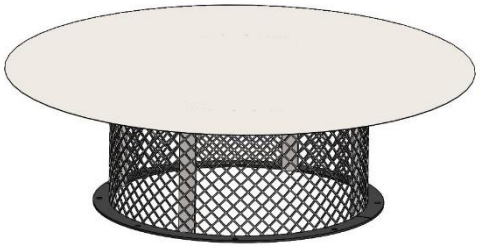
Our multi-piece design for our combustors offers several advantages both in house and on site.



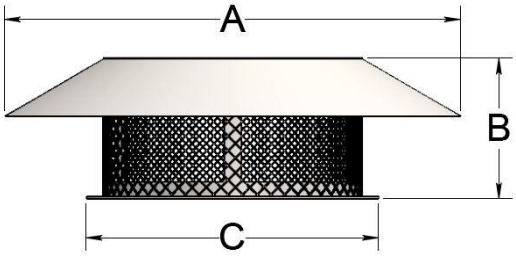
- Smaller, multiple pieces are easier to handle during fabrication for faster production times.
- Separating the body at the burner grid level allows for easier assembly/maintenance of the burner grid and pilot arm.
- Combustors can now ship upright without a permit regardless of body size to save on shipping costs.
- Easier replacement of pieces in the field instead of complete unit replacement in the event of combustor damage.

3.2 | Rain/Snow Cap

The rain cap can be attached to the top ring bracket to protect the pilot flame from being extinguished during rainstorms. In the colder regions, the cap can prevent snow from filling up the combustor which can make initial pilot ignition very difficult and time consuming.



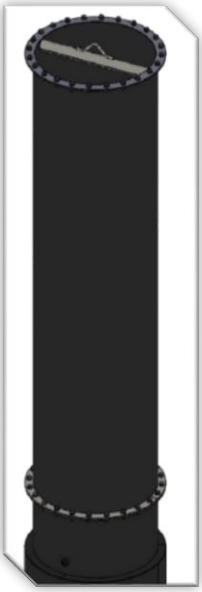
Plain Carbon Steel



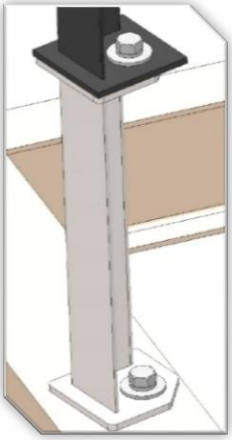
	30”	***48”***
A	53”	69.75”
B	16.3”	16.3”
C	34”	52”
Weight	66 lbs.	107 lbs.

3.3 | Body Extension

SpiralX offers an extended 120” middle section to the combustor for sites that have safety regulations requiring destroyed gases to be vented at higher altitudes. The tops of these extensions have top ring brackets as well in case a rain cap is also needed.



3.4 | Leg Extension



Leg extensions can raise the combustor exhaust similar to a body extension by lifting the entire combustor, but only to an additional height of 20.75”. The main function of the leg extensions is to make the combustor inlet higher than the condenser outlet. This prevents condensate from entering the combustor which can be hazardous.

3.5 | Standard Accessories

3.5.1 – Profire™ BMS

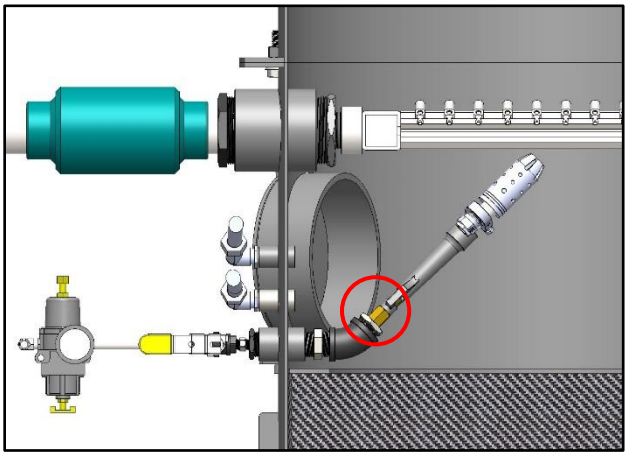
All SpiralX combustors are fitted with Profire™ Burner Management Systems (BMS). The 2100 model offers advanced pilot monitoring with automatic reignition upon spark detection and self-regulating valve automation based on combustor temperature. All monitored data can optionally be communicated to a central location in real time and remotely controlled via the SCADA and Modbus RS-485 add-ons. This on-board data logging feature can record pilot status and other key operating parameters, allowing for ≤ 98% destruction efficiency to be claimed, based on the **Texas Air Quality Act (2015)**.

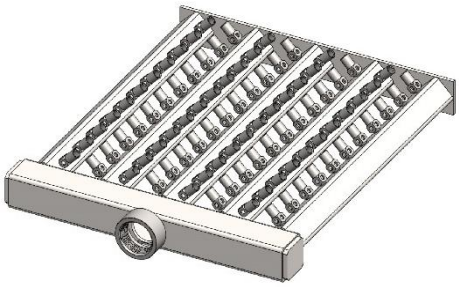
For simpler systems that only require flame detection and ignition, a more cost-effective Flare Ignition System (1300F model) is available, designed solely for automatic ignition of flare stacks.

These systems are rated for Class 1, Div. II, but can be wired remotely to the combustor for sites with Div. I environments. Hook ups can be made with stainless steel tubing or JIC hosing.

3.5.2 – Profire Pilot & Gas Consumption

Based on an orifice diameter of #60 for the Profire pilot arm and an inlet supply pressure of 5-7 psi, the combustor fuel gas consumption rate can be calculated at 15-17 scfh.





3.5.3 – Stainless Steel Burner Grid

SpiralX burner grids are manufactured in-house with stainless steel for corrosion resistance and durability. A single coupling housing facilitates gas supply hook-up as well.

3.6 | Body Insulation

Due to the increased heat output of the larger combustor bodies, all 60” combustors and larger are fitted with 2-inch ceramic fiber insulation rated for 2300°F. Recommended operating temperature is 2150°F. The insulation spans the entire lower section of the combustor body so the insulation does not interfere with installation of the top body.

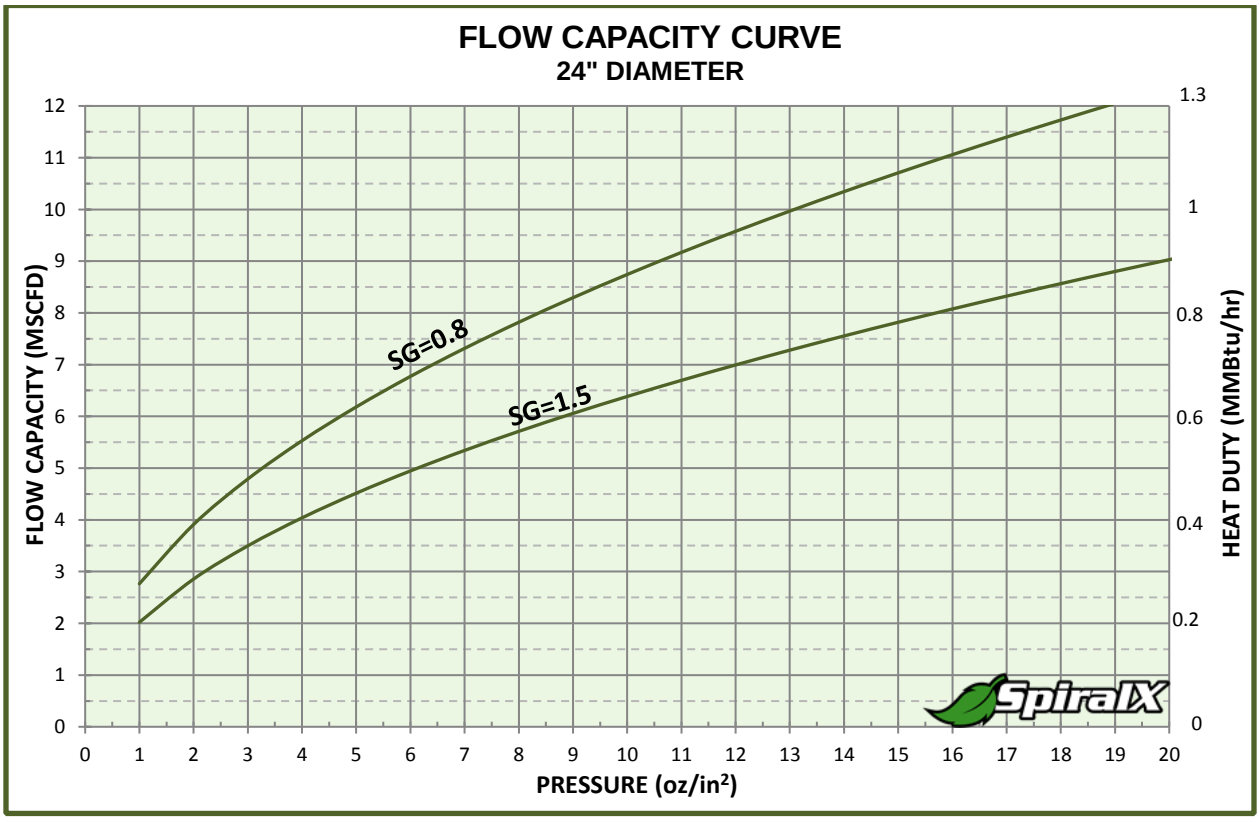
4 | APPLICATION

SpiralX combustors are used for a variety of functions within the oil & gas industry. If you are interested in a SpiralX combustor for the following applications, please request the relevant manuals for more information on other units we offer to handle your BTEX and other volatile organic compounds (V.O.C.s):

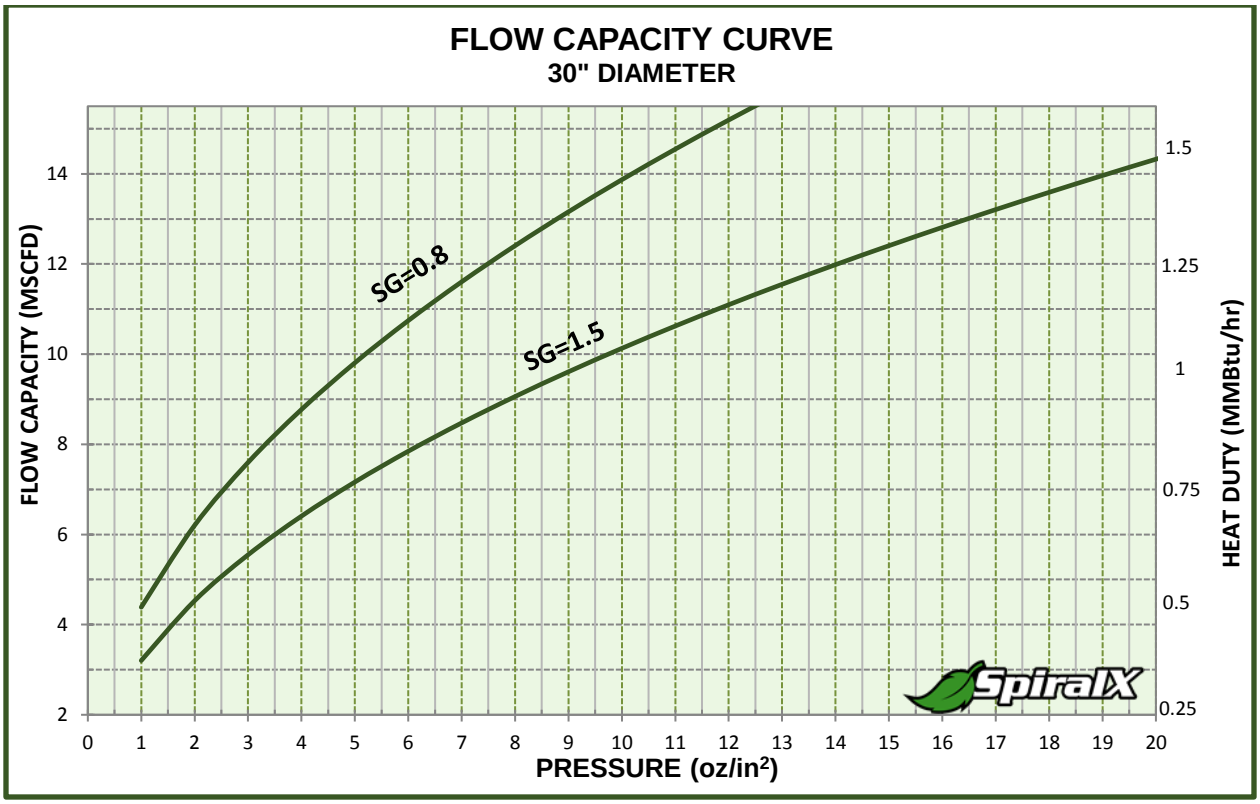
- Flash Gas Management
- Tank Batteries
- BTEX Removal and Destruction – Temperate Weather Applications
- BTEX Removal and Destruction – Arctic applications

5 | PERFORMANCE

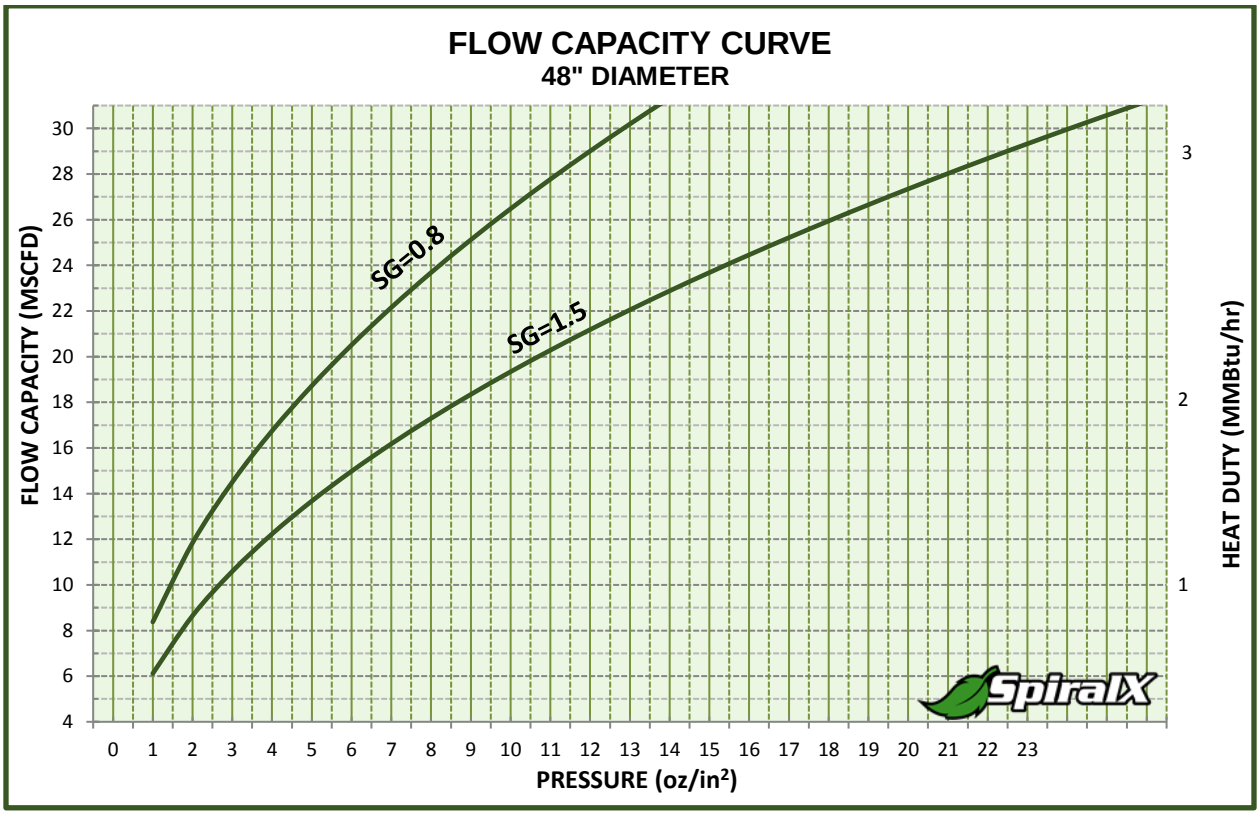
Capacity based on a specific gravity of 0.8 for flash gas applications and 1.5 for typical BTEX streams. Fuel gas



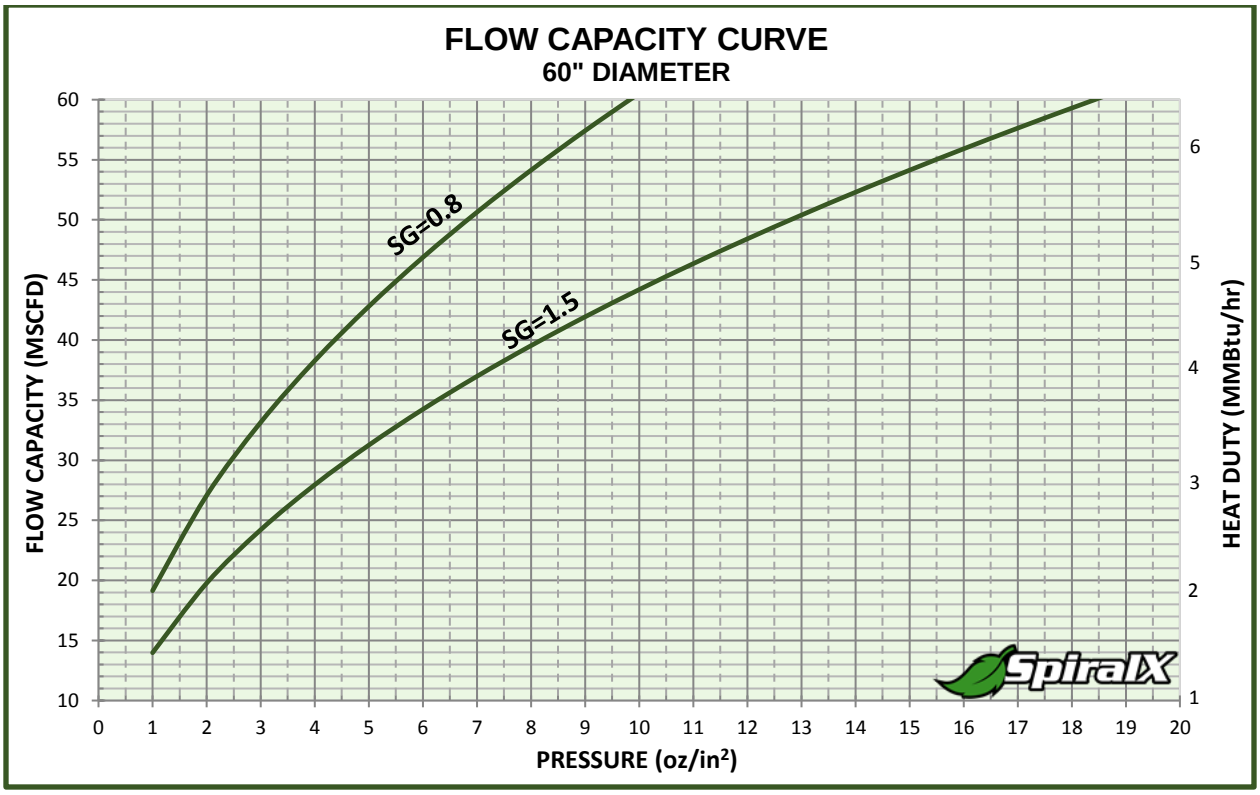
Flow capacity curve of BTEX for 24” diameter combustor as a function of pressure.



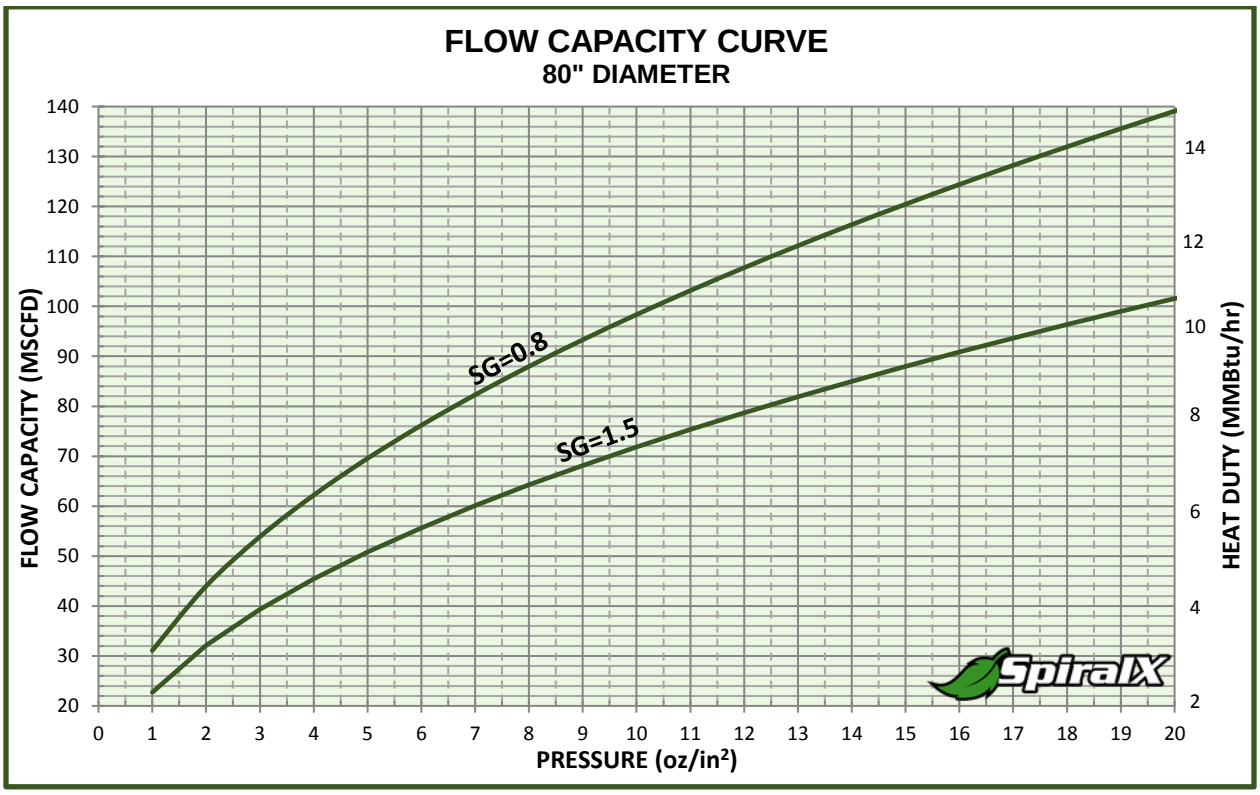
Flow capacity curve of BTEX for 30” diameter combustor as a function of pressure.



Flow capacity curve of BTEX for 48” diameter combustor as a function of pressure.



Flow capacity curve of BTEX for 60” diameter combustor as a function of pressure.



Flow capacity curve of BTEX for 80” diameter combustor as a function of pressure.

6 | DIAGRAMS & DRAWINGS

The following diagrams are typical for stand-alone combustors only. The dimensions and layouts of combustors on-skid with condenser systems can vary based on system needs and series model.

6.1 | Piping and Instrumentation Diagram (P&ID)

For standalone skid

BALL VALVE
NEEDLE VALVE
CHECK VALVE
THREE WAY VALVE
PLUG VALVE
SOLENOID MANUAL RESET
BACK PRESSURE REGULATOR
GATE VALVE
GLOBE VALVE
KNIFE VALVE
STOP CHECK VALVE
DIAPHRAGM VALVE
SOLENOID VALVE
ANGLE VALVE
FOUR WAY VALVE
PINCH VALVE
BUTTERFLY VALVE
GRAVITY FLOW
GAP
FLOW ARROW
INCOMING/DEPARTING THE FACILITY
WATER LEVEL
CONCENTRIC REDUCER
ECCENTRIC REDUCER
CAP
FLANGED CONNECTION
HOSE CONNECTION
FLAME ARRESTOR
PRESSURE SAFETY VALVE
SCREWED UNION CONNECTION

MOTOR
FAN
ACCUMULATOR TANK
COMBUSTOR
FINNED FORCED HEAT EXCHANGER
FINNED AMBIENT HEAT EXCHANGER
DIAPHRAGM PUMP
CENTRIFUGAL COMPRESSOR
HORIZONTAL TANK
INSULATED
SHELL AND TUBE HEAT EXCHANGER

VALVE IDENTIFICATION

VALVE FACING
VALVE TYPE
VALVE SIZE
VALVE CLASSIFICATION (FLG OR PRESSURE RATING)
VALVE SPECIALITY TYPE (OPTIONAL)

2" B J E (F)

VALVE TYPE CODE	VALVE TYPE
B	BALL
C	CHECK
D	DIAPHGRAM
G	GATE
M	MULTIPORT
N	NEEDLE
O	GLOBE
P	PLUG
Y	BUTTERFLY
X	CHOKE

VALVE FACING CODE	VALVE FACING TYPE
F	FLAT FACE
J	RING JOINT
R	RAISE FACE
S	SCREWED
U	UNION
W	WELDED
X	SPECIAL (VITUALIC GRAY LOC ETC.)
Y	SOLDER
Z	SOCKET WELD

CLASSIFICATION CODE	CLASSIFICATION TYPE
A	ANSI 150
B	ANSI 300
C	ANSI 400
D	ANSI 600
E	ANSI 900
F	ANSI 1500
G	ANSI 2500
H	API 2000
I	API 3000
J	API 5000
K	API 10000
L	API 15000

VALVE SPECIALITY CODE	VALVE SPECIALITY TYPE
B	BALL CHECK
F	FULL PORT
G	GEAR OPERATED
H	HIGH TEMP. TRIM
L	LUG TYPE
M	MNPT X FNPT
N	TRUNNION
O	MNPT X MNPT
P	PISTON CHECK
R	REDUCED PORT
S	SWING CHECK
T	FNPT X FNPT
W	WATER CHECK
X	SPECIAL

LINE IDENTIFICATION

PIPING CLASSIFICATION
PIPE SIZE
FLOW MEDIUM
MATERIAL CLASSIFICATION
OPTIONAL
INSULATION AND THICKNESS
LINE NUMBER

4" LH – A1 – 101 – B1"– SR

FLOW MEDIUM IDENTIFIER CODE	FLOWING MEDIUM
AD	ATMOSPHERIC DRAIN
AF	AVIATION FUEL
AV	ATMOSPHERIC VENT
BW	BOILER FEED WATER
BP	BULK PRODUCTION
CI	CHEMICAL INJECTION
CW	COOLING WATER OR JACKET WATER
DF	DIESEL FUEL
DR	DRAIN
EX	EXHAUST
FG	FUEL GAS
FL	FLARE
FW	FIRE WATER
GH	GAS, HYDROCARBON
GL	GLYCOL
HF	HYDRAULIC FLUID
HM	HEAT MEDIUM
HR	HIGH PRESSURE RELIEF
IA	INTRUMENT AIR
IG	INSTRUMENT GAS
LH	LIQUID HYDROCARBON
LO	LUBE OIL
LR	LOW PRESSURE RELIEF
MD	MUD OR MUD AND CEMENT
NI	NITROGEN
OX	OXYGEN
PW	PRODUCED WATER
PW	POTABLE WATER
SA	START AIR
SC	STEAM CONDENSATE
SD	SANITARY DRAIN
SG	START GAS
ST	STEAM
UW	UTILITY WATER
WH	WATER AND HYDROCARBONS
ZA THRU ZZ	MISCELLANEOUS FLOW MEDIA

PIPING CLASSIFICATION CODE	RATING
A	ANSI 150
B	ANSI 300
C	ANSI 400
D	ANSI 600
E	ANSI 900
F	ANSI 1500
G	ANSI 2500
H	API 2000
I	API 3000
J	API 5000
K	API 10000
L	API 15000
M	API 20000

INSULATION IDENTIFIERS CODE	INSULATION TYPE
A	PERSONNEL PROTECTION
B	HEAT TRACING
C	FREEZE PROTECTION
D	HEAT CONSERVATION
E	COLD CONSERVATION
F	ANTI – SWEAT

MATERIAL CLASSIFICATION

CODE	CLASS
1(FL)	831.8 SWEET CARBON STEEL BULK PRODUCTION (FLOWLINE) (NOTE1)
1	SWEET CARBON STEEL
1M	SWEET CARBON STEEL MARINE SERVICE
2	SWEET 316 STAINLESS STEEL (EXCEPT K2 IS 10,000 PSIG SWEET CARBON STEEL)
2M	SWEET 316 STAINLESS STEEL MARINE SERVICE
3	LOW TEMPERATURE CARBON STEEL
4	FIBERGLASS OR 90/10 COPPER NICKEL
4M	FIBERGLASS OR 90/10 COPPER NICKEL – MARINE SERVICE
5M	90/10 COPPER NICKEL MARINE SERVICE
6	HIGH TEMPERATURE CARBON STEEL
7	MID TEMPERATURE CARBON STEEL
8	GALVANIZED CARBON STEEL
9	CPVC
10	NACE CARBON STEEL
11M	GALVANIZED CARBON STEEL MARINE SERVICE
12M	WROUGHT COPPER TUBING MARINE SERVICE
14	LOW TEMPERATURE NACE CARBON STEEL

INST GAS
PROCESS
ELECTRIC TRACE PIPE
ELECTRICAL
ENCLOSURE LIMITS
SKID LIMITS

DISCRETE INSTRUMENT

INSTRUMENT (LOCAL MOUNT)
MASTER PANEL
NORMALLY INACCESSIBLE DISCRETE INSTRUMENT
LOCAL PANEL MOUNTED INSTRUMENT (MOUNTED ON FRONT OF PANEL)
LOCAL PANEL MOUNTED INSTRUMENT (MOUNTED ON REAR OF PANEL)
LIGHT IN FEILD

PLC SYMBOLS

DI – DIGITAL INPUT (TO PROGRAMMABLE CONTROLLER)
DO – DIGITAL OUTPUT (FROM PROGRAMMABLE CONTROLLER)
AI – ANOLOG INPUT (TO PROGRAMMABLE CONTROLLER)
AO – ANOLOG OUTPUT (FROM PROGRAMMABLE CONTROLLER)
ESS – ELECTRONIC SAFETY SYSTEM
PCS – PROCESS CONTROL SYSTEM

GENERAL ABBREVIATIONS

AI	ANALOG INPUT
A/M	AUTO/MANUAL
AO	ANALOG OUTPUT
AS	AIR SUPPLY
BF	BLIND FLANGE
BPV	BACK PRESSURE VALVE
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
EI	POSITION INDICATOR
F	FLAME ARRESTOR
FC	FLOW CONTROLLER
FI	FLOW INDICATOR
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FIC	FLOW INDICATOR CONTROLLER
FIT	FLOW INDICATOR TRANSMITTER
FM	FLOW METER
FIS	FLOW INDICATOR SWITCH
FS	FLOW SWITCH
FSL	FLOW SAFETY LOW
FSH	FLOW SAFETY HIGH
IA	INSTRUMENT AIR
IAS	INSTRUMENT AIR SYSTEM
IG	INSTRUMENT GAS
IGS	INSTRUMENT GAS SYSTEM
LAL	LEVEL ALARM LOW
LAH	LEVEL ALARM HIGH
LIC	LEVEL INDICATING CONTROLLER
LI	LEVEL INDICATOR
LIS	LEVEL INDICATING SWITCH
LIT	LEVEL INDICATING TRANSMITTER
LT	LEVEL TRANSMITTER
LC	LEVEL CONTROLLER
LCH	LEVEL CONTROLLER HIGH
LCL	LEVEL CONTROLLER LOW
LG	LEVEL GAUGE
LS	LEVEL SWITCH
LSHH	LEVEL SAFETY HIGH HIGH
LSH	LEVEL SAFETY HIGH
LSL	LEVEL SAFETY LOW
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
C	COMMON
S	SIGNAL
PI	PRESSURE INDICATOR
PC	PRESSURE CONTROLLER
PT	PRESSURE TRANSMITTER
PS	PRESSURE SWITCH
PSH	PRESSURE SAFETY HIGH
PSL	PRESSURE SAFETY LOW
PSV	PRESSURE SAFETY VALVE
PSIG	POUNDS PER SQUARE INCH GAUGE
SDV	SHUT DOWN VALVE
XV	SOLENOID VALVE
TC	TEMPERATURE CONTROLLER
PDT	PRESSURE DIFFERENTIAL TRANSMITTER
PDC	PRESSURE DIFFERENTIAL CONTROLLER
PDI	PRESSURE DIFFERENTIAL INDICATOR
TI	TEMPERATURE INDICATOR
TCV	TEMPERATURE CONTROL VALVE
LGV	LEVEL GAUGE VALVE
TDC	TEMPERATURE DIFFERENTIAL CONTROLLER
TDIC	TEMPERATURE DIFF INDICATOR CONTROLLER
TE	TEMPERATURE ELEMENT
TIC	TEMPERATURE INDICATING CONTROLLER
TIT	TEMPERATURE INDICATING TRANSMITTER
TS	TEMPERATURE SWITCH
TSL	TEMPERATURE SAFETY LOW
TSH	TEMPERATURE SAFETY HIGH
WS	WATER SUPPLY
TW	THERMO WELL
TS	TRANSFORMER
ME	MIST ELIMINATOR
TT	TEMPERATURE TRANSMITTER
ELEV	ELEVATION

NOTE: –
1. CONSULT PIPE SPEC FOR PRESSURE RATINGS

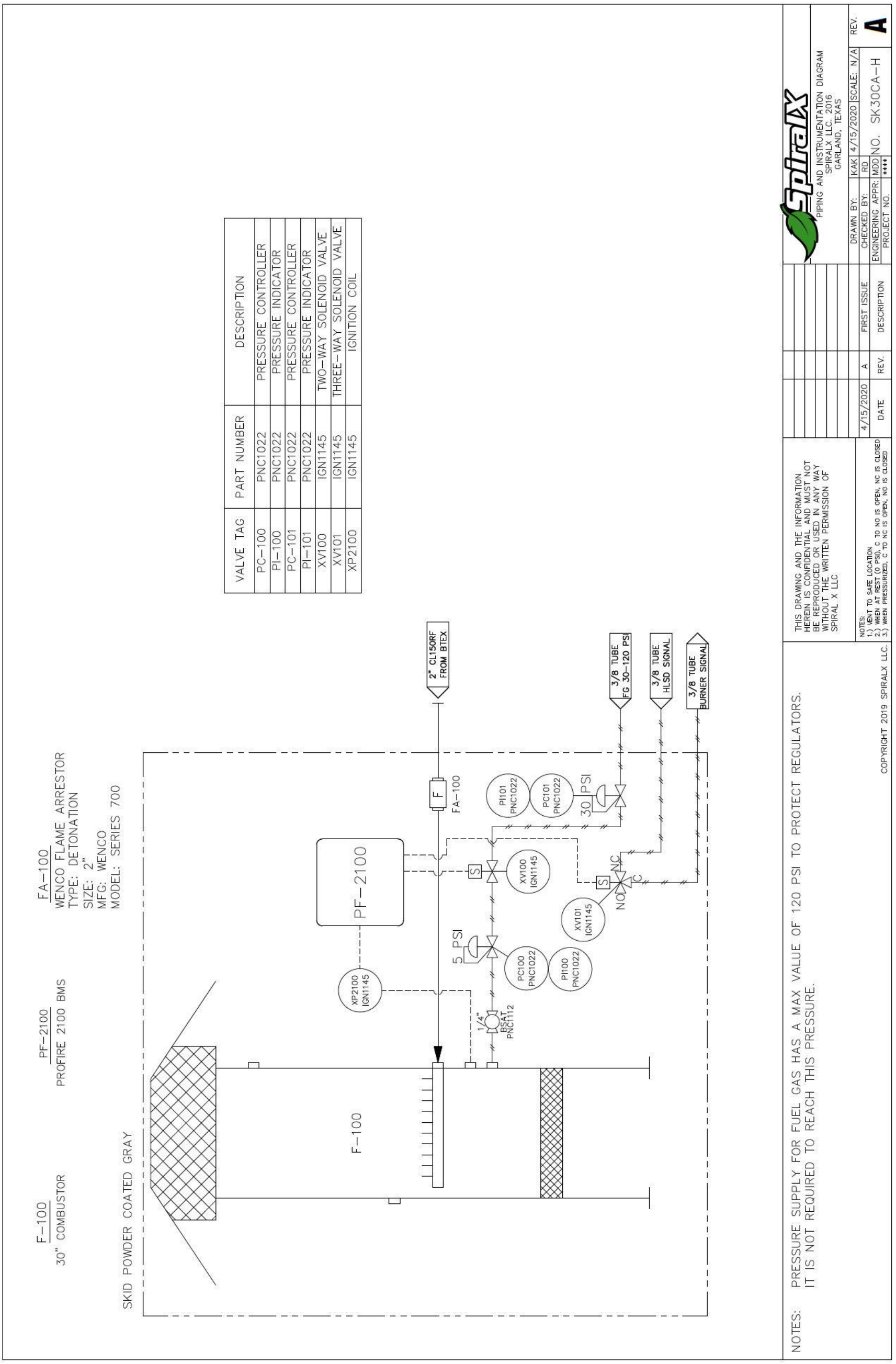
NOTES:
1.) VENT TO SAFE LOCATION
2.) WHEN AT REST (0 PSI), C TO NO IS OPEN, NC IS CLOSED
3.) WHEN PRESSURIZED, C TO NC IS OPEN, NO IS CLOSED

DATE	REV.	DESCRIPTION
12/11/2018	A	FIRST ISSUE

SpiralX
LEGEND SHEET
PIPING AND INSTRUMENTATION DIAGRAM
SPIRALX LLC. 2016.GARLAND, TEXAS

DRAWN BY:	RD	12/11/2018	SCALE: N/A	REV.
CHECKED BY:	KAK	NO.LEGEND PAGE		A
ENGINEERING APPR:	MDD			
PROJECT NO.	****			

P&ID for 30” combustor shown. 48”, 60” and 80” combustor will be similar.

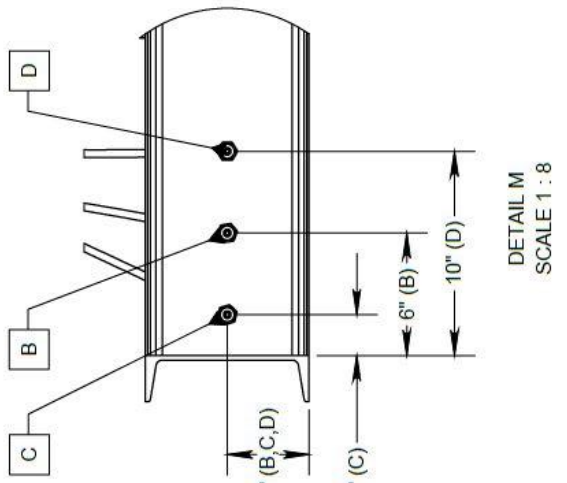


6.2 | General Arrangement of Units

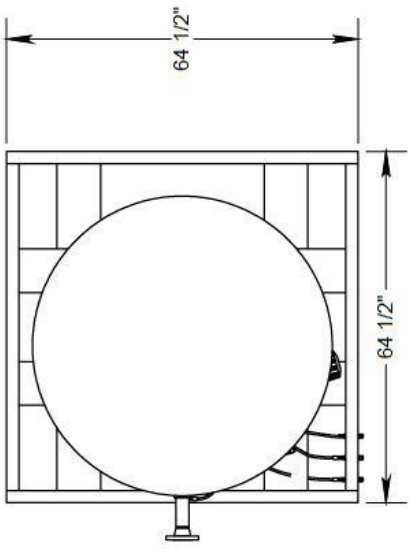
For stand-alone 30” combustor skid.

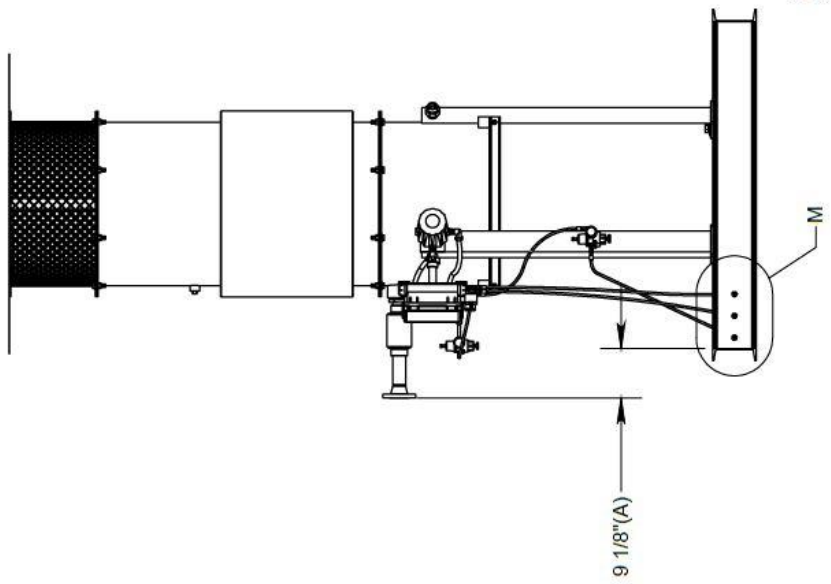
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	FIRST ISSUE	4/10/2020	MDD

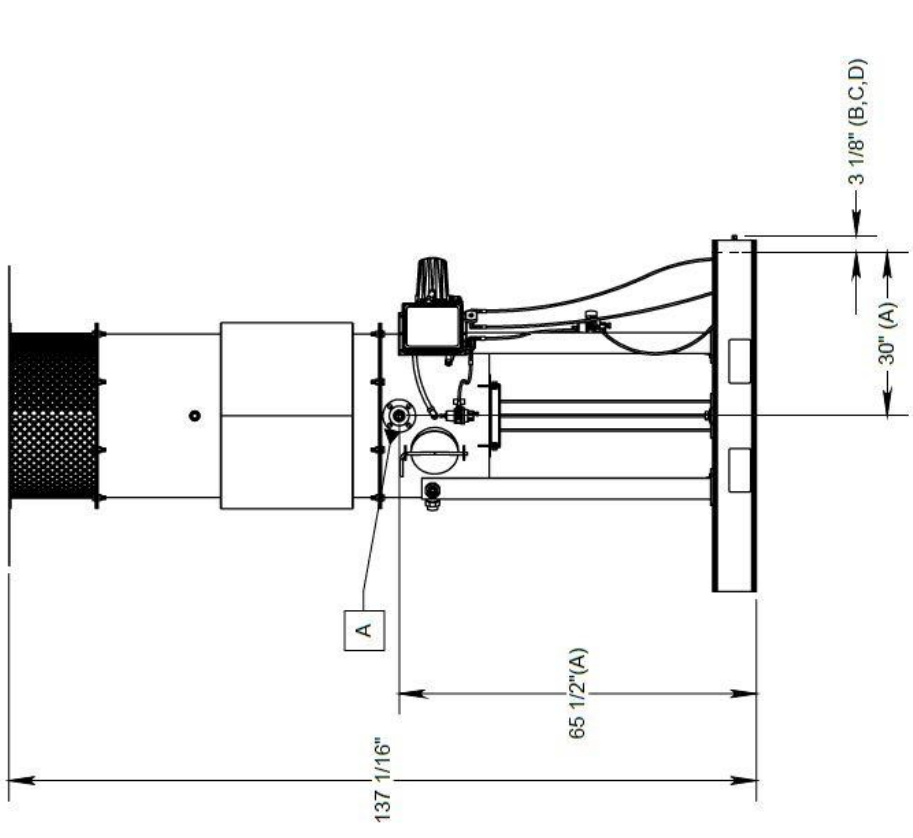
END CONNECTIONS				
LABEL	SIZE	TYPE	DESCRIPTION	PRESSURE
A	2"	CL150RF	INLET FROM BTEX	N/A
B	3/8"	TUBE FITTING	HLSD SIGNAL (IN)	0-30 PSIG
C	3/8"	TUBE FITTING	FUEL GAS (IN)	120 PSIG MAX
D	3/8"	TUBE FITTING	BURNER SIGNAL (OUT)	0-30 PSIG



DETAIL M
SCALE 1 : 8







UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	RD	4/10/2020
TOLERANCES:	CHECKED	KAK	4/10/2020
FRACTIONAL: ±1/16	ENG APPR.	MDD	4/10/2020
ANGULAR: ±1°	Q.C. SIGN		
TWO PLACE DECIMAL: ±05			
THREE PLACE DECIMAL: ±.005			
ENCLOSURE: ±3/16			
DEBUR ALL SHARP EDGES	C.I. SIGN		
DO NOT SCALE DRAWING			

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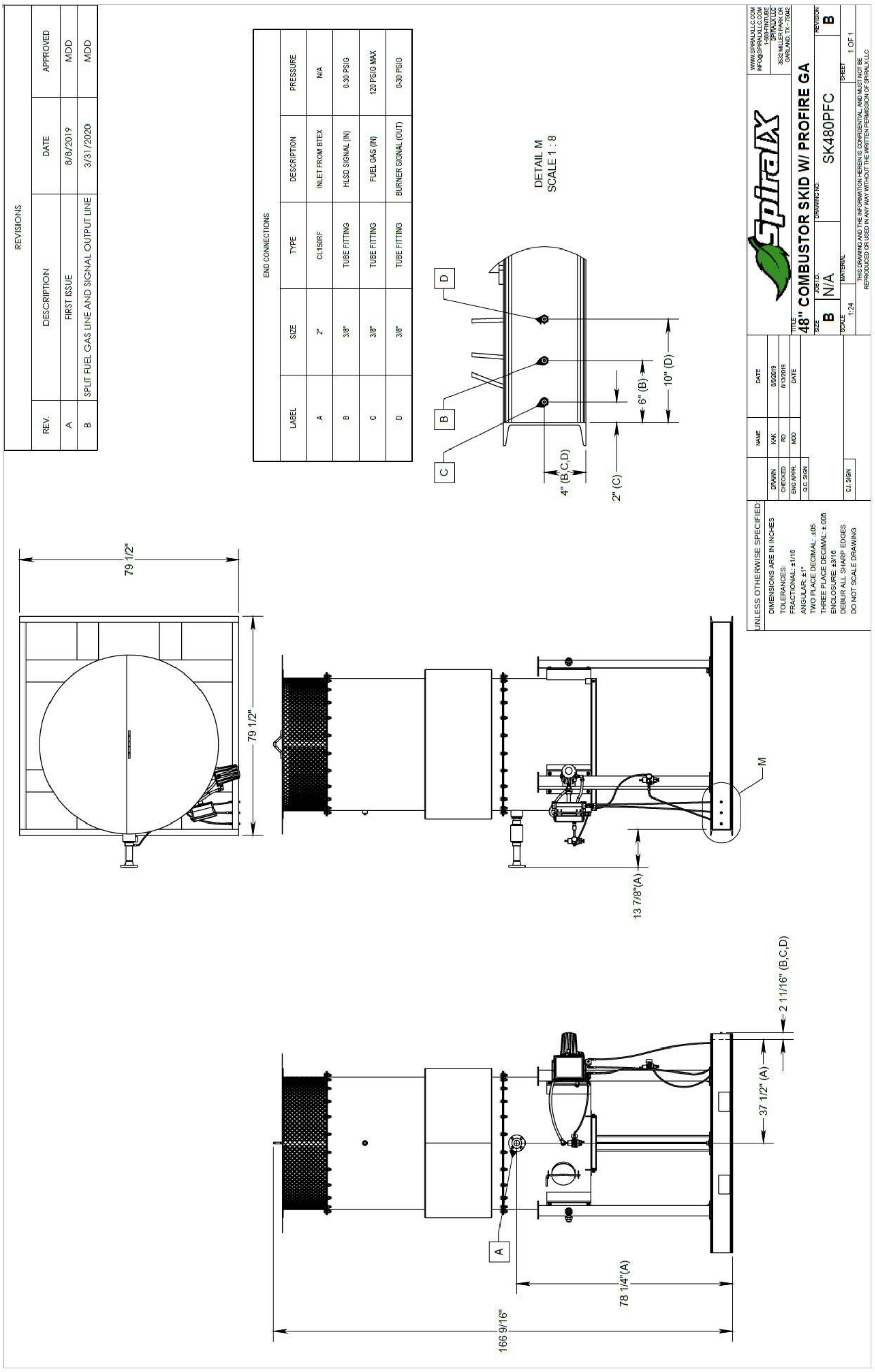
SPIRALX, LLC
3533 MILLER PARK DR
GARLAND, TX - 75042

TITLE: **30" COMBUSTOR SKID W/ PROFIRE GA**

SIZE	JOB I.D.	DRAWING NO.	REVISION
B	N/A	SK30CA-H-GA	A

SCALE	MATERIAL	SHEET
1:24		1 OF 1

For stand-alone skid. 48” combustor.



60” combustor.

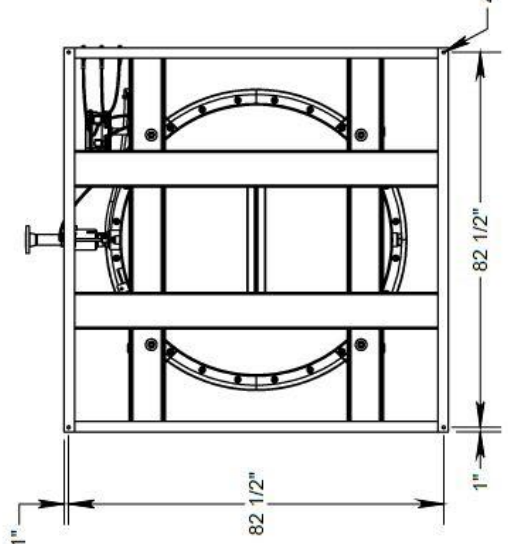
END CONNECTIONS				
LABEL	SIZE	TYPE	DESCRIPTION	PRESSURE
A	2"	CL150RF	BTEX EXHAUST INLET	NA
B	1"	FNPT	TEMP MONITORING PORT(OPTIONAL)	NA
C	3/8"	TUBE FITTING	FUEL GAS (IN)	100 PSI MAX
D	3/8"	TUBE FITTING	HLSD SIGNAL (IN)	30PSI
E	3/8"	TUBE FITTING	BURNER SIGNAL (OUT)	30PSI

REGULATOR LOCATED ON LEG SET @ 30 PSI.
REGULATOR LOCATED AT FUEL GAS INLET SET @ 5-7 PSI.

SURFACE PREP: SSPC SP-1, 2, & 3.
NO SANDBLASTING

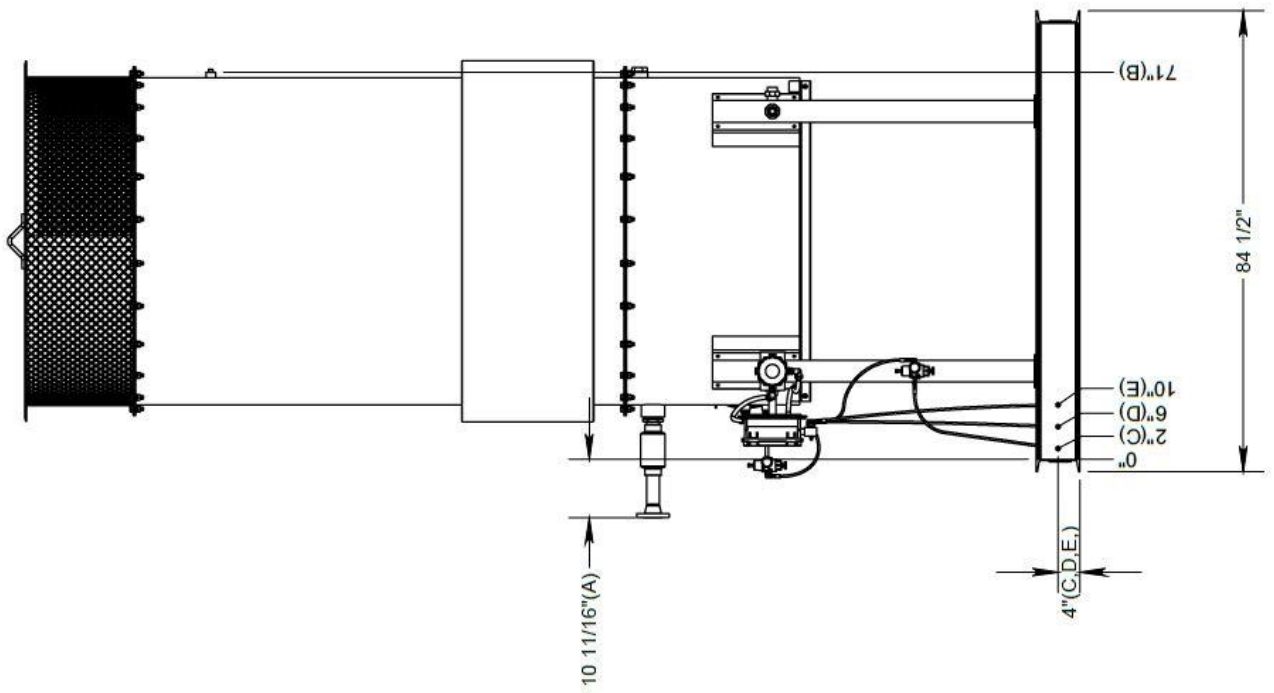
SKID:
MACRO 646 EPOXY PRIMER
B65 HI-SOLID POLYURETHANE
COLOR: CHOSEN BY CUSTOMER

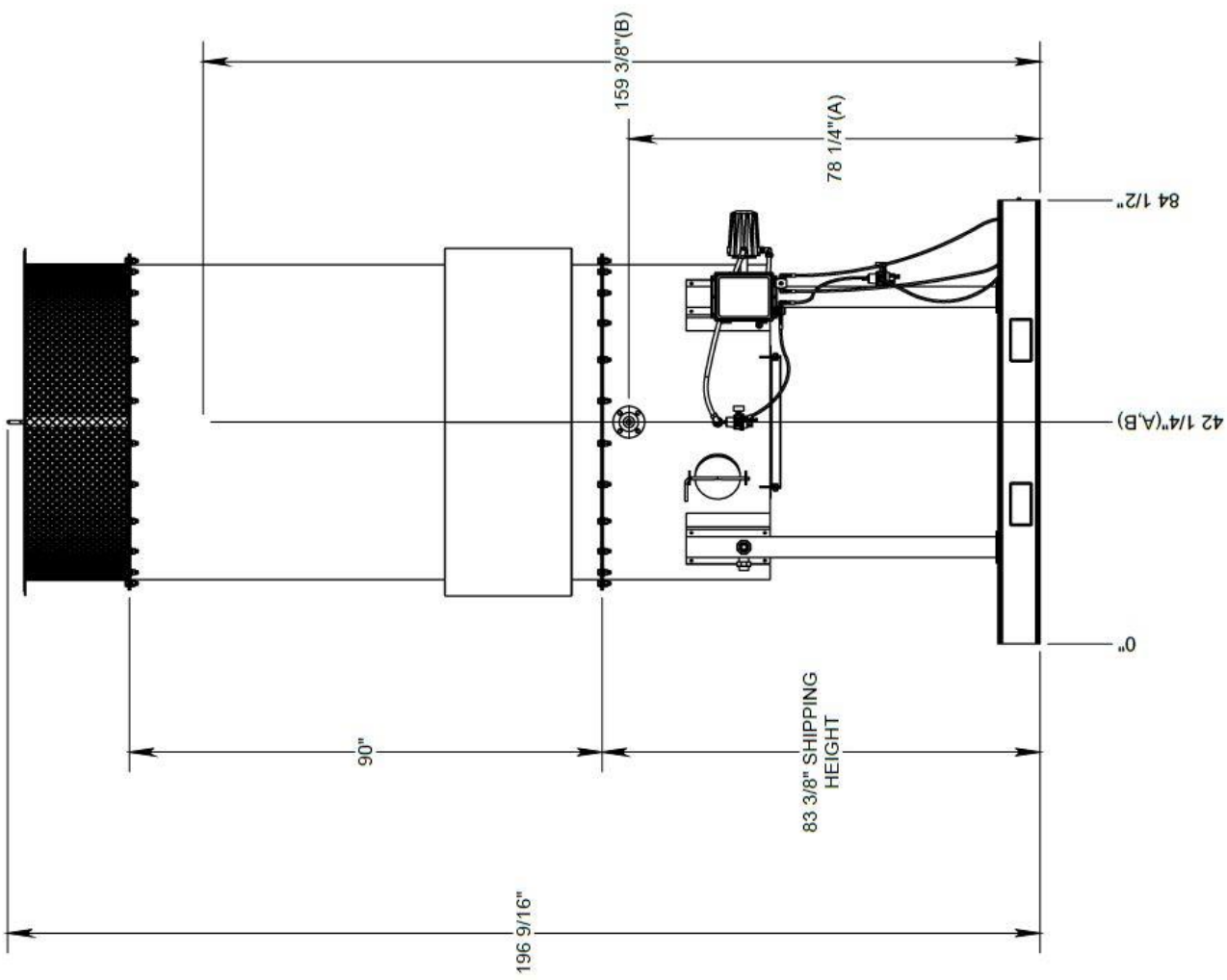
COMBUSTOR:
TUFCOTE 3.5 HIGH HEAT. 1200F RESISTANT.
COLOR: BLACK



ANCHOR BOLT LOCATIONS

NOTE:
COMBUSTOR CONTAINS THREE PARTS. LOWER PART IS ASSEMBLED WITH STRUCTURE WHILE SHIPPING AND UPPER PART IS SHIPPED LAYING ON THE FLAT BED. COMBUSTOR RAIN CAP IS SHIPPLED ON THE PALLET





TOTAL WEIGHT: 4000 LBS

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	KAK	
TOLERANCES:	CHECKED	RD	1/15/2021
FRACTIONAL: ±1/16	ENG APPR.	MOD	1/15/2021
ANGULAR: ±1°	Q.C. SIGN		1/15/2021
TWO PLACE DECIMAL: ±05			
THREE PLACE DECIMAL: ±.005			
ENCLOSURE: ±3/16	C.I. SIGN		
DEBUR ALL SHARP EDGES			
DO NOT SCALE DRAWING			

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2455, I-30 W
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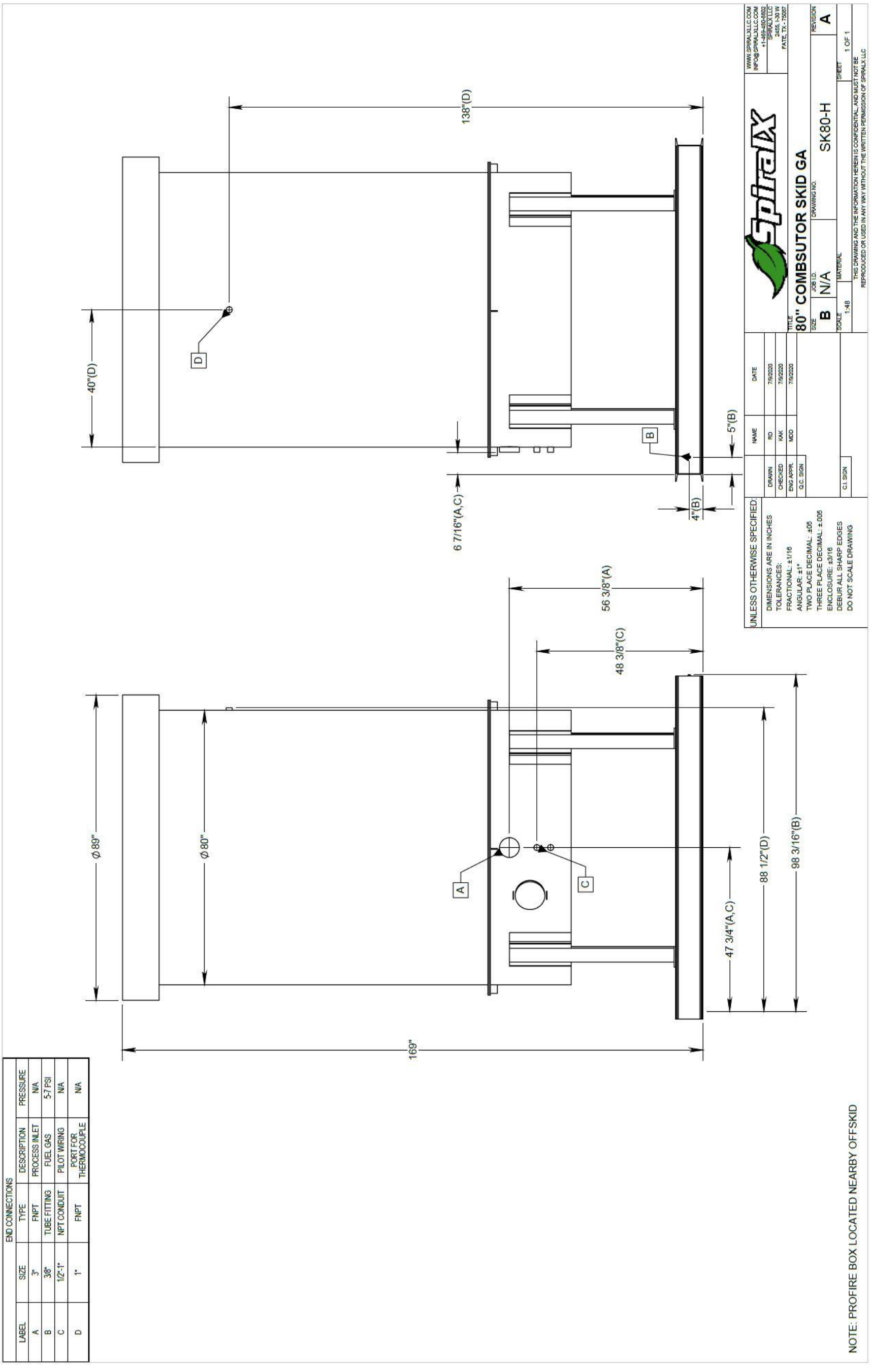
TITLE
60" COMBUSTOR GENERAL ARRANGEMENT

SIZE	JOB I.D.	DRAWING NO.	REVISION
B	N/A	SK-60CA	A

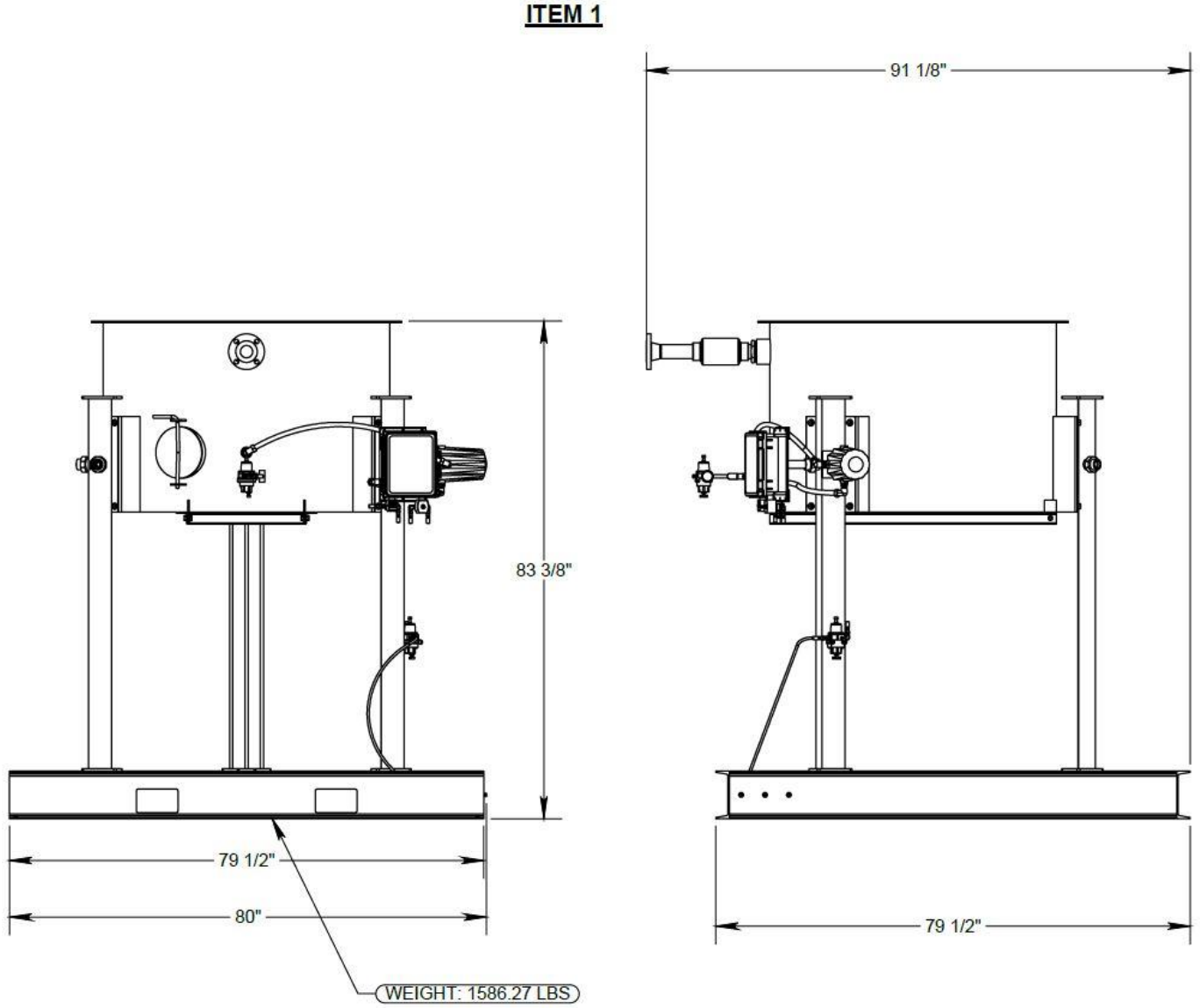
SCALE	MATERIAL	SHEET
1:64		1 OF 1

80” combustor

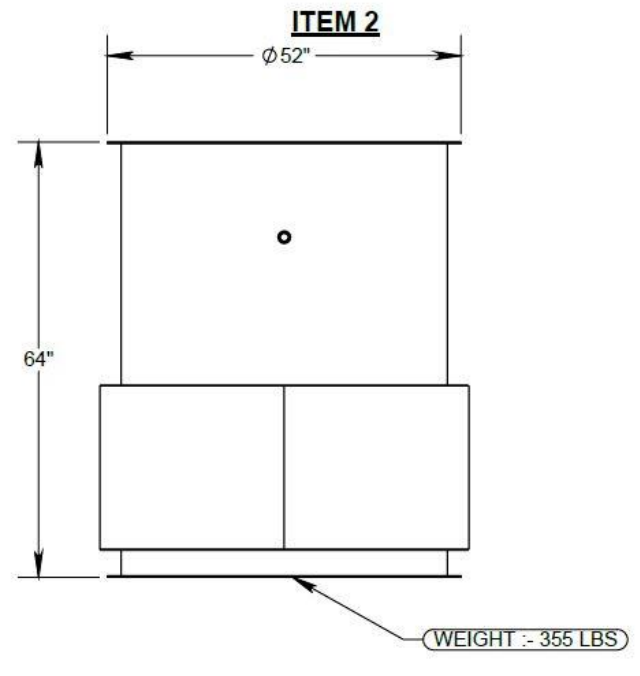


SHIPPING DOCUMENT
(3 ITEMS)

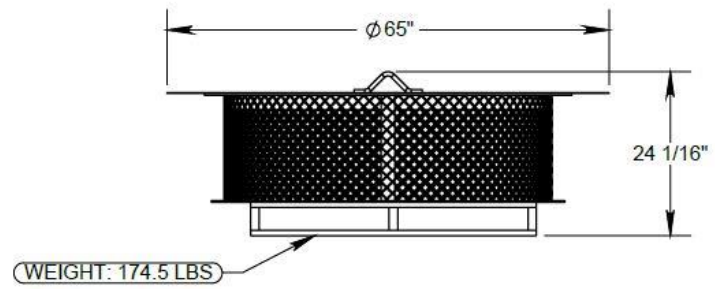
ITEM 1



ITEM 2



ITEM 3



TOTAL WEIGHT: 2635 LBS

UNLESS OTHERWISE SPECIFIED:		NAME	DATE
DIMENSIONS ARE IN INCHES	DRAWN	SMC	9/20/2019
TOLERANCES:	CHECKED	RD	9/20/2019
FRACTIONAL: ±1/16	ENG APPR.	MDD	9/20/2019
ANGULAR: ±1°	Q.C. SIGN		
TWO PLACE DECIMAL: ±05			
THREE PLACE DECIMAL: ±.005			
ENCLOSURE: ±3/16			
DEBUR ALL SHARP EDGES	C.I. SIGN		
DO NOT SCALE DRAWING			

SpiralX

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SPIRALX LLC
3532 MILLER PARK DR
GARLAND, TX - 75042

TITLE
48" COMBUSTOR WITH SKID TRANSPORT DOC

SIZE	JOB I.D.	DRAWING NO.	REVISION
B	N/A	SK48PFC TRANSPORT	A

SCALE	MATERIAL	SHEET
1:24		1 OF 1

7 | CERTIFICATE OF COMPLIANCE

Certificate of Compliance
Title 40 of the Code of Federal Regulations

SpiralX LLC certifies the following items:

24" ENCLOSED COMBUSTOR, SPIRALX LLC P/N: 24-CV
30" ENCLOSED COMBUSTOR, SPIRALX LLC P/N: 30-CV
48" ENCLOSED COMBUSTOR, SPIRALX LLC P/N: 48-CV
60" ENCLOSED COMBUSTOR, SPIRALX LLC P/N: 60-CV
80" ENCLOSED COMBUSTOR, SPIRALX LLC P/N: 80-CV

are designed for the destruction of volatile organic compounds (VOCs) in compliance with regulations governing upstream oil and gas facilities (40 CFR 60, Subpart 0000a) and gas dehydration facilities (40 CFR 63, Subparts HH and HHH). The reduction in the mass content of volatile organic compounds is a minimum of 95% as prescribed in 40 CFR 60.5412a(d)(iv). ≤ 98% claimed for VOCs and H_2S with continuously monitored pilot flame. ≤ 99% claimed for compounds containing only carbon, hydrogen, and oxygen with no more than three carbon atoms and a continuously monitored pilot flame.

Date : FEBRUARY 26, 2019

Bryan C. Holland
President of SpiralX LLC

SpiralX
www.spiralxllc.com
Manufacturing Facility: 2455 E I-30
Fate, TX 75087

APPENDIX A

Table 1: Flare Requirements

Acceptable Control Efficiency	Requirements

destruction efficiencies of:
 	
≤ 98% for VOCs and H_2S, and
 	
≤ 99% for compounds containing only carbon, hydrogen, and oxygen with no more than three carbon atoms
	The flare must:
	
	• meet 40 CFR §60.18 requirements for minimum heating value of waste gas and maximum flare tip velocity
	• have supplemental fuel gas added to any flared streams if needed to ensure gases are sufficiently combustible
	• be fueled by sweet gas or liquid petroleum gas except where only field gas is available and it is not sweetened at the site
	• be designed for and operated with no visible emissions, except for periods not to exceed a total of five minutes during any two consecutive hours (acid gas flares which must comply with opacity limits and records of 30 TAC §111.111(a)(4) are exempt from this)
	• be lit at all times when gas streams are present by having a continuous pilot flame or an automatic ignition system
	  • if a continuous pilot is utilized, the presence of a flame must be continuously monitored with a thermocouple or other equivalent device (such as an infrared monitor) as specified in 40 CFR §60.18
	  • if an automatic ignition system is utilized, it must ensure ignition when waste gas is present
	Notes:
	
	• the time, date, and duration of any loss of flare pilot flame, or auto-ignition must be recorded
	• monitors must be accurate to and calibrated at a frequency in accordance with manufacturer specifications
	• a temporary, portable, or backup flare used less than 480 hours per year is not required to be monitored
	• emergency/upset emissions are not authorized; the only emissions authorized from an emergency flare are the pilot emissions; the pilot is subject to monitoring as described above