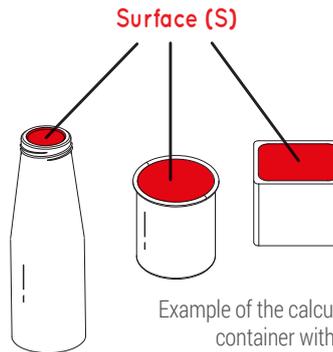# SPECIAL PH and P2H SUCTION PLATES FOR OCTOPUS SYSTEMS FOR GRIPPING EMPTY CANS, TINS, JARS AND VIALS WITHOUT LIDS OR CAPS

The special suction plates illustrated and described on this page can be installed on OCTOPUS systems to replace the PX and P2X plates. They are made of anodised aluminium sheets with holes equidistant from each other and coated with a special sponge rubber, microperforated at the holes in the aluminium sheet, in two different thicknesses: 20 mm for PH suction plates and 30 mm for P2H plates. The use of calibrated holes makes it possible to calculate the flow rate of the vacuum generator to be installed on the OCTOPUS SYSTEM, to ensure that, even in the presence of losses due to transpiration or the absence of some objects to be picked up, there is always a minimum vacuum value, sufficient to grip even the few remaining containers. The use of these suction plates is recommended for gripping and handling empty cans, tins, vials and jars made of various materials and without lids or caps. The lifting force of the container will be directly proportional to the degree of vacuum generated on the surface of the mouth of the can or vial to be picked up.

Note: These plates are not suitable for picking up empty plastic or glass water and wine bottles.

All flexible containers must be previously vacuum tested to avoid the risk of implosion.

Surface (S)

$$F = \frac{S \times P}{\eta}$$

Where:

F = Lifting force expressed in Kg;

S = Surface area of the container mouth expressed in cm^2;

P = Force exerted by atmospheric pressure, depending on the level of vacuum, expressed in Kg/cm^2;

η = Factor of safety.

Example of the calculation of the force applied to the container with mouth diameter 60 mm:

$$F = \frac{28{,}26 \text{ cm}^2 \times 0{,}75 \text{ Kg/cm}^2}{3} = 7{,}06 \text{ Kg}$$

Where:

S = 28,26 cm^2;

P = 0,75 Kg/cm^2 (value developed from a level of vacuum of -750 mbar);

η = 3.

Item	A	B	C Ø	E	F	H	Holes No.	Only rubber item	Weight Kg
PH 15 20	150	200	~2	5	20	25	48	H 15 20	0.40
PH 20 30	200	300	~2	5	20	25	96	H 20 30	0.80
PH 20 40	200	400	~2	5	20	25	128	H 20 40	1.10
PH 20 60	200	600	~2	5	20	25	192	H 20 60	1.70
PH 30 30	300	300	~2	5	20	25	144	H 30 30	1.30
PH 30 40	300	400	~2	5	20	25	192	H 30 40	1.70
PH 30 50	300	500	~2	5	20	25	240	H 30 50	2.10
PH 40 40	400	400	~2	5	20	25	256	H 40 40	2.20
PH 40 60	400	600	~2	5	20	25	384	H 40 60	3.40
PH 40 100	400	1000	~2	5	20	25	656	H 40 100	5.60
PH 60 80	600	800	~2	5	20	25	768	H 60 80	6.70
PH 60 120	600	1200	~2	5	20	25	1176	H 60 120	10.10
PH 80 100	800	1000	~2	5	20	25	1353	H 80 100	11.30
PH 110 130	1100	1130	~2	5	20	25	2385	H 110 130	19.60
P2H 15 20	150	200	~2	5	30	35	48	2H 15 20	0.44
P2H 20 30	200	300	~2	5	30	35	96	2H 20 30	0.89
P2H 20 40	200	400	~2	5	30	35	128	2H 20 40	1.21
P2H 20 60	200	600	~2	5	30	35	192	2H 20 60	1.77
P2H 30 30	300	300	~2	5	30	35	144	2H 30 30	1.36
P2H 30 40	300	400	~2	5	30	35	192	2H 30 40	1.78
P2H 30 50	300	500	~2	5	30	35	240	2H 30 50	2.22
P2H 40 40	400	400	~2	5	30	35	256	2H 40 40	2.41
P2H 40 60	400	600	~2	5	30	35	384	2H 40 60	3.55
P2H 40 100	400	1000	~2	5	30	35	656	2H 40 100	5.96
P2H 60 80	600	800	~2	5	30	35	768	2H 60 80	7.18
P2H 60 120	600	1200	~2	5	30	35	1176	2H 60 120	10.73
P2H 80 100	800	1000	~2	5	30	35	1353	2H 80 100	11.93
P2H 110 130	1100	1130	~2	5	30	35	2385	2H 110 130	21.20
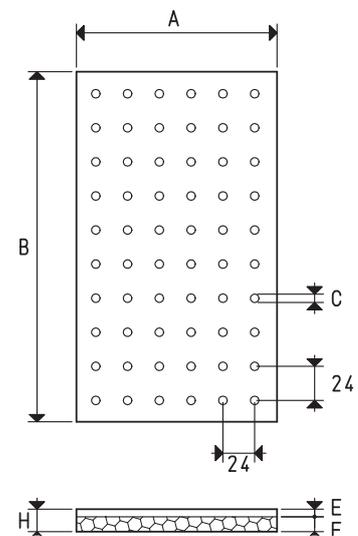
Transformation ratio: N (newton) = Kg x 9.81 (force of gravity)   inch = $\frac{mm}{25.4}$; pounds = $\frac{g}{453.6}$ = $\frac{Kg}{0.4536}$

9