Suction Diffusers

Pressures to 790 PSIG
Temperatures to 800ºF

Applications

- Process Industry
- Power Industry
- Chemical Industry
- Oil and Gas
- Metals and Mining
- Water and Waste
- Pulp and Paper

Features

- Filtration Down to 40 Microns
- Large Diffuser Screens
- Long and Short Neck Versions Available
- Cast and Fabricated Construction

Materials

- Cast Iron
- Carbon Steel
- Stainless Steel
- Other materials upon request

End Connections

- Flat Faced
- Raised Face
- Buttweld

Size Ranges

- Cast-
  2" x 1¼" - 12" x 12"
  (50mm x 32mm - 300mm x 300mm)
- Fabricated-
  Custom sizes to meet Requirement

Ratings

- ASME Class 125
- ASME Class 150
- ASME Class 300

125S SERIES
CAST IRON SUCTION DIFFUSERS

Pressures To 200 PSIG (18.96 barg)
Temperatures to 212°F (100°C)

- **All encompassing Strainer, Flow Straightener, Elbow and Pipe Reducer for pump applications**
- **Direct mount to the suction side of a pump in either horizontal or vertical position**
- **Flow turbulence reduced through integral straightening vanes for improved pump efficiency**
- **All strainers supplied with removable Stainless Steel startup mesh over Stainless Steel perforated plate**
- **Cast Iron FF Flanges on all sizes**
- **All sizes complete with O-ring sealed covers with knob bolts to minimize down time**
- **Supporting pads for easy mounting of standard I.D. support foot**
- **Drain connection with plug furnished as standard**

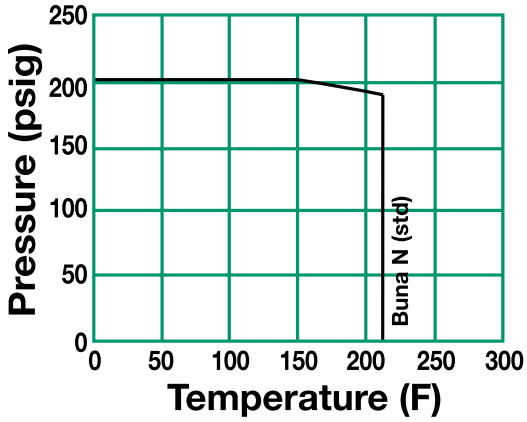
APPLICATIONS

- Pump protection

APPLICABLE CODES (Designed in accordance with)

- ASME B16.1

PRESSURE/TEMPERATURE CHART



MODELS

- 125SFI – Cast Suction Diffuser

OPTIONS

- Other perforated screens and mesh liners
- EPDM or Viton cover O-ring
- Differential connections
- Bolted covers

Cast Iron Suction Diffuser Ordering Code

Inlet Size				Dash	Model						Outlet Size	Dash	Perf	Mesh
0	6	0	0	-	1	2	5	S	F	I	N	-	4	2
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Inlet Size - Position 1-4
- 0200 - 2"
- 0250 - 2½"
- 0300 - 3"
- 0400 - 4"
- 0500 - 5"
- 0600 - 6"
- 0800 - 8"
- 1000 - 10"
- 1200 - 12"

Dash - Position 5

Model - Position 6 -11
- 125SFI - 125# Flanged

Outlet Size - Position 12
- G - 1½"
- H - 2"
- J - 2½"
- K - 3"
- M - 4"
- N - 5"
- P - 6"
- Q - 8"
- R - 10"
- S - 12"

Dash - Position 13

Perf - Position 14
- 4 - 1/8"

Mesh - Position 15
- 2 - 20"

Cast Suction Diffusers are supplied standard with Buna N cover O-ring and 1/8 perforated screen with a removable 20 mesh start up liner.

For any variations, use the part numbering system above but clearly indicate the additional requirement.

125S SERIES
CAST IRON SUCTION DIFFUSERS

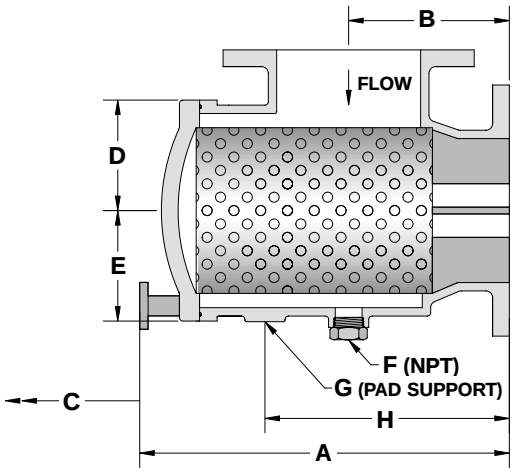
SPECIFICATION

Suction Diffuser shall mount directly to the suction side of the pump in either a horizontal or vertical position. The cover shall have a Buna N O-ring and knobs to minimize down time. The Suction Diffuser shall be available with reduced outlet sizes. The Suction Diffuser shall be _____ inlet by _____ outlet with ASME Class 125 FF flanges and shall have a _____ start up mesh with a _____ perforated screen. The Suction Diffuser shall be SSI S Series.

MATERIALS OF CONSTRUCTION

Body .....Cast Iron A126-B
Cover .....Cast Iron A126-B
Perforated Screen[1] .....304 SS
Mesh Screen .....304 SS
Knob[2] .....Ductile Iron
O-ring[1] - Standard .....Buna N
Optional .....EPDM
Optional .....Viton
Plug[2] .....Malleable Iron

1 Recommended Spares.
2 Materials of equivalent strength may be substituted at manufacturer's option.



Connections:
2" x 1¼" – 12" x 12" Flanged

SCREEN OPENINGS

SIZE	STANDARD SCREEN	START UP LINER
All	1/8" Perf.	20 Mesh*

*20 Mesh Liner is removeable

DIMENSIONS inches (mm) **and WEIGHTS** pounds (kg)

Size		A	B	C[1]	D	E	F	G[2]	H	Weight
Inlet	Outlet									
2 (50)	1½ (40)	10¼ 260.00	4½ 114.30	5 127.00	4½ 114.30	2 3/16 55.00	3/4 (20)	3/4 (20)	5 15/16 151.00	21 (9.5)
2 (50)	2 (50)	10¼ 260.00	4½ 114.30	5 127.00	4½ 114.30	2 3/16 55.00	3/4 (20)	3/4 (20)	5 15/16 151.00	23 (10.4)
2½ (65)	2 (50)	10⅞ 276.00	5 127.00	5 127.00	5 127.00	2½ 64.00	1/2 (15)	1 (25)	6 9/16 167.00	32 (14.5)
2½ (65)	2½ (65)	10⅞ 276.00	5 127.00	5 127.00	5 127.00	2½ 64.00	1/2 (15)	1 (25)	6 9/16 167.00	34 (15.4)
3 (80)	2 (50)	10¼ 260.00	5½ 139.70	5 127.00	5½ 139.70	2 3/16 55.00	3/4 (20)	1 (25)	5 15/16 151.00	37 (16.8)
3 (80)	2½ (65)	11 5/16 288.00	5½ 139.70	5 127.00	5½ 139.70	3 76.00	3/4 (20)	1 (25)	7 1/16 179.00	49 (22.2)
3 (80)	3 (80)	11 5/16 288.00	5½ 139.70	5¼ 133.00	5½ 139.70	3 76.00	3/4 (20)	1 (25)	7 1/16 179.00	55 (24.9)
4 (100)	3 (80)	13 332.00	6½ 165.10	5¼ 133.00	6½ 165.10	3⅜ 98.00	3/4 (20)	1 (25)	8¾ 223.00	57 (25.9)
4 (100)	4 (100)	12 13/16 325.00	6½ 165.10	7⅛ 181.00	6½ 165.10	3⅜ 98.00	3/4 (20)	1¼ (32)	8¼ 210.10	92 (41.7)
5 (125)	4 (100)	15¾ 400.00	7½ 190.50	7⅛ 181.00	7½ 190.50	4 7/16 112.70	3/4 (20)	1¼ (32)	7⅝ 194.00	97 (44.0)
5 (125)	5 (125)	16⅛ 411.00	7½ 190.50	7⅛ 181.00	7½ 190.50	5 9/16 141.00	1 (25)	1¼ (32)	10 254.00	101 (45.8)
6 (150)	4 (100)	13 332.00	8 203.20	7⅛ 181.00	8 203.20	3⅜ 98.00	3/4 (20)	1¼ (32)	8¾ 223.00	140 (63.5)
6 (150)	5 (125)	17 433.00	8 203.20	7⅛ 181.00	8 203.20	5 7/16 138.00	1 (25)	1¼ (32)	10 11/16 272.00	145 (65.8)
6 (150)	6 (150)	17 433.00	8 203.20	7⅞ 200.00	8 203.20	5 7/16 138.00	1 (25)	2 (50)	10 11/16 272.00	182 (82.6)
8 (200)	6 (150)	17 433.00	8 203.20	7⅞ 200.00	9 228.60	5 7/16 138.00	1 (25)	2 (50)	10 11/16 272.00	197 (89.4)
8 (200)	8 (200)	20 13/16 528.00	9 228.60	16¼ 413.00	9 228.60	7 176.50	1 (25)	2 (50)	11⅝ 295.00	292 (132.5)
10 (250)	8 (200)	20 13/16 528.00	9 228.60	16¼ 413.00	11 279.40	7 176.50	1 (25)	2 (50)	11⅝ 295.00	312 (141.5)
10 (250)	10 (250)	26¼ 667.00	11 279.40	16¼ 413.00	11 279.40	9¾ 248.00	1 (25)	2 (50)	14 3/16 360.00	398 (180.5)
12 (300)	8 (200)	25 5/16 643.00	11 279.40	16¼ 413.00	11 279.40	8¼ 209.00	1 (25)	2 (50)	13¾ 349.00	412 (186.9)
12 (300)	10 (250)	26¼ 667.00	11 279.40	16¼ 413.00	12 304.80	9¾ 248.00	1 (25)	2 (50)	14 3/16 360.00	491 (222.7)
12 (300)	12 (300)	26¼ 667.00	12 304.80	18⅛ 461.00	12 304.80	9¾ 248.00	1 (25)	2 (50)	15⅜ 390.00	573 (259.9)

1. Distance required for Screen Removal.
2. Mounting Pad Support.

125S SERIES
OPEN AREA RATIOS
with Standard Perforated Screen

Opening 40%, 1/8" Diameter

Size	Nominal Outlet Area (in^2)	Gross Screen Area (in^2)	Free Screen Area (in^2)	Open Area Ratio (OAR)
2 x 1½	1.77	25	10.00	5.6
2 x 2	3.14	36	14.40	4.6
2½ x 2	3.14	36	14.40	4.6
2½ x 2½	4.91	49	19.60	4.0
3 x 2	3.14	36	14.40	4.6
3 x 2½	4.91	49	19.60	4.0
3 x 3	7.07	60	24.00	3.4
4 x 3	7.07	111	44.40	6.3
4 x 4	12.57	105	42.00	3.3
5 x 4	12.57	111	44.40	3.5
5 x 5	19.64	176	70.40	3.6
6 x 4	12.57	111	44.40	3.5
6 x 5	19.64	245	98.00	5.0
6 x 6	28.27	245	98.00	3.5
8 x 6	28.27	245	98.00	3.5
8 x 8	50.27	428	171.20	3.4
10 x 8	50.27	428	171.20	3.4
10 x 10	78.54	665	266.00	3.4
12 x 8	50.27	428	171.20	3.4
12 x 10	78.54	665	266.00	3.4
12 x 12	113.10	739	295.60	2.6

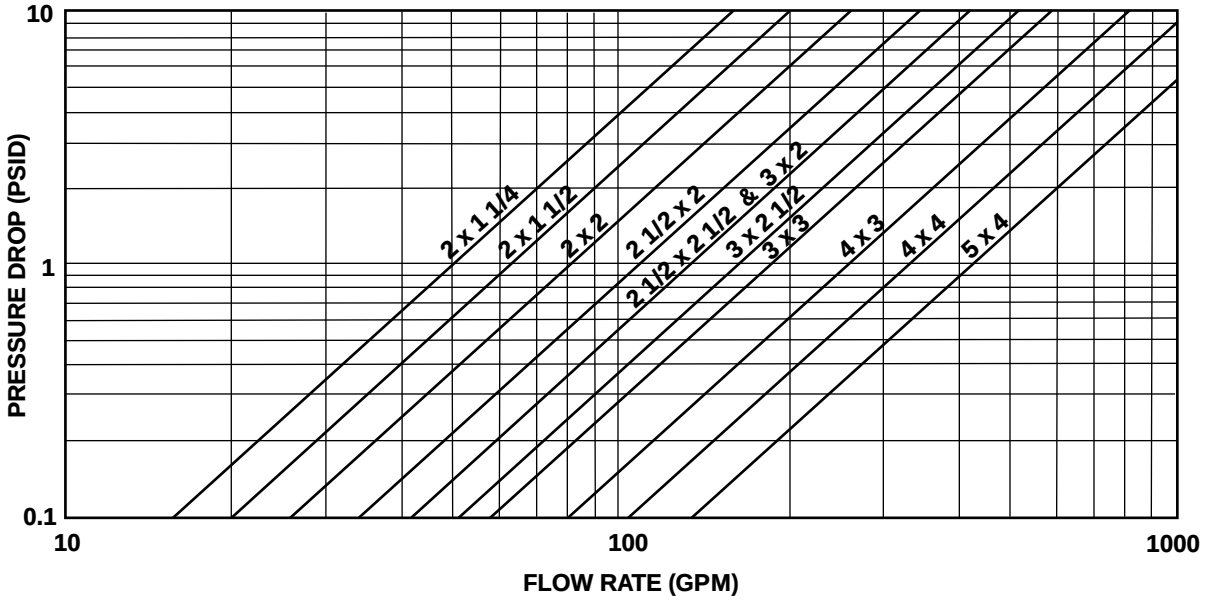
OAR = Free Screen Area divided by Nominal Outlet Area.
Free Screen Area = Opening % times Gross Screen Area.
Values shown are approximate. Contact factory for exact ratios.

125S SERIES

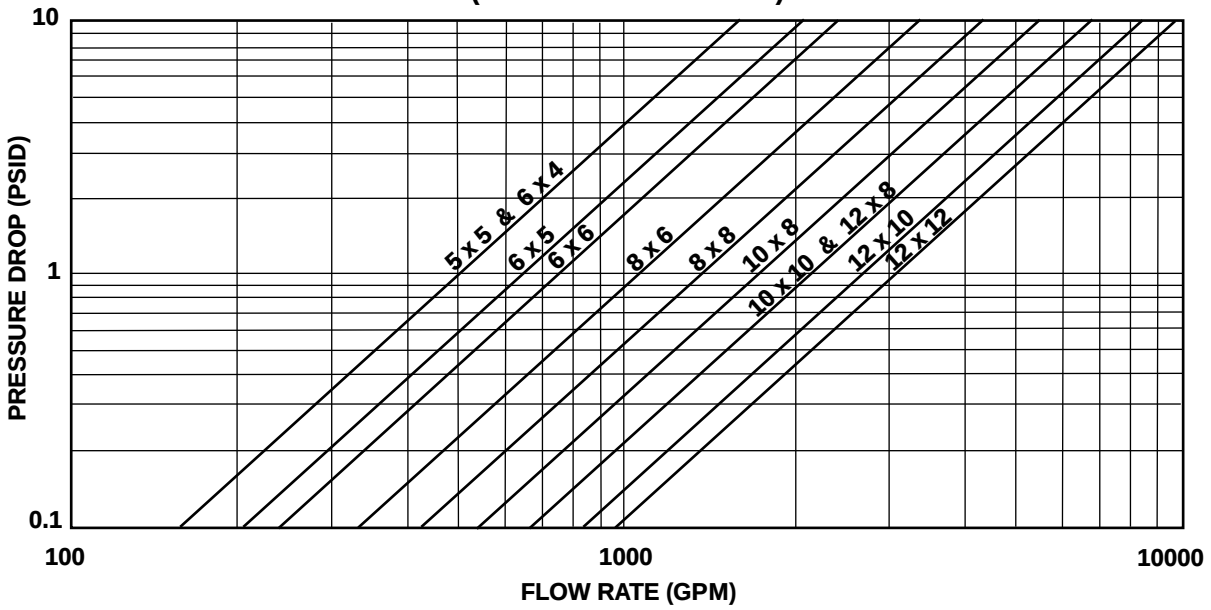
PRESSURE DROP VS FLOW RATE

Water Service, Clean Basket, 1/32" - 1/4" Perforated Screen*

(Sizes 2"x1¼" - 5"x4")



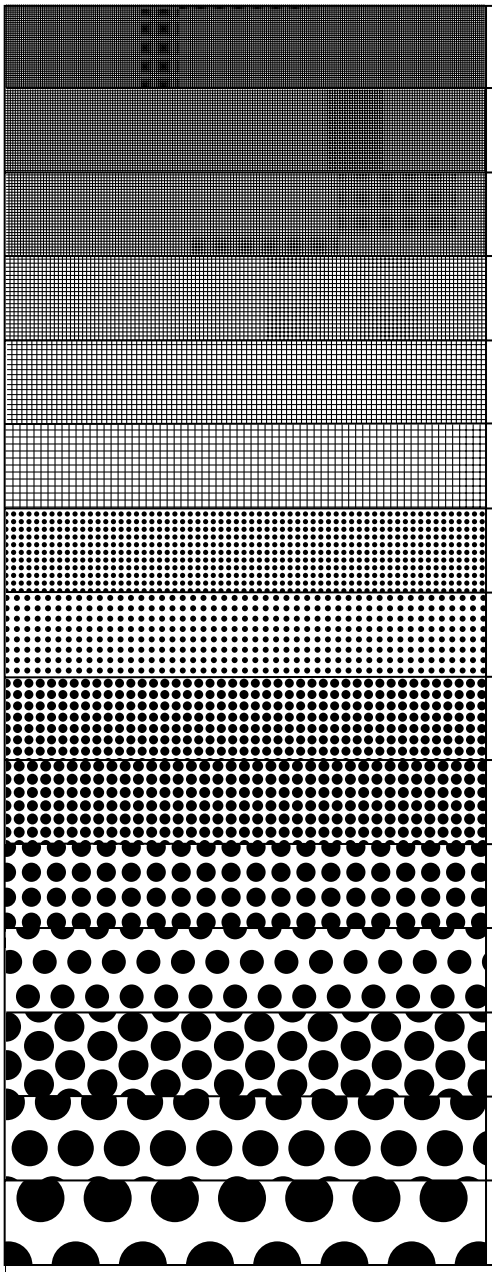
(Sizes 5"x5" - 12"x12")



For other viscous liquids or mesh liners, contact factory.

PUMP PROTECTION TECHNICAL INFORMATION

SCREEN OPENINGS



100 Mesh - 30% O.A. 0.006” Openings
80 Mesh - 36% O.A. 0.008” Openings
60 Mesh - 38% O.A. 0.010” Openings
40 Mesh - 41% O.A. 0.016” Openings
30 Mesh - 45% O.A. 0.022” Openings
20 Mesh - 49% O.A. 0.035” Openings
0.027” Dia.- 23% O.A.
0.033” Dia.- 28% O.A.
3/64” Dia.- 36% O.A.
1/16” Dia.- 37% O.A.
3/32” Dia.- 39% O.A.
1/8” Dia.- 40% O.A.
5/32” Dia.- 58% O.A.
3/16” Dia.- 50% O.A.
1/4” Dia.- 40% O.A.

FACTORS TO CONSIDER

1 Purpose

If the strainer is being used for protection rather than direct filtration, standard screens will suffice in most applications.

2 Service

With services that require extremely sturdy screens, such as high pressure/temperature applications or services with high viscosities, perforated screens without mesh liners are recommended. If a mesh liner is required to obtain a certain level of filtration, then a trapped perf/mesh/perf combination is recommended.

3 Filtration Level

When choosing a perf. or a mesh/perf. combination, attention should be given to ensure overstraining does not occur. As a general rule, the specified level of filtration should be no smaller than half the size of the particle to be removed. If too fine a filtration is specified, the pressure drop through the strainer will increase very rapidly, possibly causing damage to the screen.

Screen openings other than those shown above are readily available. Various mesh sizes as fine as 5 micron and perforated plate as coarse as 1/2” Dia. are in inventory.

Screens are available in a wide range of materials. Screens of carbon steel, stainless steel (304, 316), alloy 20, monel 400, hastelloy C and titanium grade 2 are in inventory.

Custom manufactured screens are available upon request. Please consult factory.

SUCTION DIFFUSER
CHECKLIST

Please take the factors listed below into account when selecting a strainer. Kindly photocopy this page and fill out the pertinent information, to your best ability, so that we can recommend a Strainer to suit your specific requirements.

1. Fluid to be strained _____
2. Flow rate _____
3. Density of fluid _____
4. Viscosity of fluid _____
5. Fluid working pressure _____

   Maximum pressure _____
6. Fluid Working Temp. _____

   Maximum Temp. _____
7. Preferred material of strainer construction _____
8. Present Pipeline size & material _____
9. Nature of solids to be strained out _____
10. Size of solids to be strained out _____

    Size of mesh or Perf. Req. _____
11. Clearance Limitation Above _____ Below _____

    Left side facing inlet _____ Right side facing inlet _____
12. Maximum pressure drop with clean screen _____
13. Expected cleaning frequency _____
14. Any other information deemed relevant _____

_____

_____

Name _____

Company _____

Address _____

City/Town _____

State _____ Zip Code _____

Telephone (_____) _____

Fax (_____) _____

SUCTION DIFFUSER
INSTALLATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- Ensure all machined surfaces are free of defects and that the inside of the diffuser is free of foreign objects.
- Provide for distance “C” as this dimension represents the distance required for removal of strainer.
- Mount standard support leg and foot to pad of suction diffuser.
- Align inlet and outlet pipe connections. For flanged connections, the flange bolting should be tightened gradually in a back and forth clockwise motion.
- Once installed, increase line pressure gradually and check for leak around joints.
- After piping and initial circulation is complete, remove fine mesh start-up strainer.

MAINTENANCE

For maximum eficiency, determine the length of time it takes for the pressure drop to double that in the clean condition. Once the pressure drop reaches an unacceptable value, shut down the line, drain piping and remove, clean and replace screen. A differential pressure gauge installed before and after diffuser in line will indicate pressure loss due to clogging and may be used to determine when cleaning is required.

TRIPLE DUTY VALVE
INSTALLATION AND MAINTENANCE INSTRUCTIONS

INSTALLATION

- Ensure all machined surfaces are free of defects and that the inside of the valve is free of foreign objects.
- The valve should be installed on the discharge side of the pump with the flow arrow pointed away from the pump discharge.
- Minimum recommended space for pump sizes 2” through 6” is 12”. Minimum recommended space for pump sizes 8” through 14” is 24”.
- It is not recommended to mount a valve directly to the pump.
- Sufficient clearance should be left around the valve for removal and/or repair.
- Valve should be mounted with the stem pointing up to facilitate proper seating of the valve disc.
- When connecting the valve to the line be sure that the flanges are the same – flat face to flat face. Flat face flanges require full face gaskets. The specified face-to-tace dimension of the valve is approximate due to machining tolerances. Allow adjustment in prefabricated piping or request certified dimensions.
- Check to see that flange gaskets are properly positioned before tightening the bolts. Tighten bolts gradually in a back and forth clockwise motion.
- Once installed, “crack” the valve open before starting the pump.
- Gradually adjust the stem until the proper flow rate is reached. Tapped ports are provided on the valve to insert equipment to measure the valve pressure differential.

MAINTENANCE - Packing Replacement

Before starting make a note of the position of the stem indicator.

Shut down the pump and close the isolation valves.

Open the valve completely so that the stem back seats against the inside of the yoke cover. Loosen the two nuts holding the flanged gland.

Remove the old packing and clean out the packing box.

Place a set (usually three or four) of the new packing rings around the stem. Be sure to stagger the 45 degree split in the packing rings. Press packing rings into the packing box.

Replace the flanged gland and nuts. Do not over tighten or the stem may seize.

Adjust the valve stem indicator to its original position. If there is any leakage around the packing tighten both gland nuts a 1/4 turn at a time until the leakage stops. It is very important that the gland nuts be tightened evenly.

For all other maintenance please contact the factory.

WARNING: *This product operates in pipelines or with equipment that carries fluids and/or gasses at elevated temperatures and pressures. Caution should be taken to make sure that this equipment is installed correctly and inspected regularly. Caution should also be taken to protect personnel from fluid or gas leakage.*