SAND TRAP LOUVER (STL)

Product Description

RABIE Sand Trap Louvers (STL) are very effective in trapping sand while having an aesthetic look and low pressure drops that meets most architectural and mechanical needs. Sand Trap Louvers are constructed from two sets of inverted C Channels mounted vertically. The louver has self emptying holes at the bottom through which the trapped sand is expelled out smoothly.

STL come in 2 models; STL-D (duct mounted Sand Trap Louver) and STL-W (wall mounted sand trap louver).

Frame and blades are made of extruded aluminum alloy (6030-T6) (Optionally galvanized steel), coated with polyester powder coated (RAL 9016 or 9010). Other colors and finishes are available on request.

Options

- Removable and washable air filters 1 or 2 inches (Aluminum).
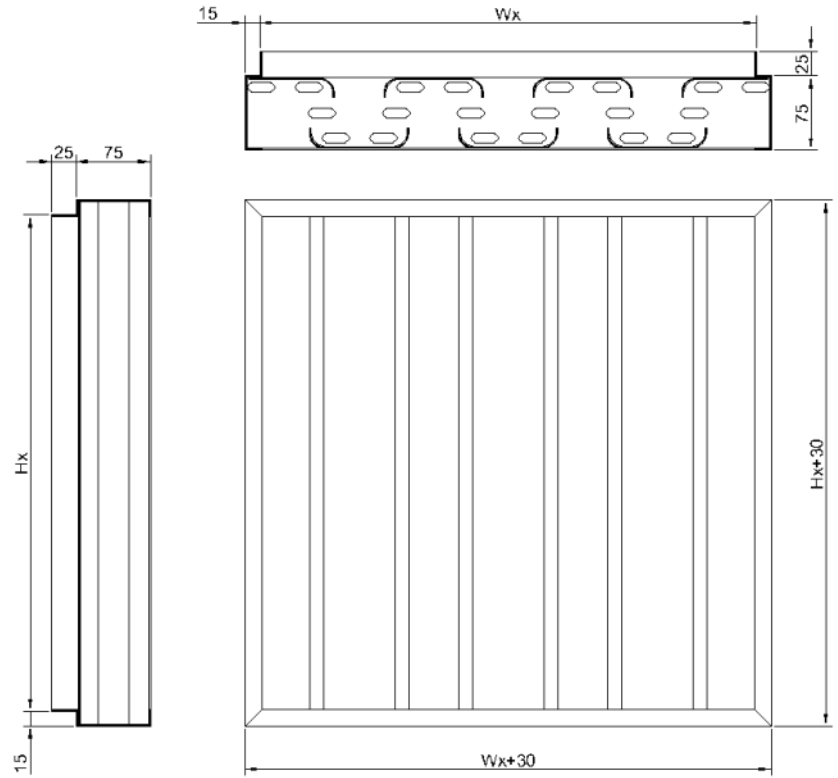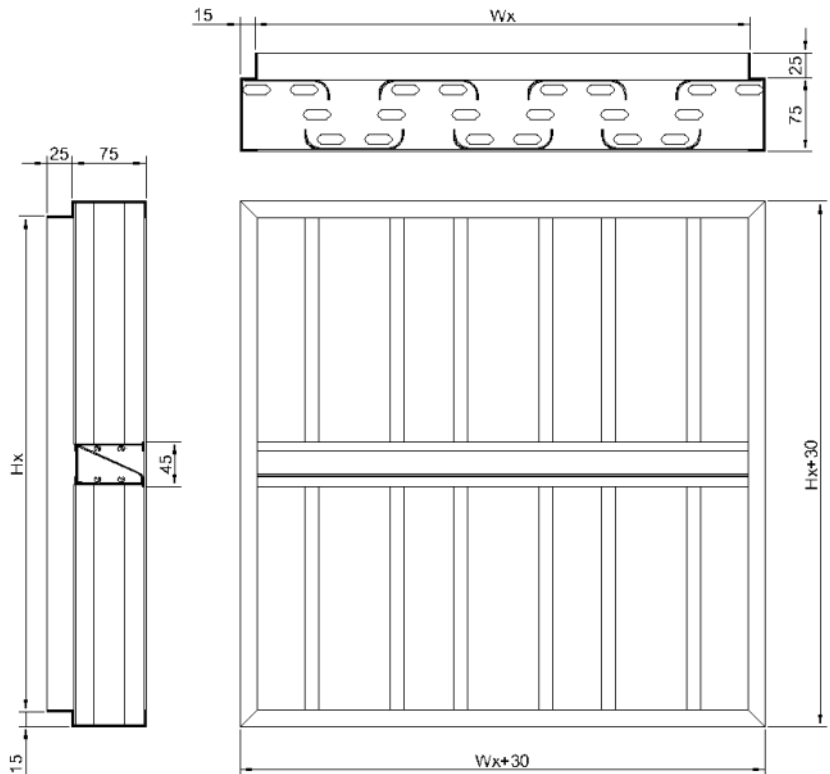- Bird or Insect screen (Galvanized steel).

SAND TRAP LOUVER (STL)

DIMENSIONS

STL-D

STL-D with Sand Chute

Notes:
1) All sizes are in mm
2) For louver heights more than 1.5 meter, middle sand chute is used.
3) W_x is Exact Neck Width = W-5mm, where W is nominal Width (duct width)
4) H_x is Exact Neck Height = H-5mm, where H is nominal Height (duct height)
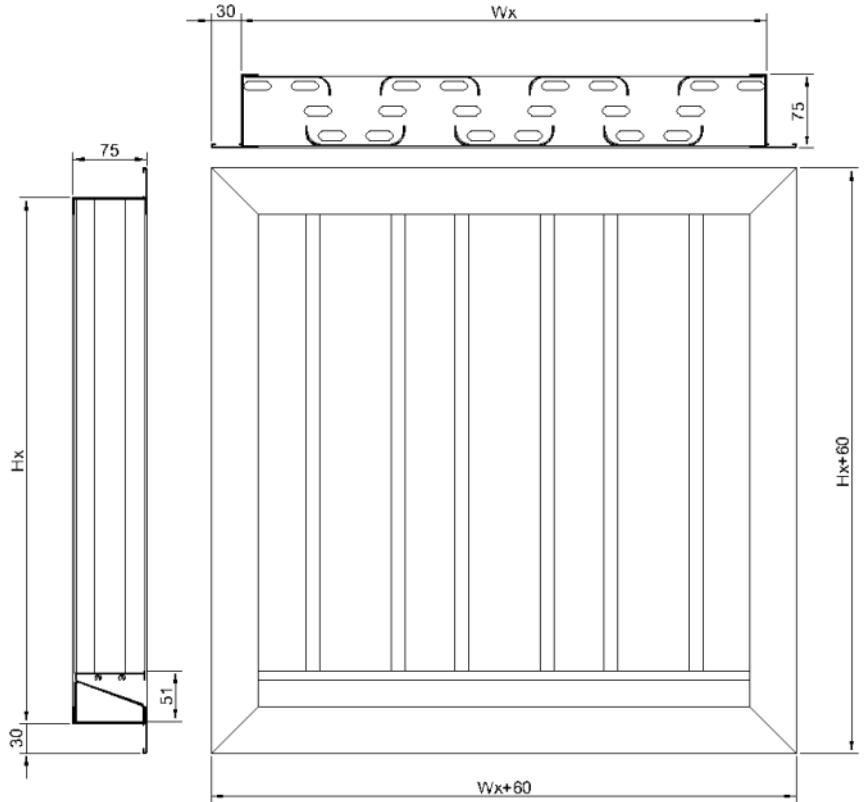
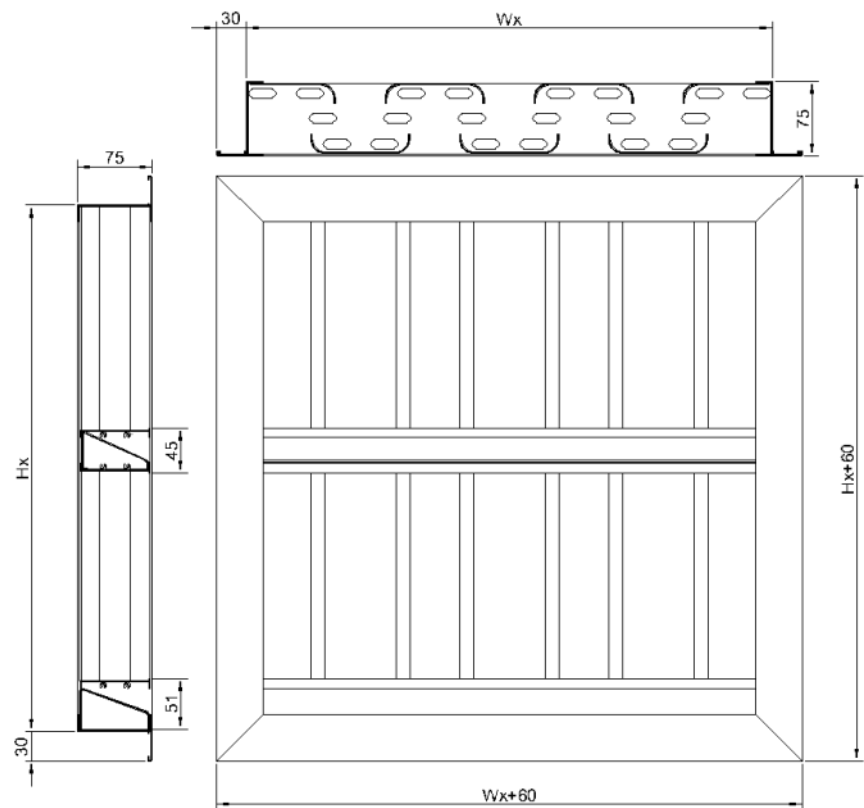# SAND TRAP LOUVER (STL)

DIMENSIONS

STL-W

STL-W with Sand Chute

Notes:
1) All sizes are in mm
2) For louver heights more than 1.5 meter, middle sand chute is used.
3) Wx is Exact Neck Width = W-10mm, where W is nominal Width (opening width)
4) Hx is Exact Neck Height = H-10mm, where H is nominal Height (opening height)

PERFORMANCE

Free Area Table (STL-D)

H	W													
mm	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
300	0.030	0.044	0.059	0.074	0.089	0.103	0.118	0.133	0.148	0.162	0.177	0.192	0.207	0.221
450	0.045	0.067	0.089	0.111	0.134	0.156	0.178	0.200	0.223	0.245	0.267	0.289	0.312	0.334
600	0.060	0.089	0.119	0.149	0.179	0.208	0.238	0.268	0.298	0.327	0.357	0.387	0.417	0.446
750	0.075	0.112	0.149	0.186	0.224	0.261	0.298	0.335	0.373	0.410	0.447	0.484	0.522	0.559
900	0.090	0.134	0.179	0.224	0.269	0.313	0.358	0.403	0.448	0.492	0.537	0.582	0.627	0.671
1050	0.105	0.157	0.209	0.261	0.314	0.366	0.418	0.470	0.523	0.575	0.627	0.679	0.732	0.784
1200	0.120	0.179	0.239	0.299	0.359	0.418	0.478	0.538	0.598	0.657	0.717	0.777	0.837	0.896
1350	0.135	0.202	0.269	0.336	0.404	0.471	0.538	0.605	0.673	0.740	0.807	0.874	0.942	1.009
1500	0.150	0.224	0.299	0.374	0.449	0.523	0.598	0.673	0.748	0.822	0.897	0.972	1.047	1.121
1650	0.160	0.240	0.320	0.400	0.480	0.560	0.640	0.720	0.800	0.880	0.960	1.040	1.120	1.200
1800	0.175	0.263	0.350	0.438	0.525	0.613	0.700	0.788	0.875	0.963	1.050	1.138	1.225	1.313
1950	0.190	0.285	0.380	0.475	0.570	0.665	0.760	0.855	0.950	1.045	1.140	1.235	1.330	1.425
2100	0.205	0.308	0.410	0.513	0.615	0.718	0.820	0.923	1.025	1.128	1.230	1.333	1.435	1.538
2250	0.220	0.330	0.440	0.550	0.660	0.770	0.880	0.990	1.100	1.210	1.320	1.430	1.540	1.650

Free Area Table (STL-W)

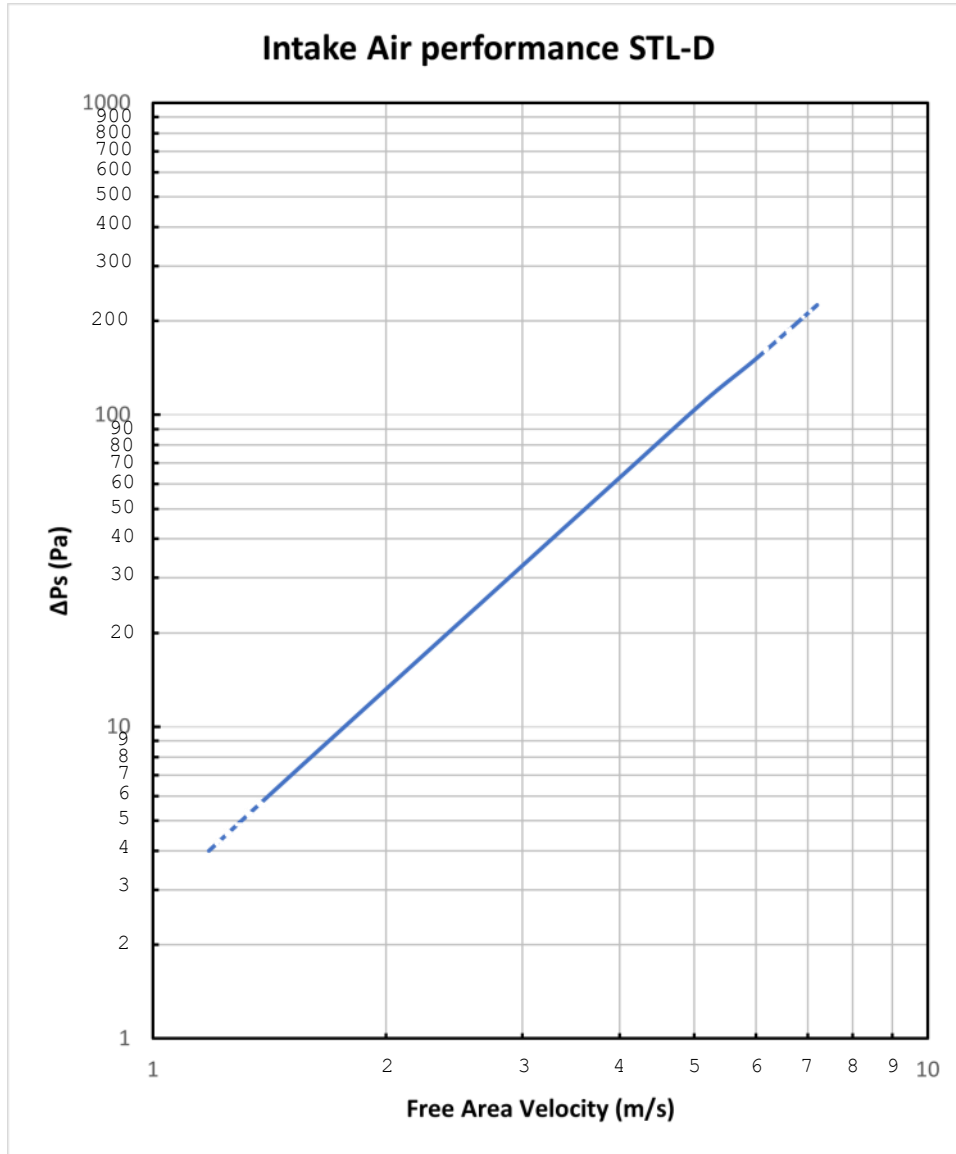| H	W													
mm	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250
300	0.021	0.033	0.044	0.056	0.068	0.080	0.092	0.104	0.116	0.128	0.140	0.152	0.164	0.176
450	0.033	0.053	0.072	0.092	0.111	0.131	0.150	0.170	0.189	0.209	0.228	0.247	0.267	0.286
600	0.046	0.073	0.100	0.127	0.154	0.181	0.208	0.235	0.262	0.289	0.316	0.343	0.370	0.397
750	0.059	0.094	0.128	0.163	0.197	0.232	0.266	0.300	0.335	0.369	0.404	0.438	0.473	0.507
900	0.072	0.114	0.156	0.198	0.240	0.282	0.324	0.366	0.408	0.450	0.492	0.534	0.576	0.618
1050	0.085	0.135	0.184	0.233	0.283	0.332	0.382	0.431	0.481	0.530	0.580	0.629	0.678	0.728
1200	0.098	0.155	0.212	0.269	0.326	0.383	0.440	0.497	0.554	0.611	0.667	0.724	0.781	0.838
1350	0.111	0.175	0.240	0.304	0.369	0.433	0.498	0.562	0.626	0.691	0.755	0.820	0.884	0.949
1500	0.124	0.196	0.268	0.340	0.412	0.484	0.555	0.627	0.699	0.771	0.843	0.915	0.987	1.059
1650	0.133	0.210	0.287	0.364	0.442	0.519	0.596	0.673	0.750	0.828	0.905	0.982	1.059	1.136
1800	0.146	0.230	0.315	0.400	0.484	0.569	0.654	0.739	0.823	0.908	0.993	1.077	1.162	1.247
1950	0.159	0.251	0.343	0.435	0.527	0.620	0.712	0.804	0.896	0.988	1.081	1.173	1.265	1.357
2100	0.171	0.271	0.371	0.471	0.570	0.670	0.770	0.869	0.969	1.069	1.168	1.268	1.368	1.468
2250	0.184	0.292	0.399	0.506	0.613	0.720	0.828	0.935	1.042	1.149	1.256	1.364	1.471	1.578

Notes:

1) Free Area is given in m²
2) STL-D AMCA Test sample had outer frame size of 1.220X1.220m which corresponds to 1.195X1.195m (WXH)
3) STL-W AMCA Test sample had outer frame size of 1.220X1.220m which corresponds to 1.170X1.170m (WXH)

PERFORMANCE

Pressure Drop (STL-D)

Test Sample was 1220X1220mm Outer Frame Size

Intake Air performance STL-D

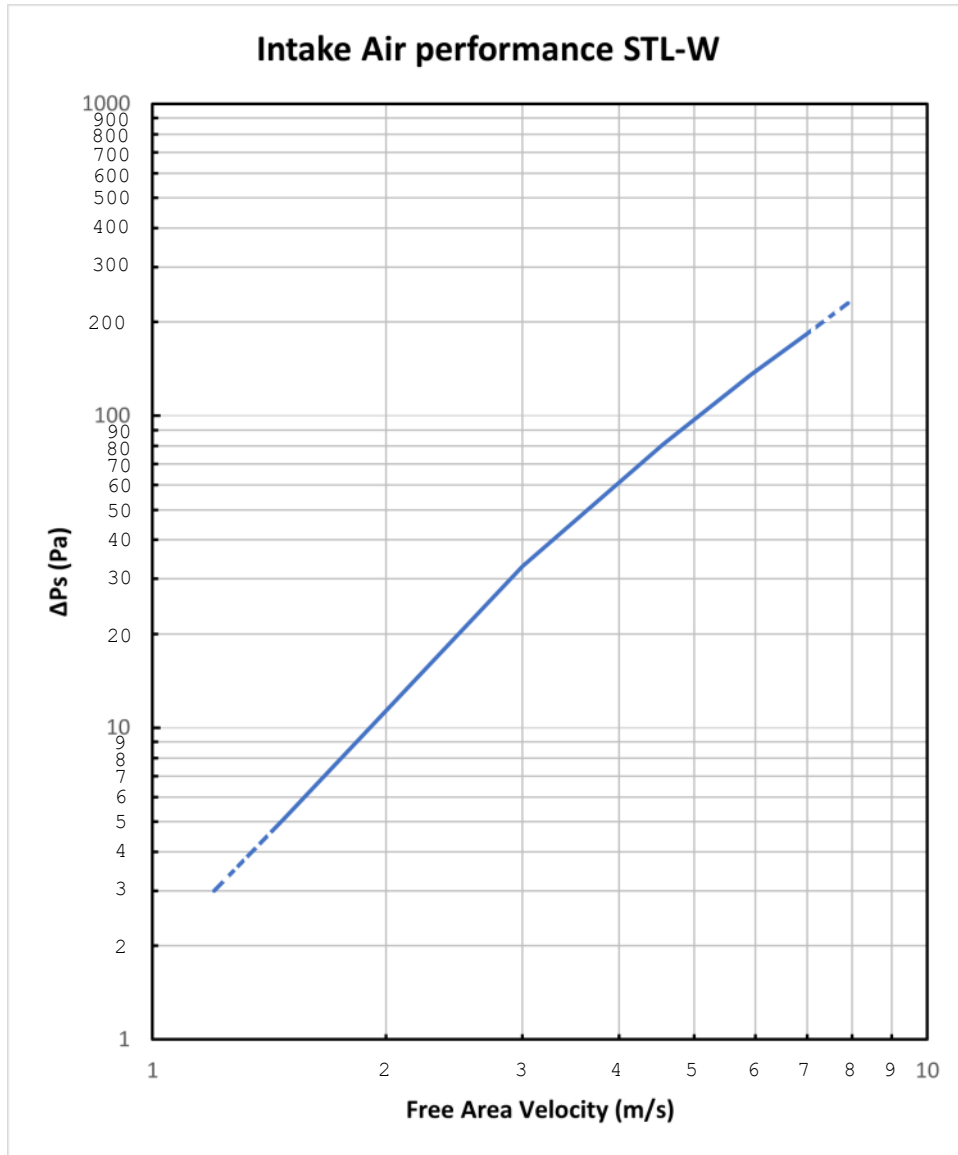(Chart: X-axis "Free Area Velocity (m/s)" from 1 to 10; Y-axis "ΔPs (Pa)" from 1 to 1000)

Rabie Al-Takyeef Factory certifies that the Sand Trap Louver Models STL-D and STL-W shown herein are licensed to bear the AMCA Certified Ratings Program seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Program seal applies to Wind Driven Sand and Air Performance ratings.

PERFORMANCE

Pressure Drop (STL-W)

Test Sample was 1220X1220mm Outer Frame Size
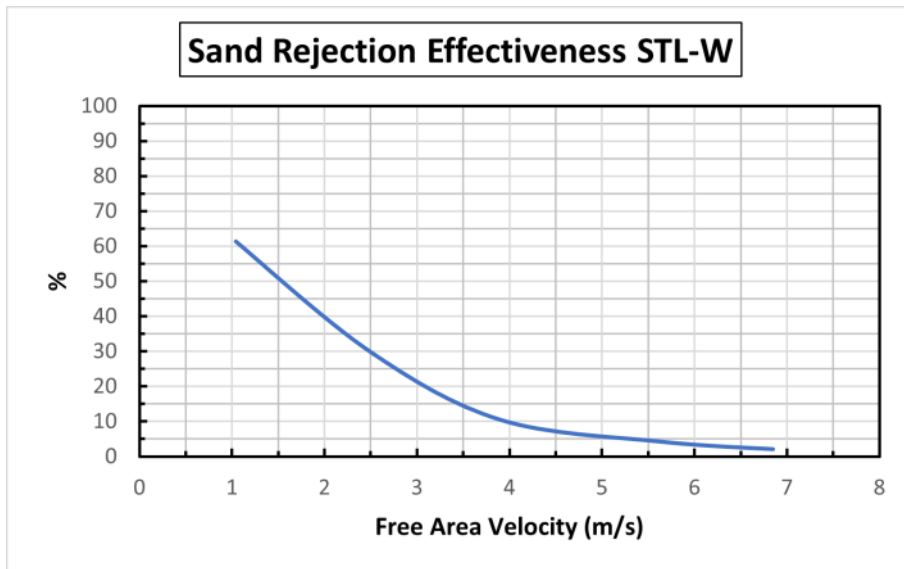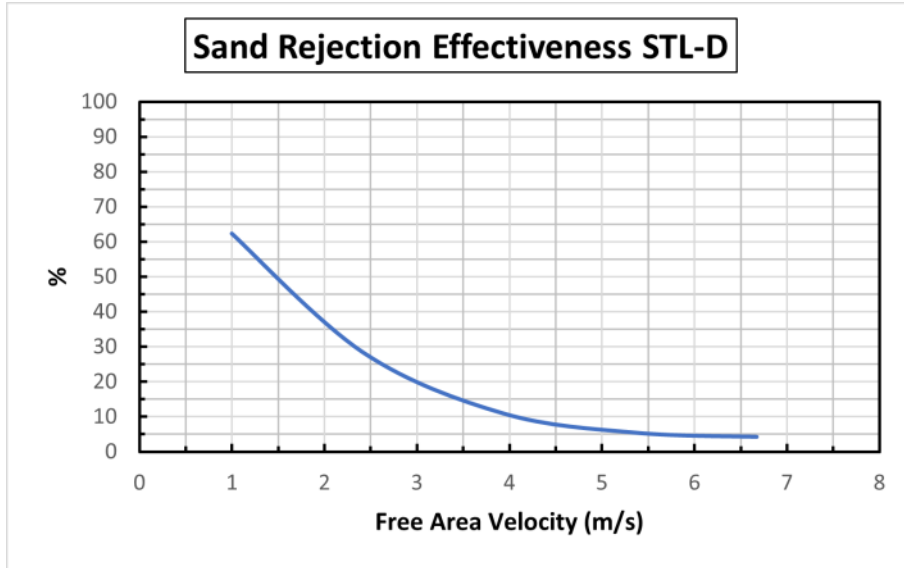
Intake Air performance STL-W

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PERFORMANCE

Wind Driven Sand Rejection at an air flow speed of 20-25m/s

Sand Rejection Effectiveness STL-D

Sand Rejection Effectiveness STL-W

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Air Performance (Pressure Drop) Test

The sand trap louvers were tested following the test figure 5.5 of AMCA 500–L. Airflow was measured and accordingly the pressure drop at the louver face was taken simultaneously. A total of five airflow increments were taken each with corresponding pressure drops at free area velocities ranging from 1.5 and 6.0m/s. The test was conducted with the sample as an Intake Louver.

Sand Rejection Test

The sand trap louvers were subjected to wind driven sand at an airflow speed of 20-25 m/s measured in the injection tube with various masses and delivery rates. In addition to the simulated wind, air was drawn through the louvre at a range of different free area velocities between 1 and 7 m/s. The sand grading used for this was between 76µm - 699µm as per AMCA 500-L, Annex H, Table 8, page 60. The test was following the test figure 5.12 of AMCA 500-L

SELECTION GUIDE

Example:

If a fan requires to suck 3000 l/s through a STL-D louver with maximum pressure drop 60 Pa, Estimate the required size.

Solution:

At the STL-D Air Performance chart, pivot the pressure drop 60 Pa then intersect with the pressure drop curve to get the free area velocity as 3.95 m/s approximately.

- Minimum required Free Area = flow rate / free area velocity   = 3 / 3.95 = 0.759m²
- From Free Area table you can see that the size 1.6mX1.6m is a close match
- Alternatively you can calculate the opening area (duct size) by using the average Nominal Neck Area to Free Area ratio, which is:
  1. For STL-D = 33%
  2. For STL-W = 29%

  So the required size for above example can be calculated alternatively as:

  Opening Area = 0.759m² (free area) / 0.33 (average ratio of STL-D) = 2.3m²