Stack Parameter Verification

Eagle Foundry Company

Prepared for:

Eagle Foundry Company

Eagle Creek, Oregon

January 9, 2026

Project No. M8006.63.001

Prepared by:

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3140 NE Broadway, Portland, OR 97232

MAUL FOSTER ALONGI

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Abbreviations

CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
MFA	Maul Foster & Alongi, Inc.
ODEQ	Oregon Department of Environmental Quality
ft	feet
m	meter
fps	feet per second
fpm	feet per meter
dscfm	dry standard cubic feet per minute
dscmm	dry standard cubic meter per meter
°F	degrees Fahrenheit
°C	degrees Celsius

1 Introduction

1.1 Project Purpose

Eagle Foundry Company (Eagle Foundry) owns and operates a facility specializing in iron and steel alloy components casting located at 23123 SE Eagle Creek Road, Eagle Creek, Oregon (the facility). The facility currently operates under Standard Air Contaminant Discharge Permit (ACDP) No. 03-2631-ST-01 issued by the Oregon Department of Environmental Quality (DEQ) on June 11, 2020.

Eagle Foundry retained MFA to confirm stack parameters for exhaust points at the facility, including stack diameters, velocities, flowrates, and temperatures. The following sections describe the exhaust parameter measurement methods and the resulting measured values.

1.2 Project Contacts

Facility:	**Eagle Foundry Company**
Address:	21123 SE Eagle Creek Road. Eagle creek, OR 97022
Contact:	Greg Lasslett
Phone:	503-637-3048 ext 213
Email:	gregl@eaglefoundaryco.com

Consultant:	**Maul Foster & Alongi**
Address:	6 Centerpointe Dr, Suite 360. Lake Oswego, OR 97035
Contact:	Paul John
Phone:	503-705-6930
Email:	pjohn@maulfoster.com

1.3 Testing Personnel

The MFA on-site team was led by Paul John, Senior Environmental Scientist, and assisted by Payton Sample, Staff Air quality Specialist. Paul John and Payton Sample conducted velocity, flowrate, and temperature measurements while confirming emission point diameters.

Greg Lasslett, Project Manager, was the primary contact for Eagle Foundry. Greg Lasslett managed staff who confirmed emission point release heights, and duct diameters. Eagle Foundry staff prepared sample point locations according to guidance from Paul John to ensure proper placement for EPA Reference Methods 1 and 2 flow measurements. The sample locations were positioned appropriately based on the specified criteria.

2 Facility Description

2.1 Facility Location

The facility is located in Eagle Creek, Oregon, east of the Clackamas River. The area immediately surrounding the facility is characterized primarily by flat terrain, with rolling hills to the northeast. The facility is located within a mixture of residential, commercial, industrial, and forest land-use zones.

2.2 Process Description

Purchased scrap metal is melted in an electric induction furnace where an electrical current generates a charge that melts the metal. Molds are produced at the Big Palmer and Small Palmer molding stations, which use a no bake molding system consisting of ceramic beads to create hollow internal sections. Molds are formed around wood patterns, which replicate the exterior of the desired castings.

Additional alloys are added to the molten metal to meet product specifications. Molten metal is transferred and poured into molds using overhead cranes. A riser in the mold provides an additional reservoir of feed metal to release the cavity air and counteract the shrinkage that occurs as the casting begins to cool. A small amount of hot top is added to the riser to act as a molten metal insulation while the casting solidifies. The castings are then transferred to the Cooling Bunker. Emissions from foundry operations are controlled by two baghouses EP2_3 and EP2_4.

When the metal has cooled sufficiently for the casting to hold its shape, it is separated from the mold by a mechanical process referred to as shakeout, by the sand reclamation system. Eagle Foundry recycles a large proportion of mold materials for re-use. Sand handling processes include pneumatic transport, storage, and screening recycled foundry sand.

After cooling, metal risers are removed either by break-off or by air arc and collected for re-melting. The casting is then sent to finishing processes as appropriate. A range of finishing processes may be performed, including mesh blasting; heat treatment, welding, and grinding.

2.3 Emission Points

Emission points for the following sources were confirmed as part of this testing program conducted by MFA staff:

- Reclamation baghouse (EP2_2) - controls emissions from the mold reclamation process;
- Screening baghouse (EP1_3) - controls emissions from mold material screening and storage;
- Small Palmer baghouse (EP1_1) - controls emissions from the Small Palmer mold forming machine, the Small Palmer Bead Silo, and torch cutting;
- Finishing baghouse (EP3_1) - controls emissions from grinding and rotoblasting;
- Welding stack (WELD1) (Front) - releases emissions from welding stations;

- Welding stack (WELD2) (Backside SW) - releases emissions from welding stations;
- Welding stack (WELD3) (Backside NW) - releases emissions from welding stations;
- Mesh blasting stack (MESH) - releases emissions through a circular duct on the mesh blasting machine, however, due to the absence of a stack, EPA Methods 1 and 2 could not be used.
- Pattern making emission points (PTRN) – emissions are assumed to be released to atmosphere through a wall vent powered by a fan; however, due to the absence of stacks, EPA Methods 1 and 2 could not be used.

Figure 1 shows the locations of all TEUs.

2.4 Emission Point Stack Dimensions and Traverse Points

Prior to testing for exhaust velocities and temperatures, MFA confirmed stack diameters, identified appropriate sample locations, and determined the appropriate number and placement of velocity pressure test points per 40 CFR 60 Appendix A, EPA Method 1. On all round stacks, two test ports were drilled into the stack at 90 degrees from one another. On the Small Palmer baghouse stack, which is rectangular, four equally spaced ports were drilled on one side of the stack. Testing was performed on the following sources using EPA Method 2:

- Reclaim baghouse (EP2_2): The stack is 36 inches in diameter. Testing ports were located 3 duct diameters downstream from the baghouse exit and 2 duct diameters upstream of the exhaust release point. Sixteen (16) traverse points were required.
- Screening station baghouse (EP1_3): The stack is 14 inches in diameter. Testing ports were located 13.4 duct diameters downstream from the baghouse exit and 2 duct diameters upstream of the exhaust release point. Eight (8) traverse points were required.
- Small Palmer Baghouse (EP1_1): The stack is a rectangular duct, 34 in x 34 in. Per EPA Method 1, the equivalent duct diameter was determined to be 34 inches in diameter. Testing ports were located 2.1 duct diameters downstream from the baghouse exhaust and 1.1 duct diameters upstream from the exhaust release point. Sixteen (16) traverse points were required.
- Finishing Baghouse (EP3_1): The stack is 38 inches in diameter. Testing ports were located 2.75 duct diameters downstream from the baghouse exit and 2 duct diameters upstream from the exhaust release point. Sixteen (16) traverse points were required.
- Welding Stack-Front side of Finishing building (WELD1): The stack is 8 inches in diameter. Testing ports were located 29 diameters downstream from the nearest duct bend and 2 diameters upstream from the exhaust release point. Eight (8) traverse points were required.
- Welding Stack-Backside of Finishing building SW (WELD2): The stack is 8 inches in diameter. Testing ports were located 28 diameters downstream from the nearest duct bend and 2 diameters upstream from the exhaust release point. Eight (8) traverse points were required.
- Welding Stack-Backside of Finishing building NW (WELD3): The stack is 8 inches in diameter. Testing ports were located 27.9 diameters downstream from the nearest duct bend and 2 diameters upstream from the exhaust release point. Eight (8) traverse points were required.

Additionally, velocity and temperature measurements were taken at the following sources using a hot-wire anemometer:

- Meshblast: This equipment has no stack on the outlet duct. Air velocity measurements were taken with a hot wire anemometer. See Appendix H for data collected.
- Pattern Room Fan: This wall fan provides ventilation in the pattern room and has no ducting on the outlet. Air velocity measurements were taken with a hot wire anemometer. See Appendix I for data collected.

3 Exhaust Parameter Test Results

3.1 Exhaust Parameter Test Results

Test results, detailed measurements of stack dimensions, test port locations, velocity pressure readings, temperatures, and barometric pressure are presented in Appendix A.

3.2 Operation Conditions

Eagle Foundry personnel confirmed that production on the day of testing was at normal levels. For the purposes of this testing, the air handling systems were operating at normal rates. None of the stacks tested have fans with variable rates.

4 Airflow Test Methods and Procedures

4.1 Testing Methods and Procedures

MFA personnel performed the following EPA methods as described in Title 40 CFP Part 60 Appendix A.

EPA Reference Method 1, "Sample and Velocity Traverses for Stationary Source." The objective of this Method is to determine a suitable location for testing and to determine the velocity and/or sample points for the exhaust stack or duct. Sampling locations and velocity point measurement locations are in Appendices A through G.

EPA Reference Method 2, "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type-S Pitot Tube)." The objective of Method 2 is to determine volumetric flow. The average velocity, temperature, static pressure, and source area are used to calculate volumetric flow for the source.

Moisture Content of air streams: All sources tested use ambient air for makeup. None of the sources tested were combustion sources, where the moisture content of the exhaust could be significantly altered from ambient conditions. Ambient moisture data was obtained from the closest National Weather Service station, Eagle Creek, OR (EGK03).

Dry Molecular Weight: Per EPA Method 2, Sec 8.6, for processes emitting essentially air, oxygen and carbon dioxide analyses need not be conducted. In calculating flowrates, MFA used a dry molecular weight of 29.0 per EPA Method 2.

Barometric Pressure: Per EPA Method 2, Sec 6.5, the barometric pressure reading may be obtained from a nearby National Weather Service station and adjusted for elevation at a rate of −0.10 in Hg per 100 feet of elevation increase. The National Weather Service Station at Portland International Airport (elevation 20 feet) was used. The elevation difference between the station and the facility, rounded to the nearest 100-foot increment, was 300 feet.

4.2 Testing Equipment

4.2.1 Standard and S-Type Pitot Tubes

Two types of pitot tubes were used for measuring velocity pressures. A standard pitot tube was used for small stacks (diameters less than 12 inches), and an S-type pitot tube was used for all stacks larger in diameter. Calibration data can be found in Appendix J.

4.2.2 ADM Shortridge Micromanometer

An ADM Shortridge micromanometer was used during testing. This multifunctional instrument is designed to measure air velocity, differential pressure, and static pressure in ductwork when paired with either an S-type or standard pitot tube. The unit uses a pressure transducer to convert pressure into digital reading displayed on the unit screen. Calibration data can be found in Appendix J.

4.2.3 Fluke Temperature Meter and K-Type Thermocouple

Handheld digital thermometer used in conjunction with K-Type thermocouple probe to precise temperature readings. This unit was used to measure stack temperatures. Calibration data can be found in Appendix J.

4.2.4 Dwyer 471 Digital Thermo-Anemometer

The instrument uses a heated sensor to measure air velocity in clean, dry airstreams. This unit was used to measure air velocity of the Mesh Blast and Pattern Room fans due to the lack of ducting on those units.

References

U.S. Environmental Protection Agency. (2023). Title 40 Part 60 Appendix A Method 1: Sample and Velocity Traverses for Stationary Sources.

U.S. Environmental Protection Agency. (2017). Title 40 Part 60 Appendix A Method 2: Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube).

Limitations

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Figure

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Figure 1
TEU Locations

Eagle Foundry Co.
23123 SE Eagle Creek Rd
Eagle Creek, OR

Legend

- Point Source Location
- Volume/Area Source
- Building Locations
- Facility Boundary
- Tax Lot

Key Map

0 50
Meters

Data Sources
Aerial photograph (2024) obtained from Google; tax lot data (2025) obtained from Oregon Metro.

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Path: C:\Workspace\M8006.63_ATTORNEY CLIENT PRIVILEGE\Pro\M8006_63_001.aprx\Fig 4-2 Emission Unit Locations
Print Date: 10/24/2025
Reviewed By: lriley
Produced By: jroberts
Project: M8006.63.001

Appendix A

Source Parameter Data

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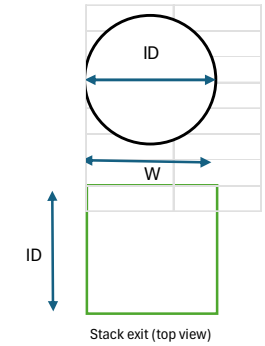
EPA Method 1
Stack Parameters and Traverse Points

Reference Diagram



Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**3:20 PM**
Source:	**Finishing Bag House**		
Facility:	**Eagle Foundry**		

Type of Testing:	V	(P for Particulate; V for Velocity /Nonparticulate)	
Type of Duct:	C	(C for circular; R for rectangular)	
Sampling location height (approx):		25.17	feet
Stack height:		31.5	feet
Circular ID (Rectangular Depth)		38	inches
Port depth and/or wall thickness:		0.1	inches
Stack width (Rectangular only)			

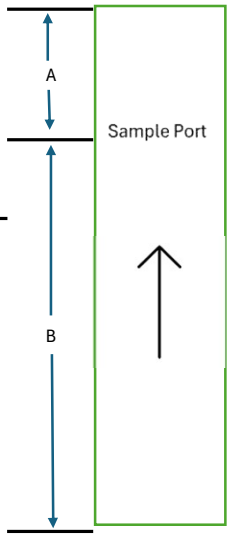
Equivalent Diameter		38	inches (If circular=duct ID)
If rectangular=	2*Depth*Width= Depth+Width	--	inches (If circular=duct ID

Stack/duct area=	7.876 sq ft	1134.115 sq inches

Sample Port Location:

	Downstream flow disturbance from process	Upstream flow distrubance toward exit
	A	B
Number of Inches:	104.5	76
Number of Diameters:	2.75	2
Minimum Number of Traverse Point:	16	

Ports	Points	% of diameter	Distance from inside wall (in)
A,B	1	3.2%	1.216
	2	10.5%	3.99
	3	19.4%	7.372
	4	32.3%	12.274
	5	67.7%	25.726
	6	80.6%	30.628
	7	89.5%	34.01
	8	96.8%	36.784



Drawing not to scale and not an accurate representation of stack

Calculation Sheet

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Finishing Bag House**
Facility:	**Eagle Foundry**

Stack Dimensional Data:

	Circ dia:	38 in
Rectanglar		
	Width:	in
	Length:	in
	Stack area:	7.876 sq ft

Equipment:

Pitot ID:	
Pitot Cp:	0.84
Digital Manometer:	
Temperature Meter:	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65 in H_2O	(4)Site Elevation:	351.9
Static Pressure(P_g):	0.04 in H_2O	T_{std}:	528
(2)Dry Molecular weight:	29.0	P_{std}:	29.92
(3)Assumed moisture:	0.95%		
Sample Time:			

Traverse Point Port	Point	Velocity(ΔP) ("H_2O)	Stack Temp (^oF)	Check for Cyclonic Flow Null Angle
A	1	0.35	65.1	20
	2	0.4	65.1	0
	3	0.41	65.1	0
	4	0.32	65	20
	5	0.35	65.2	0
	6	0.49	67.7	0
	7	0.34	69.9	0
	8	0.3	71.1	0
B	1	0.29	69.6	0
	2	0.36	69.1	0
	3	0.34	68.1	0
	4	0.31	67.8	0
	5	0.3	68.1	0
	6	0.33	68	10
	7	0.31	69.3	0
	8	0.25	70.9	0
	Average:	0.340625	67.81875	3
	Average Velocity(ΔP):	0.340625		Flow is found to be: Non-cyclon
	Aaverage Stack Temp (T_s):		67.81875	

Absolute Stack Pressure,(P_s):	29.65	in H_2O
Avg Absolute Stack Temp($T_{s(abavg)}$):	527.82	^oR
Average stack gas velocity (V_s):	32.8	ft/s
Average stack gas volumetric flow rate (Q_{sd}):	914,216.89	dscf/hr
	15,236.95	dscf/min

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portland International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2.

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0.

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03).

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET.

EPA Method 1
Stack Parameters and Traverse Points

Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**12:40 PM**
Source:	**Reclaim Baghouse**		
Facility:	**Eagle Foundry**		

Type of Testing: V (P for Particulate; V for Velocity /Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)
Sampling location height (approx): 16.25 feet
Stack height: 22.25 feet

Circular ID (Rectangular Depth) 36 inches
Port depth and/or wall thickness: 0.1 inches
Stack width (Rectangular only)
36 inches (If circular=duct ID)

Equivalent Diameter
If rectangular= 2*Depth*Width= / Depth+Width — inches (If circular=duct ID

Stack/duct area= 7.069 sq ft 1017.876 sq inches

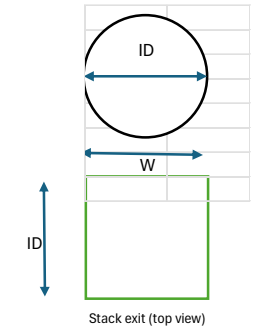
Sample Port Location:

	Downstream flow disturbance from process	Upstream flow distrubance toward exit
	A	B
Number of Inches:	108	72
Number of Diameters:	3	2

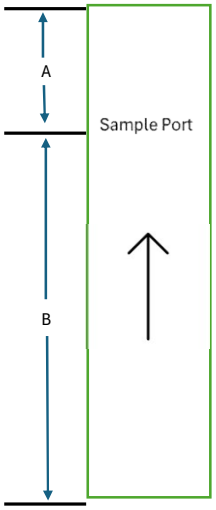
Minimum Number of Traverse Point: 16

	Points	% of diameter	Distance from inside wall (in)
A	1	3.2%	1.152
	2	10.5%	3.78
	3	19.4%	6.984
	4	32.3%	11.628
	5	67.7%	24.372
	6	80.6%	29.016
	7	89.5%	32.22
	8	96.8%	34.848

Reference Diagram



Stack exit (top view)



Drawing not to scale and not an accurate representation of stack

Calculation Sheet

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Reclaim Bag House**
Facility:	**Eagle Foundry**

Stack Dimensional Data:

Circ dia:	36	in
Rectanglar		
Width:		in
Length:		in
Stack area:	7.069	sq ft

Equipment:

Pitot ID:	8-Apr
Pitot Cp:	0.84
Digital Manometer:	
Temperature Meter:	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65	in H_20	(4)Site Elevation:	351.9
Static Pressure(P_g):	0.17	in H_20	T_{std}:	528
(2)Dry Molecular weight:	29.0		P_{std}:	29.92
(3)Assumed moisture:	0.95%			

Traverse Point Port	Point	Velocity(ΔP) ("H_2O)	Stack Temp (^oF)	Check for Cyclonic Flow Null Angle
A	1	0.09	75.2	0
	2	0.09	73.9	0
	3	0.08	72	0
	4	0.09	72	0
	5	0.13	74	0
	6	0.12	80.4	0
	7	0.23	83.3	0
	8	0.18	83.6	0
B	1	0.1	83.7	0
	2	0.18	80.5	0
	3	0.14	78.7	0
	4	0.13	78.2	0
	5	0.13	79	0
	6	0.12	82.2	0
	7	0.11	84.2	0
	8	0.13	84.9	0
	Average:	0.128125	79.1125	0

Average Velocity(ΔP):	0.128125	Flow is found to be:	Non-cyclonic
Average Stack Temp (T_s):	79.1125		

Absolute Stack Pressure,(P_s):	29.66	in H_20
Avg Absolute Stack Temp($T_{s(abavg)}$):	539.11	^oR
Average stack gas velocity (V_s):	20.35	ft/s
Average stack gas volumetric flow rate (Q_{sd}):	498,010.41	dscf/hr
	8,300.17	dscf/min

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portland International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0

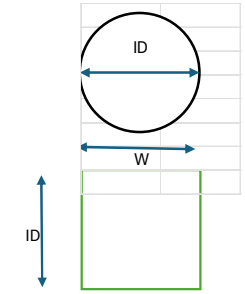
(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET.

EPA Method 1

Stack Parameters and Traverse Points

Reference Diagram



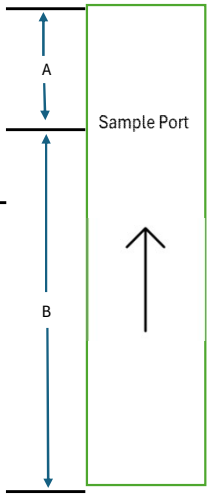
Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**2:50 PM**
Source:	**Small Palmer Baghouse**		
Facility:	**Eagle Foundry**		

Type of Testing:	V	(P for Particulate; V for Velocity /Nonparticulate)	
Type of Duct:	R	(C for circular; R for rectangular)	
Sampling location height (approx):		13.88	feet
Stack height:		16.88	feet
Circular ID (Rectangular Depth)		34	inches
Port depth and/or wall thickness:		0.1	inches
Stack width (Rectangular only)		34	
		34	inches (If circular=duct ID)
Equivalent Diameter			
If rectangular=	2*Depth*Width=	34	inches (If circular=duct ID
	Depth+Width		
Stack/duct area=		8.028	sq ft
		1156.000	sq inches

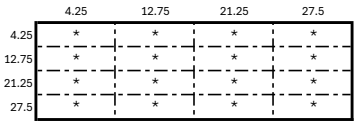
Sample Port Location:

	Downstream flow disturbance from process	Upstream flow distrubance toward exit
	A	B
Number of Inches:	72	36
Number of Diameters:	2.117647059	1.058824
Minimum Number of Traverse Point:	16	

Ports	Points	% of width	Distance from inside wall (in)
A,B,C,D	1	12.5%	4.25
	2	37.5%	12.75
	3	62.5%	21.25
	4	87.75%	29.835



Port
A
B
C
D



Rectangular stack cross section divided into 16 equal areas, with traverse point at centroid of each area

Drawing not to scale and not an accurate representation of stack

Calculation Sheet

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Small Palmer Bag House**
Facility:	**Eagle Foundry**

Stack Dimensional Data:

Circ dia:		in
Rectanglar		
Width:	34	in
Length:	34	in
Stack area:	8.028	sq ft

Equipment:

Pitot ID:	8-Apr
Pitot Cp:	0.84
Digital Manometer:	
Temperature Meter:	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65	in H_20	(4)Site Elevation:	351.9
Static Pressure(P_g):	0.11	in H_20	T_{std}:	528
(2)Dry Molecular weight:	29.0		P_{std}:	29.92
(3)Assumed moisture:	0.95%			

Traverse Point Port	Point	Velocity(ΔP) ("H_2O)	Stack Temp (^oF)	Check for Cyclonic Flow Null Angle
A	1	0.27	72	0
	2	0.64	71.2	5
	3	0.6	71.2	0
	4	0.69	71.3	0
B	1	0.06	71.4	0
	2	0.18	71.1	0
	3	0.17	70.5	0
	4	0.43	70.4	0
C	1	0.06	70.3	0
	2	0.04	70	0
	3	0.09	69.9	5
	4	0.4	69.7	5
D	1	0.06	69.6	0
	2	0.11	69.5	0
	3	0.22	69.3	0
	4	0.16	69.7	10
	Average:	0.26125	70.44375	1.5625

Average Velocity(ΔP):	0.26125	Flow is found to be:	Non-cyclonic
Average Stack Temp (T_s):	70.44375		

Absolute Stack Pressure,(P_s):	29.66	in H_20
Avg Absolute Stack Temp($T_{s(abavg)}$):	530.44	^oR
Average stack gas velocity (V_s):	28.83	ft/s
Average stack gas volumetric flow rate (Q_{sd}):	814,142.30	dscf/hr
	13,569.04	dscf/min

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portland International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET

EPA Method 1

Stack Parameters and Traverse Points

Reference Diagram

Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**11:50pm**
Source:	**Screening Bag House**		
Facility:	**Eagle Foundry**		

Type of Testing:	V	(P for Particulate; V for Velocity /Nonparticulate)
Type of Duct:	C	(C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	1	
Port diameter:	1	inch
Sampling location height {approx):	21.33	feet
Stack height:	23.67	feet

Circular ID (Rectangular Depth)	14	inches
Port depth and/or wall thickness:	0.1	inches
Stack width (Rectangular only)		
	14	inches (If circular=duct ID)

Equivalent Diameter

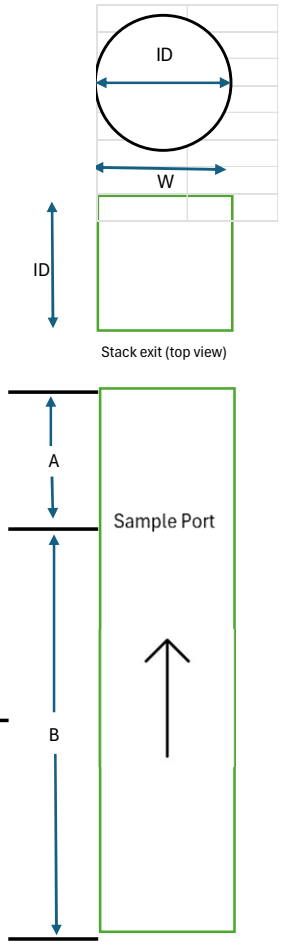
If rectangular= 2*Depth*Width= Depth+Width inches (If circular=duct ID

Stack/duct area= 1.069 sq ft 153.938 sq inches

Sample Port Location:	Downstream flow disturbance from process	Upstream flow distrubance toward exit
	A	B
Number of Inches:	188	28
Number of Diameters:	13.42857	2

Minimum Number of Traverse Point: 8

	Points	% of diameter	Distance from inside wall (in)
A	1	6.2%	0.868
	2	25.0%	3.5
	3	75.0%	10.5
	4	93.3%	13.062



Drawing not to scale and not an accurate representation of stack

Calculation Sheet

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Screening Bag House**
Facility:	**Eagle Foundry**

Stack Dimensional Data:

Circ dia:	14	in
Rectanglar		
Width:		in
Length:		in
Stack area:	1.069	sq ft

Equipment:

Pitot ID:	173 TP-2
Pitot Cp:	0.84
Digital Manometer:	
Temperature Meter:	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65 in H_20	(4)Site Elevation:	351.9
Static Pressure(P_g):	0.06 in H_20	T_{std}:	528
(2)Dry Molecular weight:	29.0	P_{std}:	29.92
(3)Assumed moisture:	0.95%		

Traverse Point Port	Point	Velocity(ΔP) ("H_2O)	Stack Temp (^oF)	Check for Cyclonic Flow Null Angle
A	1	0.14	70.6	0
	2	0.22	72.5	0
	3	0.22	74	0
	4	0.18	74.3	0
B	1	0.2	73	0
	2	0.22	73.1	0
	3	0.24	73.9	0
	4	0.22	73.2	0
		0.205	73.075	0

Average Velocity(ΔP):	0.205	Flow is found to be:	Non-cyclonic
Average Stack Temp (T_s):	73.075		

Absolute Stack Pressure,(P_s):	29.65	in H_20
Avg Absolute Stack Temp($T_{s(abavg)}$):	533.08	^oR
Average stack gas velocity (V_s):	25.60	ft/s
Average stack gas volumetric flow rate (Q_{sd}):	95,793.45	dscf/hr
	1,596.56	dscf/min

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portland International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6 For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET

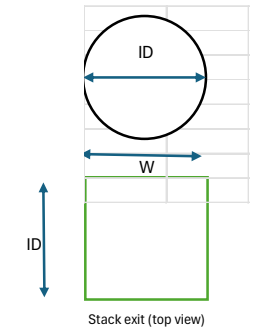
EPA Method 1
Stack Parameters and Traverse Points

Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**1:40 PM**
Source:	**Welding Stack-WELD1**		

Facility: **Eagle Foundry**

Type of Testing: V (P for Particulate; V for Velocity /Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Reference Diagram



Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	1	inch
Sampling location height {approx):	33.67	feet
Stack height:	35.00	feet
Circular ID (Rectangular Depth)	8	inches
Port depth and/or wall thickness:	0.1	inches
Stack width (Rectangular only)		
	8	inches (If circular=duct ID)

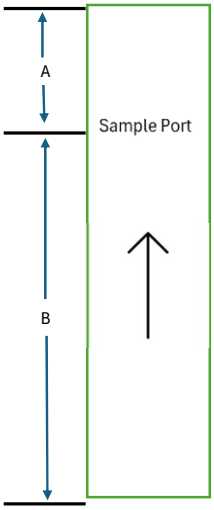
Equivalent Diameter
If rectangular= 2*Depth*Width= inches (If circular=duct ID
Depth+Width

Stack/duct area= 0.349 sq ft 50.265 sq inches

Sample Port Location:

	Downstream flow disturbance from process	Upstream flow distrubance toward exit
	A	B
Number of Inches:	232	16
Number of Diameters:	29	2
Minimum Number of Traverse Point:	8	

Ports	Points	% of diameter	Distance from inside wall (in)
A,B	1	6.2%	0.496
	2	25.0%	2
	3	75.0%	6
	4	93.3%	7.464



Drawing not to scale and not an accurate representation of stack

Calculation Sheet

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Welding Stack-WELD1**
Facility:	**Eagle Foundry**

Stack Dimensional Data:

Circ dia:	8	in
Rectanglar		
Width:		in
Length:		in
Stack area:	0.349	sq ft

Equipment:

Pitot ID:	173 TP-2
Pitot Cp:	1
Digital Manometer:	
Temperature Meter:	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65	in H_20	(4)Site Elevation:	351.9	feet
Static Pressure(P_g):	0.06	in H_20	T_{std}:	528	^oR
(2)Dry Molecular weight:	29.0		P_{std}:	29.92	in Hg
(3)Assumed moisture:	0.95%				

Traverse Point Port	Point	Velocity(ΔP) ("H_2O)	Stack Temp (^oF)	
A	1	0.3	70.3	
	2	0.37	70.3	
	3	0.42	70.3	
	4	0.33	70.3	
B	1	0.33	70.3	
	2	0.41	70.3	
	3	0.36	70.3	
	4	0.22	70.3	
		0.3425	70.3	0.99
	Average Velocity(ΔP):	0.3425		
	verage Stack Temp (T_s):		70.3	

Absolute Stack Pressure,(P_s):	29.65	in H_20
Avg Absolute Stack Temp($T_{s(abavg)}$):	530.30	^oR
Average stack gas velocity (V_s):	39.29	ft/s
Average stack gas volumetric flow rate (Q_{sd}):	48,257.76	dscf/hr
	804.30	dscf/min

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portlant International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6 For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET

EPA Method 1
Stack Parameters and Traverse Points

Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**2:10 PM**
Source:	**Welding- WELD2**		
Facility:	**Eagle Foundry**		

Type of Testing:	V	(P for Particulate; V for Velocity /Nonparticulate)
Type of Duct:	C	(C for circular; R for rectangular)
Source:	Welding Stack-Back Left	

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	1	inch
Sampling location height {approx):	33.67	feet
Stack height(approx):	35	feet
Circular ID (Rectangular Depth)	8	inches
Port depth and/or wall thickness:	0.1	inches
Stack width (Rectangular only)	8	inches (If circular=duct ID)

Equivalent Diameter
If rectangular= 2*Depth*Width= / Depth+Width — inches (If circular=duct ID

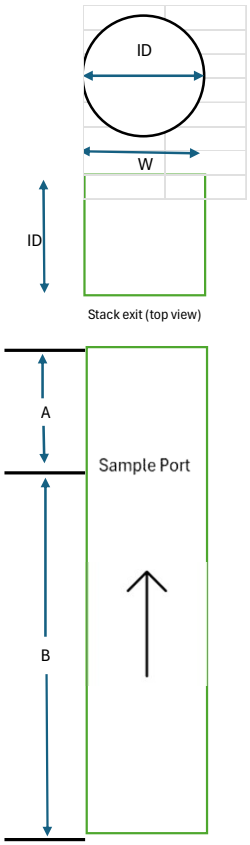
Stack/duct area= 0.349 sq ft 50.265 sq inches

Sample Port Location:	Downstream flow disturbance from process	Upstream flow distrubance toward exit
	A	B
Number of Inches:	224	16
Number of Diameters:	28	2

Minimum Number of Traverse Point: 8

Ports	Points	% of diameter	Distance from inside wall (in)
A,B	1	6.2%	0.496
	2	25.0%	2
	3	75.0%	6
	4	93.3%	7.464

Reference Diagram



Drawing not to scale and not an accurate representation of stack

Calculation Sheet

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Welding Stack-WELD2**
Facility:	**Eagle Foundry**

Stack Dimensional Data:

Circ dia:	8	in
Rectanglar		
Width:		in
Length:		in
Stack area:	0.349	sq ft

Equipment:

Pitot ID:	173 TP-2
Pitot Cp:	0.99
Digital Manometer:	
Temperature Meter:	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65	in H_20
Static Pressure(P_g):	0.06	in H_20
(2)Dry Molecular weight:	29.0	
(3)Assumed moisture:	0.95%	

(4)Site Elevation:	351.9	feet
T_{std}:	528	^oR
P_{std}:	29.92	in Hg

Traverse Point Port	Point	Velocity(ΔP) ("H_2O)	Stack Temp (^oF)
A	1	0.64	70.3
	2	1.06	70.3
	3	1.03	70.3
	4	0.83	70.3
B	1	0.93	70.3
	2	1.05	70.3
	3	0.89	70.3
	4	0.52	70.3
		0.86875	70.3
	Average Velocity(ΔP):	0.86875	
	verage Stack Temp (T_s):		70.3

No test for cyclonic flow due to small duct dia, required to use standard pitot tube

Absolute Stack Pressure,(P_s):	29.65	in H_20
Avg Absolute Stack Temp($T_{s(abavg)}$):	530.30	^oR
Average stack gas velocity (V_s):	61.95	ft/s
Average stack gas volumetric flow rate (Q_{sd}):	76,088.57	dscf/hr
	1,268.14	dscf/min

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portland International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6 For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET

EPA Method 1
Stack Parameters and Traverse Points

Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**2:20 PM**
Source:	**Welding Stack-WELD3**		
Facility:	**Eagle Foundry**		

Type of Testing:	V	(P for Particulate; V for Velocity /Nonparticulate)
Type of Duct:	C	(C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	1	inch
Sampling location height (approx):	30.17	feet
Stack height:	31.5	feet
Circular ID (Rectangular Depth)	8	inches
Port depth and/or wall thickness:	0.1	inches
Stack width (Rectangular only)		
	8	inches (If circular=duct ID)

Equivalent Diameter
If rectangular= 2*Depth*Width= inches (If circular=duct ID
Depth+Width

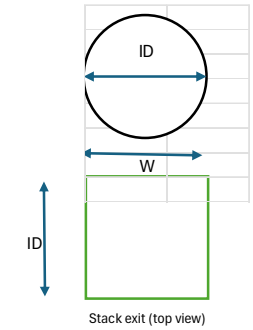
Stack/duct area= 0.349 sq ft 50.265 sq inches

Sample Port Location:

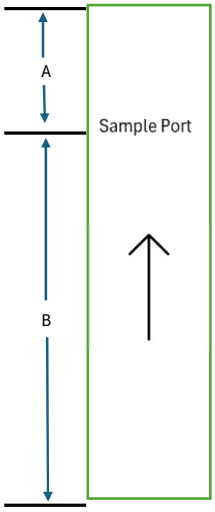
	Downstream flow disturbance from process	Upstream flow distrubance toward exit
	A	B
Number of Inches:	223	16
Number of Diameters:	27.875	2
Minimum Number of Traverse Point:	8	

Ports	Points	% of diameter	Distance from inside wall (in)
A,B	1	6.2%	0.496
	2	25.0%	2
	3	75.0%	6
	4	93.3%	7.464

Reference Diagram



Stack exit (top view)



Drawing not to scale and not an accurate representation of stack

Calculation Sheet

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Welding Stack-WELD3**
Facility:	**Eagle Foundry**

Stack Dimensional Data:

Circ dia:	8	in
Rectanglar		
Width:		in
Length:		in
Stack area:	0.349	sq ft

Equipment:

Pitot ID:	173 TP-2
Pitot Cp:	0.99
Digital Manometer:	
Temperature Meter:	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65	in H_20	(4)Site Elevation:	351.9 feet
Static Pressure(P_g):	0.06	in H_20	T_{std}:	528 ^oR
(2)Dry Molecular weight:	29.0		P_{std}:	29.92 in Hg
(3)Assumed moisture:	0.95%			

Traverse Point Port	Point	Velocity(ΔP) ("H_2O)	Stack Temp (^oF)
A	1	0.38	70.3
	2	0.42	70.3
	3	0.42	70.3
	4	0.45	70.3
B	1	0.36	70.3
	2	0.38	70.3
	3	0.45	70.3
	4	0.44	70.3
		0.4125	70.3
	Average Velocity(ΔP):	0.4125	
	'erage Stack Temp (T_s):		70.3

No test for cyclonic flow due to small duct dia, required to use standard pitot tube

Absolute Stack Pressure,(P_s):	29.65	in H_20
Avg Absolute Stack Temp($T_{s(abavg)}$):	530.30	^oR
Average stack gas velocity (V_s):	42.69	ft/s
Average stack gas volumetric flow rate (Q_{sd}):	52,430.50	dscf/hr
	873.84	dscf/min

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portland International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6 For processes emitting essentially air, analysis need not be conducted; use dry moecular weight of 29.0

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded and processed using AERMET

Calculation Sheet

Client:	**Eagle Foundry Company**	**Date:**	**Oct 8,2025**
Location:	**Eagle Creek, OR**	**Time:**	**3:50 PM**
Source:	**Mesh Bast**		
Facility:	**Eagle Foundry**		

Stack Dimensional Data:

Circ dia:	20	in
Rectanglar		
Width:		in
Length:		in
Stack area:	2.182	sq ft
Discharge Height:	15.630	ft

Equipment:

Pitot ID:	
Pitot Cp:	
Digital Manometer:	
Temperature Meter:	
Hot Wire Anemometer	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65	in H_20	(4)Site Elevation:	351.9	feet
Static Pressure(P_g):	0.06	in H_20	T_{std}:	528	^oR
(2)Dry Molecular weight:	29.0		P_{std}:	29.92	in Hg
(3)Assumed moisture:	0.95%				

Open duct for exit, not way to sample Method 1 or 2. Took exit velocity reading with Dwyer Hot Wire anemometer.

Traverse Point Port	Point		Velocity Ft/min	Stack Temp (^oF)
	1		3,800	65
	2		3,480	65
	3		1,340	65
		Velocity:	2873.33	fpm
			47.89	ft/s

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portlant International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6 For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET

Calculation Sheet

Client:	**Eagle Foundry Company**		
Location:	**Eagle Creek, OR**		
Source:	**Pattern Room Fan**	**Date:**	**Oct 8,2025**
Facility:	**Eagle Foundry**	**Time:**	**4:00 PM**

Stack Dimensional Data:

Circ dia:		in
Rectanglar		
Width:	18	in
Length:	18	in
Stack area:	2.250	sq ft
Exit Height:	9	ft

Equipment:

Pitot ID:	
Pitot Cp:	
Digital Manometer:	
Temperature Meter:	
Hot Wire Anemometer	

Source Information:

(1)Barometric Pressure(P_{bar}):	29.65	in H_20	(4)Site Elevation:	351.9	feet
Static Pressure(P_g):	0.06	in H_20	T_{std}:	528	^oR
(2)Dry Molecular weight:	29.0		P_{std}:	29.92	in Hg
(3)Assumed moisture:	0.95%				

Wall mounted fan, no inlet or outlet ducting, Took exit velocity reading with Dwyer Hot Wire anemometer.

Traverse Point Port	Point		Velocity Ft/min	Stack Temp (^oF)
	1		1,810	65
	2		1,250	65
		Velocity:	1,530	fpm
			25.5	ft/s

REFERENCE

(1) Barometric Pressure: US Weather Service Sation Portlant International Airport elev: 20 ft
Bar P=29.95, Adjusted for elevation, -.100 in Hg/100 ft increase in elevation
Per EPA Method 2

(2)Dry Molecular weight: Per EPA Method 2, Sec 8.6 For processes emitting essentially air,
analysis need not be conducted; use dry moecular weight of 29.0

(3)Assumed Moisture: Used data from US Weather Service Station, Eagle Creek, OR (EGK03)

(4)Site Elevation: Elevation derived from the US Geological Survey National Dataset downloaded
and processed using AERMET

Appendix B

Calibrations and Certifications

MAUL FOSTER ALONGI

MONTROSE
ENVIRONMENTAL

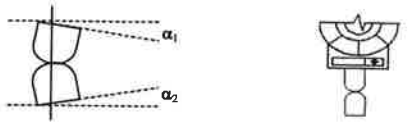
Pitot Tube Calibration Data Sheet

Calibration Date:	January 1, 2017	**Performed by:**	John Sommer	**Expiration Date:**	July 1, 2017
		ID No.:	4-8	**No obstructions:**	Yes
Calibrated Pitot Tube:	S-type	**Probe/Pitot ID No:**	4-8-TP-4	**No damage:**	Yes
Probe Description:	TRAVERSE - Flow & Temp (TP)	**Effective Length (ft):**	4	**Level and Perpendicular:**	Yes
Thermocouple calibration performed?		Yes	**Thermocouple passed calibration?**		Yes

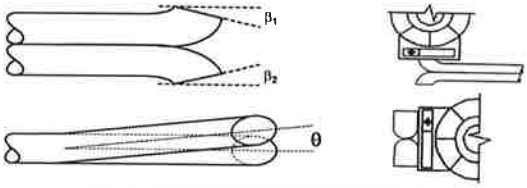
Protractor or Digital Angle Finder ID: 740
Measuring Tape ID: PDX-25-1
Caliper ID: 706

Calibration performed using the procedures of EPA Method 2, Section 10.1

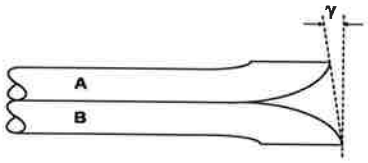
Alignment and Tubing Dimensions



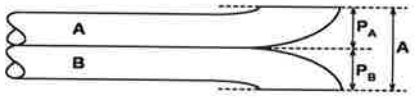
Degree indicating level position for determining α_1 and α_2.



Degree indicating level position for determining θ.

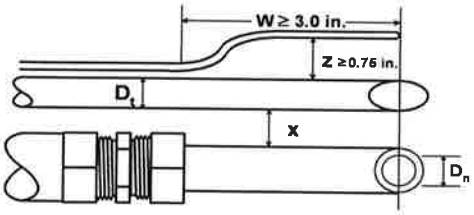


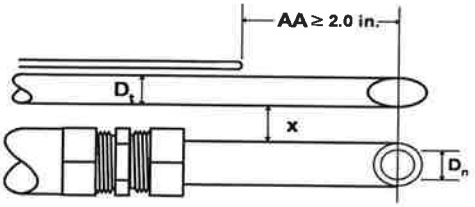
Degree indicating level position for determining γ then calculating Z.



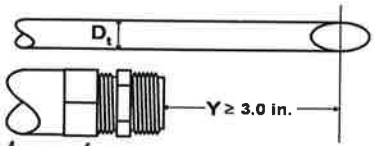
α_1 $(-10° < \alpha_1 < +10°)$	1.6	
α_2 $(-10° < \alpha_2 < +10°)$	0.8	
β_1 $(-5° < \beta_1 < +5°)$	3.3	
β_2 $(-5° < \beta_2 < +5°)$	1.1	
γ	0.7	
θ	1.3	
A	0.8810	
$z = A \tan \gamma$ $(\pm\ 0.125")$	0.0108	Pass
$w = A \tan \theta$ $(\pm\ 0.03125")$	0.0200	Pass
D_t $(0.1875" < D_t < 0.375")$	0.3749	Pass
P_A $(1.05D_t < P_A < 1.5D_t)$	0.4405	Pass
P_B $(1.05D_t < P_B < 1.5D_t)$	0.4405	Pass
$\lvert P_A - P_B \rvert \leq 0.0625$	0.0000	Pass

Assembly Inter-Component Spacing Requirements





W (≥ 3.0")		Fail	Offset TC only
-or- AA (≥ 2.0")		Fail	Setback TC only
X			
D_n			
X / D_n (≥ 1.5)			
Y (≥ 3.0")			
Z ≥ 0.75"	2.250		Offset TC only



Performed By: John Sommer
Signature: [signature] Date: 10/20/2025

Approved By: Isabelle Brewer
Signature: [signature] Date: 10/20/2025

MONTROSE
ENVIRONMENTAL

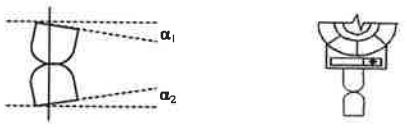
Pitot Tube Calibration Data Sheet

Calibration Date:	October 20, 2025	**Performed by:**	John Sommer	**Expiration Date:**	April 20, 2026
		ID No.:	174-TP-2	**No obstructions:**	Yes
Calibrated Pitot Tube:	S-type	**Probe/Pitot ID No:**	174-TP-2-TP-2	**No damage:**	Yes
Probe Description:	TRAVERSE - Flow & Temp (TP)	**Effective Length (ft):**	2	**Level and Perpendicular:**	Yes
Thermocouple calibration performed?	Yes	**Thermocouple passed calibration?**			Yes

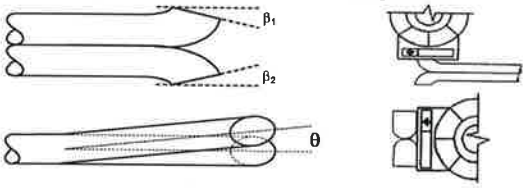
Protractor or Digital Angle Finder ID: 740
Measuring Tape ID: PDX-25-1
Caliper ID: 706

Calibration performed using the procedures of EPA Method 2, Section 10.1

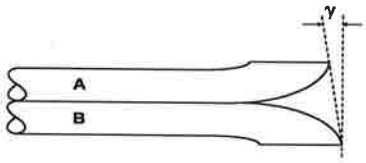
Alignment and Tubing Dimensions



Degree indicating level position for determining α_1 and α_2.

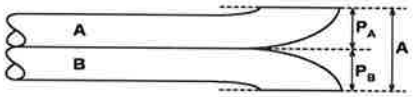


Degree indicating level position for determining θ.

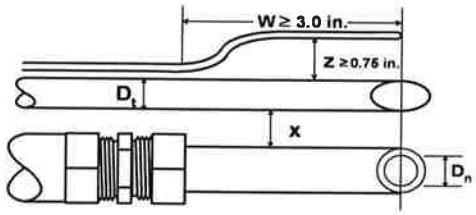


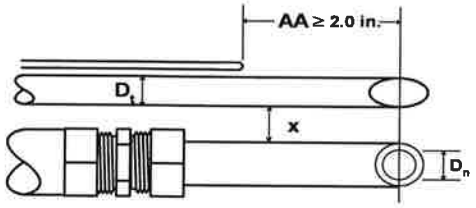
Degree indicating level position for determining γ then calculating Z.

α_1 $(-10° < \alpha_1 < +10°)$	0.8	
α_2 $(-10° < \alpha_2 < +10°)$	0.2	
β_1 $(-5° < \beta_1 < +5°)$	2.0	
β_2 $(-5° < \beta_2 < +5°)$	1.1	
γ	0.9	
θ	0.8	
A	0.9035	
z= A tan γ (± 0.125")	0.0142	Pass
w= A tan θ (± 0.03125")	0.0126	Pass
D_t (0.1875" < D_t < 0.375")	0.3749	Pass
P_A (1.05D_t < P_A < 1.5D_t)	0.4518	Pass
P_B (1.05D_t < P_B < 1.5D_t)	0.4518	Pass
$\lvert P_A - P_B \rvert \leq 0.0625$	0.0000	Pass

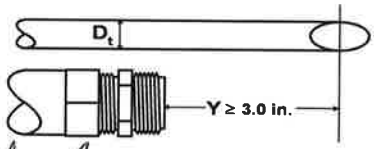


Assembly Inter-Component Spacing Requirements





W (≥ 3.0")			Offset TC only
-or- AA (≥ 2.0")	2.250	Pass	Setback TC only
X			
D_n			
X / D_n (≥ 1.5)			
Y (≥ 3.0")			
Z ≥ 0.75"			Offset TC only



Performed By: John Sommer
Signature: John Sommer Date: 10/20/2025

Approved By: Isabelle Brewer
Signature: Isabelle Brewer Date: 10/20/2025

MONTROSE
ENVIRONMENTAL

PRESSURE GAUGE CALIBRATION DATA FORM

Date	10/23/22025
Calibrator	JS
Ambient Temperature, °F	68
Test Gauge ID Number	SR #2
Reference Gauge Serial Number	537

Reference Level	Ref. Gauge Pressure, in H_2O	Test Gauge Pressure, in H_2O	Difference, in H_2O	Relative Difference, %	Pass/Fail
Low	0.69	0.6864	0.0036	1	PASS
Medium	3.1	3.061	0.039	1	PASS
High	7.1	7.137	0.037	1	PASS

Pressure difference must be ≤ 5% at each level

Performed By: John Sommer Signature: [signature] Date: 10/23/2025

Approved By: Quinton Reilly Signature: [signature] Date: 10/23/25