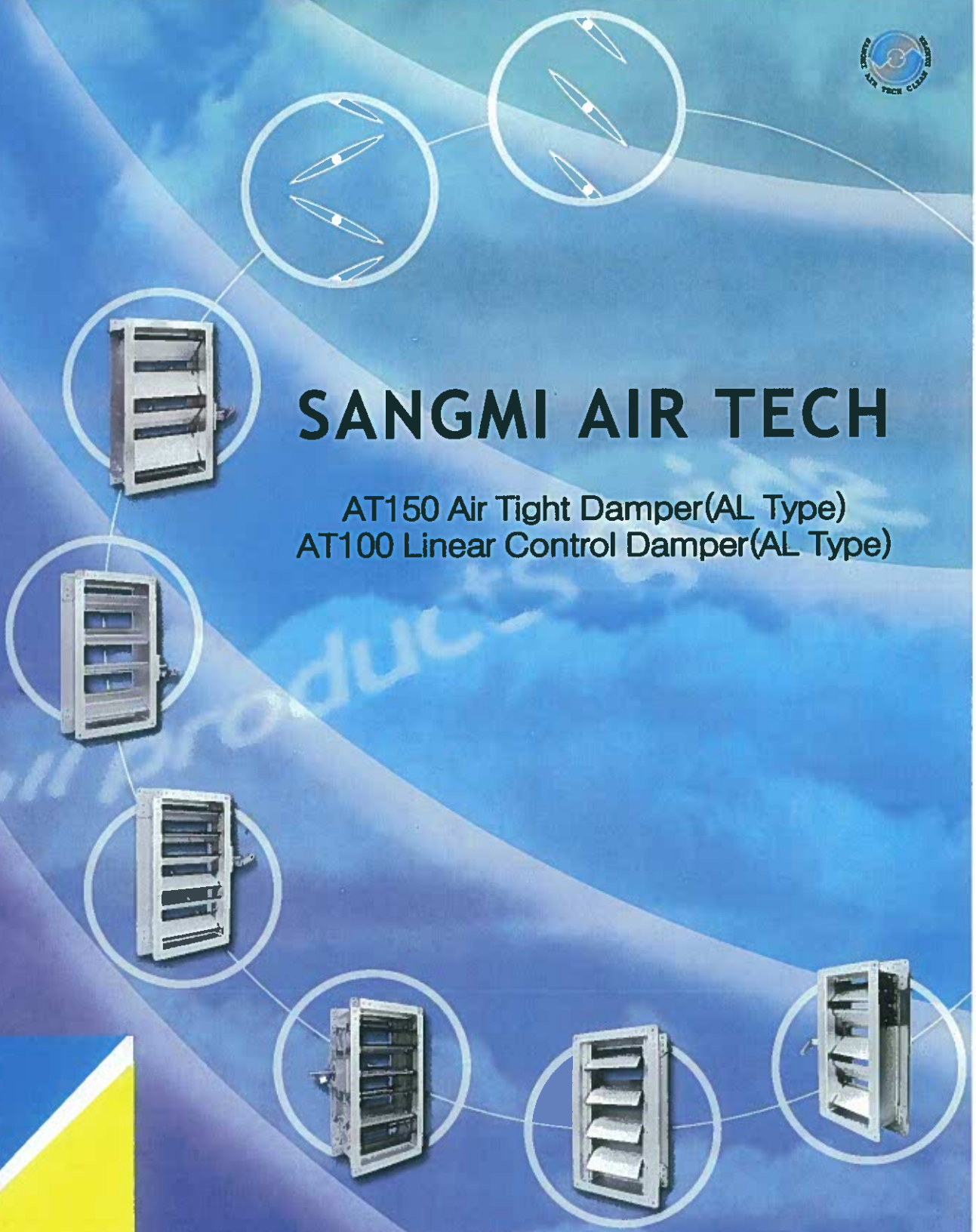
SANGMI AIR TECH

AT150 Air Tight Damper(AL Type)
AT100 Linear Control Damper(AL Type)



amca
CERTIFIED
RATINGS

AIR
LEAKAGE
AIR
PERFORMANCE

AIR
MOVEMENT
AND CONTROL
ASSOCIATION

October, 2004.

sangmi air tech co, ltd.

Air Tight Damper(AL Type)

Model No : AT 150

■Standard Specifications

Type	Material	Basic Specification
■FRAME	• A6063S-T5	• Extrude aluminum process of 2.0TH channel shape
■BLADE	• A6063S-T5	• Aluminum extrusion process of 1.2TH air foil shape
■LINKAGE	• SS400	• 3.0TH PLATED STEEL
■SHAFT	• SM15C	• ø12 PLATED ROUND BAR
■SEAL	• BLADE SEAL	• EPDM RUBBER
	• JAMB SEAL	• STS304 0.15TH
■CONTROL SHAFT	• SM15C	• Combined manual and automatic use of 13×150L
■BEARING	• NYLON	• Hwat-resistant resin

Sangmi's Air Tight Damper AT150 is ideal for general-purpose commercial and industrial systems. Having been licensed by AMCA. AT150 bears AMCA Air Preformence ad Air Leakage Seal. The air foil type blades are specially designed to minimize the air and pressure loss, and withstand high pressure when fully closed.

■Product introduction

- Under the static pressure of 100mmAq, it guarantees less than 2% air leakage rate
- Minimized blade vibration due to accurately pressed hexagonal SS400 steel shafts
- Ideal for air control purposes and easy to install

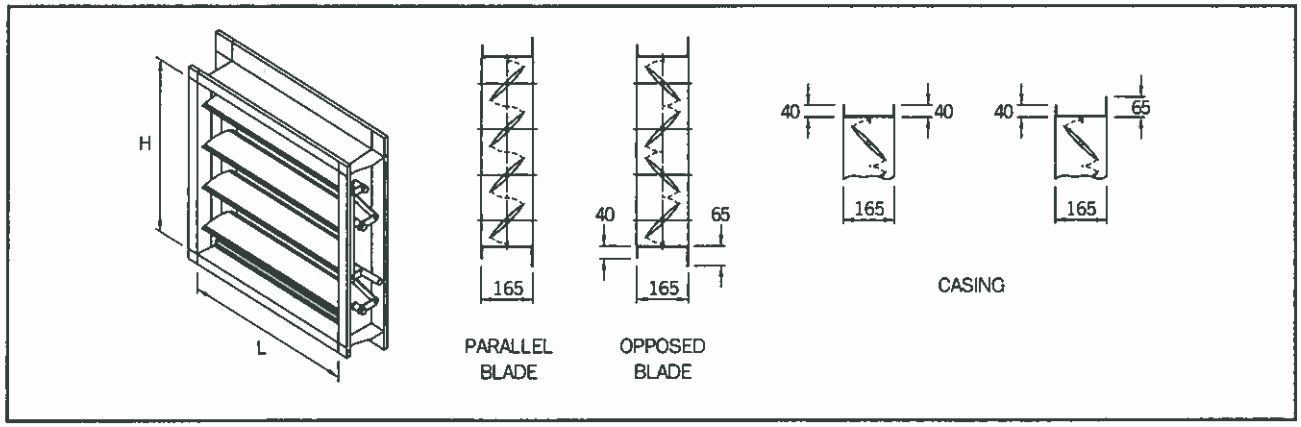
■Customization

AT150 can be customized at additional cost to include following;

- Electric actuators: Motor type
- Pneumatic actuators: Cylinder type
- Worm gear type
- Joining flanges

Please contact our technical team for other customizations such as sizes and finishes.

■DIMENSION



■PERFORMANCE DATA

LEAKAGE PERFORMANCE CLASSIFICATION

Pressure/Class	Leakage $ft^3/min/ft^2$ Required Ratings		
	0.25KPa(1")	1.0KPa(4")	2.0KPa(8")
1A	3	8	11

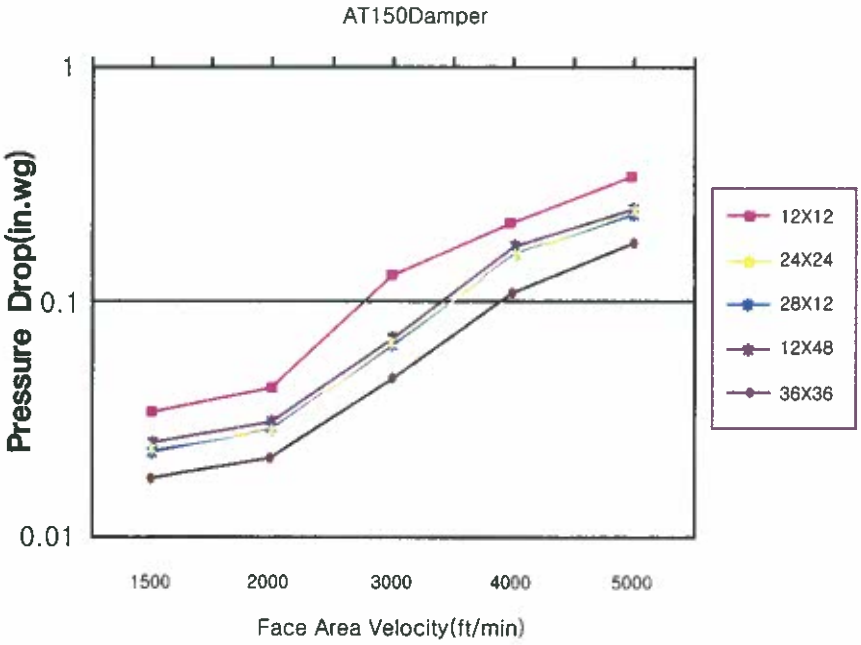
Air Tight Damper(AL Type)

Model No : AT 150

LEAKAGE CORRECTION FACTOR

DMPR. WIDTH (Inch)	STATIC PRESSURE(in. wg)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
12"	1.0	1.5	1.8	2.1	2.4	2.6	2.8	2.8	2.8	2.9	2.9	3.2	3.7
24"	1.0	1.5	1.8	2.1	2.4	2.6	2.8	2.8	2.8	2.9	2.9	3.2	3.7
36"	1.0	1.5	1.8	2.1	2.4	2.6	2.8	2.8	2.8	2.9	2.9	3.2	3.7
48"	1.0	1.5	2.0	2.3	2.6	3.0	MAX DESIGN PRESSURE 6.5						
60"	1.0	1.5	2.5	MAX DESIGN PRESSURE 3.5									

AIR PERFORMANCE GRAPH FOR FULL OPEN POSITION: AT150



AT150 12X12

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.03
2000	0.04
3000	0.13
4000	0.22
5000	0.35

AT150 24X24

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.03
3000	0.07
4000	0.16
5000	0.25

AT150 48X12

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.03
3000	0.07
4000	0.16
5000	0.24

AT150 12X48

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.03
2000	0.03
3000	0.07
4000	0.17
5000	0.25

AT150 36X36

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.02
3000	0.05
4000	0.11
5000	0.18

Air Tight Damper(AL Type)

Model No : AT 150

LEAKAGE CLASS

Damper Width inch X Height inch	250Pa (1 in. wg) Class	1KPa (4 in. wg) Class	2KPa (8 in. wg) Class
12 X 12	1A	1A	1A
24 X 24	1A	1A	1A
36 X 36	1A	1A	NA
12 X 48	1A	1A	NA
48 X 12	1A	1A	NA

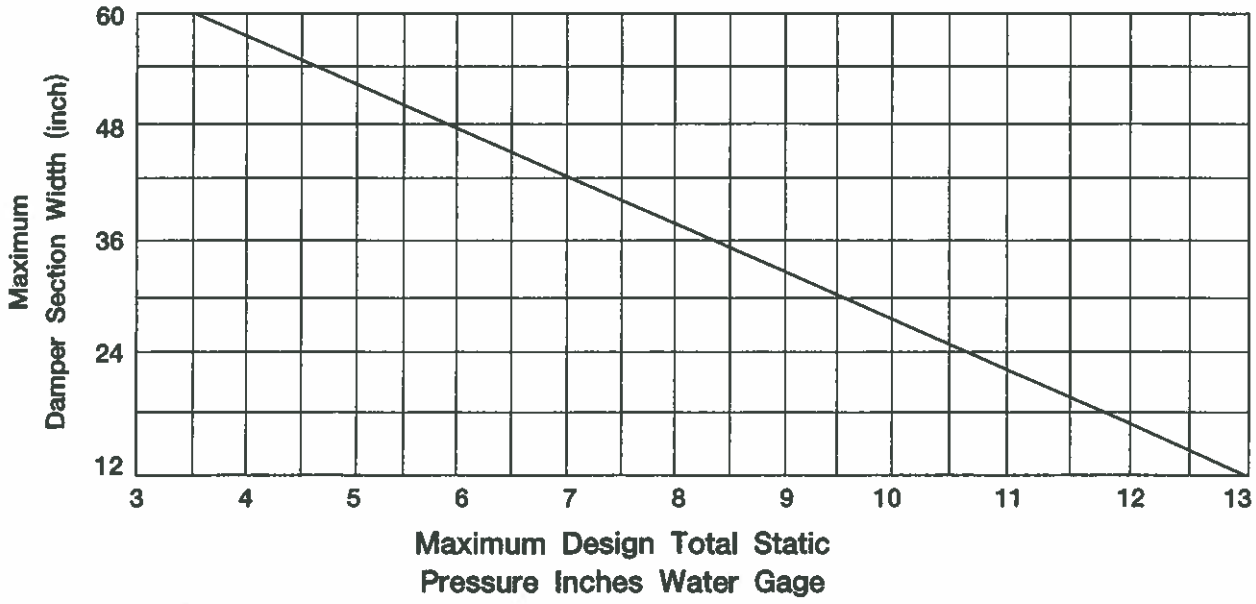
AT-150 CLOSING TORQUE

SIZE	TORQUE
12 X 12	38.2 in. lbs
24 X 24	76.38 in. lbs
36 X 36	114.6 in. lbs
12 X 48	143.21 in. lbs
48 X 12	49.65 in. lbs

Pressure Loss Coefficient (Co) Table For AMCA Test

Height (Inch)	Width(inch)										
	8	12	16	20	24	28	32	36	40	42	48
6	11.74	11.74	6.34	6.34	5.14	5.14	4.63	4.63	4.63	4.30	4.30
8	6.34	4.30	4.30	2.41	2.41	2.41	2.41	2.41	1.69	1.69	1.69
12	4.30	2.41	1.69	1.32	1.10	1.10	1.10	1.10	1.10	1.10	1.10
16	2.41	1.32	1.10	0.90	0.90	0.90	0.76	0.76	0.76	0.65	0.65
20	2.41	1.32	1.10	0.90	0.90	0.90	0.76	0.76	0.76	0.76	0.76
24	1.69	1.10	0.90	0.76	0.65	0.64	0.64	0.64	0.64	0.64	0.64
28	1.69	1.10	0.90	0.76	0.65	0.64	0.64	0.64	0.64	0.64	0.64
32	1.69	0.90	0.76	0.64	0.64	0.64	0.51	0.51	0.51	0.51	0.51
36	1.32	0.90	0.64	0.64	0.51	0.51	0.51	0.51	0.44	0.42	0.42
40	1.32	0.90	0.64	0.64	0.51	0.51	0.51	0.51	0.44	0.42	0.42
44	1.32	0.76	0.64	0.51	0.51	0.44	0.42	0.42	0.42	0.42	0.42
48	1.32	0.76	0.64	0.64	0.51	0.44	0.42	0.42	0.42	0.42	0.42
52	1.32	0.76	0.64	0.51	0.44	0.42	0.42	0.42	0.37	0.37	0.37
56	1.32	0.76	0.64	0.51	0.44	0.42	0.42	0.42	0.37	0.37	0.37
60	1.10	0.76	0.64	0.51	0.42	0.42	0.42	0.42	0.36	0.36	0.36

AT150 PRESSURE LIMITATIONS



Air Tight Damper(AL Type)

Model No : AT 150

The AT150 may be used in systems with total pressures exceeding 3.5" w.g. by reducing damper section width as indicated. Example Maximum design total pressure of 8.5" w.g. world require the AT150 damper with maximum Section Width of 36"

Pressure Limitations shown on chart above allow maximum blade deflection of 1/180 of span on 60" damper widths. Deflections on other damper widths (less that 48") at higher pressures shown will result in blade deflection substantially less that 1/180 of span.

To determine leakage at static pressure differentials higher that higher than one inch water gage, multiply leakage at one inch(from upper table) by correction factor for higher static pressure and appropriate UNIT WIDTH(from lower table.)

Leakage ratings are obtained in accordance with AMCA Publication 500-D using Test Setup Apparatus Fig. 5.5.

AIR LEAKAGE AIR PERFORMANCE

AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL. INC.

SANGMI AIR TECH CO. certifies that the AT150 DAMPER shown herein is licensed to bear the AMCA 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 Seal applies to air leakage and air performance only.

Linear Control Damper(AL Type)

Model No : AT 100

■Standard Specifications

Type	Material	Basic Specification
■FRAME	• A6063S-T5	• Extrude aluminum process of 2.0TH channel shape
■BLADE	• A6063S-T5	• Aluminum extrusion process of 1.2TH air foil shape
■LINKAGE	• SS400	• 3.0TH PLATED STEEL
■SHAFT	• SM15C	• Ø12 PLATED ROUND BAR
■SEAL	• BLADE SEAL	• EPDM RUBBER
	• JAMB SEAL	• STS304 0.15TH
■CONTROL SHAFT	• SM15C	• Combined manual and automatic use of 13×150L
■BEARING	• NYLON	• Hwat-resistant resin

The Sangmi AT100 damper incorporates parallel and opposed action within the same frame that features a low profile, air foil blades. Specially arranged blades enable the damper to provide the maximum linear curve performance, which enhances the air tightness and reduces the cost of operation. This model is licensed by AMCA for Air Performance and Air Leakage in accordance with AMCA Publication 511.

■Product introduction

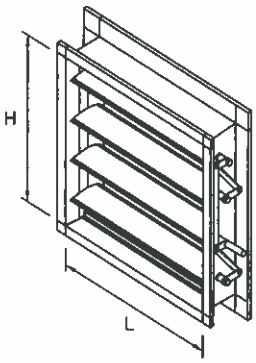
- Under the differential pressure of 25.4mmAq, the air loss is less than 2% when closed
- Obtained AMCA Seal for Air Performance and Air Leakage
- Ideal combination of parallel and opposed blades for specific requirements
- Enhanced energy efficiency
- Can be installed within ducts

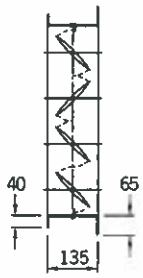
■Customization

- AT100 can be customized at additional cost to include following;
  1) Electric actuators: Motor type
  2) Pneumatic actuators: Cylinder type
  3) Worm gear type
- oining flanges

Please contact our technical team for other customizations such as sizes and finishes.

■DIMENSION





PARALLEL + OPPOSED BLADE

■PERFORMANCE DATA

LEAKAGE PERFORMANCE CLASSIFICATION

Pressure/Class	Leakage $ft^3/min/ft^2$ Required Ratings		
	0.25KPa(1")	1.0KPa(4")	2.0KPa(8")
1A	3	8	11

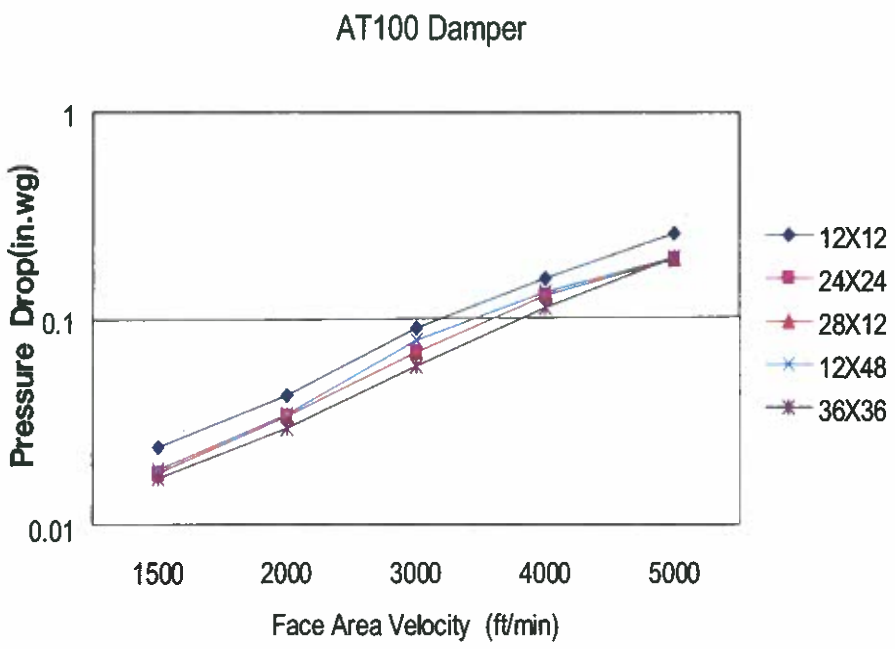
Linear Control Damper(AL Type)

Model No : AT 100

LEAKAGE CORRECTION FACTOR

DMPR. WIDTH (Inch)	STATIC PRESSURE (in. wg)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
12"	1.0	1.5	1.8	2.1	2.4	2.6	2.8	2.8	2.8	2.9	2.9	3.2	3.7
24"	1.0	1.5	1.8	2.1	2.4	2.6	2.8	2.8	2.8	2.9	2.9	3.2	3.7
36"	1.0	1.5	1.8	2.1	2.4	2.6	2.8	2.8	2.8	2.9	2.9	3.2	3.7
48"	1.0	1.6	2.0	2.3	2.6	3.0	MAX DESIGN PRESSURE 6.5						

AIR PERFORMANCE GRAPH FOR FULL OPEN POSITION: AT100



AT100 12X12

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.04
3000	0.09
4000	0.16
5000	0.26

AT100 24X24

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.03
3000	0.07
4000	0.13
5000	0.20

AT100 48X12

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.03
3000	0.07
4000	0.13
5000	0.20

AT100 12X48

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.04
3000	0.08
4000	0.14
5000	0.20

AT100 36X36

Free area velocity (ft/min)	Preessure Drop (in. wg)
1500	0.02
2000	0.03
3000	0.06
4000	0.12
5000	0.17

Model No : AT 100

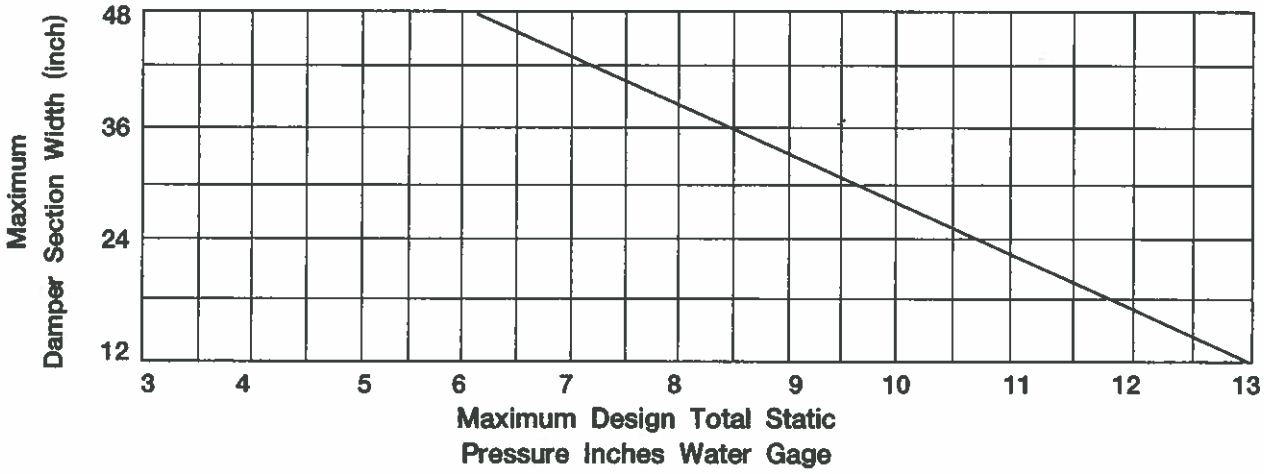
LEAKAGE CLASS

Damper Width inch X Height inch	250Pa (1 in. wg) Class	1KPa (4 in. wg) Class	2KPa (8 in. wg) Class
12 X 12	1A	1A	1A
24 X 24	1A	1A	1A
36 X 36	1A	1A	NA
12 X 48	1A	1A	NA
48 X 12	1A	1A	NA

AT-100 CLOSING TORQUE

SIZE	TORQUE
12 X 12	38.2 in. lbs
24 X 24	76.38 in. lbs
36 X 36	114.6 in. lbs
12 X 48	143.21 in. lbs
48 X 12	49.65 in. lbs

AT100 PRESSURE LIMITATIONS

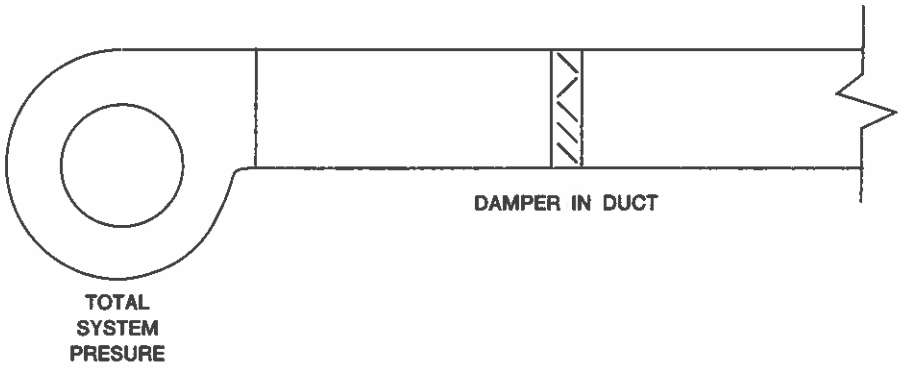


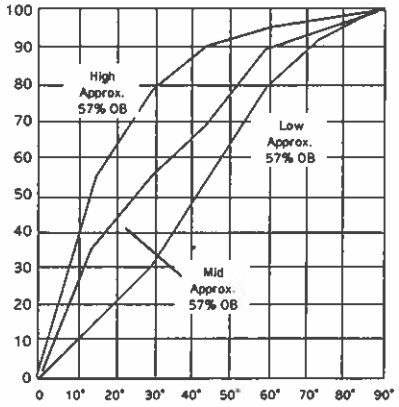
The AT100 may be used in systems with total pressures exceeding 6" w.g. by reducing damper section width as indicated. Example Maximum design total pressure of 8.5" w.g. world require the AT100 damper with maximum Section Width of 36"

Pressure Limitations shown on chart above allow maximum blade deflection of 1/360 of span.

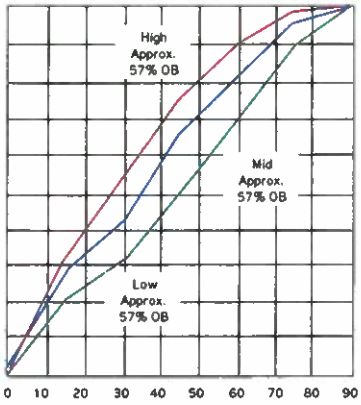
To determine leakage at static pressure differentials higher that higher than one inch water gage, multiply leakage at one inch(from upper table) by correction factor for higher static pressure and appropriate unit width.
Leakage ratings are obtained in accordance with AMCA Publication 500-D using Test Setup Apparatus Fig. 5.5.

Model No : AT 100

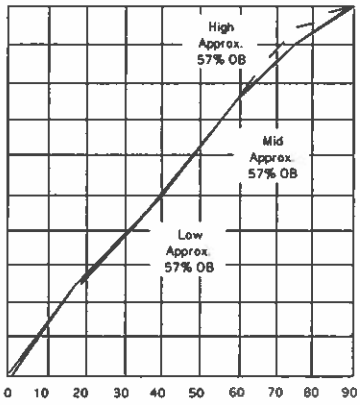




BLADE POSITION
DEGREES OPEN
1000RPM



BLADE POSITION
DEGREES OPEN
2000RPM



BLADE POSITION
DEGREES OPEN
3000RPM

EXAMPLE :
1.24" X 36" (6sq. ft.)damper with 13,000 cfm and 5" w.g. static pressure fan system.
Divide the cfm by the damper square footage to determine fpm.

$$\frac{13{,}000}{6} = 2166\text{fpm}$$

Use the 2000 fpm chart and the medium pressure (5" w.g.) curve to determine that a 57%(approx.) opposed blade damper provides the most linear performance for the application.
2.24" X 24" (4sq. ft.) damper with 4,000 cfm and 2" w.g. static pressure.
Divide the cfm by the damper square footage to determine fpm.

$$\frac{4{,}000}{4} = 1{,}000\text{fpm}$$

Use the 1,000 fpm chart and the low curve to determine that 100% opposed blade damper is ideal for a low-pressure system.

Model No : AT 100

SANGMI AIR TECH CO. certifies that the AT150 DAMPER shown herein is licensed to bear the AMCA 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 Seal applies to air leakage and air performance only.

memo

sangmi air tech

Products

- Air Tight Damper
- General Damper
- Linear Control Damper
- Anti Freezing Damper
- Back Draft Damper
- Filter Damper
- Gear Damper
- Fan & Blast Damper
- Isolation Damper
- Fire Damper
- Industrial Damper
- Tunnel Damper
- Louver Ass'y
- Sound Louver Ass'y(LV-110)
- Supply Grille Ass'y
- Hepa Filter Unit
- Eliminator Ass'y
- Relief Damper

sangmi air tech co., ltd.

Namdong-gu, Gojan-dong 679-6(82B/7L)
Incheon, Korea
Tel. 82 32 816-3291 Fax. 82 32 816-3295
E-mail: sm3291@unitel.co.kr