

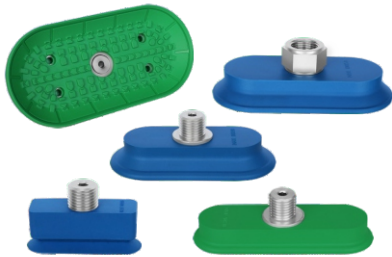
Suction Cups For Handling Sheet Metal



Flat Suction Cups MAOF (Oval)

Suction area LxW 50x16mm to 120x60mm

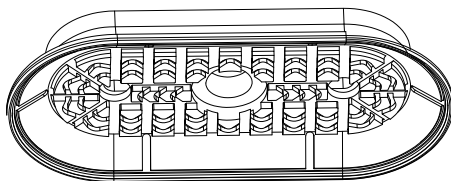
Flat Suction Cups MAOF (Oval)



Introduction and application

- ◆ For handling sheet metal quickly.(with short cycle times)
- ◆ Handling of thin sheet metal without deformation or deep-drawing.
- ◆ For use in automated handling system for stamping lines in the automotive industry.
- ◆ Handling of long,narrow sheet metal,e.g. reinforcing ribs and plates.
- ◆ The bottom of the suction cup has a special groove structure to prevent the oily metal plate from sliding during the handling process, ensuring accurate positioning of the workpiece in the press.
- ◆ Handling metal sheet parts with small curvature radii

System design flat suction cups MAOF (Oval)



Design

- ◆ Robust,wear-resistant oval suction pad MAOF made of NBR with single sealing lip,special slot and inner support.
- ◆ Suction cups and suction nipple are vulcanized and fixed
- ◆ Suction cup available with various connection types.
- ◆ Available in two material hardness values(45 shore, 60 shore)

Ordering Data Flat Suction Cups MAOF

| Item no. | Suction area ϕ [mm] | Material and Shore hardness | Connection thread |
|----------|--------------------------|-----------------------------|---|
| MAOF | 50x16 to 120x60 | NBR-45 NBR-60 | G1/4-AG G1/4-IG G3/8-IG M10-AG M14x1.5-AG RA rectangular adapter |

Note:MAOF AG=external thread (M) IG=internal thread (F)

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Ordering Data Flat Suction Cups MAOF

| Type | Connection | | | | | Rectangular adapter |
|--------------------|----------------|----------------|----------------|----------------|----------------|---------------------|
| | G1/4"-M | G1/4"-F | G3/8"-F | M10x1.5-M | M14x1.5-M | |
| MAOF 50x16 NBR-60 | 90.02.03.00322 | 90.02.03.00336 | 90.02.03.00350 | 90.02.03.00364 | 90.02.03.00378 | 90.02.03.00517 |
| MAOF 50x16 NBR-45 | 90.02.03.00323 | 90.02.03.00337 | 90.02.03.00351 | 90.02.03.00365 | 90.02.03.00379 | 90.02.03.00518 |
| MAOF 60x23 NBR-60 | 90.02.03.00324 | 90.02.03.00338 | 90.02.03.00352 | 90.02.03.00366 | 90.02.03.00380 | 90.02.03.00519 |
| MAOF 60x23 NBR-45 | 90.02.03.00325 | 90.02.03.00339 | 90.02.03.00353 | 90.02.03.00367 | 90.02.03.00381 | 90.02.03.00520 |
| MAOF 90x30 NBR-60 | 90.02.03.00326 | 90.02.03.00340 | 90.02.03.00354 | 90.02.03.00368 | 90.02.03.00382 | 90.02.03.00521 |
| MAOF 90x30 NBR-45 | 90.02.03.00327 | 90.02.03.00341 | 90.02.03.00355 | 90.02.03.00369 | 90.02.03.00383 | 90.02.03.00522 |
| MAOF 80x40 NBR-60 | 90.02.03.00328 | 90.02.03.00342 | 90.02.03.00356 | 90.02.03.00370 | 90.02.03.00384 | 90.02.03.00523 |
| MAOF 80x40 NBR-45 | 90.02.03.00329 | 90.02.03.00343 | 90.02.03.00357 | 90.02.03.00371 | 90.02.03.00385 | 90.02.03.00524 |
| MAOF 100x50 NBR-60 | 90.02.03.00330 | 90.02.03.00344 | 90.02.03.00358 | 90.02.03.00372 | 90.02.03.00386 | 90.02.03.00525 |
| MAOF 100x50 NBR-45 | 90.02.03.00331 | 90.02.03.00345 | 90.02.03.00359 | 90.02.03.00373 | 90.02.03.00387 | 90.02.03.00526 |
| MAOF 120x60 NBR-60 | 90.02.03.00332 | 90.02.03.00346 | 90.02.03.00360 | 90.02.03.00374 | 90.02.03.00388 | 90.02.03.00527 |
| MAOF 120x60 NBR-45 | 90.02.03.00333 | 90.02.03.00347 | 90.02.03.00361 | 90.02.03.00375 | 90.02.03.00389 | 90.02.03.00528 |

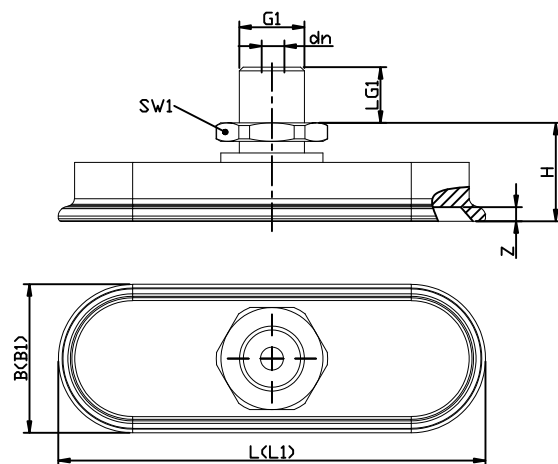
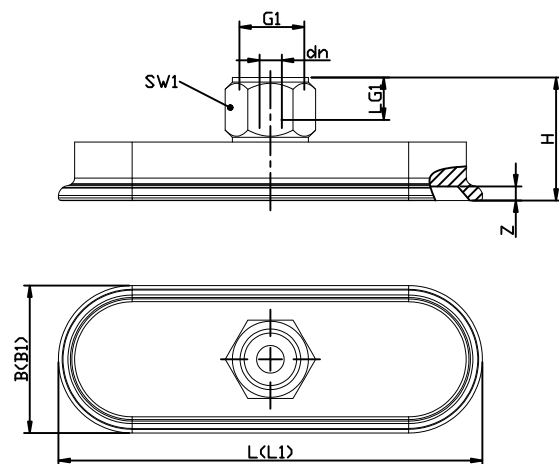
Technical Data Flat Suction Cups MAOF

| Type | Suction Force [N] | Lateral force [N] | Lateral force oily surface [N] | Volume [cm ³] | Workpiece radius min [mm] (Convex) | Recom. internal hose diameter d[mm] |
|-------------|-------------------|-------------------|--------------------------------|---------------------------|------------------------------------|-------------------------------------|
| MAOF 50x16 | 31 | 24 | 12 | 2.0 | 8 | 4 |
| MAOF 60x23 | 57 | 37 | 33 | 3.0 | 20 | 4 |
| MAOF 90x30 | 122 | 96 | 64 | 7.0 | 40 | 4 |
| MAOF 80x40 | 140 | 110 | 100 | 10.7 | 50 | 4 |
| MAOF 100x50 | 217 | 181 | 121 | 20.0 | 75 | 6 |
| MAOF 120x60 | 312 | 254 | 170 | 35.0 | 75 | 6 |

Design Data Flat Suction Cups MAOF

MAOF 50 × 16 to 120 × 60 IG

MAOF 50 × 16 to 120 × 60 AG



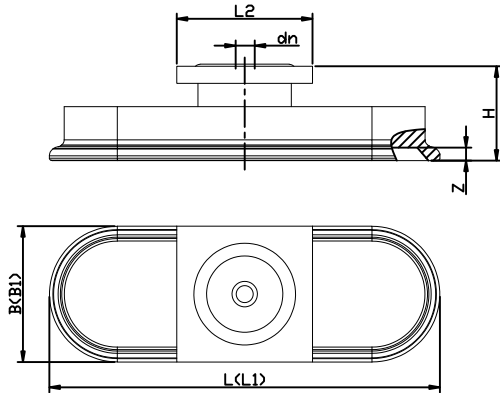
- Combined Suction Cups
- Vacuum Suction Cups
- Composite Suction Cups
- Special Grippers
- Vacuum Gripping Systems
- Mounting Elements
- Vacuum Generators
- Valve Technology
- Switch And Monitoring
- Vacuum Filters

Suction Cups For Handling Sheet Metal

Flat Suction Cups MAOF (Oval)

Suction area LxW 50x16mm to 120x60mm

MAOF 50x16 to 120x60 RA (Rectangular adapter)



| Type | Dimensions[mm] | | | | | | | | | | |
|------------------------|----------------|----|----|-----------|----|-----|-------|----|-----|-----|-----------|
| | B | B1 | dn | G1 | H | L | L1 | L2 | LG1 | SW1 | Z(Stroke) |
| MAOF 50x16 G1/4-AG | 16 | 18 | 5 | G1/4"-M | 26 | 50 | 51.5 | - | 8 | 17 | 3 |
| MAOF 50x16 G1/4-IG | 16 | 18 | 6 | G1/4"-F | 33 | 50 | 51.5 | - | 8 | 17 | 3 |
| MAOF 50x16 G3/8-IG | 16 | 18 | 6 | G3/8"-F | 34 | 50 | 51.5 | - | 9 | 22 | 3 |
| MAOF 50x16 M10x1.5-AG | 16 | 18 | 4 | M10x1.5-M | 26 | 50 | 51.5 | - | 10 | 16 | 3 |
| MAOF 50x16 M14x1.5-AG | 16 | 18 | 5 | M14x1.5-M | 28 | 50 | 51.5 | - | 10 | 22 | 3 |
| MAOF 50x16 RA | 16 | 18 | 4 | - | 29 | 50 | 51.5 | 32 | - | - | 3 |
| MAOF 60x23 G1/4-AG | 23 | 25 | 5 | G1/4"-M | 18 | 62 | 64.0 | - | 8 | 17 | 3 |
| MAOF 60x23 G1/4-IG | 23 | 25 | 6 | G1/4"-F | 26 | 62 | 64.0 | - | 8 | 17 | 3 |
| MAOF 60x23 G3/8-IG | 23 | 25 | 6 | G3/8"-F | 26 | 62 | 64.0 | - | 9 | 22 | 3 |
| MAOF 60x23 M10x1.5-AG | 23 | 25 | 4 | M10x1.5-M | 18 | 62 | 64.0 | - | 10 | 16 | 3 |
| MAOF 60x23 M14x1.5-AG | 23 | 25 | 5 | M14x1.5-M | 20 | 62 | 64.0 | - | 10 | 22 | 3 |
| MAOF 60x23 RA | 23 | 25 | 4 | - | 21 | 62 | 64.0 | 32 | - | - | 3 |
| MAOF 90x30 G1/4-AG | 32 | 34 | 5 | G1/4"-M | 19 | 92 | 94.0 | - | 8 | 17 | 3 |
| MAOF 90x30 G1/4-IG | 32 | 34 | 6 | G1/4"-F | 26 | 92 | 94.0 | - | 8 | 17 | 3 |
| MAOF 90x30 G3/8-IG | 32 | 34 | 6 | G3/8"-F | 27 | 92 | 94.0 | - | 9 | 22 | 3 |
| MAOF 90x30 M10x1.5-AG | 32 | 34 | 4 | M10x1.5-M | 19 | 92 | 94.0 | - | 10 | 16 | 3 |
| MAOF 90x30 M14x1.5-AG | 32 | 34 | 5 | M14x1.5-M | 21 | 92 | 94.0 | - | 10 | 22 | 3 |
| MAOF 90x30 RA | 32 | 34 | 4 | - | 22 | 92 | 94.0 | 32 | - | - | 3 |
| MAOF 80x40 G1/4-AG | 40 | 43 | 5 | G1/4"-M | 20 | 82 | 85.0 | - | 8 | 17 | 4 |
| MAOF 80x40 G1/4-IG | 40 | 43 | 6 | G1/4"-F | 28 | 82 | 85.0 | - | 8 | 17 | 4 |
| MAOF 80x40 G3/8-IG | 40 | 43 | 6 | G3/8"-F | 28 | 82 | 85.0 | - | 9 | 22 | 4 |
| MAOF 80x40 M10x1.5-AG | 40 | 43 | 4 | M10x1.5-M | 20 | 82 | 85.0 | - | 10 | 16 | 4 |
| MAOF 80x40 M14x1.5-AG | 40 | 43 | 5 | M14x1.5-M | 22 | 82 | 85.0 | - | 10 | 22 | 4 |
| MAOF 80x40 RA | 40 | 43 | 4 | - | 23 | 82 | 85.0 | 32 | - | - | 4 |
| MAOF 100x50 G1/4-AG | 50 | 54 | 6 | G1/4"-M | 22 | 102 | 106.0 | - | 8 | 17 | 5 |
| MAOF 100x50 G1/4-IG | 50 | 54 | 8 | G1/4"-F | 30 | 102 | 106.0 | - | 8 | 17 | 5 |
| MAOF 100x50 G3/8-IG | 50 | 54 | 8 | G3/8"-F | 31 | 102 | 106.0 | - | 9 | 22 | 5 |
| MAOF 100x50 M10x1.5-AG | 50 | 54 | 4 | M10x1.5-M | 22 | 102 | 106.0 | - | 10 | 16 | 5 |
| MAOF 100x50 M14x1.5-AG | 50 | 54 | 6 | M14x1.5-M | 24 | 102 | 106.0 | - | 10 | 22 | 5 |
| MAOF 100x50 RA | 50 | 54 | 6 | - | 25 | 102 | 106.0 | 32 | - | - | 5 |
| MAOF 120x60 G1/4-AG | 60 | 65 | 6 | G1/4"-M | 24 | 123 | 128.0 | - | 8 | 17 | 6 |
| MAOF 120x60 G1/4-IG | 60 | 65 | 8 | G1/4"-F | 32 | 123 | 128.0 | - | 8 | 17 | 6 |
| MAOF 120x60 G3/8-IG | 60 | 65 | 8 | G3/8"-F | 33 | 123 | 128.0 | - | 9 | 22 | 6 |
| MAOF 120x60 M10x1.5-AG | 60 | 65 | 4 | M10x1.5-M | 24 | 123 | 128.0 | - | 10 | 16 | 6 |
| MAOF 120x60 M14x1.5-AG | 60 | 65 | 6 | M14x1.5-M | 26 | 123 | 128.0 | - | 10 | 22 | 6 |
| MAOF 120x60 RA | 60 | 65 | 6 | - | 27 | 123 | 128.0 | 32 | - | - | 6 |