Sparging/Gas-Liquid Contacting

Design Guide & Part Selection

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SURFACE AREA – The Critical Variable

High surface area means fast, efficient mass transfer. The key to high-efficiency sparging is fine bubble propagation which provides maximum surface area for effective "mass transfer." Mott precision porous metal creates fine bubbles* over a broad range of application requirements. Mott spargers, both static and dynamic, far exceed the performance of drilled pipe and other conventional spargers. With thousands of pores over the surface, large volumes of gas can be passed with very high specific area. For example, with equal volumes of gas, 1mm bubbles would have 6.35 times more gas-liquid contact surface area than 6.35mm (1/4") bubbles.

Precision Porous Metal Media

The high performance of Mott spargers comes from the superior characteristics of Mott precision porous media. Its controlled porosity is a result of Mott proprietary manufacturing methods and dedication to quality.

Materials of Construction

Standard porous media for spargers is 316L stainless steel, which provides good corrosion resistance and high temperature capability, up to 750°F. Standard sparger hardware is 316 stainless steel. Other materials are available on special order, including 304L SS, 347 SS, 430 SS, Inconel® 600, Monel® 400, Nickel 200; Hastelloy® C276, C22 and X; and Alloy 20.

Sparging Media Grades

For most gas sparging applications, Mott Media Grade 2* is recommended. For steam sparging, Media Grade 10 is recommended. Media grade 40 is used for agitation. Other grades are available – consult factory.

Sparging – The Process

Sparging, the introduction of gas into a liquid is accomplished in many different process variations. In-tank applications, with the sparging elements located in the tank, can be batch or continuous flow, with or without agitation. Continuous pipe line sparging can be inline with a non-intrusive Mott GasSaver®, or using intrusive pipe line mounted sparger elements. This guide will show you how to size and design cost-effective sparger systems for each of the process variations.

Industries Served

- Beverage
- Chemical
- Fish Farming
- Food
- Industrial
- Minerals
- Mining
- Paper
- Petrochemical
- Pharmaceutical
- Power
- Waste Treatment
- And Many Others……

Common Gases

Gas	Symbol	Density #/Ft^3 @ STP
Air	Air	0.076
Ammonia	NH_3	0.045
Argon	Ar	0.105
Carbon Dioxide	CO_2	0.116
Chlorine	Cl_2	0.189
Hydrogen	H_2	0.005
Nitrogen	N_2	0.073
Oxygen	O_2	0.084
Ozone	O_3	0.126

* - Actual diameter of bubbles will vary depending on liquid media and application conditions. Mott makes no claim as to actual size of bubbles. Tests conducted at Mott indicate that our Media Grade 2 provides fine bubbles over a broad range of application requirements.

IN-TANK / STATIC SPARGER DESIGN GUIDE

Sparger sizing is based on the superficial *gas exit velocity* from the porous sparger surface, expressed in feet per minute (FPM), calculated from actual cubic feet per minute per square foot of sparger surface area (ACFM/Ft.^{2}). ACFM is calculated at the *liquid pressure and temperature at the sparger*,it is *not* based on gas pressure.

Sizing Procedure for In-Tank Spargers

1. Determine gas flow required in standard cubic feet per minute (SCFM).
2. Determine liquid pressure at the sparger, in PSIG (P).

2.1 For open or vented tanks, liquid head in feet x 0.433 x specific gravity = PSIG. (Specific Gravity of water = 1.0)

2.2 For closed tanks or vessels with a pressurized head space, add head space pressure to the liquid head pressure to obtain (P)

3. Determine liquid temperature °F, (T).
4. Determine ACFM, from SCFM using standard gas formula.

$$ACFM = SCFM \times \frac{14.7}{(14.7 + P)} \times \frac{(460 + T)}{520}$$

5. Select Gas Exit Velocity, FPM. See Gas Exit Velocity Chart.
6. Calculate sparger area required Ft^2 (A).

$$A = \frac{ACFM}{FPM}$$

7. Select appropriate Mott sparger element or elements, and determine best in-tank arrangement based on process requirements. Refer to Mott Sparging Literature (Ref: PMSPARG) or Mott Sparger Selection Key.

   In agitated tanks, use reinforced elements or provide support as required.

Gas Exit Velocity Chart

In-Tank, Not Agitated:

5 – 10 FPM Design
25 FPM Maximum

In-Tank, Agitated:

If	*Then*
1 – 5 FPS*	25 FPM Design 50 FPM Maximum
5 – 10 FPS*	25 FPM Design 100 FPM Maximum
>10 FPS*	50 FPM Design 150 FPM Maximum

*Calculate agitator tip speed:

$$\frac{\text{Agitator Diameter (in)} \times \text{RPM}}{229} = \text{FPS}$$

Lower exit velocities will produce smaller bubbles. Exit velocities may be less than the design values given. In some instances, actual application must be tested/proven.

Reinforced or supported elements should be used in agitated vessels.

INTRUSIVE PIPELINE SPARGER DESIGN GUIDE

Intrusive Pipe Line Sparger Sizing

Intrusive pipe line sparger sizing, where the sparger element is located inside of the pipe line, is based on the superficial *Gas Exit Velocity* from the sparger element in relation to the liquid velocity in the annulus between the inside of the pipe line and the sparger element. Exit velocity is expressed in feet per minute (FPM), calculated from actual cubic feet per minute per square foot of sparger surface area (ACFM/Ft^2). ACFM is calculated *at the liquid pressure and temperature* in the pipe line, (not gas pressure).

Intrusive Pipe Line Sparger Sizing Procedure

1. Determine gas flow required in standard cubic feet per minute (SCFM).
2. Determine liquid pressure in the pipe line in PSIG (P).
3. Determine liquid temperature °F, (T).
4. Determine ACFM using standard gas formula

$$ACFM = SCFM \times \frac{14.7}{(14.7 + P)} \times \frac{(460 + T)}{520}$$

5. Determine liquid flow in gallons per minute (GPM).
6. Determine pipe line size.
7. Assume a sparger diameter.
8. Calculate liquid linear velocity in the annulus between the pipe line ID and the sparger element ID.**
9. Select Gas Exit Velocity FPM.
10. Calculate sparger area required Ft^2 (A).

$$A = \frac{ACFM}{FPM}$$

11. Select the appropriate Mott sparger element. A reinforced element, or an element with a centering spider for support within the pipe line, is recommended for pipe line spargers.

Gas Exit Velocity Chart

If	*Then*
1 - 5 FPS**	25 FPM design 50 FPM maximum
5 - 10 FPS**	25 FPM design 100 FPM maximum
> 10 FPS**	50 FPM design 150 FPM maximum

Element Diameter Guide

Pipe Size	Sparger ∅	Flow @ 10 FPS*
1/2”	3/8”	6 GPM
3/4”	1/2”	10.5 GPM
1 “	3/4”	13.1 GPM
1-1/2”	1”	39 GPM
2”	1”	80 GPM
3”	1-1/2”	175 GPM
4”	2”	299 GPM
6”	2-1/2”	747 GPM
>6”	2-1/2”	Calculate**

**Based on schedule 40 pipe.*

***Liquid linear velocity in annulus between the pipe and sparger element FPS.*

$$FPS = \frac{GPM}{[(\text{pipe ID})^2 - (\text{sparger OD})^2] \times 2.448}$$

Lower gas exit velocities produce finer bubbles. Exit velocities can be <5 FPM with good performance. In some instances, actual application must be tested/proven.

Reinforced elements are recommended, or elements with a centering spider for support within the pipe line.

See Mott Sparging Literature (Ref: PMSPARG) or Mott Sparger Selector Key.

INLINE DYNAMIC SPARGER DESIGN GUIDE

Non-Intrusive Inline Dynamic Sparger Sizing

Sizing is based on *liquid flow*. Nominal flow rate is based on *10 FPS linear velocity* through the ID of the Dynamic Sparger. These spargers can operate effectively from less than 5 FPS up to 20 FPS. Select the Dynamic Sparger Model 8501 or GasSaver® for a given application, then determine the gas flow in ACFM and check gas exit velocity through the porous media to be sure it is within maximum design limits. Should the exit velocity be too high, go to the next size larger model or order a special GasSaver with a 12" long porous section for double the area.

Sizing Method

1. Determine liquid flow rate in gallons per minute (GPM).
2. Select Inline Dynamic Sparger model.
3. Determine liquid line pressure, PSIG (P).
4. Determine gas flow in standard cubic feet per minute (SCFM).
5. Determine liquid temperature °F (T).
6. Calculate actual cubic feet per minute (ACFM) using standard gas formula:

$$ACFM = SCFM \times \frac{14.7}{(14.7+P)} \times \frac{(460+T)}{520}$$

7. Record GasSaver area, Ft^2 (A).
8. Calculate gas exit velocity, FPM

$$FPM = \frac{ACFM}{A}$$

9. Check to be sure that the exit velocity is within the maximum range, based on the operating conditions.

Gas Exit Velocity Chart

Liquid Linear Velocity*	Gas Exit Velocity
1 - 5 FPS	25 FPM design 50 FPM maximum
5 - 10 FPS	25 FPM design 100 FPM maximum
>10 FPS	50 FPM design 200 FPM maximum

**Liquid linear velocity FPS.*

$$FPS = \frac{GPM}{(\text{Porous ID}^2 \times 2.448)}$$

Lower gas exit velocities produce finer bubbles. In some instances, actual application must be tested/proven.

GasSavers provide a very broad range of effective operation, with both liquid and gas flows.

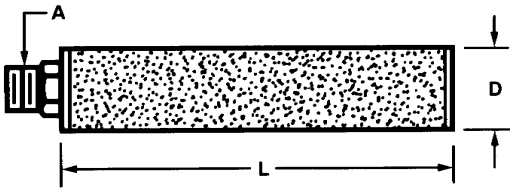
See Dynamic Sparger Selection in Mott Literature (Ref: PMSPARG) or Mott Sparger Selector Key.

MOTT SPARGER SELECTOR KEY

In-tank and/or Intrusive Precision Sparger Elements

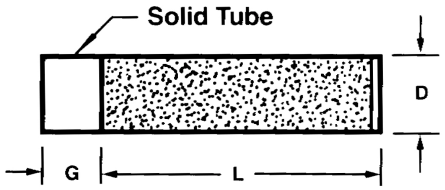
Mott porous metal sparger elements are available in many configurations to suite specific process requirements. Standard materials are 316L stainless steel porous media, and 316 stainless steel hardware. Other materials and sizes available on special order.

TYPE A HEX NIPPLE SPARGER ELEMENTS



NOTES:
"XX" – Specify Media Grade in the Product Description. Media Grade 2 recommended for gas sparging / Media Grade 10 recommended for steam sparging / Media Grade 40 recommended for tank agitation.

TYPE G SPARGER ELEMENTS (FOR WELDING BY OTHERS)



(* "G" can be any length – specify)

Seamless Sparger Elements

Description	D Dia	L	A NPT	Area Ft²
2306-A04-06-A00-XX-AB	0.375"	6"	1/4"	0.05
-12-		12"		0.10
-18-		18"		0.15
-24-		24"		0.20
-36-		36"		0.29
2308-A04-06-A00-XX-AB	0.5"	6"	1/4"	0.06
-12-		12"		0.13
-18-		18"		0.20
-24-		24"		0.26
-36-		36"		0.39
2312-A04-06-A00-XX-AB	0.75"	6"	1/4"	0.10
-12-		12"		0.20
-18-		18"		0.29
-24-		24"		0.39
-36-		36"		0.59
2316-A08-06-A00-XX-AB	1.0"	6"	1/2"	0.13
-12-		12"		0.26
-18-		18"		0.39
-24-		24"		0.52
-36-		36"		0.78

Rolled and Welded Elements

Description	D Dia	L	A NPT	Area Ft²
2224-A04-10-A00-XX-AB	1.5"	10"	1/4"	0.33
-20-		20"		0.65
-30-		30"		0.98
-40-		40"		1.31
2232-A08-10-A00-XX-AB	2.0"	10"	1/2"	0.44
-20-		20"		0.87
-30-		30"		1.31
-40-		40"		1.75
2240-A16-10-A00-XX-AB	2.5"	10"	1"	0.54
-20-		20"		1.09
-30-		30"		1.64
-40-		40"		2.18

Seamless Sparger Elements

Description	D Dia	L	G*	Area Ft²
2306-G06-06-A00-XX-AB	0.375"	6"	1"	0.05
-12-		12"		0.10
-18-		18"		0.15
-24-		24"		0.20
-36-		36"		0.29
2308-G08-06-A00-XX-AB	0.5"	6"	1"	0.06
-12-		12"		0.13
-18-		18"		0.20
-24-		24"		0.26
-36-		36"		0.39
2312-G12-06-A00-XX-AB	0.75"	6"	1"	0.10
-12-		12"		0.20
-18-		18"		0.29
-24-		24"		0.39
-36-		36"		0.59
2316-G16-06-A00-XX-AB	1.0"	6"	1"	0.13
-12-		12"		0.26
-18-		18"		0.39
-24-		24"		0.52
-36-		36"		0.78

Rolled and Welded Elements

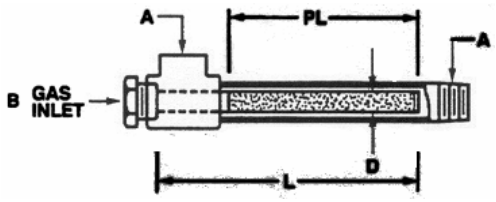
Description	D Dia	L	G*	Area Ft²
2224-G24-10-A00-XX-AB	1.5"	10"	1"	0.33
-20-		20"		0.65
-30-		30"		0.98
-40-		40"		1.31
2232-G32-10-A00-XX-AB	2.0"	10"	1"	0.44
-20-		20"		0.87
-30-		30"		1.31
-40-		40"		1.75
2240-G40-10-A00-XX-AB	2.5"	10"	1"	0.54
-20-		20"		1.09
-30-		30"		1.64
-40-		40"		2.18

MOTT SPARGER SELECTOR KEY

Inline Dynamic Sparger – 8501 Series

Mott 8501 Series Tee-Mounted Sparger Assemblies offer simple mounting in process piping systems. Gas is introduced into the element which mounts within the pipe housing. Gas passes from inside to the outside of the element. Liquid enters the side inlet to the tee and passes through the annulus between the pipe and the element and shears the bubbles from the element for fine-bubble performance. Upon reaching the end of the element, there is a sudden expansion in area that creates turbulence and good mixing of the gas and liquid. Standard materials are 316L stainless steel hardware. Other materials are available on special order.

Sparger Element – 8501 Series

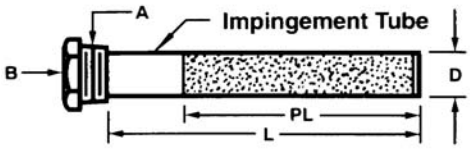


Nominal Liquid Flow	Product Description	A NPT	B NPT	L	D	PL	Porous AreaFt²
6 gpm	8501-1/2-06-XX	1/2"	1/8"	6"	0.375"	4"	0.03
	-12-			12"		10"	0.08
	-18-			18"		16"	0.13
	-24-			24"		22"	0.18
	-36-			36"		34"	0.28
10 gpm	8501-3/4-06-XX	3/4"	1/4"	6"	0.5"	3.75"	0.04
	-12-			12"		9.75"	0.10
	-18-			18"		15.75"	0.17
	-24-			24"		21.75"	0.24
	-36-			36"		33.75"	0.37
13 gpm	8501-1-06-XX	1"	1/2"	6"	0.75"	3.5"	0.06
	-12-			12"		9.5"	0.15
	-18-			18"		15.5"	0.25
	-24-			24"		21.5"	0.35
	-36-			36"		33.5"	0.55
39 gpm	8501-1 1/2-06-XX	1 1/2"	3/4"	6"	1.0"	2.5"	0.05
	-12-			12"		8.5"	0.18
	-18-			18"		14.5"	0.32
	-24-			24"		20.5"	0.45
	-36-			36"		32.5"	0.71

Sparger – 850 Series

Product Description	D	A NPT	B NPT	L	PL	Porous AreaFt²
850-1/2-06-XX	0.375"	1/2"	1/8"	6"	4"	0.03
-12-				12"	10"	0.08
-18-				18"	16"	0.13
-24-				24"	22"	0.18
-36-				36"	34"	0.28
850-3/4-06-XX	0.5"	3/4"	1/4"	6"	3.75"	0.04
-12-				12"	9.75"	0.10
-18-				18"	15.75"	0.17
-24-				24"	21.75"	0.24
-36-				36"	33.75"	0.37
850-1-06-XX	0.75"	1"	1/2"	6"	3.5"	0.06
-12-				12"	9.5"	0.15
-18-				18"	15.5"	0.25
-24-				24"	21.5"	0.35
-36-				36"	33.5"	0.55
850-1 1/2-06-XX	1.0"	1 1/2"	3/4"	6"	2.5"	0.05
-12-				12"	8.5"	0.18
-18-				18"	14.5"	0.32
-24-				24"	20.5"	0.45
-36-				36"	32.5"	0.71

Sparger Element – 850 Series

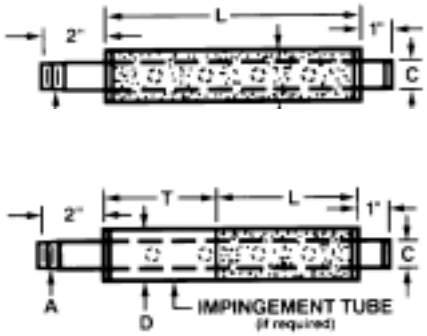


NOTES:
"XX" – Specify Media Grade in the Product Description. Media Grade 2 is recommended for gas sparging / Media Grade 10 is recommended for steam sparging.

Nominal flow rates are given based on 10 FPS liquid velocity through the annulus. The 8501 will operate effectively over a wide range, from less than 5 FPS up to 20 FPS. 10 FPS is a good design basis.

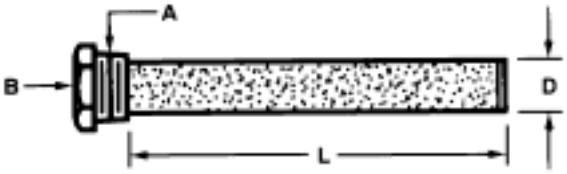
MOTT SPARGER ELEMENT SELECTOR KEY

Reinforced Sparger Elements



NOTES:
"XX" – Specify Media Grade in the Product Description. Media Grade 2 recommended for gas sparging / Media Grade 10 recommended for steam sparging / Media Grade 40 recommended for tank agitation.

Type 6400 Sparger Elements



Product Description	D Dia	L	T	A NPT	C Dia	Area Ft²
2224-CD08-10-AD00-XX-AB	1.5"	10"	0"	1/2"	0.840"	0.32
-10/6-AD00-XX-AB		10"	6			0.32
-10/12-AD00-XX-AB		10"	12"			0.32
2224-CD08-20-AD00-XX-AB		20"	0"			0.65
-20/6-AD00-XX-AB		20"	6"			0.65
-20/12-AD00-XX-AB		20"	12"			0.65
2224-CD08-30-AD00-XX-AB		30"	0"			0.98
-30/6-AD00-XX-AB		30"	6"			0.98
-30/12-AD00-XX-AB		30"	12"			0.98
2232-CD12-10-AD00-XX-AB	2"	10"	0"	3/4"	1.050"	0.43
-10/6-AD00-XX-AB		10"	6"			0.43
-10/12-AD00-XX-AB		10"	12"			0.43
2232-CD12-20-AD00-XX-AB		20"	0"			0.87
-20/6-AD00-XX-AB		20"	6"			0.87
-20/12-AD00-XX-AB		20"	12"			0.87
2232-CD12-30-AD00-XX-AB		30"	0"			1.30
-30/6-AD00-XX-AB		30"	6"			1.30
-30/12-AD00-XX-AB		30"	12"			1.30
2240-CD16-10-AD00-XX-AB	2.5"	10"	0"	1"	1.315"	0.54
-10/6-AD00-XX-AB		10"	6"			0.54
-10/12-AD00-XX-AB		10"	12"			0.54
2240-CD16-20-AD00-XX-AB		20"	0"			1.09
-20/6-AD00-XX-AB		20"	6"			1.09
-20/12-AD00-XX-AB		20"	12"			1.09
2240-CD16-30-AD00-XX-AB		30"	0"			1.63
-30/6-AD00-XX-AB		30"	6"			1.63
-30/12-AD00-XX-AB		30"	12"			1.63

Product Description	D Dia	A NPT	B NPT	L	Area Ft²
6400-3/8-1/4-1/8-06-XX	0.375"	1/4"	1/8"	6"	0.05
-12-				12"	0.10
-18-				18"	0.15
-24-				24"	0.20
-36-				36"	0.29
6400-3/8-1/2-1/8-06-XX	0.375"	1/2"	1/8"	6"	0.05
-12-				12"	0.10
-18-				18"	0.15
-24-				24"	0.20
-36-				36"	0.29
6400-1/2-1/2-1/4-06-XX	0.500"	1/2"	1/4"	6"	0.06
-12-				12"	0.13
-18-				18"	0.20
-24-				24"	0.26
-36-				36"	0.39
6400-1/2-3/4-1/4-06-XX	0.500"	3/4"	1/4"	6"	0.06
-12-				12"	0.13
-18-				18"	0.20
-24-				24"	0.26
-36-				36"	0.39
6400-3/4-3/4-1/2-06-XX	0.075"	3/4"	1/2"	6"	0.10
-12-				12"	0.20
-18-				18"	0.29
-24-				24"	0.39
-36-				36"	0.59
6400-3/4-1-1/2-06-XX	0.750"	1"	1/2"	6"	0.10
-12-				12"	0.20
-18-				18"	0.29
-24-				24"	0.39
-36-				36"	0.59

MOTT SPARGER SELECTOR KEY

Inline Non-Intrusive Dynamic Spargers

Mott GasSaver® Series provides a new dimension in sparger and gas/liquid contacting performance. Gas is introduced into the annulus around the porous metal from outside to inside. The liquid passing through the inside of the porous element "shears" the bubbles from the media before they can fully propagate, resulting in very fine bubbles and the ultimate in performance. Standard materials are 316L stainless steel porous media, 316 stainless steel hardware and housings, and non-asbestos gasket. Other materials are available on special order.

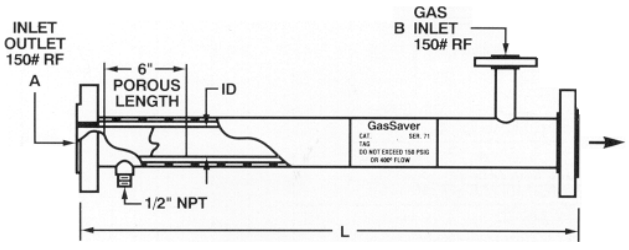
NOTES:
"XX" – Specify Media Grade in the Product Description. Media Grade 2 is recommended for gas sparging / Media Grade 10 is recommended for steam sparging.

Nominal flow rates are given based on 10 FPS liquid velocity through GasSavers. GasSavers will operate effectively over a wide range, from 5 FPS up to 20 FPS. 10 FPS is a good design point. Exit velocities can be <5 FPS with good performance in some applications – actual application must be tested.

Mott Industrial GasSavers

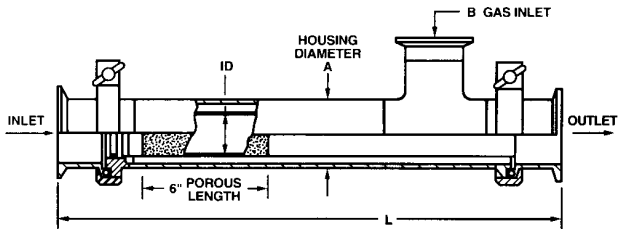
Nominal Liquid Flow	Product Description	A Dia	ID	B	L	Porous AreaFt²
10 gpm	71B24B78-B10FXXAB-65	1"	0.625"	3/4"	24"	0.08
15 gpm	71C24B78-C12FXXAB-65	1 1/2"	0.75"	1"	24"	0.10
40 gpm	71D24B78-D20FXXAB-65	2"	1.25"	1"	24"	0.16
50 gpm	71D24B78-D22FXXAB-65	2"	1.375"	1"	24"	0.18
100 gpm	71E24B78-E34FXXAB-65	3"	2.125"	1"	24"	0.28
150 gpm	71E24B78-E40FXXAB-65	3"	2.5"	1"	24"	0.33
200 gpm	71F24B78-F46FXXAB-65	4"	2.875"	1"	24"	0.38
300 gpm	71G24B78-G56FXXAB-65	6"	3.5"	2"	24"	0.46
400 gpm	71G24B78-G66FXXAB-65	6"	4.125"	2"	24"	0.54
600 gpm	71G24B78-G80FXXAB-65	6"	5.0"	2"	24"	0.65
800 gpm	71H24B78-H92FXXAB-65	8"	5.75"	2"	24"	0.75

Industrial GasSaver Shown Below



Mott Sanitary GasSavers

Nominal Liquid Flow	Product Description	A Dia	ID	B	L	Porous AreaFt²
3.5 gpm	S71B24B65-B06FXXAB-65	1"	0.375"	1"	24"	0.05
6 gpm	S71B24B65-B08FXXAB-65	1"	0.5"	1"	24"	0.06
6 gpm	S71C24B65-C08FXXAB-65	1 1/2"	0.5"	1 1/2"	24"	0.06
10 gpm	S71C24B65-C10FXXAB-65	1 1/2"	0.625"	1 1/2"	24"	0.08
15 gpm	S71C24B65-C12FXXAB-65	1 1/2"	0.75"	1 1/2"	24"	0.10
30 gpm	S71D24B65-D18FXXAB-65	2"	1.125"	1 1/2"	24"	0.15
50 gpm	S71D24B65-D22FXXAB-65	2"	1.375"	1 1/2"	24"	0.18
50 gpm	S71V24B65-V22FXXAB-65	2 1/2"	1.375"	2"	24"	0.18
75 gpm	S71V24B65-V28FXXAB-65	2 1/2"	1.75"	2"	24"	0.23
75 gpm	S71E24B65-E28FXXAB-65	3"	1.75"	2"	24"	0.23
100 gpm	S71E24B65-E34FXXAB-65	3"	2.125"	2"	24"	0.28
140 gpm	S71E24B65-E38FXXAB-65	3"	2.375"	4"	24"	0.31
100 gpm	S71F24B65-F34FXXAB-65	4"	2.125"	4"	24"	0.28
150 gpm	S71F24B65-F40FXXAB-65	4"	2.5"	4"	24"	0.33
200 gpm	S71F24B65-F46FXXAB-65	4"	2.875"	4"	24"	0.38



Sanitary GasSaver Shown Above

Mott Laboratory GasSavers All-Welded Construction

Nominal Liquid Flow	Product Description	Tubing Conn Dia	Porous ID	Overall Lg	Porous AreaFt²
1.5 gpm	7610-1/4-6-XX-AB	0.50"	0.25"	10"	0.03
6.0 gpm	7610-1/2-6-XX-AB	0.75"	0.50"	10"	0.06

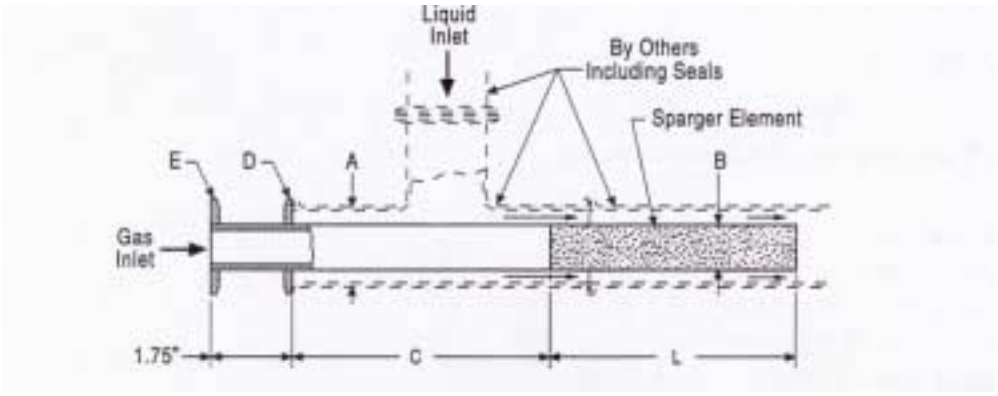
MOTT SPARGER SELECTOR KEY

Inline Non-Intrusive – Sanitary S71 Series

Mott's sanitary tee-mounted sparger offers state-of-the-art sparging performance. Mott porous metal media provides fine bubble propagation for an optimal gas/liquid interface and effective mass transfer. Gas/liquid mixing occurs when the gas-ladened liquid reaches the end of the sparger element. A sudden increase in cross-sectional area results in a zone of turbulence.

Mott gas spargers mean lowers gas consumption with high performance. Mott spargers eliminate steam hammer and reduce steam consumption in direct steam injection applications.

Standard construction: Mott precision 316L stainless steel porous media, 316 stainless steel hardware, 3A finish, and polished wells. Simple sanitary flange/clamp assembly allows for ease of installation and removal for cleaning. Permanent porous 316L stainless steel media can easily be cleaned for long service life.



Nominal* Liquid Flow	Sparger Element Part Desc.	A Tube Dia	B Sparger Dia	C	6" Area Ft^2	12"Area Ft^2	D Tri-Clamp**	E Tri-Clamp**
12 gpm	S7116-L-XX-AB	1.0"	0.5"	4.0"	.06	.13	1.5"	1.5"
30 gpm	S7124-L-XX-AB	1.5"	0.75"	4.5"	.10	.20	1.5"	1.5"
60 gpm	S7132-L-XX-AB	2.0"	1.0"	6.0"	.13	.26	2.0"	1.5"
110 gpm	S7140-L-XX-AB	2.5"	1.0"	6.0"	.13	.26	2.5"	1.5"
150 gpm	S7148-L-XX-AB	3.0"	1.5"	6.5"	.19	.39	3.0"	1.5"
260 gpm	S7164-L-XX-AB	4.0"	2.0"	8.0"	.26	.52	4.0"	2.0"

L = Length: 6" (6) or 12" (12). Other Lengths Available – Consult Factory.

XX = Media Grade: Media Grade 2 (2) for most gas applications; Media Grade 10 (10) for steam.

Example Product Description:
S7132-12-2-AB (2" Tee Mount – 1" Diameter Element x 12" Porous Length, Media Grade 2, 316L/316).

*Nominal flow specified at 10 FPS annular liquid velocity. Can operate from 1-20 FPS.

**Tri-Clamp sanitary flanges or equivalent.

mott *corporation*

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860-747-6333 Fax 860-747-6739
www.mottcorp.com

ISO 9001:2000 CERTIFIED

SPARGING APPLICATION DATA SHEET

CUSTOMER		**DATE**	
ADDRESS			
CONTACT		**E-MAIL**	
PHONE		**FAX**	

APPLICATION: Please check appropriate box for your application.

AERATION		DEWATERING OIL		OXYGENATION	
AGITATION		GAS/LIQUID REACTIONS		OZONATION	
BULKING		HYDROGENATION		pH CONTROL	
CARBONATION		OIL FLOTATION		STEAM INJECTION	
CHLORINE BLEACHING		OXYGEN BLEACHING		VOLATILES STRIPPING	
COLUMN FLOTATION		OXYGEN STRIPPING		OTHER	

PROCESS DESCRIPTION AND OBJECTIVES: Please complete the following (with details).

LIQUID TYPE					
SPECIFIC GRAVITY		DENSITY	LB/IN3	TEMPERATURE	DEG F
GAS TYPE					
PRESSURE	PSIG	SPECIFIC GRAVITY		DENSITY	LB/IN3

IN-TANK:			
BATCH		CONTINUOUS	
GAS VOLUME		SCFM	
TANK DIMENSIONS		FT	
HEAD SPACE		FT	
VENTED			
PRESSURIZED		PSIG	
LIQUID VOLUME		GAL	
LIQUID HEAD		FT	
AGITATED		NOT AGITATED	
AGITATOR DIA.		FT	
AGITATOR SPEED		RPM	
MOUNTING REQUIREMENTS: SPECIFY			
ANSI FLANGE		SIZE	
SANITARY		SIZE	
NPT		SIZE	

PIPE LINE:					
LIQUID FLOW RATE		GPM			
LIQUID PRESSURE		PSIG			
PIPE SIZE (IPS)		IN			
GAS FLOW RATE		SCFM			
MOUNTING REQUIREMENTS: SPECIFY					
INLINE		ELBOW		TEE	
ANSI FLANGE				SIZE	
SANITARY				SIZE	
NPT				SIZE	