



MD type – Without efficiency valve

Features and Strengths

Suitable for curved or irregular surface
Excellent performance for round corners and edges

Examples of use

Automobile roofs and doors, Metal sheets, Veneer sheets



Recommended Lifting Force (Max.)

Model	Volume (cm ³)	Lifting Force (Kg) - Perpendicular		
		- 20 kPa	- 60 kPa	- 90 kPa
B1.5/20-MD22	3.29	0.71	1.61	2.20
B2.5/20-MD22	3.57	0.71	1.61	2.20
B4.0/20-MD22	4.49	0.71	1.61	2.20
B5.0/20-MD22	4.78	0.71	1.61	2.20
B6.0/20-MD22	5.26	0.71	1.61	2.20



I Material Specifications

Material	Hardness Shore (°)	Color	Temperature (°C)
N6 - NBR (Nitrile)	60	Blue	-20~110
S3 - Silicone	30	Translucent White	-70~200
S5 - Silicone	50	Red	-70~200
W3 - White Silicone	30	Translucent White	-70~200
W5 - White Silicone	50	Translucent White	-70~200
W3(FDA) - White Silicone(FDA)	30	Translucent White	-70~200
W5(FDA) - White Silicone(FDA)	50	Translucent White	-70~200
U6 - Urethane	60	Dark Grey	0~100

* The temperature data is only for suction lip. Please contact us if it is used in over 60°C

** For additional materials, please contact us

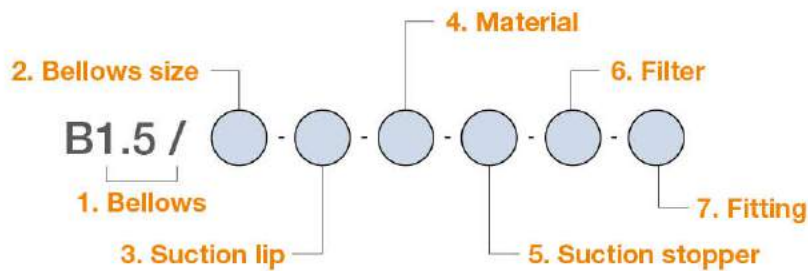
I Material Resistance

Description	NBR (Nitrile)	Silicone	White Silicone	Urethane
Wear Resistance	Excellent	Good	Good	Excellent
Oil	Excellent	Poor	Poor	Excellent
Weather / Ozone	Fair	Excellent	Excellent	Excellent
Alcohol	Good	Good	Good	Fair
Acid	Fair	Poor	Poor	Poor

SUCTION CUPS / Magic suction cup



Build an Ordering No.



1. Bellows	Description	Symbol
	Top bellows 1.5 folds	B1.5
	Top bellows 2.5 folds	B2.5
	Top bellows 1.5 folds + Middle bellows 2.5 folds	B4.0
	Top bellows 1.5 folds + Middle bellows 3.5 folds	B5.0
	Top bellows 2.5 folds + Middle bellows 3.5 folds	B6.0
2. Bellows size	Description	Symbol
	20mm bellows diameter	20
3. Suction lip	Description	Symbol
	MD type lip, 22mm diameter	MD22
4. Material	Description	Symbol
	NBR (Nitrile), 60° hardness	N6
	Silicone, 30° hardness	S3
	Silicone, 50° hardness	S5
	White Silicone, 30° hardness	W3
	White Silicone, 50° hardness	W5
	White Silicone, 30° hardness (FDA)	W3(FDA)
	White Silicone, 50° hardness (FDA)	W5(FDA)
	Urethane, 60° hardness	U6
5. Suction stopper	Description	Symbol
	D type	D
6. Filter	Description	Symbol
	No filter	Blank
	Mesh disk filter (200mesh)	F2
7. Fitting	Description	Symbol
	Fitting, G1/8 female	18F
	Fitting, G1/4 female	14F
	Fitting, G1/8 male	18M
	Fitting, G1/4 male	14M
	Fitting, G3/8 male	38M

Spare Parts – Top Bellows

Part No.	Description
TB1.5/20	Top bellows 1.5 folds for MD22 without efficiency valve
TB2.5/20	Top bellows 2.5 folds for MD22 without efficiency valve



I Spare Parts – Middle Bellows

Part No.	Description	Part No.	Description
MB2.5/20	Middle bellows 2.5 folds for MD22	MB3.5/20	Middle bellows 3.5 folds for MD22

I Spare Parts – Suction Stoppers

Part No.	Description
MS20-D	Stopper D type for MD22

I Spare Parts – Filters

Part No.	Description
VTFE20	Mesh disk filter (200mesh) for 20mm bellows diameter

I Spare Parts – Suction Lips

Part No.	Description	Part No.	Description
MD22-N6	MD type - 22mm diameter, NBR, 60° hardness	MD22-W3(FDA)	MD type - 22mm diameter, White Silicone, 30° hardness (FDA)
MD22-S3	MD type - 22mm diameter, Silicone, 30° hardness	MD22-W5(FDA)	MD type - 22mm diameter, White Silicone, 50° hardness (FDA)
MD22-S5	MD type - 22mm diameter, Silicone, 50° hardness	MD22-U6	MD type - 22mm diameter, Urethane, 60° hardness
MD22-W3	MD type - 22mm diameter, White Silicone, 30° hardness		
MD22-W5	MD type - 22mm diameter, White Silicone, 50° hardness		

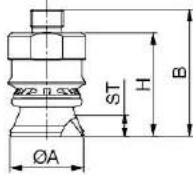
I Spare Parts – Fittings

Part No. (Code No.)	Fitting size	Description
350 003 1101	18F	G1/8 female for 20mm bellows diameter
350 003 1501	14F	G1/4 female for 20mm bellows diameter
350 003 1201	18M	G1/8 male for 20mm bellows diameter
350 003 1301	14M	G1/4 male for 20mm bellows diameter
350 003 1401	38M	G3/8 male for 20mm bellows diameter

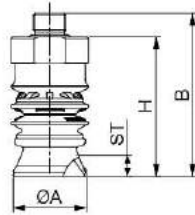
SUCTION CUPS / Magic suction cup



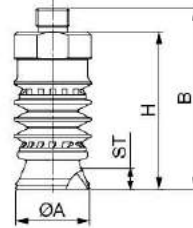
Dimensional Data



[B1.5 / 20 series]



[B4.0 / 20 series]



[B5.0 / 20 series]

Fitting

18F

18M

14F

14M

38M

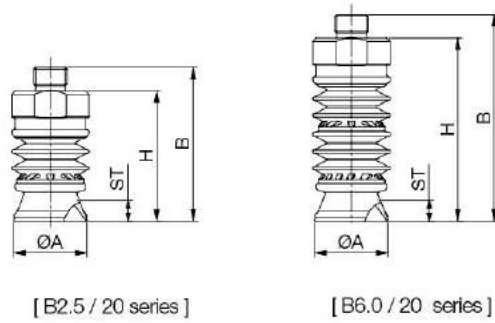
[Unit : mm]

Model	Ø A	G	ST	H*	B*
B1.5/20-MD22	22	Female thread : 1/8", 1/4" Male thread : 1/8", 1/4", 3/8"	6.1	31.1	40.1
B4.0/20-MD22	22		6.1	41.9	50.9
B5.0/20-MD22	22		6.1	46.9	55.9

* Dimension "H" and "B" is measured with 14M fitting option



Dimensional Data



Fitting
18F
18M
14F
14M
38M

[Unit : mm]

Model	ØA	G	ST	H*	B*
B2.5/20-MD22	22	Female thread : 1/8", 1/4"	6.1	39.1	48.1
B6.0/20-MD22	22	Male thread : 1/8", 1/4", 3/8"	6.1	54.9	63.9

* Dimension "H" and "B" is measured with 14M fitting option

MD type – With efficiency valve (EB type)

Features and Strengths

Suitable for curved or irregular surface
Excellent performance for round corners and edges

Examples of use

Automobile roofs and doors, Metal sheets, Veneer sheets



Recommended Lifting Force (Max.)

Model	Volume (cm ³)	Lifting Force (Kg) - Perpendicular		
		- 20 kPa	- 60 kPa	- 90 kPa
EB1.5/20-MD22	3.42	0.71	1.61	2.20
EB4.0/20-MD22	4.82	0.71	1.61	2.20
EB5.0/20-MD22	5.11	0.71	1.61	2.20



I Material Specifications

Material	Hardness Shore (°)	Color	Temperature (°C)
N6 - NBR (Nitrile)	60	Blue	-20~110
S3 - Silicone	30	Translucent White	-70~200
S5 - Silicone	50	Red	-70~200
W3 - White Silicone	30	Translucent White	-70~200
W5 - White Silicone	50	Translucent White	-70~200
W3(FDA) - White Silicone(FDA)	30	Translucent White	-70~200
W5(FDA) - White Silicone(FDA)	50	Translucent White	-70~200
U6 - Urethane	60	Dark Grey	0~100

* The temperature data is only for suction lip. Please contact us if it is used in over 60°C

** For additional materials, please contact us

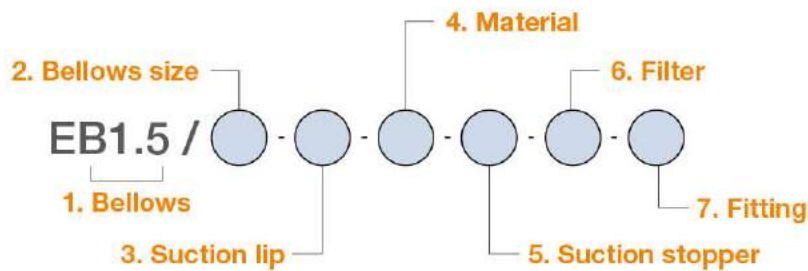
I Material Resistance







Description	NBR (Nitrile)	Silicone	White Silicone	Urethane
Wear Resistance	Excellent	Good	Good	Excellent
Oil	Excellent	Poor	Poor	Excellent
Weather / Ozone	Fair	Excellent	Excellent	Excellent
Alcohol	Good	Good	Good	Fair
Acid	Fair	Poor	Poor	Poor

SUCTION CUPS / Magic suction cup



Build an Ordering No.



1. Bellows	Description	Symbol
	Top bellows 1.5 folds with efficiency valve	EB1.5
	Top bellows 1.5 folds with efficiency valve + Middle bellows 2.5 folds	EB4.0
	Top bellows 1.5 folds with efficiency valve + Middle bellows 3.5 folds	EB5.0
2. Bellows size	Description	Symbol
	20mm bellows diameter	20
3. Suction lip	Description	Symbol
	MD type lip, 22mm diameter	MD22
4. Material	Description	Symbol
	NBR (Nitrile), 60° hardness	N6
	Silicone, 30° hardness	S3
	Silicone, 50° hardness	S5
	White Silicone, 30° hardness	W3
	White Silicone, 50° hardness	W5
	White Silicone, 30° hardness (FDA)	W3(FDA)
	White Silicone, 50° hardness (FDA)	W5(FDA)
	Urethane, 60° hardness	U6
5. Suction stopper	Description	Symbol
	D type	D
6. Filter	Description	Symbol
	No filter	Blank
	Mesh disk filter (200mesh)	F2
7. Fitting	Description	Symbol
	Fitting, G1/8 female	18F
	Fitting, G1/4 female	14F
	Fitting, G1/8 male	18M
	Fitting, G1/4 male	14M
	Fitting, G3/8 male	38M

Spare Parts – Top Bellows

Part No.	Description
EB1.5/20	Top bellows 1.5 folds for MD22 with efficiency valve



Spare Parts – Middle Bellows

Part No.	Description	Part No.	Description
MB2.5/20	Middle bellows 2.5 folds for MD22	MB3.5/20	Middle bellows 3.5 folds for MD22

Spare Parts – Suction Stoppers

Part No.	Description
MS20-D	Stopper D type for MD22

Spare Parts – Filters

Part No.	Description
VTFE20	Mesh disk filter (200mesh) for 20mm bellows diameter

Spare Parts – Suction Lips

Part No.	Description	Part No.	Description
MD22-N6	MD type - 22mm diameter, NBR, 60° hardness	MD22-W3(FDA)	MD type - 22mm diameter, White Silicone, 30° hardness (FDA)
MD22-S3	MD type - 22mm diameter, Silicone, 30° hardness	MD22-W5(FDA)	MD type - 22mm diameter, White Silicone, 50° hardness (FDA)
MD22-S5	MD type - 22mm diameter, Silicone, 50° hardness	MD22-U6	MD type - 22mm diameter, Urethane, 60° hardness
MD22-W3	MD type - 22mm diameter, White Silicone, 30° hardness		
MD22-W5	MD type - 22mm diameter, White Silicone, 50° hardness		

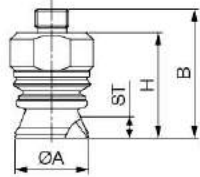
Spare Parts – Fittings

Part No. (Code No.)	Fitting size	Description
350 006 1101	18F	EB type, G1/8 female for 20mm bellows diameter
350 006 1501	14F	EB type, G1/4 female for 20mm bellows diameter
350 006 1201	18M	EB type, G1/8 male for 20mm bellows diameter
350 006 1301	14M	EB type, G1/4 male for 20mm bellows diameter
350 006 1401	38M	EB type, G3/8 male for 20mm bellows diameter

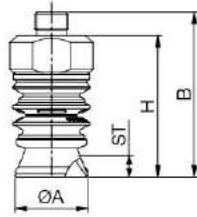
SUCTION CUPS / Magic suction cup



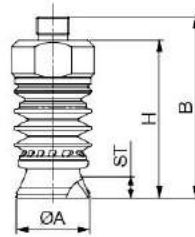
Dimensional Data



[EB1.5 / 20 series]



[EB4.0 / 20 series]



[EB5.0 / 20 series]

Fitting

18F

18M

14F

14M

38M

[Unit : mm]

Model	Ø A	G	ST	H*	B*
EB1.5/20-MD22	22	Female thread : 1/8", 1/4" Male thread : 1/8", 1/4", 3/8"	6.1	31.6	40.6
EB4.0/20-MD22	22		6.1	42.4	51.4
EB5.0/20-MD22	22		6.1	47.4	56.4

* Dimension "H" and "B" is measured with 14M fitting option

