Transfer Slit Valves

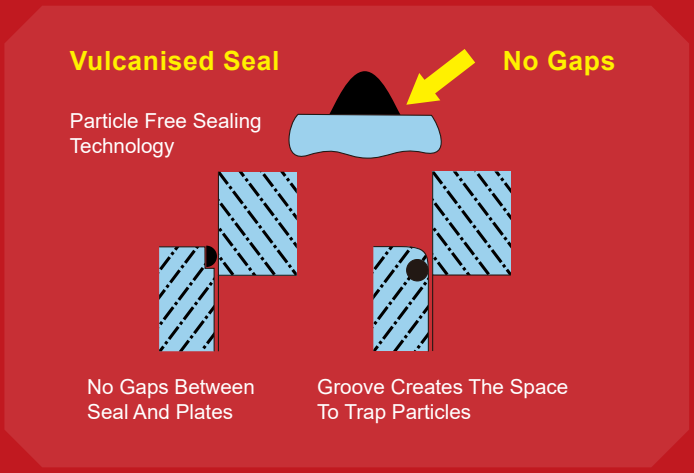


Product Introduction

The Transfer Slit Valve (TSV), is gate-like mechanism designed to connect two sealed chambers for the purpose of transferring objects from one to the other. The TSV features single axis motion, ensuring smooth and particle-free movement with no vibration. Its 'ARMLOCK' motion provides a secure seal in the closed position, even in the event of power and air supply failure during operation. With a durable, maintenance-free design capable of up to 5 million cycles, the TSV is built to last. Its simple modular design also makes it easy to service if required.

Product Features

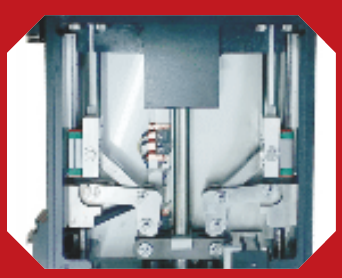
- Ability to remain closed against large pressure differential
- Maintains closed position in the event of power or air loss
- Vulcanized seal for maintenance-free operation
- >5 million cycles between maintenance
- Suitable for SEMI wafer processing applications up to 450mm



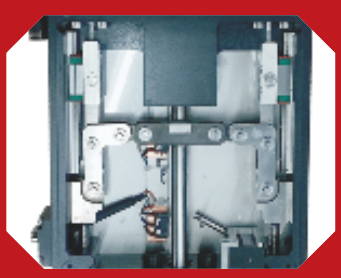
ARM Feature

- **Patented mechanism**
- **Low maintenance cost**
- **No gears, no need for relocation**
- **High reliability**
- **Particle free seal**

ARM Lock System



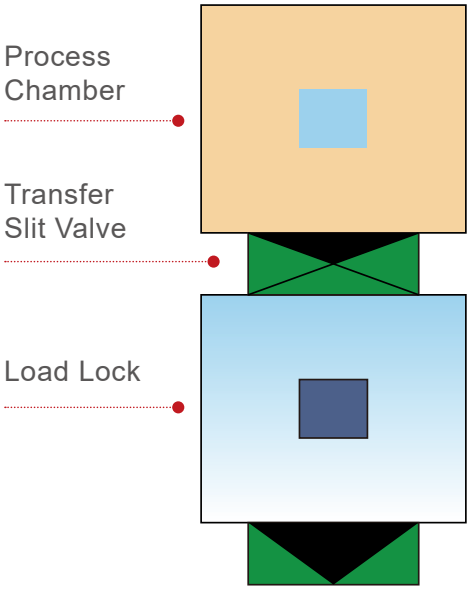
Open



Closed

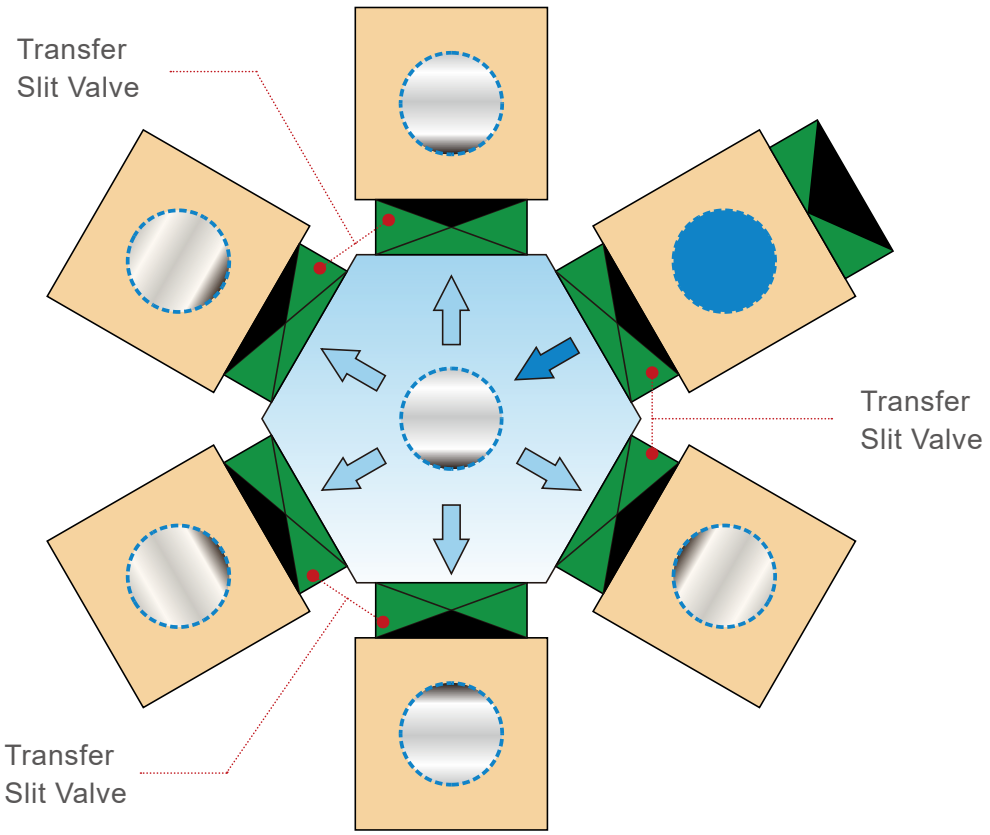
Product Application

- A critical components in semiconductor manufacturing equipment.
- Commonly used for wafer transfer, deposition, etching, ion implantation, and metrology applications.
- Provide a vacuum-tight seal to maintain the purity of the processing environment.
- Enable precise control of the process parameters, such as gas flow, pressure, and temperature.
- Essential for achieving high-quality, consistent semiconductor products.



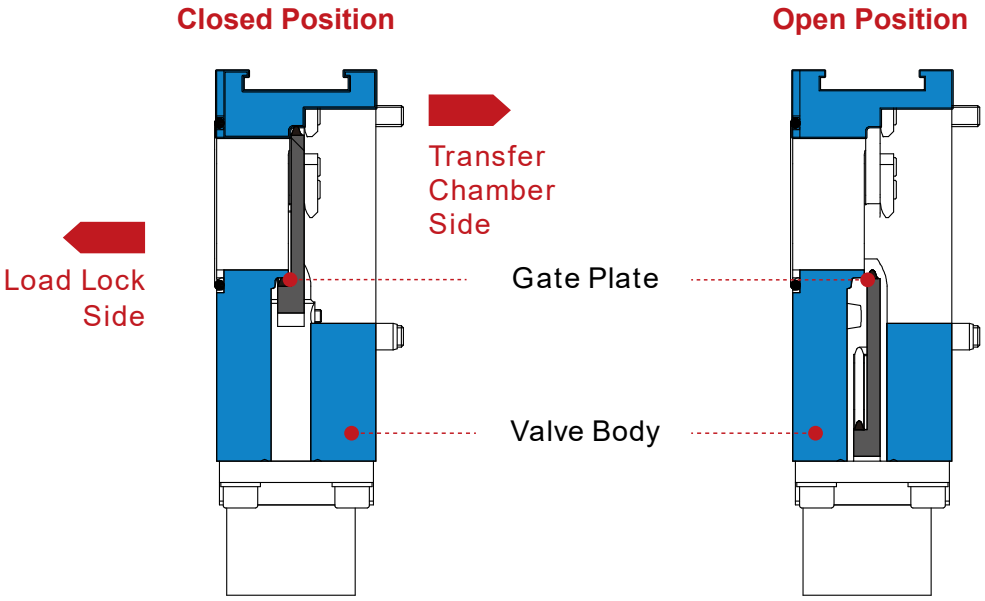
Transfer Slit Valve

Ideal for multiple process chamber systems.



Transfer Slit Valves

Valve's Operation Concept





Technical Data for Transfer Slit Valves

	High Vacuum
Feedthrough	Welded bellows in AM350
Gate seal	FKM vulcanized ring with bonding on the metal (Optional for FFKM)
Bonnet seal	FKM vulcanized ring
Operate pressure range	760 Torr ~ $1x10^{-8}$ Torr 1,000 mbar~$1.33x10^{-8}$ mbar 100 kPa~ $1.13x10^{-9}$ kPa
Leak rate	1 x 10^{-9} Torr l/s, He $1.33x10^{-9}$ mbar l/s, He $1.13x10^{-10}$ kPa l/s, He
Cycle life	>5,000,000 Cycles (ATM)
Temperature for valve body	Aluminum version: 150°C (302°F) open and close Stainless Steel version= 200°C (392°F) open and close
Temperature for actuator	100°C (212°F)
Temperature for solenoid / position indicator	80°C / 176°F
Bake temperature	100°C (212°F) for FKM gate seal
Valve body material	SS304L (Optional for SS316L and Aluminum)
Mechanism material	Steel and Aluminum
Actuator material	Aluminum
Mounting position	Any

Valve Operation Data

Pneumatic operating pressure	3 bar~5 bar 300 kPa~500 kPa 43 psi~72 psi
Position indicator (included as standard)	Micro switch with 9 pin connector
Cycles counter (included as standard)	Micro switch with visual 7 digital numbers
Solenoid (optional)	Optional for 24V DC, standard
Failure protection (included as standard)	ARM lock system (Valve closed position remain and locked)

Valve's Performance Data

	32x222mm	46x236mm	50x336mm	70x500mm
Maximum differential pressure against gate	<900 Torr <1,200 mbar <120 kpa			
Maximum differential presure at opening	<22.5 Torr <30 mbar < 3kpa			
Pneumatic valve open / close time	0.5(s)	0.5(s)	0.7(s)	0.9(s)
Valve's conductance (molecular flow)	1,590(l/s)	3,340(l/s)	5,000(l/s)	10,400(l/s)

Transfer Slit Valves

Figure 1

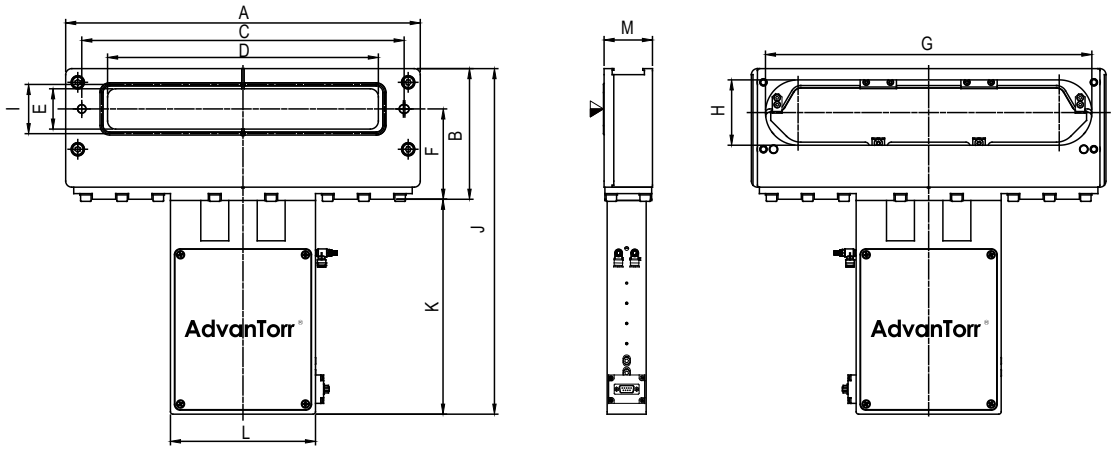
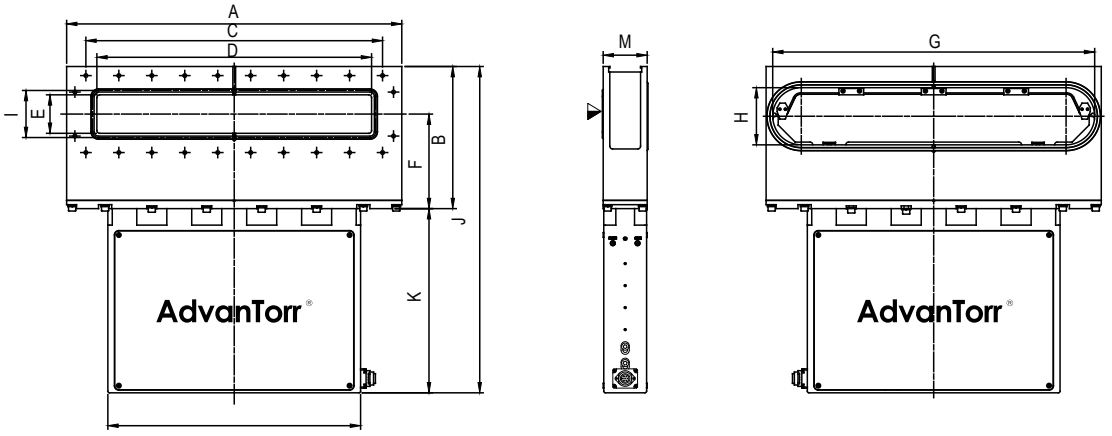


Figure 2



01. Transfer Slit Valves, HV

Material SS 304L

Part Number	Size	Figure	A	B	C	D	E	F	G	H	I	J	K	L	M
TSV-HV-32x222	32 x 222	1	340	162	300	222	32	112	275	64	61	407	245	180	50
TSV-HV-46x236	46 x 236	2	340	162	300	236	46	112	305	80	62	429	267	180	50
TSV-HV-50x336	50 x 336	2	440	162	400	336	50	112	405	81	61	429	267	180	60
TSV-HV-70x500	70 x 500	3	610	259	540	500	70	172	586	104	85	594	335	460	80

02. Transfer Slit Valves,HV

Material Aluminum

Part Number	Size	Figure	A	B	C	D	E	F	G	H	I	J	K	L	M
TSV-HV-32x222-AL	32 x 222	1	340	162	300	222	32	112	275	64	61	407	245	180	50
TSV-HV-46x236-AL	46 x 236	2	340	162	300	236	46	112	305	80	62	429	267	180	50
TSV-HV-50x336-AL	50 x 336	2	440	162	400	336	50	112	405	81	61	429	267	180	60
TSV-HV-70x500-AL	70 x 500	3	610	259	540	500	70	172	586	104	85	594	335	460	80

- Dimension in mm

L-Motion

Technical Data for L-MOTION

	High Vacuum
Feedthrough	Shaft feedthrough
Gate seal	FKM o-ring
Bonnet seal	FKM o-ring
Operate pressure range	1 x 10^{-7} mbar to 1.6 bar(abs)
Leak rate	< 1 x 10^{-9} mbar l/s
Cycle life	> 200,000
Temperature for valve body	≤ 150 °C
Temperature for actuator	≤ 60 °C
Temperature for solenoid / position indicator	≤ 70 °C
Bake temperature	-
Valve body material	304
Mechanism material	304
Actuator material	Aluminum
Mounting position	Actuator up

Valve's Operation Data

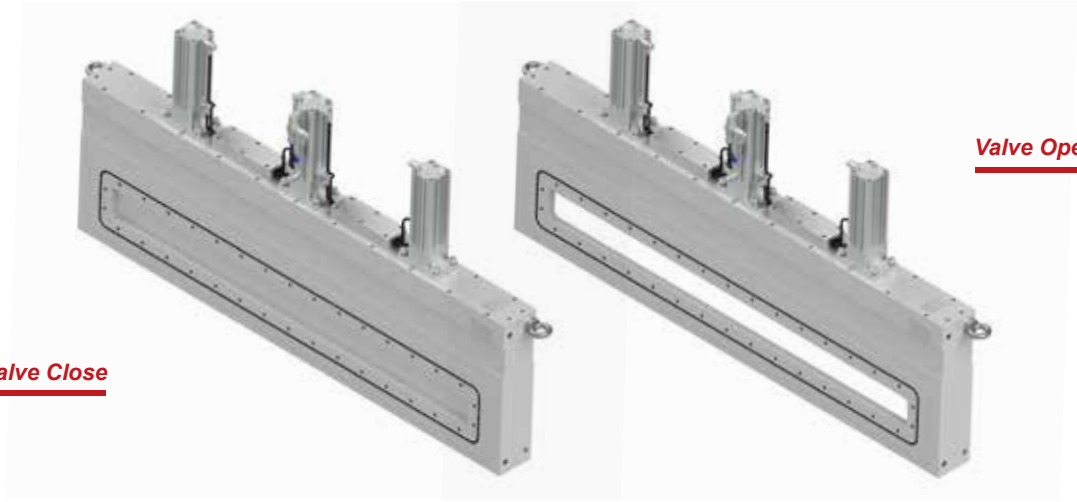
Pneumatic operating pressure	5~7 bar
position indicator (included as standard)	Magnetic sensor with wire end, standard
Cycles counter (included as standard)	N/A
Solenoid (optional)	N/A

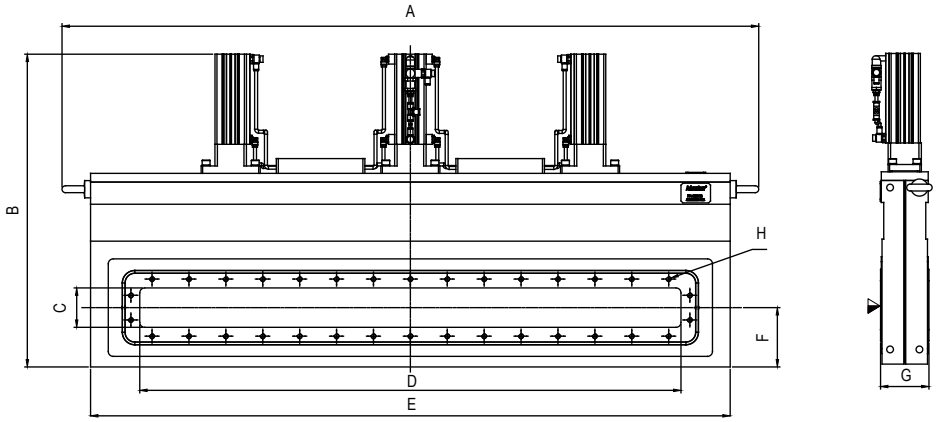
Valve's Performance Data

	80 x 1100
Maximum differential pressure against gate	< 1.6 bar
Maximum differential pressure at opening	< 30 mbar
Pneumatic valve open / close time	< 2 (s)
Valve's conductance (molecular flow)	-

01. Vacuum L-Motion Valves, HV

Material SS 304





Part Number	Size	mm / inch	A	B	C	D	E	F	G	Thread H
ALM-HV-80X1100	80 x 1100	mm	1416	635	80	1100	1300	121	99	34xM10
	3.15” x 43.31”	inch	55.75”	25.01”	3.15”	43.31”	51.18”	4.74”	3.78”	

- Dimension in mm / inch

L-Motion

Technical Data for L-MOTION

	High Vacuum
Feedthrough	Bellows
Gate seal	FKM O-ring
Bonnet seal	FKM O-ring
Operate pressure range	1 ·10^{-9} mbar to 1.1 bar (abs)
Leak rate	< 1 x 10^{-9} mbar l/s
Cycle life	> 3 million
Temperature for valve body	≤ 120 °C
Temperature for actuator	≤ 80 °C
Temperature for solenoid / position indicator	≤ 80 °C
Bake temperature	-
Valve body material	Aluminum
Mechanism material	SUS304L, SUS630
Actuator material	Aluminum
Mounting position	Actuator up or down

Valve's Operation Data

Pneumatic operating pressure	5~7 bar
position indicator (included as standard)	Magnetic sensor with wire end, standard
Cycles counter (included as standard)	N/A
Solenoid (optional)	N/A

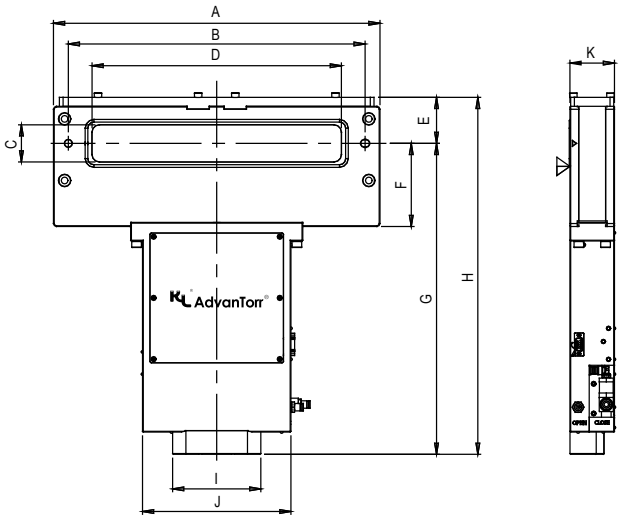
Valve's Performance Data

	50 x 336
Maximum differential pressure against gate	1.1 bar
Maximum differential pressure at opening	< 30 mbar
Pneumatic valve open / close time	< 1 (s)
Valve's conductance (molecular flow)	-

02. Transfer L-Motion Valves, HV

Material Aluminum





Part Number	Size	A	B	C	D	E	F	G	H	I	J	K
TLMV-HV-46X236	46x236	340	300	46	236	63	112	419	482	119	200	60
TLMV-HV-50X336	50x336	440	400	50	336	63	112	419	482	119	200	60

- Dimension in mm

Door Valves

Technical Data for Door valve

	High Vacuum
Feedthrough	N/A
Gate seal	N/A or FKM o-ring
Bonnet seal	FKM o-ring
Operate pressure range	1 x 10^{-9} mbar to 1.1 bar (abs)
Leak rate	< 1 x 10^{-9} mbar l/s
Cycle life	> 1 million
Temperature for valve body	≤ 120 °C
Temperature for actuator	≤ 80 °C
Temperature for solenoid / position indicator	≤ 70 °C
Bake temperature	-
Valve body material	Aluminum
Mechanism material	Aluminum
Actuator material	Aluminum
Mounting position	Actuator up or down

Valve's Operation Data

Pneumatic operating pressure	5~7 bar
position indicator (included as standard)	Magnetic sensor with wire end, standard
Cycles counter (included as standard)	N/A
Solenoid (optional)	N/A

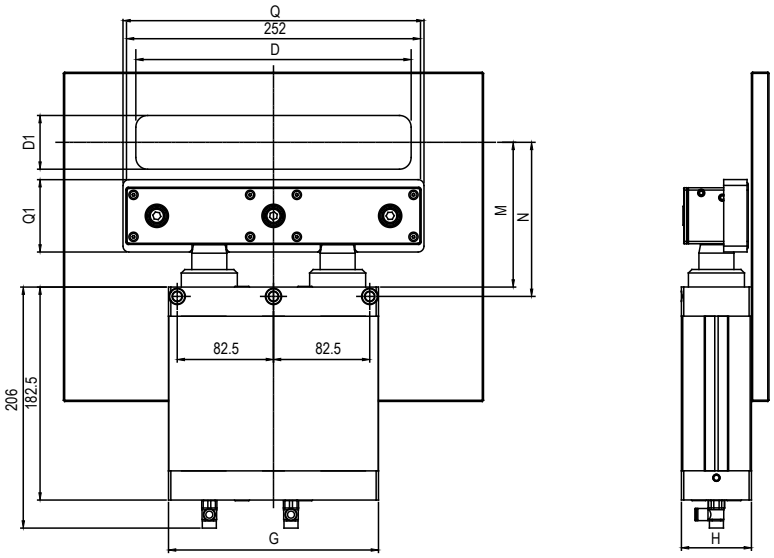
Valve's Performance Data

		Door Valve
Maximum differential pressure against gate	In closing direction	1 bar
	In opening direction	< 0.1 bar
Maximum differential pressure at opening		< 0.1 bar
Pneumatic valve open / close time		< 2 (s)
Valve's conductance (molecular flow)		-

01. Door Valve

Material Aluminum





Part Number	Size	D	D1	G	H	M	N	Q	Q1
DV-HV-46X236-AL	46 x 236	236	46	180	60	124	132	258	62
	1.81” x 9.29”	9.29”	1.81”	7.09”	2.36”	4.88”	5.20”	9.85”	2.36”
DV-HV-50X336-AL	50 x 336	336	50	180	60	124	132	360	64
	1.97” x 13.23”	13.23”	1.97”	7.09”	2.36”	4.88”	5.20”	13.78”	2.36”
DV-HV-56X496-AL	56 x 496	496	56	180	60	124	132	520	71
	2.20” x 19.53”	19.53”	2.20”	7.09”	2.36”	4.88”	5.20”	20.08”	2.52”

- Dimension in mm/ inch