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Interesting Facts

- The first "Tonka" Truck was manufactured in 1947 by Mound Metalcraft Company, which was then located in a small schoolhouse basement near Lake Minnetonka. Only two designs were initially available - steam shove & crane.
- The collecting of beer mats or coasters is called Tegestology.
- There is a rare condition called Exploding Head Syndrome. No it does not involve the head actually exploding.

July Dates to Remember

- July 4 - Independence Day
- July 18 - ASPE Golf Outing

FEATURED Product

Fulton Vantage Boiler

4,000,000 BTU NOW AVAILABLE!

- Up to 99% Efficiency
- Linkageless Controls
- No Min Return Water Temperature
- No Min/Max Flow Rates
- Multiple Fuel Options!
 - Natural Gas
 - LP
 - #2 Fuel Oil
 - (Natural Gas or LP) & Oil
 - Natural Gas & LP



Boiler Feed Sizing - Revisited

David Kroells with Dolejs Associates in Mankato has brought to our attention a valid point. In some applications the receiver sizing method given last month could be undersized. For example, on systems where smaller volume steam boilers have replaced larger volume steam boilers, the boiler feed tank may "overfill" during seasonal boiler start-up. This is especially true for systems with large amounts of condensate pipe.



Therefore, you would want a larger receiver size. Perhaps 2 times the previous given calculation. Hence, we would suggest using the following as a rule of thumb.

$$\text{Receiver Size (Gal)} = \text{BHP} \times .069 \times 15 \times 2$$

More Free Money



The City of Duluth through Comfort Systems now has a commercial and industrial conservation program available for their customers. Customers could be eligible for up to 15% of material, equipment and installation costs.

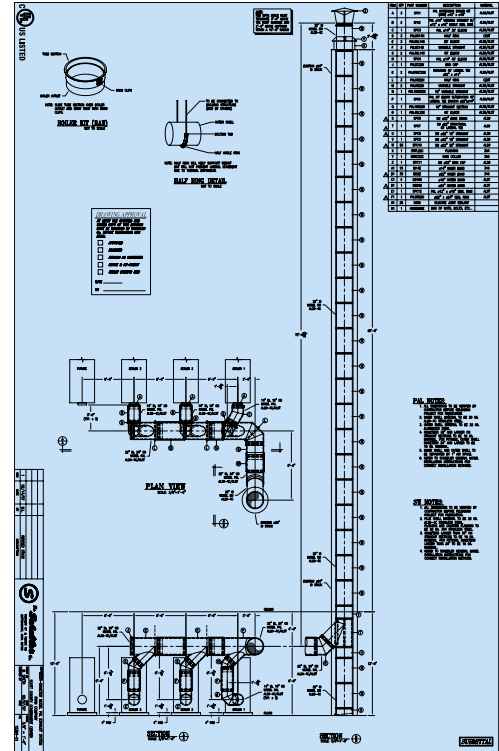
For more information about this program please click [here](#) or contact Eric Schlacks at (218) 730-4060.

Featured Manufacturer - Schebler Company



Schebler Corporation is a multi-product HVAC manufacturing firm located in Bettendorf, IA. They specialize in modular positive pressure non-condensing and condensing chimneys for gas and oil applications. However, their capabilities do not stop at modular chimney systems. Schebler excels at engineering and design of special chimney systems that include large heavy wall single piece boiler stacks, grease duct systems, rectangular boiler breaching, and generator stacks. Schebler's engineering staff is eager to perform draft calculations for your boiler and water heater systems, and can provide either .pdf or .cad drawings of stacks that can be included in a consulting engineer's design documents.

Schebler's most used chimney products include their P2A, and P4 products. The 2", and 4" insulated products are excellent choices for positive and non-positive applications where condensation in the flue or excess heat to the boiler room is unwanted. The thick insulation and the 1" air-gap in the P2A product keeps the flue gases warm and aids in its removal from the chimney.



Schebler also provides AL29-4C chimneys for condensing applications. Schebler fills a void in this market by being the first to provide a professionally designed, heavy duty, custom boiler stack for condensing applications. They feature all the same fittings found in their P2A and P4 series which include thimbles, rain collars, supports, custom length sections, and appliance connectors.

Schebler and Ryan Company are eager to assist you with your chimney needs.

The Schebler Co.		The Schebler Co.	
DATE: 6/26/2007		DATE: 6/26/2007	
PROJECT NAME: Scott Co Government Center		PROJECT NAME: Scott Co Government Center	
PROJECT NUMBER:		PROJECT NUMBER:	
DUCT PRESSURE LOSS		DUCT PRESSURE LOSS	
BOILER 1		BOILER 2	
BAROMETRIC PRESSURE	30.00 in. Hg	BAROMETRIC PRESSURE	30.00 in. Hg
VOLUME FLOW RATE	1148.00 CFM	VOLUME FLOW RATE	1148.00 CFM
GAS TEMPERATURE	300.00 F	GAS TEMPERATURE	300.00 F
AMBIENT TEMPERATURE	65.00 F	AMBIENT TEMPERATURE	65.00 F
FLUE DIAMETER	14.00 in.	FLUE DIAMETER	14.00 in.
VERT. DUCT LENGTH	9.00 ft	VERT. DUCT LENGTH	9.00 ft
HOR. DUCT LENGTH	0.00 ft	HOR. DUCT LENGTH	0.00 ft
LENGTH OF DUCT	9.00 ft	LENGTH OF DUCT	9.00 ft
KINEMATIC VISCOSITY	0.00038 ft ² /sec	KINEMATIC VISCOSITY	0.00038 ft ² /sec
AREA OF DUCT	1.5601 ft ²	AREA OF DUCT	1.5601 ft ²
VELOCITY OF GAS	1073.89 ft/min	VELOCITY OF GAS	1073.89 ft/min
DENSITY OF GAS	0.05218 lb./ft ³	DENSITY OF GAS	0.05218 lb./ft ³
VELOCITY PRESSURE	0.04909 in. W.C.	VELOCITY PRESSURE	0.04909 in. W.C.
REYNOLDS NUMBER	66228.00	REYNOLDS NUMBER	66228.00
FLUE AVE. ROUGHNESS	0.00015 ft	FLUE AVE. ROUGHNESS	0.00015 ft
ROUGHNESS/DIAMETER	0.00012871	ROUGHNESS/DIAMETER	0.00012871
FRICTION FACTOR	0.0206	FRICTION FACTOR	0.0206
ITERATIONS	0.0005	ITERATIONS	0.0005
FRICTION FACTOR	0.0206	FRICTION FACTOR	0.0206
FRICTION LOSS	0.02070437 in. W.C.	FRICTION LOSS	0.02070437 in. W.C.
NATURAL DRAFT	0.02704937 in. W.C.	NATURAL DRAFT	0.02704937 in. W.C.
PRESSURE LOSSES THIS RUN		PRESSURE LOSSES THIS RUN	
DESCRIPTION	QTY	LOSS	LOSS
ELBOW, 90 DEGREE	0	0.00000	0.00000
TEE, 90 DEGREE	0	0.00000	0.00000
ELBOW, 45 DEGREE	2	0.02104	0.04208
LAT. JUNCTION TO RUN 1	1	0.01591	0.01591
TEE, JUNCTION TO RUN 1	0	0.00000	0.00000
FRICTION LOSS	19.00	0.00004	0.00004
MISC. LOSS	0	0.00000	0.00000
TOTAL LOSS	1	0.05906	0.05906

The Schebler Co.		The Schebler Co.	
DATE: 6/26/2007		DATE: 6/26/2007	
PROJECT NAME: Scott Co Government Center		PROJECT NAME: Scott Co Government Center	
PROJECT NUMBER:		PROJECT NUMBER:	
DUCT PRESSURE LOSS		DUCT PRESSURE LOSS	
BOILER 3		BOILER 4	
BAROMETRIC PRESSURE	30.00 in. Hg	BAROMETRIC PRESSURE	30.00 in. Hg
VOLUME FLOW RATE	2296.00 CFM	VOLUME FLOW RATE	2296.00 CFM
GAS TEMPERATURE	300.00 F	GAS TEMPERATURE	300.00 F
AMBIENT TEMPERATURE	65.00 F	AMBIENT TEMPERATURE	65.00 F
FLUE DIAMETER	22.00 in.	FLUE DIAMETER	22.00 in.
VERT. DUCT LENGTH	9.00 ft	VERT. DUCT LENGTH	9.00 ft
HOR. DUCT LENGTH	0.00 ft	HOR. DUCT LENGTH	0.00 ft
LENGTH OF DUCT	9.00 ft	LENGTH OF DUCT	9.00 ft
KINEMATIC VISCOSITY	0.00038 ft ² /sec	KINEMATIC VISCOSITY	0.00038 ft ² /sec
AREA OF DUCT	3.5317 ft ²	AREA OF DUCT	3.5317 ft ²
VELOCITY OF GAS	889.78 ft/min	VELOCITY OF GAS	889.78 ft/min
DENSITY OF GAS	0.05218 lb./ft ³	DENSITY OF GAS	0.05218 lb./ft ³
VELOCITY PRESSURE	0.02079 in. W.C.	VELOCITY PRESSURE	0.02079 in. W.C.
REYNOLDS NUMBER	66228.00	REYNOLDS NUMBER	66228.00
FLUE AVE. ROUGHNESS	0.00015 ft	FLUE AVE. ROUGHNESS	0.00015 ft
ROUGHNESS/DIAMETER	0.00012871	ROUGHNESS/DIAMETER	0.00012871
FRICTION FACTOR	0.0192	FRICTION FACTOR	0.0192
ITERATIONS	0.0004	ITERATIONS	0.0004
FRICTION FACTOR	0.0192	FRICTION FACTOR	0.0192
FRICTION LOSS	0.02023 in. W.C.	FRICTION LOSS	0.02023 in. W.C.
NATURAL DRAFT	0.02704937 in. W.C.	NATURAL DRAFT	0.02704937 in. W.C.
PRESSURE LOSSES THIS RUN		PRESSURE LOSSES THIS RUN	
DESCRIPTION	QTY	LOSS	LOSS
ELBOW, 90 DEGREE	0	0.00000	0.00000
TEE, 90 DEGREE	0	0.00000	0.00000
ELBOW, 45 DEGREE	1	0.01591	0.01591
LAT. JUNCTION TO RUN 4	1	0.01591	0.01591
TEE, JUNCTION TO RUN 4	0	0.00000	0.00000
FRICTION LOSS	8.00	0.00004	0.00004
MISC. LOSS	0	0.00000	0.00000
TOTAL LOSS	1	0.04289	0.04289

The Schebler Co.		The Schebler Co.	
DATE: 6/26/2007		DATE: 6/26/2007	
PROJECT NAME: Scott Co Government Center		PROJECT NAME: Scott Co Government Center	
PROJECT NUMBER:		PROJECT NUMBER:	
DUCT PRESSURE LOSS		DUCT PRESSURE LOSS	
BOILER 3		BOILER 4	
BAROMETRIC PRESSURE	30.00 in. Hg	BAROMETRIC PRESSURE	30.00 in. Hg
VOLUME FLOW RATE	2296.00 CFM	VOLUME FLOW RATE	2296.00 CFM
GAS TEMPERATURE	300.00 F	GAS TEMPERATURE	300.00 F
AMBIENT TEMPERATURE	65.00 F	AMBIENT TEMPERATURE	65.00 F
FLUE DIAMETER	14.00 in.	FLUE DIAMETER	14.00 in.
VERT. DUCT LENGTH	9.00 ft	VERT. DUCT LENGTH	9.00 ft
HOR. DUCT LENGTH	0.00 ft	HOR. DUCT LENGTH	0.00 ft
LENGTH OF DUCT	9.00 ft	LENGTH OF DUCT	9.00 ft
KINEMATIC VISCOSITY	0.00038 ft ² /sec	KINEMATIC VISCOSITY	0.00038 ft ² /sec
AREA OF DUCT	1.5601 ft ²	AREA OF DUCT	1.5601 ft ²
VELOCITY OF GAS	1073.89 ft/min	VELOCITY OF GAS	1073.89 ft/min
DENSITY OF GAS	0.05218 lb./ft ³	DENSITY OF GAS	0.05218 lb./ft ³
VELOCITY PRESSURE	0.04909 in. W.C.	VELOCITY PRESSURE	0.04909 in. W.C.
REYNOLDS NUMBER	66228.00	REYNOLDS NUMBER	66228.00
FLUE AVE. ROUGHNESS	0.00015 ft	FLUE AVE. ROUGHNESS	0.00015 ft
ROUGHNESS/DIAMETER	0.00012871	ROUGHNESS/DIAMETER	0.00012871
FRICTION FACTOR	0.0206	FRICTION FACTOR	0.0206
ITERATIONS	0.0005	ITERATIONS	0.0005
FRICTION FACTOR	0.0206	FRICTION FACTOR	0.0206
FRICTION LOSS	0.02070437 in. W.C.	FRICTION LOSS	0.02070437 in. W.C.
NATURAL DRAFT	0.02704937 in. W.C.	NATURAL DRAFT	0.02704937 in. W.C.
PRESSURE LOSSES THIS RUN		PRESSURE LOSSES THIS RUN	
DESCRIPTION	QTY	LOSS	LOSS
ELBOW, 90 DEGREE	0	0.00000	0.00000
TEE, 90 DEGREE	0	0.00000	0.00000
ELBOW, 45 DEGREE	1	0.01591	0.01591
LAT. JUNCTION TO RUN 3	1	0.01591	0.01591
TEE, JUNCTION TO RUN 3	0	0.00000	0.00000
FRICTION LOSS	9.00	0.00004	0.00004
MISC. LOSS	0	0.00000	0.00000
TOTAL LOSS	1	0.04289	0.04289

The Schebler Co.		The Schebler Co.	
DATE: 6/26/2007		DATE: 6/26/2007	
PROJECT NAME: Scott Co Government Center		PROJECT NAME: Scott Co Government Center	
PROJECT NUMBER:		PROJECT NUMBER:	
DUCT PRESSURE LOSS		DUCT PRESSURE LOSS	
BOILER 3		BOILER 4	
BAROMETRIC PRESSURE	30.00 in. Hg	BAROMETRIC PRESSURE	30.00 in. Hg
VOLUME FLOW RATE	4592.00 CFM	VOLUME FLOW RATE	4592.00 CFM
GAS TEMPERATURE	300.00 F	GAS TEMPERATURE	300.00 F
AMBIENT TEMPERATURE	65.00 F	AMBIENT TEMPERATURE	65.00 F
FLUE DIAMETER	22.00 in.	FLUE DIAMETER	22.00 in.
VERT. DUCT LENGTH	9.00 ft	VERT. DUCT LENGTH	9.00 ft
HOR. DUCT LENGTH	0.00 ft	HOR. DUCT LENGTH	0.00 ft
LENGTH OF DUCT	9.00 ft	LENGTH OF DUCT	9.00 ft
KINEMATIC VISCOSITY	0.00038 ft ² /sec	KINEMATIC VISCOSITY	0.00038 ft ² /sec
AREA OF DUCT	3.5317 ft ²	AREA OF DUCT	3.5317 ft ²
VELOCITY OF GAS	1787.28 ft/min	VELOCITY OF GAS	1787.28 ft/min
DENSITY OF GAS	0.05218 lb./ft ³	DENSITY OF GAS	0.05218 lb./ft ³
VELOCITY PRESSURE	0.11116 in. W.C.	VELOCITY PRESSURE	0.11116 in. W.C.
REYNOLDS NUMBER	136711.28	REYNOLDS NUMBER	136711.28
FLUE AVE. ROUGHNESS	0.00015 ft	FLUE AVE. ROUGHNESS	0.00015 ft
ROUGHNESS/DIAMETER	0.00012871	ROUGHNESS/DIAMETER	0.00012871
FRICTION FACTOR	0.0192	FRICTION FACTOR	0.0192
ITERATIONS	0.0004	ITERATIONS	0.0004
FRICTION FACTOR	0.0192	FRICTION FACTOR	0.0192
FRICTION LOSS	0.11023 in. W.C.	FRICTION LOSS	0.11023 in. W.C.
NATURAL DRAFT	0.11023 in. W.C.	NATURAL DRAFT	0.11023 in. W.C.
PRESSURE LOSSES THIS RUN		PRESSURE LOSSES THIS RUN	
DESCRIPTION	QTY	LOSS	LOSS
ELBOW, 90 DEGREE	0	0.00000	0.00000
TEE, 90 DEGREE	0	0.00000	0.00000
ELBOW, 45 DEGREE	1	0.01591	0.01591
LAT. JUNCTION TO RUN 5	1	0.01591	0.01591
TEE, JUNCTION TO RUN 5	0	0.00000	0.00000
FRICTION LOSS	8.00	0.00004	0.00004
MISC. LOSS	0	0.00000	0.00000
TOTAL LOSS	1	0.04289	0.04289

RECOMMENDED DIAMETERS		
RUN IDENTIFIER	DIAMETER	VELOCITY LOSS
RUN 1	14.00	1073.89 0.05906
RUN 2	14.00	1073.89 0.05906
RUN 3	22.00	869.76 0.01448
RUN 4	14.00	1073.89 0.05701
RUN 5	22.00	1364.44 0.03307
RUN 6	14.00	1073.89 0.04263
RUN 7	22.00	1739.52 0.02918

APPLIANCE	TOTAL LOSS	TOTAL DRAFT	OUTLET PRESSURE
BOILER 1	0.327855	0.342051	-0.01440
BOILER 2	0.338765	0.342051	-0.00529
BOILER 3	0.319282	0.342051	-0.02279
BOILER 4	0.271810	0.342051	-0.07023

Click above drawing or calculations for PDF



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