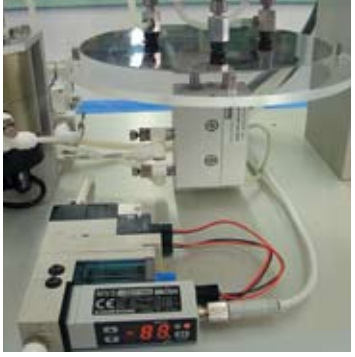
(Revised 03-29-2010)



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Vacuum Products

Cups, Generators, Sensors, Vacuum Control Valves, Cylinders & Accessories

Catalog 0802-5

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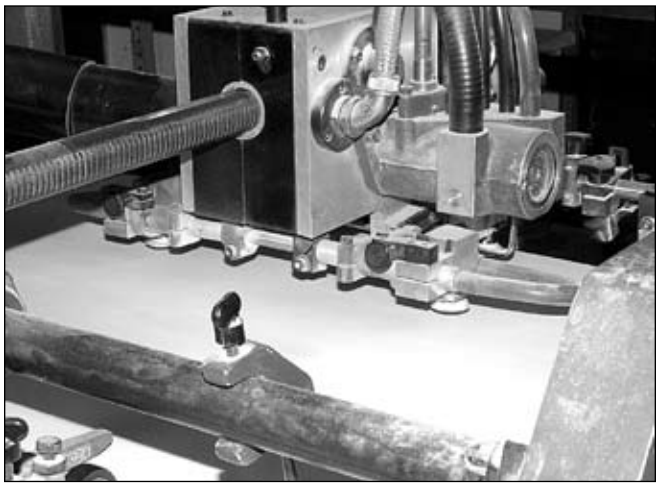
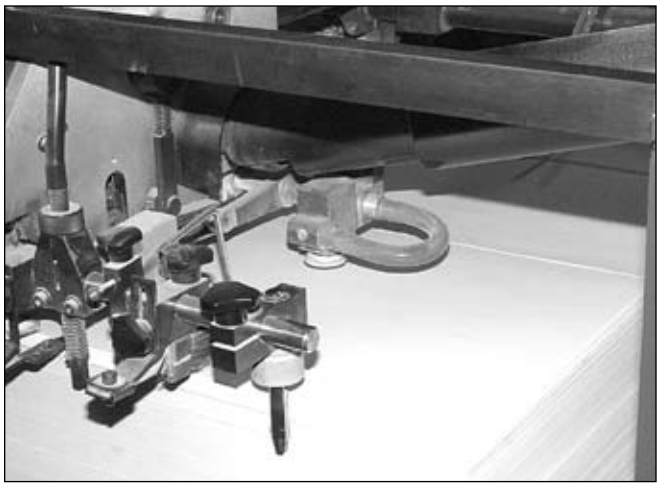
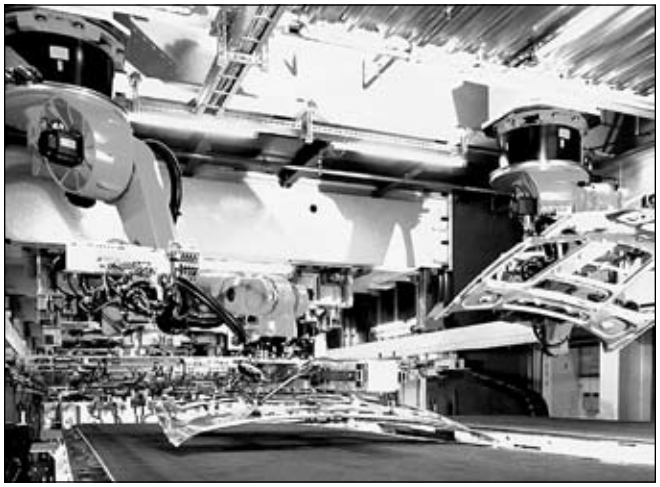
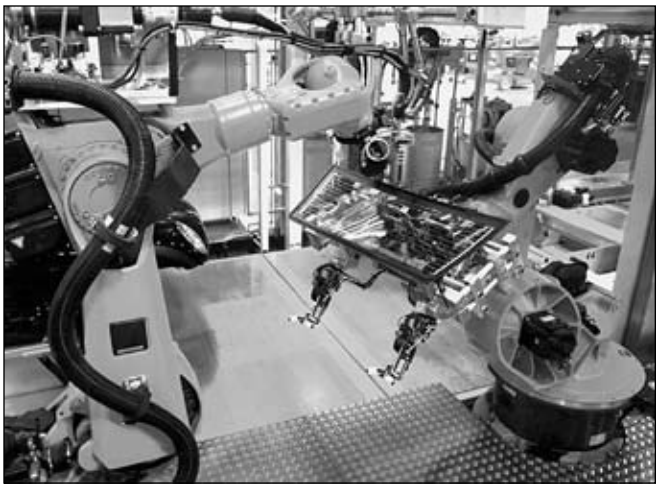




For robotic handling…





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Vacuum Cups

Section A

www.parker.com/pneu/vaccup

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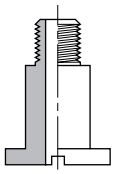

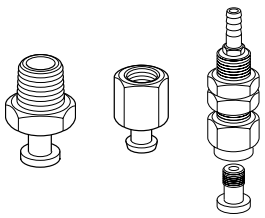

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Selecting the Proper Vacuum Cup

⚠ CAUTION:

Selecting the type of vacuum cup, material, and size suitable for an application is important to the overall vacuum system. Calculating the forces involved for each application is recommended to determine the vacuum cup size. It should be noted that these calculations are basic theoretical guidelines and each application must be tested for actual results. With all vacuum applications, certain practical assumptions concerning cup materials, environmental conditions, and product characteristics to name a few, may not be consistent with the performance. Again, the user should determine the efficiency, performance, and safety factor of the cup selection.

Calculating Pad Diameter and Forces

Mass

The term mass is a quantity of matter and its ability to resist motion when acted on by an external force. The magnitude of an object is represented as a certain number of kilograms (kg) and is symbolized as "m". The easiest way to determine the mass of an object is to measure the weight with a scale within the earth's gravitational field ($a_g = 9.81 m/sec^2$). Likewise, outside of any gravitational field, a mass could potentially be weightless.

Forces

For vacuum applications, force is a vector quantity in a defined direction either horizontal or vertical. The standard international unit of force is measured in Newtons (N) which is the equivalent of (kgm/sec^2). The force can be calculated by measuring the effect of a change in acceleration on a mass.

Newtons Law: $F(N) = mass(kg) \times a_g(m/sec^2)$

Consider an object with a mass of 10kg. The gravitational force on this object would be:

$F(N) = 10kg \times 9.81 m/sec^2 = 98.1 N$

Acceleration

Acceleration is the change in velocity of a moving object. Acceleration is a vector, a directional quantity expressed in units of meters per second squared (m/sec^2) and symbolized as "*a*". To explain the magnitude of acceleration consider an object with a change in velocity of 2 meters per second (m/sec) over a 4 second time frame. The acceleration can be calculated with:

$$a = \frac{\triangle \text{ velocity}}{\text{time}} \qquad a = \frac{6 m/sec}{2 sec} \qquad a = 3 m/sec^2$$

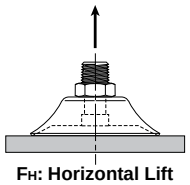
This is considered an average acceleration.

Coefficient of Friction

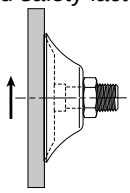
Certain values for coefficient of friction should be taken into consideration when calculating the combined forces in motion. Actual values between suction cups and surfaces are difficult to determine. Therefore, coefficient of friction values from published charts, should be used as a reference to adjust the safety factors accordingly.

Lifting Forces

When calculating lifting forces, safety factors of 2 for horizontal lifts and 4 for vertical lifts are minimum values. Applications with irregular shapes, difficult surfaces, and ackward motions will require increased safety factors.



F_H: Horizontal Lift



F_V: Vertical Lift

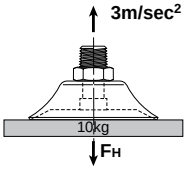
Horizontal Lifting Force

Apply Newtons Law to calculate the force on a 10kg mass with a change in acceleration of $3 m/sec^2$ and a safety factor of 2.

$F_H(N) = mass(kg) \times (a_g + a) \times S_H$

$F_H(N) = 10kg \times (9.81 m/sec^2 + 3 m/sec^2) \times 2$

$F_H = 256.2 N$



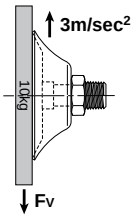
Vertical Lifting Force

Apply Newtons Law to calculate the force on a 10kg mass with a dry surface, a change in acceleration of $3 m/sec^2$ and a safety factor of 4.

$F_V(N) = mass(kg) \times (a_g + a) \times S_V$

$F_V(N) = 10kg \times (9.81 m/sec^2 + 3 m/sec^2) \times 4$

$F_V = 512.4 N$



Combined Vertical Lift and Horizontal Motion

Calculate the force on a 10kg mass with a dry surface, a change in acceleration of $3 m/sec^2$, and a change in travel acceleration of $2 m/sec^2$.

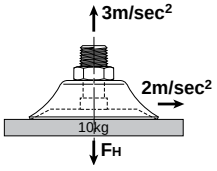
$F_M(N) = \sqrt{F_V^2 + F_H^2}$

$F_M(N) = \sqrt{[(10kg \times 2 m/sec^2) \times 4]^2 + [10kg \times (9.81 m/sec^2 + 3 m/sec^2) \times 2]^2}$

$F_M(N) = \sqrt{(80 kgm/sec^2)^2 + [256 kgm/sec^2]^2}$

$F_M(N) = \sqrt{6400 kgm/sec^2 + 65{,}536 kgm/sec^2}$

$F_M = 268.2 N$



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Analyze the Forces

Using the previous examples, consider an application where 4 cups have been selected to transfer the product.

Take the Horizontal Lifting Force (FH) of 256.2 N and divide by the number of cups (4) to obtain the individual force for each cup.

$$\frac{256.2\ (N)}{4} = 64.05\ N\ /\ Cup$$

Refering to the chart below, at 60% vacuum, select a force greater than 64.05 N. The appropriate selection is a 40mm diameter cup which has a theoretical lifting force of 76.9 N. The same calculation can be applied to the Vertical Lifting Force and the Forces in Motion examples to determine the cup diameter.

To convert Pounds (Lbf) to Newton (N), multiply Lbf x 4.4.

Calculate the Diameter of the Cup

Calculate the cup diameter for horizontal lift at 60% of full vacuum using the information from the previous page.

$$D = 35.7 \sqrt{\frac{m\ (a_g + a) \times S}{Pv \times n}}$$

$$D = 35.7 \sqrt{\frac{10\ (9.81 + 3) \times 2}{61 \times 4}}$$

D (mm) = Diameter of Cup
m (kg) = Mass
a_g = 9.81m/sec^2
a = Motion Acceleration
S = Safety Factor
Pv (kPa) = Operating Vacuum Pressure
n = Number of Cups

D = 36.58 mm

Refering to the chart below, at 60% vacuum, select a cup diameter equal to or greater than 37mm. The appropriate selection is a 40mm diameter cup which has a theoretical lifting force of 76.9 N.

Theoretical Lifting Force Per Cup lbf (N)

Cup		Vacuum Level								
		3 in hg	6 in hg	9 in hg	12in hg	15 in hg	18 in hg	21 in hg	24 in hg	27 in hg
		-1.5 PSIG	-3 PSIG	-4.5 PSIG	-6 PSIG	-7.5 PSIG	-9 PSIG	-10.5 PSIG	-12 PSIG	-13.5 PSIG
Diameter mm	Area cm^2	10.2 kPa	20.3 kPa	30.5 kPa	40.6 kPa	50.8 kPa	61 kPa	71.1 kPa	81.3 kPa	91.4 kPa
		10%	20%	30%	40%	50%	60%	70%	80%	90%
1.5	0.01	0.004 (0.02)	0.008 (0.04)	0.008 (0.04)	0.014 (0.06)	0.018 (0.08)	0.022 (0.10)	0.026 (0.12)	0.032 (0.14)	0.032 (0.14)
2	0.03	0.007 (0.03)	0.013 (0.06)	0.022 (0.10)	0.029 (0.13)	0.036 (0.16)	0.043 (0.19)	0.049 (0.22)	0.056 (0.25)	0.063 (0.28)
3.5	0.10	0.022 (0.10)	0.045 (0.20)	0.065 (0.29)	0.088 (0.39)	0.110 (0.49)	0.133 (0.59)	0.155 (0.69)	0.175 (0.78)	0.198 (0.88)
5	0.20	0.045 (0.20)	0.090 (0.40)	0.135 (0.60)	0.180 (0.80)	0.225 (1.00)	0.270 (1.20)	0.315 (1.40)	0.360 (1.60)	0.405 (1.80)
6	0.28	0.065 (0.29)	0.130 (0.58)	0.196 (0.87)	0.270 (1.20)	0.315 (1.40)	0.382 (1.70)	0.450 (2.00)	0.517 (2.30)	0.585 (2.60)
7	0.39	0.088 (0.39)	0.175 (0.78)	0.265 (1.18)	0.360 (1.60)	0.450 (2.00)	0.540 (2.40)	0.607 (2.70)	0.697 (3.10)	0.787 (3.50)
8	0.50	0.117 (0.52)	0.229 (1.02)	0.346 (1.54)	0.450 (2.00)	0.585 (2.60)	0.697 (3.10)	0.809 (3.60)	0.922 (4.10)	1.034 (4.60)
10	0.79	0.180 (0.80)	0.360 (1.60)	0.540 (2.40)	0.719 (3.20)	0.899 (4.00)	1.079 (4.80)	1.259 (5.60)	1.439 (6.40)	1.619 (7.20)
15	1.77	0.404 (1.80)	0.809 (3.60)	1.216 (5.41)	1.619 (7.20)	2.023 (9.00)	2.428 (10.8)	2.833 (12.6)	2.237 (14.4)	3.642 (16.2)
18	2.55	0.585 (2.60)	1.169 (5.20)	1.751 (7.79)	2.338 (10.4)	2.923 (13.0)	3.507 (15.6)	4.069 (18.1)	4.676 (20.8)	5.238 (23.3)
20	3.14	0.719 (3.20)	1.439 (6.40)	2.158 (9.60)	2.878 (12.8)	3.597 (16.0)	4.316 (19.2)	5.036 (22.4)	5.755 (25.6)	6.474 (28.8)
25	4.91	1.124 (5.00)	2.248 (10.0)	3.372 (15.0)	4.496 (20.0)	5.620 (25.0)	6.744 (30.0)	7.868 (35.0)	8.992 (40.0)	10.116 (45.0)
30	7.07	1.619 (7.20)	3.237 (14.4)	4.856 (21.6)	6.474 (28.8)	8.093 (36.0)	9.712 (43.2)	11.330 (50.4)	12.949 (57.6)	14.568 (64.8)
35	9.62	2.203 (9.80)	4.406 (19.6)	5.598 (29.4)	8.813 (39.2)	11.016 (49.0)	13.241 (58.9)	15.422 (68.6)	17.648 (78.5)	19.828 (88.2)
40	12.6	2.900 (12.9)	5.755 (25.6)	8.655 (38.5)	11.510 (51.2)	14.388 (64.0)	17.288 (76.9)	20.143 (89.6)	23.155 (103)	25.853 (115)
50	19.6	4.519 (20.1)	8.992 (40.0)	13.511 (60.1)	17.985 (80.0)	22.481 (100)	26.977 (120)	31.473 (140)	35.969 (160)	40.466 (180)
60	28.3	6.497 (28.9)	12.949 (57.6)	19.446 (86.5)	25.853 (115)	32.372 (144)	38.892 (173)	45.411 (202)	51.931 (231)	58.226 (259)
75	44.2	10.161 (45.2)	20.233 (90.0)	30.349 (135)	40.466 (180)	50.582 (225)	60.698 (270)	70.815 (315)	80.931 (360)	91.048 (405)
80	50.3	11.555 (51.4)	22.931 (102)	34.621 (154)	46.086 (205)	57.551 (256)	69.241 (308)	80.706 (359)	92.172 (410)	103.637 (461)
90	63.6	14.635 (65.1)	29.225 (130)	43.838 (195)	58.226 (259)	72.838 (324)	87.451 (389)	102.063 (454)	116.676 (519)	131.064 (583)
95	70.9	16.299 (72.5)	32.372 (144)	48.784 (217)	64.970 (289)	81.156 (361)	97.567 (434)	113.753 (506)	129.940 (578)	146.126 (650)
110	95.0	21.851 (97.2)	43.613 (194)	65.419 (291)	87.001 (387)	108.808 (484)	130.614 (581)	152.421 (678)	174.227 (775)	195.809 (871)
120	113.1	26.078 (116)	51.706 (230)	77.784 (346)	103.637 (461)	129.490 (576)	155.568 (692)	181.421 (807)	207.274 (922)	233.127 (1037)
150	176.7	40.690 (181)	80.931 (360)	121.622 (541)	161.862 (720)	202.328 (900)	243.019 (1081)	283.259 (1260)	323.950 (1441)	364.191 (1620)
200	314.2	72.164 (321)	143.878 (640)	216.041 (961)	287.531 (1279)	359.919 (1601)	432.083 (1922)	503.797 (2241)	575.961 (2562)	647.449 (2880

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Specifications

Cup material should be considered for temperature resistance, chemical resistance, oil resistance, abrasion resistance, markless properities and electrical properties.

Suction Cup Material	NBR	NBRE	CR	SI	SIE	U	FKM	SH	Z
	Nitrile	Nitrile ESD*	Chloroprene	Silicone	Silicone ESD*	Urethane	Flouro Rubber	Silicone High Temp	Markless
Operating Temperature (°C)	-20° to +120°	-30° to +120°	-30° to +140°	-60° to +250°	-60° to +250°	-30° to +120°	-10° to +230°	-50° to +300°	-10 to +230°
Color	Black	Black / Blue Dot	Green	White	Black / Red Dot	Blue	Black / White Dot	Grey	Black / Yellow Dot
Hardness, Shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5	55 ±5	55 ±5	70 ±5	55 ±5	70 ±5
Electrical Resistance (Ωm)	—	800 to 1000	—	—	800 to 1000	—	—	—	—
Wear Resistance	•••••		•••••	••		•••••••	•••	••	•••
Tear Strength	••••		•••••	•		•••••••	•	•	•
Aging Resistance	••••		•••••	•••••••		•••••••	•••••••	•••••••	•••••••
Ozone Resistance	••••		•••••	•••••••		•••••••	•••••••	•••••••	•••••••
Gasoline Resistance	•••••••		•••••	••••		•••••••	•••••••	••••	•••••••
Oil Resistance	•••••••		•••••	•••••••		•••••	•••••••	•••••••	•••••••
Acid Resistance	•••		•••••	•••		•	•••••••	•••	•••••••
Alkali Resistance	••••		•••••	•••		•	•••••••	•••	•••••••
Chemical Resistance	•••		••••	••		•••••••	•••••••	••	•••••••
Mechanical Resistance	••••		••••	••••		•••••	••	••••	••

••••••• = excellent; ••••• = very good; •••• = good; ••• = medium; •• = poor; • = not recommended

* ESD: Electric Static Dissipative Material

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Index of Vacuum Component Symbols

These Symbols will be located in each cup section as a guide for cup usage.

Symbol	Description
Suction Cup Icons	
	**Flat Surface, Thin Section**
	**Flat Surface, Any Section**
	**Soft Porous Material, Thin Section**
	**Soft Porous Material, Any Section**
	**Slightly Bowed Surface, Thin Section**
	**Slightly Bowed Surface, Any Section**
	**Bowed Surface, Thin Section**
	**Bowed Surface, Any Section**
	**Soft Material**
	**Metal Sheet Handling**
	**Corrugated Sheet Handling**

Symbol	Description
Suction Cup Icons	
	**Differences In Heights and Levels**
	**Vertical Lift**
	**Not For Vertical Lift**
	**Rough and / or Abrasive Surfaces**
	**Thin or Narrow Item Handling**
	**Oil Resistant**
	**High Lifting Force**
	**Vertical Lifting Force**
	**Horizontal Lifting Force**

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PFG Flat Vacuum Cups

Features

- **Universal Flat Design for Most Smooth Surface Applications**
- **Stable Vertical / Horizontal Lift**
- **Strong Low Profile Design for Fast Response Needed for Short Cycles**
- **1.5mm to 200mm Diameters**
- **Bottom Cleats on 60 to 200mm**

Applications

Exceptional for any smooth flat or surface that will benifit from stability and fast response of the cup design. This is a multi-versatile and multi-industry cup. Typical applications could be chip mounting, electrical components, semiconductor chips, glass, injection mold, sheet metal, press transfer, fixtures, woodworking.

PFG Series Vacuum Cups

Precision molded single lip flat cup for smooth or slightly curved surfaces.

PFTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Nickel plated brass materials.

PFTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket. UNF, NPT, G, metric threads. Internal hex for easy assembly. Fitting Material: Aluminum.

PFYK Series 90° Barbed Adapter

Side stem connectors allow you to secure the stem with a bolt thru a plate or “L” bracket to allow the tube connection from the side port. Nickel plated brass materials.

PFTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket. NPSF, G threads. Internal hex for easy assembly. Fitting Material: Aluminum.

PFTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.

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Model Number Index (Cups Only)

(Bold Items are Most Popular)

PFG - 2A - NBR

Cup Diameter (mm)			
1.5A	(1.5)	25	(25)
2A	(2)	**30**	**(30)**
3.5A	(3.5)	**35**	**(35)**
5A	**(5)**	**40**	**(40)**
6A	**(6)**	**50**	**(50)**
8A	**(8)**	**60**	**(60)**
10A	**(10)**	80	(80)
15*	**(15)**	95	(95)
15A**	**(15)**	**120**	**(120)**
20*	**(20)**	**150**	**(150)**
20B**	**(20)**	**200**	**(200)**

* Available for PFTK & PFYK Cup Assemblies Only.

** Available for PFTM, PFTF & PFTYS Cup Assemblies Only.

Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Note: 60 thru 200mm cups have cup cleats.

Specifications

Suction Cup Material	NBR	NBRE	CR	SI	SIE	U	FKM	SH	Z
	Nitrile	**Nitrile ESD***	**Chloroprene**	**Silicone**	**Silicone ESD***	**Urethane**	**Flouro Rubber**	**Silicone High Temp**	**Markless**
Operating Temperature (°C)	-20° to +120°	-30° to +120°	-30° to +140°	-60° to +250°	-60° to +250°	-30° to +120°	-10° to +230°	-50° to +300°	-10 to +230°
Color	Black	Black / Blue Dot	Green	White	Black / Red Dot	Blue	Black / White Dot	Grey	Black / Yellow Dot
Hardness, Shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5	55 ±5	55 ±5	70 ±5	55 ±5	70 ±5
Electrical Resistance (Ωm)	—	800 to 1000	—	—	800 to 1000	—	—	—	—
Wear Resistance	•••••		•••••	••		•••••••	•••	••	•••
Tear Strength	••••		•••••	•		•••••••	•	•	•
Aging Resistance	••••		•••••	•••••••		•••••••	•••••••	•••••••	•••••••
Ozone Resistance	••••		•••••	•••••••		•••••••	•••••••	•••••••	•••••••
Gasoline Resistance	•••••••		•••••	••••		•••••••	•••••••	••••	•••••••
Oil Resistance	•••••••		•••••	•••••••		•••••	•••••••	•••••••	•••••••
Acid Resistance	•••		•••••	•••		•	•••••••	•••	•••••••
Alkali Resistance	••••		•••••	•••		•	•••••••	•••	•••••••
Chemical Resistance	•••		••••	••		•••••••	•••••••	••	•••••••
Mechanical Resistance	••••		••••	••••		•••••	••	••••	••

••••••= excellent; •••••= very good; ••••= good; •••= medium; ••= poor; •= not recommended

* ESD: Electric Static Dissipative Material

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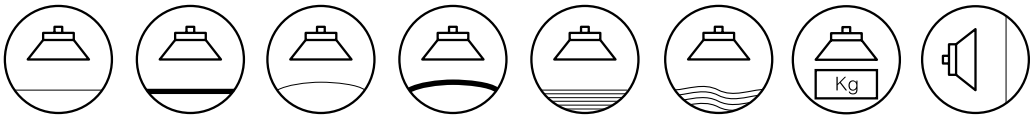
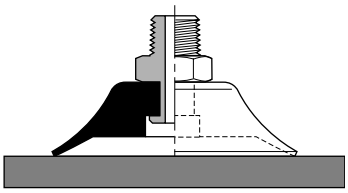
Application Guide

Flat - Smooth Surface



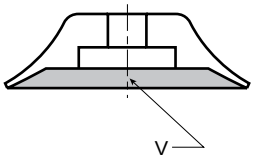
Ø 120/200 Only



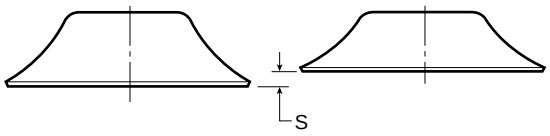
- Products With Smooth Surfaces
- Products With Minimum Flex
- Products That Will Not Permanently Deform

Main Data for Flat PFG Cups

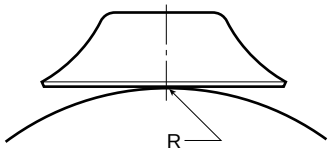
Volume



Cup Deflection



Radius



Model Number	Cup Diameter Inches (mm)	Area cm²	Volume (V) Liters	Lifting Force @60% (N)		Cup Deflection (S) mm	Radius (R) mm
PFG-1.5A-*	.06 (1.5)	0.01	0.00000053	0.10	0.05	0.1	3.5
PFG-2A-*	.08 (2)	0.03	0.0000007	0.19	0.09	0.1	1.75
PFG-3.5A-*	.12 (3)	0.10	0.000002	0.59	0.29	0.2	2.0
PFG-5A-*	.20 (5)	0.20	0.000005	1.20	0.6	0.5	3.5
PFG-6A-*	.24 (6)	0.28	0.000008	1.70	0.85	1.0	4.0
PFG-8A-*	.31 (8)	0.50	0.00003	3.10	1.5	1.4	5.0
PFG-10A-*	.39 (10)	0.79	0.00007	4.80	2.4	1.5	6.0
PFG-15-*	.59 (15)	1.77	0.0004	10.8	5.4	1.9	6.0
PFG-15A-*	.59 (15)	1.77	0.0004	10.8	5.4	1.9	6.0
PFG-20-*	.79 (20)	3.14	0.0008	19.2	9.6	2.3	9.0
PFG-20B-*	.79 (20)	3.14	0.0008	19.2	9.6	2.3	13.0
PFG-25-*	.98 (25)	4.91	0.0013	30.0	15.0	3.0	17.5
PFG-30-*	1.18 (30)	7.07	0.0018	43.2	21.6	2.0	26
PFG-35-*	1.38 (35)	9.62	0.0026	58.9	29.5	3.0	31
PFG-40-*	1.57 (40)	12.60	0.004	76.9	38.5	3.5	37
PFG-50-*	1.97 (50)	19.60	0.007	120	60	4.0	41
PFG-60-*	2.36 (60)	28.30	0.0090	173	87	5.0	70
PFG-80-*	3.15 (80)	50.30	0.025	308	154	6.0	100
PFG-95-*	3.74 (95)	70.90	0.035	434	267	6.0	150
PFG-120-*	4.72 (120)	113.00	0.078	692	346	6.0	365
PFG-150-*	5.91 (150)	176.70	0.177	1081	541	9.0	380
PFG-200-*	7.87 (200)	314.20	0.425	1922	961	13.0	430

* Cup Material

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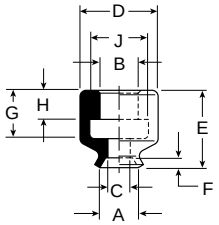
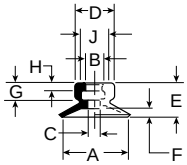
Dimensions

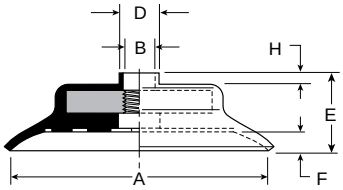
PFG-1.5
PFG-2A
PFG-3.5A



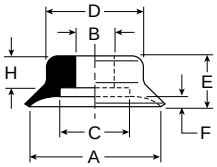
PFG-5A
PFG-15A



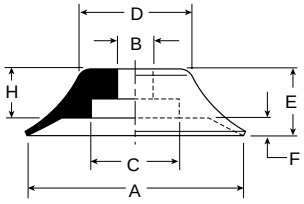
PFG-60 thru
PFG-95



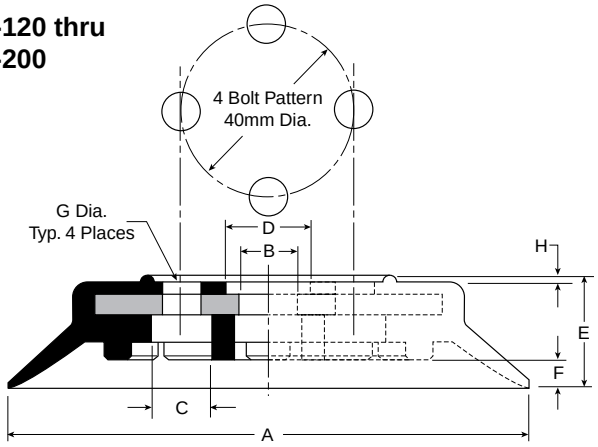
PFG-15 thru
PFG-40



PFG-50



PFG-120 thru
PFG-200



Model Number	ØA	ØB	ØC	ØD	E	F	G	H	ØJ
PFG-1.5A-*	.06 (1.5)	.08 (2)	.04 (1.0)	.16 (4)	.16 (4)	.016 (.4)	.10 (2.5)	.06 (1.5)	.12 (3)
PFG-2A-*	.08 (2)	.08 (2)	.05 (1.2)	.16 (4)	.16 (4)	.02 (.5)	.10 (2.5)	.06 (1.5)	.12 (3)
PFG-3.5A-*	.14 (3.5)	.08 (2)	.05 (1.2)	.16 (4)	.16 (4)	.02 (.5)	.10 (2.5)	.06 (1.5)	.12 (3)
PFG-5A-*	.20 (5)	.16 (4)	.06 (1.4)	.30 (7.5)	.26 (6.5)	.03 (.8)	.16 (4)	.08 (2)	.24 (6)
PFG-6A-*	.24 (6)	.16 (4)	.08 (2)	.30 (7.5)	.26 (6.5)	.03 (.8)	.16 (4)	.08 (2)	.24 (6)
PFG-8A-*	.31 (8)	.16 (4)	.08 (2)	.31 (8)	.28 (7)	.05 (1.2)	.16 (4)	.08 (2)	.24 (6)
PFG-10A-*	.39 (10)	.16 (4)	.08 (2)	.33 (8.5)	.30 (7.5)	.06 (1.5)	.16 (4)	.08 (2)	.24 (6)
PFG-15-*	.59 (15)	—	.31 (7.8)	.47 (12)	.31 (8)	.07 (1.9)	—	—	—
PFG-15A-*	.59 (15)	.16 (4)	.08 (2)	.35 (9)	.31 (8)	.08 (2)	.16 (4)	.08 (2)	.24 (6)
PFG-20-*	.79 (20)	.18 (4.6)	.43 (11)	.59 (15)	.39 (10)	.09 (2.3)	—	.18 (4.5)	—
PFG-20B-*	.79 (20)	.24 (6)	.43 (11)	.59 (15)	.49 (12.5)	.09 (2.3)	—	.28 (7)	—
PFG-25-*	.98 (25)	.24 (6)	.43 (11)	.63 (16)	.55 (14)	.12 (3)	—	.28 (7)	—
PFG-30-*	1.18 (30)	.24 (6)	.43 (11)	.55 (14)	.47 (12)	.08 (2)	—	.28 (7)	—
PFG-35-*	1.38 (35)	.24 (6)	.43 (11)	.83 (21)	.55 (14)	.12 (3)	—	.28 (7)	—
PFG-40-*	1.57 (40)	.24 (6)	.43 (11)	.94 (24)	.55 (14)	.16 (4)	—	.28 (7)	—
PFG-50-*	1.97(50)	.31 (8)	.79 (20)	1.06 (27)	.59 (15)	.14 (3.5)	—	.28 (7)	—
PFG-60-*	2.36 (60)	M10x1.25	—	.79 (12.5)	.73 (18.5)	.20 (5)	—	.10 (2.5)	—
PFG-80-*	3.15 (80)	M10x1.25	—	.79 (12.5)	.81 (20.5)	.24 (6)	—	.10 (2.5)	—
PFG-95-*	3.74 (95)	M10x1.25	—	.79 (12.5)	.83 (21)	.24 (6)	—	.10 (2.5)	—
PFG-120-*	4.72 (120)	.55 (14)	.55 (14)	.79 (20)	1.00 (25.5)	.24 (6)	4xØ8.7xØ40	.059 (1.5)	—
PFG-150-*	5.91 (150)	.51(13)	.55 (14)	.79 (20)	1.28 (32.5)	.35 (9)	4xØ8.7xØ40	.059 (1.5)	—
PFG-200-*	7.87 (200)	.51 (13)	.47 (12)	.79 (20)	1.48 (37.5)	.51 (13)	4xØ8.7xØ40	.059 (1.5)	—

Inches (mm)
* Cup Material

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PFTM Vacuum Cup Assemblies

Model Number Index

PFTM - 2A - NBR - M3

Cup Diameter (mm)			
1.5A	(1.5)	25	(25)
2A	(2)	**30**	**(30)**
3.5A	(3.5)	**35**	**(35)**
5A	**(5)**	**40**	**(40)**
6A	**(6)**	**50**	**(50)**
8A	**(8)**	**60**	**(60)**
10A	**(10)**	80	(80)
15A	**(15)**	95	(95)
20B	**(20)**		

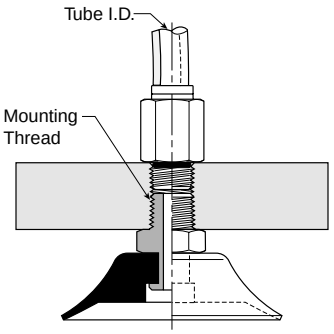
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Mounting Thread	
M3	**M3**
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
M10	**M10**
N2	**1/4 NPT**
G2	**1/4 BSPP**
See Chart Below	

(Bold Items are Most Popular)

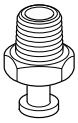
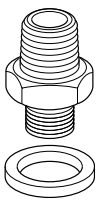
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Male Thread Fitting for PFG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Mounting Thread Code	Mounting Thread	FTM Fitting Part Number	Min. Tube ID
	1.5A, 2A, 3.5A	M3	M3x0.5 Male	**TN-PS-2A-M3**	.060 (1.5)
	5, 6, 8, 10, 15	M5	M5x0.8 Male	**FTM-5A-M5H**	.157 (4)
		G1	1/8 BSPP Male	**FTM-5A-G1**	
	20, 25, 30, 35, 40	N1	1/8 NPT Male	**FTM-20B-N1**	.157 (4)
		G1	1/8 BSPP Male	**FTM-20B-G1H**	
		G2	1/4 BSPP Male	**FTM-20B-G2**	
		M10	M10 x 1.25 Male	**FTM-20B-M10**	
	50	N1	1/8 NPT Male	**FTM-50-N1**	.157 (4)
		G1	1/8 BSPP Male	**FTM-50-G1H**	
		G2	1/4 BSPP Male	**FTM-50-G2**	
	60, 80, 95	N2	1/4 NPT Male	**FTM-60-N2**	.25 (6.35)
		G2	1/4 BSPP Male	**FTM-60-G2**	
		M10	M10x1.25 Male	**FTM-60-M10**	

Inches (mm)

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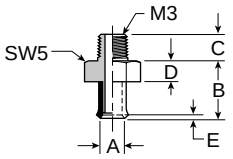
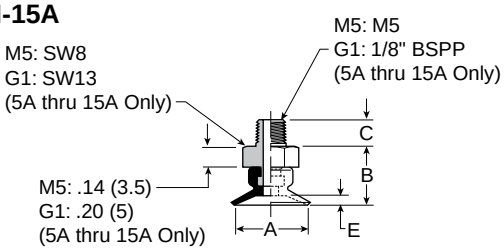
Dimensions

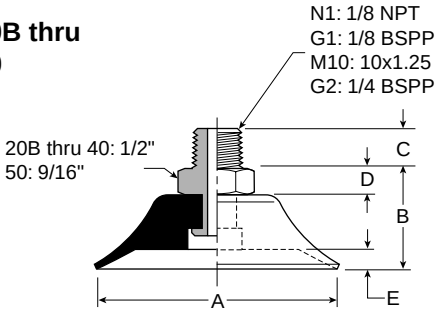
PFTM-1.5A thru PFTM-3.5A



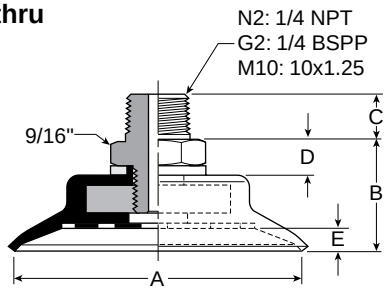
PFTM-5A thru PFTM-15A



PFTM-20B thru PFTM-50



PFTM-60 thru PFTM-95



Model Number	ØA	B	C (M3)	C (M5)	C (N1 / G1)	C (M10 / G2)	C (N2)	D	E
PFTM-1.5A-*-†	.06 (1.5)	.28 (7.0)	.12 (3)	—	—	—	—	.12 (3)	.02 (0.4)
PFTM-2A-*-†	.08 (2)	.28 (7.0)	.12 (3)	—	—	—	—	.12 (3)	.02 (0.5)
PFTM-3.5A-*-†	.14 (3.5)	.28 (7.0)	.12 (3)	—	—	—	—	.12 (3)	.02 (0.5)
PFTM-5A-*-†	.20 (5)	.39 (10)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.31 (8)
PFTM-6A-*-†	.24 (6)	.39 (10)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.31 (8)
PFTM-8A-*-†	.31 (8)	.41 (10.5)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.05 (1.2)
PFTM-10A-*-†	.39 (10)	.43 (11)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.06 (1.5)
PFTM-15A-*-†	.59 (15)	.45 (11.5)	—	.18 (4.5)	.31 (8)	—	—	See Dwg.	.08 (2)
PFTM-20B-*-†	.79 (20)	.69 (17.5)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.10 (2.5)
PFTM-25-*-†	.98 (25)	.75 (19)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.12 (3)
PFTM-30-*-†	1.18 (30)	.67 (17)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.08 (2)
PFTM-35-*-†	1.38 (35)	.75 (19)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.12 (3)
PFTM-40-*-†	1.57 (40)	.75 (19)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.14 (3.5)
PFTM-50-*-†	1.97 (50)	.79 (20)	—	—	.31 (8)	.39 (10)	—	.20 (5)	.16 (4)
PFTM-60-*-†	2.36 (60)	.90 (23)	—	—	—	.39 (10)	.59 (15)	.28 (7)	.20 (5)
PFTM-80-*-†	3.15 (80)	.98 (25)	—	—	—	.39 (10)	.59 (15)	.28 (7)	.24 (6)
PFTM-95-*-†	3.74 (95)	1.00 (25.5)	—	—	—	.39 (10)	.59 (15)	.28 (7)	.24 (6)

Inches (mm)

* Cup Material
† Thread Size

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Pneumatic Division
Richland, Michigan
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PFTF Vacuum Cup Assemblies

Model Number Index

PFTF - 5A - NBR - M5

Cup Diameter (mm)			
5A	**(5)**	**40**	**(40)**
6A	**(6)**	**50**	**(50)**
8A	**(8)**	**60**	**(60)**
10A	**(10)**	80	(80)
15A	**(15)**	95	(95)
20B	**(20)**	**120**	**(120)**
25	(25)	**150**	**(150)**
30	**(30)**	**200**	**(200)**
35	**(35)**		

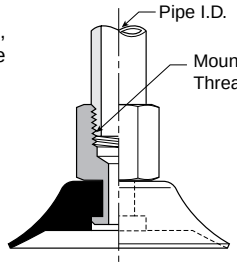
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

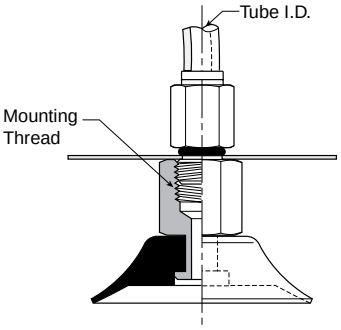
Mounting Thread	
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
M10	**M10**
N2	**1/4 NPT**
G2	**1/4 BSPP**
N4	**1/2 NPT**
G4	1/2 BSPP
See Chart Below	

(Bold Items are Most Popular)

Installation

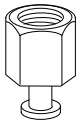
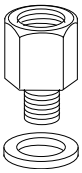
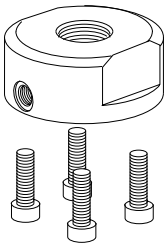
Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.





Female Thread Fitting for PFG Cups

(Bold Items are Most Popular)

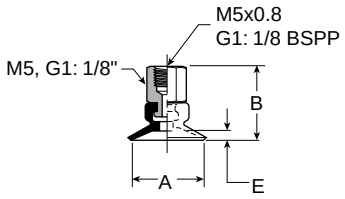
Included in Kit	Cup Diameter (mm)	Mounting Thread Code	Mounting Thread	FTF Fitting Part Number	Min. Tube ID
	5, 6, 8, 10, 15	M5	M5x0.8 Female	**FTF-5A-M5**	.157 (4)
		G1	1/8 BSPP Male	**FTF-5A-G1**	
	20, 25, 30, 35, 40	N1	1/8 NPT Female	**FTF-20B-N1**	.157 (4)
		G1	1/8 BSPP Female	**FTF-20B-G1**	
		G2	1/4 BSPP Female	**FTF-20B-G2**	
	50	N1	1/8 NPT Female	**FTF-50-N1**	.157 (4)
		G1	1/8 BSPP Female	**FTF-50-G1**	
		G2	1/4 BSPP Female	**FTF-50-G2**	
	60, 80, 95	N2	1/4 NPT Female	**FTF-60-N2**	.25 (6.35)
		G2	1/4 BSPP Female	**FTF-60-G2**	
	120, 150, 200	N4	1/2 NPT Female	**FTF-120-N4**	.312 (8)
		G4	1/2 BSPP Female	FTF-120-G4	

Inches (mm)

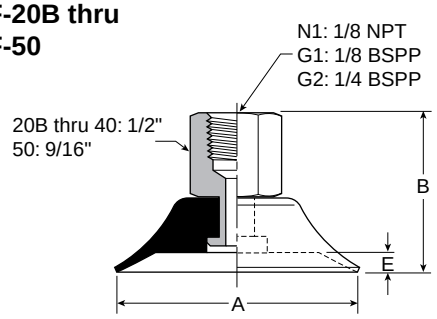
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

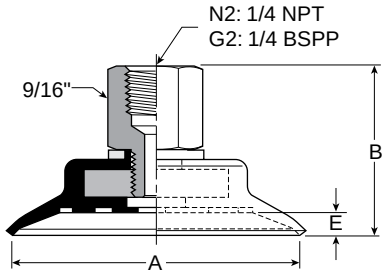
PFTF-5A thru PFTF-15A



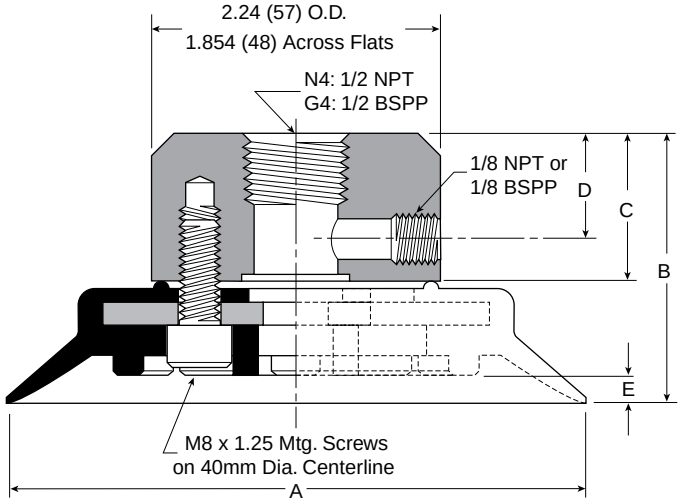
PFTF-20B thru PFTF-50



PFTF-60 thru PFTF-95



PFTF-120 thru PFTF-200



Model Number	ØA	B	B (M5)	C	D	E
PFTF-5A-*-†	.20 (5)	.57 (14.5)	.81 (20.5)	—	—	.03 (.8)
PFTF-6A-*-†	.24 (6)	.57 (14.5)	.81 (20.5)	—	—	.03 (.8)
PFTF-8A-*-†	.31 (8)	.59 (15)	.83 (21)	—	—	.05 (1.2)
PFTF-10A-*-†	.39 (10)	.57 (14.5)	.81 (20.5)	—	—	.06 (1.5)
PFTF-15A-*-†	.59 (15)	.63 (16)	.87 (22)	—	—	.08 (2)
PFTF-20B-*-†	.79 (20)	1.04 (26.5)	—	—	—	.10 (2.5)
PFTF-25-*-†	.98 (25)	1.10 (28)	—	—	—	.12 (3)
PFTF-30-*-†	1.18 (30)	1.02 (26)	—	—	—	.08 (2)
PFTF-35-*-†	1.38 (35)	1.10 (28)	—	—	—	.12 (3)
PFTF-40-*-†	1.57 (40)	1.10 (28)	—	—	—	.16 (4)
PFTF-50-*-†	1.97 (50)	1.14 (29)	—	—	—	.16 (4)
PFTF-60-*-†	2.36 (60)	1.40 (35.5)	—	—	—	.20 (5)
PFTF-80-*-†	3.15 (80)	1.48 (37.5)	—	—	—	.24 (6)
PFTF-95-*-†	3.74 (95)	1.50 (38)	—	—	—	.24 (6)
PFTF-120-*-†	4.72 (120)	1.83 (46.5)	—	.94 (24)	.51 (13)	.24 (6)
PFTF-150-*-†	5.91 (150)	2.11 (53.5)	—	.94 (24)	.51 (13)	.35 (9)
PFTF-200-*-†	7.87 (200)	2.30 (58.5)	—	.94 (24)	.51 (13)	.51 (13)

Inches (mm)
* Cup Material
† Thread size

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PFTK Vacuum Cup Assemblies

Model Number Index

PFTK - 2A - NBR - —

Cup Diameter (mm)			
2A	(2)	25	(25)
3.5A	(3.5)	**30**	**(30)**
5A	**(5)**	**35**	**(35)**
6A	**(6)**	**40**	**(40)**
8A	**(8)**	**50**	**(50)**
10A	**(10)**	**60**	**(60)**
15	**(15)**	80	(80)
20	**(20)**	95	(95)

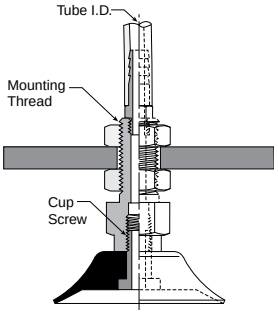
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
See Chart Below	

(Bold Items are Most Popular)

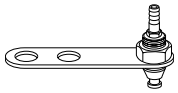
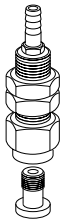
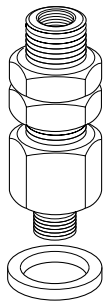
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Barbed Bulkhead for PFG Cups

(Bold Items are Most Popular)

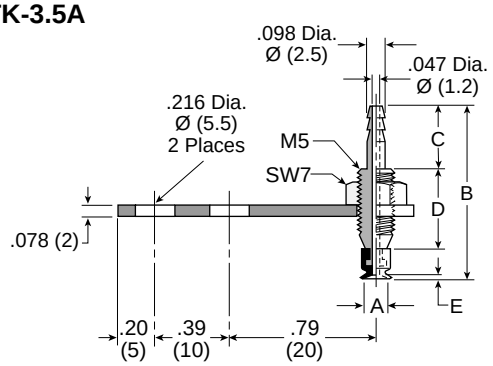
Included in Kit	Cup Diameter (mm)	Vacuum Port		FTK Fitting Part Number	Cup Screw Only	Mounting Thread	Tube ID
		Code	Thread				
	2, 3.5	Blank	Barb	**FTK-2A**	N/A	M5x0.5 Male	.11 (2.5)
	5, 6, 8, 10	Blank	Barb	**FTK-5A**	N/A	M9x1.0 Male	.157 (4)
	15	Blank	Barb	**FTK-15**	**TN-PF-15-M5**	M8x1.25 Male	.157 (4)
	20	Blank	Barb	**FTK-20**	**TN-PF-20-M5**	M8x1.25 Male	.157 (4)
	25, 30, 35, 40	Blank	Barb	**FTK-25**	**TN-PF-25-M6**	M10x1.5 Male	.157 (4)
	50	Blank	Barb	**FTK-50**	**TN-PF-50-M8**	M10x1.5 Male	.157 (4)
	60, 80, 95	N1	1/8 NPT	**FTK-60-N1**	N/A	M16x1.5 Male	N/A
		G1	1/8 BSPP	FTK-60-G1	N/A	M16x1.5 Male	N/A
		R1	1/8 BSPT	FTK-60-R1	N/A	M16x1.5 Male	N/A

Inches (mm)

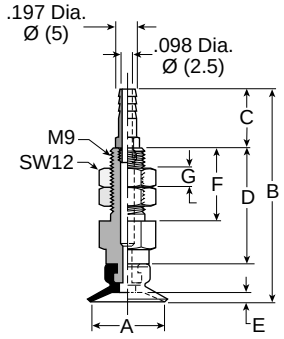
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

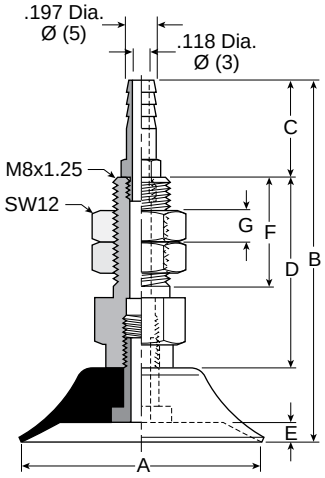
PFTK-2A thru PFTK-3.5A



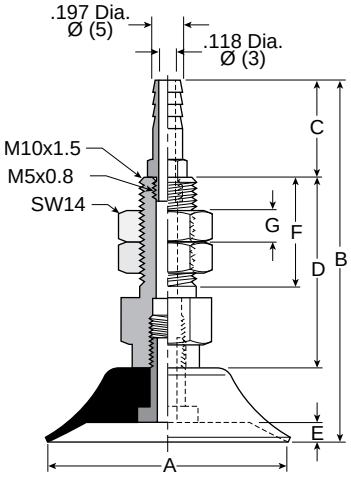
PFTK-5A thru PFTK-10A



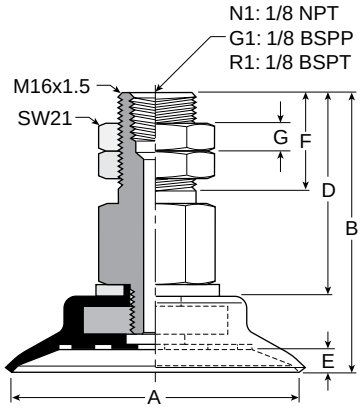
PFTK-15 thru PFTK-20



PFTK-25 thru PFTK-50



PFTK-60 thru PFTK-95



Model Number	ØA	B	C	D	E	F	G	Wt oz. (g)
PFTK-2A-*	.08 (2)	.93 (23.5)	.33 (8.5)	.43 (11)	.02 (.5)	—	—	.28 (8)
PFTK-3.5A-*	.14 (3.5)	.93 (23.5)	.33 (8.5)	.43 (11)	.02 (.5)	—	—	.28 (8)
PFTK-5A-*	.20 (5)	1.20 (30.5)	.39 (10)	.55 (14)	.03 (.8)	.61 (15.5)	.12 (3)	.39 (11)
PFTK-6A-*	.24 (6)	1.20 (30.5)	.39 (10)	.55 (14)	.03 (.8)	.61 (15.5)	.12 (3)	.39 (11)
PFTK-8A-*	.31 (8)	1.22 (31)	.39 (10)	.55 (14)	.05 (1.2)	.61 (15.5)	.12 (3)	.39 (11)
PFTK-10A-*	.39 (10)	1.81 (46)	.63 (16)	.88 (22.5)	.06 (1.5)	.61 (15.5)	.12 (3)	.53 (15)
PFTK-15-*	.59 (15)	1.81 (46)	.63 (16)	.86 (22)	.07(1.9)	.59 (15)	.12 (3)	.71 (20)
PFTK-20-*	.79 (20)	1.89 (48)	.63 (16)	.86 (22)	.09 (2.3)	.59 (15)	.20 (5)	.71 (20)
PFTK-25-*	.98 (25)	2.44 (62)	.63 (16)	1.26 (32)	.12 (3)	.71 (20)	.20 (5)	1.41 (40)
PFTK-30-*	1.18 (30)	2.36 (60)	.63 (16)	1.26 (32)	.08 (2)	.71 (20)	.20 (5)	1.41 (40)
PFTK-35-*	1.38 (35)	2.44 (62)	.63 (16)	1.26 (32)	.12 (3)	.71 (20)	.20 (5)	1.41 (40)
PFTK-40-*	1.57 (40)	2.44 (62)	.63 (16)	1.26 (32)	.14 (3.5)	.71 (20)	.20 (5)	1.41 (40)
PFTK-50-*	1.97 (50)	2.48 (63)	.63 (16)	1.26 (32)	.16 (4)	.71 (20)	.20 (5)	1.77 (50)
PFTK-60-*-†	2.36 (60)	2.30 (58.5)	—	1.67 (42.5)	.20 (5)	.79 (20)	.24 (6)	4.59 (130)
PFTK-80-*-†	3.15 (80)	2.38 (60.5)	—	1.67 (42.5)	.24 (6)	.79 (20)	.24 (6)	6.00 (170)
PFTK-95-*-†	3.74 (95)	2.40 (61)	—	1.67 (42.5)	.24 (6)	.79 (20)	.24 (6)	7.77 (220)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PFYK Vacuum Cup Assemblies

Model Number Index

PFYK - 5A - NBR - —

Cup Diameter (mm)			
2A	(2)	**35**	**(35)**
3.5A	(3.5)	**40**	**(40)**
5A	**(5)**	**50**	**(50)**
6A	**(6)**	**60**	**(60)**
8A	**(8)**	80	(80)
10A	**(10)**	95	(95)
15	**(15)**	**120**	**(120)**
20	**(20)**	**150**	**(150)**
25	(25)	**200**	**(200)**
30	**(30)**		

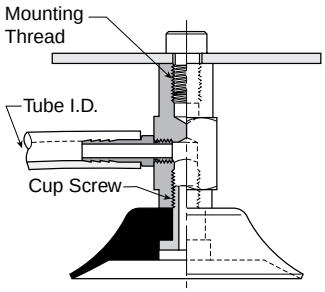
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
See Chart Below	

(Bold Items are Most Popular)

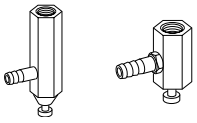
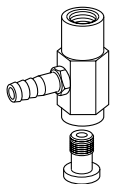
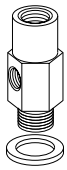
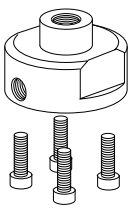
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



90° Barbed Adapter for PFG Cups

(Bold Items are Most Popular)

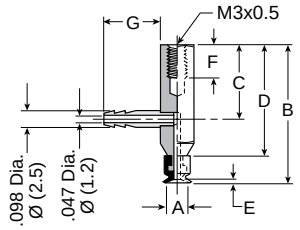
Included in Kit	Cup Diameter (mm)	Vacuum Port		FYK Fitting Part Number	Cup Screw Only	Mounting Thread	Tube ID
		Code	Thread				
	2, 3.5	Blank	Barb	**FYK-2A**	N/A	M3x0.5 Female	.078 (2)
	5, 6, 8, 10	Blank	Barb	**FYK-5A**	N/A	M4x0.7 Female	.157 (4)
	15	Blank	Barb	**FYK-15**	**TN-PF-15-M5**	M4x0.7 Female	.157 (4)
	20	Blank	Barb	**FYK-20**	**TN-PF-20-M5**	M4x0.7 Female	
	25, 30, 35, 40	Blank	Barb	**FYK-25**	**TN-PF-25-M6**	M6x1.0 Female	
	50	Blank	Barb	**FYK-50**	**TN-PF-50-M8**	M6x1.0 Female	
	60, 80, 95	N1	1/8 NPT	**FYK-60-N1**	N/A	M8x1.25 Female	N/A
		G1	1/8 BSPP	FYK-60-G1		M8x1.25 Female	
		R1	1/8 BSPT	FYK-60-R1		M8x1.25 Female	
	120, 150, 200	N1	1/8 NPT	**FYK-120-N1**	N/A	M16x1.5 Female	N/A
		G1	1/8 BSPP	FYK-120-G1		M16x1.5 Female	
		R1	1/8 BSPT	FYK-120-R1		M16x1.5 Female	

Inches (mm)

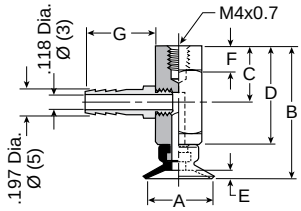
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

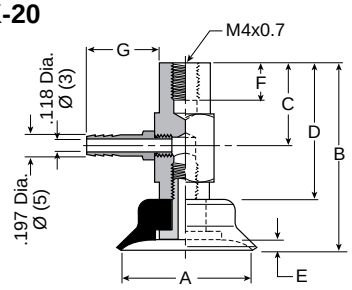
PFYK-2A thru PFYK-3.5A



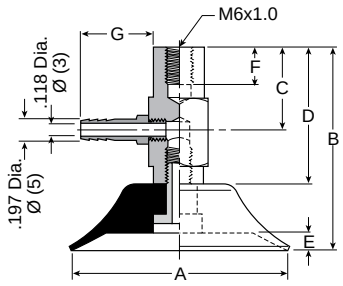
PFYK-5A thru PFYK-10A



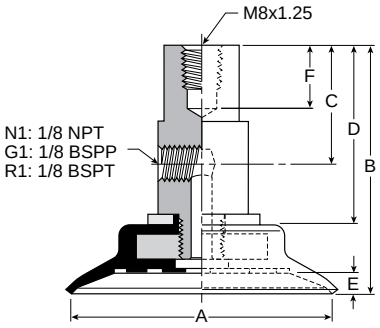
PFYK-15 thru PFYK-20



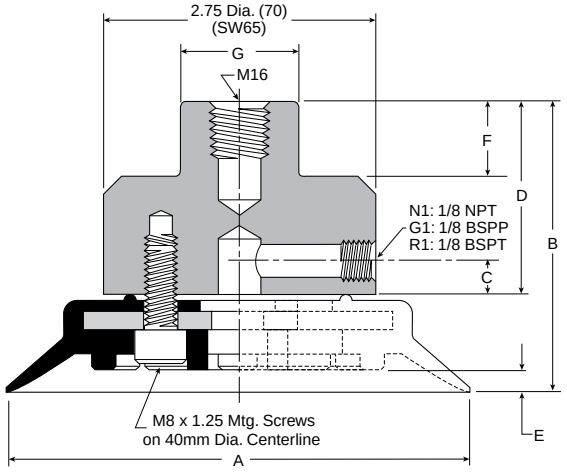
PFYK-25 thru PFYK-50



PFYK-60 thru PFYK-95



PFYK-120 thru PFYK-200



Model Number	ØA	B	C	D	E	F	G	Wt oz (g)
PFYK-2A-*	.08 (2)	.79 (20)	.43 (11)	.63 (16)	.02 (.5)	.02 (.5)	.33 (8.5)	.11 (3)
PFYK-3.5A-*	.14 (3.5)	.79 (20)	.43 (11)	.63 (16)	.02 (.5)	.02 (.5)	.33 (8.5)	.11 (3)
PFYK-5A-*	.20 (5)	1.14 (29)	.51 (13)	.89 (22.5)	.03 (.8)	.24 (6)	.63 (16)	.56 (16)
PFYK-6A-*	.24 (6)	1.14 (29)	.51 (13)	.89 (22.5)	.03 (.8)	.24 (6)	.63 (16)	.56 (16)
PFYK-8A-*	.31 (8)	1.16 (29.5)	.51 (13)	.89 (22.5)	.05 (1.2)	.24 (6)	.63 (16)	.56 (16)
PFYK-10A-*	.39 (10)	1.18 (30)	.51 (13)	.89 (22.5)	.06 (1.5)	.24 (6)	.63 (16)	.56 (16)
PFYK-15-*	.59 (15)	1.18 (30)	.55 (14)	.87 (22)	.07 (1.9)	.24 (6)	.63 (16)	.71 (20)
PFYK-20-*	.79 (20)	1.26 (32)	.55 (14)	.87 (22)	.09 (2.3)	.24 (6)	.63 (16)	.71 (20)
PFYK-25-*	.98 (25)	1.81 (46)	.79 (20)	1.26 (32)	.12 (3)	.31 (8)	.63 (16)	1.41 (40)
PFYK-30-*	1.18 (30)	1.73 (44)	.79 (20)	1.26 (32)	.08 (2)	.31 (8)	.63 (16)	1.41 (40)
PFYK-35-*	1.38 (35)	1.81 (46)	.79 (20)	1.26 (32)	.12 (3)	.31 (8)	.63 (16)	1.41 (40)
PFYK-40-*	1.57 (40)	1.81 (46)	.79 (20)	1.26 (32)	.14 (3.5)	.31 (8)	.63 (16)	1.77 (50)
PFYK-50-*	1.97 (50)	1.85 (47)	.79 (20)	1.26 (32)	.16 (4)	.31 (8)	.63 (16)	1.94 (55)
PFYK-60-*-†	2.36 (60)	2.30 (58.5)	1.10 (28)	1.57 (40)	.20 (5)	.43 (11)	—	4.24 (120)
PFYK-80-*-†	3.15 (80)	2.38 (60.5)	1.10 (28)	1.57 (40)	.24 (6)	.43 (11)	—	5.65 (160)
PFYK-95-*-†	3.74 (95)	2.40 (61)	1.10 (28)	1.57 (40)	.24 (6)	.43 (11)	—	7.42 (210)
PFYK-120-*-†	4.72 (120)	2.94 (75.5)	.47 (12)	1.97 (50)	.24 (6)	.79 (20)	1.18 Dia. (30)	22.6 (640)
PFYK-150-*-†	5.91 (150)	3.25 (82.5)	.47 (12)	1.97 (50)	.35 (9)	.79 (20)	1.18 Dia. (30)	32.1 (910)
PFYK-200-*-†	7.87 (200)	3.44 (87.5)	.47 (12)	1.97 (50)	.51 (13)	.79 (20)	1.18 Dia. (30)	42.4 (1200)

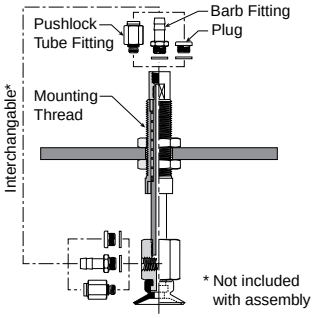
Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PFTYS Vacuum Cup Assemblies

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Shown are interchangable connectors & plugs for port connections.



Model Number Index

PFTYS | **2A** | **15** | **NBR** | **M5**

Cup Diameter (mm)		Stroke (mm)
2A	(2)	**3, 10, 15**
3.5A	(3.5)	
5A	**(5)**	
6A	**(6)**	
8A	**(8)**	
10A	**(10)**	
15A	**(15)**	
20B	**(20)**	**6, 15, 30**
25	(25)	
30	**(30)**	
35	**(35)**	
40	**(40)**	
50	**(50)**	
60	**(60)**	**30*, 50*, 70***
80	(80)	
95	(95)	
120	**(120)**	**20,** 70
150	**(150)**	
200	**(200)**	

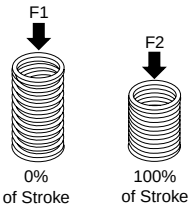
* Stroke reduced by 5mm due to shock pad.

Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Vacuum Port	
M3	**M3**
M5	**M5**
N1	**1/8 NPT**
N2	**1/4 NPT**
See Chart Below	

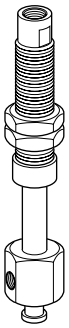
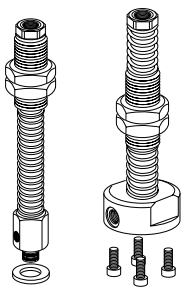
(Bold Items are Most Popular)

Compression Force



Bulkhead Level Compensator for PFG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Vacuum Port Code	Vacuum Port Thread	TYS Assembly Part Number	Stroke	F1 lbf (N)	F2 lbf (N)
	2, 3.5	M3	M3x0.5 Female	**TYS-2A-3**	3mm	.11 (.49)	.13 (.59)
				TYS-2A-10	10mm	.11 (.49)	
				TYS-2A-15	15mm	.11 (.49)	
	5, 6, 8, 10, 15	M5	M5x0.8 Female	**TYS-5A-3**	3mm	.11 (.49)	.13 (.59)
				TYS-5A-10	10mm	.14 (.61)	.26 (1.17)
				TYS-5A-15	15mm	.15 (.64)	.26 (1.17)
	20, 25, 30, 35, 40	M5	M5x0.8 Female	**TYS-20B-6**	6mm	.56 (2.5)	.79 (3.4)
				TYS-20B-15	15mm	.56 (2.5)	1.2 (4.9)
				TYS-20B-30	30mm	.67 (2.9)	1.4 (5.9)
	50	M5	M5x0.8 Female	**TYS-50-6**	6mm	.56 (2.5)	.79 (3.4)
				TYS-50-15	15mm	.56 (2.5)	1.2 (4.9)
				TYS-50-30	30mm	.67 (2.9)	1.4 (5.9)
	60, 80, 95	N1	1/8 NPT Female	**TYS-60-30**	30mm	1.6 (6.8)	3.6 (15.6)
				TYS-60-50	50mm	1.9 (8.3)	4.5 (19.6)
				TYS-60-70	70mm	2.2 (9.5)	4.8 (21)
	120, 150, 200	N2	1/4 NPT Female	**TYS-120-20**	20mm	3.6 (15.6)	6.8 (29)
				TYS-120-70	70mm	3.4 (14.7)	

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
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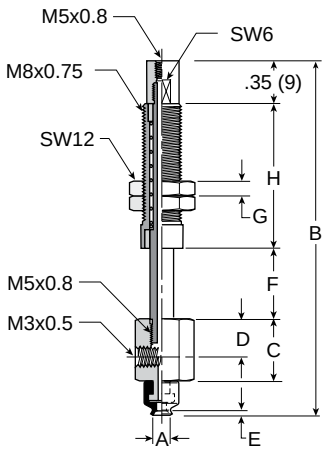
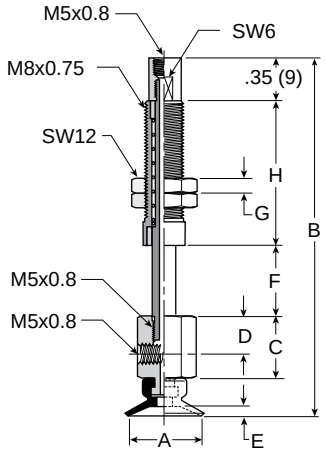
Dimensions

PFTYS2A3 thru
PFTYS3.5A15



PFTYS5A3 thru
PFTYS15A15



Model Number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PFTYS2A3*†	.08 (2)	1.97 (50)	.43 (11)	.28 (7)	.02 (.5)	.12 (3)	.12 (3)	.91 (23)	.21 (6)
PFTYS2A10*†	.08 (2)	2.24 (57)	.43 (11)	.28 (7)	.02 (.5)	.39 (10)	.12 (3)	.91 (23)	.39 (11)
PFTYS2A15*†	.08 (2)	2.74 (69.5)	.43 (11)	.28 (7)	.02 (.5)	.59 (15)	.12 (3)	1.20 (30.5)	.53 (15)
PFTYS3.5A3*†	.12 (3.5)	1.97 (50)	.43 (11)	.28 (7)	.02 (.5)	.12 (3)	.12 (3)	.91 (23)	.21 (6)
PFTYS3.5A10*†	.12 (3.5)	2.24 (57)	.43 (11)	.28 (7)	.02 (.5)	.39 (10)	.12 (3)	.91 (23)	.39 (11)
PFTYS3.5A15*†	.12 (3.5)	2.74 (69.5)	.43 (11)	.28 (7)	.02 (.5)	.59 (15)	.12 (3)	1.20 (30.5)	.53 (15)
PFTYS5A3*†	.20 (5)	2.13 (54)	.51 (13)	.31 (8)	.03 (.8)	.12 (3)	.12 (3)	.91 (23)	.25 (7)
PFTYS5A10*†	.20 (5)	2.42 (61.5)	.51 (13)	.31 (8)	.03 (.8)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS5A15*†	.20 (5)	2.91 (74)	.51 (13)	.31 (8)	.03 (.8)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS6A3*†	.24 (6)	2.15 (54.5))	.51 (13)	.31 (8)	.03 (.8)	.12 (3)	.12 (3)	.91 (23)	.25 (7)
PFTYS6A10*†	.24 (6)	2.42 (61.5)	.51 (13)	.31 (8)	.03 (.8)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS6A15*†	.24 (6)	2.91 (74)	.51 (13)	.31 (8)	.03 (.8)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS8A3*†	.31 (8)	2.17 (55.5)	.51 (13)	.31 (8)	.05 (1.2)	.12 (3)	.12 (3)	.91 (23)	.25 (7)
PFTYS8A10*†	.31 (8)	2.44 (62)	.51 (13)	.31 (8)	.05 (1.2)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS8A15*†	.31 (8)	2.93 (74.5)	.51 (13)	.31 (8)	.05 (1.2)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS10A3*†	.39 (10)	2.14 (54)	.51 (13)	.31 (8)	.06 (1.5)	.12 (3)	.12 (3)	.91 (23)	.64 (18)
PFTYS10A10*†	.39 (10)	2.48 (63)	.51 (13)	.31 (8)	.06 (1.5)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS10A15*†	.39 (10)	2.95 (75)	.51 (13)	.31 (8)	.06 (1.5)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)
PFTYS15A3*†	.59 (15)	2.20 (56)	.51 (13)	.31 (8)	.08 (2)	.12 (3)	.12 (3)	.91 (23)	.64 (18)
PFTYS15A10*†	.59 (15)	2.50 (63.5)	.51 (13)	.31 (8)	.08 (2)	.39 (10)	.12 (3)	.91 (23)	.65 (18.5)
PFTYS15A15*†	.59 (15)	2.97 (75.5)	.51 (13)	.31 (8)	.08 (2)	.59 (15)	.12 (3)	1.20 (30.5)	.74 (21)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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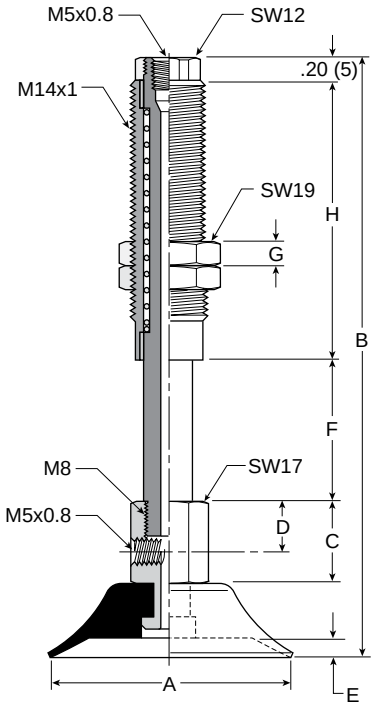
Dimensions

PFTYS20B6 thru PFTYS5030



Model Number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PFTYS20B6*†	.79 (20)	3.01 (76.5)	.67 (17)	.39 (10)	.09 (2.3)	.24 (6)	.20 (5)	1.42 (36)	2.3 (65)
PFTYS20B15*†	.79 (20)	3.37 (85.5)	.67 (17)	.39 (10)	.09 (2.3)	.59 (15)	.20 (5)	1.42 (36)	2.5 (71)
PFTYS20B30*†	.79 (20)	4.82 (122.5)	.67 (17)	.39 (10)	.09 (2.3)	1.18 (30)	.20 (5)	2.28 (58)	3.4 (96)
PFTYS256*†	.98 (25)	3.07 (78)	.67 (17)	.39 (10)	.12 (3)	.24 (6)	.20 (5)	1.42 (36)	2.3 (66)
PFTYS2515*†	.98 (25)	3.43 (87)	.67 (17)	.39 (10)	.12 (3)	.59 (15)	.20 (5)	1.42 (36)	2.5 (71)
PFTYS2530*†	.98 (25)	4.88 (124)	.67 (17)	.39 (10)	.12 (3)	1.18 (30)	.20 (5)	2.28 (58	3.4 (96)
PFTYS306*†	1.18 (30)	2.99 (76)	.67 (17)	.39 (10)	.08 (2)	.24 (6)	.20 (5)	1.42 (36)	2.4 (67)
PFTYS3015*†	1.18 (30)	3.35 (85)	.67 (17)	.39 (10)	.08 (2)	.59 (15)	.20 (5)	1.42 (36)	2.5 (72)
PFTYS3030*†	1.18 (30)	4.80 (122)	.67 (17)	.39 (10)	.08 (2)	1.18 (30)	.20 (5)	2.28 (58	3.5 (97)
PFTYS356*†	1.38 (35)	3.07 (78)	.67 (17)	.39 (10)	.12 (3)	.24 (6)	.20 (5)	1.42 (36)	2.5 (71)
PFTYS3515*†	1.38 (35)	3.43 (87)	.67 (17)	.39 (10)	.12 (3)	.59 (15)	.20 (5)	1.42 (36)	2.6 (74)
PFTYS3530*†	1.38 (35)	4.88 (124)	.67 (17)	.39 (10)	.12 (3)	1.18 (30)	.20 (5)	2.28 (58	3.5 (99)
PFTYS406*†	1.57 (40)	3.07 (78)	.67 (17)	.39 (10)	.14 (3.5)	.24 (6)	.20 (5)	1.42 (36)	2.5 (71)
PFTYS4015*†	1.57 (40)	3.43 (87)	.67 (17)	.39 (10)	.14 (3.5)	.59 (15)	.20 (5)	1.42 (36)	2.7 (76)
PFTYS4030*†	1.57 (40)	4.88 (124)	.67 (17)	.39 (10)	.14 (3.5)	1.18 (30)	.20 (5)	2.28 (58	3.6 (101)
PFTYS506*†	1.97 (50)	3.11 (79)	.67 (17)	.39 (10)	.16 (4)	.24 (6)	.20 (5)	1.42 (36)	2.8 (80)
PFTYS5015*†	1.97 (50)	3.46 (88)	.67 (17)	.39 (10)	.16 (4)	.59 (15)	.20 (5)	1.42 (36)	3.0 (85)
PFTYS5030*†	1.97 (50)	4.92 (125)	.67 (17)	.39 (10)	.16 (4)	1.18 (30)	.20 (5)	2.28 (58)	3.9 (110)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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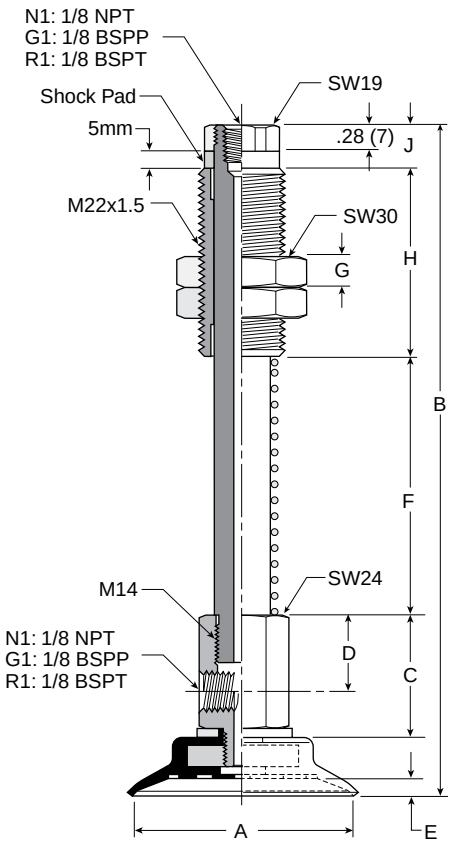
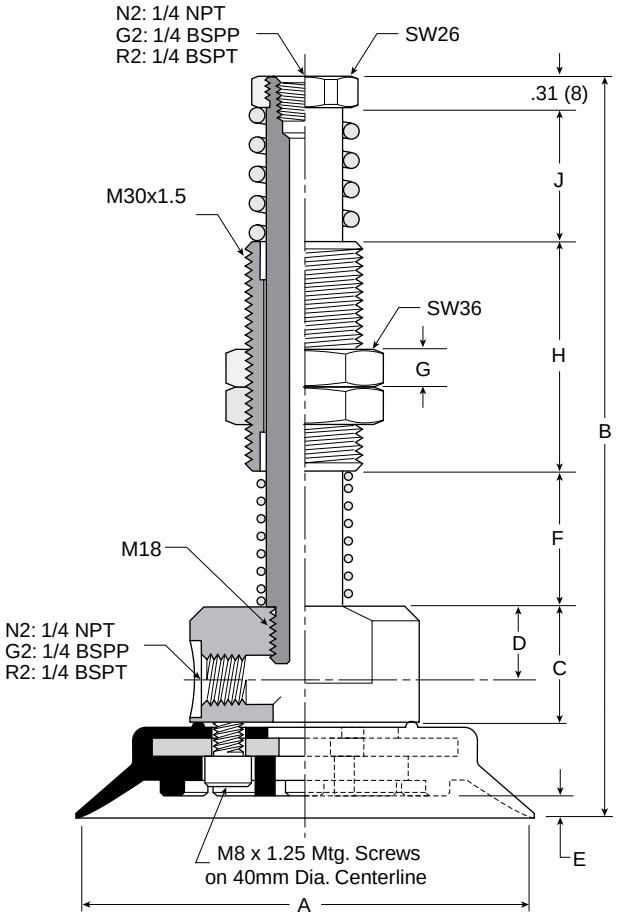
Dimensions

PFTYS6030 thru PFTYS9570



PFTYS12020 thru PFTYS20070



Model Number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PFTYS6030*†	2.36 (60)	6.02 (153)	1.28 (32.5)	.78 (20)	.20 (5)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	9.7 (282)
PFTYS6050*†	2.36 (60)	7.01 (178)	1.28 (32.5)	.78 (20)	.20 (5)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	11.2 (316)
PFTYS6070*†	2.36 (60)	7.99 (203)	1.28 (32.5)	.78 (20)	.20 (5)	3.74 (95)	.39 (10)	1.97 (50)	.47 (12)	12.1 (343)
PFTYS8030*†	3.15 (80)	6.10 (155)	1.28 (32.5)	.78 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	11 (310)
PFTYS8050*†	3.15 (80)	7.09 (180)	1.28 (32.5)	.78 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	12.2 (344)
PFTYS8070*†	3.15 (80)	8.07 (205)	1.28 (32.5)	.78 (20)	.24 (6)	3.74 (95)	.39 (10)	1.97 (50)	.47 (12)	13.1 (371)
PFTYS9530*†	3.74 (95)	6.12 (156)	1.28 (32.5)	.78 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	12.4 (350)
PFTYS9550*†	3.74 (95)	7.11 (181)	1.28 (32.5)	.78 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	13.6 (384)
PFTYS9570*†	3.74 (95)	8.09 (201)	1.28 (32.5)	.78 (20)	.24 (6)	3.74 (95)	.39 (10)	1.97 (50)	.47 (12)	14.5 (411)
PFTYS12020*†	4.72 (120)	7.56 (192)	1.28 (32.5)	.71 (18)	.24 (6)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	41.2 (1165)
PFTYS12070*†	4.72 (120)	10.12 (257)	1.28 (32.5)	.71 (18)	.24 (6)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	44 (1246)
PFTYS15020*†	5.91 (150)	7.83 (199)	1.28 (32.5)	.71 (18)	.35 (9)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	49 (1389)
PFTYS15070*†	5.91 (150)	10.39 (264)	1.28 (32.5)	.71 (18)	.35 (9)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	52 (1471)
PFTYS20020*†	7.87 (200)	8.03 (204)	1.28 (32.5)	.71 (18)	.51 (13)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	62 (1755)
PFTYS20070*†	7.87 (200)	10.59 (269)	1.28 (32.5)	.71 (18)	.51 (13)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	64.9 (1836)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

P5V-CFS Double Lip Flat Cups

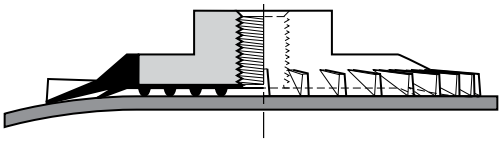
Features

- **Double Sealing Lips for Flexible Sheet Handling**
- **Vacuum Cup Grooves on Underside Increase Holding Area**
- **Resists Acceleration and Deceleration Shear Forces**
- **Strong Low Profile for Fast Response**
- **Metal Insert Fitting for Stable Vertical and Horizontal Lifts**

Applications

These suction cups are ideal for applications where the product may flex when being lifted. All cups have a double sealing lip and cleats to increase holding capacity.
The top of the cup has a ribbed outer lip to prevent it from rolling over the surface to be lifted.

Dual sealing lips provide 2 seals for vacuum. As the product flexes, the outer lip seal may break, but the inner lip seal will hold the degree of vacuum for continued lifting capacity. In these types of applications, sizing should be done on the inner diameter cup dimension.



Bottom View

Parker Hannifin Corporation
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Richland, Michigan
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Model Number Index

P5V - CFS 15014 N

Cup Diameter (mm)	
05011	**(50)**
10013	**(100)**
15014	**(150)**

Cup Material
N Nitrile Rubber
Available (Consult Factory)
S Silicone

(Bold Items are Most Popular)

Specifications

All Cups come standard with Female Vacuum Ports. (BSPP)

Part Number	**Cup Diameter** (mm)	**Thread Size**
05011	(50)	1/8"
10013	(100)	3/8"
15014	(150)	1/2"

* 300mm Cup has an additional 1/2" female port for increase vacuum flow.

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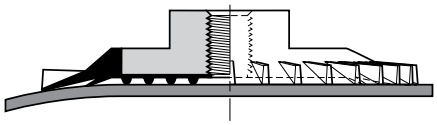
Application Guide

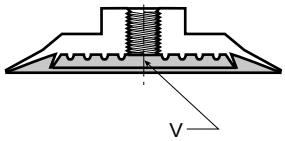
Flat - Smooth Surface



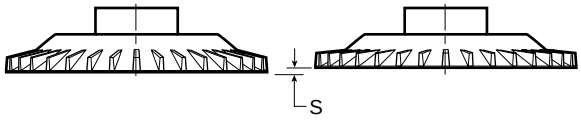
- Products With Smooth Surfaces
- Destacking Applications

Main Data for Flat P5V-CFS Cups

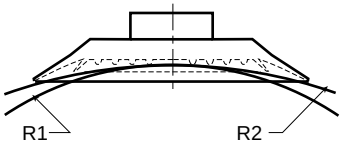
Volume



Cup Deflection



Radius



Model Number	Cup Diameter Inches (mm)		Area*** cm^2	Cup Volume (V) Liters	Deflection (S) (mm)	Radius R (mm)	
	Inner	Outer				R1*	R2**
P5V-CFS05011	1.38 (35)	1.97 (50)	19.6	.001	.16 (4)	3.86 (98)	3.15 (80)
P5V-CFS10013	2.83 (72)	3.94 (100)	78.5	.0667	.30 (8)	10.00 (254)	6.34 (161)
P5V-CFS15014	4.17 (106)	5.91 (150)	176.7	.2083	.43 (11)	12.17 (309)	9.92 (252)

* Minimum permissible radius for lifting using inner lip.

** Minimum permissible radius for lifting using outer lip.

*** Area based on Outer Cup Diameter

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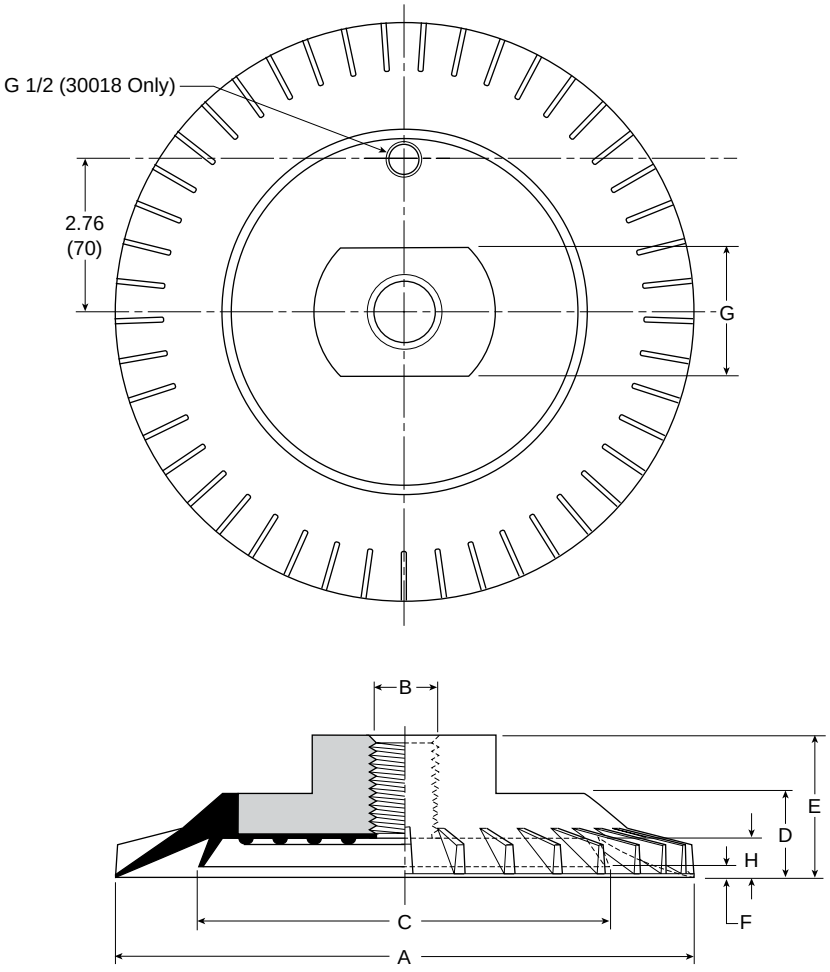
Dimensions



Model Number	ØA	B	ØC	D	E	F	G	H
P5V-CFS50*	1.97 (50)	G1/8	1.38 (35)	0.43 (11)	0.71 (18)	0.087 (2.2)	0.51 (13)	0.146 (3.7)
P5V-CFS100*	3.94 (100)	G3/8	2.83 (72)	0.71 (18)	1.10 (28)	0.197 (5)	0.87 (22)	0.295 (7.5)
P5V-CFS150*	5.91 (150)	G1/2	4.17 (106)	1.02 (26)	1.65 (42)	0.276 (7)	1.06 (27)	0.43 (11)

Inches (mm)
* Cup Material

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PBG Bellows Vacuum Cups

Features

- **Bellows Design for Level Compensation Within Restricted Clearances**
- **Sheet Separation for Flexible and Stacked Products**
- **Soft Seal Lip for Flexible Products**
- **10mm to 150mm Diameters**

Applications

These cups are for curved, corrugated, lightly textured surfaces and flexible product. Under vacuum, the bellow cup will collapse on contact and lift the product for a short distance. This inherent performance facilitates lifting and destack operations by breaking the vacuum between stacked product. The bellow style adds level compensation for applications that have inconsistent stack heights or uneven surfaces. The inclusive 30-degree rotation of the bellow helps maintain the vacuum seal when lifting sheet products that flex. Because of it's shape however the bellows suction cup is not suitable for applications involving lifting vertical surfaces.

PBG Series Vacuum Cups

Versatile bellow cup design provides increased sealing lip and level compensation for products with irregular, smooth, curved surfaces.

PBTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Nickel plated brass materials.

PBTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket. UNF, NPT, G, metric threads. Internal hex for easy assembly. Fitting Material: Aluminum.

PBYK Series 90° Barbed Adapter

Side stem connectors allow you to secure the stem with a bolt through a plate or "L" bracket to allow the tube connection from the side port. Nickel plated brass materials.

PBTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket. NPSF, G threads. Internal hex for easy assembly. Fitting Material: Aluminum.

PBTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.

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Model Number Index (Cups Only)

PBG - 10A - NBR

Cup Diameter (mm)			
10A	(10)	**40**	**(40)**
15A	**(15)**	**50**	**(50)**
20*	**(20)**	**75**	**(75)**
20B**	**(20)**	110	(110)
30	**(30)**	150	(150)

* Available for PBTK & PBYK Cup Assemblies Only.

** Available for PBTM, PBTF & PBTYS Cup Assemblies Only.

Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

(Bold Items are Most Popular)

Specifications

Suction Cup Material	**NBR**	**NBRE**	**CR**	**SI**	**SIE**	**U**	**FKM**	**SH**
	Nitrile	**Nitrile ESD***	**Chloroprene**	**Silicone**	**Silicone ESD***	**Urethane**	**Flouro Rubber**	**Silicone High Temp**
Operating Temperature (°C)	-20° to +120°	-30° to +120°	-30° to +140°	-60° to +250°	-60° to +250°	-30° to +120°	-10° to +230°	-50° to +300°
Color	Black	Black / Blue Dot	Green	White	Black / Red Dot	Blue	Black / White Dot	Grey
Hardness, Shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5	55 ±5	55 ±5	70 ±5	55 ±5
Electrical Resistance (Ωm)	—	800 to 1000	—	—	800 to 1000	—	—	—
Wear Resistance	•••••		•••••	••		••••••	•••	••
Tear Strength	••••		•••••	•		••••••	•	•
Aging Resistance	••••		•••••	••••••		••••••	••••••	••••••
Ozone Resistance	••••		•••••	••••••		••••••	••••••	••••••
Gasoline Resistance	••••••		•••••	••••		••••••	••••••	••••
Oil Resistance	••••••		•••••	••••••		•••••	••••••	••••••
Acid Resistance	•••		•••••	•••		•	••••••	•••
Alkali Resistance	••••		•••••	•••		•	••••••	•••
Chemical Resistance	•••		••••	••		••••••	••••••	••
Mechanical Resistance	••••		••••	••••		•••••	••	••••

•••••• = excellent; ••••• = very good; •••• = good; ••• = medium; •• = poor; • = not recommended

* ESD: Electric Static Dissipative Material

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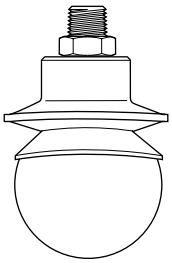
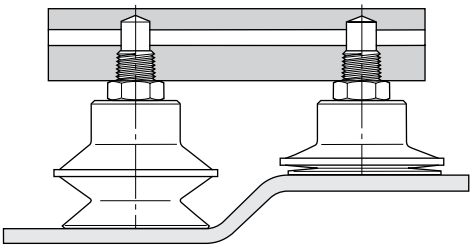
Application Guide

Bellows

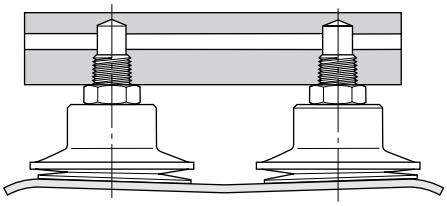
- Round Objects



- Uneven Surfaces
- Curved Product
- Level Compensation

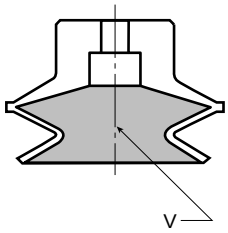


- Flexible Product
- Soft Seal Lip

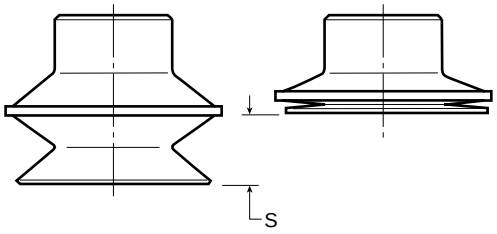


Main Data for Bellows PBG Cups

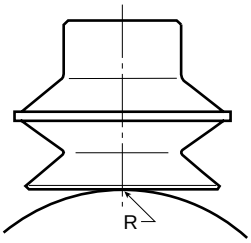
Volume



Cup Deflection



Radius



Model Number	Cup Diameter Inches (mm)	Area cm²	Volume (V) Liters	Lifting Force @60% (N)		Cup Deflection (S) (mm)	Radius (R) (mm)
							
PBG-10A-*	.39 (10)	0.79	.0002	4.80	—	.16 (4)	4
PBG-15A-*	.59 (15)	1.77	.0007	10.80	—	.24 (6)	6
PBG-20-*	.79 (20)	3.14	.001	19.20	—	.35 (9)	8
PBG-20B-*	.79 (20)	3.14	.001	19.20	—	.35 (9)	8
PBG-30-*	1.18 (30)	7.07	.004	43.2	—	.51 (13)	15
PBG-40-*	1.57 (40)	12.60	.009	76.9	—	.51 (13)	30
PBG-50-*	1.97 (50)	19.60	.026	120	—	.79 (20)	40
PBG-75-*	2.95 (75)	44.02	.076	270	—	.87 (22)	70
PBG-110-*	4.33 (110)	95.00	.111	434	—	1.14 (29)	100
PBG-150-*	5.91 (150)	176.70	.260	1081	—	1.50 (38)	130

* Cup Material

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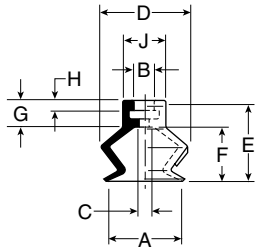
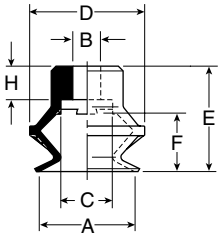
Dimensions

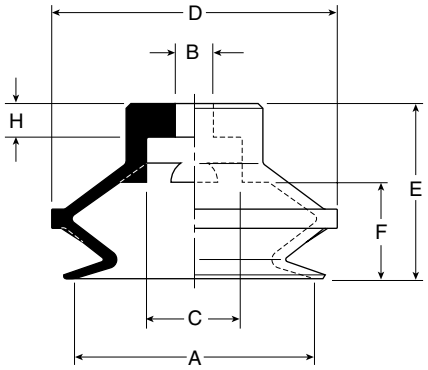
PBG-10A and PBG-20B



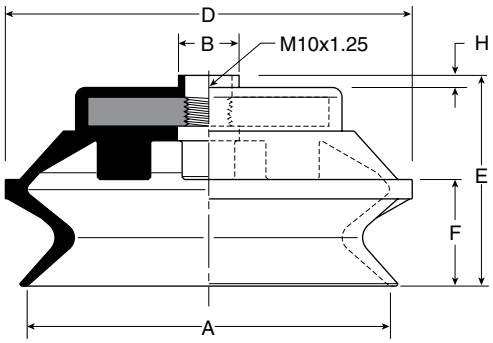
PBG-20 thru PBG-40



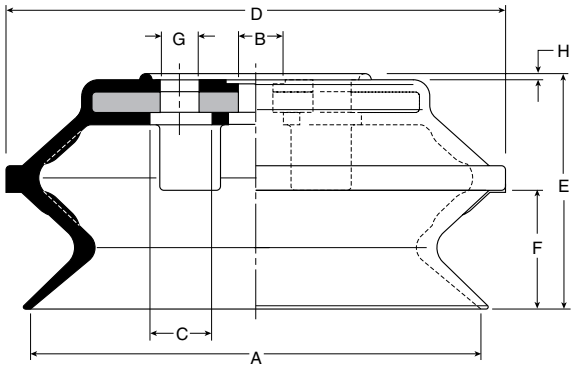
PBG-50



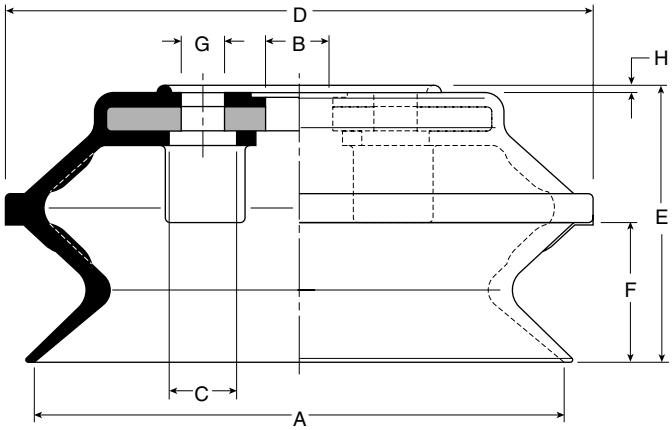
PBG-75



PBG-110



PBG-150



Model Number	ØA	ØB	ØC	ØD	E	F	G	H	ØJ
PBG-10A-*	.42 (10.6)	.16 (4)	.08 (2)	.49 (12.4)	.53 (13.5)	.30 (7.5)	.24 (6)	.08 (2)	.24 (6)
PBG-15A-*	.59 (15)	.16 (4)	.16 (4)	.67 (17)	.63 (16)	.39 (10)	.24 (6)	.08 (2)	.24 (6)
PBG-20B-*	.79 (20)	.24 (6)	.43 (10.8)	.94 (24)	.87 (22)	.47 (12)	—	.28 (7)	—
PBG-20-*	.79 (20)	.18 (4.6)	.43 (10.8)	.94 (24)	.77 (19.5)	.47 (12)	—	.18 (4.5)	—
PBG-30-*	1.18 (30)	.23 (5.8)	.43 (10.8)	1.42 (36)	1.20 (30.5)	.67 (17)	—	.28 (7)	—
PBG-40-*	1.57 (40)	.23 (5.8)	.43 (10.8)	1.81 (46)	1.20 (30.5)	.61 (15.5)	—	.28 (7)	—
PBG-50-*	1.97(50)	.31 (7.8)	.78 (19.8)	2.34 (59.5)	1.44 (36.5)	.79 (20)	—	.28 (7)	—
PBG-75-*	2.95 (75)	.49 (12.5)	—	3.31 (84)	1.71 (43.5)	.87 (22)	—	.10 (2.5)	—
PBG-110-*	4.33 (110)	.55 (14)	.55 (14)	4.80 (122)	2.26 (57.5)	1.14 (29)	—	.059 (1.5)	
PBG-150-*	5.91 (150)	.79 (20)	.55 (14)	6.57 (167)	3.01 (76.5)	1.50 (38)	4xØ9xØ40	.059 (1.5)	—

Inches (mm)

* Cup Material

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PBTM Vacuum Cup Assemblies

Model Number Index

PBTM - 10A - NBR - M5

Cup Diameter (mm)			
10A	(10)	**40**	**(40)**
15A	**(15)**	**50**	**(50)**
20B	**(20)**	**75**	**(75)**
30	**(30)**		

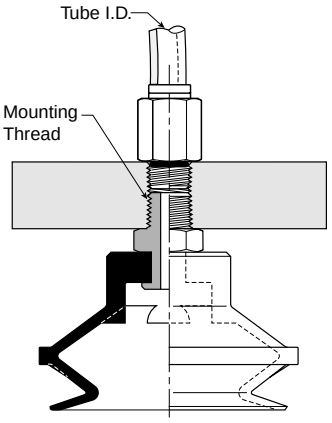
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Mounting Thread	
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
M10	**M10**
N2	**1/4 NPT**
G2	**1/4 BSPP**
See Chart Below	

(Bold Items are Most Popular)

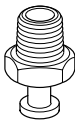
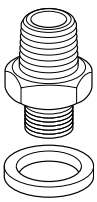
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Male Threaded Fitting for PBG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Mounting Thread Code	Mounting Thread	FTM Fitting Part Number	Min. Tube ID
	10, 15	M5	M5x0.8 Male	**FTM-5A-M5H**	.157 (4)
		G1	1/8 BSPP Male	**FTM-5A-G1**	
	20, 30, 40	N1	1/8 NPT Male	**FTM-20B-N1**	.157 (4)
		G1	1/8 BSPP Male	**FTM-20B-G1H**	
		G2	1/4 BSPP Male	**FTM-20B-G2**	
		M10	M10x1.25 Male	**FTM-20B-M10**	
	50	N1	1/8 NPT Male	**FTM-50-N1**	.157 (4)
		G1	1/8 BSPP Male	**FTM-50-G1H**	
		G2	1/4 BSPP Male	**FTM-50-G2**	
	75	N2	1/4 NPT Male	**FTM-60-N2**	.25 (6.35)
		G2	1/4 BSPP Male	**FTM-60-G2**	
		M10	M10x1.25 Male	**FTM-60-M10**	

Inches (mm)

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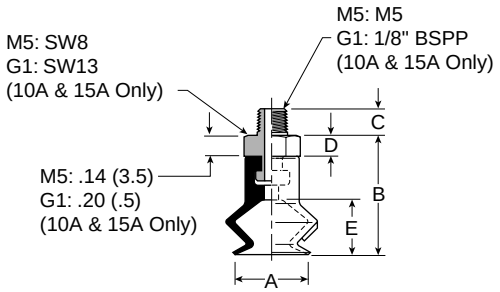
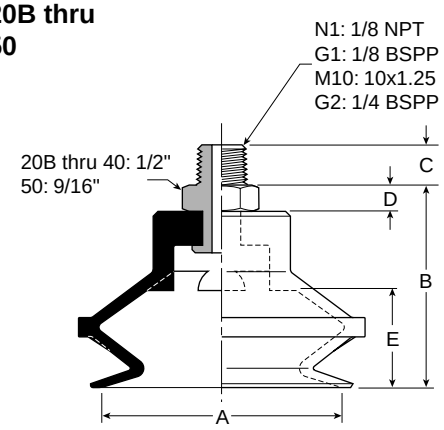
Dimensions

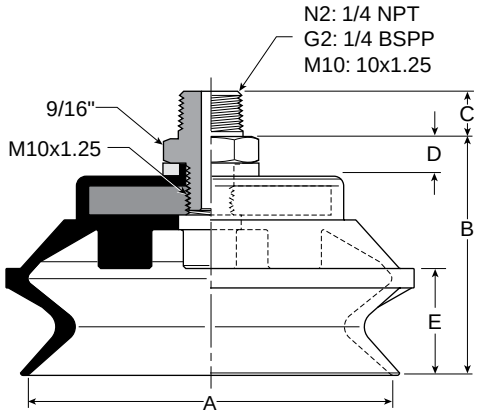
PBTM-10A thru PBTM-15



PBTM-20B thru PBTM-50



PBTM-75



Model Number	ØA	B	C (M5)	C (N1 / G1)	C (M10 / G2)	C (N2)	D	E
PBTM-10A-*-†	.39 (10)	.67 (17)	.18 (4.5)	.31 (8)	—	—	See Dwg.	.30 (7.5)
PBTM-15A-*-†	.59 (15)	.77 (19.5)	.18 (4.5)	.31 (8)	—	—	See Dwg.	.39 (10)
PBTM-20B-*-†	.79 (20)	1.06 (27)	—	.31 (8)	.39 (10)	—	.20 (5)	.47 (12)
PBTM-30-*-†	1.18 (30)	1.40 (35.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.67 (17)
PBTM-40-*-†	1.57 (40)	1.40 (35.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.61 (15.5)
PBTM-50-*-†	1.97 (50)	1.63 (41.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.79 (20)
PBTM-75-*-†	3.74 (95)	1.99 (50.5)	—	—	.39 (10)	.59 (15)	.28 (7)	.87 (22)

Inches (mm)
* Cup Material
† Thread Size

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PBTF Vacuum Cup Assemblies

Model Number Index

PBTF - 10A - NBR - M5

Cup Diameter (mm)			
10A	(10)	**50**	**(50)**
15A	**(15)**	**75**	**(75)**
20B	**(20)**	110	110)
30	**(30)**	150	(150)
40	**(40)**		

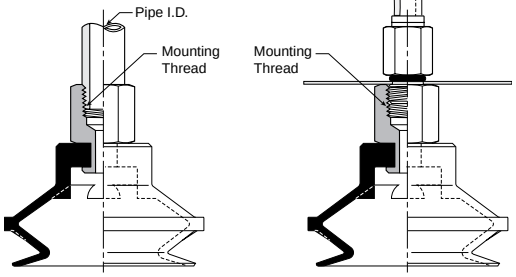
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Mounting Thread	
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
N2	**1/4 NPT**
G2	**1/4 BSPP**
N4	**1/2 NPT**
G4	1/2 BSPP
See Chart Below	

(Bold Items are Most Popular)

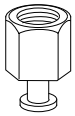
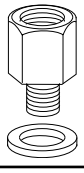
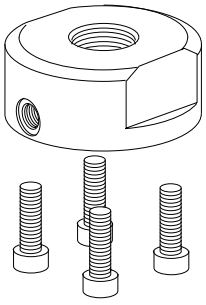
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Female Threaded Fitting for PBG Cups

(Bold Items are Most Popular)

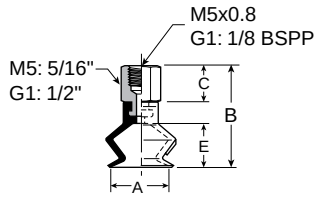
Included in Kit	Cup Diameter (mm)	Mounting Thread Code	Mounting Thread	FTF Fitting Part Number	Min. Tube ID
	10, 15	M5	M5x0.8 Female	**FTF-5A-M5**	.157 (4)
		G1	1/8 BSPP Male	**FTF-5A-G1**	
	20, 30, 40	N1	1/8 NPT Female	**FTF-20B-N1**	
		G1	1/8 BSPP Female	**FTF-20B-G1**	
		G2	1/4 BSPP Female	**FTF-20B-G2**	
	50	N1	1/8 NPT Female	**FTF-50-N1**	
		G1	1/8 BSPP Female	**FTF-50-G1**	
		G2	1/4 BSPP Female	**FTF-50-G2**	
	75	N2	1/4 NPT Female	**FTF-60-N2**	.25 (6.35)
		G2	1/4 BSPP Female	**FTF-60-G2**	
	110, 150	N4	1/2 NPT Female	**FTF-120-N4**	.312 (8)
		G4	1/2 BSPP Female	FTF-120-G4	

Inches (mm)

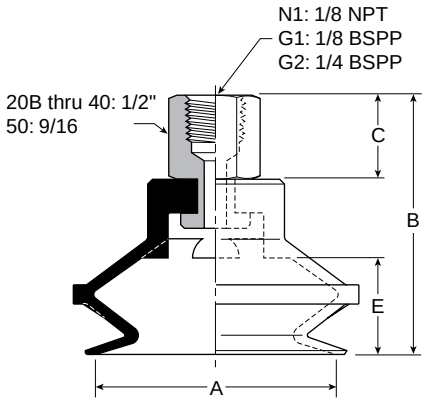
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

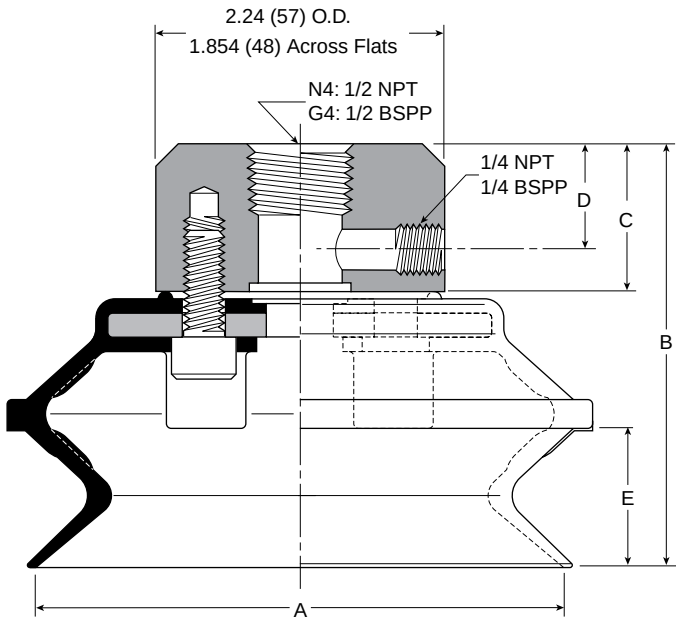
PBTF-10A thru PBTF-15A



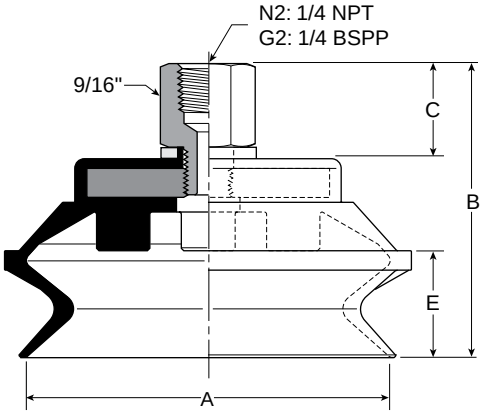
PBTF-20B thru PBTF 50



PBTF-110 thru PBTF-150



PBTF-75



Model Number	ØA	B	B (M5)	C	C (M5)	D	E
PBTF-10A-*-†	.39 (10)	.85 (21.5)	1.08 (27.5)	.31 (8)	.55 (14)	—	.30 (7.5)
PBTF-15A-*-†	.59 (15)	.94 (24)	1.18 (30)	.31 (8)	.55 (14)	—	.39 (10)
PBTF-20B-*-†	.79 (20)	1.42 (36)	—	.55 (14)	—	—	.47 (12)
PBTF-30-*-†	1.18 (30)	1.75 (44.5)	—	.55 (14)	—	—	.70 (17)
PBTF-40-*-†	1.57 (40)	1.75 (44.5)	—	.55 (14)	—	—	.61 (15.5)
PBTF-50-*-†	1.97 (50)	1.99 (50.5)	—	.55 (14)	—	—	.79 (20)
PBTF-75-*-†	3.74 (95)	2.38 (60.5)	—	.77 (19.5)	—	—	.87 (22)
PBTF-110-*-†	4.72 (120)	3.07 (78)	—	.94 (24)	—	.51 (13)	1.14 (29)
PBTF-150-*-†	5.91 (150)	3.82 (97)	—	.94 (24)	—	.51 (13)	1.50 (38)

Inches (mm)
* Cup Material
† Thread Size

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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PBTK Vacuum Cup Assemblies

Model Number Index

PBTK - 10A - NBR - —

Cup Diameter (mm)			
10A	(10)	**40**	**(40)**
15A	**(15)**	**50**	**(50)**
20	**(20)**	**75**	**(75)**
30	**(30)**		

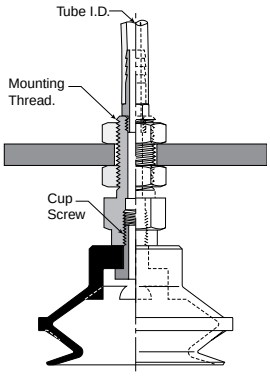
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
See Chart Below	

(Bold Items are Most Popular)

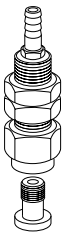
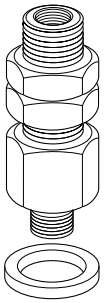
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Barbed Bulkhead for PBG Cups

(Bold Items are Most Popular)

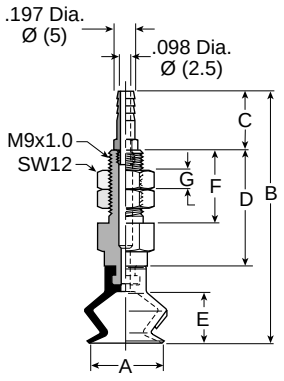
Included in Kit	Cup Diameter (mm)	Vacuum Port		FTK Fitting Part Number	Cup Screw Only	Thread	Tube ID
		Code	Thread				
	10, 15	Blank	Barb	**FTK-5A**	N/A	M9x1.0 Male	.157 (4)
	20	Blank	Barb	**FTK-20**	**TN-PF-20-M5**	M8x1.25 Male	.157 (4)
	30, 40	Blank	Barb	**FTK-25**	**TN-PF-25-M6**	M10x1.25 Male	
	50	Blank	Barb	**FTK-50**	**TN-PF-50-M8**	M10x1.25 Male	
	75	N1	1/8 NPT	**FTK-60-N1**	N/A	M16x1.5 Male	N/A
		G1	1/8 BSPP	FTK-60-G1	N/A	M16x1.5 Male	
		R1	1/8 BSPT	FTK-60-R1	N/A	M16x1.5 Male	

Inches (mm)

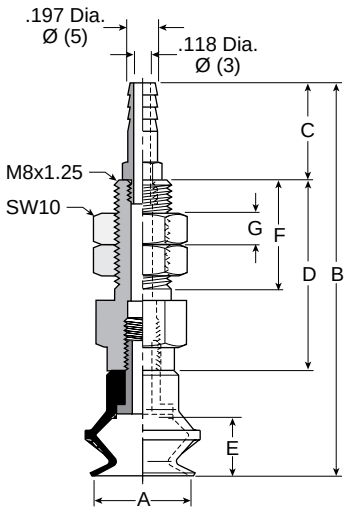
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

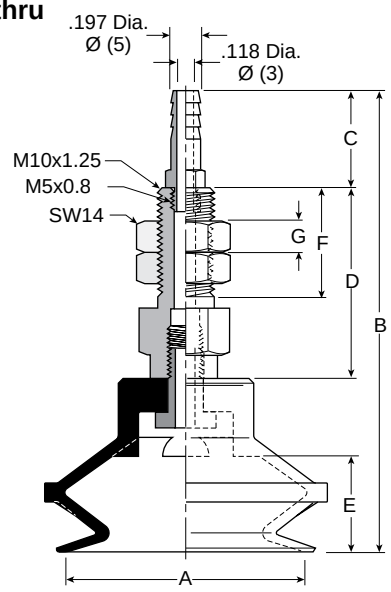
PBTK-10A thru PBTK-15A



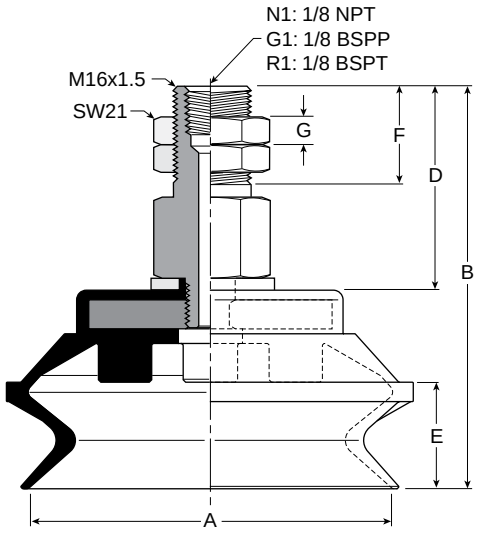
PBTK-20



PBTK-30 thru PBTK-50



PBTK-75



Model Number	ØA	B	C	D	E	F	G	Wt oz (g)
PBTK-10A-*	.39 (10)	2.05 (52)	.39 (10)	.89 (22.5)	.30 (7.5)	.24 (6)	.61 (15.5)	.5 (15)
PBTK-15A-*	.59 (15)	2.15 (54.5)	.39 (10)	.89 (22.5)	.39 (10)	.24 (6)	.61 (15.5)	.5 (15)
PBTK-20-*	.79 (20)	2.26 (57.5)	.63 (16)	.87 (22)	.47 (12)	.24 (6)	.59 (15)	.7 (21)
PBTK-30-*	1.18 (30)	3.09 (78.5)	.63 (16)	1.26 (32)	.67 (17)	.24 (6)	.79 (20)	1.6 (45)
PBTK-40-*	1.57 (40)	3.09 (78.5)	.63 (16)	1.26 (32)	.61 (15.5)	.24 (6)	.79 (20)	1.7 (48)
PBTK-50-*	1.97 (50)	3.33 (84.5)	.63 (16)	1.26 (32)	.79 (20)	.24 (6)	.79 (20)	2.2 (62)
PBTK-75-*-†	3.74 (95)	3.29 (83.5)	—	1.67 (42.5)	.87 (22)	.43 (11)	—	6.5 (186)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PBYK Vacuum Cup Assemblies

Model Number Index

PBYK - 10A - NBR - —

Cup Diameter (mm)			
10A	(10)	**40**	**(40)**
15A	**(15)**	**50**	**(50)**
20	**(20)**	**75**	**(75)**
30	**(30)**	110	(110)
40	**(40)**	150	(150)

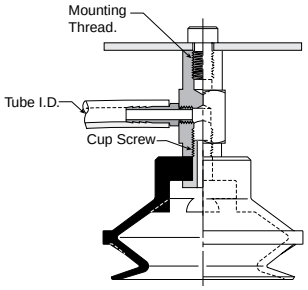
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
See Chart Below	

(Bold Items are Most Popular)

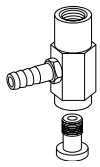
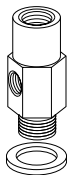
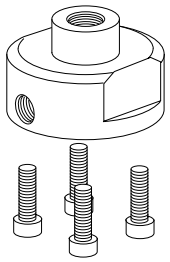
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



90° Barbed Adapter for PBG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Vacuum Port Code	Vacuum Port Thread	FYK Fitting Part Number	Cup Screw Only	Mounting Thread	Tube ID
	10, 15	Blank	Barb	**FYK-5A**	N/A	M4x0.7 Female	.157 (4)
	20	Blank	Barb	**FYK-20**	**TN-PF-20-M5**	M4x0.7 Female	
	30, 40	Blank	Barb	**FYK-25**	**TN-PF-25-M6**	M6x1.0 Female	
	50	Blank	Barb	**FYK-50**	TN-PF-50-M8	M6x1.0 Female	
	75	N1	1/8 NPT	**FYK-60-N1**	N/A	M8x1.25 Female	N/A
		G1	1/8 BSPP	FYK-60-G1			
		R1	1/8 BSPT	FYK-60-R1			
	110, 150	N1	1/8 NPT	**FYK-120-N1**	N/A	M16x1.5 Female	N/A
		G1	1/8 BSPP	FYK-120-G1			
		R1	1/8 BSPT	FYK-120-R1			

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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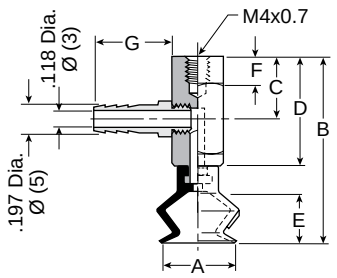
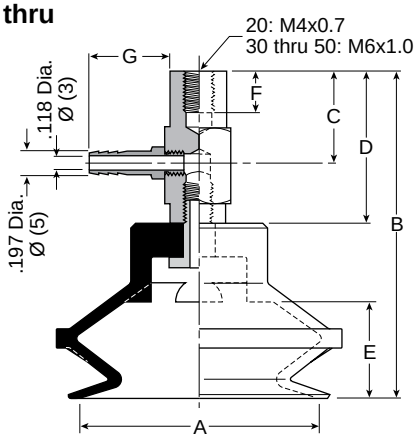
Dimensions

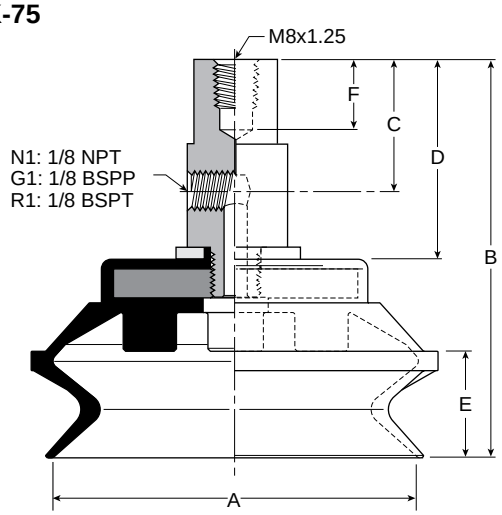
PBYK-10A thru PBYK-15A



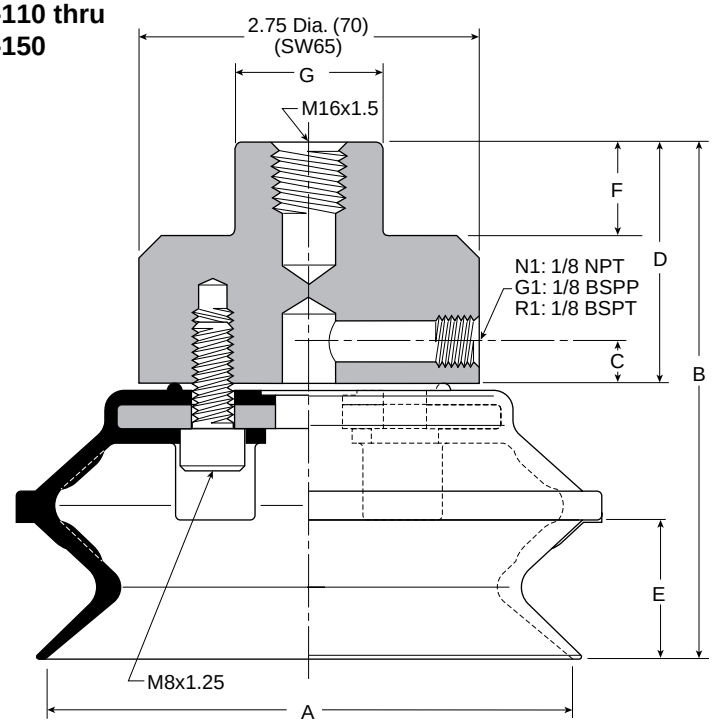
PBYK-20 thru PBYK-50



PBYK-75



PBYK-110 thru PBYK-150



Model Number	ØA	B	C	D	E	F	G	Wt oz (g)
PBYK-10A-*	.39 (10)	1.42 (36)	.51 (13)	.89 (22.5)	.29 (7.5)	.24 (6)	.63 (16)	.6 (16)
PBYK-15A-*	.59 (15)	1.52 (38.5)	.51 (13)	.89 (22.5)	.39 (10)	.24 (6)	.63 (16)	.6 (16)
PBYK-20-*	.79 (20)	1.63 (41.5)	.55 (14)	.87 (22)	.47 (12)	.24 (6)	.63 (16)	.7 (21)
PBYK-30-*	1.18 (30)	2.46 (62.5)	.79 (20)	1.26 (32)	.67 (17)	.24 (6)	.63 (16)	1.6 (45)
PBYK-40-*	1.57 (40)	2.46 (62.5)	.79 (20)	1.26 (32)	.61 (15.5)	.24 (6)	.63 (16)	2.0 (58)
PBYK-50-*	1.97 (50)	2.70 (68.5)	.79 (20)	1.26 (32)	.78 (20)	.24 (6)	.63 (16)	2.4 (67)
PBYK-75-*-†	3.74 (95)	3.29 (83.5)	1.10 (28)	1.67 (42.5)	.86 (22)	.43 (11)	—	6.9 (176)
PBYK-110-*-†	4.72 (120)	4.17 (106)	.47 (12)	1.97 (50)	1.14 (29)	.79 (20)	1.18 Dia. (30)	26.4 (670)
PBYK-150-*-†	5.91 (150)	4.92 (125)	.47 (12)	1.97 (50)	1.50 (38)	.79 (20)	1.18 Dia. (30)	46.5 (1180)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
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PBTYS Vacuum Cup Assemblies

Model Number Index

PBTYS | **10A** | **3** | **NBR** | **M5**

Cup Diameter (mm)	Stroke (mm)
10A (10)	**3, 10, 15**
15A (15)	
20B (20)	**6, 15, 30**
30 (30)	
40 (40)	
50 (50)	
75 (75)	**30*, 50* 70***
110 (110)	**20,** 70
150 (150)	

* Stroke reduced by 5mm due to shock pad.

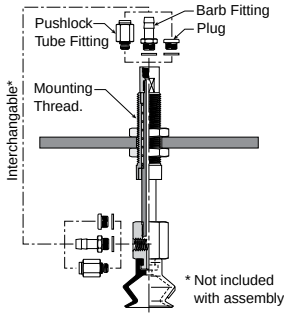
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Ports	
M5	**M5**
N1	**1/8 NPT**
N2	**1/4 NPT**
See Chart Below	

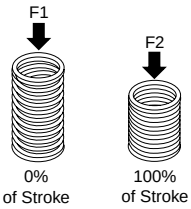
(Bold Items are Most Popular)

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Shown are interchangable connectors & plugs for port connections.

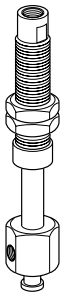
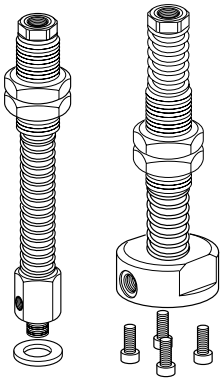


Compression Force



Bulkhead Level Compensator for PBG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Vacuum Port Code	Vacuum Port Thread	TYS Assembly Part Number	Stroke	F1 lbf (N)	F2 lbf (N)
	10, 15	M5	M5x0.8 Female	**TYS-5A-3**	3mm	.11 (.49)	.13 (.59)
				TYS-5A-10	10mm	.11 (.49)	
				TYS-5A-15	15mm	.11 (.49)	
	20, 30, 40	M5	M5x0.8 Female	**TYS-20B-6**	6mm	.56 (2.5)	.79 (3.4)
				TYS-20B-15	15mm	.56 (2.5)	1.2 (4.9)
				TYS-20B-30	30mm	.67 (2.9)	1.4 (5.9)
	50	M5	M5x0.8 Female	**TYS-50-6**	6mm	.56 (2.5)	.79 (3.4)
				TYS-50-15	15mm	.56 (2.5)	1.2 (4.9)
				TYS-50-30	30mm	.67 (2.9)	1.4 (5.9)
	75	N1	1/8 NPT Female	**TYS-60-30**	30mm	1.6 (6.8)	3.6 (15.6)
				TYS-60-50	50mm	1.9 (8.3)	4.5 (19.6)
				TYS-60-70	70mm	2.2 (9.5)	4.8 (21)
	110, 150	N2	1/4 NPT Female	**TYS-120-20**	20mm	3.6 (15.6)	6.8 (29)
				TYS-120-70	70mm	3.4 (14.7)	

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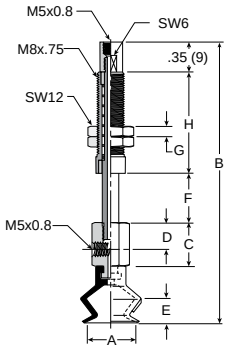
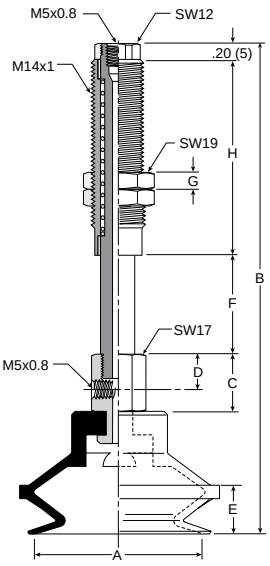
Dimensions

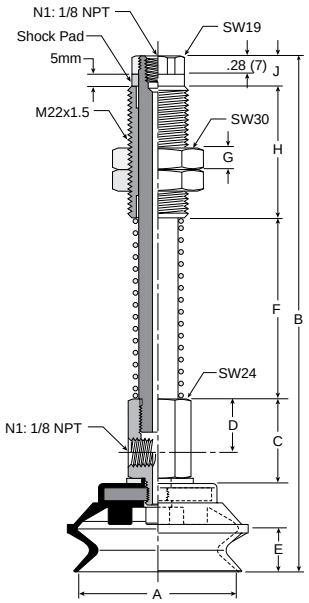
PBTYS10A3 thru PBTYS15A15



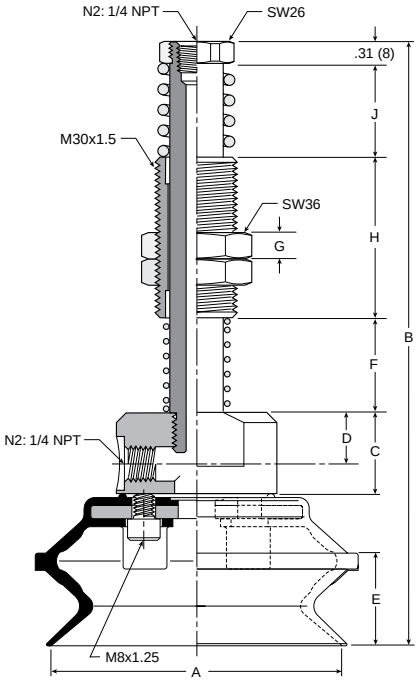
PBTYS20B6 thru PBTYS5030



PBTYS7530



PBTYS11020 thru PBTYS15070



Model Number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PBTYS10A3*	.39 (10)	2.42 (61.5)	.51 (13)	.31 (8)	.30 (7.5)	.12 (3)	.12 (3)	.91 (23)	—	.6 (18)
PBTYS10A10*	.39 (10)	2.70 (68.5)	.51 (13)	.31 (8)	.30 (7.5)	.39 (10)	.12 (3)	.91 (23)	—	.65 (18.5)
PBTYS10A15*	.39 (10)	3.19 (81)	.51 (13)	.31 (8)	.30 (7.5)	.59 (15)	.12 (3)	1.20 (30.5)	—	.7 (21)
PBTYS15A3*	.59 (15)	2.52 (64)	.51 (13)	.31 (8)	.39 (10)	.12 (3)	.12 (3)	.91 (23)	—	.6 (18)
PBTYS15A10*	.59 (15)	2.80 (71)	.51 (13)	.31 (8)	.39 (10)	.39 (10)	.12 (3)	.91 (23)	—	.65 (18.5)
PBTYS15A15*	.59 (15)	3.29 (83.5)	.51 (13)	.31 (8)	.39 (10)	.59 (15)	.12 (3)	1.20 (30.5)	—	.7 (21)
PBTYS20B6*	.79 (20)	3.54 (90)	.67 (17)	.39 (10)	.47 (12)	.24 (6)	.20 (5)	1.42 (36)	—	2.4 (67)
PBTYS20B15*	.79 (20)	3.90 (99)	.67 (17)	.39 (10)	.47 (12	.59 (15)	.20 (5)	1.42 (36)	—	2.5 (72)
PBTYS20B30*	.79 (20)	5.36 (136)	.67 (17)	.39 (10)	.47 (12	1.18 (30)	.20 (5)	2.28 (58)	—	3.4 (97)
PBTYS306*	1.18 (30)	3.72 (94.5)	.67 (17)	.39 (10)	.67 (17)	.24 (6)	.20 (5)	1.42 (36)	—	2.5 (72)
PBTYS3015*†	1.18 (30)	4.07 (103.5)	.67 (17)	.39 (10)	.67 (17)	.59 (15)	.20 (5)	1.42 (36)	—	3.4 (97)
PBTYS3030*†	1.18 (30)	5.53 (140.5)	.67 (17)	.39 (10)	.67 (17)	1.18 (30)	.20 (5)	2.28 (58)	—	3.6 (102)
PBTYS406*†	1.57 (40)	3.72 (94.5)	.67 (17)	.39 (10)	.61 (15.5)	.24 (6)	.20 (5)	1.42 (36)	—	2.8 (78)
PBTYS4015*†	1.57 (40)	4.07 (103.5)	.67 (17)	.39 (10)	.61 (15.5)	.59 (15)	.20 (5)	1.42 (36)	—	2.9 (83)
PBTYS4030*†	1.57 (40)	5.53 (140.5)	.67 (17)	.39 (10)	.61 (15.5)	1.18 (30)	.20 (5)	2.28 (58)	—	3.8 (108)
PBTYS506*†	1.97 (50)	3.96 (100.5)	.67 (17)	.39 (10)	.78 (20)	.24 (6)	.20 (5)	1.42 (36)	—	3.3 (92)
PBTYS5015*†	1.97 (50)	4.31 (109.5)	.67 (17)	.39 (10)	.78 (20)	.59 (15)	.20 (5)	1.42 (36)	—	3.4 (97)
PBTYS5030*†	1.97 (50)	5.77 (146.5)	.67 (17)	.39 (10)	.78 (20)	1.18 (30)	.20 (5)	2.28 (58)	—	4.3 (122)
PBTYS7530*†	2.95 (75)	7.01 (178)	1.28 (32.5)	.78 (20)	.87 (22)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	12 (339)
PBTYS7550*†	2.95 (75)	7.99 (203)	1.28 (32.5)	.78 (20)	.87 (22)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	13 (373)
PBTYS7570*†	2.95 (75)	8.98 (228)	1.28 (32.5)	.78 (20)	.87 (22)	3.74 (95)	.39 (10)	1.97 (50)	.47 (12)	14 (400)
PBTYS11020*†	4.33 (110)	8.82 (224)	1.18 (30)	.71 (18)	1.14 (29)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	42 (1194)
PBTYS11070*†	4.33 (110)	11.38 (289)	1.18 (30)	.71 (18)	1.14 (29)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	45 (1276)
PBTYS15020*†	5.91 (150)	9.57 (243)	1.18 (30)	.71 (18)	1.50 (38)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	60 (1704)
PBTYS15070*†	5.91 (150)	12.13 (308)	1.18 (30)	.71 (18)	1.50 (38)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	63 (1786)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PJG Short Bellows Vacuum Cups

Features

- **Short Bellows for Fast Response**
- **More Lip Seal Contact for Corrugated, Textured Surfaces**
- **Soft Sealing Lip**
- **6mm to 80mm**

Applications

The short stroke bellow suction cup has an extra thin sealing edge and shorter stroke versus the traditional bellows for faster response. The cups are good for corrugated and smooth surfaces.

PJG Series Vacuum Cups

Versatile bellow cup design provides increased sealing lip and level compensation for products with irregular, smooth, curved surfaces, or flexible sheets.

PJTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Nickel plated brass materials.

PJTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket.
UNF, NPT, G, metric threads.
Internal hex for easy assembly.
Fitting Material: Aluminum.

PJYK Series 90° Barbed Adapter

Side stem connectors allow you to secure the stem with a bolt through a plate or “L” bracket to allow the tube connection from the side port. Nickel plated brass materials.

PJTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket.
NPSF, G threads. Internal hex for easy assembly.
Fitting Material: Aluminum.

PJTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.

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Model Number Index (Cups Only)

PJG - 6 - NBR

Cup Diameter (mm)			
6	(6)	35	(35)
8	(8)	**40**	**(40)**
10	**(10)**	**50**	**(50)**
15	**(15)**	60	(60)
20	**(20)**	70	(70)
30	**(30)**	80	(80)

Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

(Bold Items are Most Popular)

Specifications

Suction Cup Material	**NBR**	**NBRE**	**CR**	**SI**	**SIE**	**U**	**FKM**	**SH**	**Z**
	Nitrile	**Nitrile ESD***	**Chloroprene**	**Silicone**	**Silicone ESD***	**Urethane**	**Flouro Rubber**	**Silicone High Temp**	**Markless**
Operating Temperature (°C)	-20° to +120°	-30° to +120°	-30° to +140°	-60° to +250°	-60° to +250°	-30° to +120°	-10° to +230°	-50° to +300°	-10 to +230°
Color	Black	Black / Blue Dot	Green	White	Black / Red Dot	Blue	Black / White Dot	Grey	Black / Yellow Dot
Hardness, Shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5	55 ±5	55 ±5	70 ±5	55 ±5	70 ±5
Electrical Resistance (Ωm)	—	800 to 1000	—	—	800 to 1000	—	—	—	—
Wear Resistance	•••••		•••••	••		••••••	•••	••	•••
Tear Strength	••••		•••••	•		••••••	•	•	•
Aging Resistance	••••		•••••	••••••		••••••	••••••	••••••	••••••
Ozone Resistance	••••		•••••	••••••		••••••	••••••	••••••	••••••
Gasoline Resistance	••••••		•••••	••••		••••••	••••••	••••	••••••
Oil Resistance	••••••		•••••	••••••		•••••	••••••	••••••	••••••
Acid Resistance	•••		•••••	•••		•	••••••	•••	••••••
Alkali Resistance	••••		•••••	•••		•	••••••	•••	••••••
Chemical Resistance	•••		••••	••		••••••	••••••	••	••••••
Mechanical Resistance	••••		••••	••••		•••••	••	••••	••

•••••• = excellent; ••••• = very good; •••• = good; ••• = medium; •• = poor; • = not recommended

* ESD: Electric Static Dissipative Material

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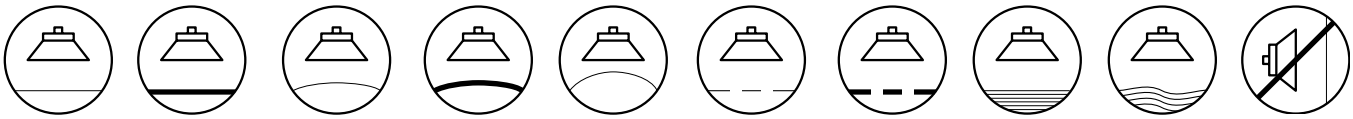
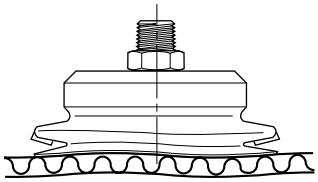
Application Guide

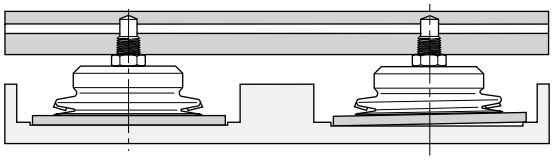
Short Bellows



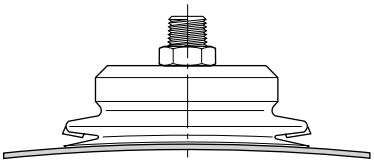
- High Speed Packaging



- Level Compensation for Small Electronic Components

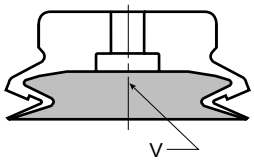


- Flexible Product
- Soft Seal Lip

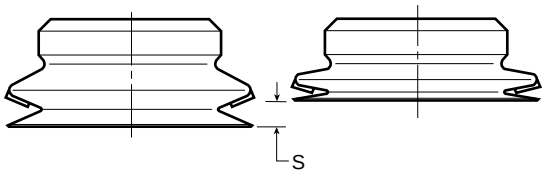


Main Data for Short Bellows PJG Cups

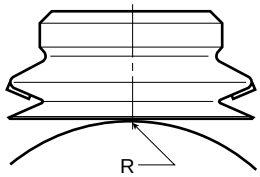
Volume



Cup Deflection



Radius



Model Number	Cup Diameter Inches (mm)	Area cm^2	Volume (V) Liters	Lifting Force @ 60% (N)		Cup Deflection (S) mm	Radius R (mm)
							
PJG-6-*	.24 (6)	.28	0.000016	1.70	—	4.2	4.0
PJG-8-*	.31 (8)	.50	0.00007	3.10	—	4.0	5.0
PJG-10-*	.39 (10)	0.79	0.00017	4.80	—	3.0	6.0
PJG-15-*	.59 (15)	1.77	0.0005	10.8	—	3.3	10.0
PJG-20-*	.79 (20)	3.14	0.0012	19.2	—	5.5	13.0
PJG-30-*	1.18 (30)	7.07	0.003	43.2	—	7.0	26.0
PJG-35-*	1.38 (35)	9.62	0.004	58.9	—	7.0	31.0
PJG-40-*	1.57 (40)	12.6	0.005	76.9	—	7.2	37.0
PJG-50-*	1.97 (50)	19.6	0.008	120	—	9.0	41.0
PJG-60-*	2.36 (60)	28.3	0.020	173	—	8.0	70.0
PJG-70-*	2.76 (70)	38.5	0.030	235	—	9.5	90.0
PJG-80-*	3.15 (80)	50.3	0.040	308	—	9.5	100.0

*Cup Material

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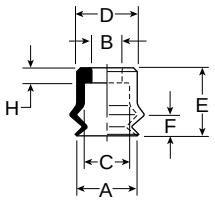
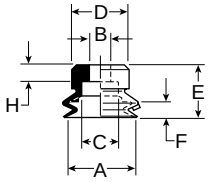
Dimensions

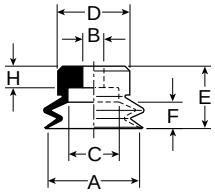
PJG-6 and PJG-8



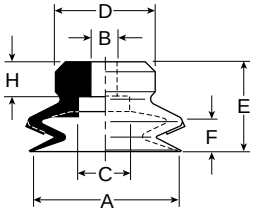
PJG-10 and PJG-15



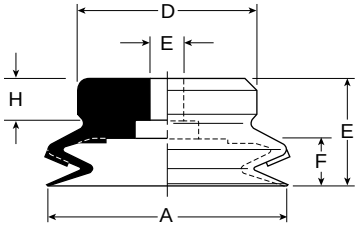
PJG-20



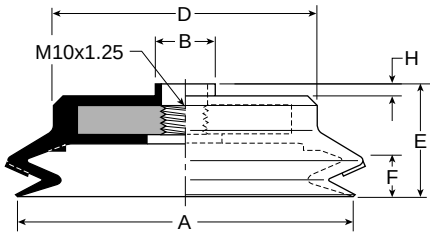
PJG-30 thru PJG-40



PJG-50



PJG-60 thru PJG-80



Model Number	ØA	ØB	ØC	ØD	E	F	H
PJG-6-*	.24 (6)	.16 (4)	.24 (6)	.30 (7.5)	.35 (9)	.17 (4.2)	.08 (2)
PJG-8-*	.31 (8)	.16 (4)	.24 (6)	.31 (8)	.35 (9)	.16 (4)	.08 (2)
PJG-10-*	.39 (10)	.18 (4.6)	.31 (7.8)	.43 (11)	.37 (9.5)	.12 (3)	.14 (3.5)
PJG-15-*	.59 (15)	.18 (4.6)	.31 (7.8)	.47 (12)	.43 (11)	.13 (3.3)	.14 (3.5)
PJG-20-*	.79 (20)	.18 (4.6)	.43 (10.8)	.59 (15)	.51 (13)	.22 (5.5)	.18 (4.5)
PJG-30-*	1.18 (30)	.23 (5.8)	.43 (10.8)	.78 (20)	.71 (18)	.28 (7)	.28 (7)
PJG-35-*	1.38 (35)	.23 (5.8)	.43 (10.8)	.98 (25)	.71 (18)	.28 (7)	.28 (7)
PJG-40-*	1.57 (40)	.23 (5.8)	.43 (10.8)	1.18 (30)	.71 (18)	.28 (7.2)	.28 (7)
PJG-50-*	1.97 (50)	.31 (7.8)	.78 (19.8)	1.57 (40)	.79 (20)	.35 (9)	.28 (7)
PJG-60-*	2.36 (60)	.49 (12.5)	—	1.77 (45)	.89 (22.5)	.31 (8)	.10 (2.5)
PJG-70-*	2.75 (70)	.49 (12.5)	—	2.17 (55)	.93 (23.5)	.37 (9.5)	.10 (2.5)
PJG-80-*	3.15 (80)	.49 (12.5)	—	2.68 (68)	.93 (23.5)	.37 (9.5)	.10 (2.5)

Inches (mm)
* Cup Material

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PJTM Vacuum Cup Assemblies

Model Number Index

PJTM - 8 - NBR - M5

Cup Diameter (mm)			
6	(6)	35	(35)
8	(8)	**40**	**(40)**
10	**(10)**	**50**	**(50)**
15	**(15)**	60	(60)
20	**(20)**	70	(70)
30	**(30)**	80	(80)

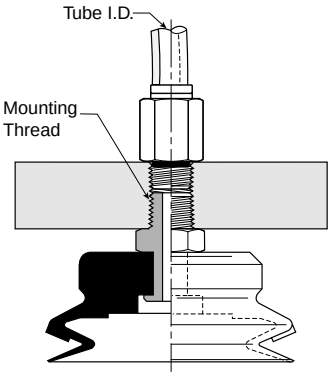
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Mounting Thread	
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
M10	**M10**
N2	**1/4 NPT**
G2	**1/4 BSPP**
See Chart Below	

(Bold Items are Most Popular)

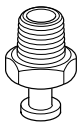
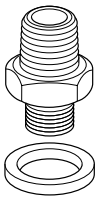
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Male Threaded Fitting for PJG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Mounting Thread Code	Mounting Thread	FTM Fitting Part Number	Min. Tube ID
	6, 8	M5	M5x0.8 Male	**FTM-5A-M5H**	.157 (4)
		G1	1/8 BSPP Male	**FTM-5A-G1**	
	10, 15	M5	M8x1.25 Male	**TN-PF-15-M5**	.157 (4)
	20	M5	M8x1.25 Male	**TN-PF-20-M5**	
	30, 35, 40	N1	1/8 NPT Male	**FTM-20B-N1**	.157 (4)
		G1	1/8 BSPP Male	**FTM-20B-G1H**	
		M10	M10x1.25 Male	**FTM-20B-M10**	
	50	N1	1/8 NPT Male	**FTM-50-N1**	.157 (4)
		G1	1/8 BSPP Male	**FTM-50-G1H**	
		G2	1/4 BSPP Male	**FTM-50-G2**	
	60, 70, 80	N2	1/4 NPT Male	**FTM-60-N2**	.25 (6.35)
		G2	1/4 BSPP Male	**FTM-60-G2**	
		M10	M10x1.25 Male	**FTM-60-M10**	

Inches (mm)

Parker Hannifin Corporation
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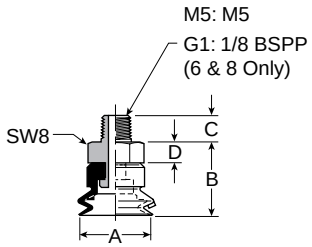
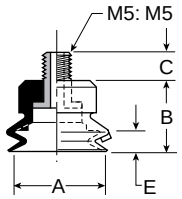
Dimensions

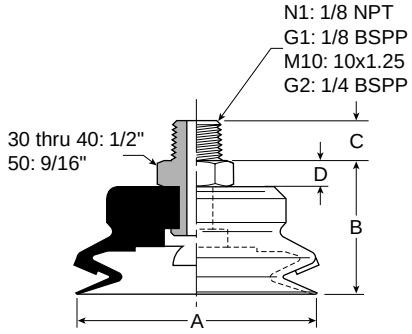
PJTM-6 and PJTM-8



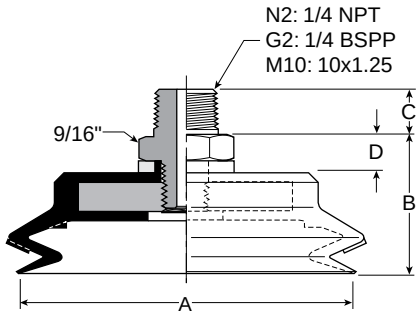
PJTM-10 thru PJTM-20



PJTM-30 thru PJTM-50



PJTM-60 thru PJTM-80



Model Number	ØA	B	C (M5)	C (N1 / G1)	C (M10 / G2)	C (N2)	D
PJTM-6-*-†	.24 (6)	.49 (12.5)	.18 (4.5)	.31 (8)	—	—	.14 (3.5)
PJTM-8-*-†	.31 (8)	.49 (12.5)	.18 (4.5)	.31 (8)	—	—	.14 (3.5)
PJTM-10-*-†	.39 (10)	.37 (9.5)	.20 (5)	—	—	—	—
PJTM-15-*-†	.59 (15)	.43 (11)	.20 (5)	—	—	—	—
PJTM-20-*-†	.79 (20)	.51 (13)	.20 (5)	—	—	—	—
PJTM-30-*-†	1.18 (30)	.91 (23)	—	.31 (8)	.39 (10)	—	.20 (5)
PJTM-35-*-†	1.38 (35)	.91 (23)	—	.31 (8)	.39 (10)	—	.20 (5)
PJTM-40-*-†	1.57 (40)	.91 (23)		.31 (8)	.39 (10)	—	.20 (5)
PJTM-50-*-†	1.97 (50)	.98 (25)	—	.31 (8)	.39 (10)	—	.20 (5)
PJTM-60-*-†	2.36 (60)	1.06 (27)	—	—	.39 (10)	.59 (15)	.28 (7)
PJTM-70-*-†	2.75 (70)	1.10 (28)	—	—	.39 (10)	.59 (15)	.28 (7)
PJTM-80-*-†	3.15 (80)	1.10 (28)	—	—	.39 (10)	.59 (15)	.28 (7)

Inches (mm)
* Cup Material
† Thread Size

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PJTF Vacuum Cup Assemblies

Model Number Index

PJTF - 8 - NBR - M5

Cup Diameter (mm)			
6	(6)	**50**	**(50)**
8	(8)	60	(60)
30	**(30)**	70	(70)
35	(35)	80	(80)
40	**(40)**		

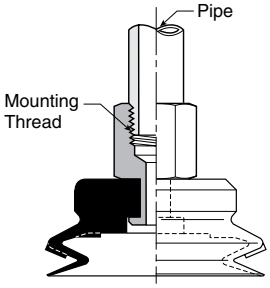
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

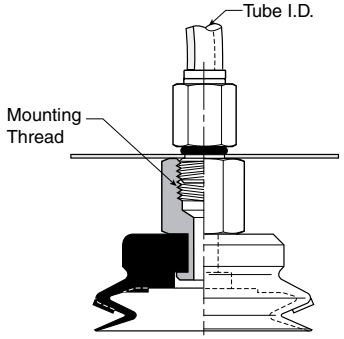
Mounting Thread	
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
M10	**M10**
N2	**1/4 NPT**
G2	**1/4 BSPP**
See Chart Below	

(Bold Items are Most Popular)

Installation

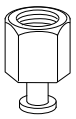
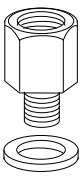
Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.





Female Threaded Fitting for PJG Cups

(Bold Items are Most Popular)

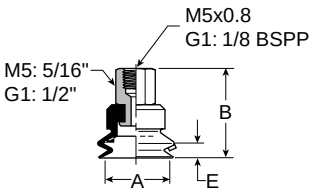
Included in Kit	Cup Diameter (mm)	Mounting Thread Code	Mounting Thread	FTF Fitting Part Number	Min. Tube ID
	6, 8	M5	M5x0.8 Female	**FTF-5A-M5**	.157 (4)
		G1	G1/8 Female	**FTF-5A-G1**	
	30, 35, 40	N1	1/8 NPT Female	**FTF-20B-N1**	.157 (4)
		G1	G1/8 Female	**FTF-20B-G1**	
		G2	G1/4 Female	**FTF-20B-G2**	
	50	N1	1/8 NPT Female	**FTF-50-N1**	.157 (4)
		G1	G1/8 Female	**FTF-50-G1**	
		G2	G1/4 Female	**FTF-50-G2**	
	60, 70, 80	N2	1/4 NPT Female	**FTF-60-N2**	.25 (6.35)
		G2	G1/4 Female	**FTF-60-G2**	

Inches (mm)

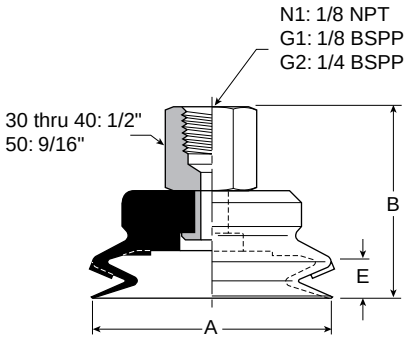
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

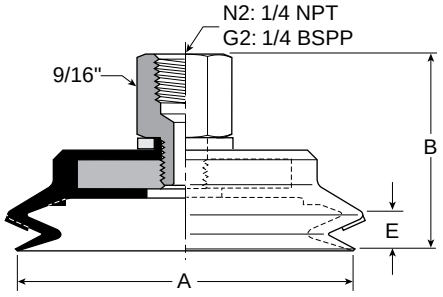
PJTF-6 and PJTF-8



PJTF-30 thru PJTF-50



PJTF-60 thru PJTF-80



Model Number	ØA	B	B (M5)	E
PJTF-6-*-†	.24 (6)	.79 (20)	.55 (14)	.16 (4)
PJTF-8-*-†	.31 (8)	.79 (20)	.55 (14)	.16 (4)
PJTF-10-*-†	.39 (10)	.79 (20)	.55 (14)	.12 (3)
PJTF-15-*-†	.59 (15)	.79 (20)	.55 (14)	.13 (3.3)
PJTF-30-*-†	1.18 (30)	1.25 (32)	—	.28 (7)
PJTF-35-*-†	1.18 (30)	1.25 (32)	—	.28 (7)
PJTF-40-*-†	1.57 (40)	1.25(32)	—	.28 (7.2)
PJTF-50-*-†	1.97 (50)	1.34 (34)	—	.35 (9)
PJTF-60-*-†	2.36 (60)	1.56 (39.5)	—	.31 (8)
PJTF-70-*-†	2.75 (70)	1.59 (40.5)	—	.37 (9.5)
PJTF-80-*-†	3.15 (80)	1.59 (40.5)	—	.37 (9.5)

Inches (mm)

* Cup Material

† Thread Size

Parker Hannifin Corporation
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PJTK Vacuum Cup Assemblies

Model Number Index

PJTK - 10 - NBR - —

Cup Diameter (mm)			
6	(6)	35	(35)
8	(8)	**40**	**(40)**
10	**(10)**	**50**	**(50)**
15	**(15)**	60	(60)
20	**(20)**	70	(70)
30	**(30)**	80	(80)

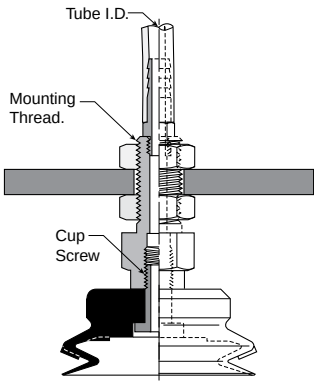
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
See Chart Below	

(Bold Items are Most Popular)

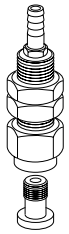
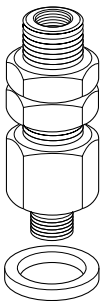
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Barbed Bulkhead for PJG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Vacuum Port Code	Vacuum Port Thread	FTK Fitting Part Number	Cup Screw Only	Mounting Thread	Tube ID
	6, 8	Blank	Barb	**FTK-5A**	N/A	M9x1.0 Male	.157 (4)
	10, 15	Blank	Barb	**FTK-15**	**TN-PF-15-M5**	M8x1.25 Male	.157 (4)
	20	Blank	Barb	**FTK-20**	**TN-PF-20-M5**	M8x1.25 Male	
	30, 35, 40	Blank	Barb	**FTK-25**	**TN-PF-25-M6**	M10x1.5 Male	
	50	Blank	Barb	**FTK-50**	**TN-PF-50-M8**	M10x1.5 Male	
	60, 70, 80	N1	1/8 NPT	**FTK-60-N1**	N/A	M16x1.5 Male	N/A
		G1	1/8 BSPP	FTK-60-G1	N/A	M16x1.5 Male	
		R1	1/8 BSPT	FTK-60-R1	N/A	M16x1.5 Male	

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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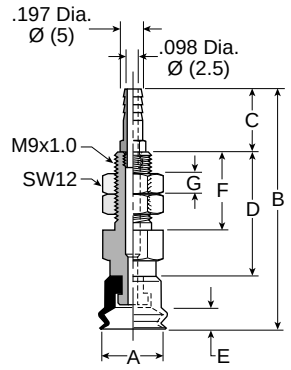
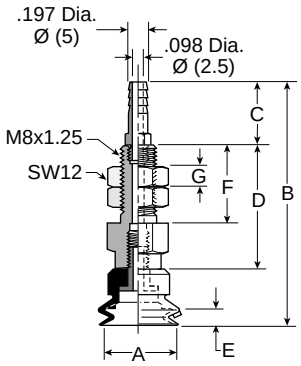
Dimensions

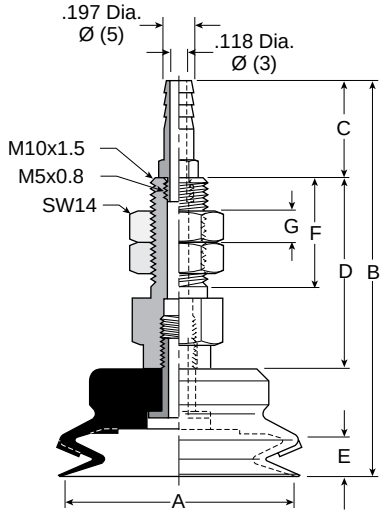
PJTK-6 and PJTK-8



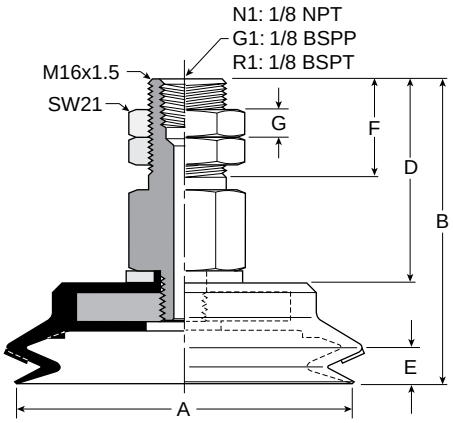
PJTK-10 thru PJTK-20



PJTK-30 thru PJTK-50



PJTK-60 thru PJTK-80



Model Number	ØA	B	C	D	E	F	G	Wt oz (g)
PJTK-6-*	.24 (6)	1.30 (33)	.39 (10)	.55 (14)	.17 (4.2)	.47 (12)	.12 (3)	.4 (11)
PJTK-8-*	.31 (8)	1.30 (33)	.39 (10)	.55 (14)	.16 (4)	.47 (12)	.12 (3)	.4 (11)
PJTK-10-*	.39 (10)	1.87 (47.5)	.63 (16)	.87 (22)	.12 (3)	.59 (15)	.12 (3)	.5 (14)
PJTK-15-*	.59 (15)	1.93 (49)	.63 (16)	.87 (22)	.13 (3.3)	.59 (15)	.12 (3)	.5 (15)
PJTK-20-*	.79 (20)	2.01 (51)	.63 (16)	.87 (22)	.22 (5.5)	.59 (15)	.20 (5)	.6 (17)
PJTK-30-*	1.18 (30)	2.60 (66)	.63 (16)	1.26 (32)	.28 (7)	.79 (20)	.20 (5)	1.5 (42)
PJTK-35-*	1.38 (35)	2.60 (66)	.63 (16)	1.26 (32)	.28 (7)	.79 (20)	.20 (5)	1.6 (44)
PJTK-40-*	1.57 (40)	2.60 (66)	.63 (16)	1.26 (32)	.28 (7.2)	.79 (20)	.20 (5)	1.6 (44)
PJTK-50-*	1.97 (50)	2.68 (68)	.63 (16)	1.26 (32)	.35 (9)	.79 (20)	.20 (5)	25.0 (58)
PJTK-60-*-†	2.36 (60)	2.46 (62.5)	—	1.67 (42.5)	.31 (8)	.79 (20)	.24 (6)	5.1 (144)
PJTK-70-*-†	2.75 (70)	2.50 (63.5)	—	1.67 (42.5)	.37 (9.5)	.79 (20)	.24 (6)	5.7 (163)
PJTK-80-*-†	3.15 (80)	2.50 (63.5)	—	1.67 (42.5)	.37 (9.5)	.79 (20)	.24 (6)	6.7 (190)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
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PJYK Vacuum Cup Assemblies

Model Number Index

PJYK - 10 - NBR - —

Cup Diameter (mm)			
6	(6)	35	(35)
8	(8)	**40**	**(40)**
10	**(10)**	**50**	**(50)**
15	**(15)**	60	(60)
20	**(20)**	70	(70)
30	**(30)**	80	(80)

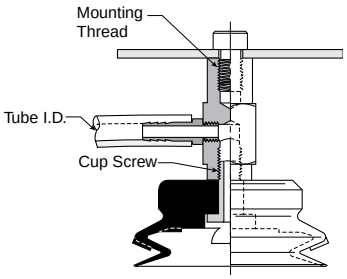
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
See Chart Below	

(Bold Items are Most Popular)

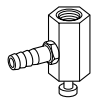
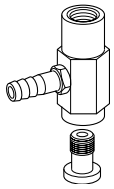
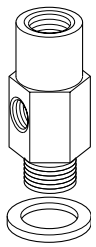
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



90° Barbed Adapter for PJG Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Vacuum Port		FYK Fitting Part Number	Cup Screw Only	Mounting Thread	Tube ID
		Code	Thread				
	6, 8	Blank	Barb	**FYK-5A**	N/A	M4x0.7 Female	.157 (4)
	10, 15	Blank	Barb	**FYK-15**	**TN-PF-15-M5**	M4x0.7 Female	.157 (4)
	20	Blank	Barb	**FYK-20**	**TN-PF-20-M5**	M4x0.7 Female	
	30, 35, 40	Blank	Barb	**FYK-25**	**TN-PF-25-M6**	M6x1.0 Female	
	50	Blank	Barb	**FYK-50**	**TN-PF-50-M8**	M6x1.0 Female	
	60, 70, 80	N1	1/8 NPT	**FYK-60-N1**	N/A	M8x1.25 Female	N/A
		G1	1/8 BSPP	FYK-60-G1	N/A	M8x1.25 Female	
		R1	1/8 BSPT	FYK-60-R1	N/A	M8x1.25 Female	

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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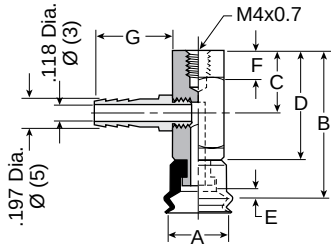
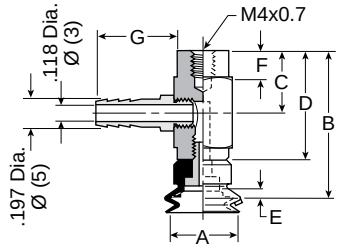
Dimensions

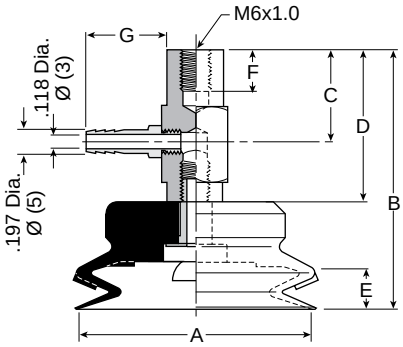
PJYK-6 and PJYK-8



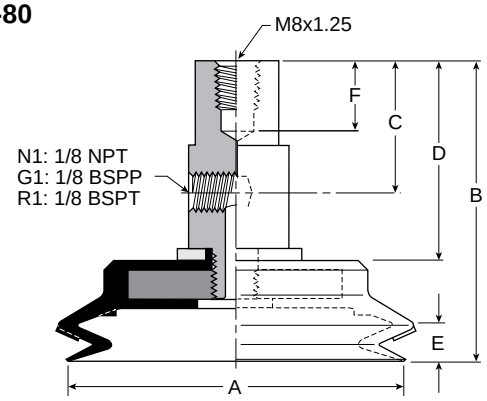
PJYK-10 thru PJYK-20



PJYK-25 thru PJYK-50



PJYK-60 thru PJYK-80



Model Number	ØA	B	C	D	E	F	G	Wt oz (g)
PJYK-6-*	.24 (6)	1.24 (31.5)	.51 (13)	.89 (22.5)	.17 (4.2)	.24 (6)	.63 (16)	.56 (16)
PJYK-8-*	.31 (8)	1.24 (31.5)	.51 (13)	.89 (22.5)	.17 (4.2)	.24 (6)	.63 (16)	.56 (16)
PJYK-10-*	.39 (10)	1.24 (31.5)	.55 (14)	.87 (22)	.12 (3)	.24 (6)	.63 (16)	.59 (17)
PJYK-15-*	.59 (15)	1.30 (33)	.55 (14)	.87 (22)	.13 (3.3)	.24 (6)	.63 (16)	.63 (18)
PJYK-20-*	.79 (20)	1.38 (35)	.55 (14)	.87 (22)	.22 (5.5)	.24 (6)	.63 (16)	.7 (20)
PJYK-30-*	1.18 (30)	1.97 (50)	.79 (20)	1.26 (32)	.28 (7)	.31 (8)	.63 (16)	1.6 (46)
PJYK-35-*	1.38 (35)	1.97 (50)	.79 (20)	1.26 (32)	.28 (7)	.31 (8)	.63 (16)	1.7 (48)
PJYK-40-*	1.57 (40)	1.97 (50)	.79 (20)	1.26 (32)	.28 (7.2)	.31 (8)	.63 (16)	1.7 (48)
PJYK-50-*	1.97 (50)	2.05 (52)	.79 (20)	1.26 (32)	.35 (9)	.31 (8)	.63 (16)	2.2 (62)
PJYK-60-*-†	2.36 (60)	2.46 (62.5)	1.10 (28)	1.67 (42.5)	.31 (8)	.43 (11)	—	4.9 (139)
PJYK-70-*-†	2.75 (70)	2.50 (63.5)	1.10 (28)	1.67 (42.5)	.37 (9.5)	.43 (11)	—	5.6 (158)
PJYK-80-*-†	3.15 (80)	2.50 (63.5)	1.10 (28)	1.67 (42.5)	.37 (9.5)	.43 (11)	—	6.5 (185)

Inches (mm)

* Cup Material

† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PJTYS Vacuum Cup Assemblies

Model Number Index

PJTYS **10A** **3** **NBR** **M5**

Cup Diameter (mm)	Stroke (mm)
6 (6)	**3, 10, 15**
8 (8)	
10 (10)	
15 (15)	
20 (20)	**6, 15, 30**
30 (30)	
35 (35)	
40 (40)	
50 (50)	
60 (60)	**30*, 50*, 70***
70 (70)	
80 (80)	

* Stroke reduced by 5mm due to shock pad.

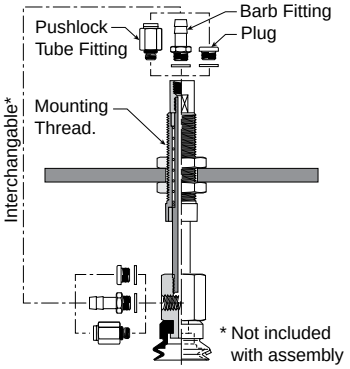
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp
Z	Markless

Vacuum Port	
M5	**M5**
N1	**1/8 NPT**
See Chart Below	

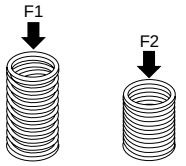
(Bold Items are Most Popular)

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Shown are interchangable connectors & plugs for port connections.

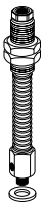


Compression Force



Bulkhead Level Compensator for PJG Cups

(Bold Items are Most Popular)

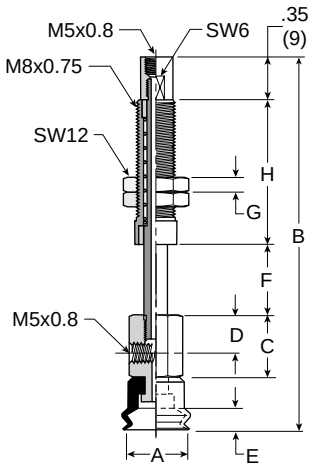
Included in Kit	Cup Diameter (mm)	Vacuum Port Code	Vacuum Port Thread	TYS & JTYS Assembly Part Number	Stroke	F1 lbf (N)	F2 lbf (N)
	6, 8	M5	M5x0.8 Female	**TYS-5A-3**	3mm	.11 (.49)	.13 (.59)
				TYS-5A-10	10mm	.14 (.61)	.26 (1.17)
				TYS-5A-15	15mm	.15 (.64)	.26 (1.17)
	10, 15	M5	M5x0.8 Female	**JTYS-10-3**	3mm	.11 (.49)	.13 (.59)
				JTYS-10-10	10mm	.56 (2.5)	1.2 (4.9)
				JTYS-10-15	15mm	.67 (2.9)	1.4 (5.9)
	20	M5	M5x0.8 Female	**JTYS-20-3**	3mm	.11 (.49)	.13 (.59)
				JTYS-20-10	10mm	.56 (2.5)	1.2 (4.9)
				JTYS-20-15	15mm	.67 (2.9)	1.4 (5.9)
	30, 35, 40	M5	Female	**TYS-20B-6**	6mm	.56 (2.5)	.79 (3.4)
				TYS-20B-15	15mm	.56 (2.5)	1.2 (4.9)
				TYS-20B-30	30mm	.67 (2.9)	1.4 (5.9)
	50	M5	M5x0.8 Female	**TYS-50-6**	6mm	.56 (2.5)	.79 (3.4)
				TYS-50-15	15mm	.56 (2.5)	1.2 (4.9)
				TYS-50-30	30mm	.67 (2.9)	1.4 (5.9)
	60, 70, 80	N1	1/8 NPT Female	**TYS-60-30**	30mm	1.6 (6.8)	3.6 (15.6)
				TYS-60-50	50mm	1.9 (8.3)	4.5 (19.6)
				TYS-60-70	70mm	2.2 (9.5)	4.8 (21)

Inches (mm)

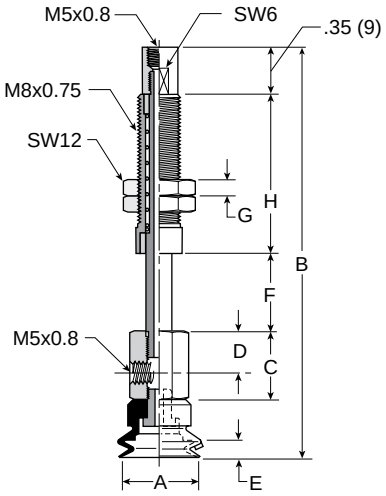
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

PJTYS63 thru PJTYS815



PJTYS103 thru PJTYS2015



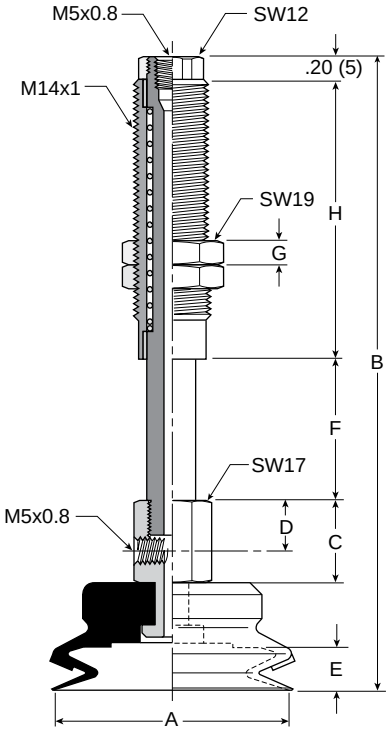
Model Number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PJTYS63*†	.24 (6)	2.24 (57)	.51 (13)	.31 (8)	.17 (4.2)	.12 (3)	.12 (3)	.91 (23)	.2 (7)
PJTYS610*†	.24 (6)	2.52 (64)	.51 (13)	.31 (8)	.17 (4.2)	.39 (10)	.12 (3)	.91 (23)	.3 (9)
PJTYS615*†	.24 (6)	3.01 (76.5)	.51 (13)	.31 (8)	.17 (4.2)	.59 (15)	.12 (3)	1.20 (30.5)	.4 (11)
PJTYS83*†	.31 (8)	2.24 (57)	.51 (13)	.31 (8)	.16 (4)	.12 (3)	.12 (3)	.91 (23)	.2 (7)
PJTYS810*†	.31 (8)	2.52 (64)	.51 (13)	.31 (8)	.16 (4)	.39 (10)	.12 (3)	.91 (23)	.3 (9)
PJTYS815*†	.31 (8)	3.01 (76.5)	.51 (13)	.31 (8)	.16 (4)	.59 (15)	.12 (3)	1.20 (30.5)	.4 (11)
PJTYS103*†	.39 (10)	2.24 (57)	.51 (13)	.31 (8)	.12 (3)	.12 (3)	.20 (5)	.91 (23)	1.0 (30.5)
PJTYS1010*†	.39 (10)	2.52 (64)	.51 (13)	.31 (8)	.12 (3)	.39 (10)	.20 (5)	.91 (23)	1.1 (31)
PJTYS1015*†	.39 (10)	3.01 (76.5)	.51 (13)	.31 (8)	.12 (3)	.59 (15)	.20 (5)	1.20 (30.5)	1.2 (33.5)
PJTYS153*†	.59 (15)	2.32 (59)	.51 (13)	.31 (8)	.13 (3.3)	.12 (3)	.20 (5)	.91 (23)	1.1 (31)
PJTYS1510*†	.59 (15)	2.60 (66)	.51 (13)	.31 (8)	.13 (3.3)	.39 (10)	.20 (5)	.91 (23)	1.1 (32)
PJTYS1515*†	.59 (15)	3.07 (78)	.51 (13)	.31 (8)	.13 (3.3)	.59 (15)	.20 (5)	1.20 (30.5)	1.3 (34.5)
PJTYS203*†	.79 (20)	2.48 (63)	.51 (13)	.31 (8)	.22 (5.5)	.12 (3)	.20 (5)	.91 (23)	1.1 (31)
PJTYS2010*†	.79 (20)	2.83 (72)	.51 (13)	.31 (8)	.22 (5.5)	.39 (10)	.20 (5)	.91 (23)	1.1 (32)
PJTYS2015*†	.79 (20)	4.29 (109)	.51 (13)	.31 (8)	.22 (5.5)	.59 (15)	.20 (5)	1.20 (30.5)	1.3 (34.5)

Inches (mm)
** Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

PJTYS306 thru
PJTYS5030



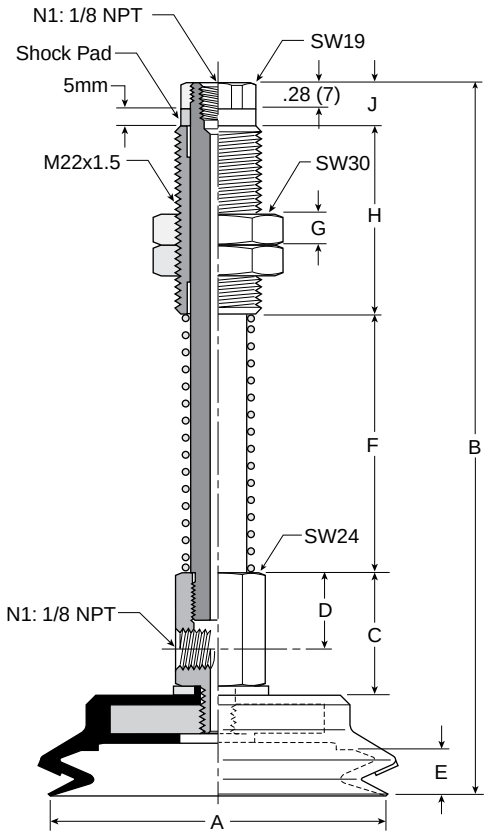
Model Number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PJTYS306*†	1.18 (30)	3.23 (82)	.67 (17)	.39 (10)	.28 (7)	.24 (6)	.20 (5)	1.42 (36)	—	2.4 (69)
PJTYS3015*†	1.18 (30)	3.58 (91)	.67 (17)	.39 (10)	.28 (7)	.59 (15)	.20 (5)	1.42 (36)	—	2.6 (74)
PJTYS3030*†	1.18 (30)	5.04 (128)	.67 (17)	.39 (10)	.28 (7)	1.18 (30)	.20 (5)	2.28 (58)	—	3.5 (99)
PJTYS356*†	1.38 (35)	3.23 (82)	.67 (17)	.39 (10)	.28 (7)	.24 (6)	.20 (5)	1.42 (36)	—	2.5 (71.5)
PJTYS3515*†	1.38 (35)	3.58 (91)	.67 (17)	.39 (10)	.28 (7)	.59 (15)	.20 (5)	1.42 (36)	—	2.7 (76.5)
PJTYS3530*†	1.38 (35)	5.04 (128)	.67 (17)	.39 (10)	.28 (7)	1.18 (30)	.20 (5)	2.28 (58)	—	3.6 (101.5)
PJTYS406*†	1.57 (40)	3.23 (82)	.67 (17)	.39 (10)	.28 (7.2)	.24 (6)	.20 (5)	1.42 (36)	—	2.6 (73.5)
PJTYS4015*†	1.57 (40)	3.58 (91)	.67 (17)	.39 (10)	.28 (7.2)	.59 (15)	.20 (5)	1.42 (36)	—	2.8 (78.5)
PJTYS4030*†	1.57 (40)	5.04 (128)	.67 (17)	.39 (10)	.28 (7.2)	1.18 (30)	.20 (5)	2.28 (58)	—	3.7 (103.5)
PJTYS506*†	1.97 (50)	3.31 (84)	.67 (17)	.39 (10)	.35 (9)	.24 (6)	.20 (5)	1.42 (36)	—	3.1 (89)
PJTYS5015*†	1.97 (50)	3.66 (93)	.67 (17)	.39 (10)	.35 (9)	.59 (15)	.20 (5)	1.42 (36)	—	3.3 (94)
PJTYS5030*†	1.97 (50)	5.12 (130)	.67 (17)	.39 (10)	.35 (9)	1.18 (30)	.20 (5)	2.28 (58)	—	4.2 (119)

Inches (mm)
** Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

PJTYS6030 thru
PJTYS8070



Model Number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PJTYS6030*†	2.36 (60)	6.18 (157)	1.18 (30)	.79 (20)	.31 (8)	1.18 (45)	.39 (10)	1.97 (50)	.47 (12)	10.4 (294)
PJTYS6050*†	2.36 (60)	7.17 (182)	1.18 (30)	.79 (20)	.31 (8)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	11.6 (328)
PJTYS6070*†	2.36 (60)	8.15 (207)	1.18 (30)	.79 (20)	.31 (8)	3.74 (95)	.39 (10)	1.97 (50)	.47 (12)	12.5 (355)
PJTYS7030*†	2.75 (70)	6.22 (158)	1.18 (30)	.79 (20)	.37 (9.5)	1.18 (45)	.39 (10)	1.97 (50)	.47 (12)	10.9 (309)
PJTYS7050*†	2.75 (70)	7.20 (183)	1.18 (30)	.79 (20)	.37 (9.5)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	12.2 (346)
PJTYS7070*†	2.75 (70)	8.19 (208)	1.18 (30)	.79 (20)	.37 (9.5)	3.74 (95)	.39 (10)	1.97 (50)	.47 (12)	13.1 (370)
PJTYS8030*†	3.15 (80)	6.22 (158)	1.18 (30)	.79 (20)	.37 (9.5)	1.18 (45)	.39 (10)	1.97 (50)	.47 (12)	11.9 (338)
PJTYS8050*†	3.15 (80)	7.20 (183)	1.18 (30)	.79 (20)	.37 (9.5)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	13.1 (372)
PJTYS8070*†	3.15 (80)	8.19 (208)	1.18 (30)	.79 (20)	.37 (9.5)	3.74 (95)	.39 (10)	1.97 (50)	.47 (12)	14.1 (399)

Inches (mm)
** Cup Material
† Vacuum Port

Parker Hannifin Corporation
Pneumatic Division
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PCG Multiple Bellows Vacuum Cups

Features

- **Soft Touch**
- **Extra Level Compensation**
- **Flexible Sealing Lip for Irregular Curved Surfaces**
- **5mm to 90mm in Diameter**

Applications

These multiple bellow cups are designed for applications that require additional level compensation, more flexibility, or minimum back pressure for a “soft touch”. The multiple bellow has a soft sealing edge good for a variety of sensitive applications; such as food packaging, CD / DVD, medical packaging, and highly irregular curved surfaces. Cups can also be used to assist with sheet separation in destack operations.

PCG Series Vacuum Cups

2-1/2 bellows design minimizes contact pressure applied to the product. The soft seal lip and touch allows the cup to conform to the product’s surface to make a vacuum seal.

PCTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Nickel plated brass materials.

PCTM Series Male Thread Connector

Simple male connection for low profile positions secured to a plate or bracket. UNF, NPT, G, metric threads. Internal hex for easy assembly. Fitting Material: Aluminum.

PCYK Series 90° Barbed Adapter

Side stem connectors allow you to secure the stem with a bolt through a plate or “L” bracket to allow the tube connection from the side port. Nickel plated brass materials.

PCTF Series Female Thread Connector

Simple female connection for low profile positions secured to a plate or bracket. NPSF, G threads. Internal hex for easy assembly. Fitting Material: Aluminum.

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Model Number Index (Cups Only)

(Bold Items are Most Popular)

PCG - 5 - NBR

Cup Diameter (mm)	
5 (5)	**30 (30)**
7 (7)	**40 (40)**
10 (10)	**60 (60)**
15 (15)	90 (90)
20 (20)	

Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Specifications

Suction Cup Material	**NBR**	**NBRE**	**CR**	**SI**	**SIE**	**U**	**FKM**	**SH**
	Nitrile	**Nitrile ESD***	**Chloroprene**	**Silicone**	**Silicone ESD***	**Urethane**	**Flouro Rubber**	**Silicone High Temp**
Operating Temperature (°C)	-20° to +120°	-30° to +120°	-30° to +140°	-60° to +250°	-60° to +250°	-30° to +120°	-10° to +230°	-50° to +300°
Color	Black	Black / Blue Dot	Green or Black / Green Dot	White	Black / Red Dot	Blue	Black / White Dot	Grey
Hardness, Shore A (°Sh)	55 ±5	70 ±5	55 ±5	55 ±5	55 ±5	55 ±5	70 ±5	55 ±5
Electrical Resistance (Ωm)	—	800 to 1000	—	—	800 to 1000	—	—	—
Wear Resistance	•••••		•••••	••		••••••	•••	••
Tear Strength	••••		•••••	•		••••••	•	•
Aging Resistance	••••		•••••	••••••		••••••	••••••	••••••
Ozone Resistance	••••		•••••	••••••		••••••	••••••	••••••
Gasoline Resistance	••••••		•••••	••••		••••••	••••••	••••
Oil Resistance	••••••		•••••	••••••		•••••	••••••	••••••
Acid Resistance	•••		•••••	•••		•	••••••	•••
Alkali Resistance	••••		•••••	•••		•	••••••	•••
Chemical Resistance	•••		••••	••		••••••	••••••	••
Mechanical Resistance	••••		••••	••••		•••••	••	••••

•••••• = excellent; ••••• = very good; •••• = good; ••• = medium; •• = poor; • = not recommended

* ESD: Electric Static Dissipative Material

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Pneumatic Division
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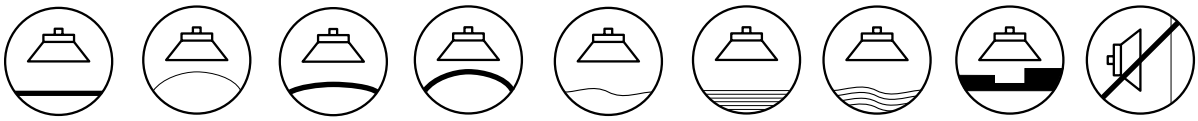
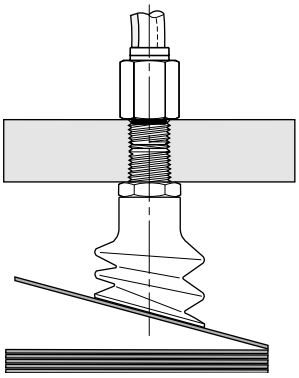
Application Guide

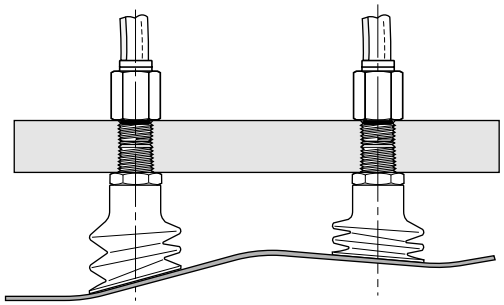
2-1/2 Bellows



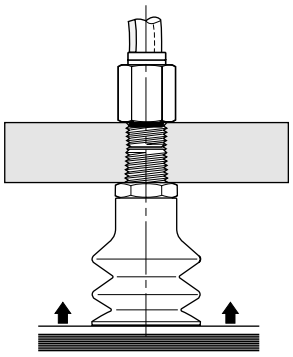
- Destack Perimeter Separation



- Level Compensation for applications where Level Compensators do not have adequate space

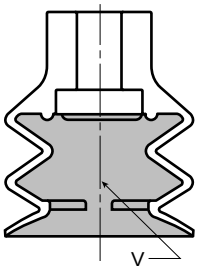


- Controlling downstroke lifts product on contact

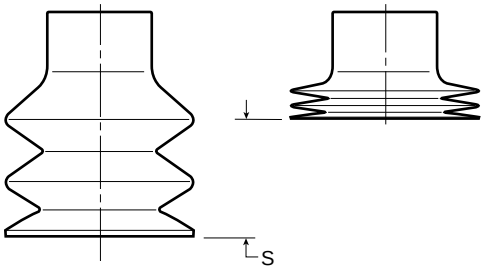


Main Data for 2-1/2 Bellows PJG Cups

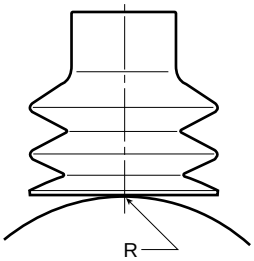
Volume



Cup Deflection



Radius



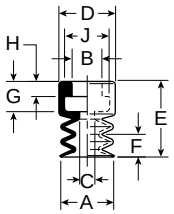
Model Number	Cup Diameter Inches (mm)	Area cm²	Volume (V) Liters	Lifting Force @ 60% (N)		Cup Deflection (S) (mm)	Radius (R) (mm)
PCG-5-*	.20 (5)	.20	.00003	1.20	—	3	3.5
PCG-7-*	.28 (7)	.39	.00004	2.40	—	3	4.0
PCG-10-*	.39 (10)	.79	.0001	4.80	—	3	5.0
PCG-15-*	.59 (15)	1.77	.0009	10.8	—	10	6.0
PCG-20-*	.79 (20)	3.14	.002	19.2	—	10	8.0
PCG-30-*	1.18 (30)	7.07	.009	43.2	—	14.5	20.0
PCG-40-*	1.57 (40)	12.6	.018	76.9	—	22	30.0
PCG-60-*	2.36 (60)	28.3	.072	173	—	27	55.0
PCG-90-*	3.54 (90)	63.6	.1639	389	—	42	80.0

* Cup Material

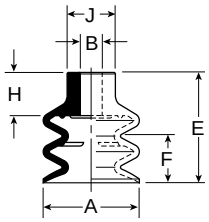
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

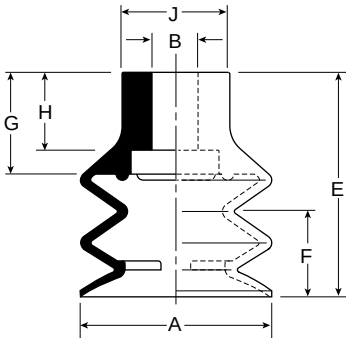
PCG-5 and PCG-7



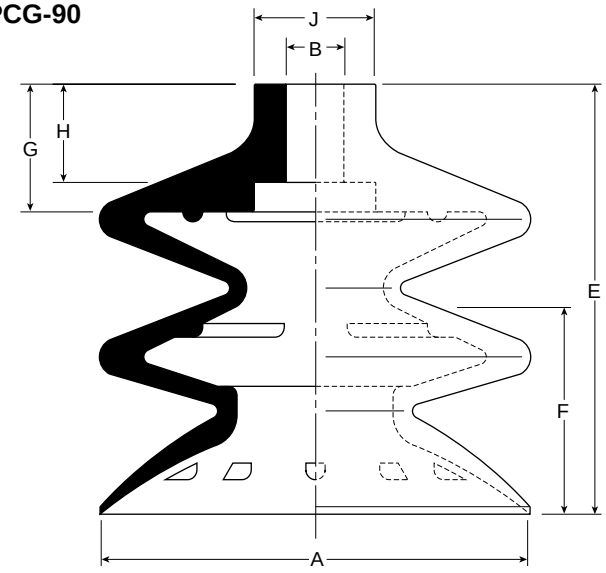
PCG-10 thru PCG-20



PCG-30 thru PCG-60



PCG-90



Model Number	ØA	ØB	ØC	ØD	E	F	G	H	J
PCG-5-*	.20 (5)	.16 (4)	.08 (2)	.30 (7.5)	.37 (9.5)	.12 (3)	.16 (4)	.08 (2)	.24 (6)
PCG-7-*	.28 (7)	.16 (4)	.08 (2)	.30 (7.5)	.39 (10)	.12 (3)	.16 (4)	.08 (2)	.24 (6)
PCG-10-*	.35 (9)	.20 (5)	—	—	.59 (15)	.12 (3)	.28 (7)	—	.35 (9)
PCG-15-*	.60 (15.2)	.20 (5)	—	—	.90 (22)	.39 (10)	.35 (9)	—	.39 (10)
PCG-20-*	.79 (20)	.20 (5)	—	—	.91 (23)	.39 (10)	.35 (9)	—	.39 (10)
PCG-30-*	1.26 (32)	.31 (8)	—	—	1.48 (37.5)	.57 (14.5)	.67 (17)	.51 (13)	.71 (18)
PCG-40-*	1.65 (42)	.31 (8)	—	—	1.81 (46)	.87 (22)	.67 (17)	.51 (13)	.79 (20)
PCG-60-*	2.44 (62)	.31 (8)	—	—	2.17 (55)	1.06 (27)	.71 (18)	.51 (13)	.85 (21.5)
PCG-90-*	3.46 (88)	.47 (12)	—	—	3.44 (87.5)	1.65 (42)	1.02 (26)	.79 (20	.98 (25)

Inches (mm)
* Cup Material

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PCTM Vacuum Cup Assemblies

Model Number Index

PCTM - 5 - NBR - M5

Cup Diameter (mm)			
5	(5)	**30**	**(30)**
7	**(7)**	**40**	**(40)**
10	**(10)**	**60**	**(60)**
15	**(15)**	90	(90)
20	**(208)**		

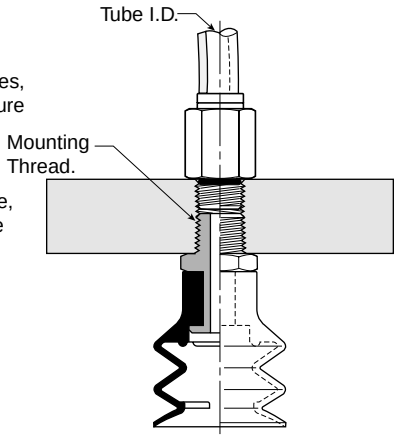
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Mounting Thread	
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
N2	**1/4 NPT**
G2	**1/4 BSPP**
See Chart Below	

(Bold Items are Most Popular)

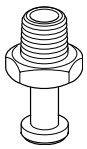
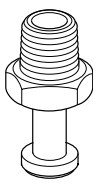
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Male Threaded Fitting for PCG Cups

(Bold Items are Most Popular)

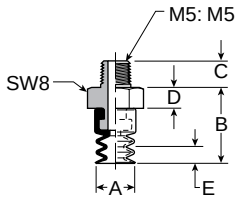
Included in Kit	Cup Diameter (mm)	Mounting Thread	Mounting Thread Code	FTM & CTM Fitting Part Number	Min. Tube ID
	5, 7	M5	M5x0.8 Male	**FTM-5A-M5H**	.098 (2.5mm)
	10, 15, 20	M5	M5x0.8 Male	**CTM-10-M5H**	.156 (4mm)
		N1	1/8 NPT Male	CTM-10-N1	
		G1	1/8 BSPP Male	**CTM-10-G1H**	
	30, 40, 60	N1	1/8 NPT Male	**CTM-30-N1**	.25 (6.35mm)
		G1	1/8 BSPP Male	**CTM-30-G1H**	
		G2	1/4 BSPP Male	**CTM-30-G2**	
	90	N2	1/4 NPT Male	**CTM-90-N2**	.31 (8mm)
		G2	1/4 BSPP Male	**CTM-90-G2**	

Inches (mm)

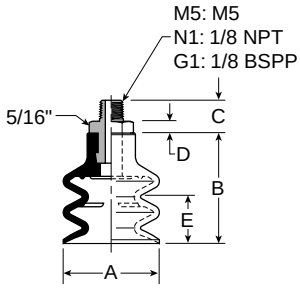
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

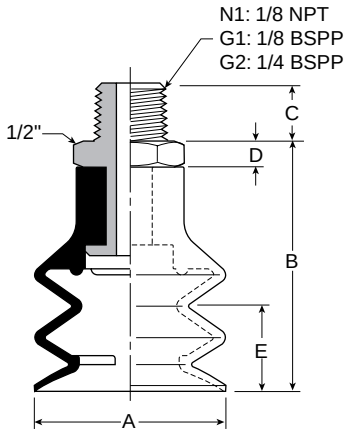
PCTM-5 and PCTM-7



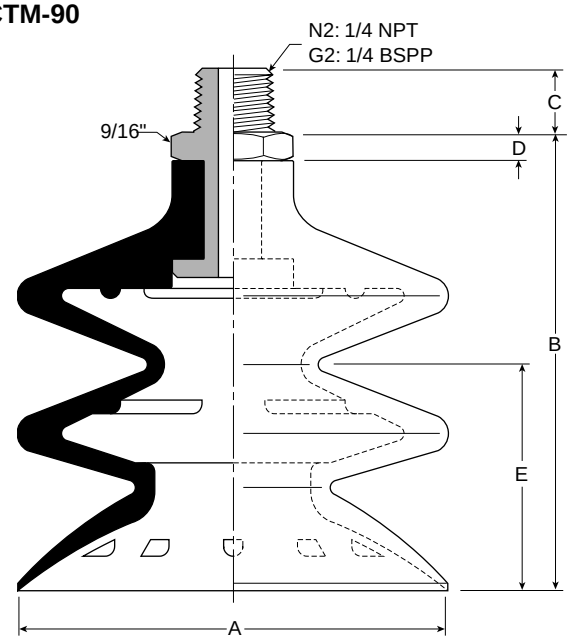
PCTM-10 thru PCTM-20



PCTM-30 thru PCTM-60



PCTM-90



Model Number	ØA	B	C (M5)	C (N1 / G1)	C M10 / G2)	C (N2)	D	E
PCTM-5-*-†	.20 (5)	.51 (13)	.18 (4.5)	—	—	—	.14 (3.5)	.12 (3)
PCTM-7-*-†	.28 (7)	.53 (13.5)	.18 (4.5)	—	—	—	.14 (3.5)	.12 (3)
PCTM-10-*-†	.35 (9)	.69 (17.5)	.18 (4.5)	.31 (8)	—	—	.10 (2.5)	.12 (3)
PCTM-15-*-†	.60 (15.2)	1.04 (25.5)	.18 (4.5)	.31 (8)	—	—	.10 (2.5)	.39 (10)
PCTM-20-*-†	.79 (20)	1.04 (25.5)	.18 (4.5)	.31 (8)	—	—	.10 (2.5)	.39 (10)
PCTM-30-*-†	1.26 (32)	1.67 (42.5)	—	.31 (8)	.39 (10)	—	.20 (5)	.57 (14.5)
PCTM-40-*-†	1.65 (42)	2.01 (51)	—	.31 (8)	.39 (10)	—	.20 (5)	.87 (22)
PCTM-60-*-†	2.44 (62)	2.36 (60)	—	.31 (8)	.39 (10)	—	.20 (5)	1.06 (27)
PCTM-90-*-†	3.46 (88)	3.64 (92.5)	—	—	.39 (10)	.59 (15)	.20 (5)	1.65 (42)

Inches (mm)
* Cup Material
† Thread Size

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PCTF Vacuum Cup Assemblies

Model Number Index

PCTF - 5 - NBR - M5

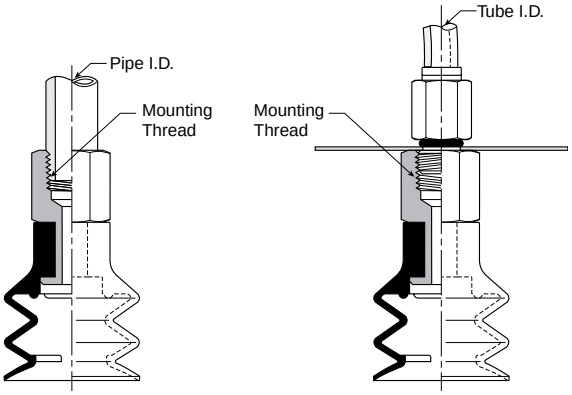
Cup Diameter (mm)			
5	(5)	**30**	**(30)**
7	**(7)**	**40**	**(40)**
10	**(10)**	**60**	**(60)**
15	**(15)**	90	(90)
20	**(20)**		

Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Mounting Thread	
M5	**M5**
N1	**1/8 NPT**
G1	**1/8 BSPP**
N2	**1/4 NPT**
G2	**1/4 BSPP**
See Chart Below	

(Bold Items are Most Popular)

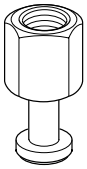
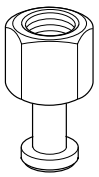
Installation Mounting



Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.

Female Threaded Fitting for PCG Cups

(Bold Items are Most Popular)

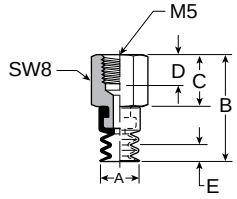
Included in Kit	Cup Diameter (mm)	Mounting Thread	Mounting Thread Code	FTF & CTF Fitting Part Number	Min. Tube ID
	5, 7	M5	M5x0.8 Female	**FTF-5A-M5**	.098 (2.5mm)
	10, 15, 20	G1	1/8 BSPP Female	**CTF-10-G1**	.156 (4mm)
	30, 40, 60	N1	1/8 NPT Female	**CTF-30-N1**	.25 (6.35mm
		G1	1/8 BSPP Female	**CTF-30-G1**	
		G2	1/4 BSPP Female	**CTF-30-G2**	
	90	N2	1/4 NPT Female	**CTF-90-N2**	.31 (8)
		G2	1/4 BSPP Female	**CTF-90-G2**	

Inches (mm)

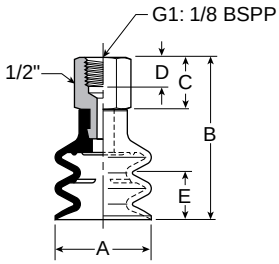
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

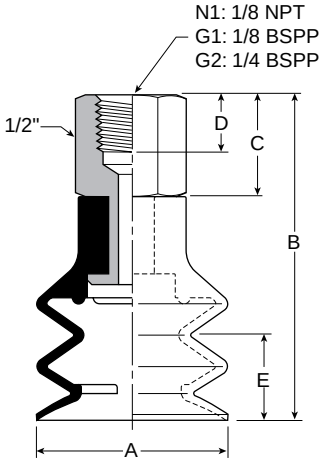
PCTF-5 and PCTF-7



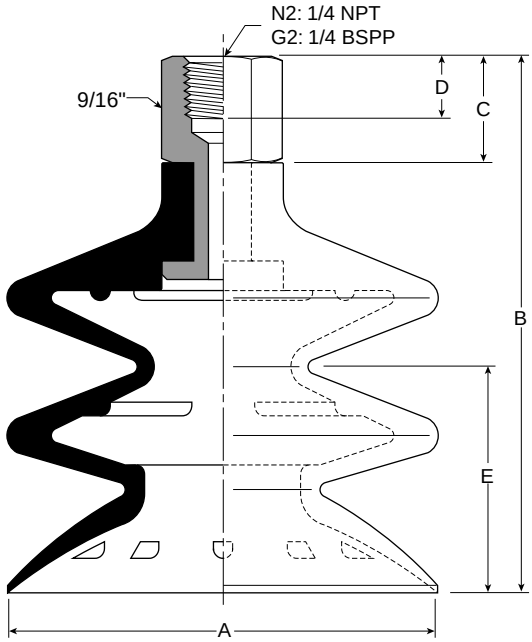
PCTF-10 thru PCTF-20



PCTF-30 thru PCTF-60



PCTF-90



Model Number	ØA	B	C	D	E
PCTF5*†	.20 (5)	.85 (21.5)	.47 (12)	.31 (8)	.12 (3)
PCTF7*†	.28 (7)	.87 (22)	.47 (12)	.31 (8)	.12 (3)
PCTF10*†	.35 (9)	1.06 (27)	.47 (12)	.31 (8)	.12 (3)
PCTF15*†	.60 (15.2)	1.38 (35)	.47 (12)	.31 (8)	.39 (10)
PCTF20*†	.79 (20)	1.38 (35)	.47 (12)	.31 (8)	.39 (10)
PCTF30*†	1.26 (32)	2.03 (51.5)	.55 (14)	.31 (8)	.57 (14.5)
PCTF40*†	1.65 (42)	2.36 (60)	.55 (14)	.31 (8)	.87 (22)
PCTF60*†	2.44 (62)	2.72 (69)	.55 (14)	.31 (8)	1.06 (27)
PCTF90*†	3.46 (88)	4.13 (105)	.69 (17.5)	.39 (10)	1.65 (42)

Inches (mm)
* Cup Material
† Thread Size

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PCTK Vacuum Cup Assemblies

Model Number Index

PCTK - 5 - NBR - —

Cup Diameter (mm)			
5	(5)	**30**	**(30)**
7	**(7)**	**40**	**(40)**
10	**(10)**	**60**	**(60)**
15	**(15)**		
20	**(20)**		

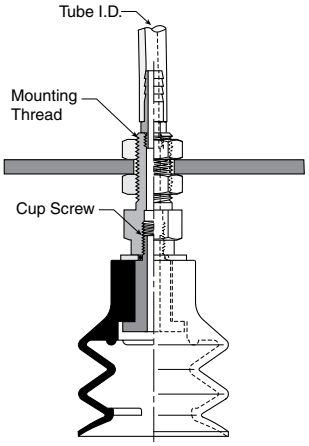
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Port	
Blank	**Barb**
See Chart Below	

(Bold Items are Most Popular)

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Barbed Bulkhead for PCG Cups

(Bold Items are Most Popular)

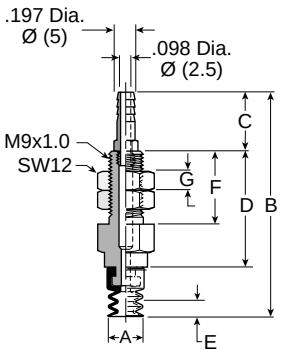
Included in Kit	Cup Diameter (mm)	Vacuum Port		FTK & CTK Fitting Part Number	Cup Screw Only	Mounting Thread	Tube ID
		Code	Thread				
	5, 7	Blank	Barb	**FTK-5A**	N/A	M9x1 Male	.156 (4)
	10, 15, 20	Blank	Barb	**CTK-10**	TN-PC-10-M5	M8x1.25 Male	.156 (4)
	30, 40, 60	Blank	Barb	**CTK-30**	TN-PC-30-M8	M10x1.5 Male	.156 (4)

Inches (mm)

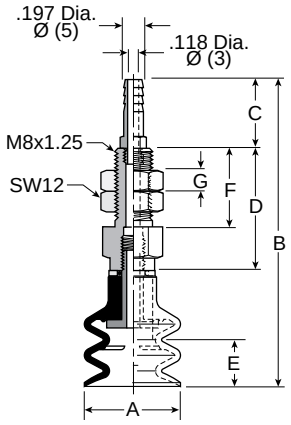
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

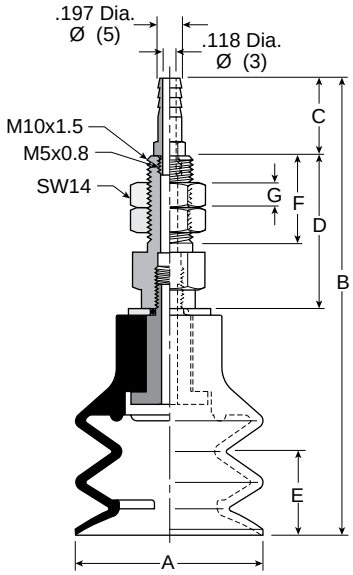
PCTK-5 and PCTK-7



PCTK-10 thru PCTK-20



PCTK-30 thru PCTK -60



Model Number	ØA	B	C	D	E	F	G	Wt oz. (g)
PCTK-5-*	.20 (5)	1.32 (33.5)	.39 (10)	.55 (14)	.12 (3)	.47 (12)	.12 (3)	.56 (11)
PCTK-7-*	.28 (7)	1.34 (34)	.39 (10)	.55 (14)	.12 (3)	.47 (12)	.12 (3)	.56 (11)
PCTK-10-*	.35 (9)	2.21 (56.2)	.63 (16)	.88 (22.5)	.12 (3)	.59 (15)	.16 (4)	.78 (22)
PCTK-15-*	.60 (15.2)	2.53 (64.2)	.63 (16)	.86 (22)	.39 (10)	.59 (15)	.16 (4)	.78 (22)
PCTK-20-*	.79 (20)	2.53 (64.2)	.63 (16)	.86 (22)	.39 (10)	.59 (15)	.16 (4)	.78 (22)
PCTK-30-*	1.26 (32)	3.42 (86.8)	.63 (16)	1.26 (32)	.57 (14.5)	.79 (20)	.20 (5)	1.62 (46)
PCTK-40-*	1.65 (42)	3.75 (95.3)	.63 (16)	1.26 (32)	.86 (22)	.79 (20)	.20 (5)	1.94 (55)
PCTK-60-*	2.44 (62)	4.11 (104.3)	.63 (16)	1.26 (32)	1.06 (27)	.79 (20)	.20 (5)	3.00 (85)

Inches (mm)
* Cup Material
† Vacuum Port

Parker Hannifin Corporation
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PCYK Vacuum Cup Assemblies

Model Number Index

PCYK - 5 - NBR - —

Cup Diameter (mm)			
5	(5)	**30**	**(30)**
7	**(7)**	**40**	**(40)**
10	**(10)**	**60**	**(60)**
15	**(15)**	90	(90)
20	**(20)**		

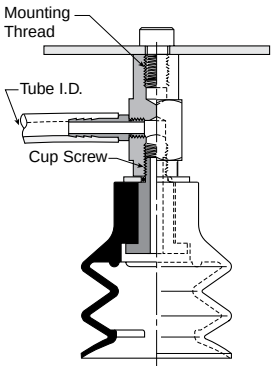
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
NBRE	Nitrile ESD
CR	Chloroprene
SIE	Silicone ESD
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
See Chart Below	

(Bold Items are Most Popular)

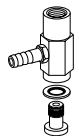
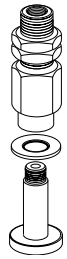
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



90° Barbed Adapter for PCG Cups

(Bold Items are Most Popular)

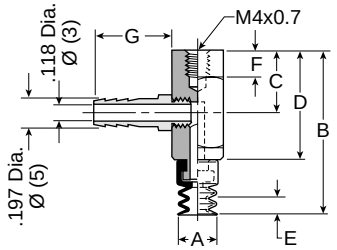
Included in Kit	Cup Diameter (mm)	Vacuum Port Code	Vacuum Port Thread	FYK & CYK Fitting Part Number	Cup Screw Only	Mounting Thread	Tube ID
	5, 7	Blank	Barb	**FYK-5A**	N/A	M4x0.7 Female	.156 (4)
	10, 15, 20	Blank	Barb	**CYK-10**	TN-PC-10-M5	M4x0.7 Female	.156 (4)
	30, 40, 60	Blank	Barb	**CYK-30**	TN-PC-30-M8	M6x1.0 Female	.156 (4)
	90	N1	1/8 NPT	**CYK-90-N1**	**TN-PC-90-M12**	M16x1.5 Female	N/A
		G1	1/8 BSPP	CYK-90-G1			
		R1	1/8 BSPT	CYK-90-R1			

Inches (mm)

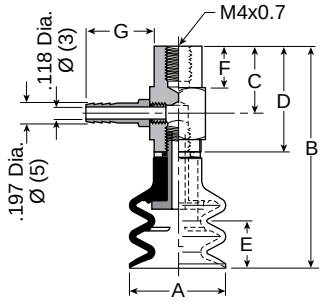
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

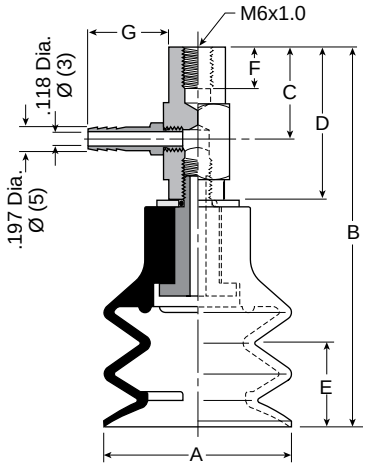
PCYK-5 and PCYK-7



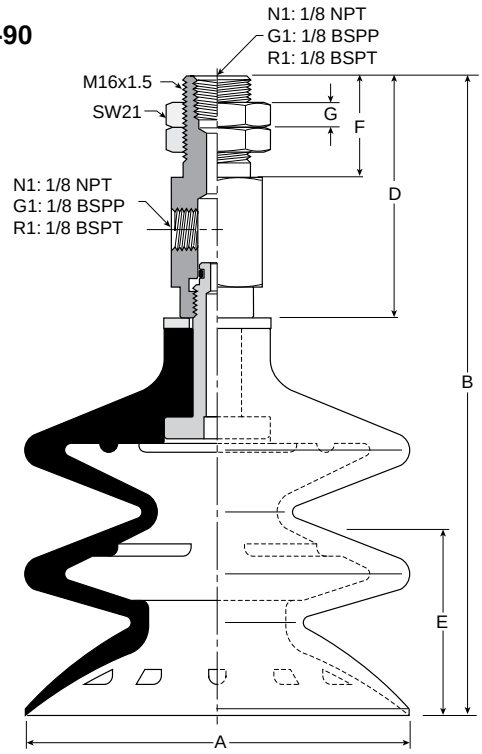
PCYK-10 thru PCYK-20



PCYK-30 thru PCYK-60



PCYK-90



Model Number	ØA	B	C	D	E	F	G	Wt oz. (g)
PCYK-5-*	.20 (5)	1.26 (32)	.51 (13)	.89 (22.5)	.12 (3)	.24 (6)	.63 (16)	.56 (16)
PCYK-7-*	.28 (7)	1.28 (32.5)	.51 (13)	.89 (22.5)	.12 (3)	.24 (6)	.63 (16)	.56 (16)
PCYK-10-*	.35 (9)	1.58 (40.2)	.55 (14)	.87 (22)	.12 (3)	.24 (6)	.63 (16)	.78 (22)
PCYK-15-*	.60 (15.2)	1.90 (48.2)	.55 (14)	.87 (22)	.39 (10)	.24 (6)	.63 (16)	.78 (22)
PCYK-20-*	.79 (20)	1.90 (48.2)	.55 (14)	.87 (22)	.39 (10)	.24 (6)	.63 (16)	.78 (22)
PCYK-30-*	1.26 (32)	2.79 (70.8)	.79 (20)	1.26 (32)	.57 (14.5)	.31 (8)	.63 (16)	1.62 (46)
PCYK-40-*	1.65 (42)	3.12 (79.3)	.79 (20)	1.26 (32)	.87 (22)	.31 (8)	.63 (16)	1.94 (55)
PCYK-60-*	2.44 (62)	3.48 (88.3)	.79 (20)	1.26 (32)	1.06 (27)	.31 (8)	.63 (16)	3.00 (85)
PCYK-90-*	3.46 (88)	5.70 (144.8)	.91 (23)	2.17 (55)	1.65 (42)	.43 (11)	—	10.58 (300)

Inches (mm)
* Cup Material
† Thread Size

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PKG Automotive Vacuum Cups

Features

- **Flat Design To Prevent Deforming Product**
- **Cup Replacement Simplied**
- **Recyclable Rubber**
- **Lower Maintenace Cost**
- **Soft Durometers**
- **Silicon Free**
- **40mm to 110mm Diameters**

Applications

The PKG Cups are well suited for all operations within automotive manufacturing; sheet metal destack, body assembly, press transfer, final assembly, fixtures.

PKG Series Vacuum Cups

The PKG is a single edge deep cup for products with a radius. The PKFG is a single lip design with a grooved foot pattern to prevent vacuum from deforming thin products. The PKJG is a single bellow cup designed to work with flexible and curved products. All of these designs incorporate a grooved and textured underside to increase frictional and holding forces. The cup assembly has a variety of connector designs to replace only the cup to minimize operating expenses.

PKGF Female Adapter Series

Simple female connection for low profile positions secured to a plate or bracket. Male screw to secure cup has an internal hex for easy assembly.
Fitting Material: Aluminum.

PKFT Adapter Series

Simple adapter connection for low profile positions secured to a plate or bracket. Male screw to secure cup has an internal hex for easy assembly.
Fitting Material: Aluminum. O-Ring-210 Buna.

PKGT Adapter Series

Simple adapter connection for low profile positions secured to a plate or bracket. Male screw to secure cup has an internal hex for easy assembly.
Fitting Material: Aluminum. O-Ring-210 Buna.

PKJF Female Adapter Series

Simple female connection for low profile positions secured to a plate or bracket. Male screw to secure cup has an internal hex for easy assembly.
Fitting Material: Aluminum.

PKFF Female Adapter Series

Simple female connection for low profile positions secured to a plate or bracket. Male screw to secure cup has an internal hex for easy assembly.
Fitting Material: Aluminum.

PKJT Adapter Series

Simple adapter connection for low profile positions secured to a plate or bracket. Male screw to secure cup has an internal hex for easy assembly.
Fitting Material: Aluminum. O-Ring-210 Buna.

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Model Number Index (Cups Only) (Bold Items are Most Popular)

PKG - 60 - NBR

Cup Diameter (mm)	Cup Material
60 (60) 75 (75) **100 (100)**	**NBR Nitrile Rubber**


PKG

PKFG - 75 - NBR

Cup Diameter (mm)	Cup Material
75 (75) **100 (100)**	**NBR Nitrile Rubber**


PKFG

PKJG - 40 - NBR

Cup Diameter (mm)	Cup Material
40 (40) 50 (50) 60 (60 **80 (80)** **110 (110)**	**NBR Nitrile Rubber**


PKJG

Specifications

Suction Cup Material	NBR Nitrile
Operating Temperature (°C)	-20° to +120°
Color	Black
Hardness, Shore A (°Sh)	55 ±5
Wear Resistance	•••••
Tear Strength	••••
Aging Resistance	••••
Ozone Resistance	••••
Gasoline Resistance	••••••
Oil Resistance	••••••
Acid Resistance	•••
Alkali Resistance	••••
Chemical Resistance	•••
Mechanical Resistance	••••

•••••• = excellent; ••••• = very good; •••• = good; ••• = medium;
•• = poor; • = not recommended

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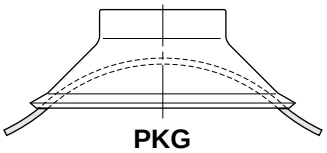
www.parker.com/pneumatics

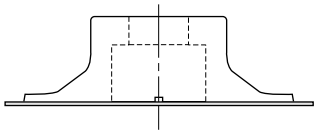
Application Guide

- Deep Cup for External Curves
- Slip Resistant Foot Pattern



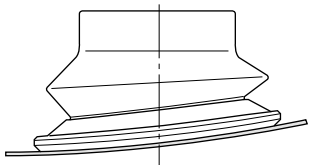
PKG

- No Deformation
- Thin Flat Sheets
- Slip Resistant Foot Pattern



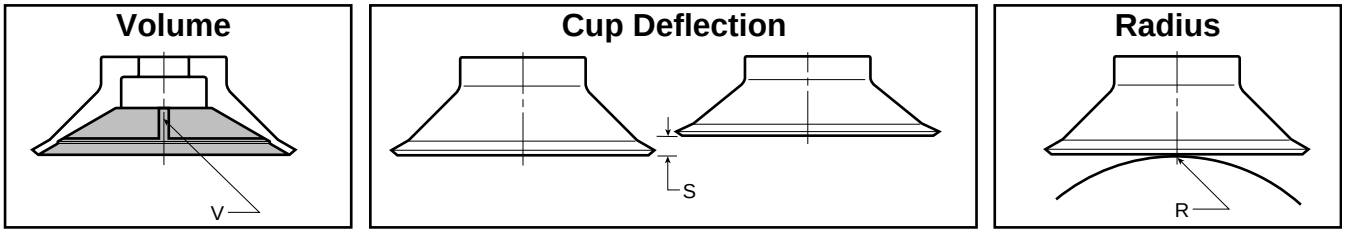
PKFG

- Bellows for Any Curves
- Slip Resistant Foot Pattern

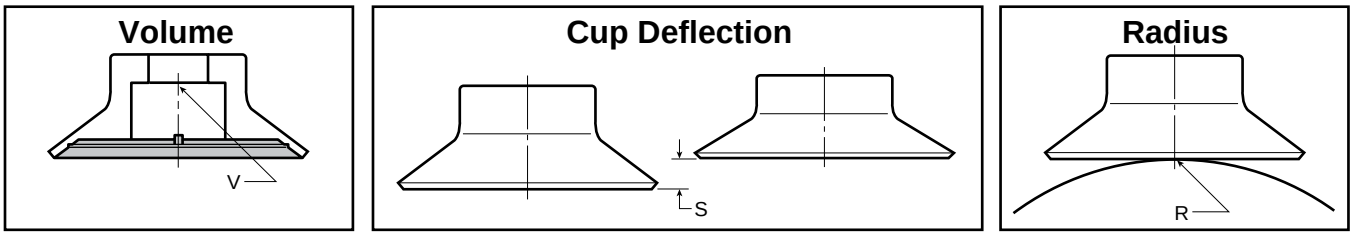


PKJG

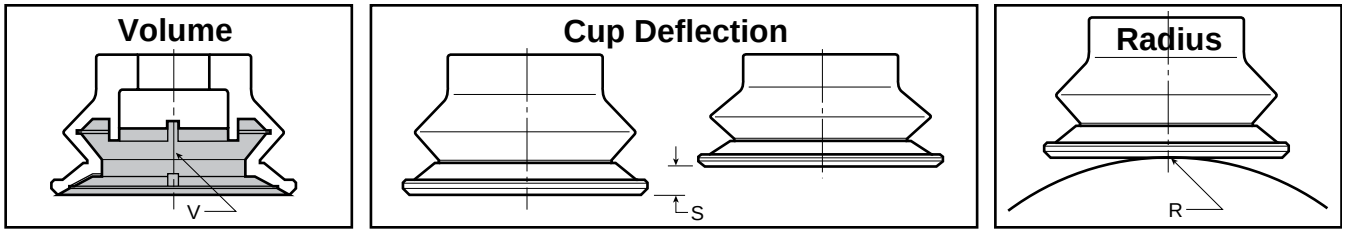
Main Data for PKG Suction Cups



Main Data for PKFG Suction Cups



Main Data for PKJG Suction Cups



Model Number	Cup Diameter Inches (mm)	Area cm²	Volume (V) Liters	Lifting Force @ 60% (N)		Cup Deflection (S) (mm)	Radius R (mm)
PKG-60-*	2.36 (60)	28.3	.06	173	86.5	9	60
PKG-75-*	2.95 (75)	44.2	.07	270	135	13	100
PKG-100-*	3.94 (100)	78.5	.09	480	240	17.3	150
PFKG-75-*	2.95 (75)	44.2	.03	270	65.0	5	140
PFKG-100-*	3.94 (100)	78.5	.05	480	113	8	200
PKJG-40-*	1.57 (40)	12.6	.02	76.9	—	10.5	30
PKJG-50-*	1.98 (50)	19.6	.03	120	—	19	40
PKJG-60-*	2.36 (60)	28.3	.04	173	—	14	52
PKJG-80-*	3.15 (80)	50.3	.05	308	—	17	70
PKJG-110-*	4.33 (110)	95.0	.07	581	—	23	130

* Cup Material

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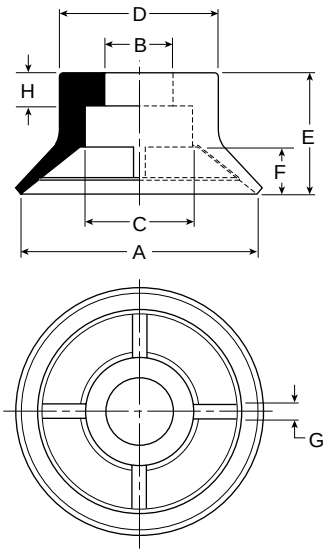
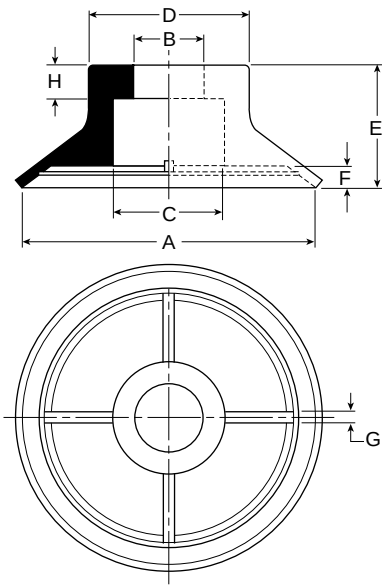
Dimensions

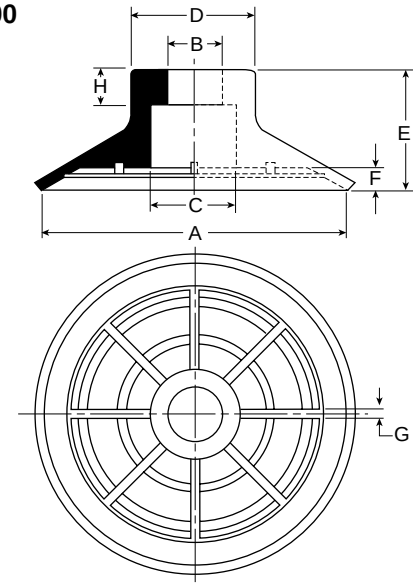
PKG-60 thru PKG-100



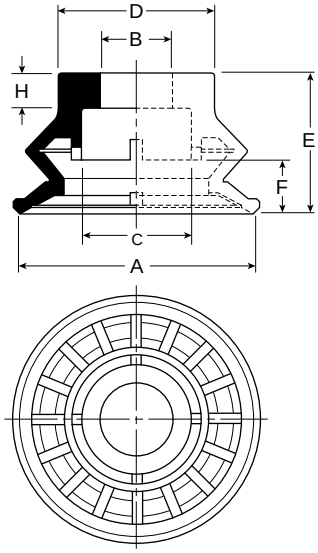
PKFG-75



PKFG-100



PKJG-40 thru PKJG-110



Model Number	ØA	ØB	ØC	ØD	E	F	G	H
PKG-60-*	2.36 (60)	.73 (18.5)	1.10 (28)	1.57 (40)	1.22 (31)	.35 (9)	.12 (3)	.35 (9)
PKG-75-*	2.95 (75)	.73 (18.5)	1.10 (28)	1.57 (40)	1.26 (32)	.51 (13)	.12 (3)	.35 (9)
PKG-100-*	3.94 (100)	.73 (18.5)	1.10 (28)	1.57 (40)	1.54 (39)	.68 (17.3)	.16 (4)	.35 (9)
PKFG-75-*	2.95 (75)	.73 (18.5)	1.10 (28)	1.57 (40)	1.26 (32)	.20 (5)	.12 (3)	.35 (9)
PKFG-100-*	3.94 (100)	.73 (18.5)	1.10 (28)	1.57 (40)	1.54 (39)	.31 (8)	.16 (4)	.35 (9)
PKJG-40-*	1.57 (40)	.73 (18.5)	1.10 (28)	1.57 (40)	1.38 (35)	.41 (10.5)	—	.37 (9.5)
PKJG-50-*	1.98 (50)	.73 (18.5)	1.10 (28)	1.57 (40)	1.38 (35)	.75 (19)	—	.35 (9)
PKJG-60-*	2.36 (60)	.73 (18.5)	1.10 (28)	1.57 (40)	1.38 (35)	.55 (14)	—	.35 (9)
PKJG-80-*	3.15 (80)	.73 (18.5)	1.10 (28)	1.57 (40)	1.54 (39)	.67 (17)	—	.35 (9)
PKJG-110-*	4.33 (110)	.73 (18.5)	1.10 (28)	1.57 (40)	1.98 (50)	.91 (23)	—	.35 (9)

Inches (mm)

* Cup Material

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PKGF Vacuum Cup Assemblies

Model Number Index

PKGF - 60 - NBR - N3

Cup Diameter (mm)
60 (60)
75 (75)
100 (100)

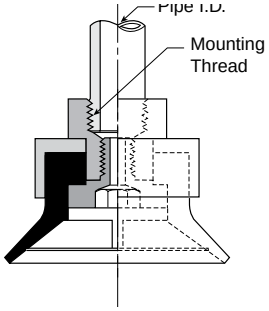
Cup Material
NBR Nitrile Rubber

Mounting Thread
N3 3/8 NPSF
G3 3/8 BSPP

(Bold Items are Most Popular)

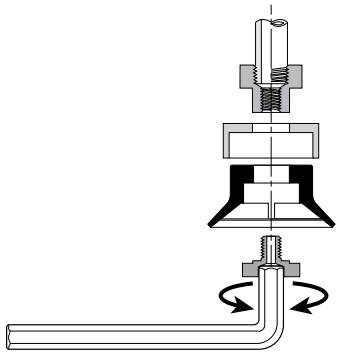
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



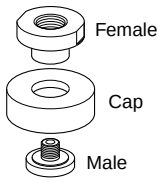
Note:
Simply remove the hex keyed male screw to replace cup.

Hex Key Size: 8mm



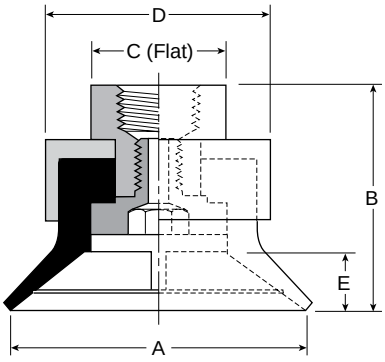
Female Adapter for PKG Cups

(Bold Items are Most Popular)

Adapter Components	Adapter Part Numbers	Thread Sizes	Description
	**TN-PK-F-N3**	3/8 NPT	Female Port
	TN-PK-F-G3	3/8 BSPP	Female Port
	TN-PK-100-M10	M10x1.5	Male Screw
	PKG-C-6710	—	Cap

Dimensions

PKGF-60 thru
PKGF-100



Model Number	ØA	B	C	D	E
PKGF-60-*-†	2.36 (60)	1.85 (46.9)	1.10 (28)	1.81 (46)	.35 (9)
PKGF-75-*-†	2.95 (75)	1.88 (47.8)	1.10 (28)	1.81 (46)	.51 (13)
PKGF-100-*-†	3.94 (100)	2.16 (54.9)	1.10 (28)	1.81 (46)	.68 (17.3)

Inches (mm)
* Cup Material
† Thread Size

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PKGT Vacuum Cup Assemblies

Model Number Index

PKGT - 60 - NBR

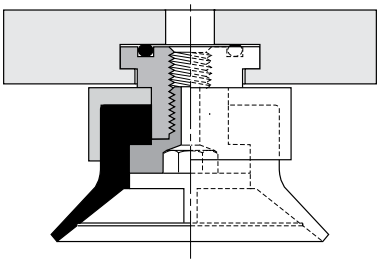
Cup Diameter (mm)
60 (60)
75 (75)
100 (100)

Cup Material
NBR Nitrile Rubber

(Bold Items are Most Popular)

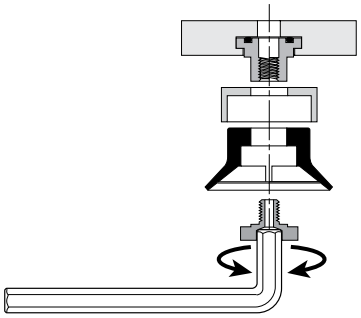
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Note:
Simply remove the hex keyed male screw to replace cup.

Hex Key Size: 8mm

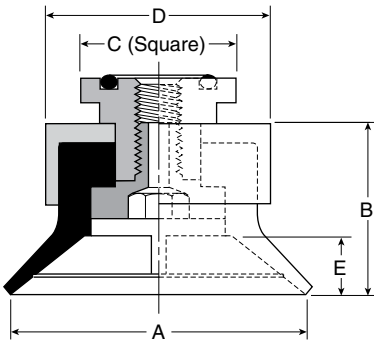


Adapter for PKG Cups (Bold Items are Most Popular)

Adapter Components	Adapter Part Numbers	Thread Sizes	Description
Adapter Cap Male	**TN-PK-T**	—	Adapter / O-ring
	PKG-C-6710	—	Cap
	TN-PK-100-M10	M10x1.5	Male Screw

Dimensions

PKGT-60 and PKGT-100



Model Number	ØA	B	C	D	E
PKGT-60-*	2.36 (60)	1.33 (34)	1.10 (28)	1.81 (46)	.04 (1.1)
PKGT-75-*	2.95 (75)	1.38 (35)	1.10 (28)	1.81 (46)	.04 (1.1)
PKGT-100-*	3.94 (100)	1.65 (42)	1.10 (28)	1.81 (46)	.05 (1.3)

Inches (mm)
* Cup Material

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PKFF Vacuum Cup Assemblies

Model Number Index

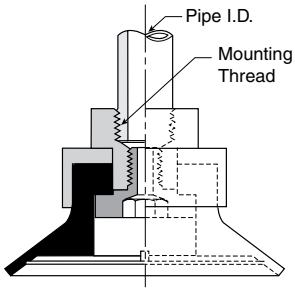
PKFF - 75 - NBR - N3

Cup Diameter (mm)	Cup Material	Mounting Thread
75 (75)	**NBR Nitrile Rubber**	**N3 3/8 NPSF**
100 (100)		**G3 3/8 BSPP**

(Bold Items are Most Popular)

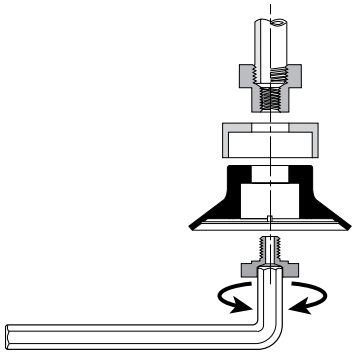
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



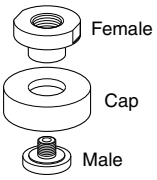
Note:
Simply remove the hex keyed male screw to replace cup.

Hex Key Size: 8mm



Female Adapter for PKFG Cups

(Bold Items are Most Popular)

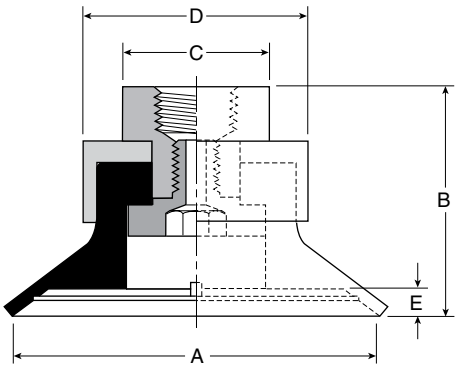
Adapter Components	Adapter Part Numbers	Thread Sizes	Description
	**TN-PK-F-N3**	3/8 NPT	Female Port
	TN-PK-F-G3	3/8 BSPP	Female Port
	TN-PK-100-M10	M10x1.5	Male Screw
	PKG-C-6710	—	Cap

Dimensions

PKFF-75 thru
PKFF-100

Model Number	ØA	B	C	D	E
PKFF-75-*-†	1.57 (40)	1.91 (48.5)	1.10 (28)	1.81 (46)	.20 (5)
PKFF-100-*-†	1.97 (50)	2.19 (55.5)	1.10 (28)	1.81 (46)	.31 (8)

Inches (mm)
* Cup Material
† Thread Size



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PKFT Vacuum Cup Assemblies

Model Number Index

PKFT - 75 - NBR

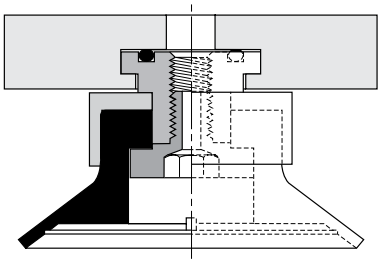
Cup Diameter (mm)
75 (75)
100 (100)

Cup Material
NBR Nitrile Rubber

(Bold Items are Most Popular)

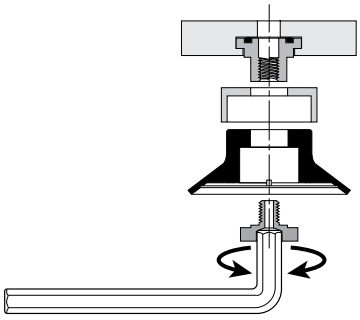
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Note:
Simply remove the hex keyed male screw to replace cup.

Hex Key Size: 8mm



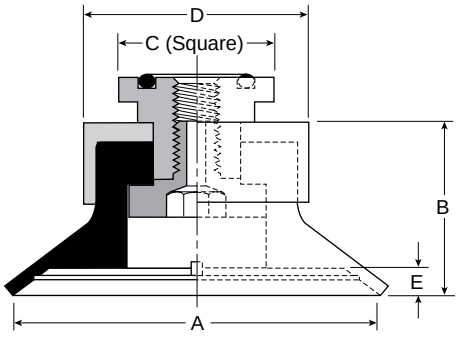
Adapter for PKFG Cups

(Bold Items are Most Popular)

Adapter Components	Adapter Part Numbers	Thread Sizes	Description
Adapter	**TN-PK-T**	—	Adapter / O-ring
Cap	**PKG-C-6710**	—	Cap
Male	**TN-PK-100-M10**	M10x1.5	Male Screw

Dimensions

PKFT-75 thru
PKFT-10



Model Number	ØA	B	C	D	E
PKGT-75-*	1.57 (40)	1.38 (35)	1.10 (28)	1.81 (46)	.20 (5)
PKGT-100-*	1.97 (50)	1.65 (42)	1.10 (28)	1.81 (46)	.31 (8)

Inches (mm)
* Cup Material

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PKJF Vacuum Cup Assemblies

Model Number Index

PKJF - 60 - NBR - N3

Cup Diameter (mm)
40 (40)
50 (50)
60 (60)
80 (80)
110 (110)

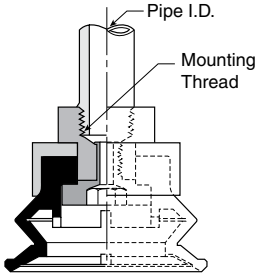
Cup Material
NBR Nitrile Rubber

Mounting Thread
N3 3/8 NPSF
G3 3/8 BSPP

(Bold Items are Most Popular)

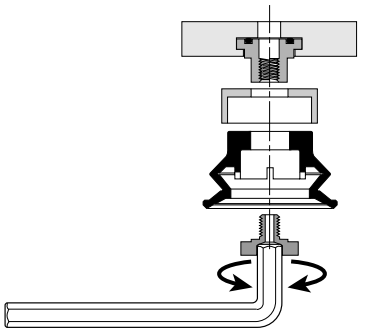
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



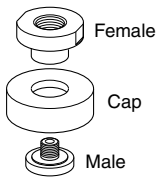
Note:
Simply remove the hex keyed male screw to replace cup.

Hex Key Size: 8mm



Female Adapter for PKFG Cups

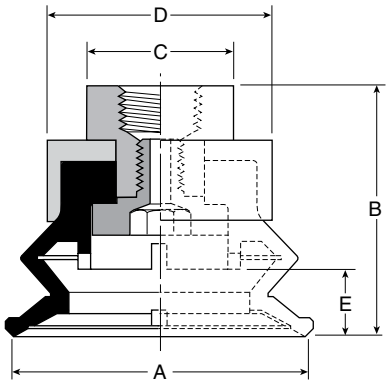
(Bold Items are Most Popular)

Adapter Components	Adapter Part Numbers	Thread Sizes	Description
	**TN-PK-F-N3**	3/8 NPT	Female Port
	TN-PK-F-G3	3/8 BSPP	Female Port
	TN-PK-100-M10	M10x1.5	Male Screw
	PKG-C-6710	—	Cap

Dimensions

PKJF-75 thru PKJF-100

Model Number	ØA	B	C	D	E
PKJF-40-*-†	1.57 (40)	2.03 (51.5)	1.10 (28)	1.81 (46)	.41 (10.5)
PKJF-50-*-†	1.97 (50)	2.03 (51.5)	1.10 (28)	1.81 (46)	.75 (19)
PKJF-60-*-†	2.23 (60)	2.03 (51.5)	1.10 (28)	1.81 (46)	.55 (14)
PKJF-80-*-†	3.15 (80)	2.19 (55.5)	1.10 (28)	1.81 (46)	.67 (17)
PKJF-110-*-†	4.33 (110)	2.62 (66.5)	1.10 (28)	1.81 (46)	.91 (23)



Inches (mm)
* Cup Material
† Thread Size

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PKJT Vacuum Cup Assemblies

Model Number Index

PKJT - 60 - NBR

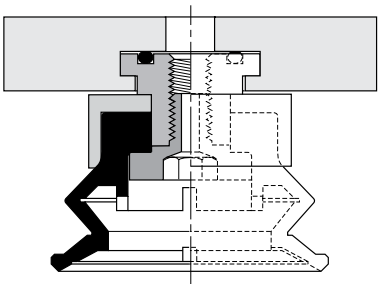
Cup Diameter (mm)
40 (40)
50 (50)
60 (60)
80 (80)
110 (110)

Cup Material
NBR Nitrile Rubber

(Bold Items are Most Popular)

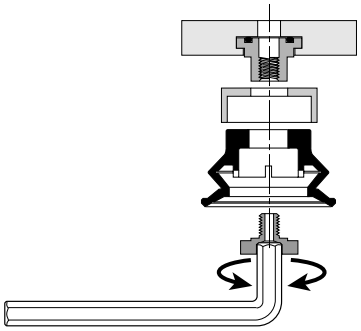
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.



Note:
Simply remove the hex keyed male screw to replace cup.

Hex Key Size: 8mm



Adapter for PKJG Cups

(Bold Items are Most Popular)

Adapter Components	Adapter Part Numbers	Thread Sizes	Description
Adapter	**TN-PK-T**	—	Adapter / O-ring
Cap	**PKG-C-6710**	—	Cap
Male	**TN-PK-100-M10**	M10x1.5	Male Screw

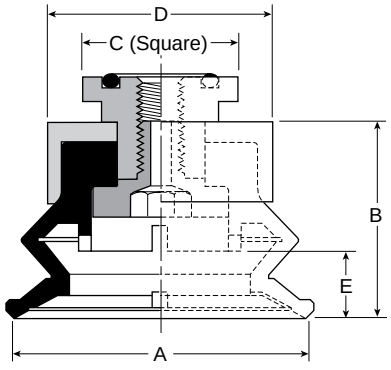
Dimensions

PKJT-40 thru PKJT-110

Model Number	ØA	B	C	D	E
PKJT-40-*	1.57 (40)	1.50 (38)	1.10 (28)	1.81 (46)	.41 (10.5)
PKJT-50-*	1.97 (50)	1.50 (38)	1.10 (28)	1.81 (46)	.75 (19
PKJT-60-*	2.23 (60)	1.50 (38)	1.10 (28)	1.81 (46)	.55 (14)
PKJT-80-*	3.15 (80)	1.65 (42)	1.10 (28)	1.81 (46)	.67 (17)
PKJT-110-*	4.33 (110)	2.09 (53)	1.10 (28)	1.81 (46)	.91 (23)

Inches (mm)

* Cup Material



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PUGB Flat Swivel Vacuum Cups

Features

- **Internal Swivel Joint Design**
- **30° Inclusive Angle for Flexible Products**
- **Increased Stability for Horizontal Lifts**
- **Lower Maintenance Costs**
- **10mm to 200mm Diameters**

Applications

The single edge swivel cup is for smooth surfaces with slightly curved surfaces or flexible sheets with substantial weights. Typically, lift capacities and break away forces are higher for flat cups which may be necessary for good stability during lift and transfer. The position of the internal swivel joint minimizes moments during lift and transfer. The swivel joint compensates for load and angular misalignment instead of the cup material, prolonging cup life. Maintenance costs are minimized by replacing only the cup portion of the assembly.

PUGB Series Vacuum Cups

30° inclusive swivel, single lip cup for smooth, slightly curved surfaces and flexible products. Rigid construction provides good stability against acceleration and deceleration forces during product transfer.

PUTK Series Barbed Bulkhead

Top stem connectors secured with jam nuts and allow tubing connections at the top side. Nickel plated brass materials.

PUTYS Series Bulkhead Level Compensator

303 stainless steel construction secured with jam nuts. Spring biased compensators can absorb impacts of down-strokes and adjust for different levels of pick up points. 303 stainless corrosion resistant materials with drymet bushings increases the strength and life.

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Model Number Index (Cups Only)

PUG - 40 - NBR

Cup Diameter (mm)			
25	(25)	**80**	**(80)**
30	(30)	**100**	**(100)**
35	(35)	120	(120)
40	**(40)**	**150**	**(150)**
50	(50)	200	(200)
60	**(60)**		

Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
CR	Chloroprene
U	Urethane
FKM	Flouro Rubber
SH	High Temp

(Bold Items are Most Popular)

Model Number Index

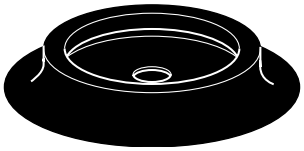
PUGB - 40 - NBR

Cup Diameter (mm)			
25	(25)	**80**	**(80)**
30	(30)	**100**	**(100)**
35	(35)	120	(120)
40	**(40)**	**150**	**(150)**
50	(50)	200	(200)
60	**(60)**		

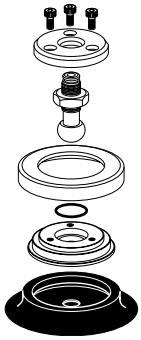
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
CR	Chloroprene
U	Urethane
FKM	Flouro Rubber
SH	High Temp

(Bold Items are Most Popular)

PUG Cup



PUGB Assembly



Specifications

Suction Cup Material	NBR	CR	SI	U	FKM	SH
	Nitrile	**Chloroprene**	**Silicone**	**Urethane**	**Flouro Rubber**	**Silicone High Temp**
Operating Temperature (°C)	-20° to +120°	-30° to +140°	-60° to +250°	-30° to +120°	-10° to +230°	-50° to +300°
Color	Black	Green	White	Blue	Black / White Dot	Grey
Hardness, Shore A (°Sh)	55 ±5	55 ±5	55 ±5	55 ±5	70 ±5	55 ±5
Electrical Resistance (Ωm)	—	—	—	—	—	—
Wear Resistance	•••••	•••••	••	••••••	•••	••
Tear Strength	••••	•••••	•	••••••	•	•
Aging Resistance	••••	•••••	••••••	••••••	••••••	••••••
Ozone Resistance	••••	•••••	••••••	••••••	••••••	••••••
Gasoline Resistance	••••••	•••••	••••	••••••	••••••	••••
Oil Resistance	••••••	•••••	••••••	•••••	••••••	••••••
Acid Resistance	•••	•••••	•••	•	••••••	•••
Alkali Resistance	••••	•••••	•••	•	••••••	•••
Chemical Resistance	•••	••••	••	••••••	••••••	••
Mechanical Resistance	••••	••••	••••	•••••	••	••••

•••••• = excellent; ••••• = very good; •••• = good; ••• = medium; •• = poor; • = not recommended

* ESD: Electric Static Dissipative Material

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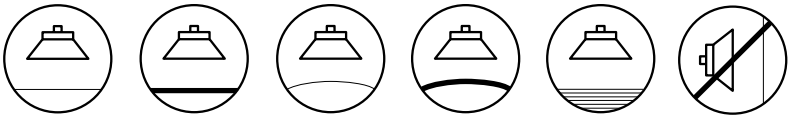
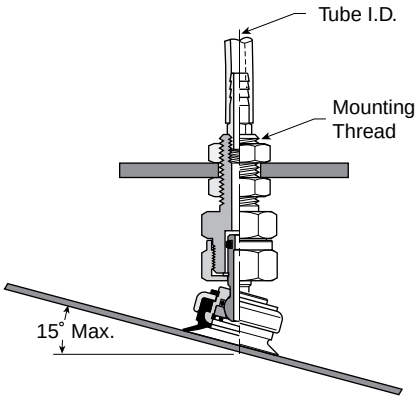
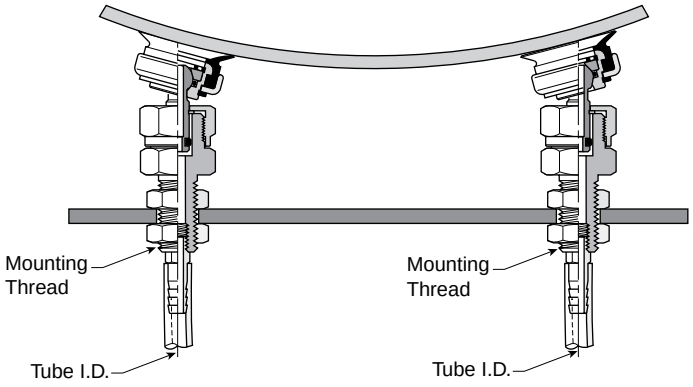
Application Guide

Swivel Bellows

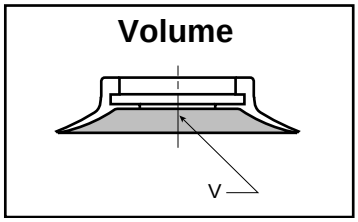


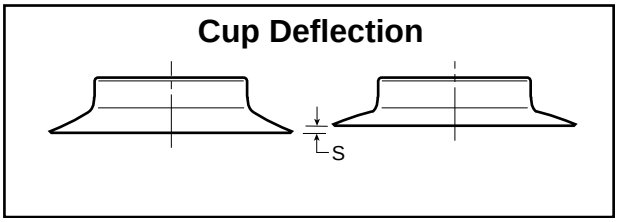
- Angles Pickup
- Fixtures for Curved Product

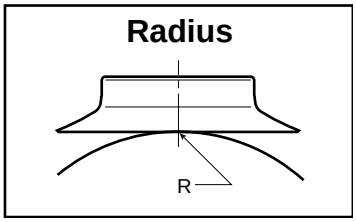




Main Data for Swivel Bellows PUG Cups







Model Number	Cup Diameter Inches (mm)	Area cm²	Volume (V) Liters	Lifting Force @ 60% (N)		Cup Deflection (S) mm	Radius R (mm)
PUGB-25-*	.98 (25)	4.91	0.0013	30.0	—	2.5	17
PUGB-30-*	1.18 (30)	7.07	0.0018	43.2	—	2	26
PUGB-35-*	1.38 (35)	9.62	0.0026	58.9	—	3	31
PUGB-40-*	1.57 (40)	12.6	0.0040	76.9	—	3	37
PUGB-50-*	1.57 (40)	19.6	0.0070	120	—	4	41
PUGB-60-*	2.36 (60)	28.3	0.0090	173	—	5	70
PUGB-80-*	3.15(80)	50.3	0.025	308	—	6	100
PUGB-100-*	3.94 (100)	78.5	0.045	480	—	6	150
PUGB-120-*	4.72 (120)	113.1	0.078	692	—	8	365
PUGB-150-*	5.91 (150)	177.0	0.177	1081	—	10	380
PUGB-200-*	7.87 (200)	314.0	0.425	1922	—	12	430

* Cup Material

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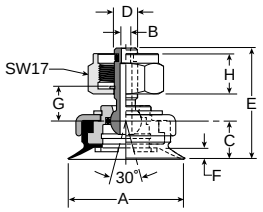
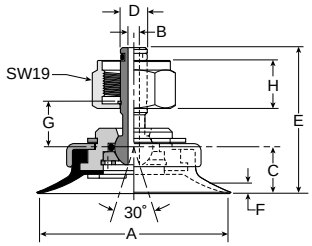
Dimensions

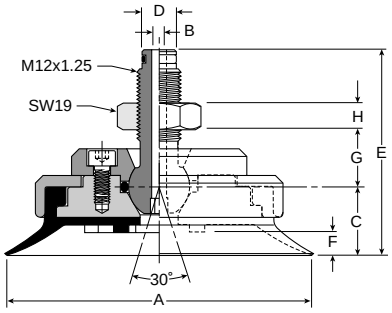
PUGB-25 thru PUGB-35



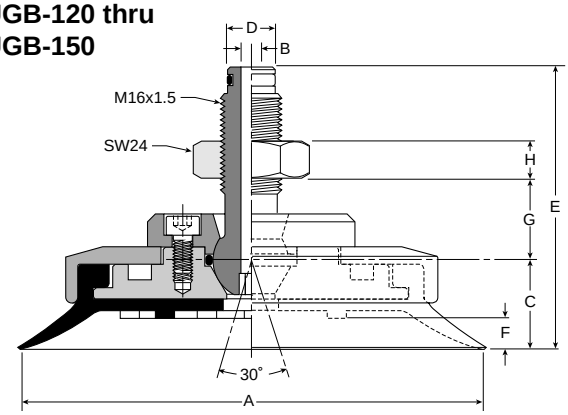
PUGB-40 and PUGB-50



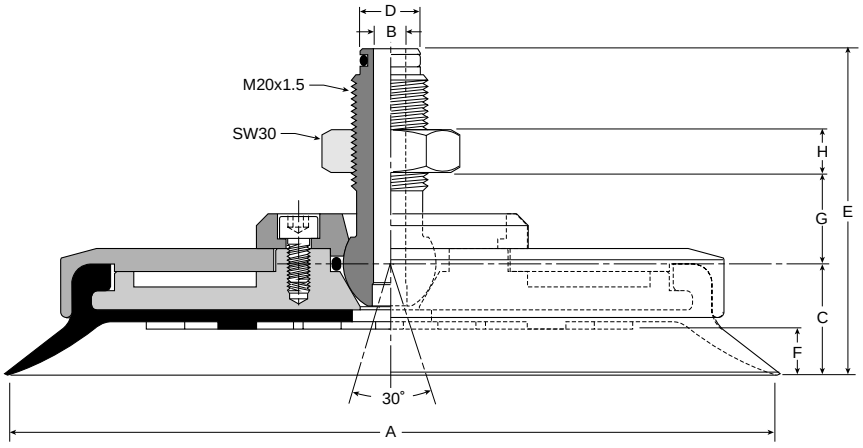
PUGB-60 thru PUGB-100



PUGB-120 thru PUGB-150



PUGB-200



Model Number	ØA	ØB	C	ØD	E	F	G	H
PUGB-25-*	.98 (25)	.09 (2.3)	.37 (9.5)	.24 (6)	1.12 (28.5)	.10 (2.5)	.356 (9.05)	.41 (10.5)
PUGB-30-*	1.18 (30)	.09 (2.3)	.39 (10)	.24 (6)	1.14 (29)	.08 (2)	.356 (9.05)	.41 (10.5)
PUGB-35-*	1.38 (35)	.09 (2.3)	.43 (11)	.24 (6)	1.18 (30)	.12 (3)	.356 (9.05)	.41 (10.5)
PUGB-40-*	1.57 (40)	.12 (3.0)	.43 (11)	.28 (7)	1.46 (37)	.12 (3)	.474 (12.05)	.49 (12.5)
PUGB-50-*	1.97 (50)	.12 (3.0)	.47 (12)	.28 (7)	1.50 (38)	.15 (4)	.474 (12.05)	.49 (12.5)
PUGB-60-*	2.36 (60)	.15 (3.9)	.63 (16)	.35 (9)	2.05 (52)	.20 (5)	.59 (15)	.28 (7)
PUGB-80-*	3.15 (80)	.15 (3.9)	.71 (18)	.35 (9)	2.13 (54)	.24 (6)	.59 (15)	.28 (7)
PUGB-100-*	3.94 (100)	.15 (3.9)	.71 (18)	.35 (9)	2.13 (54)	.24 (6)	.59 (15)	.28 (7)
PUGB-120-*	4.72 (120)	.23 (5.9)	.91 (23)	.51 (13)	2.87 (73)	.31 (8)	.79 (20)	.39 (10)
PUGB-150-*	5.91 (150)	.23 (5.9)	.98 (25)	.51 (13)	2.95 (75)	.39 (10)	.79 (20)	.39 (10)
PUGB-200-*	7.87 (200)	.31 (7.9)	1.14 (29)	.63 (16)	3.35 (85)	.47 (12)	.79 (20)	.47 (12)

Inches (mm)
* Cup Material

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PUTK Vacuum Cup Assemblies

Model Number Index

PUTK - 40 - NBR - —

Cup Diameter (mm)			
25	(25)	**80**	**(80)**
30	(30)	**100**	**(100)**
35	(35)	120	(120)
40	**(40)**	**150**	**(150)**
50	(50)	200	(200)
60	**(60)**		

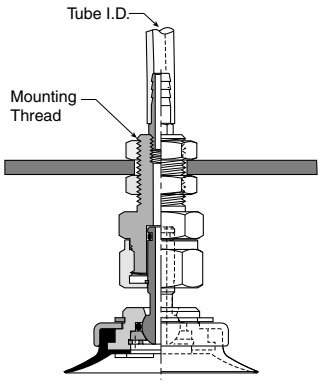
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
CR	Chloroprene
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Port	
Blank	**Barb**
N1	**1/8 NPT**
G1	1/8 BSPP
R1	1/8 BSPT
N2	1/4 NPT
G2	1/4 BSPP
R2	1/4 BSPT
See Chart Below	

(Bold Items are Most Popular)

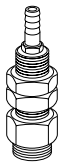
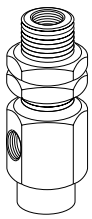
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



Barbed Bulkhead for PUGB Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Vacuum Port		Mounting Thread	UTK Fitting Part Number	Tube ID
		Code	Thread			
	25, 30, 35	Blank	Barb	M10x1.5 Male	**UTK-20**	.157 (4)
	40, 50	Blank	Barb	M14x1.5 Male	**UTK-40**	.157 (4)
	60, 80, 100	N1	1/8 NPT	M16x1.5 Male	**UTK-60-N1**	N/A
		G1	1/8 BSPP		UTK-60-G1	
		R1	1/8 BSPT		UTK-60-R1	
	120, 150	N1	1/8 NPT	M22x1.5 Male	**UTK-120-N1**	N/A
		G1	1/8 BSPP		UTK-120-G1	
		R1	1/8 BSPT		UTK-120-R1	
	200	N2	1/4 NPT	M22x1.5 Male	UTK-200-N2	N/A
		G2	1/4 BSPP		UTK-200-G2	
		R2	1/4 BSPT		UTK-200-R2	

Inches (mm)

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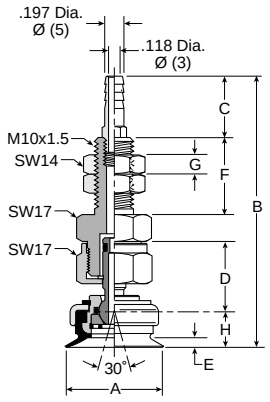
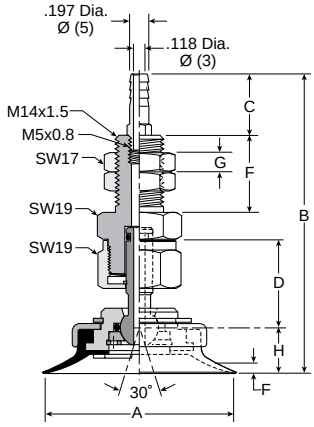
Dimensions

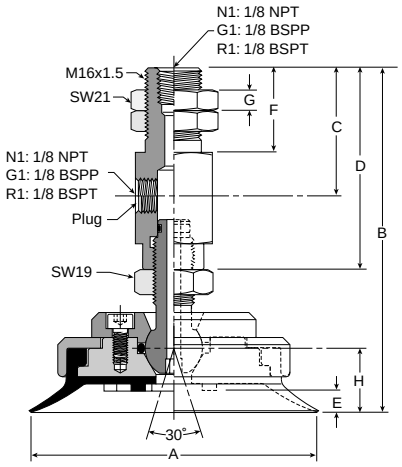
PUTK-25 thru PUTK-35



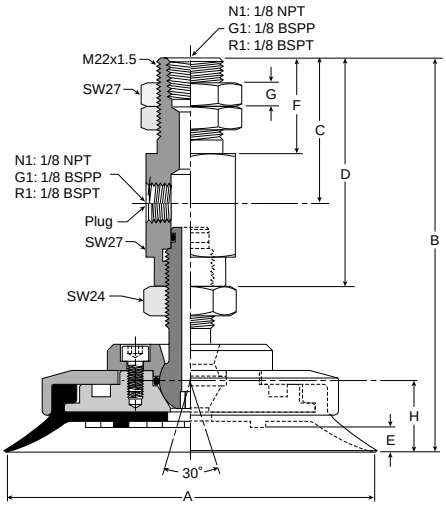
PUTK-40 and PUTK-50



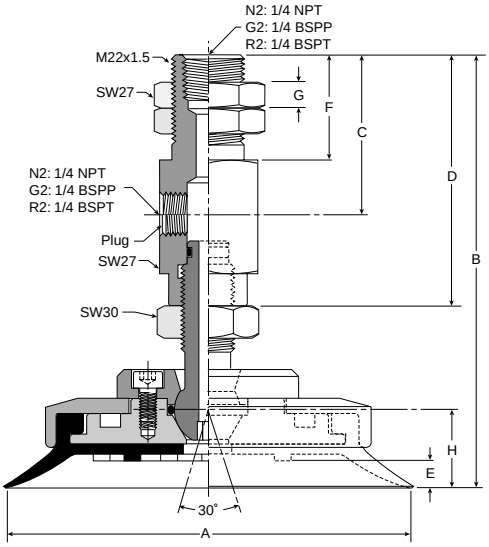
PUTK-60 thru PUTK-100



PUTK-120 thru PUTK-150



PUTK-200



Model Number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PUTK-25-*	.98 (25)	2.78 (70.5)	.63 (16)	.71 (18)	.10 (2.5)	.79 (20)	.20 (5)	.53 (13.5)	2.3 (66)
PUTK-30-*	1.18 (30)	2.80 (71)	.63 (16)	.71 (18)	.08 (2)	.79 (20)	.20 (5)	.55 (14)	2.5 (71)
PUTK-35-*	1.38 (35)	2.83 (72)	.63 (16)	.71 (18)	.12 (3)	.79 (20)	.20 (5)	.59 (15)	2.5 (71)
PUTK-40-*	1.57 (40)	3.03 (77)	.63 (16)	.91 (23)	.12 (3)	.79 (20)	.20 (5)	.43 (11)	4.2 (118)
PUTK-50-*	1.97 (50)	3.07 (78)	.63 (16)	.91 (23)	.15 (4)	.79 (20)	.20 (5)	.47 (12)	4.3 (121)
PUTK-60-*	2.36 (60)	3.66 (93)	.63 (16)	1.89 (48)	.20 (5)	.91 (23)	.24 (6)	.63 (16)	12.4 (352)
PUTK-80-*	3.15 (80)	3.74 (95)	1.38 (35)	2.16 (55)	.24 (6)	.91 (23)	.24 (6)	.71 (18)	15.7 (444)
PUTK-100-*	3.94 (100)	3.74 (95)	1.38 (35)	2.16 (55)	.24 (6)	.91 (23)	.24 (6)	.71 (18)	20.0 (568)
PUTK-120-*	4.72 (120)	5.04 (128)	1.81 (46)	2.95 (75)	.37 (8)	1.26 (32)	.37 (8)	.91 (23)	34.0 (63)
PUTK-150-*	5.91 (150)	5.12 (130)	1.81 (46)	2.95 (75)	.39 (10)	1.26 (32)	.37 (8)	.98 (25)	41.0 (1107)
PUTK-200-*	7.87 (200)	5.51 (140)	1.81 (46)	2.80 (71)	.47 (12)	1.26 (32)	.37 (8)	1.14 (29)	83.0 (2340)

Inches (mm)

* Cup Material

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

PUYK Vacuum Cup Assemblies

Model Number Index

PUYK - 40 - NBR - —

Cup Diameter (mm)	
25	(25)
30	(30)
35	(35)
40	**(40)**
50	(50)

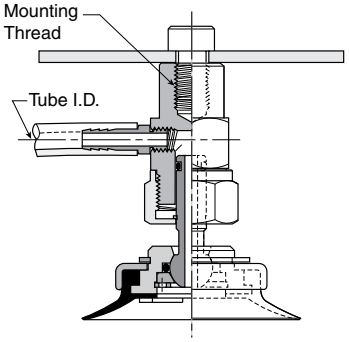
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
CR	Chloroprene
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Port
Blank Barb
See Chart Below

(Bold Items are Most Popular)

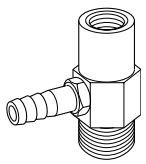
Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Tube I.D. listed below is a recommended minimum value, for that cup range, to optimize response time of the system. Your requirements may vary.



90° Barbed Adapter for PUGB Cups

(Bold Items are Most Popular)

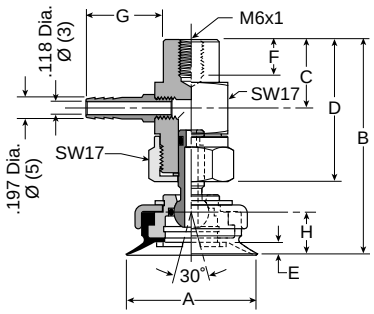
Included in Kit	Cup Diameter (mm)	Vacuum Port		Mounting Thread	UYK Fitting Part Number	Tube ID
		Code	Thread			
	25, 30, 35	Blank	Barb	M6x1 Female	**UYK-20**	.157 (4)
	40, 50	Blank	Barb	M8x1.25 Female	**UYK-40**	.157 (4)

Inches (mm)

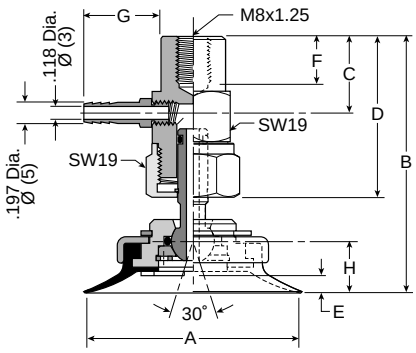
Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
www.parker.com/pneumatics

Dimensions

PUYK-25 thru PUYK-35



PUYK-40 and PUYK-50



Model Number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PUYK-25-*	.98 (25)	1.95 (49.5)	.63 (16)	1.30 (33)	.10 (2.5)	.31 (8)	.96 (24.5)	.37 (9.5)	2.3 (66)
PUYK-30-*	1.18 (30)	1.97 (50)	.63 (16)	1.30 (33)	.08 (2)	.31 (8)	.96 (24.5)	.39 (10)	2.6 (73)
PUYK-35-*	1.38 (35)	2.01 (51)	.63 (16)	1.30 (33)	.12 (3)	.31 (8)	.96 (24.5)	.43 (11)	2.6 (73)
PUYK-40-*	1.57 (40)	2.32 (59)	.71 (18)	1.50 (38)	.12 (3)	.39 (10)	1.00 (25.5)	.43 (11)	4.0 (116)
PUYK-50-*	1.97 (50)	2.36 (60)	.71 (18)	1.50 (38)	.15 (4)	.39 (10)	1.00 (25.5)	.47 (12)	4.1 (117)

Inches (mm)

* Cup Material

Parker Hannifin Corporation
Pneumatic Division
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www.parker.com/pneumatics

PUTYS Vacuum Cup Assemblies

Model Number Index

PUTYS **40** **6** **NBR** **M5**

Cup Diameter (mm)	Stroke (mm)
25 (25)	6, 15, 30
30 (30)	
35 (35)	
40 (40)	
50 (50)	
60 (60)	30*, 50*, 70*
80 (80)	
100 100)	
120 (120)	20, 70
150 (150)	
200 (200)	

* Stroke reduced by 5mm due to shock pad.

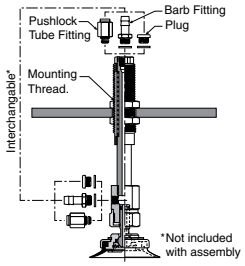
Cup Material	
NBR	**Nitrile Rubber**
SI	**Silicone**
Available (Consult Factory)	
CR	Chloroprene
U	Urethane
FKM	Flouro Rubber
SH	High Temp

Vacuum Ports	
M5	**M5**
N1	**1/8 NPT**
N2	**1/4 NPT**
See Chart Below	

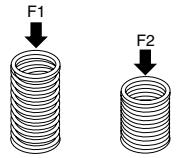
(Bold Items are Most Popular)

Installation

Note:
When installing cup assemblies, use a sealant material to secure the assembly and prevent vacuum leakage.
Shown are interchangable connectors & plugs for port connections.

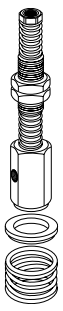


Compression Force



Bulkhead Level Compensator for PUGB Cups

(Bold Items are Most Popular)

Included in Kit	Cup Diameter (mm)	Vacuum Port Code	Vacuum Port Thread	UTYS Assembly Part Number	Stroke	F1 lbf (N)	F2 lbf (N)
	25, 30, 35	M5	M5x8 Female	**UTYS-20-6**	6mm	.56 (2.5)	.79 (3.4)
				UTYS-20-15	15mm	.56 (2.5)	1.2 (4.9)
				UTYS-20-30	30mm	.67 (2.9)	1.4 (5.9)
	40, 50	M5	M5x8 Female	**UTYS-40-6**	6mm	.56 (2.5)	.79 (3.4)
				UTYS-40-15	15mm	.56 (2.5)	1.2 (4.9)
				UTYS-40-30	30mm	.67 (2.9)	1.4 (5.9)
	60, 80, 100	N1	1/8 NPT Female	**UTYS-60-30**	30mm	1.6 (6.8)	3.6 (15.6)
				UTYS-60-50	50mm	1.9 (8.3)	4.5 (19.6
				UTYS-60-70	70mm	2.2 (9.5)	4.8 (21)
	120, 150	N2	1/4 NPT Female	**UTYS-120-20**	20mm	3.6 (15.6)	6.8 (29)
				UTYS-120-70	70mm	3.4 (14.7)	6.8 (29)
	200	N2	1/4 NPT Female	UTYS-200-20	20mm	3.6 (15.6)	6.8 (29)
				UTYS-200-70	70mm	3.4 (14.7)	6.8 (29)

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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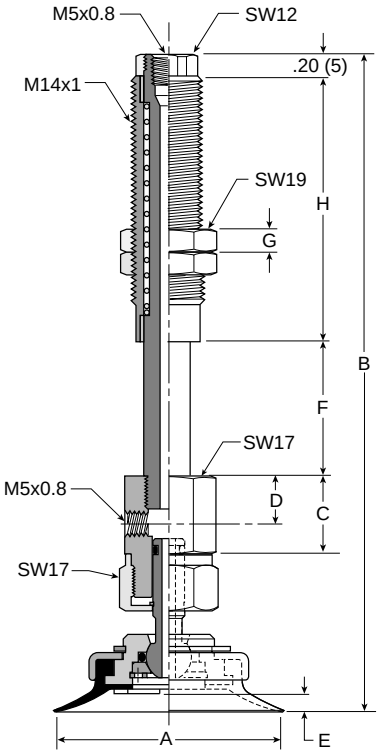
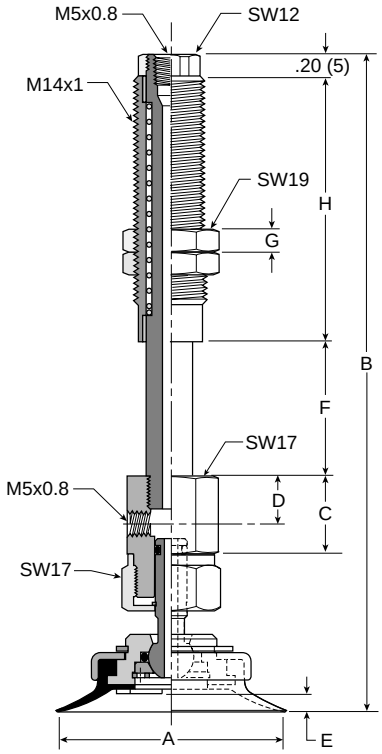
Dimensions

PUTYS256 thru PUTYS3530



PUTYS406 thru PUTYS5030



Model Number	ØA	B	C	D	E	F	G	H	Wt oz (g)
PUTYS256*	.79 (20)	3.54 (90)	.63 (16)	.39 (10)	.10 (2.5)	.24 (6)	.20 (5)	1.42 (36)	3.1 (89)
PUTYS2515*	.79 (20)	3.90 (99)	.63 (16)	.39 (10)	.10 (2.5)	.59 (15)	.20 (5)	1.42 (36)	3.3 (94)
PUTYS2530*	.79 (20)	5.35 (136)	.63 (16)	.39 (10)	.10 (2.5)	1.18 (30)	.20 (5)	2.28 (58)	4.2 (119)
PUTYS306*	1.18 (30)	3.56 (90.5)	.63 (16)	.39 (10)	.08 (2)	.24 (6)	.20 (5)	1.42 (36)	3.3 (94)
PUTYS3015*	1.18 (30)	3.92 (99.5)	.63 (16)	.39 (10)	.08 (2)	.59 (15)	.20 (5)	1.42 (36)	3.5 (99)
PUTYS3030*	1.18 (30)	5.37 (136.5)	.63 (16)	.39 (10)	.08 (2)	1.18 (30)	.20 (5)	2.28 (58)	4.4 (124)
PUTYS356*	1.18 (30)	3.60 (91.5)	.63 (16)	.39 (10)	.12 (3)	.24 (6)	.20 (5)	1.42 (36)	3.3 (94)
PUTYS3515*	1.18 (30)	3.96 (100.5)	.63 (16)	.39 (10)	.12 (3)	.59 (15)	.20 (5)	1.42 (36)	3.5 (99)
PUTYS3530*	1.18 (30)	5.41 (137.5)	.63 (16)	.39 (10)	.12 (3)	1.18 (30)	.20 (5)	2.28 (58)	4.4 (124)
PUTYS406*	1.57 (40)	3.84 (97.5)	.67 (17)	.39 (10)	.12 (3)	.24 (6)	.20 (5)	1.42 (36)	4.3 (123)
PUTYS4015*	1.57 (40)	4.19 (106.5)	.67 (17)	.39 (10)	.12 (3)	.59 (15)	.20 (5)	1.42 (36)	4.5 (128)
PUTYS4030*	1.57 (40)	5.65 (143.5)	.67 (17)	.39 (10)	.12 (3)	1.18 (30)	.20 (5)	2.28 (58)	5.4 (153)
PUTYS506*	1.97 (50)	3.88 (98.5)	.67 (17)	.39 (10)	.16 (4)	.24 (6)	.20 (5)	1.42 (36)	4.3 (123)
PUTYS5015*	1.97 (50)	4.23 (107.5)	.67 (17)	.39 (10)	.16 (4)	.59 (15)	.20 (5)	1.42 (36)	4.5 (128)
PUTYS5030*	1.97 (50)	5.69 (144.5)	.67 (17)	.39 (10)	.16 (4)	1.18 (30)	.20 (5)	2.28 (58)	5.4 (154)

Inches (mm)
* Cup Material

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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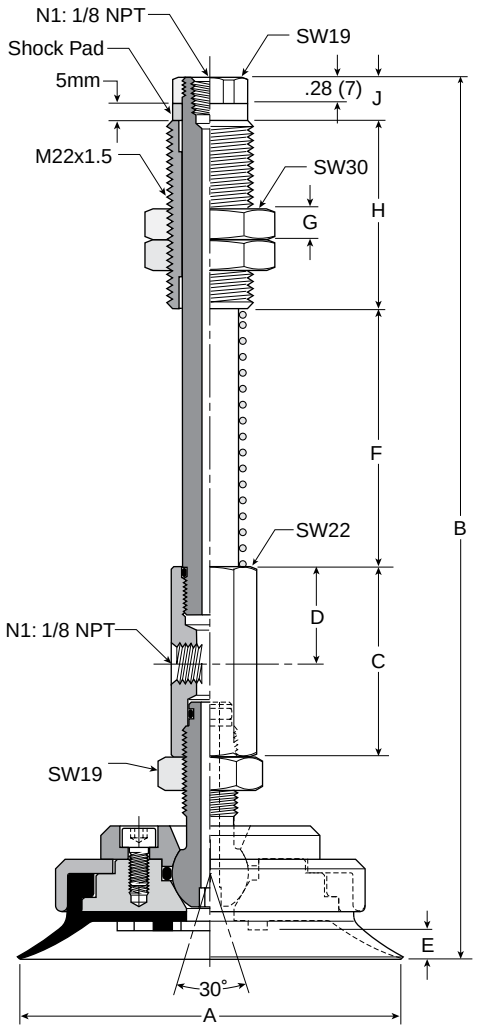
Dimensions

PUTYS6030 thru PUTYS10070



Model Number	ØA	B	C	D	E	F	G	H	J	Wt oz (g)
PUTYS6030*	2.36 (60)	7.28 (185)	1.57 (40)	.79 (20)	.20 (5)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	17.2 (487)
PUTYS6050*	2.36 (60)	8.27 (210)	1.57 (40)	.79 (20)	.20 (5)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	18.4 (521)
PUTYS6070*	2.36 (60)	9.25 (235)	1.57 (40)	.79 (20)	.20 (5)	3.54 (90)	.39 (10)	1.97 (50)	.47 (12)	19.3 (548)
PUTYS8030*	3.15 (80)	7.36 (187)	1.57 (40)	.79 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	19.7 (559)
PUTYS8050*	3.15 (80)	8.35 (212)	1.57 (40)	.79 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	20.1 (595)
PUTYS8070*	3.15 (80)	9.33 (237)	1.57 (40)	.79 (20)	.24 (6)	3.54 (90)	.39 (10)	1.97 (50)	.47 (12)	21.9 (620)
PUTYS10030*	1.18 (30)	7.36 (187)	1.57 (40)	.79 (20)	.24 (6)	1.77 (45)	.39 (10)	1.97 (50)	.47 (12)	25.7 (729)
PUTYS10050*	1.18 (30)	8.35 (212)	1.57 (40)	.79 (20)	.24 (6)	2.76 (70)	.39 (10)	1.97 (50)	.47 (12)	26.7 (756)
PUTYS10070*	1.18 (30)	9.33 (237)	1.57 (40)	.79 (20)	.24 (6)	3.54 (90)	.39 (10)	1.97 (50)	.47 (12)	49.9 (1414)

Inches (mm)
* Cup Material

Parker Hannifin Corporation
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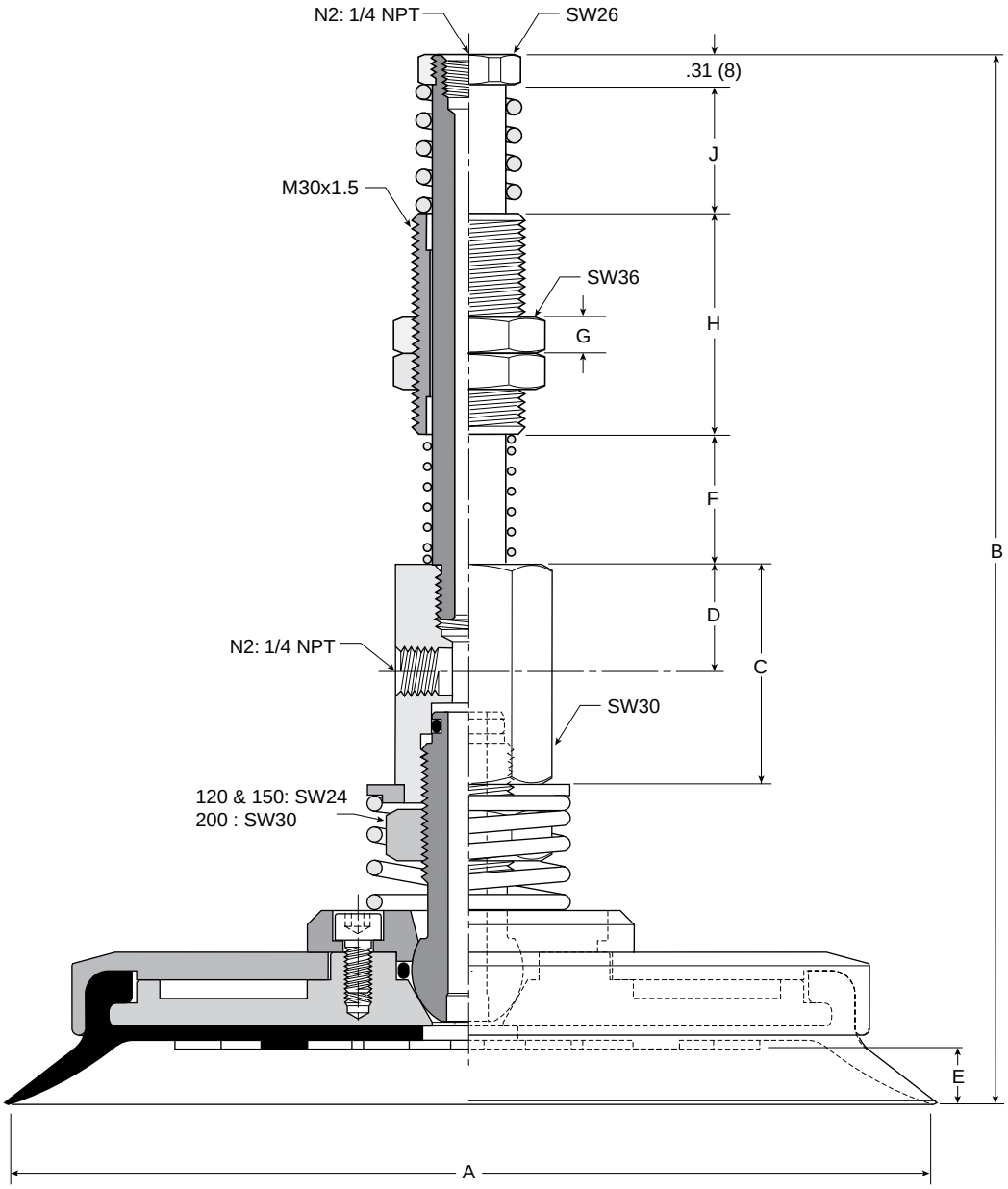
Dimensions

PUTYS12020 thru
PUTYS20070



Model Number	ØA	B	C	D	E	F	G	H	J	Wt oz. (g)
PUTYS12020*	4.72 (120)	9.88 (251)	2.36 (60)	1.06 (27)	.31 (8)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	49.9 (1414)
PUTYS12070*	4.72 (120)	12.44 (316)	2.36 (60)	1.06 (27)	.31 (8)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	52.7 (1495)
PUTYS15020*	4.72 (120)	9.96 (253)	2.36 (60)	1.06 (27)	.39 (10)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	57.8 (1640)
PUTYS15070*	4.72 (120)	12.52 (318)	2.36 (60)	1.06 (27)	.39 (10)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	60.7 (1721)
PUTYS20020*	4.72 (120)	10.20 (279)	2.36 (60)	1.06 (27)	.47 (12)	1.38 (35)	.39 (10)	2.36 (60)	1.38 (35)	98.1 (2780)
PUTYS20070*	4.72 (120)	12.76 (324)	2.36 (60)	1.06 (27)	.47 (12)	3.94 (100)	.39 (10)	2.36 (60)	1.38 (35)	100.9 (2861)

Inches (mm)
* Cup Material

Parker Hannifin Corporation
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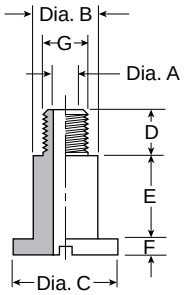
Cup Screws



Part Number	A	B	C	D	E	F	G
TN-PF-15-M5	.10 (2.5)	.20 (5)	.31 (8)	.22 (5.5)	.06 (1.5)	(2)	M5
TN-PF-20-M5	.10 (2.5)	.20 (5)	.43 (11)	.24 (6)	.12 (3)	(2)	M5
TN-PF-25-M6	.14 (3.5)	.33 (8.5)	.55 (14)	.24 (6)	.43 (11)	(2)	M6
TN-PF-50-M6	.14 (3.5)	.31 (8)	.79 (20)	.24 (6)	.24 (6)	(2)	M6
TN-PF-50-M8	.16 (4)	.31 (8)	.79 (20)	.39 (10)	.20 (5)	(2)	M8
TN-PF-10-M5	.10 (2.5)	.12 (3)	.24 (6)	.22 (5.5)	.08 (2)	(2)	M5
TN-PF-30-M6	.13 (3.4)	.31 (8)	.59 (15)	.41 (10.5)	.41 (10.5)	(3)	M6
TN-PC-30-M8	.15 (3.9)	.31 (8)	.29 (15)	.47 (12)	.39 (10)	(3)	M8
TN-PC-90-M12	.15 (3.9)	.47 (12)	.98 (25)	.43 (11)	.75 (19)	(5)	M12

Inches (mm)

Parker Hannifin Corporation
Pneumatic Division
Richland, Michigan
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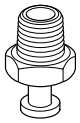
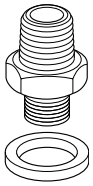
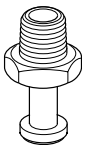
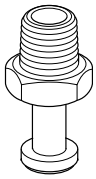
Male Threaded Cup Fittings

	Cup Fitting	Cup Series	Cup Assembly	Vacuum Port
	TN-PS-2A-M3	PFG	PFTM	M3
	FTM-5A-M5H	PFG / PBG / PJG / PCG	PFTM / PBTM / PJTM / PCTM	M5
	FTM-5A-G1	PFG / PBG / PJG / PCG	PFTM / PBTM / PJTM / PCTM	1/8 BSPP
	FTM-20B-G1H	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/8 BSPP
	FTM-20B-N1	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/8 NPT
	FTM-20B-G2	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/8 BSPP
	FTM-20B-M10	PFG / PBG / PJG	PFTM / PBTM / PJTM	M10
	FTM-50-N1	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/8 NPT
	FTM-50-G1H	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/8 BSPP
	FTM-50-G2	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/8 BSPP
	FTM-60-N2	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/4 NPT
	FTM-60-G2	PFG / PBG / PJG	PFTM / PBTM / PJTM	1/8 BSPP
	FTM-60-M10	PFG / PBG / PJG	PFTM / PBTM / PJTM	M10
	CTM-10-M5H	PCG	PCTM	M5
	CTM-10-N1	PCG	PCTM	1/8 NPT
	CTM-10-G1H	PCG	PCTM	1/8 BSPP
	CTM-30-N1	PCG	PCTM	1/8 NPT
	CTM-30-G1H	PCG	PCTM	1/8 BSPP
	CTM-30-G2	PCG	PCTM	1/8 BSPP
	CTM-90-N2	PCG	PCTM	1/4 NPT
	CTM-90-G2	PCG	PCTM	1/8 BSPP
	TN-PK-100-M10	PKG	PKGF / PKGT / PKFF / PKFT / PKJF / PKJT	M10

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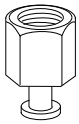
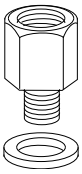
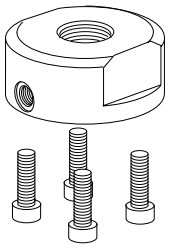
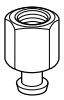
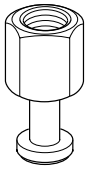
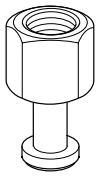
Female Threaded Cup Fittings

	Cup Fitting	Cup Series	Cup Assembly	Vacuum Port
	FTF-5A-M5	PFG / PBG / PJG / PAG	PFTF / PBTF / PJTF / PATF	M5
	FTF-5A-G1	PFG / PBG / PJG	PFTF / PBTF / PJTF	1/8 BSPP
	FTF-20B-N1	PFG/ PBG / PJG	PFTF / PBTF / PJTF	1/8 NPT
	FTF-20B-G1	PFG/ PBG / PJG	PFTF / PBTF / PJTF	1/8 BSPP
	FTF-20B-G2	PFG/ PBG / PJG	PFTF / PBTF / PJTF	1/8 BSPP
	FTF-50-N1	PFG / PBG / PJG	PFTF / PBTF / PJTF	1/8 NPT
	FTF-50-G1	PFG / PBG / PJG	PFTF / PBTF / PJTF	1/8 BSPP
	FTF-50-G2	PFG / PBG / PJG	PFTF / PBTF / PJTF	1/8 BSPP
	FTF-60-N2	PFG / PBG / PJG	PFTF / PBTF / PJTF	1/4 NPT
	FTF-60-G2	PFG / PBG / PJG	PFTF / PBTF / PJTF	1/8 BSPP
	FTF-120-N4	PFG / PBG	PFTF / PBTF	1/2 NPT
	FTF-120-G4	PFG / PBG	PFTF / PBTF	1/2 BSPP
	CTF-10-G1	PCG	PCTF	1/8 BSPP
	CTF-30-N1	PCG	PCTF	1/8 NPT
	CTF-30-G1	PCG	PCTF	1/8 BSPP
	CTF-30-G2	PCG	PCTF	1/8 BSPP
	CTF-90-N2	PCG	PCTF	1/4 NPT
	CTF-90-G2	PCG	PCTF	1/8 BSPP
 Female	TN-PK-F-N3	PKG	PKGF / PKFF / PKJF	3/8 NPT
	TN-PK-F-G3	PKG	PKGF / PKFF / PKJF	3/8 BSPP

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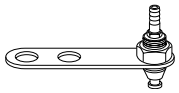
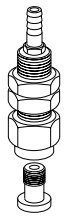
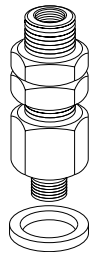
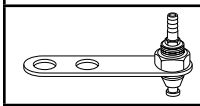
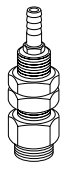
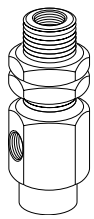
Bulkhead Cup Fittings

	Cup Fitting	Cup Series	Cup Assembly	Vacuum Port
	FTK-2A	PFG	PFTK	Barb Fitting
	FTK-5A	PFG / PBG / PJG / PCG / PAG	PFTK / PBTK / PJTK / PCTK / PATK	Barb Fitting
	FTK-15	PFG / PBG / PJG	PFTK / PBTK / PJTK	Barb Fitting
	FTK-20	PFG / PFOG / PBG / PJG	PFTK / PBTK / PJTK	Barb Fitting
	FTK-25	PFG / PFOG / PBG / PJG / PAG	PFTK / PBTK / PJTK / PATK	Barb Fitting
	FTK-50	PFG / PBG / PJG	PFTK / PBTK / PJTK	Barb Fitting
	FTK-60-N1	PFG / PBG / PJG	PFTK / PBTK / PJTK	1/8 NPT
	FTK-60-G1	PFG / PBG / PJG	PFTK / PBTK / PJTK	1/8 BSPP
	FTK-60-R1	PFG / PBG / PJG	PFTK / PBTK / PJTK	1/8 BSPT
	FTK-2X4A/3.5X7A	PFG	PFTK	Barb Fitting
	CTK-10	PCG	PCTK	Barb Fitting
	CTK-30	PCG	PCTK	Barb Fitting
	UTK-20	PUGB	PUTK	Barb Fitting
	UTK-40			
	UTK-60-N1	PUGB	PUTK	1/8 NPT
	UTK-60-G1	PUGB	PUTK	1/8 BSPP
	UTK-60-R1	PUGB	PUTK	1/8 BSPT
	UTK-120-N1	PUGB	PUTK	1/8 NPT
	UTK-120-G1	PUGB	PUTK	1/8 BSPP
	UTK-120-R1	PUGB	PUTK	1/8 BSPT
	UTK-200-N2	PUGB	PUTK	1/4 NPT
	UTK-200-G2	PUGB	PUTK	1/4 BSPP
	UTK-200-R2	PUGB	PUTK	1/4 BSPT

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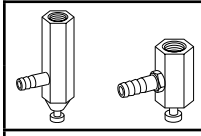
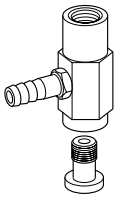
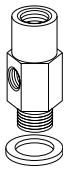
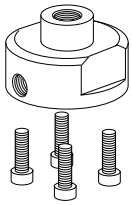
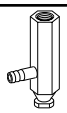
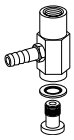
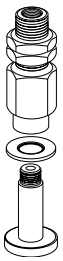
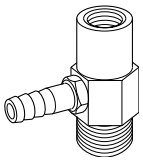
90° Cup Fittings

	Cup Fitting	Cup Series	Cup Assembly	Vacuum Port
	FYK-2A	PFG	PFYK	Barb Fitting
	FYK-5A	PFG / PBG / PJG / PCG	PFYK / PBYK / PJYK / PCYK	Barb Fitting
	FYK-15	PFG / PBG / PJG	PFYK / PBYK / PJYK	Barb Fitting
	FYK-20	PFG / PBG / PJG	PFYK / PBYK / PJYK	
	FYK-25	PFG / PBG / PJG	PFYK / PBYK / PJYK	
	FYK-50	PFG / PBG / PJG	PFYK / PBYK / PJYK	
	FYK-60-N1	PFG / PBG / PJG	PFYK / PBYK / PJYK	1/8 NPT
	FYK-60-G1			
	FYK-60-R1			
	FYK-120-N1	PFG / PBG	PFYK / PBYK	1/8 NPT
	FYK-120-G1			
	FYK-120-R1			
	FYK-2X4A/3.5X7A	PFG	PFYK	Barb Fitting
	CYK-10	PCG	PCYK	Barb Fitting
	CYK-30	PCG	PCYK	Barb Fitting
	CYK-90-N1	PCG	PCYK	1/8 NPT
	CYK-90-G1			1/8 BSPP
	CYK-90-R1			1/8 BSPT
	UYK-20	PUGB	PUYK	Barb Fitting
	UYK-40			

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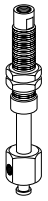
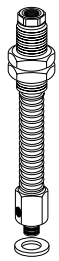
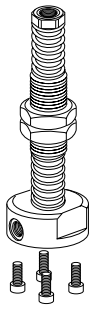
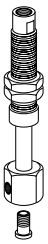
Level Compensators

	Assembly Part Number	Cup Series	Cup Assembly	Compensator Only	Cup Fitting
	TYS-2A-3	PFG / PBG / PJG	PFTYS / PBTYS / PJTYS	TYS-M5-3-M5	FTY-2A-M5-M3
	TYS-2A-10			TYS-M5-10-M5	
	TYS-2A-15			TYS-M5-15-M5	
	TYS-5A-3	PFG / PBG	PFTYS / PBTYS	TYS-M5-3-M5	FTY-5A-M5-M5
	TYS-5A-10			TYS-M5-10-M5	
	TYS-5A-15			TYS-M5-15-M5	
	TYS-20B-6	PFG / PBG / PJG	PFTYS / PBTYS / PJTYS	TYS-M8-6-M5	FTY-20B-M8-M5
	TYS-20B-15			TYS-M8-15-M5	
	TYS-20B-30			TYS-M8-30-M5	
	TYS-50-6	PFG / PBG / PJG	PFTYS / PBTYS / PJTYS	TYS-M8-6-M5	FTY-50
	TYS-50-15			TYS-M8-15-M5	
	TYS-50-30			TYS-M8-30-M5	
	TYS-60-30	PFG / PBG / PJG	PFTYS / PBTYS / PJTYS	TYS-M14-25-N	FTY-60/95
	TYS-60-50			TYS-M14-45-N	
	TYS-60-70			TYS-M14-65-N	
	TYS-120-20	PFG / PBG	PFTYS / PBTYS	TYS110/200M1820	FTY-120-N2
	TYS-120-70	PFG / PBG	PFTYS / PBTYS	TYS110/200M1870	FTY-120-N2
	JTYS-10-3	PJG	PJTYS	TYS-M5-3-M5	CTY-10/20
	JTYS-10-10			TYS-M5-10-M5	
	JTYS-10-15			TYS-M5-15-M5	
	JTYS-20-6	PJG	PJTYS	TYS-M5-3-M5	CTY-10/20
	JTYS-20-15			TYS-M5-10-M5	
	JTYS-20-30			TYS-M5-15-M5	

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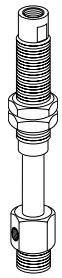
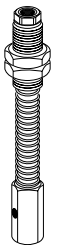
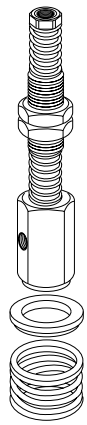
Level Compensators

	Assembly Part Number	Cup Series	Cup Assembly	Compensator Only	Cup Fitting
	UTYS-20-6	PUGB	PUTYS	TYS-M8-6-M5	UTY-20-M8-M5
	UTYS-20-15			TYS-M8-15-M5	
	UTYS-20-30			TYS-M8-30-M5	
	UTYS-40-6	PUGB	PUTYS	TYS-M8-6-M5	UTY-40-M8-M5
	UTYS-40-15			TYS-M8-15-M5	
	UTYS-40-30			TYS-M8-30-M5	
	UTYS-60-30	PUGB	PUTYS	TYS-M14-25-N	UTY-60-M14-N1
	UTYS-60-50			TYS-M14-45-N	
	UTYS-60-70			TYS-M14-65-N	
	UTYS-120-20	PUGB	PUTYS	TYS110/200M1820	UTY-120-M18-N2
	UTYS-120-70			TYS110/200M1870	
	UTYS-200-20	PUGB	PUTYS	TYS110/200M1820	UTY-200-M18-N2
	UTYS-200-70			TYS110/200M1870	

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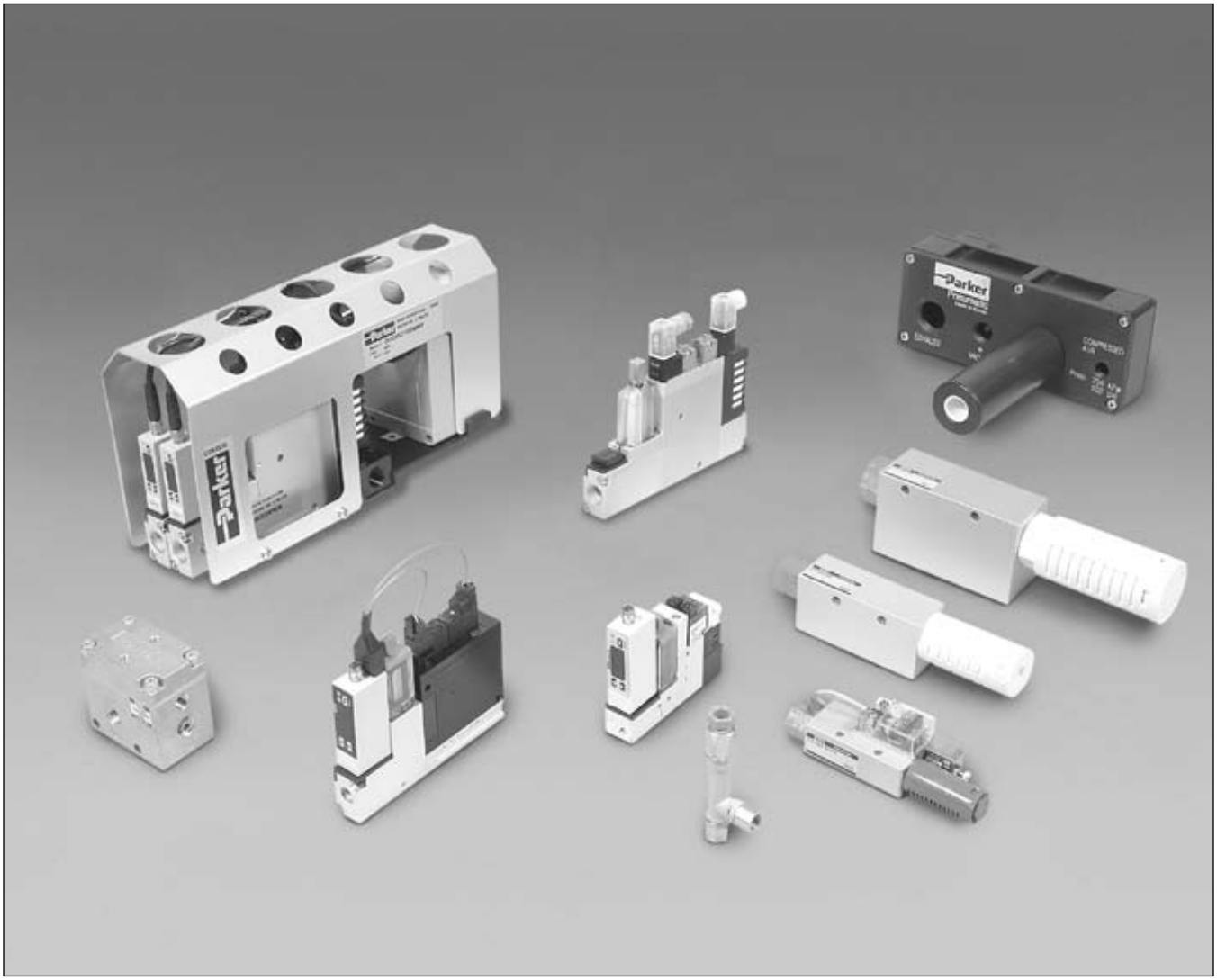
Vacuum Generators

Section B

www.parker.com/pneu/vacgen



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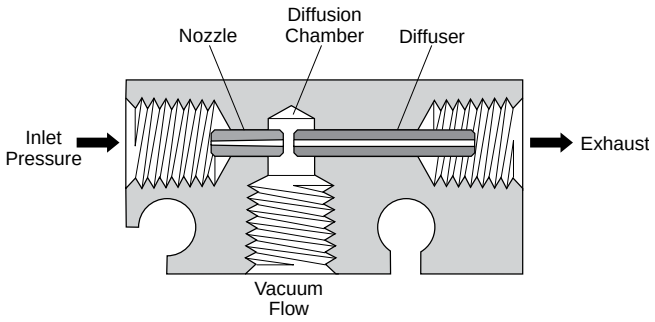
Principle of Venturi Vacuum

A vacuum generator is a single stage venturi that creates high vacuum with fast response using compressed air.

The ability to control this performance renders this technology as an excellent solution for factory automation.

In principle, compressed air is throttled as the air exits the nozzle and is discharged into the diffuser. This increased velocity of air lowers the pressure in the diffusion chamber. The volume of air within the closed vacuum system flows into the low pressure area of the diffusion chamber and is exhausted thru the diffuser. This effect increases the vacuum level and evacuates most of the air within the closed vacuum system at supersonic speeds.



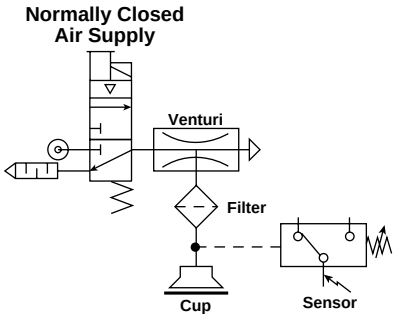
Additional Advantages to Venturi Generators

- No Moving Components
- Low Maintenance
- Long Life
- Responsive
- Physically Small
- Cost Effective

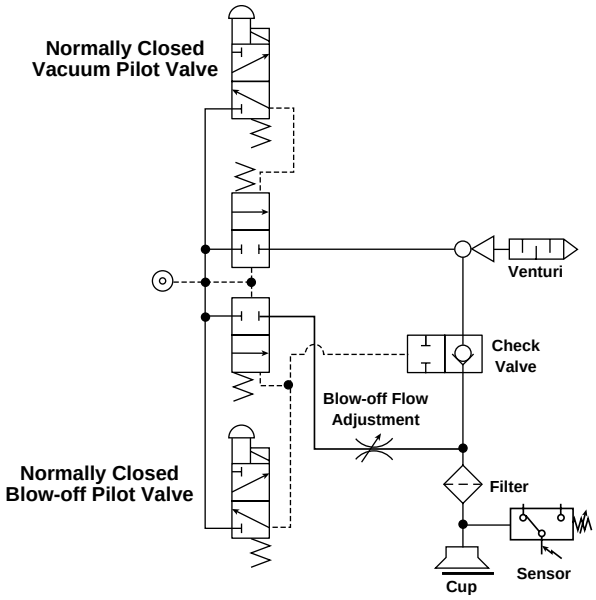
Applying the Venturi Generator

There are two basic approaches when designing a vacuum system with venturi generators.

1. Design a system with basic venturi generators and individual components to support the vacuum circuit.



2. Design a system with all of the supporting components integrated into the venturi generator.

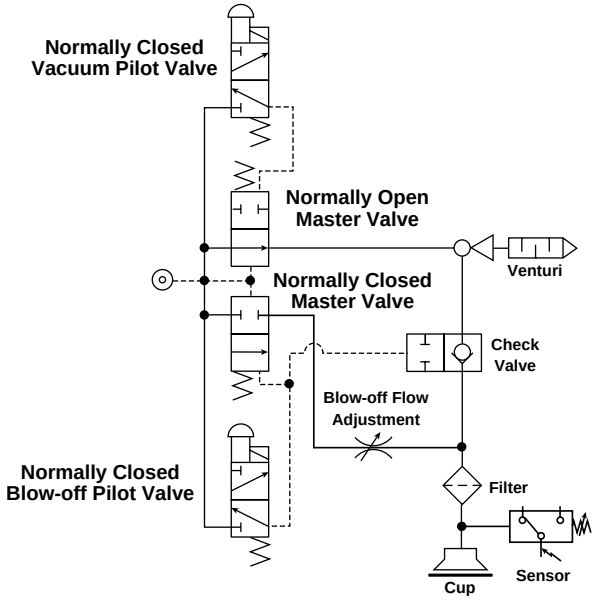


There are several advantages to an integrated venturi system. The response time of the vacuum and blow-off functions are greatly reduced compared to basic venturi generators, the installation time is also reduced which makes this a cost effective system and the compact size allows the integrated unit to be close to the suction cup.

Venturi Generator with Power Loss Circuits

When designing a vacuum system that requires a Normally Open circuit or Emergency Stop circuits to avoid any hazard during a power failure, consider the circuits below and on the following page.

Normally Open Circuit



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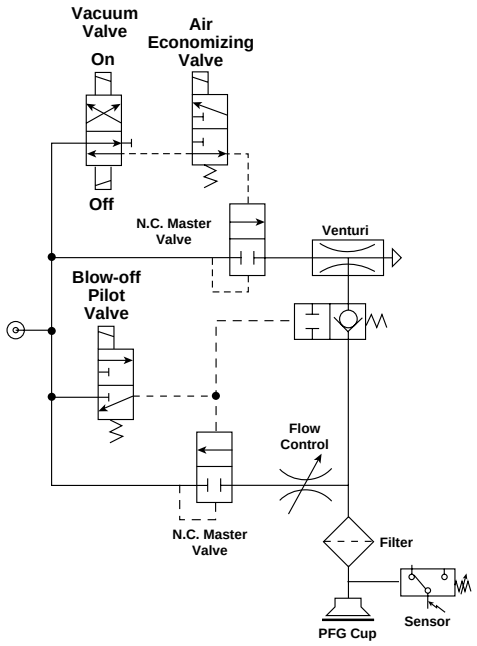
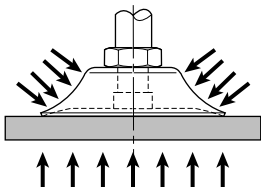
Valve Controlled Emergency Stop Circuit
(See CEK Vacuum Generator)



The Venturi System
A closed vacuum system has a volume of air within all the components between the vacuum port of the venturi and the suction cup. The venturi's ability to evacuate this volume of air when the suction cup forms a seal on the surface, creates the pressure differential required to force the suction cup onto the product.



The evacuated air creates a lower air pressure within the closed vacuum system, causing the atmospheric pressure to apply a uniform force on the surface of the cup. This holding force is proportional to the difference in pressures and area of the suction cup.

Selecting the Appropriate Supply Valve
If a basic venturi generator is selected, correct sizing of the air supply valve and supply line are critical to the performance of the unit.

Nozzle Diameter	Minimum Tube I.D. inches (mm)	Flow (Cv)
0.5 mm	0.157 (4)	0.16
1.0 mm	0.157 (4)	0.16
1.5 mm	0.236 (6)	0.379
2.0 mm	0.315 (8)	0.65
2.5 mm	0.315 (8)	0.95
3.0 mm	0.393 (10)	1.35

If pressure drops occur due to other pneumatic components or a manifold venturi system, it may be necessary to increase the valve and / or supply line tubing I.D..

Selecting the Nozzle Diameter with Reference to Suction Cup Diameter
As a general guide, for most non-porous vacuum applications, the nozzle diameter can be selected based on the suction cup diameter previously determined in Section A.

Nozzle Diameter	Maximum Suction Cup Diameter inches (mm)
0.5 mm	.79 (20)
1.0 mm	1.97 (50)
1.5 mm	2.36 (60)
2.0 mm	4.72 (120)
2.5 mm	5.91 (150)
3.0 mm	7.87 (200)

Designing a system with a single suction cup dedicated to a single vacuum generator is ideal, however, it may not always be practical. It is recommended that the sum of the areas of multiple cups dedicated to a single venturi do not exceed the area of the diameter of the single suction cups shown above.

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Selecting a Generator Size

The choice of Generator Series depends on the system requirements for components and overall performance for the application. Inline Generators offer the basic function for creating vacuum flow. Adding integrated components such as automatic blow off Controls, Vacuum and Blow-off Solenoids, Pressure Sensors, Check Valves and Filters are options that can reduce overall mounting space, reduce cycle time and can offer air conservation functions as well as emergency stop modes. For guidelines on selecting Vacuum Generators by features, consult the highlight features in the Generator Index section for each Series Section.

A vacuum source can only achieve and hold a degree of vacuum that sustains the amount of leakage into the vacuum system. In most cases, it is the leakage through the product and by of the cup seal that limits the system degree of vacuum. Products with high product leakage are Porous Applications. The degree of vacuum that can be obtained with this type of product can vary and tends to be below 10 inHg. Products with low or no leakage are called Non-Porous Applications. It can be assumed that the maximum degree of vacuum of the system is the maximum degree of the vacuum generator. Due to design cycle time and safety requirements, a lower degree of vacuum is generally chosen other than the maximum obtainable degree of vacuum. Chart 1 lists different units of measure for vacuum with typical application levels The system degree of vacuum must be determined by product testing.

Chart 1: Basic Vacuum Pressure Measurements Units

Negative Gauge Pressure PSIG	Absolute Pressure PSIA	Inches of Mercury inHg
0	14.7	0
Atmospheric Pressure at Sea Level		
-1.5	13.2	3
-3.0	11.7	6
-4.5	10.2	9
Typical Porous Vacuum Level		
-6.0	8.7	12
-7.5	7.2	15
-9.0	5.7	18
-10.5	4.2	21
Typical Non-Porous Vacuum Level		
-12.0	2.7	24
-13.5	1.2	27
-14.7	0	29.92
Perfect Vacuum (Zero Reference Pressure)		

Evacuation Time

The size of the generator generally refers to either the Evacuation Time or the Vacuum Flow Rates of the generator and varies by the size of the nozzle / diffuser.

Evacuation Time is the time required to evacuate the air out of a vacuum system to specific degree of vacuum. Typically, this degree of vacuum is a value where it is safe to move a product in a pick and place application and is determined by the design engineer. Evacuation Time can also be considered response time of the system.

A typical Evacuation Time chart for a generator series is shown in Chart 2. The time to achieve a given degree of vacuum in a 1 cubic foot volume is listed in seconds for each Generator.

Example: A pick and place application requires a 0.25 secs for creation of 18 inHg of vacuum in the vacuum system. The vacuum system volume, which includes tubing and cups, is 0.002 ft^3.

The evacuation time charts are given for a 1 cubic foot (ft^3) volume. To use these charts, convert the time requirement of the system to an equivalent time for a 1 cubic foot (ft^3) volume. In this example, 1 cubic foot (ft^3) is 500 times the system volume of 0.002 ft^3. Multiply the system time requirement by 500 (500 x 0.25 secs = 125 seconds). Any generator with a evacuation time of less than 125 seconds to attain 18 inHg can be chosen for this application. A CV-15-HS will meet the requirements for this application. A (-) listed means the generator will not obtain a higher degree of vacuum than the level of the first (-).

Chart 2: Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure	Air Consumption	Evacuation Time in sec / ft^3 * to reach different Vacuum Levels (inHg)								
	PSI	SCFM	3	6	9	12	15	18	21	24	27
CV-05HS	70	0.46	24.3	57.3	101.0	160.5	231.1	305.1	433.1	597.7	—
CV-05LS	70	0.46	11.0	23.4	40.0	64.4	110.2	—	—	—	—
CV-10HS	70	1.55	4.8	9.9	16.0	24.9	35.9	51.4	77.4	117.5	226.0
CV-10LS	70	1.55	3.7	7.6	13.0	20.3	33.1	—	—	—	—
CV-15HS	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1
CV-15LS	70	3.53	2.0	3.1	5.0	7.6	12.1	—	—	—	—
CV-20HS	70	6.36	1.7	2.8	5.0	6.5	9.0	13.0	18.9	27.4	60.7
CV-20LS	70	6.36	1.3	2.5	4.0	5.9	11.3	—	—	—	—

* 1 ft^3 = 28.31 liters

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Vacuum Flow

A typical Vacuum Flow chart for a generator series is listed in Chart 3. The vacuum flow rate at given degree of vacuum is listed in SCFM for each Generator. This chart is generally used to determine the change of degree of vacuum given a change in vacuum flow rate of a generator.

Example. A CV-15HS can only obtain 9 inHg. The vacuum flow rate at 9 inHg is 1.50 SCFM. This means that the cup seal and product leaks 1.50 SCFM of air. This generator can maintain the leak rate of 1.50 SCFM. Choosing a generator with more flow at 9 inHg will increase the degree of vacuum in the system because the generator can overcome more leakage. In this case,the vacuum flow rates are linear since this CV generator is a single stage venturi generator. Replacing a CV-15HS with CV-20HS will increase the degree of vacuum in the system to approximately 16.2 inHg. The CV-20HS now maintains 16.2 inHg at a flow rate of 1.50 SCFM.

Chart 3: Vacuum Flow (SCFM)

Nozzle Dia.	inHg										
	0	3	6	9	12	15	18	21	24	27	30
CV-05HS	.21	.19	.17	.15	.13	.11	.09	.07	.05	.03	—
CV-05LS	.32	.27	.22	.17	.12	.06	—	—	—	—	—
CV-10HS	.95	.85	.75	.65	.55	.45	.35	.25	.15	.05	—
CV-10LS	1.27	1.05	.83	.59	.38	.17	—	—	—	—	—
CV-15HS	2.22	1.98	1.74	1.5	1.26	1.01	.76	.51	.25	.10	—
CV-15LS	3.35	2.79	2.23	1.67	1.10	.53	—	—	—	—	—
CV-20HS	3.88	3.45	3.02	2.59	2.16	1.73	1.30	.87	.44	.25	—
CV-20LS	5.85	5.09	4.03	2.97	1.91	.85	—	—	—	—	—

Tubing Reference

Tubing ID	
SAE	mm
5/64	2
3/32	2.38
1/8	3.17
5/32	4
3/16	4.76
1/4	6.35
5/16	8
3/8	9.52
7/16	11.1

Tubing Length (L)	
In.	M
18	.457
24	.610
30	.762
36	.914
42	1.07
48	1.22
54	1.37
60	1.52
66	1.67

SAE x 25.4 =mm In. x 254 =M

Pad Volume Reference (P_V)

PFG		
Ø	Cu in.	L
2	.00004	.0000006
3.5	.0001	.000002
5	.0003	.000005
6	.00048	.000008
8	.002	.00003
10	.004	.00007
15	.012	.0002
20	.03	.0005
25	.067	.0011
30	.067	.0011
35	.14	.0023
40	.18	.003
50	.25	.0042
60	.57	.0094
80	1.28	.021
95	1.95	.032
110	5.00	.082
150	10.80	.177
200	23.24	.381

PBG		
Ø	Cu in.	L
10	.013	.0002
15	.045	.0007
20	.070	.001
30	.28	.004
40	.56	.009
50	1.60	.026
75	4.63	.076
110	6.77	.111
150	15.86	.26

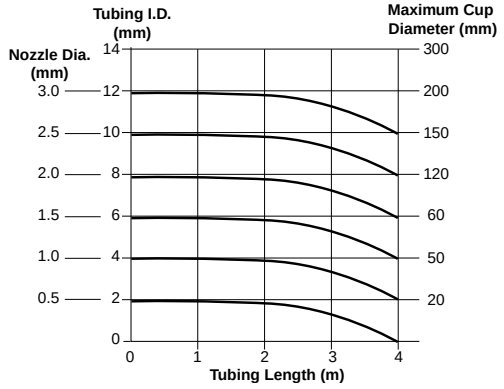
PCG		
Ø	Cu in.	L
5	.002	.00003
7	.003	.00004
10	.010	.0001
15	.060	.0009
18	.082	.001
20	.123	.002
30	.595	.009
40	1.15	.018
60	4.40	.072
90	10.00	.1639

1 ft^3 = 28.31 liters
1 ft^3 = 1728 in^3

Nozzle Diameter to Tubing Diameter to Cup Diameter Reference

For each application, the size of the nozzle diameter, vacuum tubing I.D., and maximum cup diameter must be practical in relationship to each other. The chart to the right is a quick reference to aid in selecting the vacuum tubing I.D. and nozzle diameter given the maximum cup diameter.

As an example, one 60mm cup with 2 meters in tubing length would require a minimum 6mm I.D. vacuum tube and a 1.5mm nozzle. The same 60mm cup with 3.5 meters in tubing length would require a minimum 8mm I.D. vacuum tube and a 2.0mm nozzle to achieve an equivalent performance.



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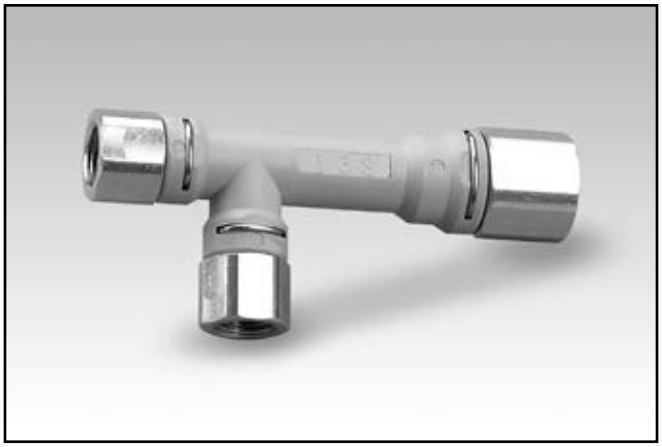
MCA

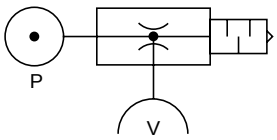


Features

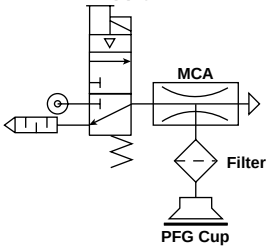
- **Very Compact and Lightweight**
- **One-Touch Fittings for Threaded Connection**
- **Mount Directly to Level Compensators**
- **Short Response Time When Locating Near Cups**
- **Vacuum Flow Rates from 0.21 to 1.26 SCFM**

Characteristics

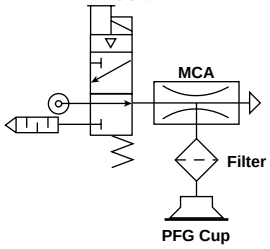
The MCA is the size of a normal push-lock tube fitting. It can be located in very restrictive areas close to the pick-and-place application to reduce the response time. The durable resin body makes the unit lightweight and friendly to end-of-arm tooling. The connections are easily interchangeable to accommodate tube fittings or female threads.



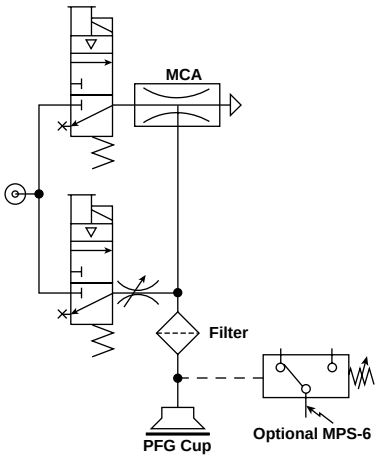
Normally Closed Air Supply



Normally Open Air Supply



Normally Closed Air Supply with Blow-off & Optional Sensor



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Model Number Index

(Bold Items are Most Popular)

MCA [07] [H] [S] [N1] [N1] [N1]

Nozzle Diameter	Vacuum Degree	Supply Pressure	Pressure Port	Vacuum Port	Exhaust Port
07 0.7mm	**H High Vacuum 27 inHg**	**S 70 PSI**	**N1 1/8 NPT**	**N1 1/8 NPT Female**	**N1 1/8 NPT (07)**
10 1.0mm			G1 1/8 BSPP	G1 1/8 G Female	G1 1/8 BSPP (07)
13 1.3mm					**N2 1/4 NPT (10,13)**
					G2 1/4 BSPP (10, 13)

Specifications

Media	Non-Lubricated Air, Non-Corrosive Gases
Operating Pressure	14 to 114 PSI
Operating Temperature	32° to 120°F
Material	Polycarbonate, Aluminum Fittings
Generator Weight	05HS: 0.6 oz., 07HS, 07LS, 10HS, 10LS, 13HS: 0.8 oz.

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure	Air Consumption	Evacuation Time in sec / ft³ to reach different Vacuum Levels (inHg)								
	PSI	**SCFM**	**3**	**6**	**9**	**12**	**15**	**18**	**21**	**24**	**27**
MCA07HS	70	0.80	9.6	21.2	35.0	55.9	87.6	130.5	182.2	262.4	—
MCA10HS	70	1.68	5.1	11.0	18.0	28.2	41.0	58.2	83.1	123.2	—
MCA13HS	70	2.81	3.7	7.3	12.0	19.5	28.5	39.8	58.5	104.2	—

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

	inHg										
Nozzle Diameter	**0**	**3**	**6**	**9**	**12**	**15**	**18**	**21**	**24**	**27**	**30**
MCA07HS	.41	.37	.32	.27	.22	.18	.14	.10	.06	—	—
MCA10HS	.88	.78	.68	.58	.47	.37	.26	.16	.06	—	—
MCA13HS	1.26	1.11	.96	.81	.67	.53	.39	.25	.11	—	—

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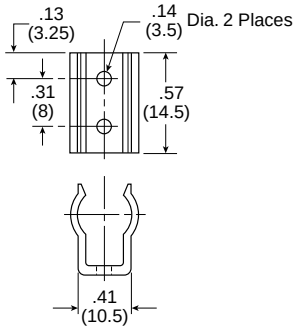
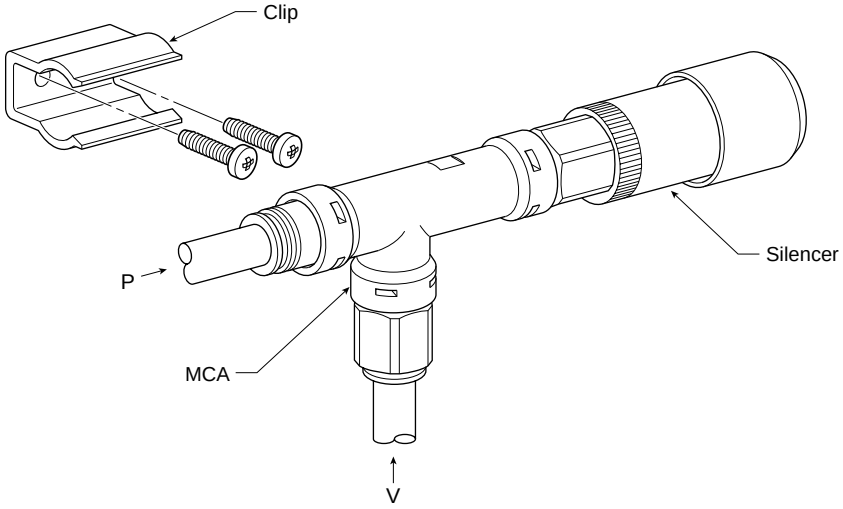
Replacement Components

Item	Model Number	Generator
Silencer	MSS-01	MCA07HS
Silencer	MSM-01	MCA10HS
		MCA13HS
Bracket	MCA-B	MCA05, 07, 10, 13



MCA-B



Installation

Install clip and secure MCA unit. Silencers are not included with the MCA generator series. Silencers or exhaust mufflers must be ordered separately and properly installed to manage the exhaust created by the venturi. If a tube connector is selected for the exhaust port option, plumb the exhaust to an appropriate collector.

⚠ Cautions

Do not operate MCA generators outside the temperature range and pressures listed in the specifications section of this catalog.

All normally closed valve supply circuits will interrupt the air supply to the venturi during a power failure or Emergency Stop condition. As a result, the product being transferred may be dropped, possibly creating a hazard to the surrounding environment. To avoid hazardous situations during a power loss or Emergency Stop condition, consider a normally open valve supply circuit or an Emergency Stop system.

It is always recommended to dedicate one suction cup to a single MCA generator for the best response and maximize the vacuum level per individual cup. If more than one cup is used per generator, the vacuum level of the pick-and-place system may drop to an unsafe level if one of the pads separates from the product.

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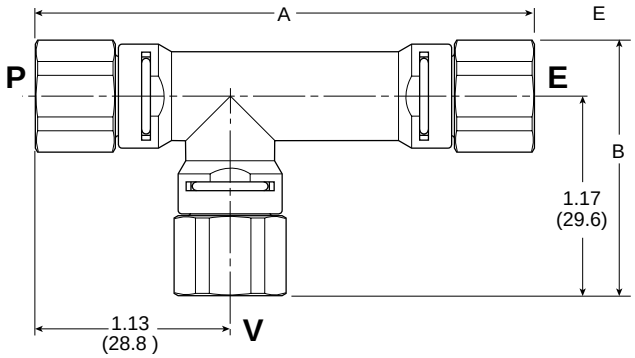
Dimensions



MCA**N1N1N1**
MCA**N1N1N2**

Item	A	B	P (Pressure Port)	V (Vacuum Port)	E (Exhaust Port)
MCA07HSN1N1N1	2.17 (55.2)	1.10 (28)	NPT-1/8" Female	NPT-1/8" Female	NPT-1/8" Female
MCA10HSN1N1N2	2.76 (70)	1.16 (29.5)	NPT-1/8" Female	NPT-1/8" Female	NPT-1/4" Female
MCA13HSN1N1N2	2.76 (70)	1.16 (29.5)	NPT-1/8" Female	NPT-1/8" Female	NPT-1/4" Female

Inches (mm)

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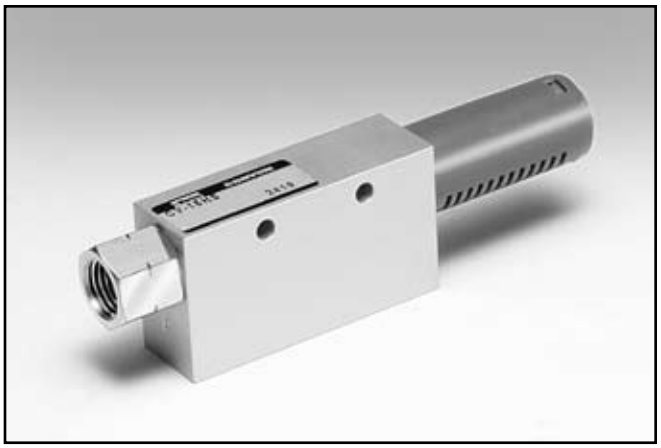
CV

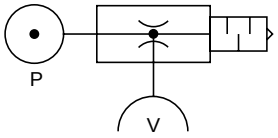


Features

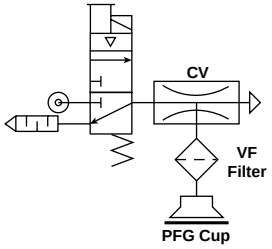
- **Durable and Long Life**
- **Anodized Aluminum Body**
- **Aluminum Body Includes Exhaust Muffler**
- **Vacuum Levels - 17 inHg or 27 inHg**
- **Vacuum Flow Rates from 0.21 to 12.36 SCFM**
- **303 SS and PTFE Materials Available**

Characteristics

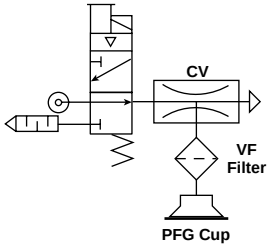
The CV is the original and most popular venturi. The basic CV unit is applicable to almost any application. The aluminum / brass nozzle construction is durable and virtually maintenance free over the long life of the unit.



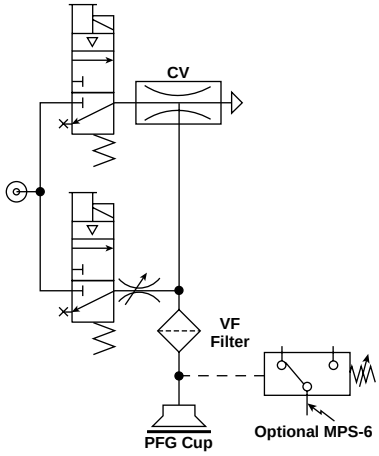
Normally Closed Air Supply



Normally Open Air Supply



Normally Closed Air Supply with Blow-off & Optional Sensor



Specifications

Media	Non-Lubricated Air, Non-Corrosive Gases
Operating Pressure	14 to 114 PSI
Operating Temperature	32 to 120°F
Material	**Body:** Aluminum, 303 Stainless, or PFTE **Nozzle:** Nickel plated brass, 303 Stainless, PFTE
Generator Weight	05HS, 05LS, 10HS, 10LS: 2.8 oz., 15HS, 15LS: 4.9 oz., 20HS, 20LS: 12.3 oz., 25HS, 25LS: 25.6 oz., 30AHS, 30ALS: 29.8 oz.

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Model Number Index

(Bold Items are Most Popular)

CV **05** **H** **S** **N** **—**

Nozzle Diameter	
05	**0.5mm**
10	**1.0mm**
15	**1.5mm**
20	**2.0mm**
25	**2.5mm**
30A	**3.0mm**

Vacuum Degree	
H	**High Vacuum 90%**
L	Low Vacuum 57%

Supply Pressure	
S	**70 PSI**

Port Thread*	
N	**NPT**
G	BSPP
R	BSPT

* Inlet Pressure Port & Vacuum Port Only.

Body / Nozzle Material	
Blank	**Aluminum** (Body)**
	Nickle Plated Brass (Nozzle)
S3S3	303SS*
TT	PTFE*

* Not available in nozzle diameter 05.
** Includes exhaust port silencer.

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft³* to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
CV05HS	70	0.46	24.3	57.3	101.0	160.5	231.1	305.1	433.1	597.7	—
CV05LS	70	0.46	11.0	23.4	40.0	64.4	110.2	—	—	—	—
CV10HS	70	1.55	4.8	9.9	16.0	24.9	35.9	51.4	77.4	117.5	226.0
CV10LS	70	1.55	3.7	7.6	13.0	20.3	33.1	—	—	—	—
CV15HS	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1
CV15LS	70	3.53	2.0	3.1	5.0	7.6	12.1	—	—	—	—
CV20HS	70	6.36	1.7	2.8	5.0	6.5	9.0	13.0	18.9	27.4	60.7
CV20LS	70	6.36	1.3	2.5	4.0	5.9	11.3	—	—	—	—
CV25HS	70	9.36	1.4	2.3	3.0	4.5	6.5	9.0	13.0	18.9	35.3
CV25LS	70	9.36	1.0	2.0	3.0	3.7	5.6	—	—	—	—
CV30AHS	70	13.60	1.1	2.0	2.8	3.5	4.8	6.8	9.6	16.7	29.1
CV30ALS	70	13.60	0.9	1.5	2.7	3.4	5.1	—	—	—	—

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30Dia.
CV05HS	.21	.19	.17	.15	.13	.11	.09	.07	.05	.03	—
CV05LS	.32	.27	.22	.17	.12	.06	—	—	—	—	—
CV10HS	.95	.85	.75	.65	.55	.45	.35	.25	.15	.05	—
CV10LS	1.27	1.05	.83	.59	.38	.17	—	—	—	—	—
CV15HS	2.22	1.98	1.74	1.50	1.26	1.01	.76	.51	.26	.10	—
CV15LS	3.35	2.79	2.23	1.67	1.10	.53	—	—	—	—	—
CV20HS	3.88	3.45	3.02	2.59	2.16	1.73	1.30	.87	.44	.25	—
CV20LS	5.85	5.09	4.03	2.97	1.91	.85	—	—	—	—	—
CV25HS	5.65	5.11	4.57	4.03	3.49	2.94	2.39	1.85	1.31	.77	—
CV25LS	8.83	7.29	5.75	4.21	2.67	1.13	—	—	—	—	—
CV30AHS	7.94	7.16	6.38	5.62	4.84	4.06	3.28	2.50	1.17	.92	—
CV30ALS	12.36	10.24	8.12	6.00	3.89	1.48	—	—	—	—	—

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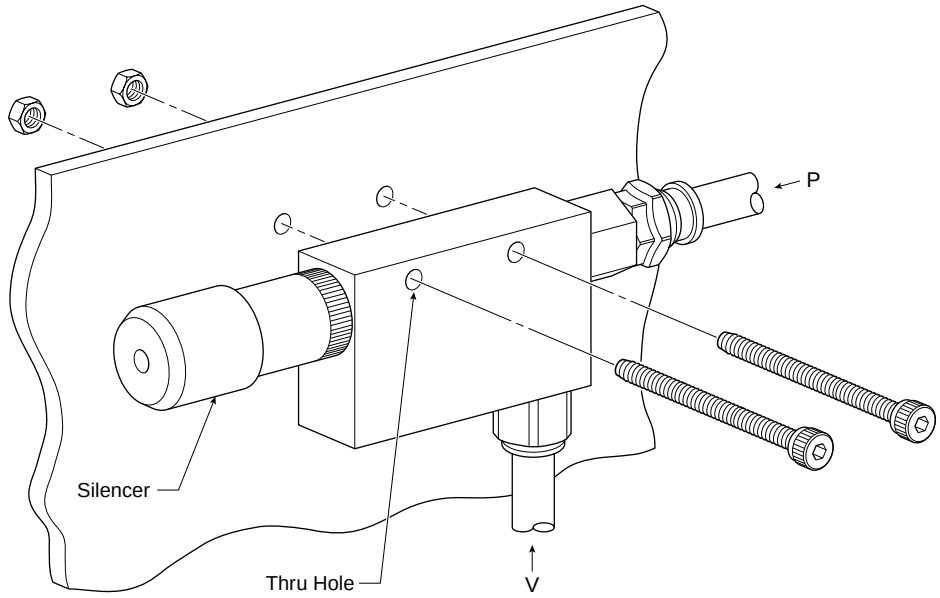
Replacement Components

Item	Model Number	Generator
Silencer	MSS-01	CV05HS/LS
		CV10HS/LS
Silencer	MSM-01	CV15HS/LS
Silencer	MSL-02	CV20HS/LS
Silencer	MS6-01	CV25HS/LS
		CV30AHS/LS



Installation

Secure CV unit. Silencers are included with the CV generator series. If a tube connector is selected by the user for the exhaust port as opposed to the silencer, plumb the exhaust to an appropriate collector.

⚠ Cautions

Do not operate CV generators outside the temperature range and pressures listed in the specifications section of this catalog.

All normally closed valve supply circuits will interrupt the air supply to the venturi during a power failure or Emergency Stop condition. As a result, the product being transferred may be dropped, possibly creating a hazard to the surrounding environment. To avoid hazardous situations during a power loss or Emergency Stop condition, consider a normally open valve supply circuit or an Emergency Stop system.

It is always recommended to dedicate one suction cup to a single CV generator for the best response and maximize the vacuum level per individual cup. If more than one cup is used per generator, the vacuum level of the pick-and-place system may drop to an unsafe level if one of the pads separates from the product.

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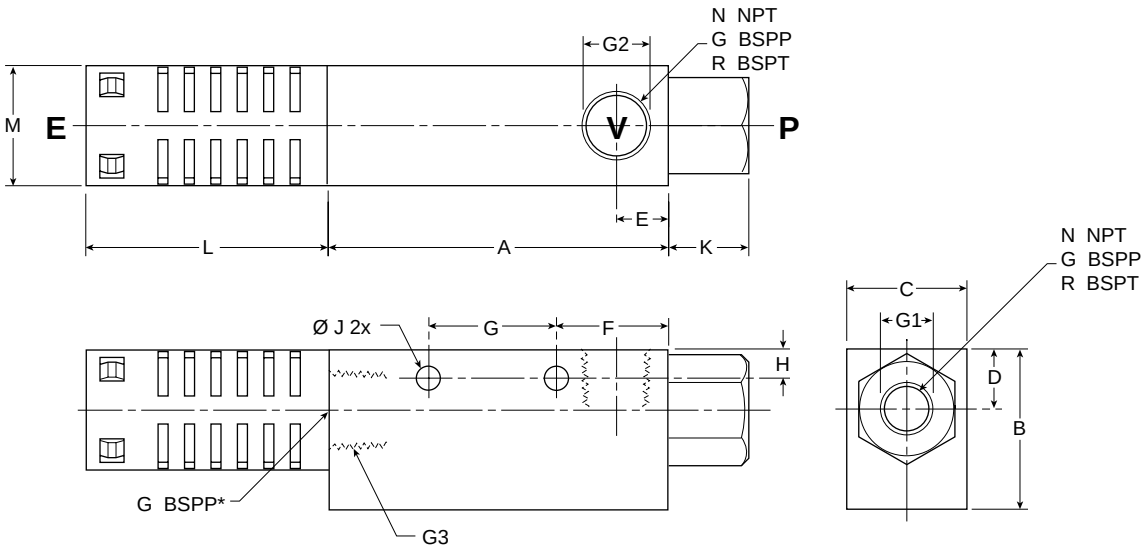
Dimensions



***Note:** Stainless Steel and PTFE CV units do not include silencer and exhaust port "G3" utilizes NPT thread instead of the standard BSPP thread port used for Aluminum units.
Omit the "L" dimension for Stainless Steel and PTFE units.

Item	A	B	C	D	E	F	G	H	J	K	L	M	G1	G2	G3
CV05HS/LS	1.77 (45)	1.30 (33)	.63 (16)	.39 (10)	.31 (8)	.55 (14)	.79 (20)	.18 (4.5)	.17 (4.2)	.39 (10)	1.42 (36)	.73 (18.5)	1/8 NPT	1/8 NPT	1/8 BSPP
													1/8 BSPP	1/8 BSPP	
													1/8 BSPT	1/8 BSPT	
CV10HS/LS	1.77 (45)	1.30 (33)	.63 (16)	.39 (10)	.31 (8)	.55 (14)	.79 (20)	.18 (4.5)	.17 (4.2)	.39 (10)	1.42 (36)	.73 (18.5)	1/8 NPT	1/8 NPT	1/8 BSPP
													1/8 BSPP	1/8 BSPP	
													1/8 BSPT	1/8 BSPT	
CV15HS/LS	2.48 (63)	1.38 (35)	.79 (20)	.43 (11)	.39 (10)	.79 (20)	.98 (25)	.20 (5)	.18 (4.5)	.59 (15)	1.79 (45.5)	.79 (20)	1/4 NPT	1/4 NPT	1/4 BSPP
													1/4 BSPP	1/4 BSPP	
													1/4 BSPT	1/4 BSPT	
CV20HS/LS	3.35 (85)	1.57 (40)	1.18 (30)	.59 (15)	.51 (13)	1.10 (28)	1.26 (32)	.28 (7)	.24 (6)	.79 (20)	2.38 (60.5)	1.18 (30)	1/4 NPT	3/8 NPT	1/2 BSPP
													1/4 BSPP	3/8 BSPP	
													1/4 BSPT	3/8 BSPT	
CV25HS/LS	3.94 100	2.36 (60)	1.57 (40)	.79 (20)	.63 (16)	.79 (20)	1.97 (50)	.22 (5.5)	.24 (6)	.67 (17)	3.78 (96)	1.57 (40)	3/8 NPT	1/2 NPT	3/4 BSPP
													3/8 BSPP	1/2 BSPP	
													3/8 BSPT	1/2 BSPT	
CV30AHS/ALS	4.65 (118)	2.36 (60)	1.57 (40)	.79 (20)	.79 (20)	1.30 (33)	1.97 (50)	.22 (5.5)	.24 (6)	.79 (20)	3.78 (96)	1.57 (40)	1/2 NPT	3/4 NPT	3/4 BSPP
													1/2 BSPP	3/4 BSPP	
													1/2 BSPT	3/4 BSPT	

Inches (mm)

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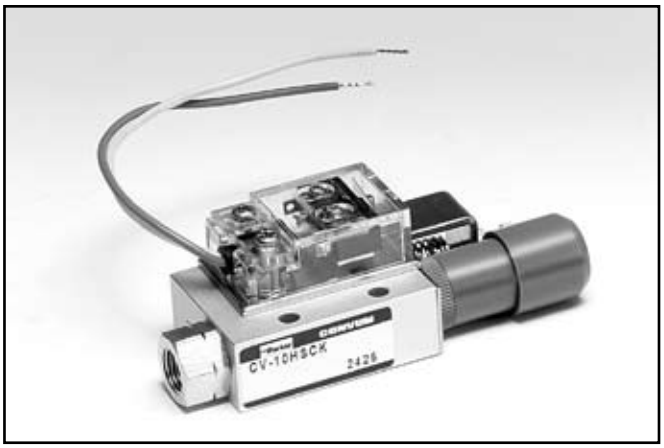
CV-CK



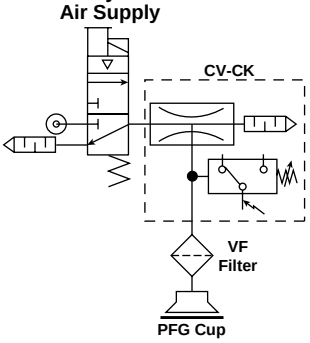
Features

- **Adjustable Switch Between 5.9 and 15.74 inHg**
- **Standard Anodized Aluminum Body**
- **Aluminum Body Includes Exhaust Muffler**
- **Vacuum Levels - 17 inHg or 27 inHg**
- **Vacuum Flow Rates from 0.95 to 5.85 SCFM**
- **Exhaust Muffler Included with Aluminum Body**

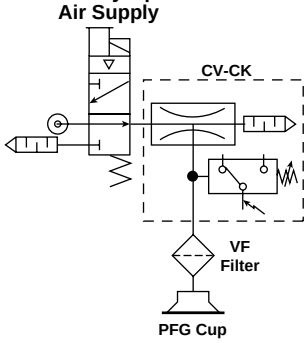
Characteristics

The CV-CK Series venturi is supplied with an adjustable open contact switch for vacuum confirmation. The switch point ranges between 5.9 and 15.74 inHg with a hysteresis of 1 to 3.9 inHg. The mechanical switch option is a cost effective method to confirm part presence.

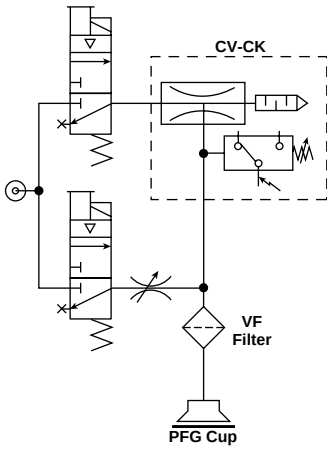
Normally Closed Air Supply



Normally Open Air Supply



Normally Closed Air Supply with Blow-off & Sensor



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Model Number Index

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CV 05 H S CK N

Nozzle Diameter	Vacuum Degree	Supply Pressure	Adjustable Mechanical Vacuum Switch	Port Thread*
10 1.0mm	**H High Vacuum 90%**	**S 70 PSI**	**CK**	**N NPT**
15 1.5mm	L Low Vacuum 57%			G BSPP
20 2.0mm				R BSPT

* Inlet Pressure Port & Vacuum Port Only.

Note: Includes exhaust port silencer.

Specifications

Media	Non-Lubricated Compressed Air, Non-Corrosive Gases
Operating Pressure	14 to 114 PSI
Operating Temperature	32 to 140°F
Material	Body: Aluminum Nozzle: Nickel Plated Brass
Setting Range	5.9 to15.74 inHg
Accuracy	± 1.574 inHg
Hysteresis	1.08 to 3.93 inHg
Air Circuit	Normally Open
Switch Output	AC125V: 5A, AC250V: 3A, DC250V: 0.2A
Generator Weight	05HS, 05LS, 10HS, 10LS: 4.2 oz., 15HS, 15LS: 6.7 oz., 20HS, 20LS: 16.1 oz.

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft³* to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
CV10HSCK	70	1.55	4.8	9.9	16.0	24.9	35.9	51.4	77.4	117.5	226.0
CV10LSCK	70	1.55	3.7	7.6	13.0	20.3	33.1	—	—	—	—
CV15HSCK	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1
CV15LSCK	70	3.53	2.0	3.1	5.0	7.6	12.1	—	—	—	—
CV20HSCK	70	6.36	0.7	2.8	5.0	6.5	9.0	13.0	18.9	27.4	60.7
CV20LSCK	70	6.36	1.1	2.0	3.0	3.7	5.6	—	—	—	—

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
CV10HSCK	.95	.85	.75	.65	.55	.45	.35	.25	.15	.05	—
CV10LSCK	1.27	1.05	.83	.59	.38	.17	—	—	—	—	—
CV15HSCK	2.22	1.98	1.74	1.5	1.26	1.01	.76	.51	.25	.10	—
CV15LSCK	3.35	2.79	2.23	1.67	1.10	.53	—	—	—	—	—
CV20HSCK	3.88	3.45	3.02	2.59	2.16	1.73	1.30	.87	.44	.25	—
CV20LSCK	5.85	5.09	4.03	2.97	1.91	.85	—	—	—	—	—

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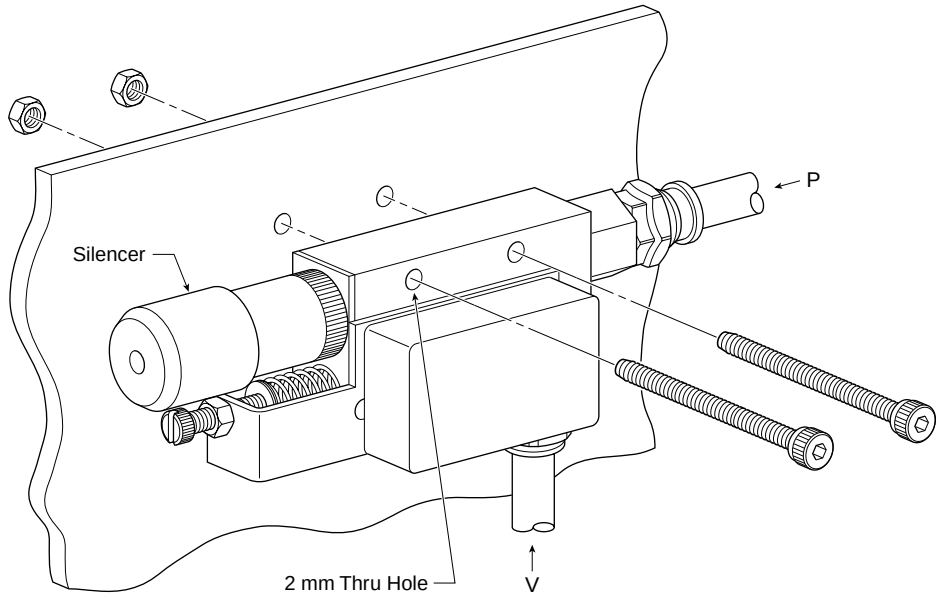
Replacement Components

Item	Model Number	Generator
Silencer	MSS-01	CV10HS/LSCK
Silencer	MSM-01	CV15HS/LSCK
Silencer	MSL-02	CV20HS/LSCK
Mechanical Switch	CV-CK	CV10 thru 20



Installation

Install clip and secure CV-CK unit. Silencers are included with the CV-CK generator series. If a tube connector is selected for the exhaust port option, plumb the exhaust to an appropriate collector.

⚠ Cautions

Do not operate CV-CK generators outside the temperature range and pressures listed in the specifications section of this catalog.

All normally closed valve supply circuits will interrupt the air supply to the venturi during a power failure or Emergency Stop condition. As a result, the product being transferred may be dropped, possibly creating a hazard to the surrounding environment. To avoid hazardous situations during a power loss or Emergency Stop condition, consider a normally open valve supply circuit or an Emergency Stop system.

It is always recommended to dedicate one suction cup to a single CV-CK generator for the best response and maximize the vacuum level per individual cup. If more than one cup is used per generator, the vacuum level of the pick-and-place system may drop to an unsafe level if one of the pads separates from the product.

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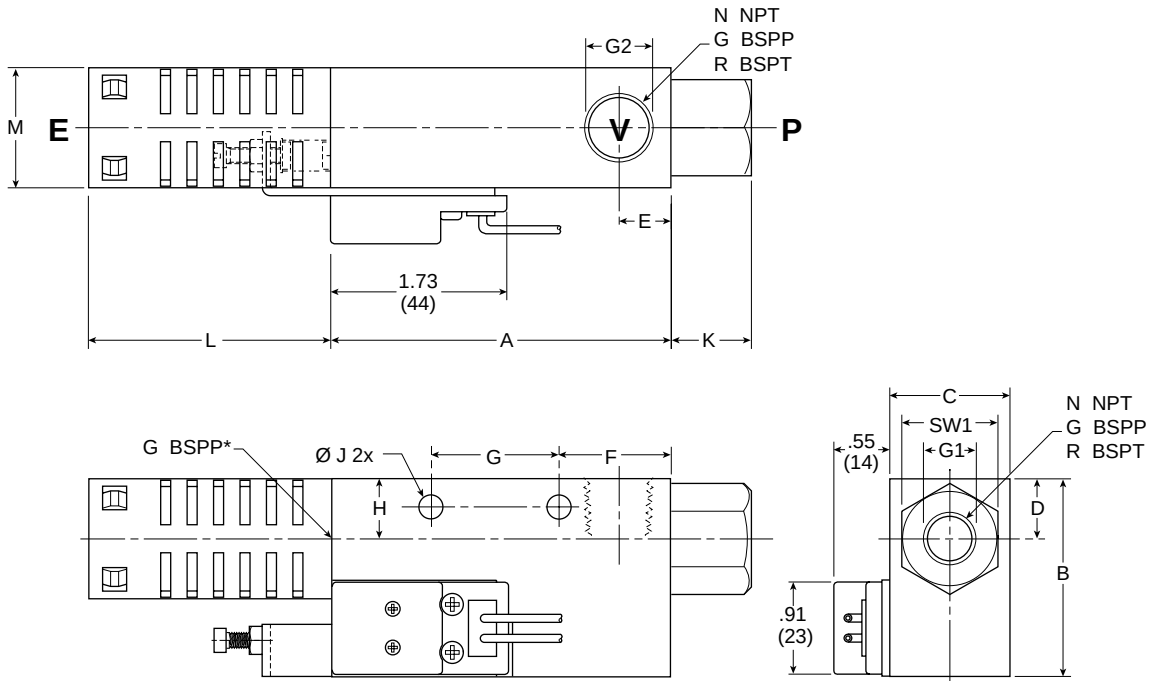
Dimensions



Item	A	B	C	D	E	F	G	H	J	K	L	M	G1	G2	SW1
CV10HS/LSCK	1.77 (45)	1.30 (33)	.63 (16)	.39 (10)	.31 (8)	.55 (14)	.79 (20)	.18 (4.5)	17 (4.2)	.39 (10)	1.42 (36)	.73 (18.5)	NPS1/8	NPS1/8	.55 (14)
													BSPP1/8	BSPP1/8	
													BSPT1/8	BSPT1/8	
CV15HS/LSCK	2.48 (63)	1.38 (35)	.79 (20)	.43 (11)	.39 (10)	.79 (20)	.98 (25)	.20 (5)	.18 (4.5)	.59 (15)	1.79 (45.5)	.79 (20)	NPS1/4	NPS1/4	.67 (17)
													BSPP1/4	BSPP1/4	
													BSPT1/4	BSPT1/4	
CV20HS/LSCK	3.35 (85)	1.57 (40)	1.18 (30)	.59 (15)	.51 (13)	1.10 (28)	1.26 (32)	.28 (7)	.24 (6)	.79 (20)	2.38 (60.5)	1.18 (30)	NPS1/4	NPS3/8	.94 (24)
													BSPP1/4	BSPP3/8	
													BSPT1/4	BSPT3/8	

Inches (mm)

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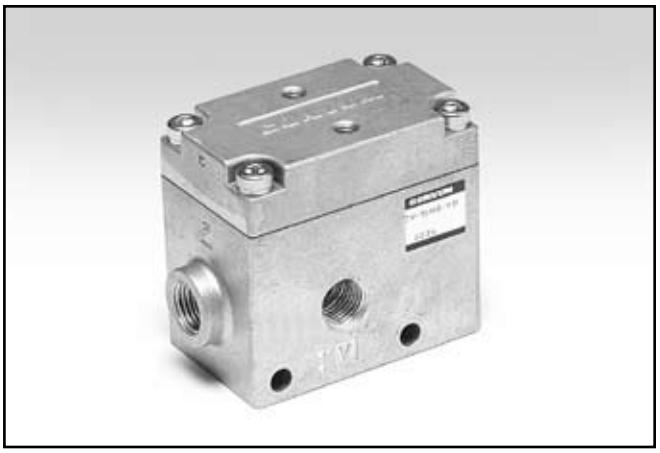
CV-VR

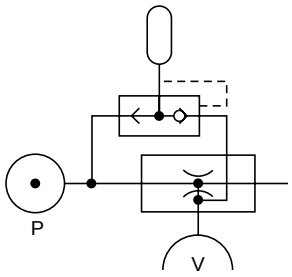


Features

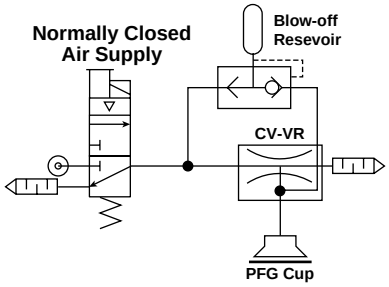
- **Auto Blow-off After Vacuum Cycle**
- **Rugged Aluminum Die Cast Construction**
- **Porting for Vacuum Sensor**
- **Porting for Additional Blow-off Flow Rate**
- **All Mechanical and Pneumatic**
- **Vacuum Flow Rate 2.22 SCFM**

Characteristics

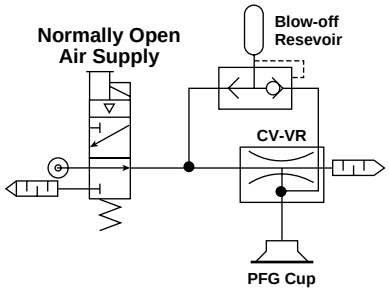
The CV-VR series venturi is perfect for applications that may require automatic blow-off capabilities for a totally pneumatic circuit; such as end of arm tooling or packaging applications. The CV-VR has a built-in reservoir that accumulates the blow-off release during the vacuum cycle. The blow-off release is immediate and automatic when the vacuum operation is discontinued.



Energize the Normally Closed valve to initiate vacuum. When De-energized, accumulated blow-off pressure automatically releases the product.



Energize the Normally Open valve to Deactivate vacuum. When Energized, accumulated blow-off pressure automatically releases the product.



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CV 15 H S VR N

Nozzle Diameter	Vacuum Degree	Supply Pressure	Automatic Vacuum Release Type	Pressure & Vacuum Port
15 1.5mm	**H** High Vacuum 90%	**S** 70 PSI		**N** 1/4 NPT **G** 1/4 BSPP

Specifications

Media	Non-Lubricated Compressed Air, Non-Corrosive Gases
Operating Pressure	21 to 103 PSI
Operating Temperature	32 to 120°F
Material	**Body:** Die-Cast Aluminum **Packing:** NBR
Generator Weight	8.9 oz.

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure	Air Consumption	Evacuation Time in sec / ft³ * to reach different Vacuum Levels (inHg)								
	PSI	SCFM	3	6	9	12	15	18	21	24	27
CV15HSVR	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
CV15HSVR	2.22	1.98	1.74	1.5	1.26	1.01	.76	.51	.25	.10	—

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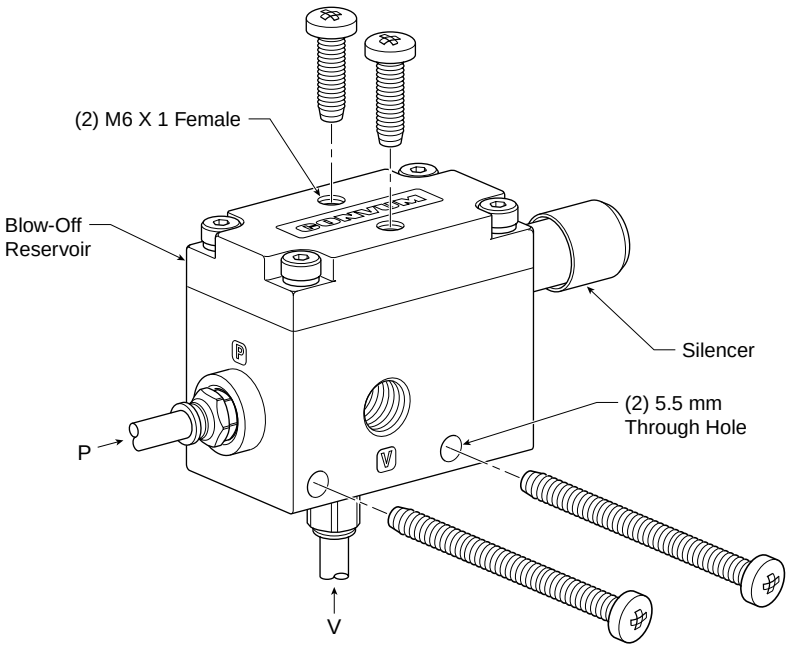
Accessories

Item	Model Number	Generator
Silencer	MSM-01	CV15HSVR*

* N (NPT) or G (BSPP)



Installation

Secure the CV-VR unit. Silencers are not included with the CV-VR generator series. Silencers or exhaust mufflers must be ordered separately and properly installed to manage the exhaust created by the venturi. If a tube connector is selected for the exhaust port option, plumb the exhaust to an appropriate collector.

Note:
Plug Auxilliary Air Reservoir Port if not used.

⚠ Cautions

Do not operate CV-VR generators outside the temperature range and pressures listed in the specifications section of this catalog.

All normally closed valve supply circuits will interrupt the air supply to the venturi during a power failure or Emergency Stop condition. As a result, the product being transferred may be dropped, possibly creating a hazard to the surrounding environment. To avoid hazardous situations during a power loss or Emergency Stop condition, consider a normally open valve supply circuit or an Emergency Stop system.

It is always recommended to dedicate one suction cup to a single CV-CR generator for the best response and maximize the vacuum level per individual cup. If more than one cup is used per generator, the vacuum level of the pick-and-place system may drop to an unsafe level if one of the pads separates from the product.

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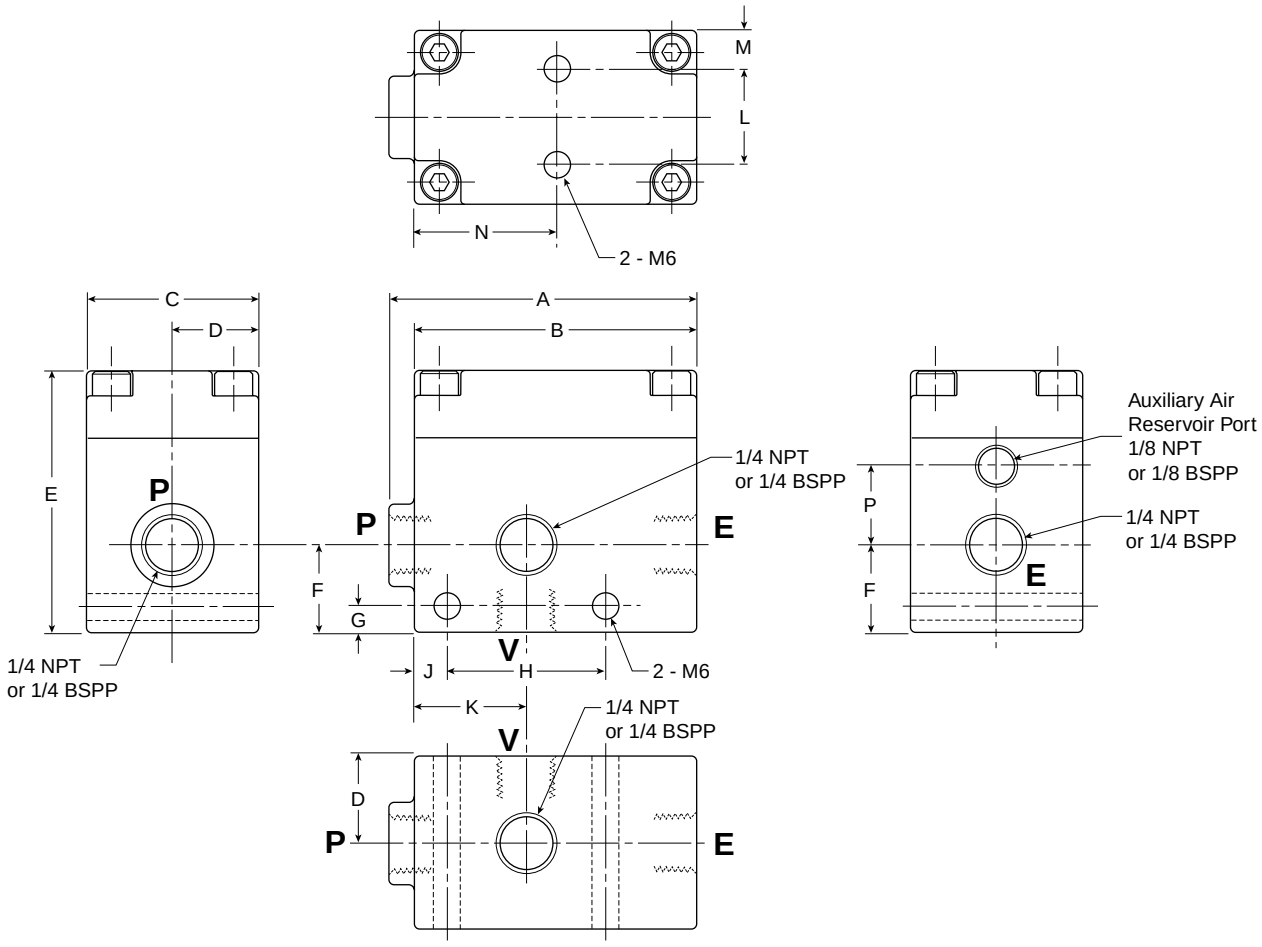
Dimensions



Item	A	B	C	D	E	F	G	H	J	K	L	M	N	P
CV15HSVR	2.76 (70)	2.52 (64)	1.57 (40)	.79 (20)	2.36 (60)	.79 (20)	.24 (6)	1.42 (36)	28 (7)	.98 (25)	.87 (22)	.35 (9)	1.26 (32)	.69 (17.5)

Inches (mm)

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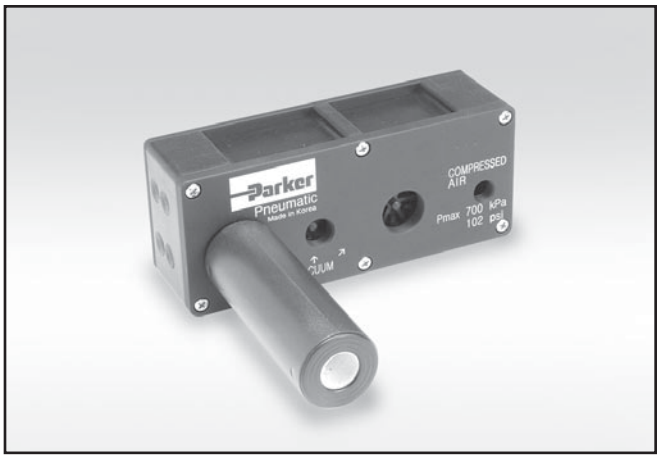
CHF

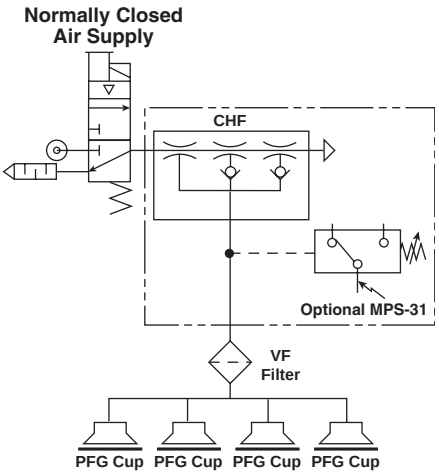


Features

- **Classic Multi-stage Venturi**
- **Anodized Aluminum Body**
- **Aluminum Body Includes Exhaust Muffler**
- **Maximum Vacuum Level, 27.3 inHg**
- **Vacuum Flow Rates from 12.5 to 31.8 SCFM**
- **Mounting Brackets Included**

Characteristics

CHF- High Flow Series is a multistage vacuum generator. CHF unit is ideal for porous applications. 4 bolt mounting pattern with gauge opposite of vacuum and pressure inlet ports enables this generator to be panel mounted.
CHF Series comes standard with flow thru exhaust mufflers to reduce clogging in dirty environments. Additional Pneumatic Control Valve is required to create vacuum flow.



Model Number Index

(Bold Items are Most Popular)

CHF - 10 Z N E

Vacuum Flow	
20	**20.9 SCFM**
30	**26.3 SCFM**
40	**31.8 SCFM**

Gauge Port Options	
Z	**No Gauge**
30	Gauge, 0 to 30 inHg, 1/8 NPT Back Mount
31	Vacuum Sensor MPS-V31N-NC, NPN, with 2 Meter Cable
32	Vacuum Sensor MPS-V31N-PC, PNP, with 2 Meter Cable
33	Vacuum Sensor MPS-V31N-NG, NPN, Grommet
34	Vacuum Sensor MPS-V31N-PG, PNP, Grommet

Port Thread	
N	**NPT**
G	BSPP

Note: Includes Brackets and Muffler.

Replacement Components

Part Number	Description
SFCHF90NN	CHF- Repair Kit
266298A	0 to 30 inHg Gauge
SFBW15	Bracket Kit (Includes 4 Brackets & 4 M5 x 15 Screws
SIS-001	Silencer (Flow Thru)

Specifications

Media	Non-Lubricated Air, Non-Corrosive Gases
Operating Pressure	80 PSI
Operating Temperature	32°F to 120°F
Material	**Body:** Aluminum **Nozzle & Diffuser:** Polymer **Seals:** BUNA N

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Performance

Item	Vacuum Degree at 80 PSI	Vacuum Flow (SCFM)	Air Consumption (SCFM Max.)	Weight (grams)
CHF-20	27.3	20.9	6.5	875
CHF-30	27.3	26.3	9.6	885
CHF-40	27.3	31.8	14	965

Evacuation Time (SEC)

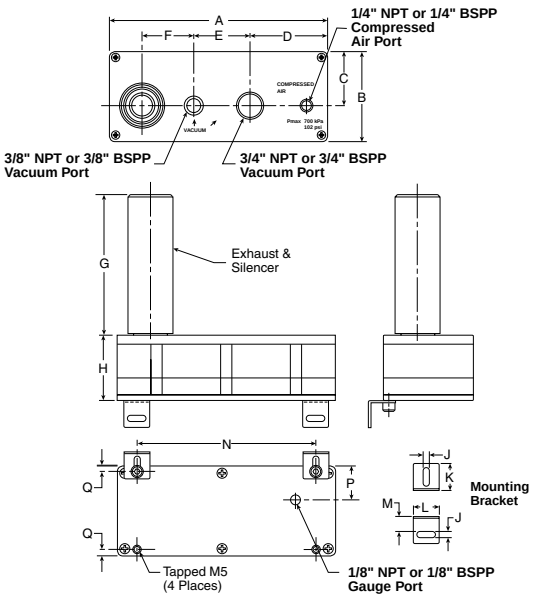
Series	Air Supply Pressure (PSI)	Air Consumption (SCFM)	Evacuation time in sec / ft³ * to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
CHF-20	80	6.5	0.21	0.64	1.70	4.03	7.63	11.65	19.28	33.48	94.50
CHF-30	80	9.6	0.21	0.63	1.27	3.39	6.36	9.53	16.10	27.76	78.82
CHF-40	80	14.0	0.17	0.42	1.27	2.33	4.03	5.93	9.75	16.95	47.67

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
CHF-20	20.90	12.12	7.88	3.85	2.76	2.12	1.45	0.81	0.35	0.04	—
CHF-30	26.30	15.27	9.89	4.84	3.46	2.68	1.83	1.02	0.42	0.05	—
CHF-40	31.80	18.50	12.00	5.90	4.20	3.30	2.30	1.30	0.60	0.06	—

Dimensions



Item	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
CHF-20, 30	7.64 (194)	3.15 (80)	1.89 (48)	2.72 (69)	1.97 (50)	1.81 (46)	4.84 (123)	1.69 (43)	.22 (5.5)	.94 (24)	.91 (23)	.51 (13)	6.26 (159)	1.26 (32)	.20 (5)
CHF-40	7.64 (194)	3.15 (80)	1.89 (48)	2.72 (69)	1.97 (50)	1.81 (46)	4.84 (123)	2.28 (58)	.22 (5.5)	.94 (24)	.91 (23)	.51 (13)	6.26 (159)	1.26 (32)	.20 (5)

Inches (mm)

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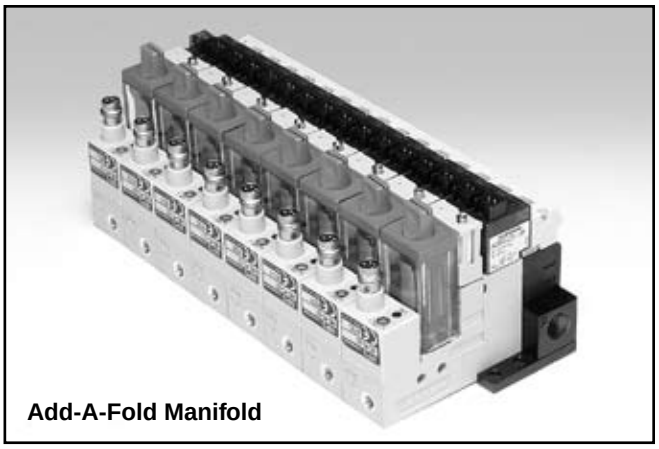
MC2

Features

- **Vacuum Generating Pilot Valve**
- **Vacuum Blow-off Pilot Valve**
- **Vacuum Sensor - Filter - Silencer Available**
- **Regulating Blow-off Adjustment**
- **Manifold System**
- **Short Cycle Times for High Speed Pick and Place**
- **Vacuum Flow Rates from 0.2 to .71 SCFM**

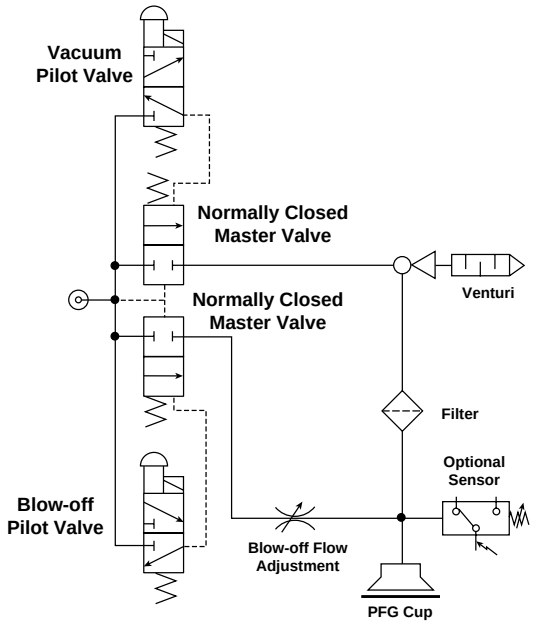
Characteristics

The MC2 is a complete package for factory automation. The MC2 has integrated vacuum generating and blow-off release pilot valves to minimize the response time to achieve vacuum. The small foot print and lightweight body allows the unit to be located close to the suction cup for maximum performance. The MC2 has additional features; regulating blow-off needle, 37 micron mesh filter, and a sensor platform for vacuum confirmation. The MC2 can be assembled into a maximum 8 station manifold. The unit can be ordered normally open or normally closed.

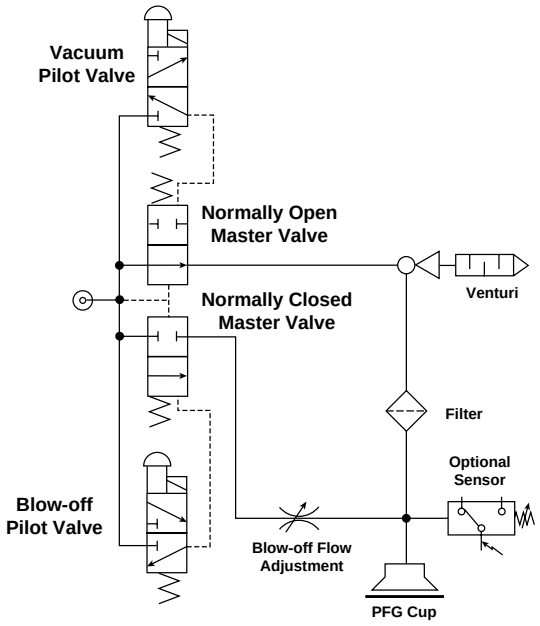


Add-A-Fold Manifold

Normally Closed Vacuum Circuit
The Vacuum Pilot is Energized to Activate Vacuum



Normally Open Vacuum Circuit
The Vacuum Pilot is Energized to Deactivate Vacuum



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Model Number Index

(Bold Items are Most Popular)

MC2 S 10 H S 61 M 24 B 5 N

Function
- **S Single Unit**

Nozzle Diameter
- 07 .7mm
- **10 1.0mm**

Vacuum Degree
- **H High Vacuum 27 inHg**

Supply Pressure
- **S 70 PSI**

Sensor
- **01 MVS-201-NC (NPN/NPN)**
- **06 MVS-201-PCP (PNP/PNP)**
- **21 MPS-V2C-NC (NPN)**
- **22 MPS-V2C-PC (PNP)**
- **61 MPS-V6C-NC (NPN)**
- **62 MPS-V6C-PC (PNP)**
- **Z No Sensor**

Body Type
- **M* Short**
- **L** Long**

Voltage
- **24 24VDC w/Lamp & Surge**

Master Valve Air Supply
- A Normally Open
- **B Normally Closed**

Valve Connector
- **5 500mm Lead Clip (Included)**

Pressure Port
- **N 1/8 NPT**
- G 1/8 BSPP
- R 1/8 BSPT

*Available with Sensor Options 61, 62, 63, 64 & 65 Only
**Available with Sensor Options 01, 02, 06, 21, 22, 23, & 24 Only

Specifications

Media	Non-Lubricated Compressed Air, Non-Corrosive Gases
Operating Pressure	21 to 84 PSI (1.5 to 6 kgf/cm^2)
Optimum Operating Pressure	70 PSI (5 kgf/cm^2)
Humidity	35 to 85%
Pressure Port	**N:** 1/8 NPT Female, **G:** 1/8 BSPP Female, **R:** 1/8 BSPT Female
Vacuum Port	M5 Female
Operating Temperature	41 to 132°F (5 to 50°C)
Material	Aluminum, Polyamide, NBR

Vacuum Generating and Blow-off Release Pilot

Type of Control Valve	Pilot Valve
Manual Operation	Non-Locking Manual Override
Electrical Connection	Clip Type Connector with LED and Surge Protection
Power Supply	24VDC ± 10%
Power Consumption	0.6W (0.7W for Lamp Surge Killer Type)
Pressure Range	21 to 84 PSI (1.5 to 6 kgf/cm^2)
Pilot Valve Air Supply	Normally Closed
Generator Weight	**M:** Body Type 3.6 oz. (100G), **L:** Body Type 4.1 oz. (117G)
Manifold Weight	2-Station: 1.4 oz. (40g), 3-Station: 2 oz. (54g), 4-Station: 2.4 oz. (68g), 5-Station: 2.8 oz. (82g) 6-Station: 3.4 oz. (96g), 7-Station: 3.8 oz. (110g), 8-Station: 4.4 oz. (124g)

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft^3* to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
MC207HS	70	0.79	11.0	25.1	42.0	66.4	96.3	135.6	187.3	275.4	—
MC210HS	70	1.55	5.4	12.1	20.0	32.2	52.0	85.0	120.1	183.9	—

* 1 ft^3 = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
MC207HS	.40	.36	.32	.28	.24	.20	.15	.11	.07	—	—
MC210HS	.71	.64	.57	.49	.42	.34	.25	.17	.10	—	—

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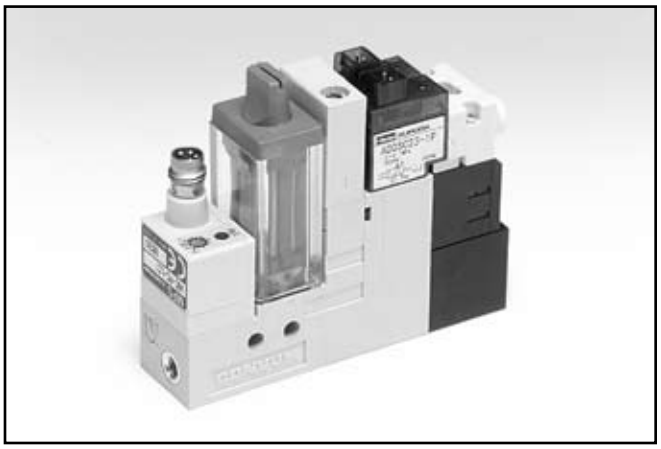
MC2 with MPS-6 Series



The “V6” sensor has one normally open and one normally closed NPN or PNP output available for vacuum confirmation. The MPS-6 sensor is a cost effective performer with an output response time less than
1 msec. and a nice adjustable 220 degree output range.

The “V6” sensor is available with an M8, 4-Pin or grommeted (2M) electrical connector. The mating M8, 4-Pin cable is not included with the MPS-6 Sensor and must be ordered separately. See MC2 Accessories for cable options.

For more information on MPS-6 Series Sensor, see Section C.

MC2 with MPS-2 Series

The “V2” sensor has 2 independent NPN or PNP outputs available for vacuum confirmation. The output response time of this sensor is less than 2 msec.

The “V2” sensor is available with an M8, 4-Pin or grommeted (2M) electrical connector. The mating M8, 4-Pin cable is not included with the MPS-2 Sensor and must be ordered separately. See MC2 Accessories for cable options.

For more information on MPS-2 Series Sensor, see Section C.

MC2 with MVS-201 Series

The “201” sensor has one output NPN or PNP for vacuum confirmation and a control output that interfaces directly with the blow-off release pilot valve. With programmable time control features and a special chip driver, the sensor automatically activates the blow-off release when the NPN or PNP input vacuum signal from the PLC is discontinued. This eliminates a PLC output to activate the blow-off release. This new technology reduces PLC output requirements by 50% and reduces installation to a simple 4 wire system. The output response of the sensor is less than 2 msec.

The “201” sensor is available with an M8, 4-Pin electrical connector. The MC2-201 valve cable is included with the MVS-201 Sensor Option. The mating M8, 4-Pin cable must be ordered separately. See MC2 Accessories for cable options.

For more information on MVS-201Series Sensor, see Section C.

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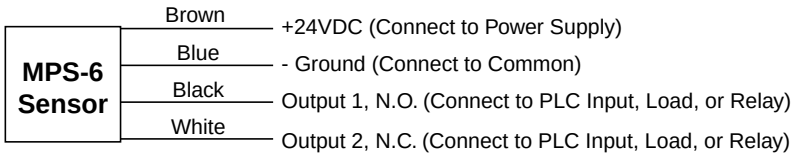
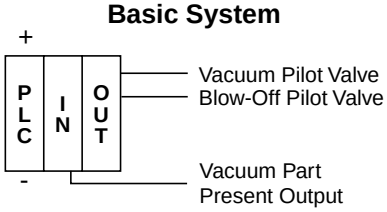
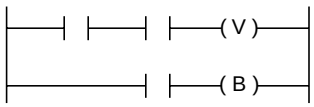
MC2 with MPS-6 Series



Basic System

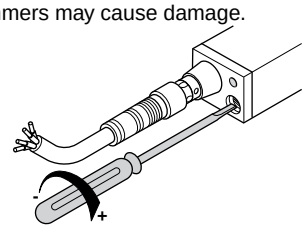


Vacuum System Programming

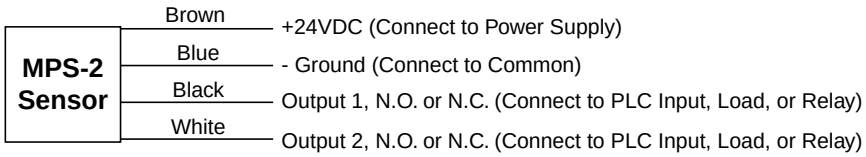


Output Adjustment

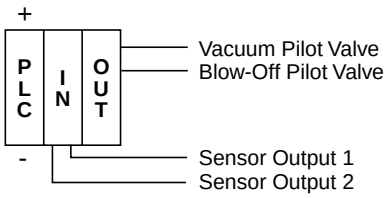
Rotate the potentiometer trimmer to increase or decrease pressure switch point output. Excessive force or exceding the limits of the trimmers may cause damage.



MC2 with MPS-2 Series

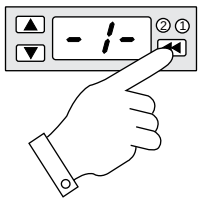


Basic System

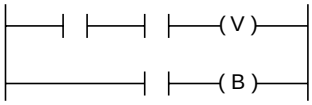


Output Adjustment

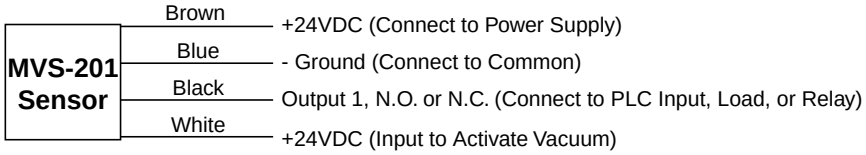
Sensor functions and outputs are programmed by touch panel.



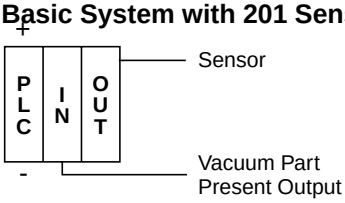
Vacuum System Programming



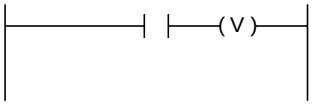
MC2 with MVS-201 Series



Basic System with 201 Sensor

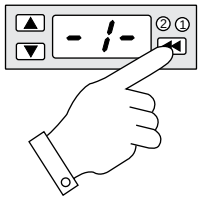


Vacuum System Programming



Output Adjustment

Sensor functions and outputs are programmed by touch panel.



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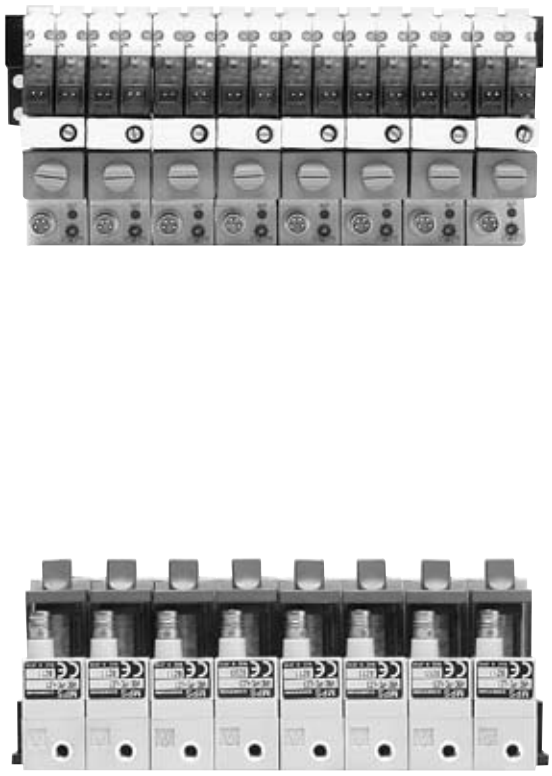

Example 1: Application requires an 8-Station MC2 Manifold with NPT supply ports.

Qty.	Part No.	Comment
1	AAMC2-M08N	Add-A-Fold
1	MC2S05HS62M24B5N	Station #1
1	MC2S05HS62M24B5N	Station #2
1	MC2S10HS62M24B5N	Station #3
1	MC2S10HS62M24B5N	Station #4
1	MC2S10HS62M24B5N	Station #5
1	MC2S10HS62M24B5N	Station #6
1	MC2S07LS62M24B5N	Station #7
1	MC2S07LS62M24B5N	Station #8
	Alternative Method	
1	AAMC2-M08N	Add-A-Fold
2	MC2S05HS62M24B5N	Station #1-2
4	MC2S10HS62M24B5N	Station #3-6
2	MC2S07LS62M24B5N	Station #7-8

How To Order Add-A-Fold Assemblies

1. Manifold assemblies are multiple line item listings.
2. First line item must be the Add-A-Fold assembly part number.
3. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.
4. Station Number 1 is the left most Generator when looking at the Manifold Generator Ports.
5. List either a part number of the MC2 Generator or a Blank Plate for each station of the Manifold.
6. See Model Number Index Code for MC2 Generator number and MC2 Accessories for Blank Plate Part numbers.

AAMC2-M08N

Manifold Port Type
N NPT
R BSP
G BSPP

Number of Stations
02 2
03 3
04 4
05 5
06 6
07 7
08 8*
* Maximum Number of Stations

Manifold Series
M

Generator Series
MC2

Add-A-Fold Assembly
AA

Manifold Part Number

MC2 - M 08 N

Manifold	Stations	Port Size
	02	**N 1/8 NPT**
	03	G 1/8 BSPP
	04	R 1/8 BSPT
	05	
	06	
	07	
	08	

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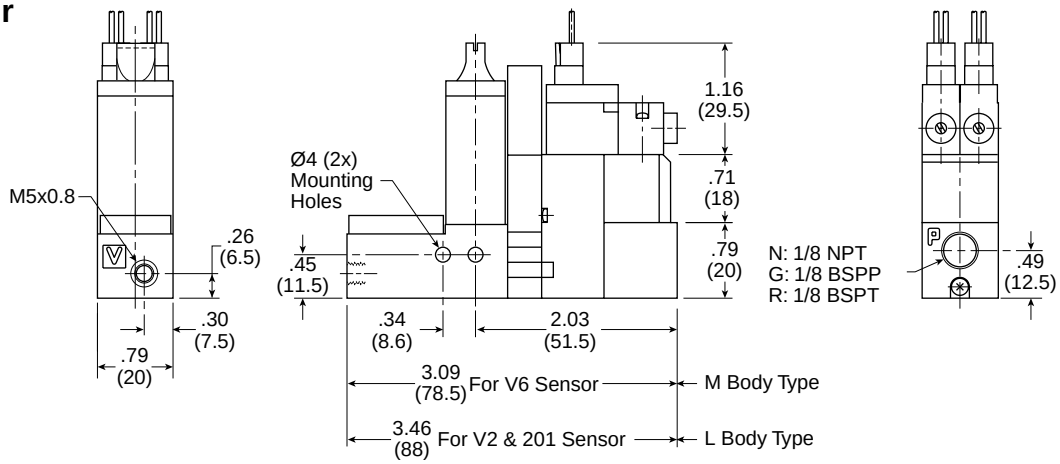
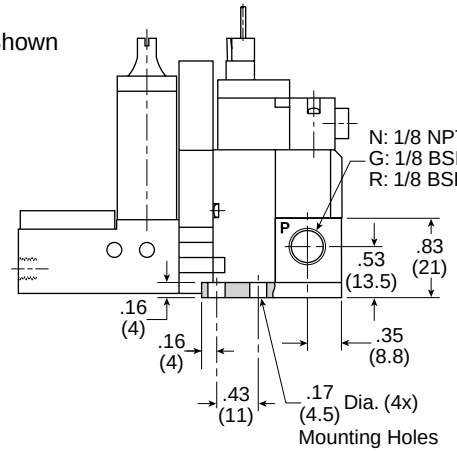
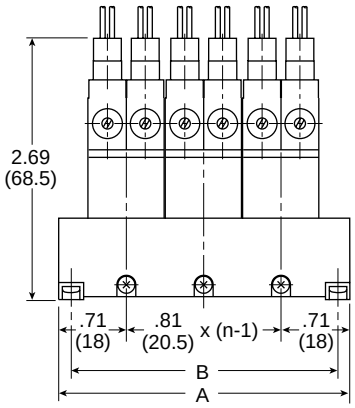
Generator

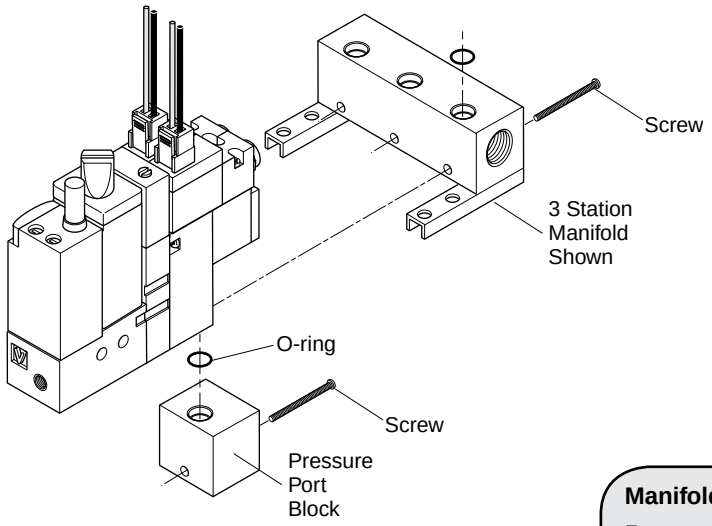


Manifold

3-Station Manifold Shown







Manifold Assembly

Remove Pressure Port Block and use existing O-ring and Screw to secure the MC2 unit to the Manifold.

n	2	3	4	5	6	7	8
A	2.22 (56.5)	3.03 (77)	3.84 (97.5)	4.65 (118)	5.45 (138.5)	6.26 (159)	7.07 (179.5)

Inches (mm)

n = Number of Stations

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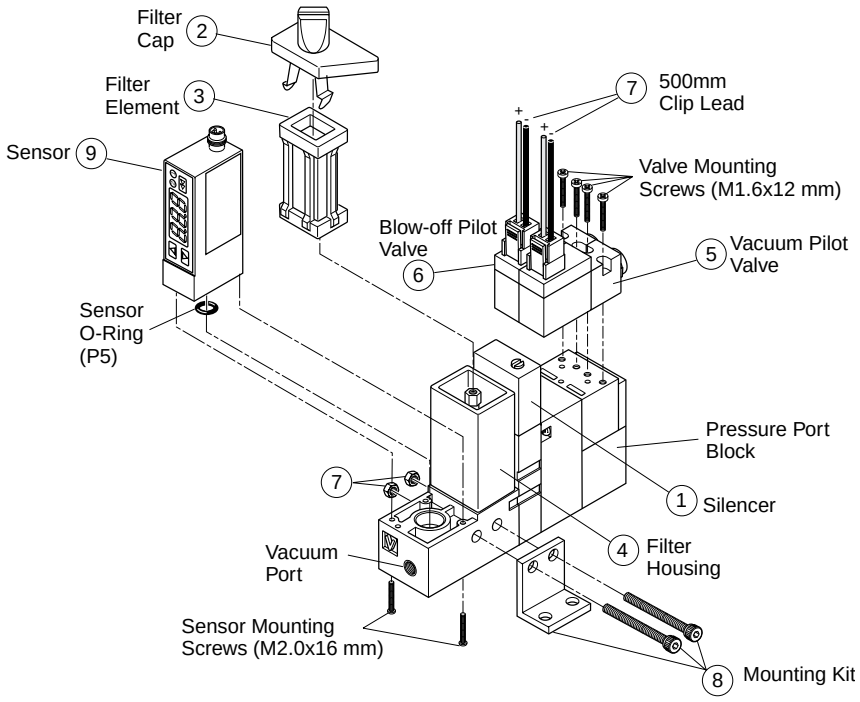
Replacement Components

Item	Part Number	Description
1	MC2-S	Silencer
2, 3, 4	MC2-F	Filter Kit
3	MC2-E	Filter Element
5, 7	MC2-24-A-10-V	Vacuum Pilot Valve
6, 7	MC2-24-B-10-D	Blow-off Pilot Valve
7	MC2-5L	500mm Clip Lead
8	MC2-B	Mounting Kit

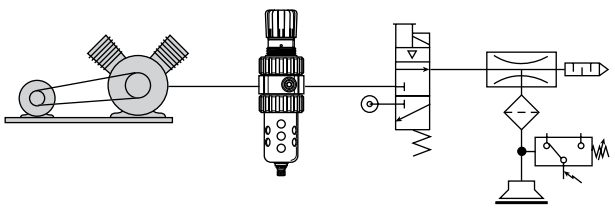
Item	Part Number	Replacement Sensor
9	MPS-V6C-NC	MPS-V6 (NPN) Option
	MPS-V6C-PC	MPS-V6 (PNP) Option
	MPS-V2C-NC	MPS-V2 (NPN) Option
	MPS-V2C-PC	MPS-V2 (PNP) Option
	MVS-201-NC	MVS-201 (NPN) Option
	MVS-201-PCP	MVS-201 (PNP) Option



⚠ Cautions

Do not use or expose the MC2 with fluids or corrosive gases. Vacuum Venturi's are designed to be used with non-lubricated, non-corrosive, compressed air.

Do not operate MC2 generators outside the temperature range and pressures listed in the specifications section of this catalog. Regulate the compressed air to 70PSI and filtrate with a maximum 40 micron filter. Non-lubricated compressed air will maintain the life and vacuum level of the generator.



All normally closed vacuum circuits will interrupt the air supply to the venturi during a power failure or Emergency Stop condition. As a result, the product being transferred may be dropped, possibly creating a hazard to the surrounding environment. To avoid hazardous situations during a power loss or Emergency Stop condition, consider a normally open vacuum circuit.

Check the insulation of all lead wires after installation to avoid shorts. Properly secure all lead wires to avoid stress or repeated movement that may fray lead wires.

Some electrical components are diode or zener diode protected. When installing solenoids and sensors, check the polarity of the component before applying power. Apply the appropriate voltage to the solenoids and sensors. Inappropriate voltage, shorts, or surges may damage the circuitry.

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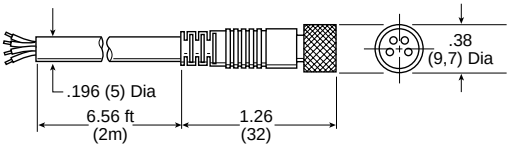
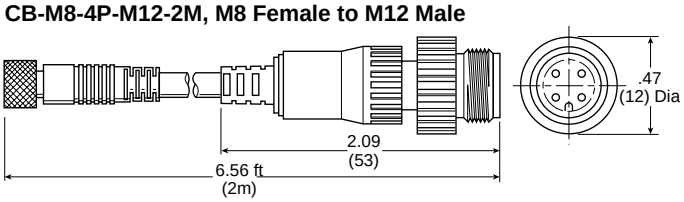
Accessories

Sensor Cables

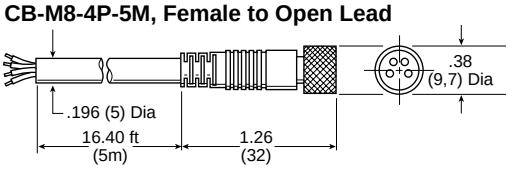
CB-M8-4P-2M, Female to Open Lead



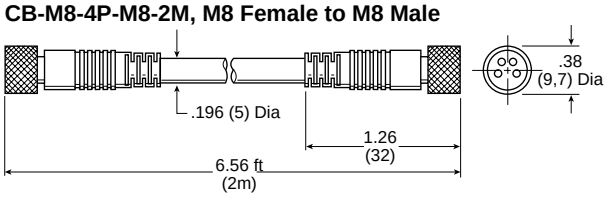
CB-M8-4P-M12-2M, M8 Female to M12 Male



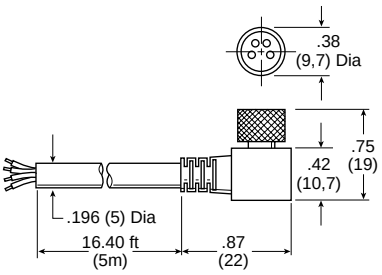
CB-M8-4P-5M, Female to Open Lead



CB-M8-4P-M8-2M, M8 Female to M8 Male

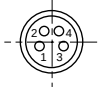


CB-M8-4P-5M-90, Female to Open Lead

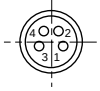


Pin Out Connection

Female Interface 4-Pin, M8



Male Interface 4-Pin, M8



Male Interface 4-Pin, M12

Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

Pilot Valve Cables

MC2-5L (500mm) Lead*

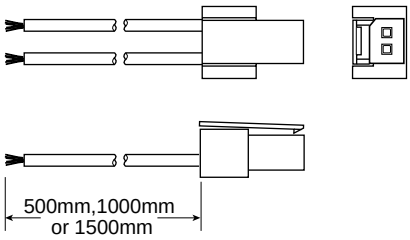
MC2-10L (1000mm) Lead

MC2-30L (3000mm) Lead

(Connects Power Source to Vacuum & Blow-off Release Pilot Valves)

Positive “+” (Red Wire)
Negative “-” (Black Wire)

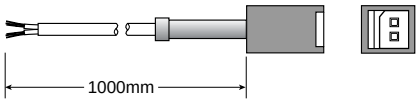
* Included with Generator

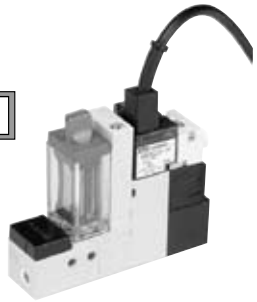


MC2-CB10 Valve Cable

(Connects Power Source to Vacuum & Blow-off Release Pilot Valves)

Positive “+” (Red Wire)
Negative “-” (Black Wire)

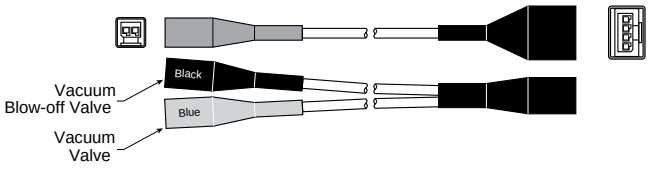




MC2-201G Sensor / Valve Connector*

(Connects Sensor to Vacuum & Blow-off Release Pilot Valves)

MC2-C201G



* Included with Generator Option 01 & 06.

Manifold Blank Plate Kit

MC2-MM

Kit Includes: Blank Plate, Screws & Gasket

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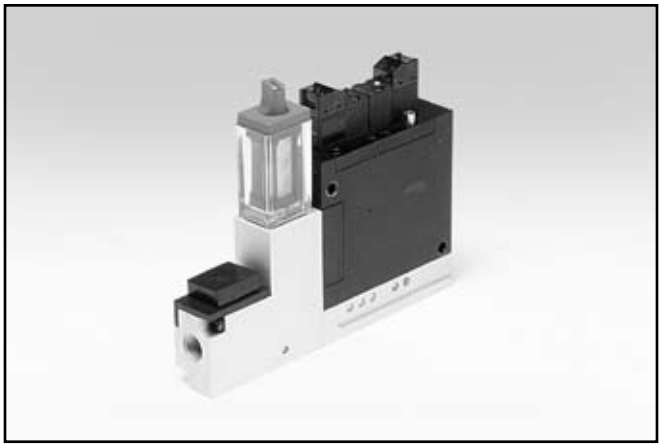
CVR2

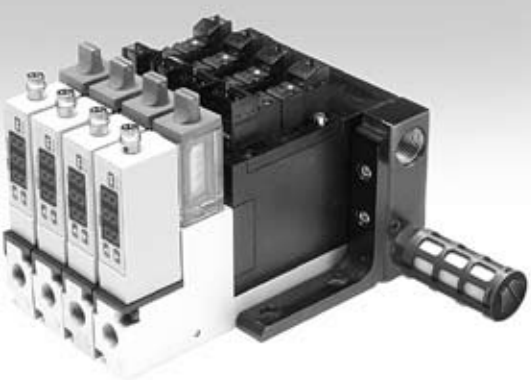


Features

- **Vacuum Generating Pilot Valve**
- **Vacuum Release Pilot Valve Option**
- **Vacuum Sensor - Filter - Silencer Available**
- **Regulating Blow-off Adjustment**
- **Check Valve Option**
- **Manifold System**
- **Vacuum Flow Rates from 0.56 to 1.27 SCFM**

Characteristics

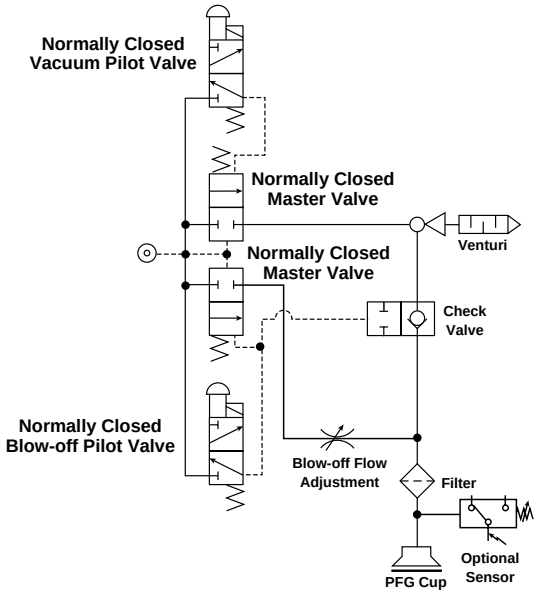
The CVR2 Series vacuum generator is a complete package for factory automation. The CVR2 has integrated vacuum pilot and blow-off release pilot valves to minimize response times. The CVR2 has additional features; regulating blow-off needle, 37 micron mesh filter, optional check valve, and a sensor platform for vacuum confirmation. The CVR2 can be assembled into a maximum 10 station manifold. The unit can be ordered normally open or normally closed.



Add-A-Fold Manifold (Silencer Included)

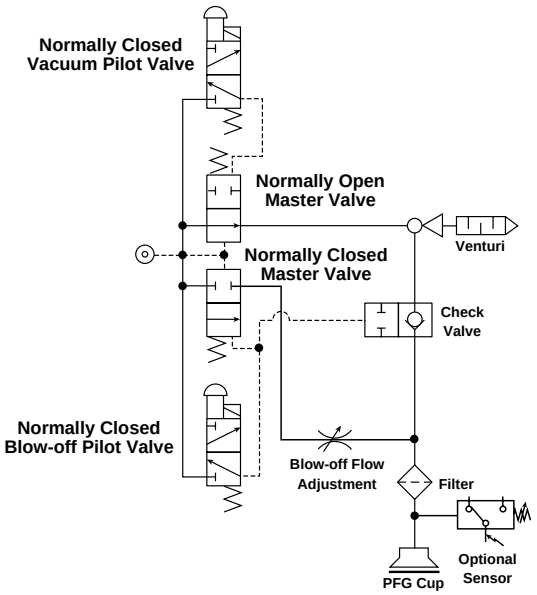
Normally Closed Vacuum Circuit

The Vacuum Pilot is Energized to Activate Vacuum



Normally Open Vacuum Circuit

The Vacuum Pilot is Energized to Deactivate Vacuum



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Model Number Index

(Bold Items are Most Popular)

CVR2 S 13 H S 61 E 24 B N

Function
- **S* Single Unit**
- **M Manifold**

* Single Unit cannot be modified to fit manifolds.

Nozzle Diameter
- **13 1.3mm**

Supply Pressure
- **S 70 PSI**

Vacuum Degree
- **H High Vacuum 27 inHg**
- L Low Vacuum 17 inHg

Sensor
- **01 MVS-201-NC (NPN/NPN)**
- **06 MVS-201-PCP (PNP/PNP)**
- **21 MPS-V2C-NC (NPN)**
- **22 MPS-V2C-PC (PNP)**
- **61 MPS-V6C-NC (NPN)**
- **62 MPS-V6C-PC (PNP)**
- **Z No Sensor**

Voltage
- **24 24VDC w/Lamp & Surge***

* 500mm Clip Included

Vacuum Release and Check Valve

Code	Release Valve	Check Valve
E	**With**	**With**

Master Valve Air Supply
- A Normally Open
- **B Normally Closed**

Port Threads
- **N NPT**
- G BSPP
- R BSPT

Specifications

Media	Non-Lubricated Compressed Air, Non-Corrosive Gases
Optimum Operating Pressure	70 PSI (5 kgf/cm^2)
Humidity	35 to 85%
Pressure Port	**N:** 1/8 NPT Female, **G:** 1/8 BSPP Female, **R:** 1/8 BSPT Female
Vacuum Port	**N:** 1/8 NPT Female, **G:** 1/8 BSPP Female, **R:** 1/8 BSPT Female
Operating Temperature	41 to 132°F (5 to 50°C)
Material	Aluminum, Brass, NBR

Vacuum Generating and Blow-off Release Pilot

Type of Control Valve	Pilot Valve
Manual Operation	Non-Locking Manual Override
Electrical Connection	Clip Type Connector with LED and Surge Protection
Power Supply	24VDC ± 10%
Power Consumption	0.7W
Operating Pressure	70 PSI (5 kgf/cm^2)
Pilot Valve Air Supply	Normally Closed
Generator Weight	13.75 oz. (385g)
Manifold Weight	2-Station: 24 oz. (680g), 3-Station: 31 oz. (880g), 4-Station: 38 oz. (1080g), 5-Station: 45 oz. (1280g)

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft^3 * to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
CVR213HS	70	2.65	3.1	7.3	12.0	18.1	26.8	39.5	57.6	84.5	174.0

* 1 ft^3 = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
CVR213HS	1.30	1.15	1.00	0.87	0.72	0.57	0.43	0.29	0.15	—	—

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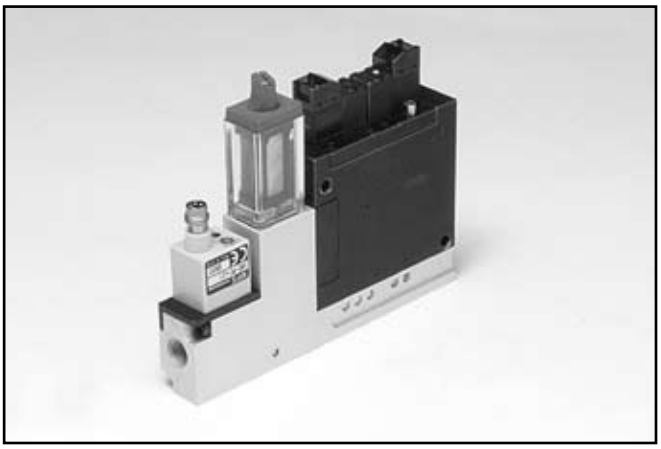
CVR2 with V6 Sensor

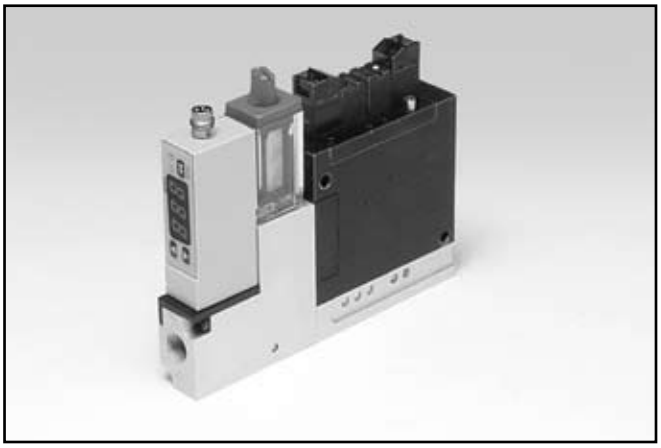


The “V6” sensor has one normally open and one normally closed NPN or PNP output available for vacuum confirmation. The MPS-6 sensor is a cost effective performer with an output response time less than 1 msec. and a nice adjustable 220 degree output range.

The “V6” sensor is available with an M8, 4-Pin or grommeted (2M) electrical connector. The mating M8, 4-Pin cable is not included with the MPS-6 Sensor and must be ordered separately. See CVR2 Accessories for cable options.

For more information on MPS-6 Series Sensor, see Section C.

CVR2 with V2 Sensor

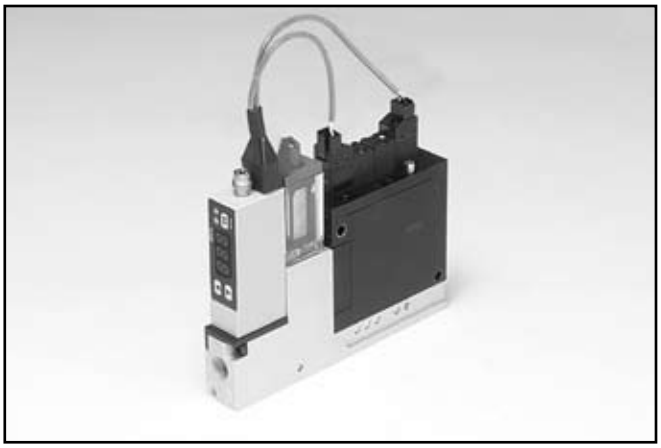


The “V2” sensor has 2 independent NPN or PNP outputs available for vacuum confirmation. The output response time of this sensor is less than 2 msec.

The “V2” sensor is available with an M8, 4-Pin or grommeted (2M) electrical connector. The mating M8, 4-Pin cable is not included with the MPS-2 Sensor and must be ordered separately. See CVR2 Accessories for cable options.

For more information on MPS-2 Series Sensor, see Section C.

CVR2 with 201 Sensor



The “201” sensor has one output NPN or PNP for vacuum confirmation and a control output that interfaces directly with the blow-off release pilot valve. With programmable time control features and a special chip driver, the sensor automatically activates the blow-off release when the NPN or PNP input vacuum signal from the PLC is discontinued. This eliminates a PLC output to activate the blow-off release. This new technology reduces PLC output requirements by 50% and reduces installation to a simple 4 wire system. The output response of the sensor is less than 2 msec.

The “201” sensor is available with an M8, 4-Pin electrical connector. The CVR2-201G valve cable is included with the MVS-201 Sensor Option. The mating M8, 4-Pin cable must be ordered separately. See CVR2 Accessories for cable options.

For more information on MVS-201Series Sensor, see Section C.

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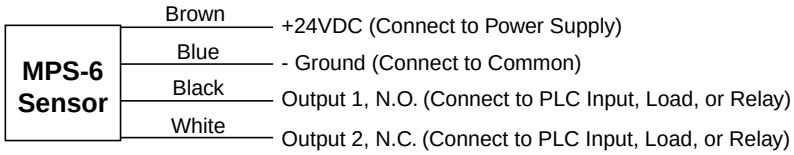
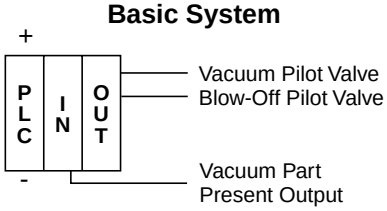
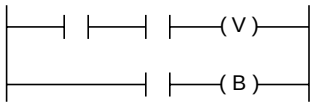
CVR2 with V6 Sensor



Basic System

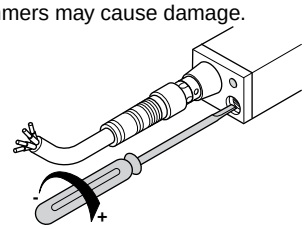


Vacuum System Programming

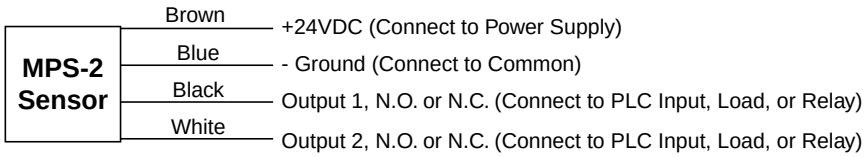


Output Adjustment

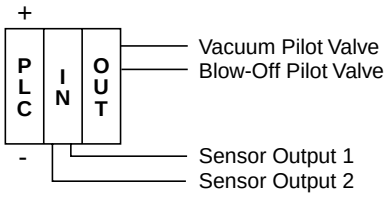
Rotate the potentiometer trimmer to increase or decrease pressure switch point output. Excessive force or exceding the limits of the trimmers may cause damage.



CVR2 with V2 Sensor

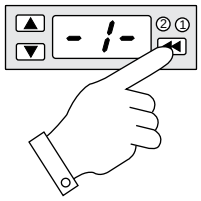


Basic System

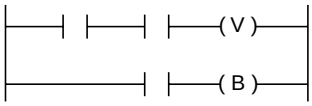


Output Adjustment

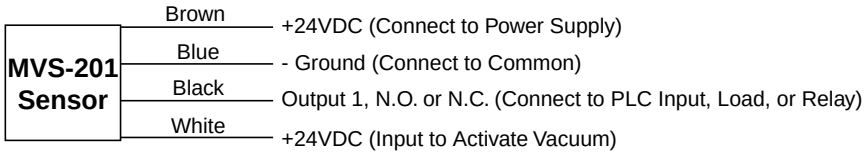
Sensor functions and outputs are programmed by touch panel.



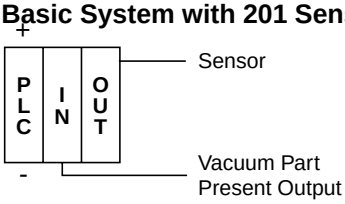
Vacuum System Programming



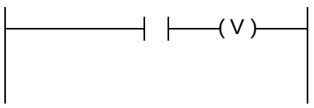
CVR2 with 201 Sensor



Basic System with 201 Sensor

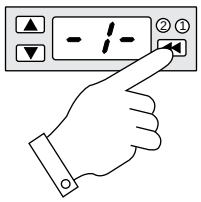


Vacuum System Programming



Output Adjustment

Sensor functions and outputs are programmed by touch panel.



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Example 1: Application requires a 4-Station CVR2 Manifold, NPT ports with 1 Blank Plate at Station Number 4.

Qty.	Part No.	Comment
1	AACVR2-M04N	Add-A-Fold
1	CVR2M10HS22E24BLN.....	Station #1
1	CVR2M10HS22E24BLN.....	Station #2
1	CVR2M13HS22E24BLN.....	Station #3
1	CVR2M13HS22E24BLN.....	Station #4
	Alternative Method	
1	AACVR2-M04N	Add-A-Fold
2	CVR2M10HS22E24BLN.....	Station #1-2
2	CVR2M13HS22E24BLN.....	Station #3-4

How To Order Add-A-Fold Assemblies

1. Manifold assemblies are multiple line item listings.
2. First line item must be the Add-A-Fold assembly part number.
3. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.
4. Station Number 1 is the left most Generator when looking at the Manifold Generator Ports.
5. List either a part number of the Manifold Type Generator or a Blank Plate for each station of the Manifold.
6. See Model Number Index Code for CVR2 Generator number and Accessories for Blank Plate Part numbers.

AACVR2-M04N

Port Type
N NPT
R BSP
G BSPP

Number of Stations
02 2
03 3
04 4
05 5
06 6
07 7
08 8
09 9
10 10*
* Maximum Number of Stations

Manifold Series
M

Generator Series
CVR2

Add-A-Fold Assembly
AA

Manifold Part Number

CVR2 - M 04 N

Manifold

Stations*
02
03
04
05
•
•
10

Port Size
N 1/8 NPT
G 1/8 BSPP
R 1/8 BSPT

* Maximum 10 Stations

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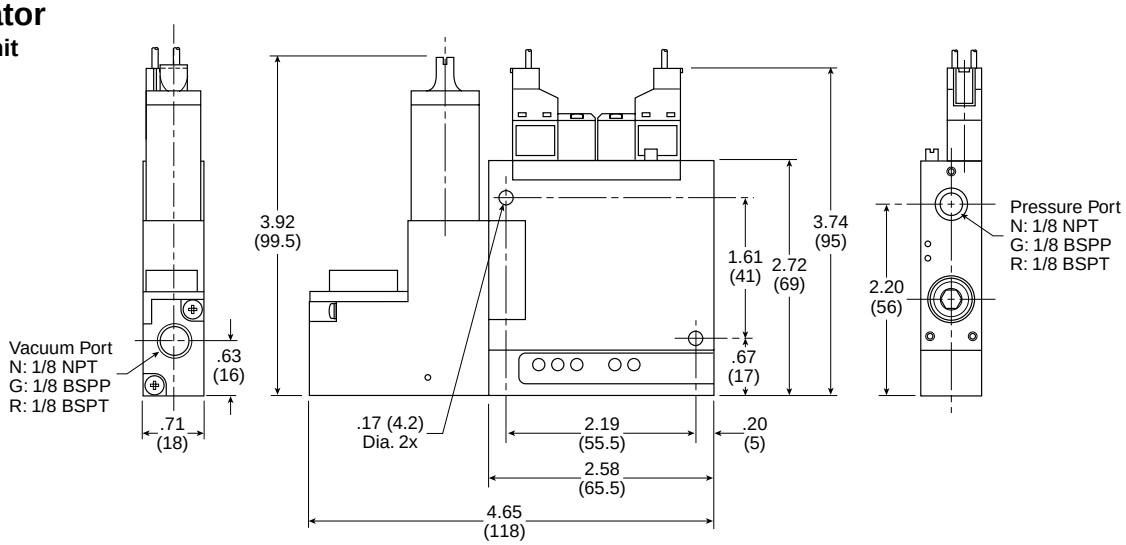
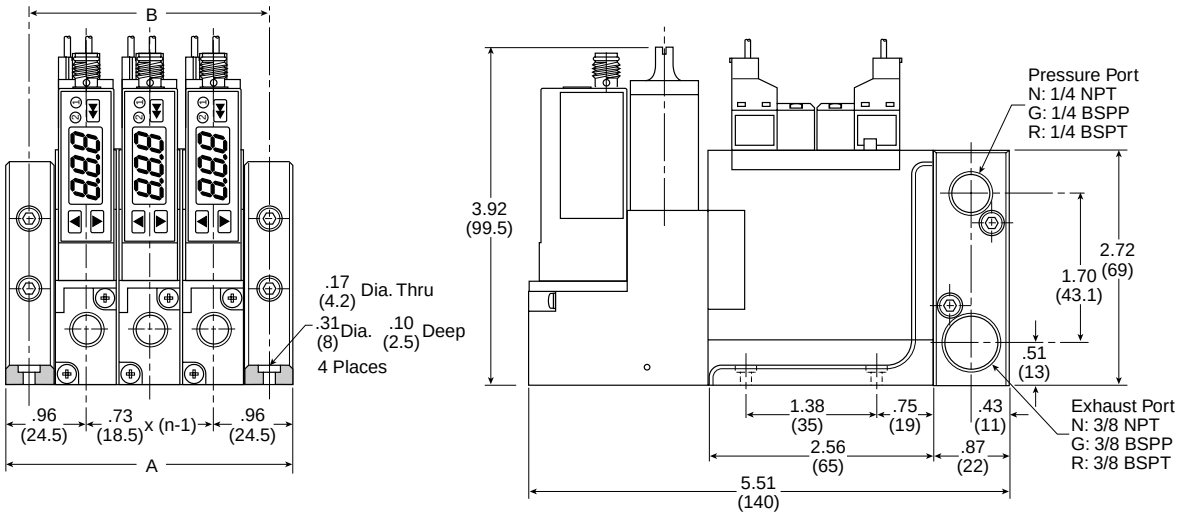
Generator

Single Unit



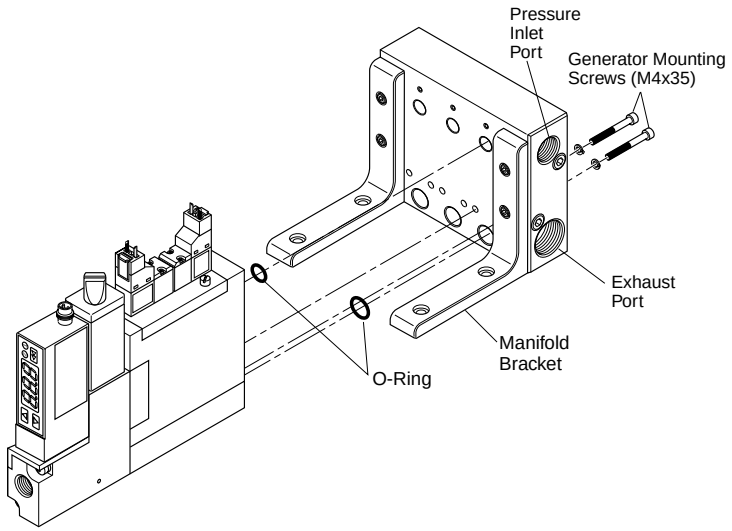
Manifold

3-Station Manifold Shown



Manifold Assembly

Generator Function must be ordered for Manifold Mounting.



n	2	3	4	5	6
A	3.27 (83)	4.17 (106)	5.08 (129)	5.98 (152)	6.89 (175)
B	2.56 (65)	3.46 (88)	4.37 (111)	5.28 (134)	6.18 (157)
n	**7**	**8**	**9**	**10**	
A	7.80 (198)	8.70 (221)	9.61 (244)	10.51 (267)	
B	7.09 (180)	7.99 (203)	8.90 (226)	9.80 (249)	

Inches (mm)
n = Number of Stations

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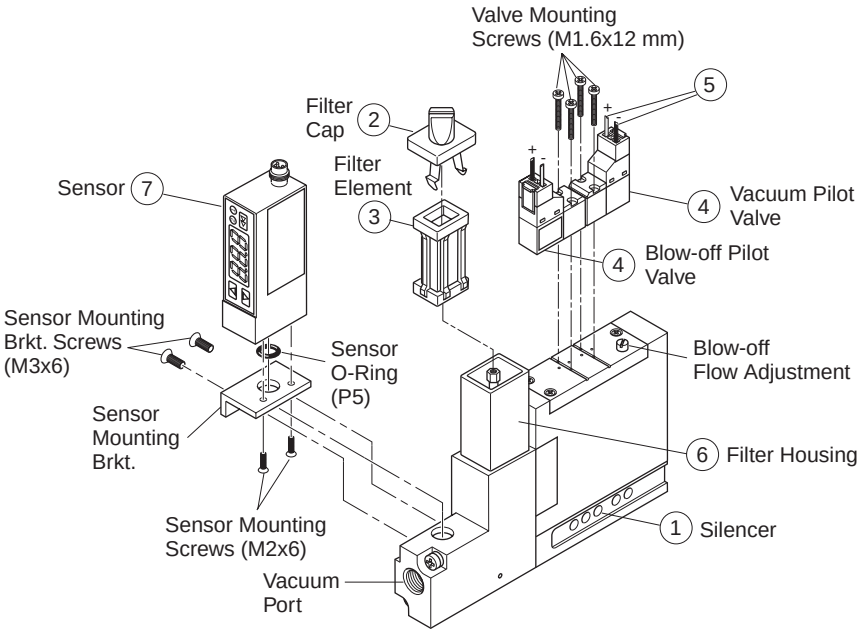
Replacement Components

Item	Part Number	Description
1	CVR2-S	Silencer
2, 3, 6	MC2-F	Filter Kit
3	MC2-E	Filter Element
4, 5	3MB019-00D2-3	Pilot Valve
5	CVR2-5L	500mm Clip Lead

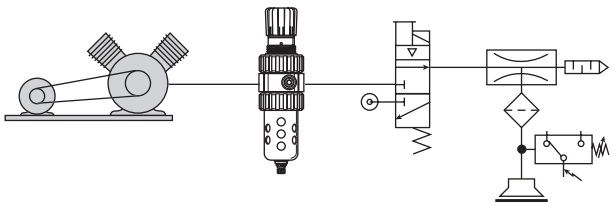
Item	Part Number	Replacement Sensor
7	MPS-V6C-NC	MPS-V6 (NPN) Option
	MPS-V6C-PC	MPS-V6 (PNP) Option
	MPS-V2C-NC	MPS-V2 (NPN) Option
	MPS-V2C-PC	MPS-V2 (PNP) Option
	MVS-201-NC	MVS-201 (NPN) Option
	MVS-201-PCP	MVS-201 (PNP) Option



⚠ Cautions

Do not use or expose the CVR2 with fluids or corrosive gases. Vacuum Venturi's are designed to be used with non-lubricated, non-corrosive, compressed air.

Do not operate CVR2 generators outside the temperature range and pressures listed in the specifications section of this catalog. Regulate the compressed air to 70PSI and filtrate with a maximum 40 micron filter. Non-lubricated compressed air will maintain the life and vacuum level of the generator.



All normally closed vacuum circuits will interrupt the air supply to the venturi during a power failure or Emergency Stop condition. As a result, the product being transferred may be dropped, possibly creating a hazard to the surrounding environment. To avoid hazardous situations during a power loss or Emergency Stop condition, consider a normally open vacuum circuit.

Check the insulation of all lead wires after installation to avoid shorts. Properly secure all lead wires to avoid stress or repeated movement that may fray lead wires.

Some electrical components are diode or zener diode protected. When installing solenoids and sensors, check the polarity of the component before applying power. Apply the appropriate voltage to the solenoids and sensors. Inappropriate voltage, shorts, or surges may damage the circuitry.

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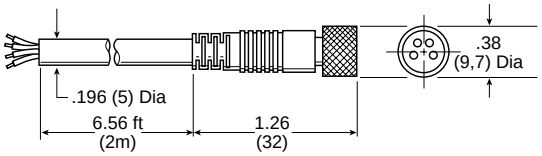
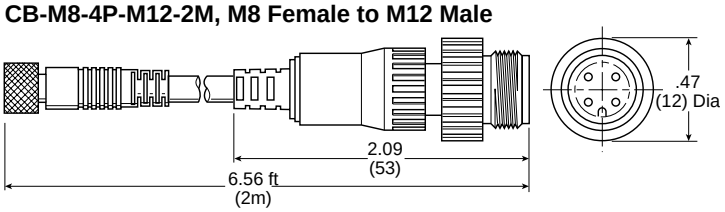
Accessories

Sensor Cables

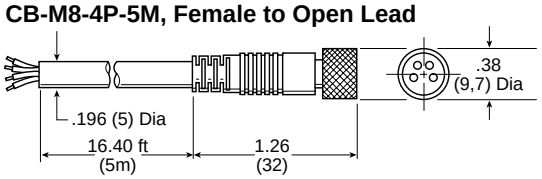
CB-M8-4P-2M, Female to Open Lead



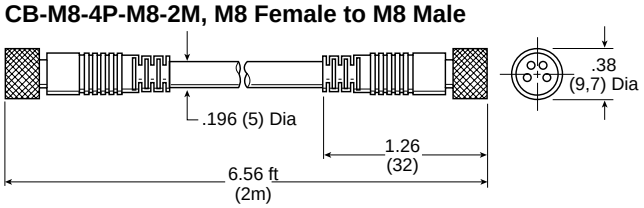
CB-M8-4P-M12-2M, M8 Female to M12 Male



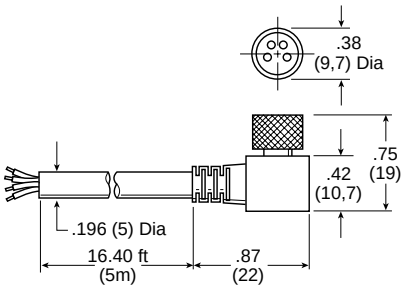
CB-M8-4P-5M, Female to Open Lead



CB-M8-4P-M8-2M, M8 Female to M8 Male

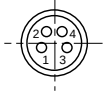


CB-M8-4P-5M-90, Female to Open Lead

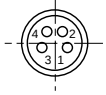


Pin Out Connection

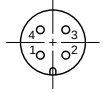
Female Interface 4-Pin, M8



Male Interface 4-Pin, M8



Male Interface 4-Pin, M12



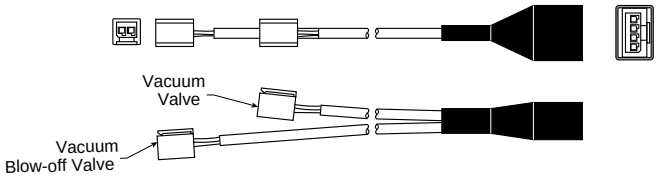
Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

Pilot Valve Cables

CVR2-201G Sensor / Valve Connector*

(Connects Sensor to Vacuum & Blow-off Release Pilot Valves)

CVR2-C201G



* Included with Generator Option 01 & 06.

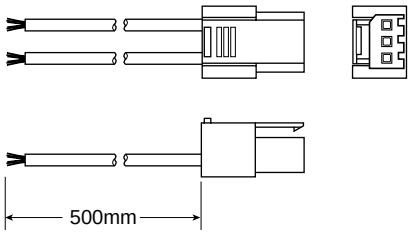
CVR2-5L (500mm) Lead*

(Connects Power Source to Vacuum & Blow-off Release Pilot Valves)

Positive “+” (Red Wire)

Negative “-” (Black Wire)

* Included with Generator



Manifold Blank Plate Kit

CVR2-BLK

Kit Includes: Blank Plate, Screws & Gasket

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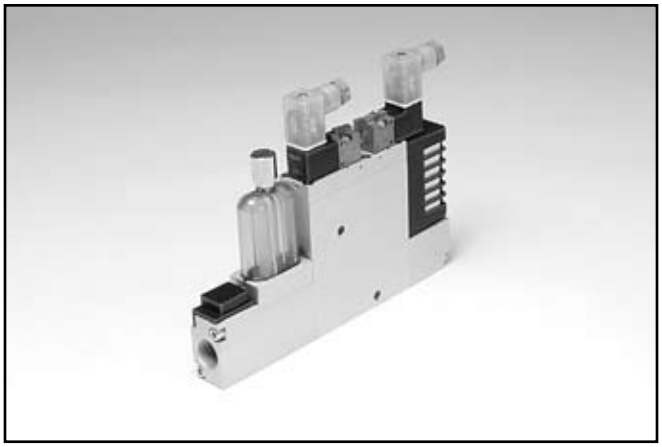
CVK

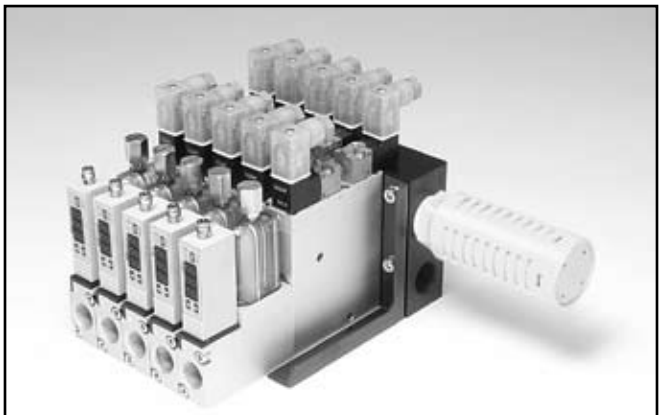


Features

- **Vacuum Generating Pilot Valve**
- **Vacuum Release Pilot Valve Option**
- **Vacuum Sensor - Filter - Silencer Available**
- **Regulating Blow-off**
- **Check Valve Option**
- **Air-Economizing Controls**
- **Manifold System**
- **Vacuum Flow Rates from 2.1 to 5.75 SCFM**

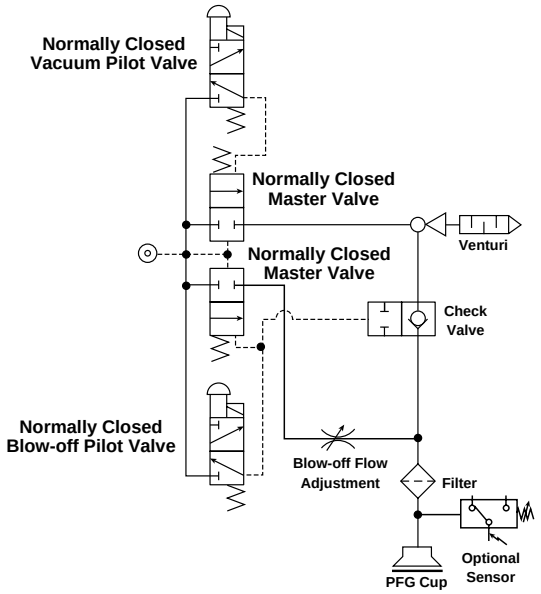
Characteristics

The CVK Series vacuum generator provides a complete solution for factory automation. The CVK is perfect for non-porous applications such as material handling, critical applications involving glass, or general transfer applications. The CVK has integrated vacuum pilot and blow-off release pilot valves to minimize response times. The CVK has additional features; regulating blow-off needle, 130 micron filter, optional check valve, and a sensor platform for vacuum confirmation. The CVK can be assembled into a maximum 5 station manifold. The unit can be ordered normally open or normally closed.

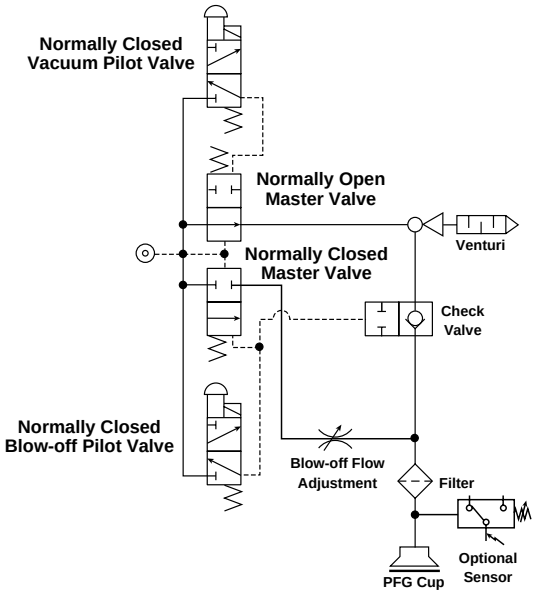


Add-A-Fold Assembly (Silencer Included)

Normally Closed Vacuum Circuit
The Vacuum Pilot is Energized to Activate Vacuum



Normally Open Vacuum Circuit
The Vacuum Pilot is Energized to Deactivate Vacuum



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Model Number Index

(Bold Items are Most Popular)

CVK 15 H S 21 C 24 B D N

Nozzle Diameter
- 15 1.5mm
- **20 2.0mm**
- **27* 2.7mm**

* "H" High Vacuum Only.

Vacuum Degree
- **H High Vacuum 27 inHg**
- L Low Vacuum 17 inHg

Supply Pressure
- **S 70 PSI**

Sensor
- **01 MVS-201-NC (NPN/NPN)**
- **06 MVS-201-PCP (PNP/PNP)**
- **21 MPS-V2C-NC (NPN)**
- **22 MPS-V2C-PC (PNP)**
- **61 MPS-V6C-NC (NPN)**
- **62 MPS-V6C-PC (PNP)**
- **Z No Sensor**

Voltage
- **24 24VDC**

Vacuum Release and Check Valve

Code	Release Valve	Check Valve
C	**With**	**With**

Master Valve Air Supply
- A Normally Open
- **B Normally Closed**

Valve Connector
- **D DIN w/LED & Surge Protection**

Port Threads
- **N NPT**
- G BSPP
- R BSPT

Specifications

Media	Non-Lubricated Compressed Air, Non-Corrosive Gases
Optimum Operating Pressure	70 PSI (5 kgf/cm²)
Humidity	35 to 85%
Pressure Port	**N:** 1/4 NPT Female, **G:** 1/4 BSPP Female, **R:** 1/4 BSPT Female
Vacuum Port	**N:** 3/8 NPT Female, **G:** 3/8 BSPP Female, **R:** 3/8 BSPT Female
Operating Temperature	41 to 132°F (5 to 50°C)
Material	Aluminum, Brass, NBR

Vacuum Pilot and Blow-off Release Pilot

Type of Control Valve	Pilot Valve
Manual Operation	Non-Locking Manual Override
Electrical Connection	DIN Connector with LED and Surge Protection
Power Supply	24VDC ± 10%
Power Consumption	1.8W
Operating Pressure	70 PSI (5 kgf/cm²)
Pilot Valve Air Supply	Normally Closed
Generator Weight	26.3 oz. (750g)
Manifold Weight	2-Station: 24 oz. (680g), 3-Station: 31 oz. (880g), 4-Station: 38 oz. (1080g), 5-Station: 45 oz. (1280g)

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft³ * to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
CVK15HS	70	3.53	2.3	4.8	8.0	12.4	18.4	26.3	40.4	62.1	189.3
CVK20HS	70	6.36	1.1	2.5	5.0	7.6	12.1	18.6	29.9	53.4	129.9
CVK27HS	70	10.42	0.6	2.0	3.0	5.6	8.5	13.3	21.2	42.1	—

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
CVK15HS	2.51	2.23	1.95	1.67	1.39	1.12	.85	.58	.30	—	—
CVK20HS	3.75	3.34	2.93	2.50	2.12	1.70	1.28	.86	.44	—	—
CVK27HS	5.75	5.09	4.43	3.77	3.11	2.45	1.80	1.15	.50	—	—

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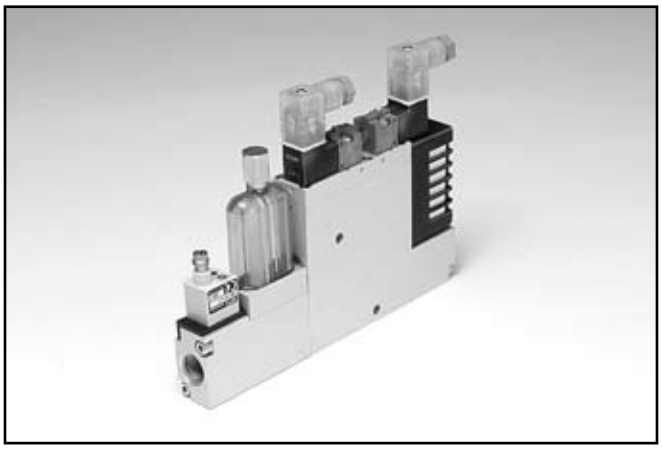
CVK with MPS-6 Series

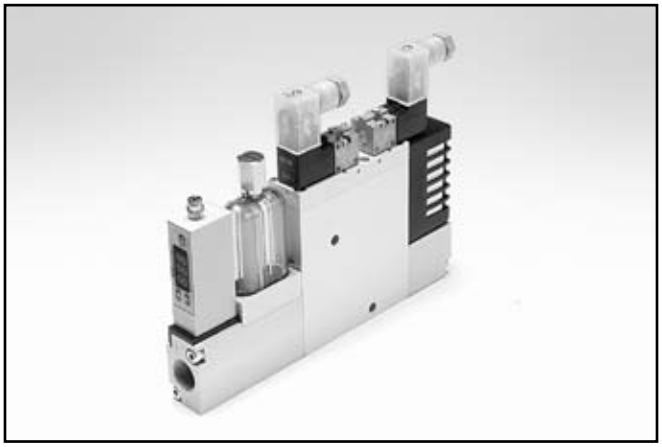


The “V6” sensor has one normally open and one normally closed NPN or PNP output available for vacuum confirmation. The MPS-6 sensor is a cost effective performer with an output response time less than
1 msec. and a nice adjustable 220 degree output range.

The “V6” sensor is available with an M8, 4-Pin or grommeted (2M) electrical connector. The mating M8, 4-Pin cable is not included with the MPS-6 Sensor and must be ordered separately. See CVK Accessories for cable options.

For more information on MPS-6 Series Sensor, see Section C.

CVK with MPS-2 Series

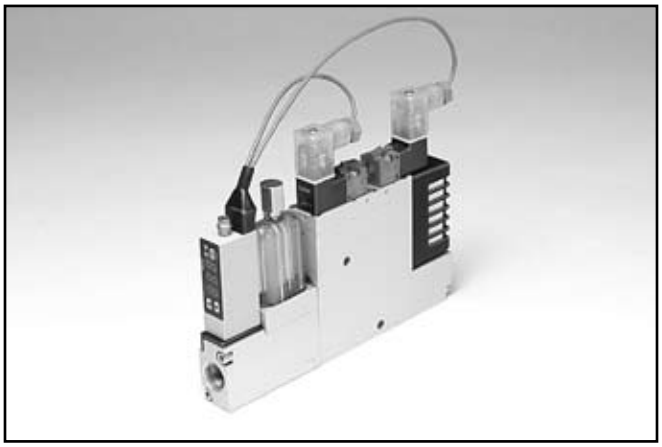


The “V2” sensor has 2 independent NPN or PNP outputs available for vacuum confirmation. The output response time of this sensor is less than 2 msec.

The “V2” sensor is available with an M8, 4-Pin or grommeted (2M) electrical connector. The mating M8, 4-Pin cable is not included with the MPS-2 Sensor and must be ordered separately. See CVK Accessories for cable options.

For more information on MPS-2 Series Sensor, see Section C.

CVK with MVS-201 Series



The “201” sensor has one output NPN or PNP for vacuum confirmation and a control output that interfaces directly with the blow-off release pilot valve. With programmable time control features and a special chip driver, the sensor automatically activates the blow-off release when the NPN or PNP input vacuum signal from the PLC is discontinued. This eliminates a PLC output to activate the blow-off release. This new technology reduces PLC output requirements by 50% and reduces installation to a simple 4 wire system. The output response of the sensor is less than 2 msec.

The “201” sensor is available with an M8, 4-Pin electrical connector. The CVK-D201G valve cable is included with the MVS-201 Sensor Option. The mating M8, 4-Pin cable must be ordered separately. See CVK Accessories for cable options.

For more information on MVS-201Series Sensor, see Section C.

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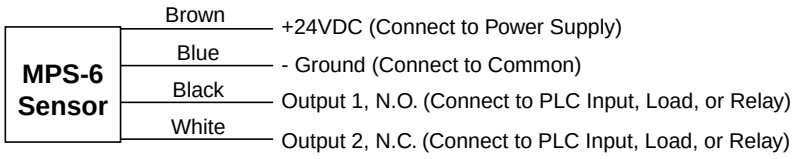
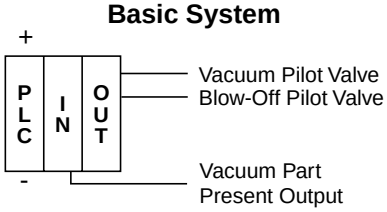
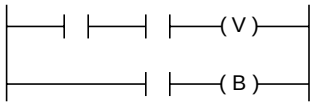
CVK with MPS-6 Series



Basic System

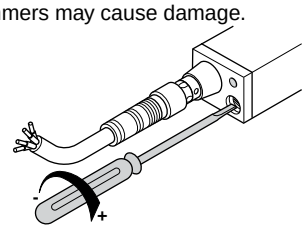


Vacuum System Programming

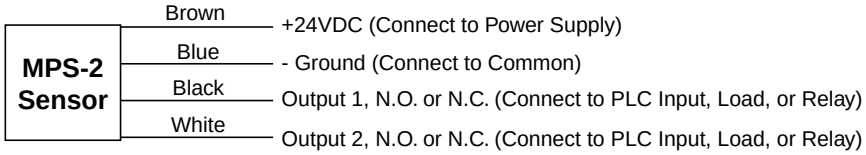


Output Adjustment

Rotate the potentiometer trimmer to increase or decrease pressure switch point output. Excessive force or exceding the limits of the trimmers may cause damage.

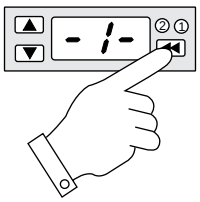


CVK with MPS-2 Series

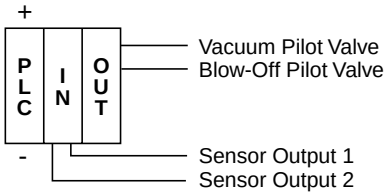


Output Adjustment

Sensor functions and outputs are programmed by touch panel.

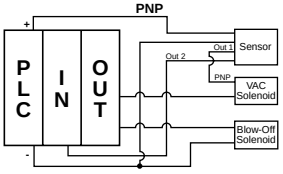


Basic System

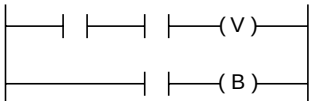


Air-Economizing System

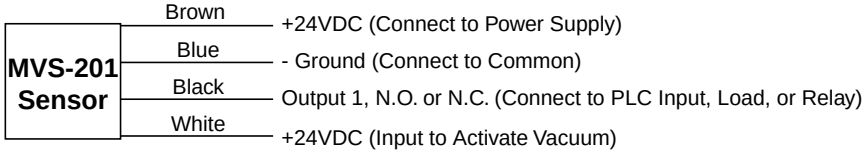
N.C. Output 1 - Air Economizing
N.O. Output 2 - Part Present Output



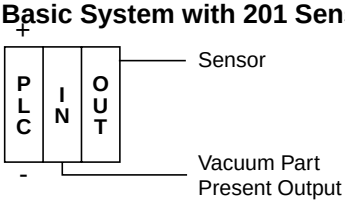
Vacuum System Programming



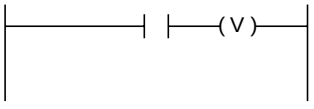
CVK with MVS-201 Series



Basic System with 201 Sensor

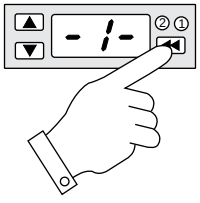


Vacuum System Programming



Output Adjustment

Sensor functions and outputs are programmed by touch panel.



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Station 1 Station 2 Station 3 Station 4 Station 5

Example 1: Shown above is a 5-Station CVK Manifold with only 2 sensors and NPT Ports.

Qty.	Part No.	Comment
1	AACVK-M04N	Add-A-Fold
1	CVK15HS21C24BDN	Station #1
1	CVK15HS21C24BDN	Station #2
1	CVK20HSZC24BDN	Station #3
1	CVK20HSZC24BDN	Station #4
1	CVK27HSZC24BDN	Station #5
	Alternative Method	
1	AACVK-M04N	Add-A-Fold
2	CVK15HS21C24BDN	Station #1-2
2	CVK20HSZC24BDN	Station #3-4
1	CVK27HSZC24BDN	Station #5

How To Order Add-A-Fold Assemblies

1. Manifold assemblies are multiple line item listings.
2. First line item must be the Add-A-Fold assembly part number.
3. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.
4. Station Number 1 is the left most Generator when looking at the Manifold Generator Ports.
5. List either a part number of the Manifold Type Generator or a Blank Plate for each station of the Manifold.
6. See Model Number Index Code for CVK Generator number and Accessories for Blank Plate Part numbers.

AACVK-M05N

Port Type
N NPT
R BSP
G BSPP

Number of Stations
02 2
03 3
04 4
05 5*
* Maximum Number of Stations

Manifold Series
M

Generator Series
CVK

Add-A-Fold Assembly
AA

Manifold Block

CVK - M 05 N

Manifold	Stations	Port Size
	02	**N 1/8 NPT**
	03	G 1/8 BSPP
	04	R 1/8 BSPT
	05	

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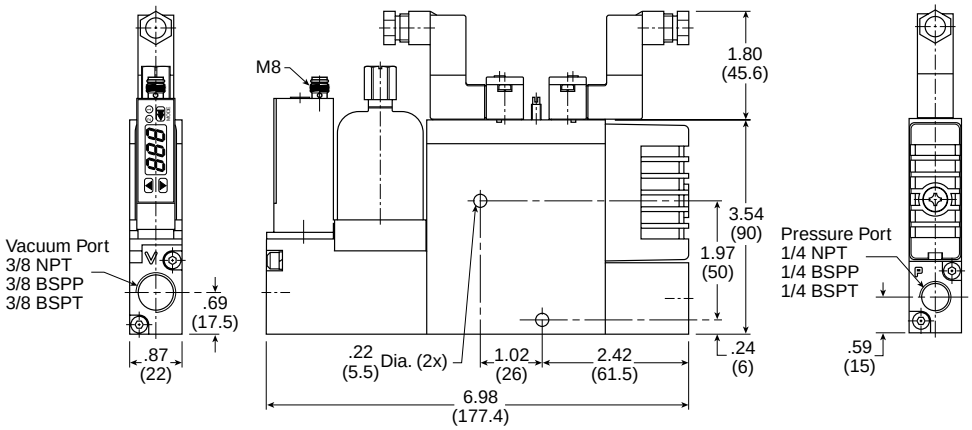
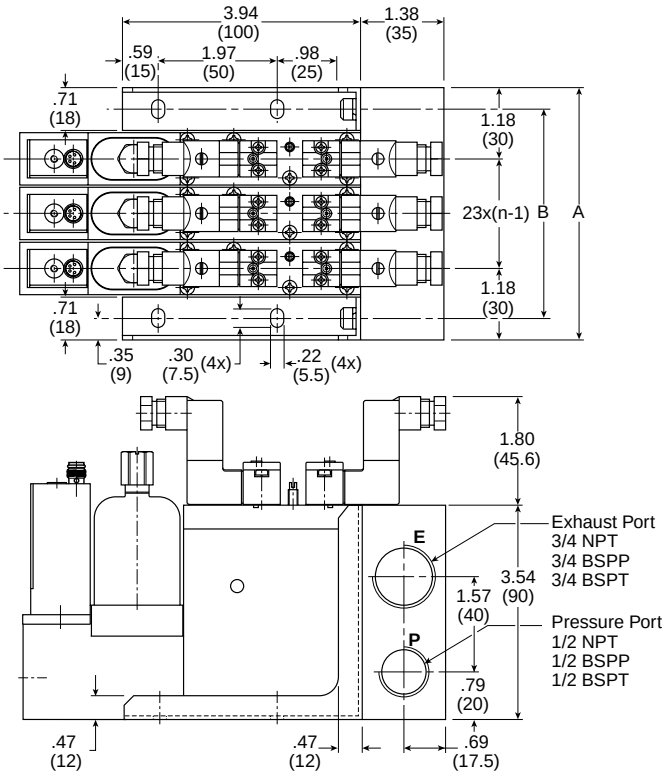
Generator



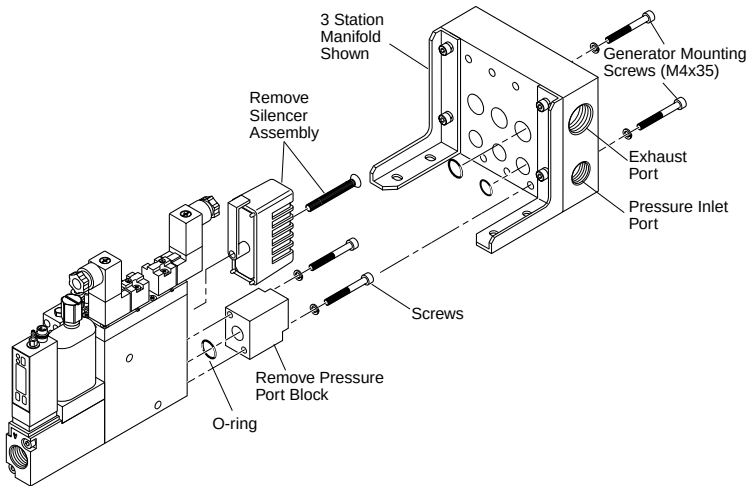
Manifold

3-Station Manifold Shown



Manifold Assembly

Remove Pressure Port Block and Silencer Assembly. Use existing O-rings and Manifold Mounting Screws to secure the CVK unit to the Manifold.



n	2	3	4	5
A	3.27 (83)	4.17 (106)	5.08 (129)	5.98 (152)
B	2.56 (65)	3.46 (88)	4.37 (111)	5.28 (134)

Inches (mm)

n = Number of Stations

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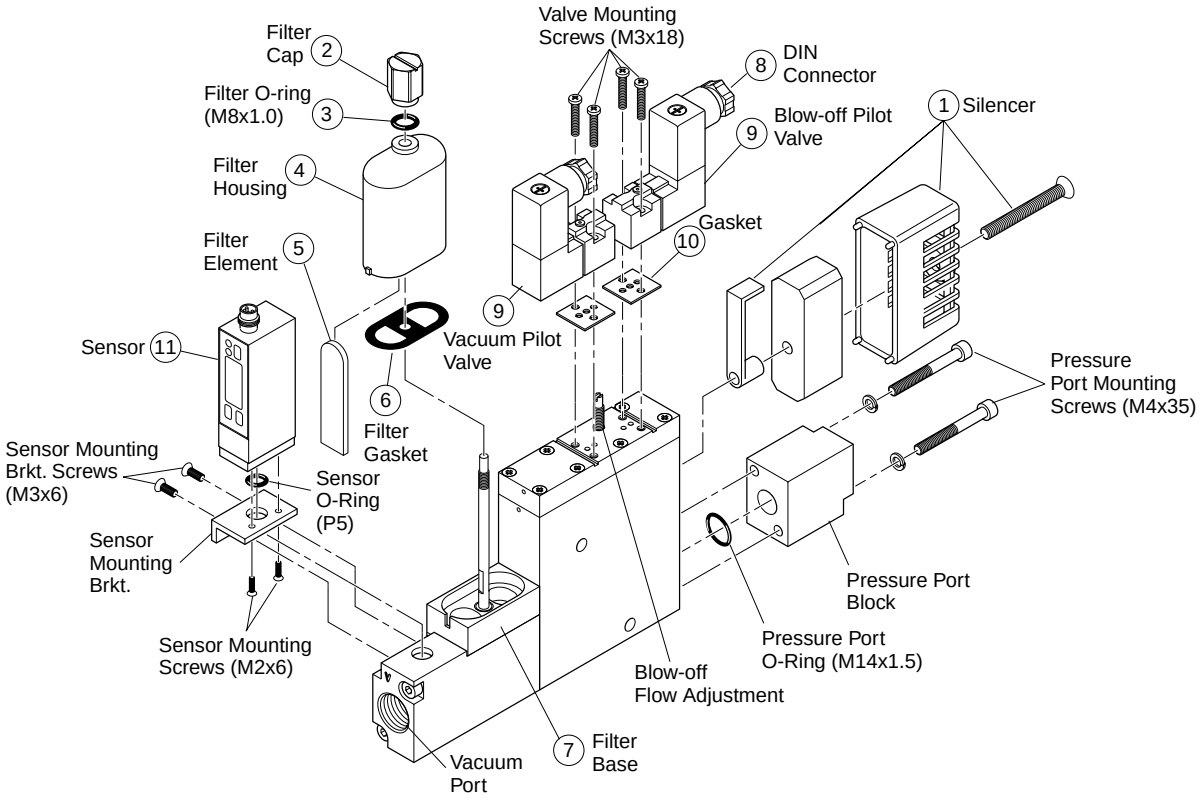
Replacement Components

Item	Part Number	Description
1	CVK-S	Silencer
2 thru 7	CVK-F	Filter Kit
5	CVK-E	Filter Element
8	PESC2020B	DIN Connector
8, 9, 10	P5136-M6L-DC24V	Pilot Valve Kit

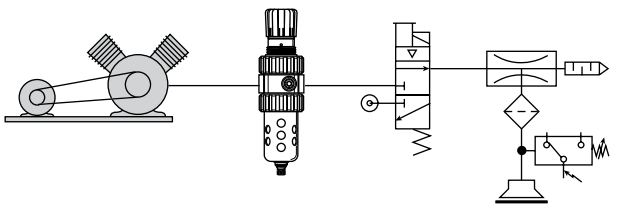
Item	Part Number	Replacement Sensor
11	MPS-V6C-NC	MPS-V6 (NPN) Option
	MPS-V6C-PC	MPS-V6 (PNP) Option
	MPS-V2C-NC	MPS-V2 (NPN) Option
	MPS-V2C-PC	MPS-V2 (PNP) Option
	MVS-201-NC	MVS-201 (NPN) Option
	MVS-201-PCP	MVS-201 (PNP) Option



⚠ Cautions

Do not use or expose the CVK with fluids or corrosive gases. Vacuum Venturi's are designed to be used with non-lubricated, non-corrosive, compressed air.

Do not operate CVK generators outside the temperature range and pressures listed in the specifications section of this catalog. Regulate the compressed air to 70PSI and filtrate with a maximum 40 micron filter. Non-lubricated compressed air will maintain the life and vacuum level of the generator.



All normally closed vacuum circuits will interrupt the air supply to the venturi during a power failure or Emergency Stop condition. As a result, the product being transferred may be dropped, possibly creating a hazard to the surrounding environment. To avoid hazardous situations during a power loss or Emergency Stop condition, consider a normally open vacuum circuit.

Check the insulation of all lead wires after installation to avoid shorts. Properly secure all lead wires to avoid stress or repeated movement that may fray lead wires.

Some electrical components are diode or zener diode protected. When installing solenoids and sensors, check the polarity of the component before applying power. Apply the appropriate voltage to the solenoids and sensors. Inappropriate voltage, shorts, or surges may damage the circuitry.

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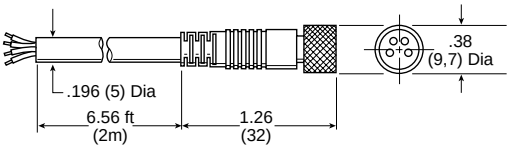
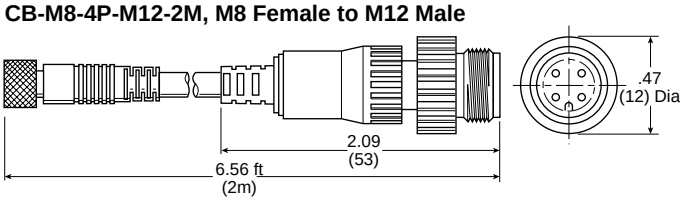
Accessories

Sensor Cables

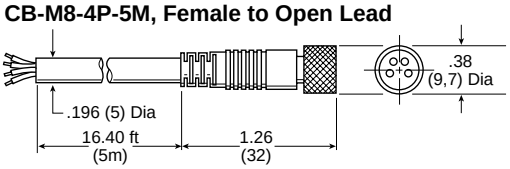
CB-M8-4P-2M, Female to Open Lead



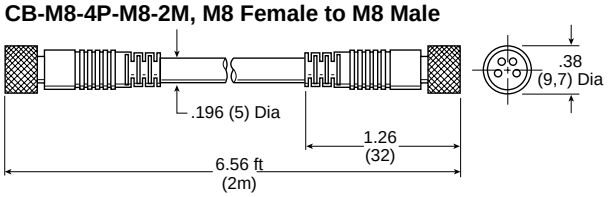
CB-M8-4P-M12-2M, M8 Female to M12 Male



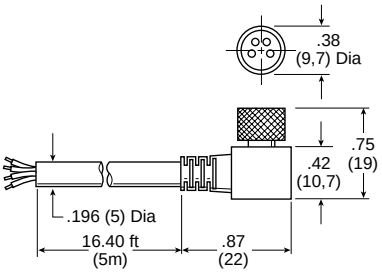
CB-M8-4P-5M, Female to Open Lead



CB-M8-4P-M8-2M, M8 Female to M8 Male

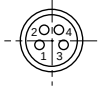


CB-M8-4P-5M-90, Female to Open Lead

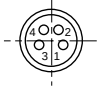


Pin Out Connection

Female Interface 4-Pin, M8



Male Interface 4-Pin, M8



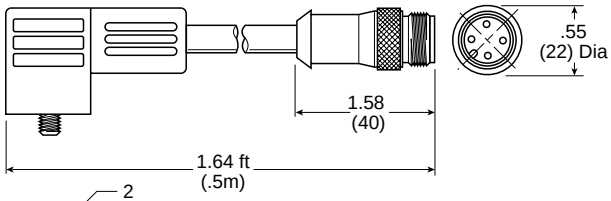
Male Interface 4-Pin, M12

Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

DIN Connector Options

DIN Connector with M12 Connector

CB-94DN-M12-4P
(24VDC, LED / Surge Protection)

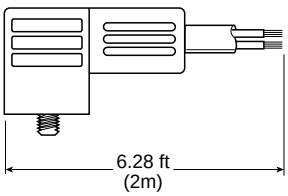


Male Interface 4-Pin, M12

Cable Pin	DIN
1	1
2	Not Used
3	Ground
4	2

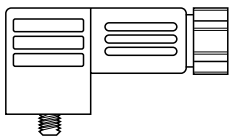
DIN Connector with Cable

PESC2220B
(24VDC, LED / Surge Protection)



DIN Connector

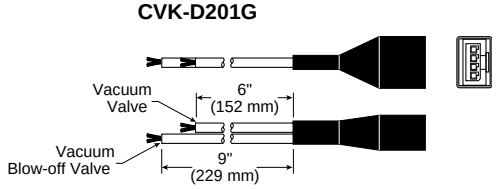
PESC2020B
(24VDC, LED / Surge Protection)



CVK-D201G Valve Cable*

(Connects Sensor to Vacuum & Blow-off Release Pilot Valves)

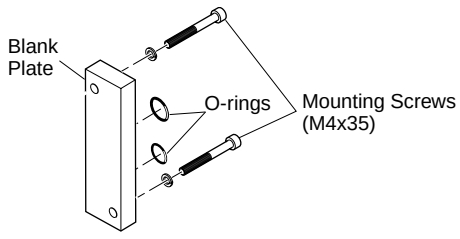
CVK-D201G



* Included with Generator Option 01 & 06.

Generator Blank Plate Kit

CVK-BLK
Kit Includes: Blank Plate, Screws & O-rings



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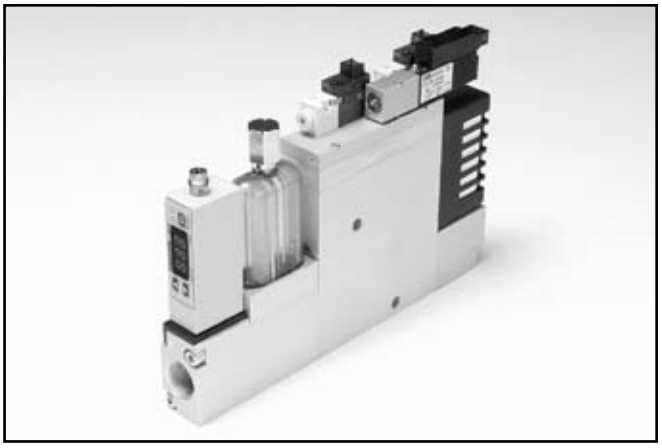
CEK Emergency Stop



Characteristics

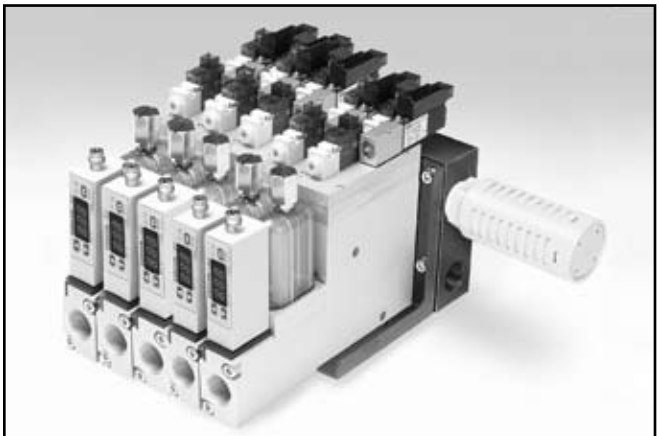
The CEK is a CVK unit with a Normally Closed Vacuum On / Off valve that maintains the last state of air during an emergency stop or power loss. In addition to this, an air-economizing valve has been added to interrupt the air supply by connecting the output signal from the sensor to minimize air consumption.

This unit is ideal for non-porous applications that require fast response of large vacuum and blow-off release flow.

Typically, with a Normally Closed air Circuit, the user controls vacuum with a command signal. During an Emergency Stop Event or power failure event, the vacuum command signal is lost, but, the Vacuum valve **(1)** remains in the current operating position due to the construction of the valve. The air-economizing valve **(5)**, in a Normally Open configuration, passes the air supply from the Vacuum On / Off valve **(1)**. The Sensor **(2)** output activates the air-economizing valve **(5)** closing the air supply to the Normally Closed master valve. The Check Valve **(3)** maintains the achieved vacuum level until the hysteresis value of the Sensor **(2)** is reached or when the Vacuum valve **(1)** has been returned to the closed position to stop the vacuum operation.

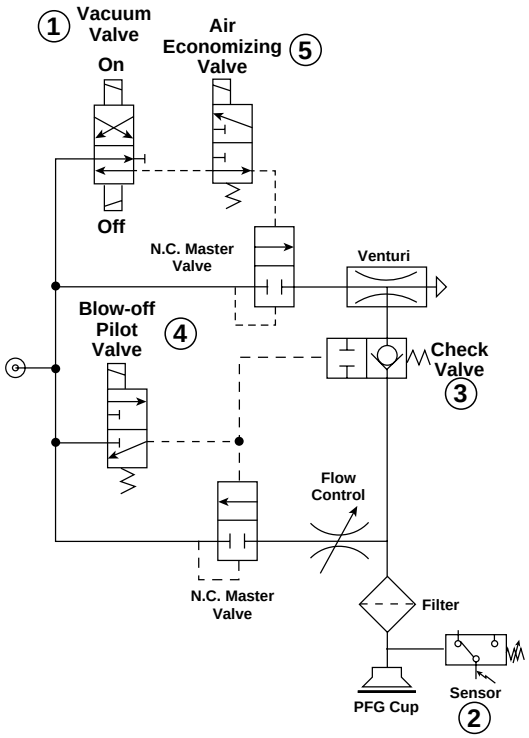
Features

- **Integrated Double Solenoid for Last State**
- **Integrated Vacuum Pilot**
- **Integrated Blow-off Pilot**
- **Integrated Filter, Silencer**
- **Air Economizing Capabilities**
- **Manifolds for up to 5 Units**



Add-A-Fold Assembly (Silencer Included)

Valve Controlled Emergency Stop Circuit



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Model Number Index

(Bold Items are Most Popular)

CEK **15** **H** **S** **21** **C** **24P** **B** **L** **N**

Nozzle Diameter
15 1.5mm
20 2.0mm
27 2.7mm

Vacuum Degree
H High Vacuum 27 inHg

Supply Pressure
S 70 PSI

Voltage
24N 24VDC, NPN
24P 24VDC, PNP

Air Supply
B Normally Closed

Port Threads
N NPT
G BSPP
R BSPT

Sensor
21 MPS-V2C-NC (NPN)
22 MPS-V2C-PC (PNP)
Z No Sensor

Vacuum Release and Check Valve		
Code	**Release Valve**	**Check Valve**
C	**With**	**With**

Valve Connector
L Clip w/LED & Surge Protection

Specifications

Media	Non-Lubricated Compressed Air, Non-Corrosive Gases
Operating Pressure	70 PSI (5 kgf/cm²)
Humidity	35 to 85%
Pressure Port	**N:** 1/4 NPT Female, **G:** 1/4 BSPP Female, **R:** 1/4 BSPT Female
Vacuum Port	**N:** 3/8 NPT Female, **G:** 3/8 BSPP Female, **R:** 3/8 BSPT Female
Operating Temperature	41 to 132°F (5 to 50°C)
Material	Aluminum, Brass, NBR

	Air-Economizing Valve and Blow-off Release Pilot	**Emergency Stop Valve**
Type of Control Valve	Pilot Valve	Double Solenoid
Manual Operation	Manual Override	Manual Overrides
Electrical Connection	Clip Connector with LED and Surge	Clip Connector with LED and Surge
Power Supply	24VDC ± 10%	24VDC ± 10%
Power Consumption	0.9W	0.9W
Operating Pressure	70 PSI (5 kgf/cm²)	70 PSI (5 kgf/cm²)
Air Supply	Normally Closed	Normally Closed
Generator Weight	26.3 oz. (750g)	
Manifold Weight	2-Station: 24 oz. (680g), 3-Station: 31 oz. (880g), 4-Station: 38 oz. (1080g), 5-Station: 45 oz. (1280g)	

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft³ * to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
CEK15HS	70	3.53	2.3	4.8	8.0	12.4	18.4	26.3	40.4	62.1	189.3
CEK20HS	70	6.36	1.1	2.5	5.0	7.6	12.1	18.6	29.9	53.4	129.9
CEK27HS	70	10.42	0.6	2.0	3.0	5.6	8.5	13.3	21.2	42.1	—

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

Nozzle Diameter	inHg										
	0	3	6	9	12	15	18	21	24	27	30
CEK15HS	2.51	2.23	1.95	1.67	1.39	1.12	.85	.58	.30	—	—
CEK20HS	3.75	3.34	2.93	2.50	2.12	1.70	1.28	.86	.44	—	—
CEK27HS	5.75	5.09	4.43	3.77	3.11	2.45	1.80	1.15	.50	—	—

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Example 1: Shown above is a 5-Station CVK Manifold with only 2 sensors and NPT Ports.

Qty.	Part No.	Comment
1	AACEK-M04N	Add-A-Fold
1	CEK15HS21C24NBLN	Station #1
1	CEK15HS21C24NBLN	Station #2
1	CEK20HS21C24NBLN	Station #3
1	CEK20HS21C24NBLN	Station #4
1	CEK27HS21C24NBLN	Station #5
	Alternative Method	
1	AACEK-M04N	Add-A-Fold
2	CEK15HS21C24NBLN	Station #1-2
2	CEK20HS21C24NBLN	Station #3-4
1	CEK27HS21C24NBLN	Station #5

How To Order Add-A-Fold Assemblies

1. Manifold assemblies are multiple line item listings.
2. First line item must be the Add-A-Fold assembly part number.
3. Subsequent line items listed identify each station in the Manifold starting with Station Number 1.
4. Station Number 1 is the left most Generator when looking at the Manifold Generator Ports.
5. List either a part number of the Manifold Type Generator or a Blank Plate for each station of the Manifold.
6. See Model Number Index Code for CEK Generator number and Accessories for Blank Plate Part numbers.

AACEK-M05N

Port Type
N NPT
R BSP
G BSPP

Number of Stations
02 2
03 3
04 4
05 5*
* Maximum Number of Stations

Manifold Series
M

Generator Series
CEK

Add-A-Fold Assembly
AA

Manifold Block

CVK - M 05 N

Manifold	Stations	Port Size
	02	N 1/8 NPT
	03	G 1/8 BSPP
	04	R 1/8 BSPT
	05	

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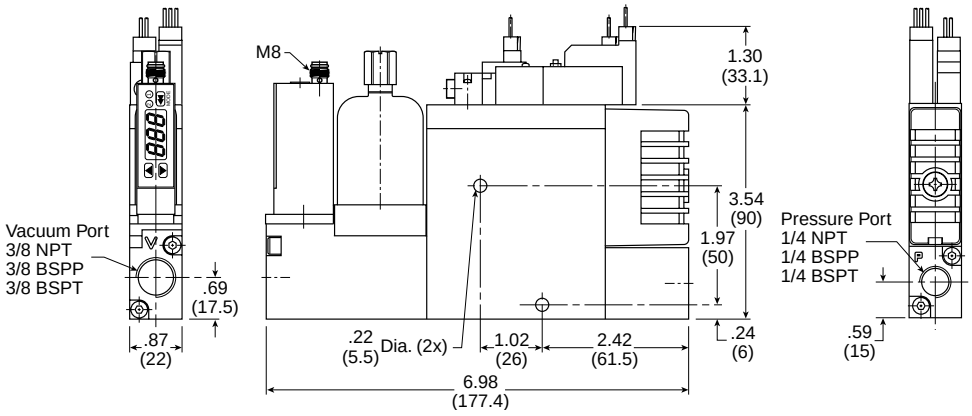
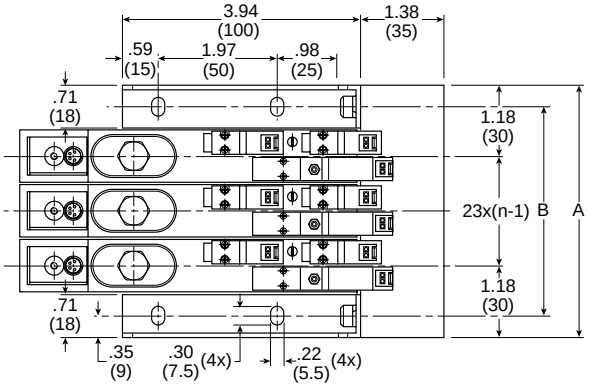
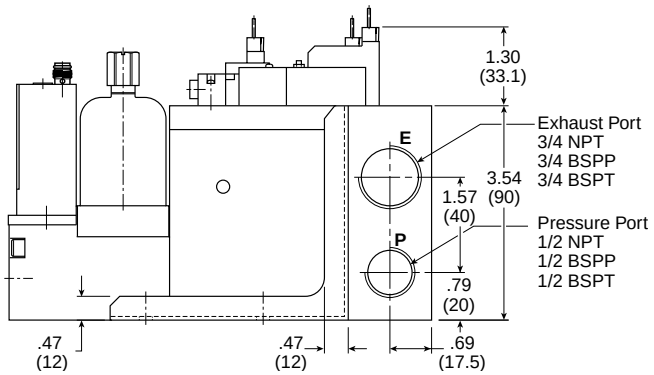
Generator



Manifold

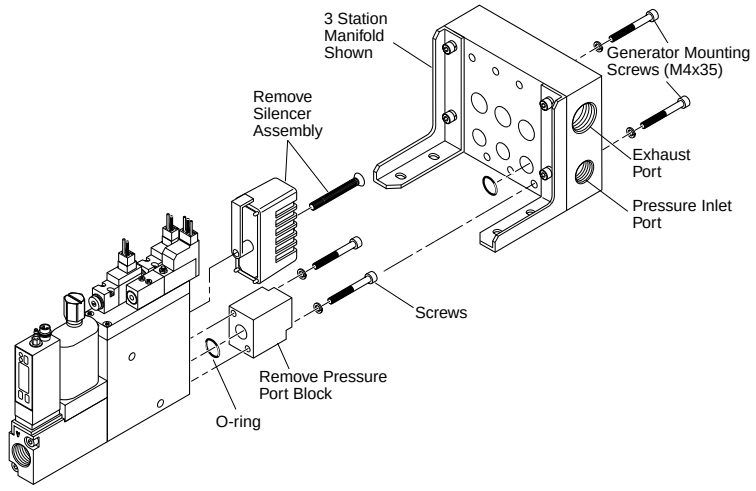
3-Station Manifold Shown





Manifold Assembly

Remove Pressure Port Block and Silencer Assembly. Use existing O-rings and Manifold Mounting Screws to secure the CEK unit to the Manifold.



n	2	3	4	5
A	3.27 (83)	4.17 (106)	5.08 (129)	5.98 (152)
B	2.56 (65)	3.46 (88)	4.37 (111)	5.28 (134)

Inches (mm)

n = Number of Stations

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Replacement Components

Item	Part Number	Description
1	CVK-S	Silencer
2 thru 7	CVK-F	Filter Kit
5	CVK-E	Filter Element
8, 10	MC2-24-B-10-D	Blow-off Pilot Valve
9, 10	MC2-24-A-10-V	Air-Economizing Valve
10	MC2-5L	500mm Clip Lead
11,13	PCL241B-NB-D24SP	Vacuum On / Off Valve, NPN
12,13	PCL241B-NB-D24UM	Vacuum On / Off Valve, PNP
13	PCL2-D24-CL5	500mm Clip Lead
Item	**Part Number**	**Replacement Sensor**
14	MPS-V2C-NC	MPS-V2 (NPN) Option
	MPS-V2C-PC	MPS-V2 (PNP) Option

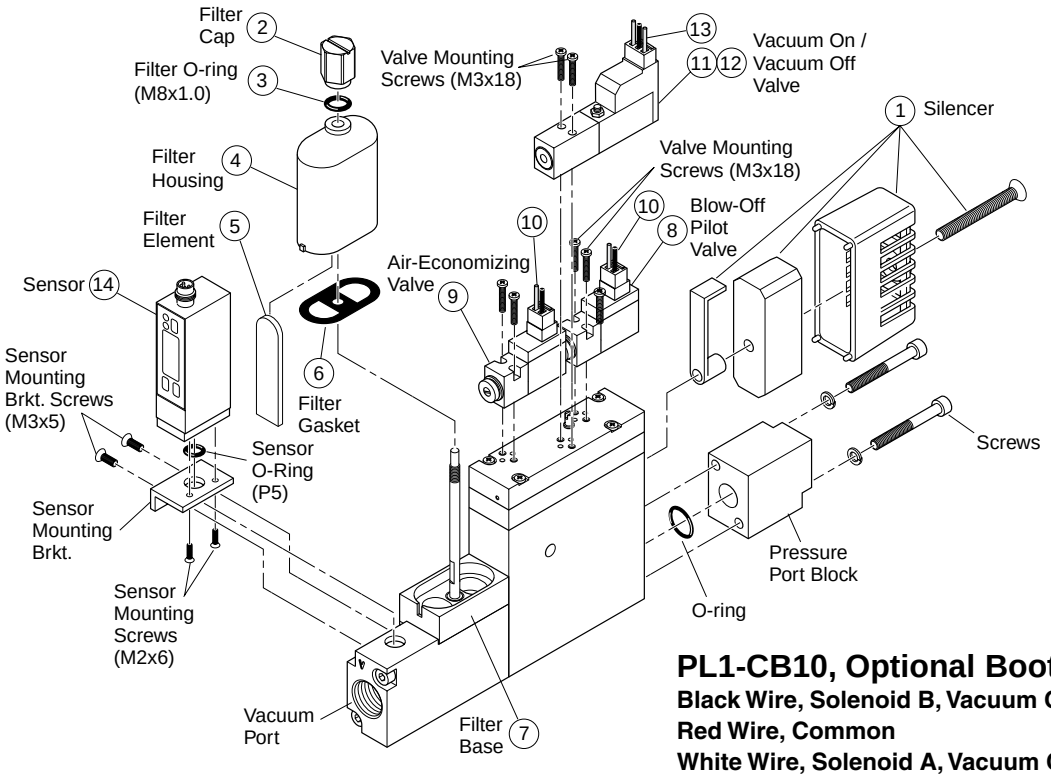
⚠ Cautions

Do not use or expose the CEK with fluids or corrosive gases. Vacuum Venturi's are designed to be used with non-lubricated, non-corrosive, compressed air.

Do not operate CEK generators outside the temperature range and pressures listed in the specifications section of this catalog. Regulate the compressed air to 70PSI and filtrate with a maximum 40 micron filter. Non-lubricated compressed air will maintain the life and vacuum level of the generator.

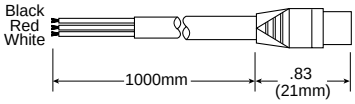
Check the insulation of all lead wires after installation to avoid shorts. Properly secure all lead wires to avoid stress or repeated movement that may fray lead wires.

Some electrical components are diode or zener diode protected. When installing solenoids and sensors, check the polarity of the component before applying power. Apply the appropriate voltage to the solenoids and sensors. Inappropriate voltage, shorts, or surges may damage the circuitry.



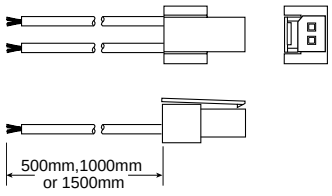
PL1-CB10, Optional Booted Cable

Black Wire, Solenoid B, Vacuum Off
Red Wire, Common
White Wire, Solenoid A, Vacuum On



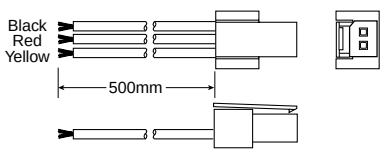
Pilot Valve Cable

MC2-5L (500mm) Lead*
MC2-10L (1000mm) Lead
(Connects Power Source to Vacuum & Blow-off Release Pilot Valves)
Positive "+" (Red Wire)
Negative "-" (Black Wire)
* Included with Generator



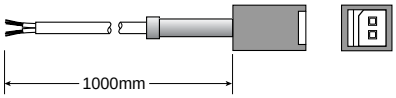
PCL2-D24-CL5* Cable

Black Wire, Solenoid B, Vacuum On
Red Wire, Common
Yellow Wire, Solenoid A, Vacuum Off
*Included with Generator



MC2-CB10 Valve Cable

(Connects Power Source to Vacuum & Blow-off Release Pilot Valves)
Positive "+" (Red Wire)
Negative "-" (Black Wire)



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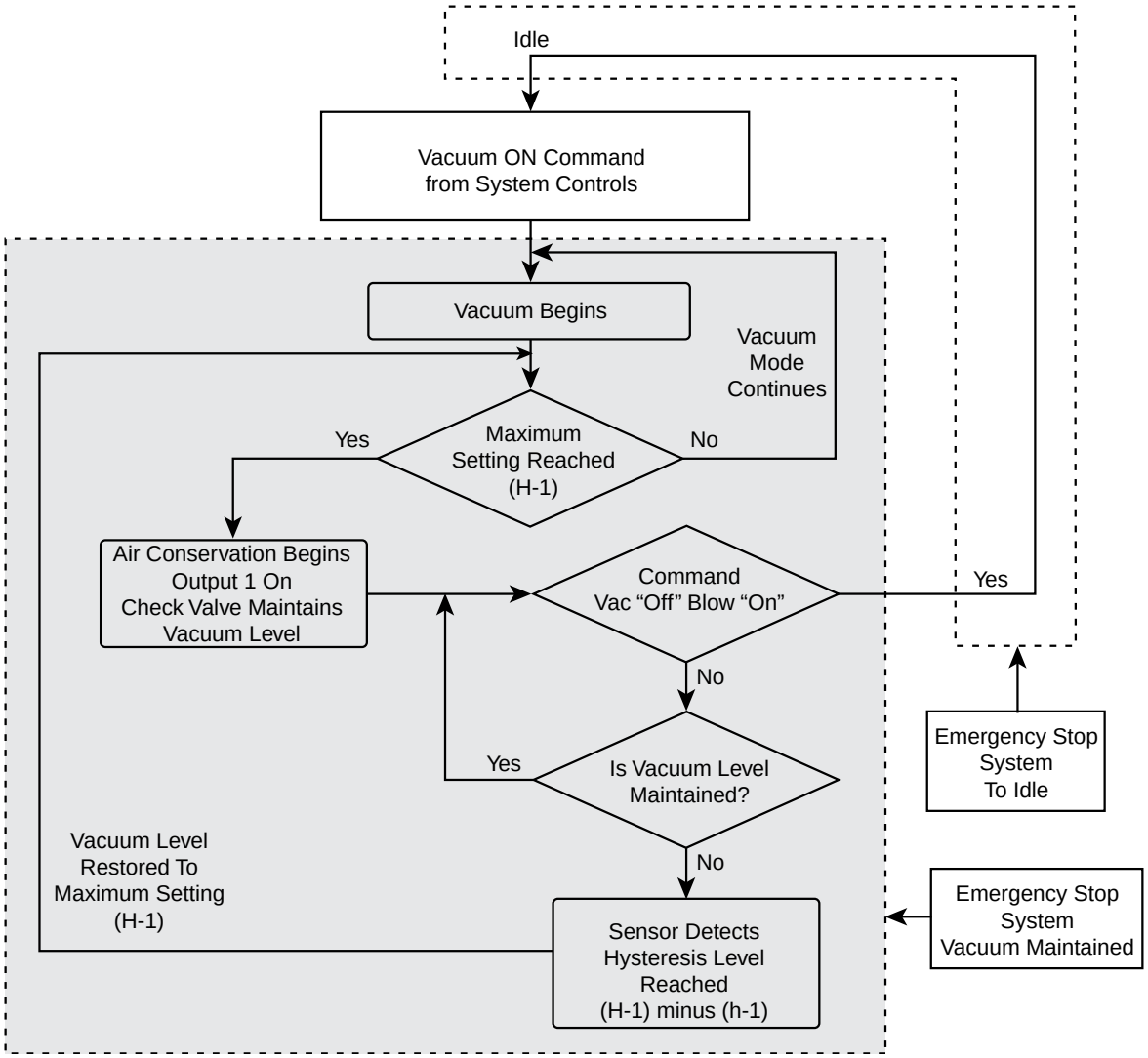
CEK - System Logic



CEK - Emergency Stop Operating System (EOS)

The Emergency Stop Operating System is designed to maintain the last state of operation when an emergency stop or power failure occurs.

The chart below illustrates the state of operation in different modes.

Modes	Vacuum On	Vacuum Off	Blow-Off	EOS
Normal Conditions	Air-Economizing between 18-16 inHg	Idle	Blow-Off On Blow-Off Idle	EOS Off
Emergency Stop, Power Failure	Vacuum On ↓ Vacuum On	Idle	Blow-Off On or Idle ↓ Idle	EOS On
Restore Power	Vacuum On Air-Economizing Function Resumes	Idle	Idle	EOS Off

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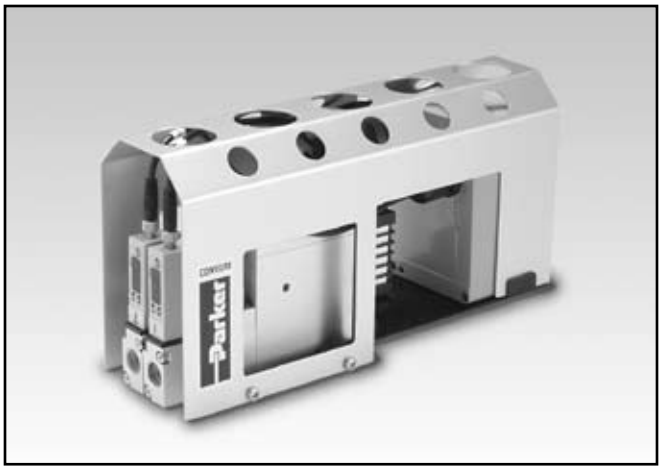
CVXCEK



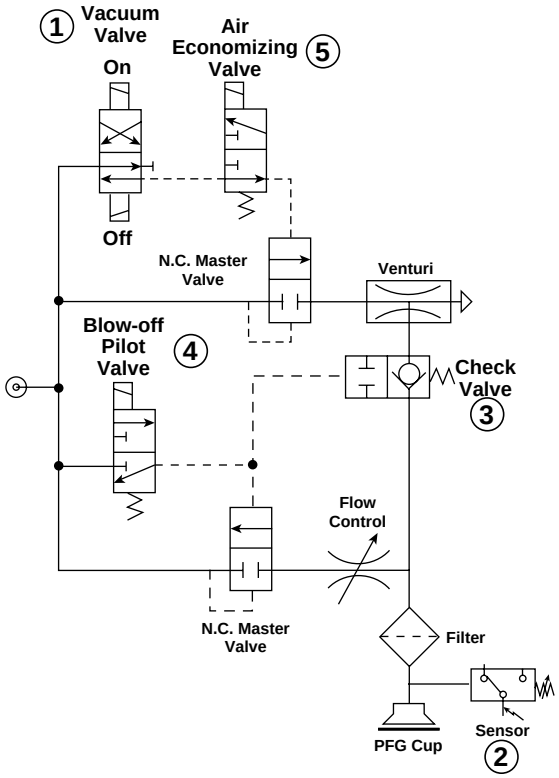
Features

- **Integrated Double Solenoid for Hold Last State Conditions**
- **Integrated Vacuum Pilot**
- **Integrated Blow-off Pilot**
- **Integrated Filter, Silencer**
- **Air Economizing Capabilities**
- **Manifolds for up to 5 Units**

Characteristics

The CVXCEK vacuum generator creates vacuum and blow-off pressure in a vacuum system and has additional Air-economizing and emergency operating system functions.

Each CVXCEK unit consists of 2 independent vacuum generators labeled channel 1 and channel 2. Each vacuum generator has a vacuum ON / OFF solenoid pilot valve, blow-off solenoid pilot valve, Air-Economizing valve, blow-off needle control valve, pressure sensor, vacuum check valve, vacuum filter, and exhaust filter. Each Vacuum Generator is mounted to a 2-Station bar manifold with an optional electrical mounting kit. The pressure provided to inlet port of the bar manifold is common to both vacuum generators.



General Operation of CVXCEK Vacuum Units

A vacuum generator is a single stage Venturi that creates vacuum pressure using compressed air. In principle, compressed air is throttled as the air exits the nozzle and is discharged into the diffuser. This increased velocity of air lowers the pressure in the diffusion chamber. The volume of air within the closed vacuum system flows into the low-pressure area of the diffusion chamber and is exhausted thru the diffuser. This effect increases the vacuum level and evacuates most of the air within the closed vacuum. The vacuum generator will produce the specified degrees of vacuum as cataloged if the vacuum system is closed, inlet pressure is to design pressure, and there are no major restrictions in the exhaust flow.

Vacuum is created when the unit receives a momentary or maintained command vacuum “ON” signal, (high signal is sent to Vacuum Pilot Valve **(1)**. Once a preset vacuum degree (H-1) of the pressure sensor **(2)** is achieved, the Air-Economizing Valve is enabled to conserve compressed air. The vacuum level will be maintained by the Check Valve **(3)** until the hysteresis switch point (H-1 minus h-1) of Sensor **(2)**. At this point vacuum is turned back “ON” until the switch point (H-1) is achieved again. This cycle, which is called Air-economizing, will repeat until a blow-off signal is sent to the unit. When the Blow-off Pilot Valve **(4)** is activated to decay the vacuum pressure, the unit will release the part. Command vacuum “ON” should be turned “OFF” when command blow-off is turned “ON”. The Emergency Stop operating system provides Air-Economizing or maximum degree of vacuum at the time of disruption of Input and Output Power.

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Model Number Index

(Bold Items are Most Popular)

CVXCEK | **27** | **D3** | **2** | **49** | **N** | **A**

Nozzle Diameter
27 27HS 2.7mm

Electrical Enclosure
D1 M12, 110VAC
D3 M12, 24VDC, PNP
D4 M12, 110VAC, w/ Mtg. Plate
D6 M12, 24VDC, PNP w/ Mtg. Plate
N1 M18, 110VAC
N3 M18, 24VDC, PNP
N4 M18, 110VAC, w/ Mtg. Plate
N6 M18, 24VDC, PNP w/ Mtg. Plate

Number of Channels
1 Generator w/ Blanking Plate
2 Generators

Voltage
49 24VDC
53 110VAC

Engineering Level
A Current

Port Threads
N NPT
G BSPP

Specifications

Media	Non-Lubricated Compressed Air, Non-Corrosive Gases
Operating Pressure	70 PSI
Humidity	35 to 85%
Pressure Port	**N:** 1/4 NPT Female, **G:** 1/4 BSPP Female, **R:** 1/4 BSPT Female
Vacuum Port	**N:** 3/8 NPT Female, **G:** 3/8 BSPP Female, **R:** 3/8 BSPT Female
Operating Temperature	41 to 132°F (5 to 50°C)
Material	Aluminum, Brass, NBR

Air-Economizing Valve and Blow-off Release Pilot		Vacuum Pilot Valve	Sensors
Type of Control	Single Solenoid	Double Solenoid	MPS-2 Pressure Sensor
Manual Operation	Manual Override	Manual Overrides	N/A
Electrical Connection	Clip Connector	Clip Connector	M8, 4-Pin
Power Supply*	24VDC ± 10%	24VDC ± 10%	10.8 to 30VDC
Solenoid Power Consumption	0.6W with LED and Surge	2.0W with LED and Surge	125mA
Operating Pressure	70 PSI	70 PSI	-14.7 PSI to 72.5 PSI
Air Supply	Normally Closed	Normally Closed	N/A
Manifold Weight	1-Station: 62 oz. (1758g), 2-Station: 88 oz. (2495g)		

***** 110VAC units use 24VDC Solenoids and Sensors.

Performance

Series / Nozzle Diameter	Nozzle Diameter (mm)	Vacuum Degree at 70 PSI	Vacuum Flow per Channel (SCFM)	Air Consumption per Channel (SCFM)
CVXCEK27	2.7	27	5.75	10.41

Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure	Air Consumption Per Channel	Evacuation Time per Channel in sec / ft³ * to reach different Vacuum Levels (inHg)								
	PSI	SCFM	3	6	9	12	15	18	21	24	27
CVXCEK27	70	10.42	0.6	2.0	3.0	5.6	8.5	13.3	21.2	42.1	—

* 1 ft³ = 28.31 liters

Vacuum Flow (SCFM)

	inHg										
Nozzle Dia.	**0**	**3**	**6**	**9**	**12**	**15**	**18**	**21**	**24**	**27**	**30**
27HS	5.75	5.09	4.43	3.77	3.11	2.45	1.80	1.15	.50	—	—

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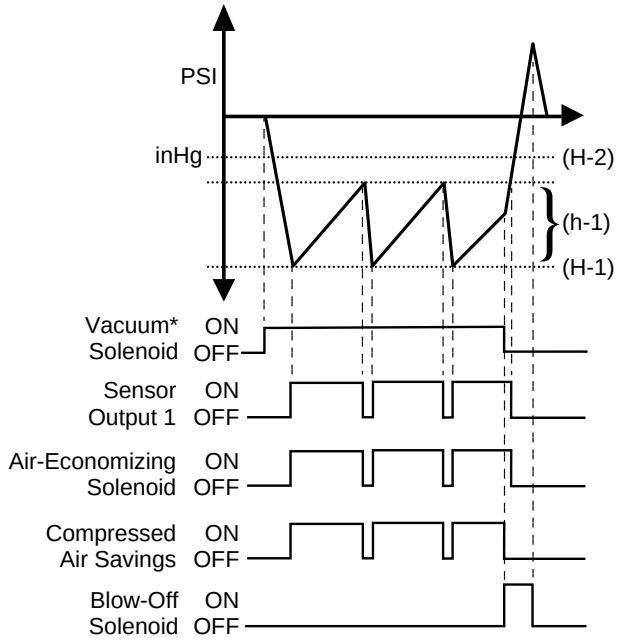
Sensor Output Function

Sensor outputs are open collector transistor type. Replacement Sensor MPS-V2C-NC is an NPN Sinking Sensor. When installed on the CVXCEK, the onboard electronics converts this sensor to a PNP circuit. Wiring circuit of the CVXCEK units is PNP, Sourcing. Each vacuum generator sensor has 2 outputs. Output 1 and Output 2 are independent of each other and have different factory set conditions. These settings can be changed with the touch pad programming.

Air Economizing

Minimizes air consumption by utilizing the built in check valve. Once a predetermined vacuum level has been achieved (H-1), the Air-Economizing valve is enabled and the check valve maintains the vacuum level within the system. The Air-Economizing valve is disabled at a vacuum level H-1 minus h-1. The hysteresis feature of the vacuum sensor can maintain the vacuum level of the system indefinitely when properly wired to the Air-Economizing valve and operating pressure is present.



* Vacuum Solenoid can be a maintained or momentary signal. Maintained shown.

Sensor Output 1 - Air Economizing

This sensor output does not interface with the input table of the PLC/PC. This sensor output interfaces with the Air-Economizing Valve on the CVXCEK Unit. The Vacuum Pilot Valve Solenoid is connected to the PLC/PC output table. The switch point setting, (H-1) on Output 1 of the sensor, enables the Air-Economizing Valve. No external PLC programming is required for Air-Economizing functions because this function is built into the CVXCEK Electrical Unit. The vacuum pilot signal from the vacuum ON/OFF valve is connected to the Air-Economizing Valve. It is this valve that toggles the vacuum pilot signal to the Vacuum Poppet Valve on and off. The toggling of the vacuum pilot signal on and off creates the air-economizing mode. When the vacuum level in system achieves the preset valve of H-1, the sensor output switches to a Closed, Passing, state. This activates the Air-Economzing valve which inhibits the vacuum pilot signal from creating vacuum. In nonporous applications, the internal check valve maintains the vacuum level till the level drops through the Hysterisis Range (h-1) to the hysteresis switch point setting vacuum (H-1) minus (h-1). At this point, the sensor output switches to a open position, Non-passing state and de-activates the Air-Economzing Valve. This cycle will continue depending on the vacuum system and until blow-off function is enabled.

Sensor Output 2 - Vacuum Confirmation – Part Presence Signa

Operates as an Output from the Sensor to provide a Part Presence Signal. This sensor output interfaces with the Input table on the PLC/PC. When the cup is adhered to the part, vacuum level increases and at the Switch Point Setting (H-2), the sensor changes state to indicate a part presence Signal.

Emergency Stop Condition

An emergency stop condition for factory automation is an external override condition that is usually activated by the machine operator to temporarily shut down the equipment. It is the Loss of Output Power or the Loss of Output Power and Input Power to the CVXCEK Vacuum Generator. The relevance to vacuum is the ability of the vacuum equipment to maintain the last output state of the control circuit.

The Emergency Operating System (EOS) on the CVXCEK unit is designed to maintain and continue the current operation mode of the vacuum generator. The detent Vacuum Pilot Valve will maintain the last command of the PLC/PC. The Air-economizing Valve will still operate during loss of output power. The current operation mode of the vacuum generator will be maintained when operating pressure is present.

If an emergency event or power failure occurs any time the system is in the shaded area, vacuum will be maintained to hold the work piece. If an emergency event or power failure occurs any time the system operations are at idle or during blow-off “ON”, the system will remain or return to the idle state.

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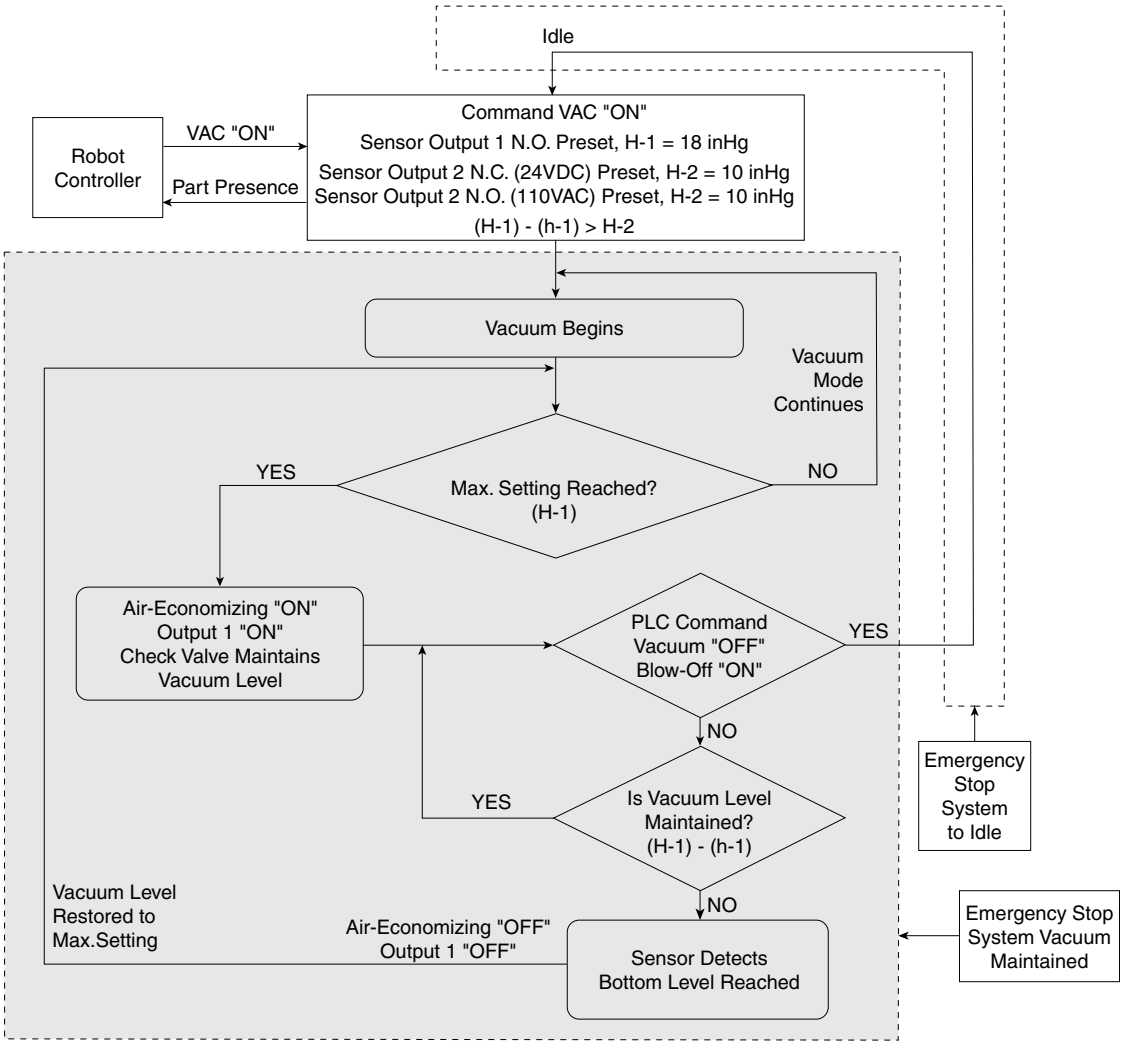

CVXCEK - Emergency Stop Operating System (EOS)

The Emergency Stop Operating System is designed to maintain the last state of operation when an emergency stop or power failure occurs.

The chart below illustrates the state of operation in different modes.

Modes	Vacuum On	Vacuum Off	Blow-Off
Normal Conditions	Air Economizing 18 to 15.5 inHg	Idle	Blow-off On Blow-off Idle
Emergency Stop Event			
Input Power On Output Power Off	Air Economizing 18 to 15.5 inHg	Idle	On ↓ Idle Idle Idle
Input Power Off Output Power On	Vacuum On ↓ Max. Vacuum On	Idle	On ↓ Idle Idle Idle
Input Power Off Output Power Off	Vacuum On ↓ Max. Vacuum On	Idle	On ↓ Idle Idle Idle
Restore Power Input Power On Output Power On	Vacuum On Air Economizing 18 to 15.5 inHg	Idle	Idle

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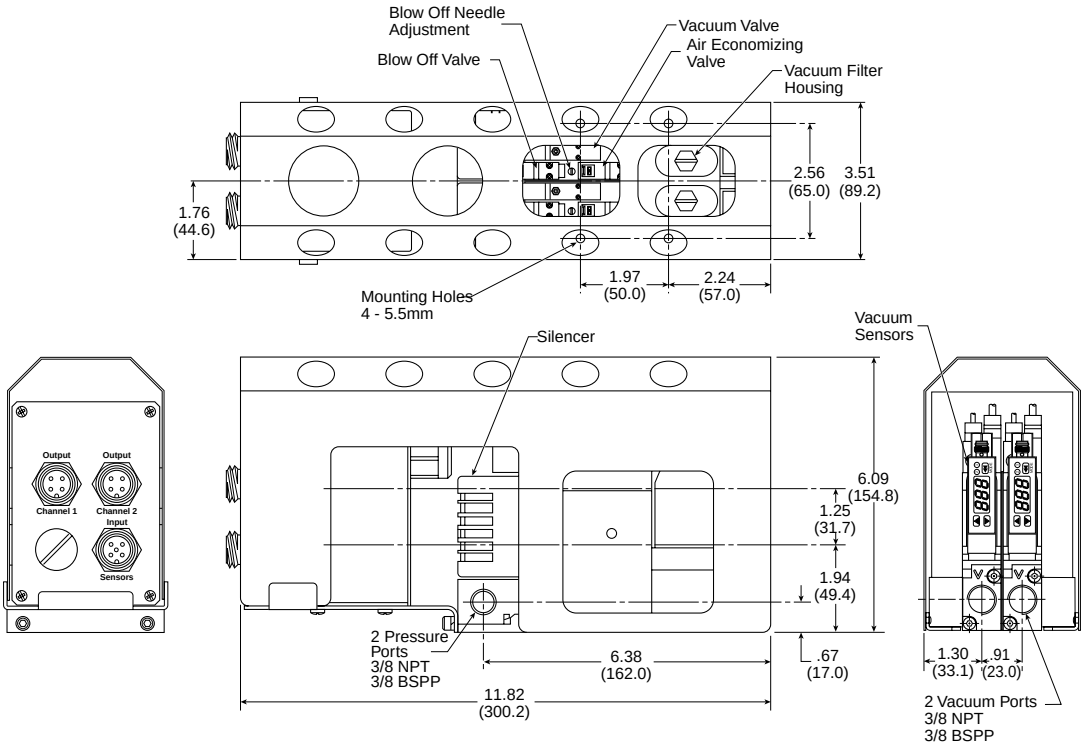
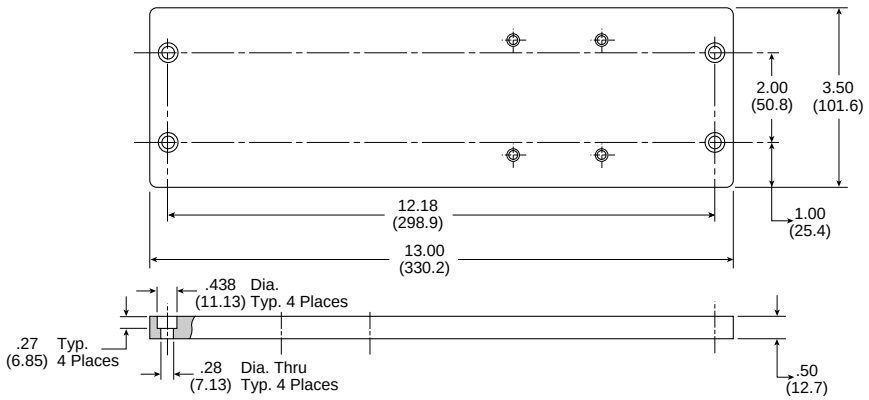


Optional Mounting Plate



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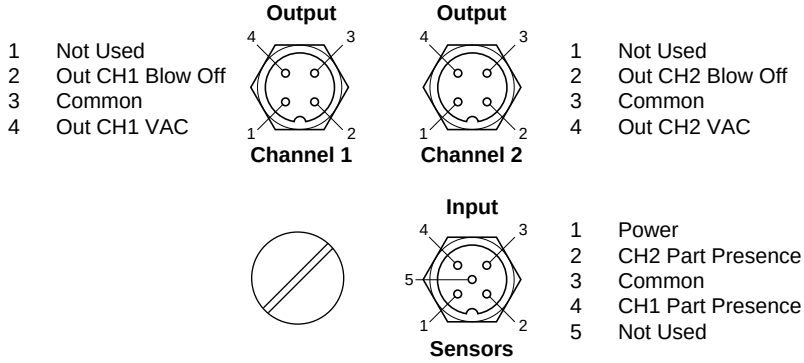
M12, 24VDC

Output - 4-Pin, M12, Keyed Male

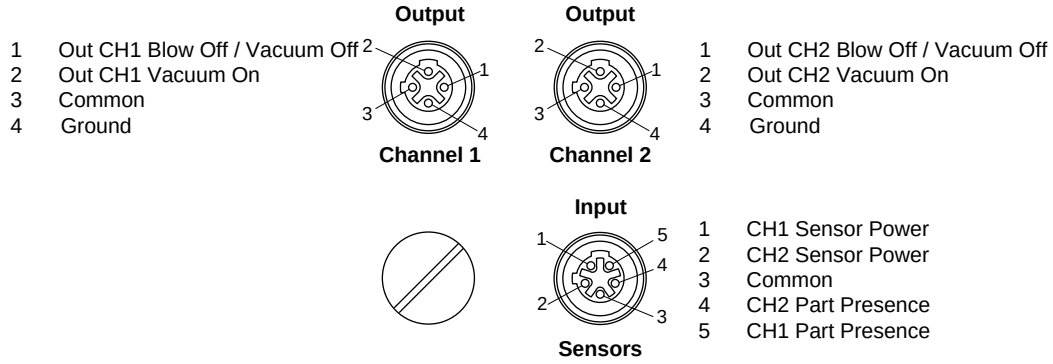
Input - 5-Pin, M12, Keyed Male



M12, 110VAC

Output - 4-Pin, M12, Double Keyed Male

Input - 5-Pin, M12, Double Keyed Male

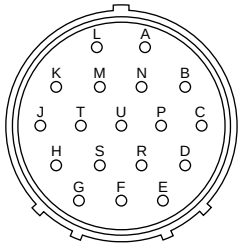


M18, 24VDC & 110VAC

18-Pin Connector

24VDC

A	CH2 Blow Off
B	CH2 Sensor Power
C	CH2 Part Presence
D	CH2 VAC Control
E	CH1 Blow Off
F	CH1 Sensor Power
G	CH1 Part Presence
H	CH1 VAC Control
J	DC Voltage Monitor
K	Common
L	Ground
M	Not Used
N	Not Used
P	Output Power
R	Not Used
S	Not Used
T	Not Used
U	Not Used



Face View - Male 18-Pin Connector

110VAC

A	CH2 Blow Off
B	CH2 Sensor Power
C	CH2 Part Presence
D	CH2 VAC Control
E	CH1 Blow Off
F	CH1 Sensor Power
G	CH1 Part Presence
H	CH1 VAC Control
J	AC Voltage Monitor
K	Common
L	Ground
M	Not Used
N	Not Used
P	Not Used
R	Not Used
S	Not Used
T	Output Power
U	Not Used

Notes: Pin B & F are jumpered inside unit.
Either pin can connect power to both sensors.

Pin P / T & J are jumpered inside unit.
This is for monitoring power only. Pin P / T is not necessary for operation of the unit.

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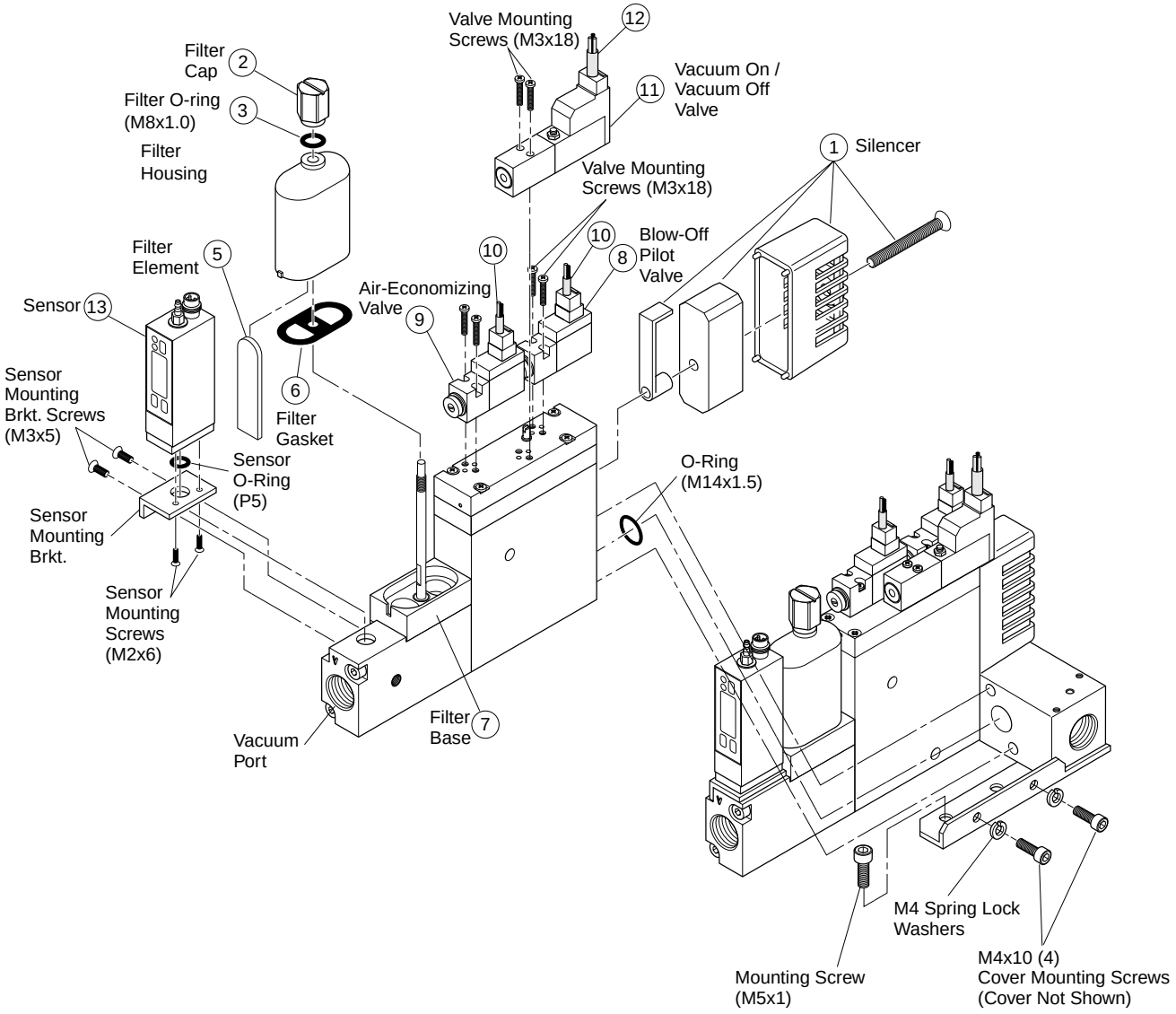
Replacement Components

Item	Part Number	Description
1	CVK-S	Silencer
2 thru 7	CVK-F	Filter Kit
5	CVK-E	Filter Element
8	MC2-24-B-10-D	Blow-off Pilot Valve
9	MC2-24-A-10-V	Air-economizing Valve
10	MC2-CB10	1000mm Clip Lead
11	PCL241B-NB-D24UM	Vacuum On / Off Valve, PNP
	PCL241B-NB-D24SP	Vacuum On / Off Valve, NPN
12	PL1-CB10	1000mm Clip Lead
13	MPS-V2C-NC	Pressure Sensor
14	CB-M8-4P-2M	4-Pin, M8, Sensor Cable
1 thru 9	CEK27HSZC24PBLN	CEK Generator Only
1 thru 9, 13	CEK27HS21C24PBLN	CEK Generator & Sensor



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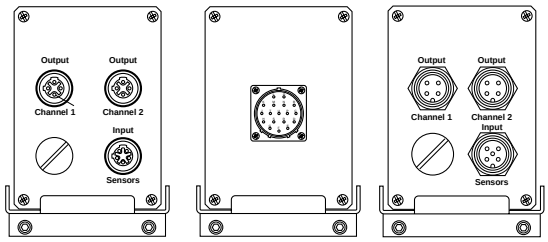
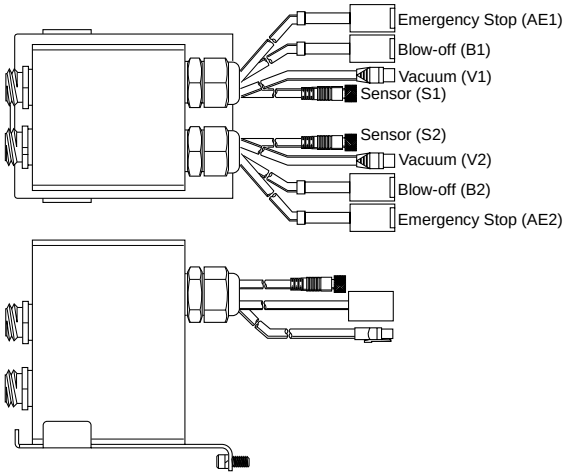
Discrete Kits

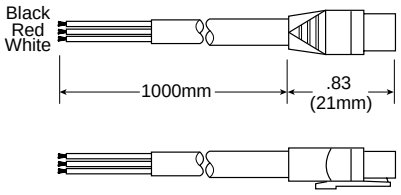
PSCEKD1A - M12, 110VAC
PSCEKN1A - M18, 110VAC
PSCEKN3A - M18, 24VDC
PSCEKD3A - M12, 24VDC





PL1-CB10, Valve Cable

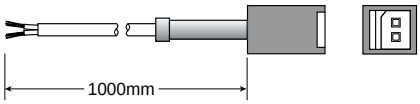
Black Wire, Solenoid B, Vacuum Off
Red Wire, Common
White Wire, Solenoid A, Vacuum On



MC2-CB10 Valve Cable

(Connects Power Source to the Air-Economizing & Blow-off Release Pilot Valves)

Positive “+” (Red Wire)
Negative “-” (Black Wire)



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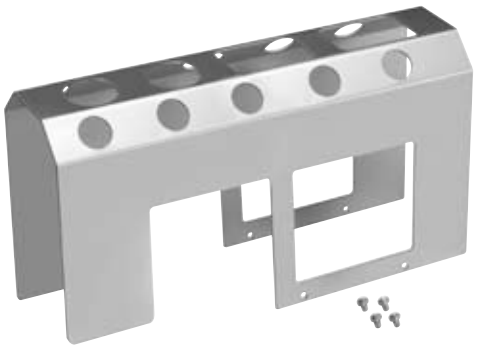
Cover



⚠ Cautions

Do not use or expose the CEK with fluids or corrosive gases. Vacuum Venturi’s are designed to be used with non-lubricated, non-corrosive, compressed air.

Do not operate CEK generators outside the temperature range and pressures listed in the specifications section of this catalog. Regulate the compressed air to 70PSI and filtrate with a maximum 40 micron filter. Non-lubricated compressed air will maintain the life and vacuum level of the generator.

Check the insulation of all lead wires after installation to avoid shorts. Properly secure all lead wires to avoid stress or repeated movement that may fray lead wires.

Some electrical components are diode or zener diode protected. When installing solenoids and sensors, check the polarity of the component before applying power. Apply the appropriate voltage to the solenoids and sensors. Inappropriate voltage, shorts, or surges may damage the circuitry.

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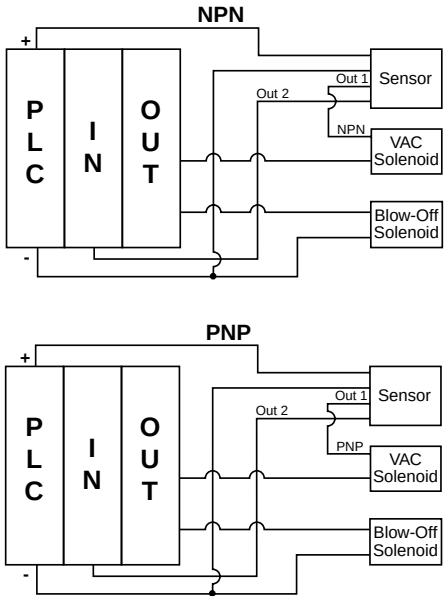
__A__

Air Consumption
The amount of air in (measured in SCFM) consumed to achieve the maximum rated vacuum level of the venturi.

Air-Economizing Function
The CVK and CEK integrated vacuum generators have the capacity to minimize air consumption by utilizing the built in check valve. Once a predetermined vacuum level has been achieved (with a non-porous application) , the check valve can maintain the vacuum level within the system. The hysteresis feature of the vacuum sensor can maintain the vacuum level of the system indefinitely when properly wired to the vacuum solenoid pilot valve.

N.C. Output 1 - Air Economizing
N.O. Output 2 - Part Present Output



__B__

Blow-off Needle
This is a flow adjustment supplied on integrated units to control the flow rate of the blow-off release.

Blow-off Time
The amount of time required to break the vacuum and release the product in a pick and place application. This is signal controlled by the PLC or by the MVS-201 sensor.

Blow-off Release Master Valve
This is a shuttle valve that works by differential forces which is piloted by a 2-3 valve. This valve is always configured normally closed.

Blow-off Needle
This is a flow adjustment supplied on integrated units to control the flow rate of the blow-off release.

Blow-off Time
The amount of time required to break the vacuum and release the product in a pick and place application. This is signal controlled by the PLC or by the MVS-201 sensor.

__E__

Emergency Stop
Emergency stop conditions for factory automation; this is an external override condition that is usually activated by the machine operator to temporarily shut the equipment down. The relevance to vacuum is the ability of the vacuum equipment to maintain the last output state of the control circuit. This feature would prevent part loss during this event as a normally closed system could maintain the current vacuum state without the presence of power.

Electrical Connections
Pilot valves for all integrated generators are 24VDC. The basic connectors for these valves are described as push in clip type (L) or DIN type (D). All electronic connections include LED and surge suppression.

__F__

Filtration
Filtration between the pad and generator is recommended. Regular maintenance of filters maintains the efficiency of the system.

__I__

Integrated Vacuum Generator
A vacuum venturi with integrated vacuum and blow-off release pilot valves built on the unit to minimize response times of the system. The unit may also incorporate filters, silencers, blow-off flow controls , and optional sensors.

__L__

Last Output State
During an emergency stop or power loss event, emergency stop circuits from Parker can maintain the current state of operation. This is referred to as maintaining the last output state from the system controls.

__P__

Part Present Signal
Each sensor has an available NPN / PNP output and can be used for numerous purposes. One of them is a part present signal that usually signifies that a preset output for a vacuum level has been achieved and it is safe to proceed. The accuracy and repeatability of this signal can be critical to high speed applications. False or dropped signals can interrupt the systems operations. Therefore, stable vacuum levels and output settings near the “part-off” vacuum level are critical.

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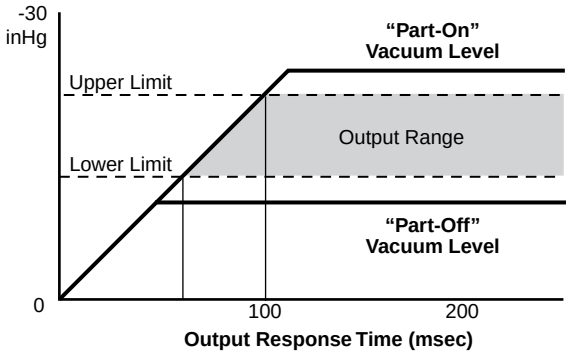
"Part-on" / "Part-off" Vacuum Differential

You must determine the highs and lows of the vacuum system in order to properly set the sensor outputs. Typically with venturi systems at fixed operating pressures, the maximum vacuum level is known. The "Part-off" vacuum level of the system must be determined by operating the system "open" while the sensor displays the level of vacuum in the system. This is known as the "Part/on" / "Part-off" differential in vacuum levels. Once this window of vacuum is known, the part present signal could be set in the middle between these vacuum levels. Ideally, it would be best if this window was a big as possible to avoid any issues with the sensors. Yet, sometimes by design or necessity, this window is very small or insignificant due to a high speed operation. To maximize the speed of the machinery, reduce the response time of the sensor output by setting the output around 1 inHg above the open vacuum level. The system response time is minimized and thus the "Part-on" / "Part-off" window is insignificant.



Power Loss

This refers to loss of electrical power supply to the system. Unlike other pneumatic components with safety features, loss of electrical power to a normally closed vacuum circuit could be catastrophic; possibly resulting in dropping the product. To prevent this situation, consider an E-stop circuit or a normally open vacuum circuit.

Pressure Sensor

A piezo resistive sensor used to monitor pressure levels in the system. The sensors supply NPN/PNP open collector transistor outputs back to the PLC for confirmation.

__R__

Response Time

The time to evacuate the air out of a closed system to a certain vacuum level. This is critical to the overall performance of the vacuum system.

Remote Sensing

Vacuum pressure confirmation and the speed of the output response is critical to high speed applications. To accomplish this, position pressure sensors near the suction cups to maximize "part-on/part-off" vacuum differential and reducing response times. These remote sensors can be then centrally programmed at a convenient location with the use of MPS-7 series CPU's.

__T__

Threads

NPT (National Pipe Taper)

BSPT (British Standard Pipe Taper)

BSPP (British Standard Pipe Parallel)

G (Gaus)

M (Metric)

NPS (Dry Seal American Standard Fuel Internal Straight Pipe)

__V__

Vacuum

Any reference to vacuum or negative pressures could be defined as a force applied to a closed system by the difference in the number of air molecules within a chamber, enclosure, piping system, etc. to the number of air molecules outside of these systems or enclosures. The outside atmospheric pressure is larger and applies a force to the lesser pressures in the systems or enclosures. Therefore, vacuum is a differential pressure whereby atmosphere is the reference and external force.

Vacuum Confirmation

Term used to describe an output signal npn/pnp from the sensor to the PLC when the suction cup has made a proper seal with the product before transfer. This verifies that the vacuum level is safe to proceed.

Vacuum Flow

Represented as SCFM, this is the rate at which air molecules can be evacuated through a venturi system.

Vacuum Generator

This is sometimes referred to as an ejector. The venturi generates vacuum with compressed air by evacuating air molecules from a closed system.

Vacuum Release Pilot Valve

Also referred to as Discharge valve, this valve pilots the Blow-off release master valve to effectively release the product during pick and place applications. This function is essential to high speed applications.

Vacuum Master Valve

This is a shuttle valve that works by differential forces which is piloted by a 2-3 valve. This valve can be configured normally closed or open.

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Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft³ * to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
MCA07HS	70	0.80	9.6	21.2	35.0	55.9	87.6	130.5	182.2	262.4	—
MCA10HS	70	1.68	5.1	11.0	18.0	28.2	41.0	58.2	83.1	123.2	—
MCA13HS	70	2.81	3.7	7.3	12.0	19.5	28.5	39.8	58.5	104.2	—
CV05HS	70	0.46	24.3	57.3	101.0	160.5	231.1	305.1	433.1	597.7	—
CV05LS	70	0.46	11.0	23.4	40.0	64.4	110.2	—	—	—	—
CV10HS	70	1.55	4.8	9.9	16.0	24.9	35.9	51.4	77.4	117.5	226.0
CV10LS	70	1.55	3.7	7.6	13.0	20.3	33.1	—	—	—	—
CV15HS	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1
CV15LS	70	3.53	2.0	3.1	5.0	7.6	12.1	—	—	—	—
CV20HS	70	6.36	1.7	2.8	5.0	6.5	9.0	13.0	18.9	27.4	60.7
CV20LS	70	6.36	1.3	2.5	4.0	5.9	11.3	—	—	—	—
CV25HS	70	9.36	1.4	2.3	3.0	4.5	6.5	9.0	13.0	18.9	35.3
CV25LS	70	9.36	1.0	2.0	3.0	3.7	5.6	—	—	—	—
CV30AHS	70	13.60	1.1	2.0	2.8	3.5	4.8	6.8	9.6	16.7	29.1
CV30ALS	70	13.60	0.9	1.5	2.7	3.4	5.1	—	—	—	—
CV10HSCK	70	1.55	4.8	9.9	16.0	24.9	35.9	51.4	77.4	117.5	226.0
CV10LSCK	70	1.55	3.7	7.6	13.0	20.3	33.1	—	—	—	—
CV15HSCK	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1
CV15LSCK	70	3.53	2.0	3.1	5.0	7.6	12.1	—	—	—	—
CV20HSCK	70	6.36	0.7	2.8	5.0	6.5	9.0	13.0	18.9	27.4	60.7
CV20LSCK	70	6.36	1.1	2.0	3.0	3.7	5.6	—	—	—	—
CV15HSVR	70	3.53	2.5	4.8	7.0	11.0	15.5	22.0	31.9	46.6	112.1
CHF10	80	3.3	0.45	1.48	3.39	8.26	15.47	23.31	38.78	66.96	189.22
CHF20	80	6.5	0.21	0.64	1.70	4.03	7.63	11.65	19.28	33.48	94.50
CHF30	80	9.6	0.21	0.63	1.27	3.39	6.36	9.53	16.10	27.76	78.82
CHF40	80	14.0	0.17	0.42	1.27	2.33	4.03	5.93	9.75	16.95	47.67

* 1 ft^3 = 28.31 liters

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Vacuum Flow (SCFM)

Nozzle Diameter	nHg										
	0	3	6	9	12	15	18	21	24	27	30
MCA07HS	.41	.37	.32	.27	.22	.18	.14	.10	.06	—	—
MCA10HS	.88	.78	.68	.58	.47	.37	.26	.16	.06	—	—
MCA13HS	1.26	1.11	.96	.81	.67	.53	.39	.25	.11	—	—
CV05HS	.21	.19	.17	.15	.13	.11	.09	.07	.05	.03	—
CV05LS	.32	.27	.22	.17	.12	.06	—	—	—	—	—
CV10HS	.95	.85	.75	.65	.55	.45	.35	.25	.15	.05	—
CV10LS	1.27	1.05	.83	.59	.38	.17	—	—	—	—	—
CV15HS	2.22	1.98	1.74	1.50	1.26	1.01	.76	.51	.26	.10	—
CV15LS	3.35	2.79	2.23	1.67	1.10	.53	—	—	—	—	—
CV20HS	3.88	3.45	3.02	2.59	2.16	1.73	1.30	.87	.44	.25	—
CV20LS	5.85	5.09	4.03	2.97	1.91	.85	—	—	—	—	—
CV25HS	5.65	5.11	4.57	4.03	3.49	2.94	2.39	1.85	1.31	.77	—
CV25LS	8.83	7.29	5.75	4.21	2.67	1.13	—	—	—	—	—
CV30AHS	7.94	7.16	6.38	5.62	4.84	4.06	3.28	2.50	1.17	.92	—
CV30ALS	12.36	10.24	8.12	6.00	3.89	1.48	—	—	—	—	—
CV10HSCK	.95	.85	.75	.65	.55	.45	.35	.25	.15	.05	—
CV10LSCK	1.27	1.05	.83	.59	.38	.17	—	—	—	—	—
CV15HSCK	2.22	1.98	1.74	1.5	1.26	1.01	.76	.51	.25	.10	—
CV15LSCK	3.35	2.79	2.23	1.67	1.10	.53	—	—	—	—	—
CV20HSCK	3.88	3.45	3.02	2.59	2.16	1.73	1.30	.87	.44	.25	—
CV20LSCK	5.85	5.09	4.03	2.97	1.91	.85	—	—	—	—	—
CV15HSVR	2.22	1.98	1.74	1.5	1.26	1.01	.76	.51	.25	.10	—
CHF10	12.50	7.24	4.69	2.29	1.63	1.27	0.85	0.49	0.21	0.03	—
CHF20	20.90	12.12	7.88	3.85	2.76	2.12	1.45	0.81	0.35	0.04	—
CHF30	26.30	15.27	9.89	4.84	3.46	2.68	1.83	1.02	0.42	0.05	—
CHF40	31.80	18.50	12.00	5.90	4.20	3.30	2.30	1.30	0.60	0.06	—

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Evacuation Time

Series / Nozzle Diameter	Air Supply Pressure PSI	Air Consumption SCFM	Evacuation Time in sec / ft³ * to reach different Vacuum Levels (inHg)								
			3	6	9	12	15	18	21	24	27
MC207HS	70	0.79	11.0	25.1	42.0	66.4	96.3	135.6	187.3	275.4	—
MC210HS	70	1.55	5.4	12.1	20.0	32.2	52.0	85.0	120.1	183.9	—
CVR213HS	70	2.65	3.1	7.3	12.0	18.1	26.8	39.5	57.6	84.5	174.0
CVK15HS	70	3.53	2.3	4.8	8.0	12.4	18.4	26.3	40.4	62.1	189.3
CVK15LS	70	3.53	1.1	2.8	5.0	9.3	16.7	—	—	—	—
CVK20HS	70	6.36	1.1	2.5	5.0	7.6	12.1	18.6	29.9	53.4	129.9
CVK20LS	70	6.36	0.8	2.3	4.0	7.6	15.5	—	—	—	—
CVK27HS	70	10.42	0.6	2.0	3.0	5.6	8.5	13.3	21.2	42.1	—
CEK15HS	70	3.53	2.3	4.8	8.0	12.4	18.4	26.3	40.4	62.1	189.3
CEK20HS	70	6.36	1.1	2.5	5.0	7.6	12.1	18.6	29.9	53.4	129.9
CEK27HS	70	10.42	0.6	2.0	3.0	5.6	8.5	13.3	21.2	42.1	—
CVXCEK	70	10.42	0.6	2.0	3.0	5.6	8.5	13.3	21.2	42.1	—

* 1 ft³ = 28.31 liters

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Vacuum Flow (SCFM)

Nozzle Diameter	nHg										
	0	3	6	9	12	15	18	21	24	27	30
MC207HS	.40	.36	.32	.28	.24	.20	.15	.11	.07	—	—
MC210HS	.71	.64	.57	.49	.42	.34	.25	.17	.10	—	—
CVR213HS	1.30	1.15	1.00	0.87	0.72	0.57	0.43	0.29	0.15	—	—
CVK15HS	2.51	2.23	1.95	1.67	1.39	1.12	.85	.58	.30	—	—
CVK15LS	3.67	3.02	2.37	1.72	1.06	.40	—	—	—	—	—
CVK20HS	3.75	3.34	2.93	2.50	2.12	1.70	1.28	.86	.44	—	—
CVK20LS	5.61	4.61	3.60	2.60	1.60	.60	—	—	—	—	—
CVK27HS	5.75	5.09	4.43	3.77	3.11	2.45	1.80	1.15	.50	—	—
CEK15HS	2.51	2.23	1.95	1.67	1.39	1.12	.85	.58	.30	—	—
CEK20HS	3.75	3.34	2.93	2.50	2.12	1.70	1.28	.86	.44	—	—
CEK27HS	5.75	5.09	4.43	3.77	3.11	2.45	1.80	1.15	.50	—	—
CVXCEK	5.75	5.09	4.43	3.77	3.11	2.45	1.80	1.15	.50	—	—

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Notes

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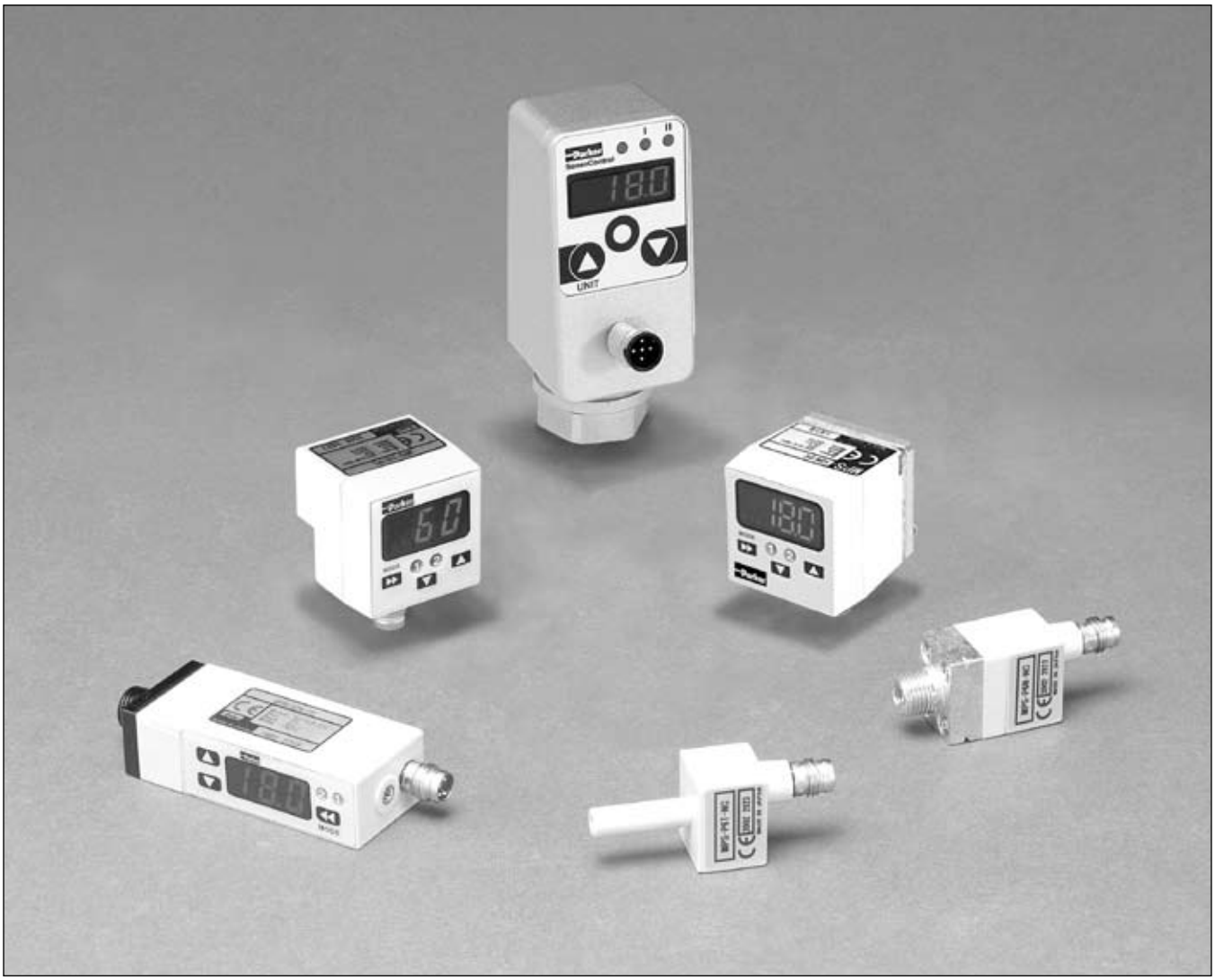
Pressure Sensors

Section C

www.parker.com/pneu/sensors



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Pressure Unit Table

Units	Units								
	Pa	**bar**	**PSI**	**kgf/cm²**	**atm**	**mm H_2O**	**in H_2O**	**mm Hg**	**in Hg**
Pa	1	10^{-5}	$0.145x10^{-3}$	$1.0197x10^{-5}$	$0.987x10^{-5}$	0.10197	$0.402x10^{-2}$	$0.750x10^{-2}$	$0.295x10^{-3}$
bar	10^{5}	1	14.5038	1.01972	0.98692	10197.16	401.46	750.062	29.53
PSI	6894.76	0.06895	1	0.07031	0.6805	703.07	27.68	51.715	2.036
kgf/cm²	98066.5	0.9807	14.2233	1	0.96784	10000	393.70	735.56	28.96
atm	$1.013x10^{-5}$	1.01325	14.696	1.03323	1	10332	406.77	760	29.92
mm H_2O	9.807	$0.098x10^{-3}$	0.00142	0.0001	$0.097x10^{-3}$	1	0.0394	0.07355	$0.29x10^{-2}$
in H_2O	249.09	$0.249x10^{-2}$	0.0361	0.00254	$0.246x10^{-2}$	25.4	1	1.868	0.07355
mm Hg	133.322	0.00133	0.01934	0.00136	0.00132	13.5951	0.535	1	0.0394
in Hg	3386.4	0.03378	0.4912	0.0345	0.03353	345.32	13.589	25.4	1

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	Pressure Range	Output Type	Media	Maximum IP Rating	Hysteresis Output Mode Adjustment	Output Setting	Display	Page Number
Technical Data								C4 - C7
MPS-2 	0 to -30 inHg -14.7 to 72.5 PSI	(2) NPN / PNP	Air, Non-Corrosive Gas	65	Variable, 100% F.S.	Push Button	LED Display (Red)	C8 - C13
MVS-201 	0 to -30 inHg -14.7 to 72.5 PSI	(1) NPN / PNP	Air, Non-Corrosive Gas	40	Variable, 100% F.S.	Push Button	LED Display (Red)	C14 - C21
MPS-32 	0 to -30 inHg 0 to 145 PSI	(2) PNP or (1) NPN with Analog	Air, Non-Corrosive Gas	50	Variable, 100% F.S.	Push Button	LED Display (Red / Green)	C22 - C27
MPS-6 	0 to -30 inHg 0 to 14.7 PSI 0 to 145 PSI	(1) NPN / PNP or (1) Analog	Air, Non-Corrosive Gas	40	—	Trim Pot	—	C28 - C31
MPS-7 	Remote Panel: Use with MPS-5,6,8	71: (2) NPN / PNP Analog Option 74: (1) NPN / PNP	—	40	Variable, 100% F.S.	Push Button	LED Display (Red)	C32 - C39
MPS-8 	0 to -30 inHg -14.7 to 72.5 PSI	(1) NPN / PNP or (1) Analog	Air, Non-Corrosive Gas	40	Fixed, < 2% F.S.	Trim Pot	—	C40 - C43
SCPSD 	-14.7 PSI to 250 PSI 0 to 1000 PSI 0 to 2000 PSI 0 to 3000 PSI 0 to 5000 PSI 0 to 9000 PSI	(1 or 2) PNP Analog Option	Non-Corrosive to 316L SUS	67	Variable, 100% F.S.	Push Button	LED Display (Red)	C44 - C49
Accessories								C50-C51
Programming Symbols Legend								C52
Glossary								C53-C56

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Selecting the Proper Pressure Sensor

Selecting a Parker Pressure Sensor for an application is more than just selecting the correct operating range of the sensor. Electromechanical pressure sensors convert the applied pressure to an electrical signal. When pressure is applied, the diaphragm is deflected causing the diffused resistors to change resistance (piezoelectric effect), which yields an electrical signal proportional to the pressure change. Applications for pressure switches are numerous and important in today's high-tech manufacturing environment. Parker Pressure Sensors are solid state sensors and not mechanical switches. The outputs are either analog (1 –5vc, 4-20ma or 0-20ma) or PNP/NPN Open Collector Transistor Type Outputs. The application will determine if the Open Collector Output is used in a Hysteresis or Window Comparator Function. The output mode of the sensor, as well as whether the sensor is normally open (non-passing) or normally closed (passing), can be programmed by you to fit your application. In addition to electrical outputs, most of these sensors have additional programming options that can be integrated into the system logic for additional benefits. These programming options are listed at the bottom of the page and are detailed on the next pages. Choose the best Pressure Sensor for the application based on Pressure Range, Output Type and additional programming options.

Programming Options

Programming Options	MPS 2	MVS 201	MPS 32	MPS 6	MPS 71	MPS 74	MPS 8	SCPSD
Outputs Change N.O. / N.C.	✔	✔	✔	✔	✔	✔	✔	✔
Units of Measure change	✔	✔	✔		✔	✔		✔
EZY Mode	✔				✔			
Hysteresis Mode	✔	✔	✔	✔	✔	✔	✔	✔
Window Comparator Mode	✔		✔		✔	✔		
Auto Teach Mode	✔		✔		✔			
Auto Surveillance Mode	✔		✔		✔			
Display Refresh Settings	✔		✔		✔			✔
Output Response Time	✔		✔		✔			✔
Display Peak / Bottom Difference Value	✔		✔		✔			✔
Special Display Features	✔		✔		✔			
Lockout Option	✔	✔	✔		✔	✔		
Peak Value at a Touch	✔		✔		✔			
Bottom Value at a Touch	✔		✔		✔			
Zero Reset	✔	✔	✔		✔			✔
Red / Green LED Display Options			✔					
Peak Surveillance Mode			✔			✔		
Energy Savings Mode	✔	✔			✔	✔		✔
Scan Mode						✔		
Password Lockout								✔
Error Output Mode								✔
Setting of Decimal Point								✔
Air Conservation / Blow-Off Timer		✔						
Vacuum Timer Option		✔						
Signal Controlled Vacuum		✔						
Blow-off Activation Timer		✔						
Blow-off Timer		✔						
Vacuum Confirmation Signal		✔						
Blow-off Confirmation Signal		✔						
Peak Vacuum Error Message		✔						
Vacuum Response Error Message		✔						
Blow-off Time Error Message		✔						

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Programming Options:

Outputs Change N.O. / N.C.

Pressure Sensor output function can be changed in the field. The status of the Output at 0 PSIG is either Normally Open (Non-Passing) or Normally Closed (Passing).

Units of Measure

Pressure Sensors have the option of displaying system pressure on an 8-segment LED display. The units of measure on the display can be changed to suit the application. Some choices are PSI, inHg, Bar, Kpa, Mpa or mmHg and are dependent on the pressure range of the sensor.

EZY Mode

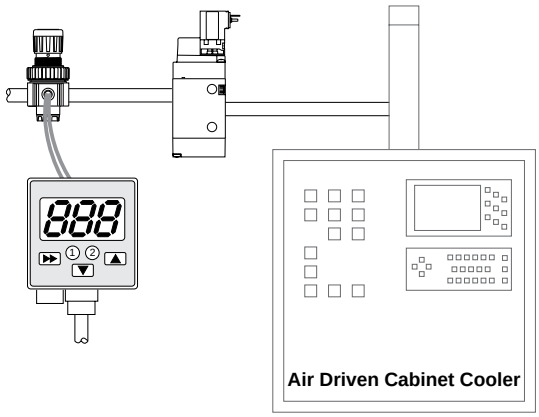
Allows the user to adjust the set points of the pressure sensor while all other programming options are locked out.

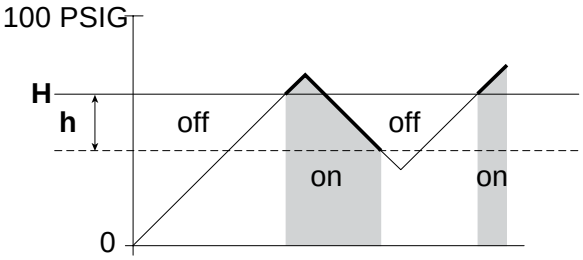
Hysteresis Mode

This output mode provides one switch point (H) and a hysteresis pressure adjustment (h). When the switch point pressure is achieved, the output (NPN / PNP) is activated if normally open or deactivated if normally closed. Typically, this mode is used for pressure confirmation. For positive pressure applications, this operating mode does not provide any output or alarms beyond the switch point in the case of excessive pressures.

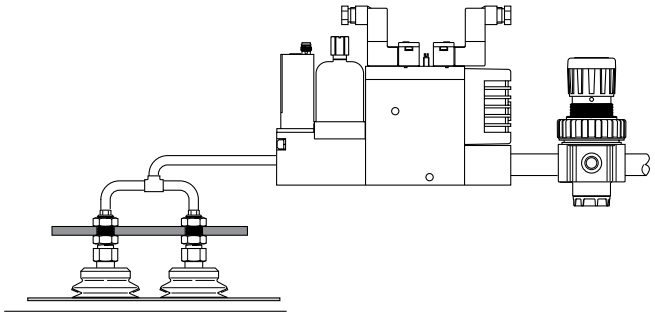
The hysteresis setting **(h)** is the difference in pressure below the switch point pressure which controls the on / off status of the output.

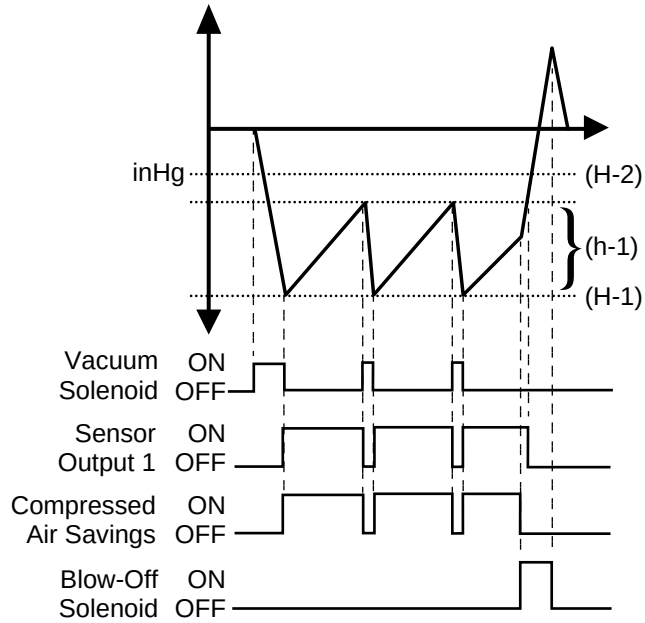
In the Air Driven Cabinet Cooler application below, H=10 PSIG, h=2 PSIG The unit will function properly above 10 PSIG and given some pressure variations, the sensor output will remain “on” until 8 PSIG. Below 8 PSIG the output will change to “off”, which will be an indication that the cabinet is not being cooled efficiently or not at all.





Some Pressure Sensor have 2 independent outputs. In nonporous Vacuum Applications, these outputs can be set to Hysteresis Mode to conserve compressed air, which reduces operating expense and noise level. In these Air Economizing applications, H-2 is used for part presence signal and H-1 is used to turn off the vacuum system. The system will turn back on when the degree of vacuum decreases to a level of H-1 minus h-1. The vacuum solenoid valve toggles “on and off” while maintaining a degree of vacuum above H-2.





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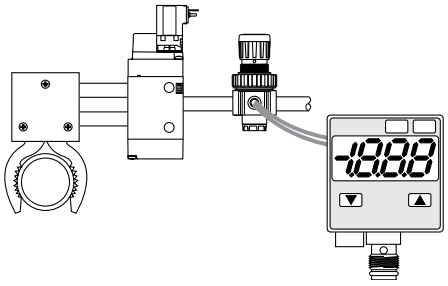
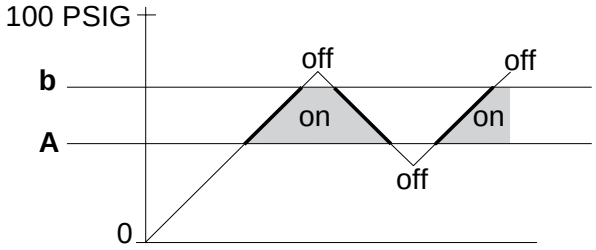
Window Comparator Mode

This output mode provides two switch points **(A)** and **(b)** that control the output signals (NPN / PNP) between the two pressures. This creates a “window” of operation and is sometimes referred to as “high / low” setting. The Window Comparator Mode provides an output or alarm when pressures exceed the upper or lower limit.

The sensor in the below application monitors the pressure to the valve controlling a pneumatic gripper. If the pressure is below **(A)**, the gripper may not have enough holding capacity for the application and the part could drop. If the pressure is above b, the gripper may excerpt too much force on the part and damage the part. If the pressure is in the window of operation, in-between **(A)** and **(b)**, the application is within design specification.





Auto Teach Mode

Programming feature that automatically sets switch points during the vacuum cycle.

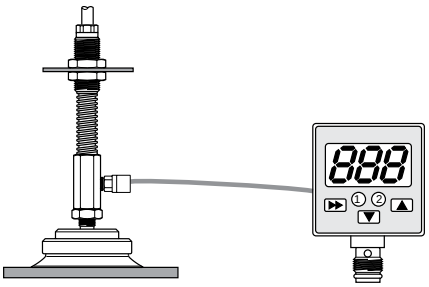
Sets Output 1 to Hysteresis Mode and Output 2 to Window Comparator Mode. 60% of maximum vacuum level displayed during setup operation of the system.

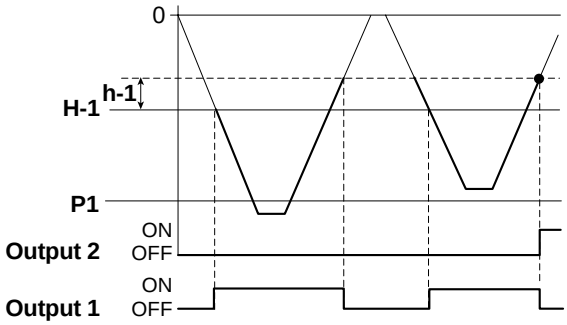
Auto Surveillance Mode

The Auto Surveillance Mode is a failure prediction indictor. The Sensor automatically surveys vacuum cycle to determine if the Peak Vacuum Level was attained after H-1. Output 2 changes state if the Peak Vacuum Level of the system is not reached over a consecutive number of surveillances programmed. Peak Vacuum Level and number of surveillances are programmed at the end of the Automatic Teach Mode.

During a vacuum pick and place application, H-1 is part presence signal and P-1 is the peak degree of vacuum of the system. P-1 is automatically set in Automatic Teach Mode to a level of 80% of the maximum degree of vacuum the system. P-1 can be changed in the field to suit the application parameters. During the automation cycle, vacuum is turned “on” and H-1 is obtained to indicate part present, then P-1 is obtained. Vacuum is turned off and the pressure is decreased to a level below H-1 minus h-1. This is a good cycle because P-1 was obtained before the pressure sensor measured H-1 minus h-1. A bad cycle is determined when H-1 is obtained and P-1 is not measured before H-1 minus h-1 is measured. In a bad cycle, the second output of the sensor is turn “on” for 3 seconds. The sensor can monitor from 1 to 100 cycles. If set to 100 cycles, the sensor records each cycle up to 100 cycles or until P-1 is obtained. Once P-1 is obtained, the sensor resets itself. If P-1 is not obtained over 100 consecutive cycles, output 2 will be turned on for 3 seconds. It will reset after the output is turned on and repeat as programmed.

The sensor is used for preventative maintenance with an output to a PLC. The vacuum cycle is still obtaining H-1, but the peak degree of vacuum the system is decreasing over time. Without Auto Surveillance, the peak degree of vacuum can decrease to a point of dropping a part or to a degree that H-1 is not obtained. Both events can cause machine downtime.





Display Refresh Settings

The LED display is refreshed every 0.1 seconds. If the pressure is changing to quickly for the human eye to see, the display refresh time can be changed from 0.1 to 3 seconds. This will dampen the display but will not affect the output response time of the pressure sensor.

Output Response Time

Output response time is the time it takes for the output signal to change state after the pressure switch point is achieved. Sensor response time is typically less than 2.0 milliseconds. In some applications, pressure spikes that are faster than the actual mechanical application response time of the system can cause erroneous changes in the sensor outputs. The output response time of the sensor can be changed by a multiple of 2, 32, 256, or 512. The response time of 2 milliseconds can be changed to a high point of 2 x 512, or 1.24 seconds.

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Display Peak / Bottom Difference Value

Display LED's indicate the current pressure of the system. The sensor can be programmed to indicate just the Peak (High), Bottom (Low) or the Difference Pressure of these pressures over a specific time period. The time period can be set from 2 to 99 seconds. Ever try to read a pressure gauge in a high cyclic application? Using the Peak Value or Bottom Value over time will show you just the High or Low Value over a specific time period. Difference Value can be used to determine if the pressure drop of the system is becoming to excessive which can slow the response time of the systems.

A gauge with a needle changing between 70 and 57 psi is indicating a dynamic pressure drop. The sensor can be set to display only the difference value of 13 psi. Visually monitoring the system becomes easier. If the display value is too high, then there is too much pressure drop in the system. Display value settings do not affect the sensor output functions.

Special Display Features

The LED display can be programmed with respect the status of the outputs. For example, when the output is closed, the LED can be blinking, or turned "ON". If it is open, the LED display can be turned off or crossed out. This can be visual alert to the status of the output and the pressure of the system.

Lockout Option

All sensor programming is locked out. Programming or LED Display cannot be changed when the sensor is locked out.

Peak Value at a Touch

With a touch of the Up Arrow Button, the maximum pressure that the sensor has measured since power was applied to the sensor will be displayed. This is a great help in machine set-up. Run the machine, open the safety guard and determine the maximum pressure of the system cycle. In Vacuum Applications, the sensor will display the Peak Degree of Vacuum. This can be used for trouble shooting and machine set-up.

Bottom Value at a Touch

With a touch of the Down Arrow Button, the minimum pressure that the sensor has measured since power was applied to the sensor will be displayed.

Zero Reset

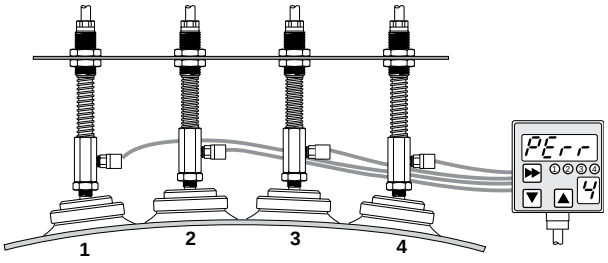
Just like a pressure gauge, a pressure sensor measures the system pressure in relation to the atmospheric pressure. Pressure Sensors can be calibrated to the current atmospheric pressure by using the Zero Reset Function.

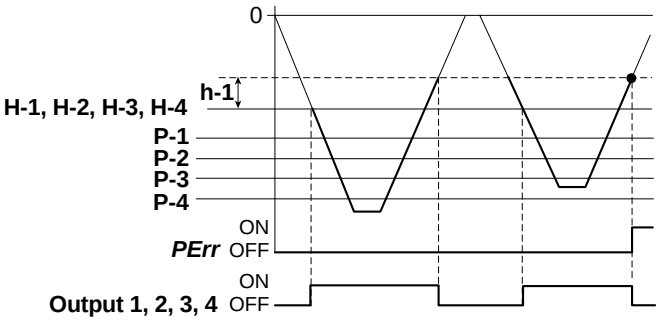
Red / Green LED Display Options

Display LED's change from Red to Green, or Green to Red when the output changes state. These 11mm LED's give a clear Green (GO) or Red (STOP) indication. In window comparator mode, if the system pressure is between the High and the Low pressure, everything is OK – LED Green. If the pressure is out of the "window" the sensor will change the output status and change the color of the Sensor LED from Green to Red.

Peak Surveillance Mode

Peak Surveillance Mode is very similar to Auto Surveillance Mode. Instead of an output being turned "on" for 3 seconds, the LED display will change from indicating current pressure to the blinking error code of *PErr*. In the below application, the MPS-74 display unit has 4 independent sensors attached to the unit. This provides 4 independent outputs to the PLC for part present signal on all 4 cups. If Peak Degree of vacuum is not obtained for one of the remote sensors, the MPS-74 display will change to the specific channel to indicate which cup did not obtain peak degree of vacuum and blink *PErr*. This allows maintenance to trouble shoot one-cup line instead the whole vacuum system.





Energy Savings Mode

Turning off the LED display will conserve power. By touching a button, the LED display is active and indicates current pressure of the system, but will turn off automatically.

Scan Mode

This is specific to the MPS-74 Sensor which can have up to 4 remote pressure sensors connected to the back of the unit. In scan mode, the sensor displays the pressure from one of the sensors for 3 seconds, and then switches to the next sensor and repeats.

Password Lockout

Lockouts the sensor from any programming changes. To unlock the sensor a user programmed 4 digit code must be entered into the sensor. This can be reset along with all programming of the sensor.

Error Output Mode

Switch Output can be used optionally as an error output to display pressure switch function errors. As an error output it is normally closed, and in case of errors (*Err 1, Err 2, Err 3*) it is open. At the same time LED II lights up. The display and the output remain active until the error is cleared.

Setting of Decimal Point

Depending on the units of measure, the decimal point can be adjusted up to three decimal points.

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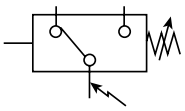
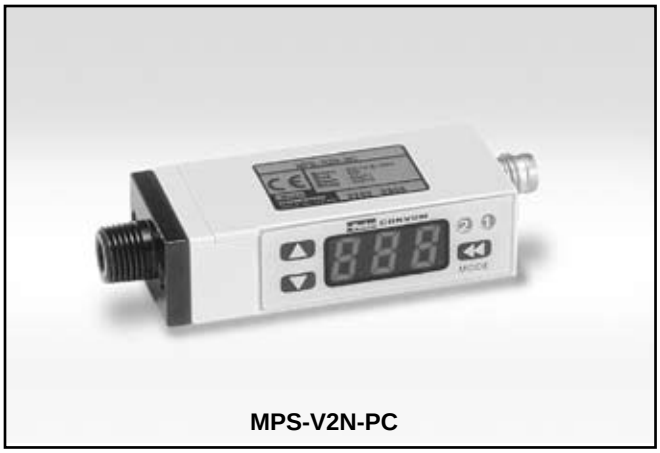
MPS-2





MPS-V2N-PC

Features

- **Pressure Ranges:**
  Vacuum Pressure ..... 0 to -30 inHg
  Compound Pressure .....-14.7 to 72.5 PSI
- **Sensor Outputs:**
  2 NPN or PNP Open Collector Transistor Output , 30VDC, 125mA
- **Hysteresis or Window Comparator Mode**
- **4 Selectable Units of Measure**
  (mmHg, -bar, -kPa, inHg)
  (kgf/cm², PSI, bar, kPa)
- **Output Response Time Less Than 2.0 Milliseconds**
- **CE Marked**
- **Air and Non-Corrosive Gases**
- **Error Message**

MPS-2 Programming Options

Outputs Change N.O. / N.C.	✔
Units of Measure change	✔
EZY Mode	✔
Hysteresis Mode	✔
Window Comparator Mode	✔
Auto Teach Mode	✔
Auto Surveillance Mode	✔
Display Refresh Settings	✔
Output Response Time	✔
Display Peak / Bottom Difference Value	✔
Special Display Features	✔
Lockout Option	✔
Peak Value at a Touch	✔
Bottom Value at a Touch	✔
Zero Reset	✔
Red / Green LED Display Options	
Peak Surveillance Mode	
Energy Savings Mode	✔
Scan Mode	
Password Lockout	
Error Output Mode	
Setting of Decimal Point	

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MPS-2 Ordering Numbers

(Bold Items are Most Popular)

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	1/8 NPT*, Male, M5 Female	PNP Sourcing	4 Pin, M8	**MPS-V2N-PC**
		NPN Sinking		**MPS-V2N-NC**
-14.7 to 72.5 PSI		PNP Sourcing	4 Pin, M8	**MPS-R2N-PC**
		NPN Sinking		**MPS-R2N-NC**

* BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type
Example : MPS-V2N-PC (NPT) , MPS-V2G-PC (BSPP) or MPS-v2R-PC (BSPT)

Specifications

Pressure Range	Vacuum (V)		Compound (R)	
Units of Measure Display Resolution	bar:	0.001	bar:	0.01
	kPa:	0.1	kPa:	1
	mmHg:	1	kgf/cm^2:	0.01
	inHg:	0.1	PSI:	0.1
Media	Air and Non-Corrosive Gases			
Pressure Port	**(N)** 1/8" NPT			
Proof Pressure	**(V)** 72.5 PSI, **(R)** 116.0 PSI			
Operating Temperature	32 to 122°F (0 to 50°C)			
Storage Temperature	14 to 140°F (-10 to 60°C)			
Humidity	35 to 85% RH			
Electrical Connection	**(C)** 4-Pin, M8 Connector			
Power Supply	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection			
Display	3-Digit, 7-Segment LED			
Display Refresh	0.1 to 3.0 sec. (Factory set at 0.1)			
Output Circuit	NPN (Sinking) or PNP (Sourcing) Output, Open Collector Transistor 30VDC, 125mA			
Switch Output	2 Output Signals, NPN or PNP, Normally Open or Closed, LED Indicator			
Output Modes	Hysteresis or Window Comparator			
Response Time	< 2ms, with Programmable Increments 32, 128, 1024ms			
Repeatability	± 0.2% F.S.			
Thermal Error	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)			
General Protection	IP65 or IP40, CE Marked, EMC-EN55011 Class B, EN 50082-2			
Insulation Resistance	> 100M ohms at 500VDC			
Vibration Resistance	10 to 55Hz, 1.5mm, XYZ, 2 hrs.			
Shock Resistance	10 G, XYZ			
Material	**Housing:** Polycarbonate, **Pressure Port:** Zinc Die-cast			
Mass	1.58 oz. (45g)			

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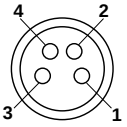
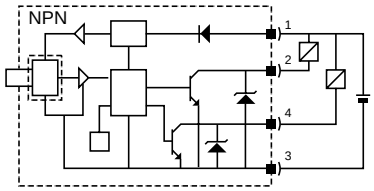
Sensor Pin Out

Pin #

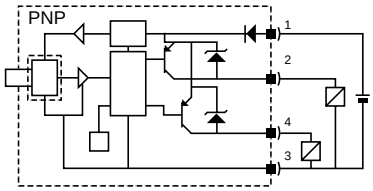
1 Brown: 24VDC
2 White: NPN / PNP Open Collector Output 2
3 Blue: 0VDC
4 Black: NPN / PNP Open Collector Output 1



Internal Circuit



NPN Sinking



PNP Sourcing

⚠ Cautions

The MPS-2 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

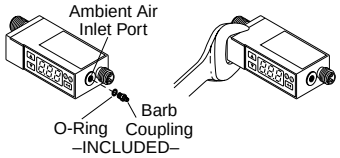
- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install as shown using the metal mounting base.
- To achieve IP65 rating, connect the o-ring and barb as shown to a normal environment with a 2mm I. D. tube.



Error Messages

Display	Description	Solutions
Err	Zero Reset Error	Reset Zero Below 3% of F.S.
Er1	System Error (Internal)	Contact Factory
Er2	Auto Teach Mode Error	Restart Function
CE1	Over current of Output 1	Load current exceeds maximum 125mA.
CE2	Over current of Output 2	
FFF –FF	Applied pressure exceeds pressure range	Apply pressures within the rating of the sensor

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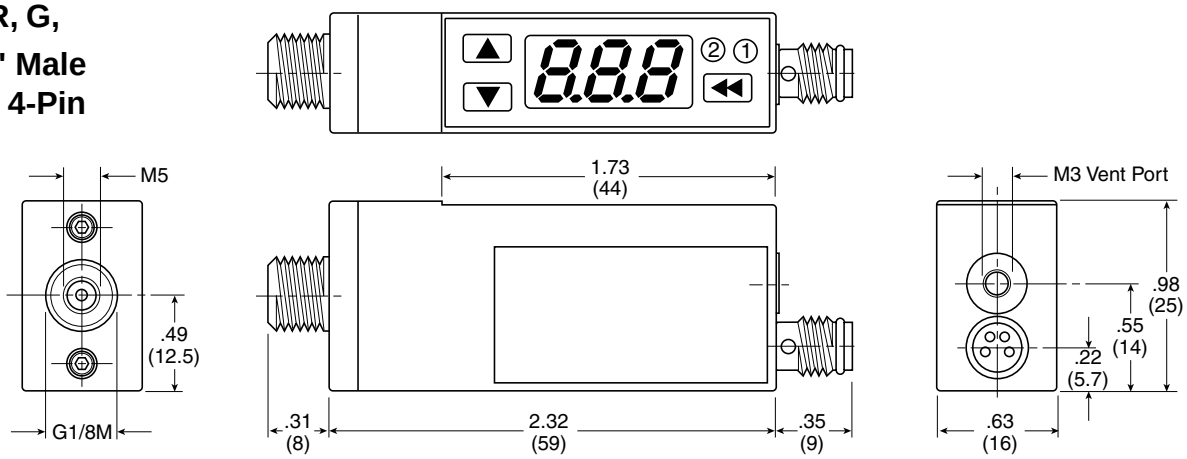
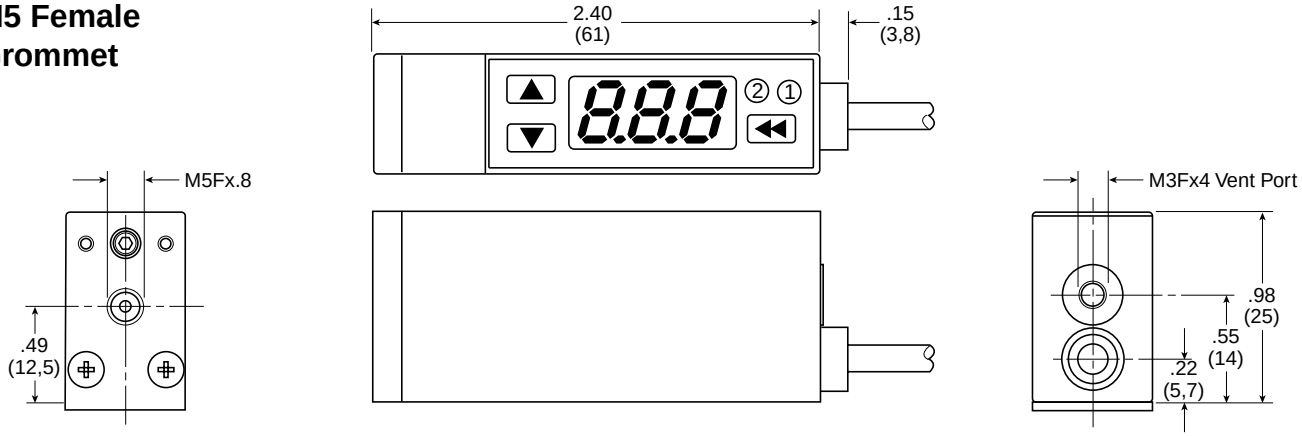
Dimensions

N, R, G, 1/8" Male M8, 4-Pin



M5 Female Grommet



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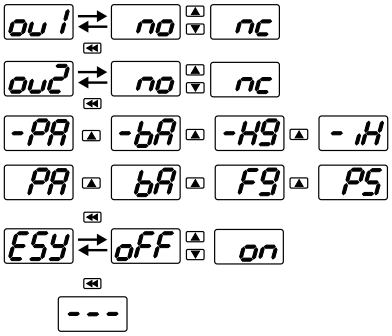
See page C52 for Symbol Explanation

1 Hold ◀◀
Press ▲ 1x

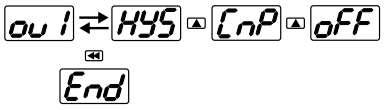
Output Set Open or Closed Selecting Units of Measure

Easy Mode Activation

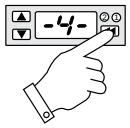


2 Press ◀◀ 2x

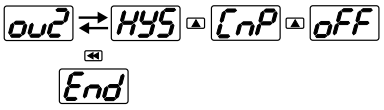
Output Mode 1 Hysteresis or Window Comparator



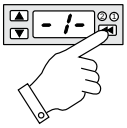
3 Press ◀◀ 4x



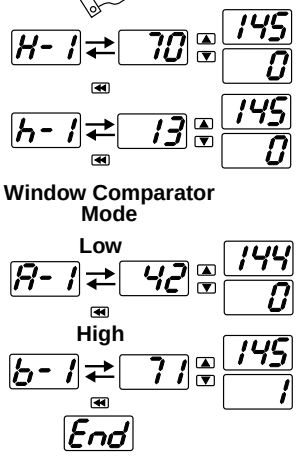
Output Mode 2 Hysteresis or Window Comparator



4 Press ◀◀ 1x

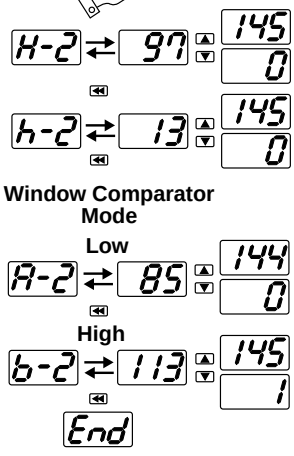


Output 1 Setting Hysteresis Mode



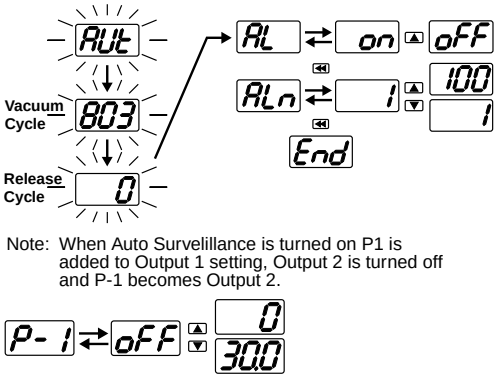
5 Press ◀◀ 3x

Output 2 Setting Hysteresis Mode



6 Press ◀◀ 5x

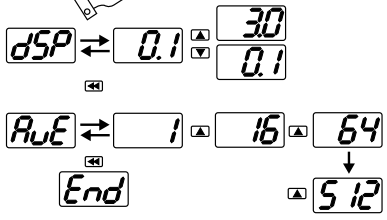
Automatic Teach Mode & Auto Surveillance



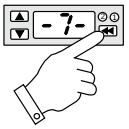
Note: When Auto Surveillance is turned on P1 is added to Output 1 setting, Output 2 is turned off and P-1 becomes Output 2.

7 Press ◀◀ 6x

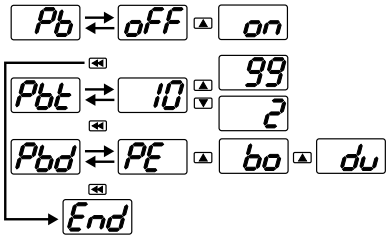
Display Refresh Settings / Output Response Time Interval



8 Press ◀◀ 7x

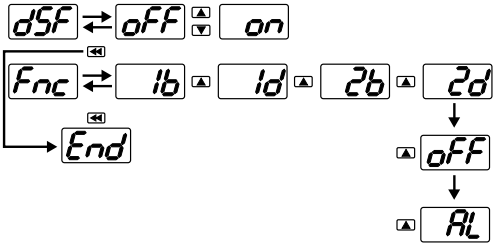


Display Peak Value Bottom Value or Their Difference

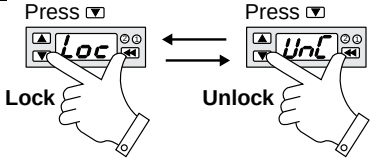


9 Press ◀◀ 8x

Special Display Features



10 Hold ◀◀
Press ▼

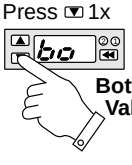


Hold ◀◀
Press ▼

11 Press ▲ 1x

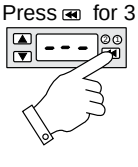
Peak Value

Press ▼ 1x

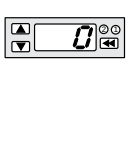


Bottom Value

12 Press ◀◀ for 3 Seconds



Zero Reset



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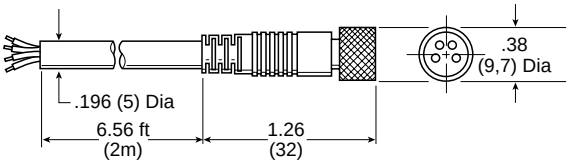
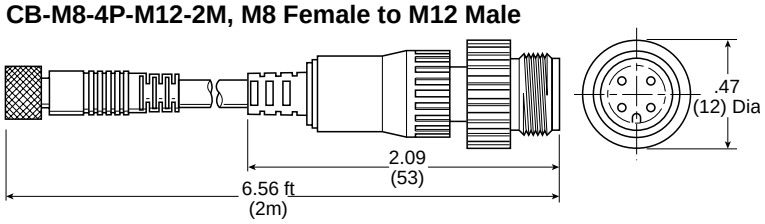
Accessories

Cables

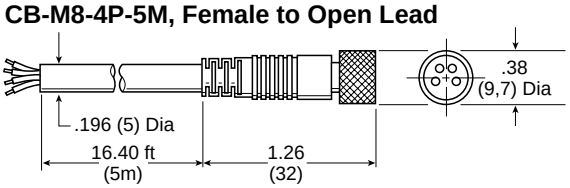
CB-M8-4P-2M, Female to Open Lead



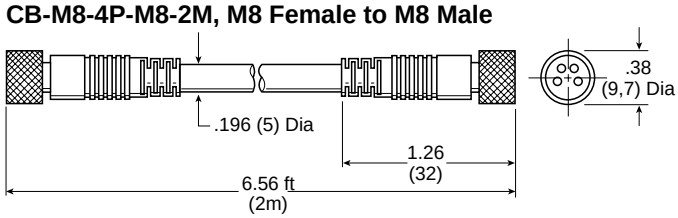
CB-M8-4P-M12-2M, M8 Female to M12 Male



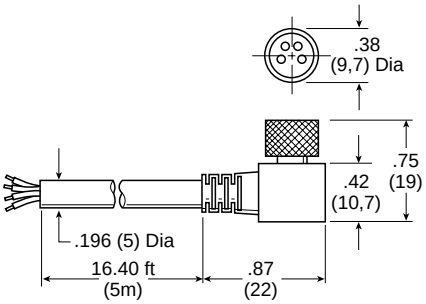
CB-M8-4P-5M, Female to Open Lead



CB-M8-4P-M8-2M, M8 Female to M8 Male

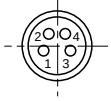


CB-M8-4P-5M-90, Female to Open Lead

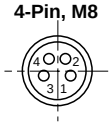


Pin Out Connection

Female Interface 4-Pin, M8

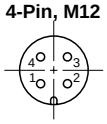


Male Interface 4-Pin, M8



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

Male Interface 4-Pin, M12



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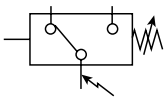
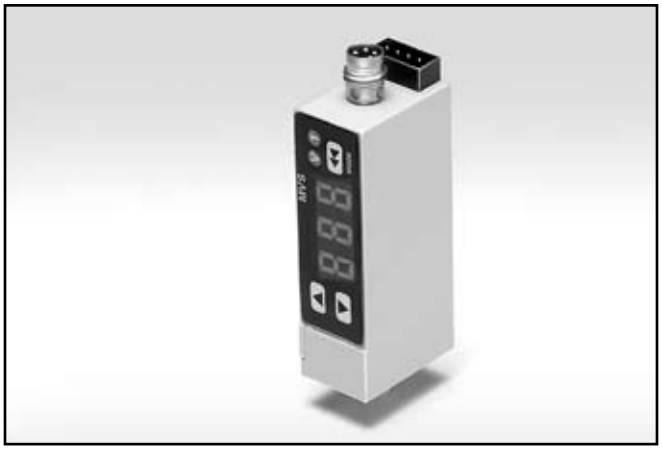
MVS-201

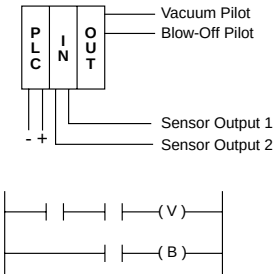


For use with MC2/CVR2/CVK Generators

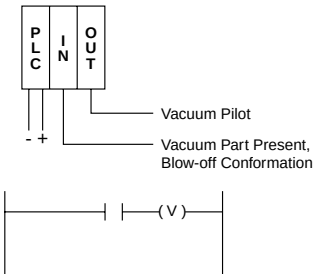


The MVS-201 is a winning combination with the MC2, CVR-2, and CVK vacuum generators. The MVS-201 automatically provides an output signal for the blow-off function without the need of an additional output from the PLC. Begin the vacuum cycle with an output signal from the PLC to the “201” sensor. The “201” sensor has one NPN or PNP output for vacuum confirmation and a control output that interfaces directly with the blow-off release pilot valve. With programmable time control features and a special chip driver, the sensor automatically activates the blow-off release when the NPN or PNP vacuum signal from the PLC is discontinued. This eliminates, THE PREVIOUSLY REQUIRED, PLC output to activate the blow-off release This new technology eliminates PLC output requirements by 50% and reduces installation to a simple 4 wire system by wiring the sensor only. There are 3 modes of operation for various applications. The output response time of the sensor is less than 2.5 msec. Peak limit prevention maintenance feature is automatically recorded internally.

Basic PLC System



PLC System with 201 Sensor



Features

- **Pressure Range:**
  Compound Pressure .....-14.7 to 72.5 PSI
- **Time Controlled Sensor**
- **Intelligent Simple 4-wire System**
- **Eliminate I/O for Release Valve**
- **2 Functions with One Rung of Code**
- **Automatic Timer (0-9.9 sec.) Function by Sensor Control Driver for Vacuum Generating and Release Valves**
- **Peak Value Preventative Maintenance Confirmation**
- **Response Time Less Than 2 Milliseconds**
- **CE Marked**

MVS-201 Programming Options

Outputs Change N.O. / N.C.	✔
Units of Measure change	✔
EZY Mode	
Hysteresis Mode	✔
Window Comparator Mode	
Auto Teach Mode	
Auto Surveillance Mode	
Display Refresh Settings	
Output Response Time	
Display Peak / Bottom Difference Value	
Special Display Features	
Lockout Option	✔
Peak Value at a Touch	
Bottom Value at a Touch	
Zero Reset	✔
Red / Green LED Display Options	
Peak Surveillance Mode	
Energy Savings Mode	✔
Scan Mode	
Password Lockout	
Error Output Mode	
Setting of Decimal Point	
Air Conservation / Blow-Off Timer	✔
Vacuum Timer Option	✔
Signal Controlled Vacuum	✔
Blow-off Activation Timer	✔
Blow-off Timer	✔
Vacuum Confirmation Signal	✔
Blow-off Confirmation Signal	✔
Peak Vacuum Error Message	✔
Vacuum Response Error Message	✔
Blow-off Time Error Message	✔

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MVS-201 Ordering Numbers

(Bold Items are Most Popular)

Pressure Range	Output Circuit	Input Circuit	Electrical Connector *	Part Number
-14.7 to 72.5 PSI	PNP Sourcing	NPN Sinking	4 Pin, M8	MVS-201-PC
		PNP Sourcing		**MVS-201-PCP**
	NPN Sinking	NPN Sinking		**MVS-201-NC**
		PNP Sourcing		MVS-201-NCP

* Requires Sensor to Valve Electrical Connector

Note:
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).
Input Circuit controls vacuum solenoid valve (Output Signal from PLC).

Senor to Valve Electrical Connector

Generator Series	Sensor Connection	Valve Connection	Part Number
MC2	5 Pin Clip Type	2 with Clip Type	**MC2-C201G**
CVR2			**CVR2-C201G**
CVK		2 Wire Leads	**CVK-D201G**

Specifications

Pressure Range	**Compound (R)**
Units of Measure Display Resolution	bar: 0.01
	kPa: 1
	kgf/cm^2: 0.01
	PSI: 0.1
Media	Non-Lubricated Air and Non-Corrosive Gases
Proof Pressure	116.0 PSI
Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical Connection	**(C)** 4-Pin, M8 Connector
Power Supply	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection
Display	3-Digit, 7-Segment LED
Display Frequency	5Hz
Circuit	NPN (Sinking), PNP (Sourcing) Open Collector Transistor
Digital Output	Individually Selectable N.O. or N.C., max 125mA, 30V, with Overcurrent Protection
Mode	OP1, OP2, OP3 **Hysteresis:** 0 to 100% of Switch Point
Response Time	< 2ms
Repeatability	± 0.3% F.S.
Thermal Error	±0.2% F.S. in Temperature Range: 32 to 122°F (0 to 50°C)
General Protection	IP40, CE Marked, EMC-EN55011 Class B, EN50082-1
Current Consumption	< 45mA, < 25mA When Utilizing Screen Saver Option
Spike Protection	350 Vp, 1, µs
Dielectric Strength	1000 VAC 1 min.
Insulation Resistance	> 100M ohms at 500VDC
Vibration Resistance	10 to 55Hz, 1.5mm, XYZ, 2 hrs.
Shock Resistance	10 G, XYZ
Material	**Body:** Polycarbonate
Mass	1.7 oz. (45g)

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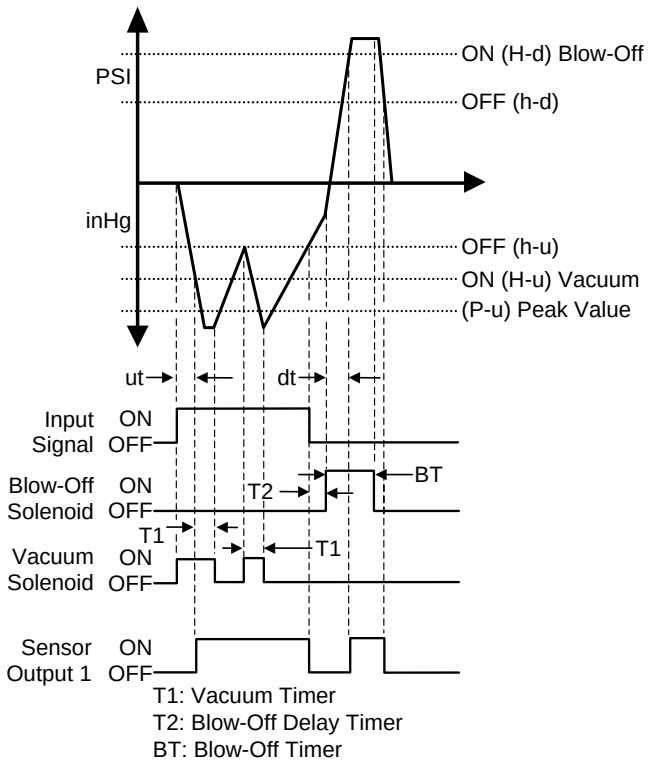
Operating Modes

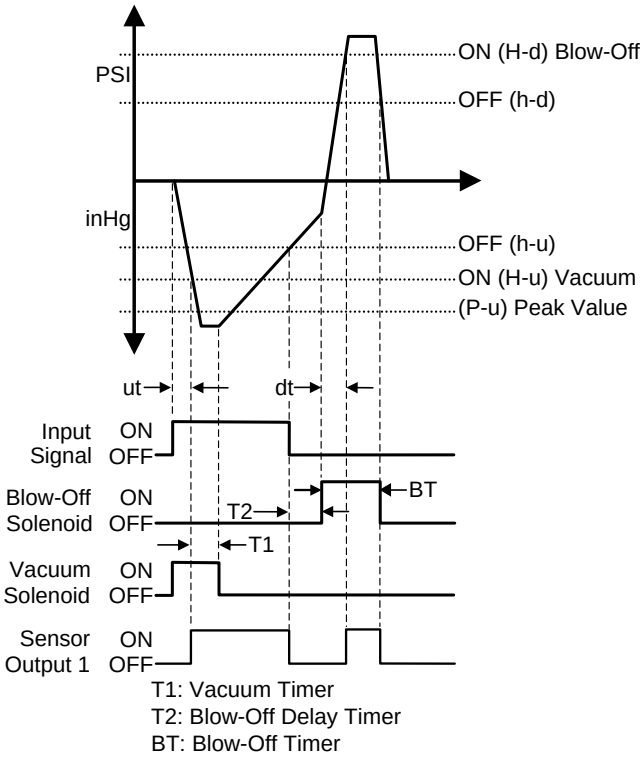
Description of operation modes and terms on page C20.

Mode: OP1 "Air Conservation / Timer



T1: Vacuum Timer
T2: Blow-Off Delay Timer
BT: Blow-Off Timer

Mode: OP2 "Vacuum Timer Option"



T1: Vacuum Timer
T2: Blow-Off Delay Timer
BT: Blow-Off Timer

Timer Mode OP1

"Air Conservation / Vacuum Valve Timer"

This Vacuum valve control with the use of timing features conserves air consumption via the vacuum generator non-return check valve and sensor hysteresis function. Vacuum time **(t1)** can be used to control the vacuum valve for a specific length of time (0.0-9.9 sec.) after output 1 vacuum level is reached. The vacuum timing function **(t1)** will remove the signal from the sensor to the vacuum valve allowing the generator check valve system to conserve air consumption and vacuum. The vacuum valve will re-open for the same length of time **(t1)** when the pressure level drops to the hysteresis setting **(h-v)**. The operation will continue until the input signal is stopped. Optional delay timer between vacuum / blow-off **(t2)** and blow-off **(bt)** timer is available. After selecting **OP1**, set **bt**, **t1**, and **t2** values by using arrow **"UP"** and **"DOWN"** keys. To bypass any of these timing function operations, simply enter 0.00 seconds and the sensor will automatically proceed to the next function.

Timer Mode OP2

"Vacuum Valve Timer"

This mode is ideal for use with CONVUM generators without check valves. Vacuum timer **(t1)** can be used to control the vacuum for a specific length of time (0.00 – 9.9sec.) after output 1 is reached. Optional delay timer between vacuum / blow-off **(t2)** and blow-off **(bt)** timer is available. After selecting **OP2**, set **bt**, **t1**, and **t2** values by using arrow **"UP"** and **"DOWN"** keys. To bypass any of these timing function operations, simply enter 0.00 seconds and the sensor will automatically proceed to the next function.

Note:
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).
Input Circuit controls vacuum solenoid valve (Output Signal from PLC).

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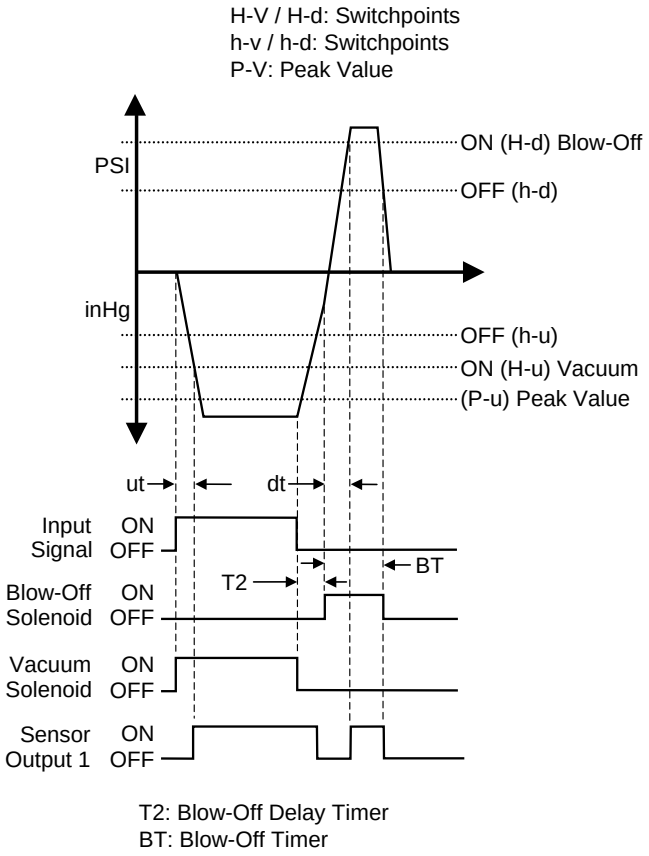
Operating Modes

Description of operation modes and terms on page C20.

Mode: OP3 "Signal Controlled Vacuum"



T2: Blow-Off Delay Timer
BT: Blow-Off Timer

Timer Mode OP3

"Signal Controlled Vacuum"

The vacuum timer option **(t1)** is omitted and the PLC controls the input signal time for the vacuum operation. The delay timer between vacuum / blow-off **(t2)** and the blow-off **(bt)** timers are still available. After selecting **OP3**, set **bt** and **t2** values by using arrow **"UP"** and **"DOWN"** keys. To bypass any of these timing function operations, simply enter 0.00 seconds and the sensor will automatically proceed to the next function.

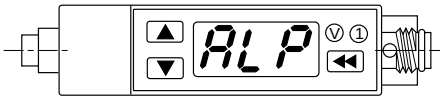
Note:
Output Circuit provides vacuum and blow-off confirmation signal (Input Signal to PLC).
Input Circuit controls vacuum solenoid valve (Output Signal from PLC).

Additional Sensor Features
(Available in All Operating Modes)

Screen Saver Function

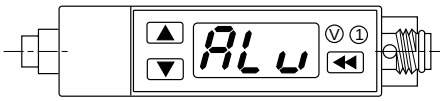
This reduces current consumption by 20mA and will activate after 10 seconds.

Peak Value Level (P-v)



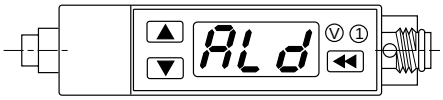
The sensor records this value for preventative maintenace issues. If this value is not reached the sensor will display an error message **(ALP)** indicating leaks or wear in the system.

Vacuum Level Response Time (ut)



The sensor records the time (sec) to reach Output 1 and will display an error message **(ALu)** indicating Output 1 has not been reached within the acceptable time (sec) set by the user.

Blow-off Time (dt)



The sensor records the time (sec) to complete blow-off cycle and will display an error message **(ALd)** indicating (dt) has not reacting within the acceptable time (sec) set by the user.

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Wiring Diagram

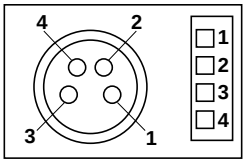
M8 Pin #

1 Brown: 24VDC
2 White: Input; NPN (0VDC) / PNP (24VDC)
3 Blue: 0VDC
4 Black: Output; NPN / PNP Open Collector Output

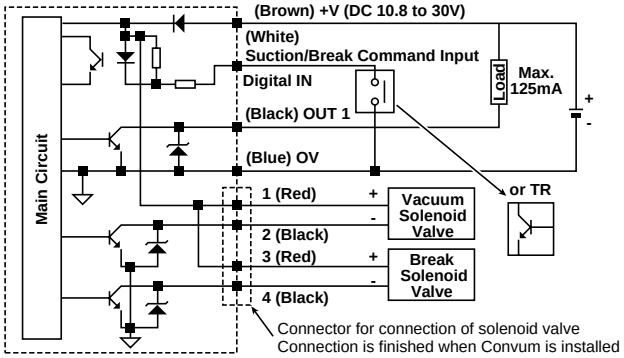
201 Pin #

1 Red: Vacuum Solenoid Valve + V
2 Black: Gnd
3 Red: Blow-Off Solenoid Valve + V
4 Black: Gnd

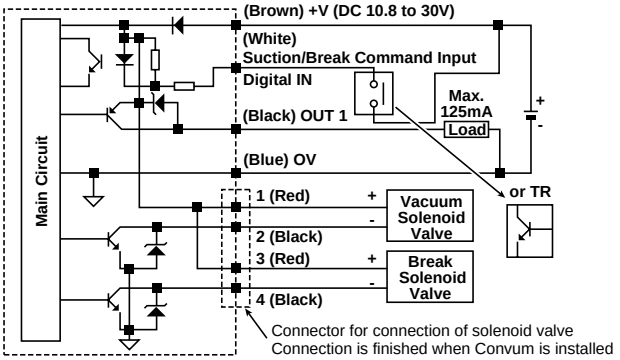
Sensor Male Pin Out



Internal Circuit



Output / Input NPN Sinking



Output / Input PNP Sourcing

⚠ Cautions

The MVS-201 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.

Error Messages

Display	Description	Solutions
Err	Zero Reset Error	Reset Zero Below 3% of F.S.
Er1	System Error (Internal)	Contact Factory
CE1	Over current of Output 1	Load current exceeds maximum 125mA.
FFF –FF	Applied pressure exceeds pressure range	Apply pressures within the rating of the sensor

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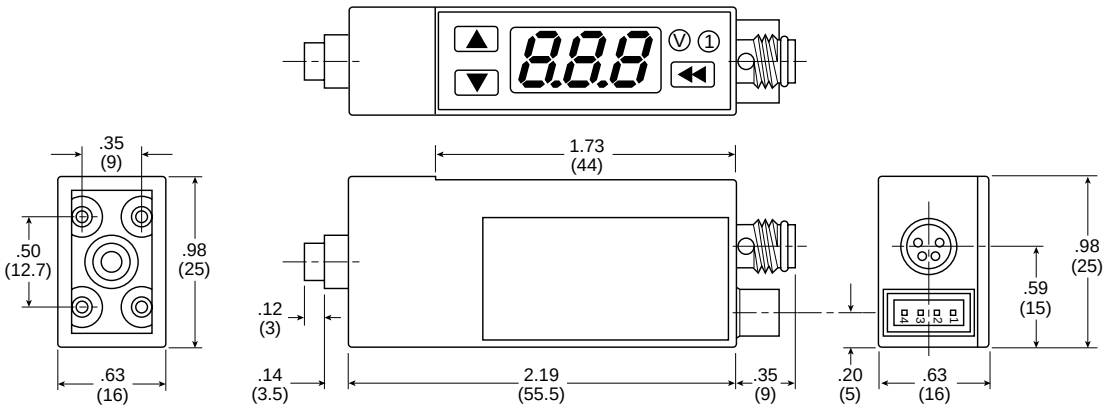
Dimensions

M8, 4-Pin



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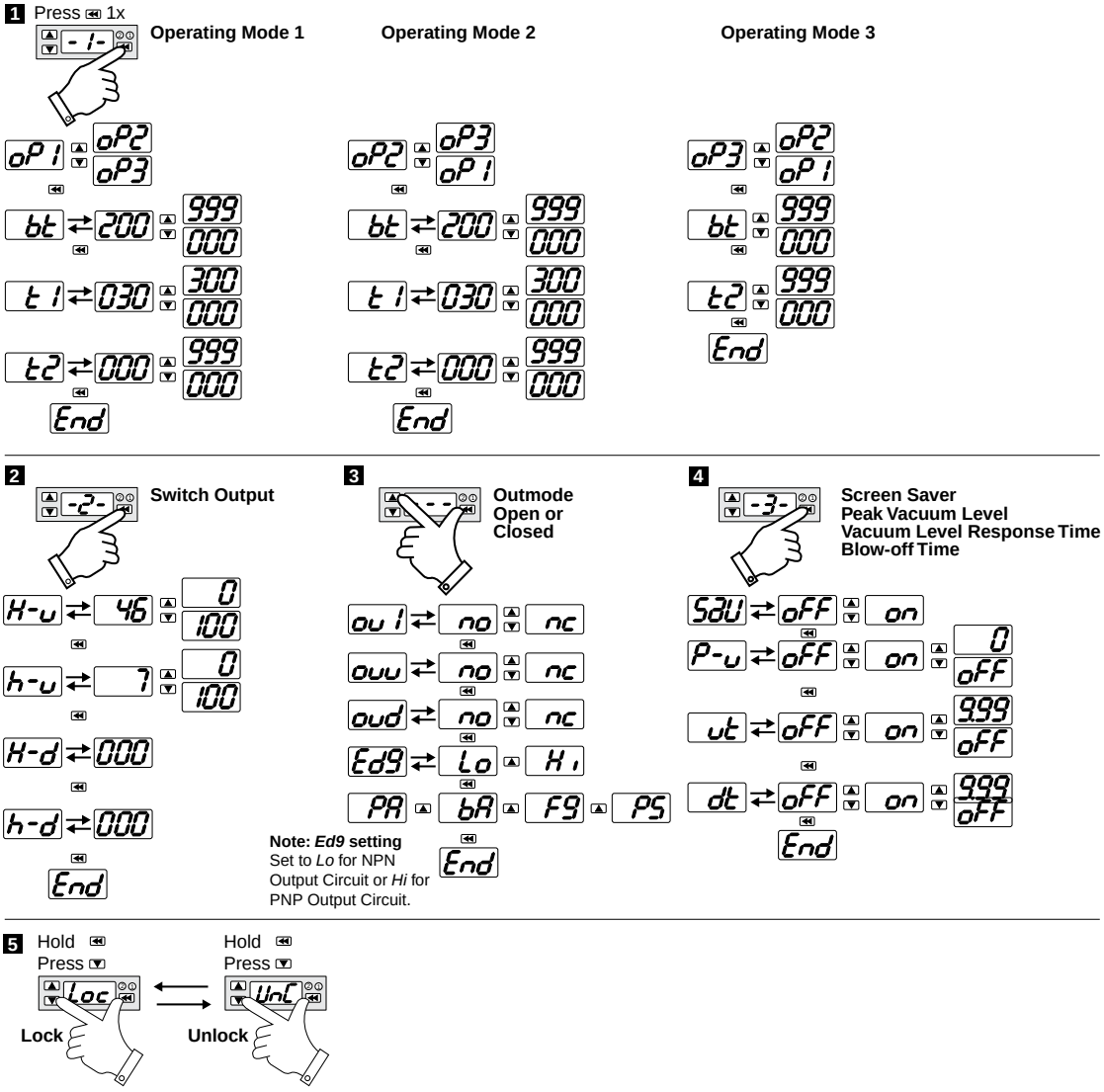

Programming Symbols Legend

oP1	Operation 1: Air Conservation / Timer	ALd	Error Message - Blow-off Time
oP2	Operation 2: Vacuum Timer Option	ou1	Output 1
oP3	Operation 3: Signal Controlled Vacuum	ouu	Vacuum Valve (Leave NO)
bt	Blow-Off Timer	oud	Blow-off Release Valve (Leave NO)
t1	Controlled Vacuum Signal with Timer	SdU	Screen Saver Function
t2	Blow-Off Activation Timer	P-u	Peak Vacuum Level Recorder (P-v)
Hu	Switch Output Value (H-v)	ut	Vacuum Response Time Recorder
hu	Switch Output Hysteresis Value (h-v)	dt	Blow-Off Time Recorder
Hd	Blow-off Output Value (H-d)	no	Normally Open
hd	Blow-off Output Hysteresis Value (h-d)	nc	Normally Closed
ALP	Error Message - Peak Vacuum Level	Ed9	Low or High Signal to Vacuum Valve
ALu	Error Message - Vacuum Response Time		

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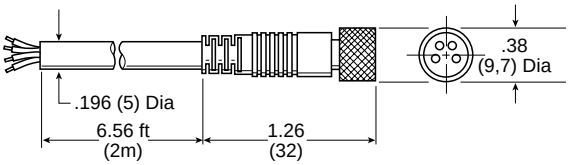
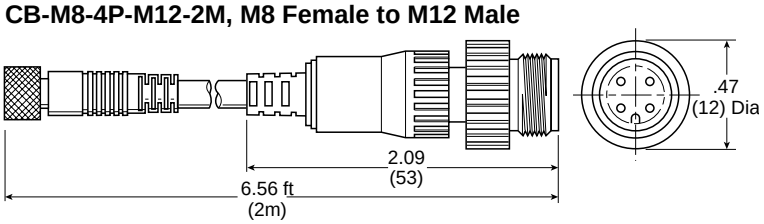
Accessories

M8 Cables for Sensor

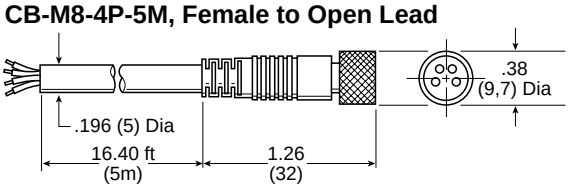
CB-M8-4P-2M, Female to Open Lead



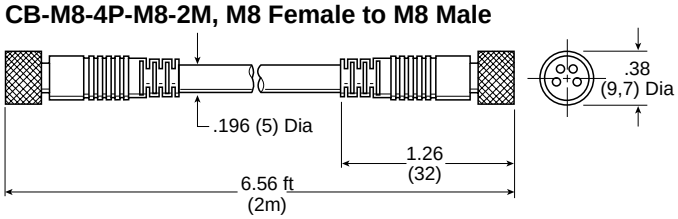
CB-M8-4P-M12-2M, M8 Female to M12 Male



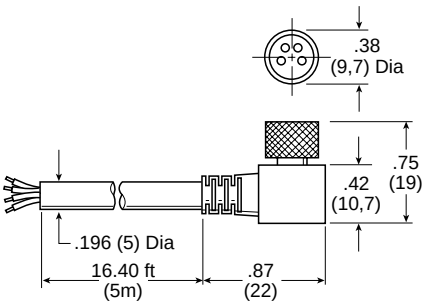
CB-M8-4P-5M, Female to Open Lead



CB-M8-4P-M8-2M, M8 Female to M8 Male

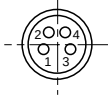


CB-M8-4P-5M-90, Female to Open Lead

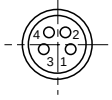


Pin Out Connection

Female Interface 4-Pin, M8

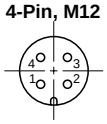


Male Interface 4-Pin, M8



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

Male Interface 4-Pin, M12

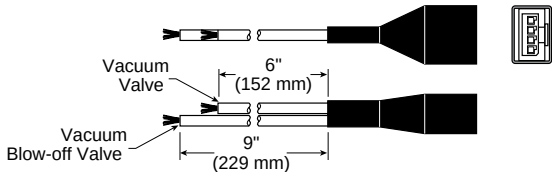


MVS-201 Cables

(Connects Sensor to Vacuum & Blow-off Release Pilot Valves)

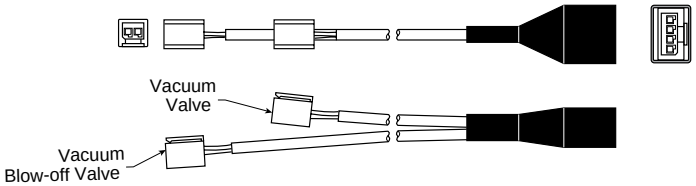
For CVK

CVK-D201G



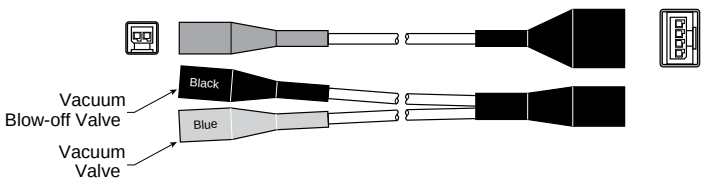
For CVR2

CVR2-C201G



For MC2

MC2-C201G



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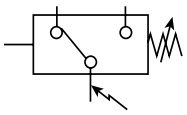
MPS-32



Red ⟷ Green Display

MPS-V32N-PC

MPS-V32N-PG

Mounting Bracket MPS-ACCK1 Included with Sensors.

Features

- **Pressure Ranges:**
  Vacuum Pressure ..... 0 to -30 inHg
  Positive Pressure .....0 to 145 PSI
- **Sensor Output:**
  2 NPN or PNP Open Collector Transistor Output, 30VDC, 125mA
  Optional Analog Output, 4 to 20mA
  Optional Analog Output, 1 to 5VDC
- **Switch Point and Window Comparator Mode**
- **4 Selectable Units of Measure (mmHg, -bar, -kPa, inHg) (kgf/cm², PSI, bar, kPa)**
- **Output Response Time Less Than 2.0 Milliseconds**
- **RoHS**
- **Air and Non-Corrosive Gases**
- **Error Message**

MPS-32 Programming Options

Outputs Change N.O. / N.C.	✔
Units of Measure change	✔
EZY Mode	
Hysteresis Mode	✔
Window Comparator Mode	✔
Auto Teach Mode	✔
Auto Surveillance Mode	✔
Display Refresh Settings	✔
Output Response Time	✔
Display Peak / Bottom Difference Value	✔
Special Display Features	✔
Lockout Option	✔
Peak Value at a Touch	✔
Bottom Value at a Touch	✔
Zero Reset	✔
Red / Green LED Display Options	✔
Peak Surveillance Mode	✔
Energy Savings Mode	
Scan Mode	
Password Lockout	
Error Output Mode	
Setting of Decimal Point	

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MPS-32 Ordering Numbers

(Bold Items are Most Popular)

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	1/8 NPSF*	PNP Sourcing	4 Pin, M8	**MPS-V32N-PC**
			2M Lead Wire	**MPS-V32N-PG**
		NPN Sinking	4 Pin, M8	MPS-V32N-NC
			2M Lead Wire	MPS-V32N-NG
0 to 145 PSI	1/8 NPSF*	PNP Sourcing	4 Pin, M8	**MPS-P32N-PC**
			2M Lead Wire	**MPS-P32N-PG**
		NPN Sinking	4 Pin, M8	MPS-P32N-NC
			2M Lead Wire	MPS-P32N-NG
		PNP Sourcing with 4-20ma	4 Pin, M8	**MPS-P32N-PCI**

* Mounting Bracket Included

Specifications

Pressure Range		Vacuum (V)		Positive (P)	
Units of Measure Display Resolution (with unit-switching function)		bar: 0.001 kPa: 0.1 mmHg: 1 inHg: 0.1		bar: 0.01 MPa: 0.001 kgf/cm²: 0.01 PSI: 1	
Proof Pressure		-101 to 0 kPa		0 to 1 MPa	
Media		Air & Non-Corrosive Gases			
Pressure Port		**(N)** 1/8" NPSF			
Operating Temperature		32 to 122°F (0 to 50°C)			
Storage Temperature		14 to 140°F (-10 to 60°C)			
Humidity		35 to 85% RH			
Electrical Connection		**(C)** 4-Pin, M8 Connector, **(G)** Grommet Open Lead			
Power Supply		12 to 24VDC ±10% or less, Ripple (Vp-p) 10% or less			
Display		3 + 1/2 Digit, 2 Color, 7-Segment LED			
Display Refresh		.1 to 3.0 Seconds, Variable (Factory set at 0.1)			
Control Output		NPN (Sinking), PNP (Sourcing), Open Collector, max 125mA, 2 Output			
Switch Output		Output Signal, NPN or PNP, Normally Open or Closed, LED Indicator			
Output Modes		Hysteresis or Window Comparator			
Response Time		2ms or less,(Variable 32, 128, 1024ms)			
Repeatability		± 0.2% of F.S. ± 1 digit or less		± 03% of F.S. ± 1 digit or less	
Analog Output	Voltage Output	1 to 5VDC (1 ± 0.04V, 5 ± 0.04V); Outout Impedance 1kΩ; Linearity 0.5% of F.S.; Response Time 2ms or less			
	Current Output	4 to 20mA; Linearity ±0.5% of F.S. or less; Maximum Load Impedance 300Ω with Power Supply Voltage of 12V; 600Ω with Power Supply Voltage of 12V; Minimum Load Impedance 50Ω			
Thermal Error		32 to 122°F (0 to 50°C) 25°C (77°C) ± 2% of F.S. or less at range of 32 to 122°F (0 to 50°C)			
General Protection		IP50, CE Marked, EMC-EN61000-6-2: 2001			
Current Consumption		<80mA			
Vibration Resistance		10 to 150Hz, Double Amplitude 1.5mm, XYZ, 2 hrs.			
Shock Resistance		10G, XYZ			
Material		**Housing:** ABS (gray) , **Pressure Port:** Zinc Die-cast, **Diaphragm:** Silicone			
Mass		1.7 oz. (45g) (Not including cable)			

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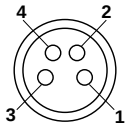
Sensor Pin Out



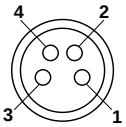
Pin #

1 Brown: 24VDC
2 White: NPN / PNP Open Collector Output 2
3 Blue: 0VDC
4 Black: NPN / PNP Open Collector Output 1

Lead Wiring

Sensor Pin Out with Analog Output

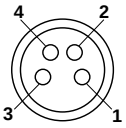
Current Output



Pin #

1 Brown: 24VDC
2 White: 4 to 20mA
3 Blue: 0VDC
4 Black: PNP Open Collector Output 1

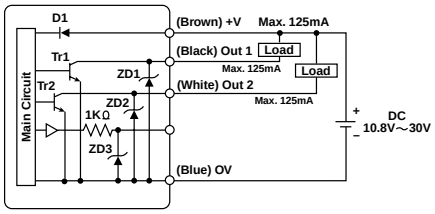
Voltage Output



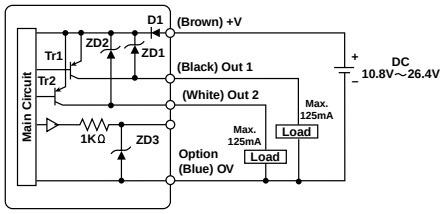
Pin #

1 Brown: 24VDC
2 White: 1 to 5VDC
3 Blue: 0VDC
4 Black: PNP Open Collector Output 1

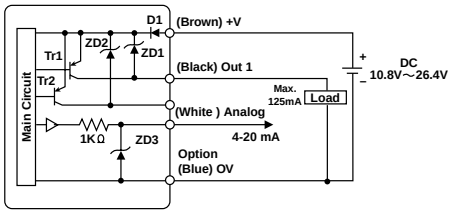
Internal Circuit for Open Collector and Analog Output Wiring



NPN (2 Open Collector Output)



PNP (2 Open Collector Output)



PNP (with Analog Output)

⚠Cautions

The MPS-32 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

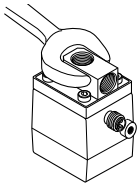
- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 26.4VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install as shown using the metal mounting bracket.



Error Messages

Display	Description	Solutions
Err	Zero Reset Error	Reset Zero Below 3% of F.S.
Er1	System Error (Internal)	Contact Factory
CE1	Over current of Output 1	Load current exceeds maximum 125mA.
FFF –FF	Applied pressure exceeds pressure range	Apply pressures within the rating of the sensor

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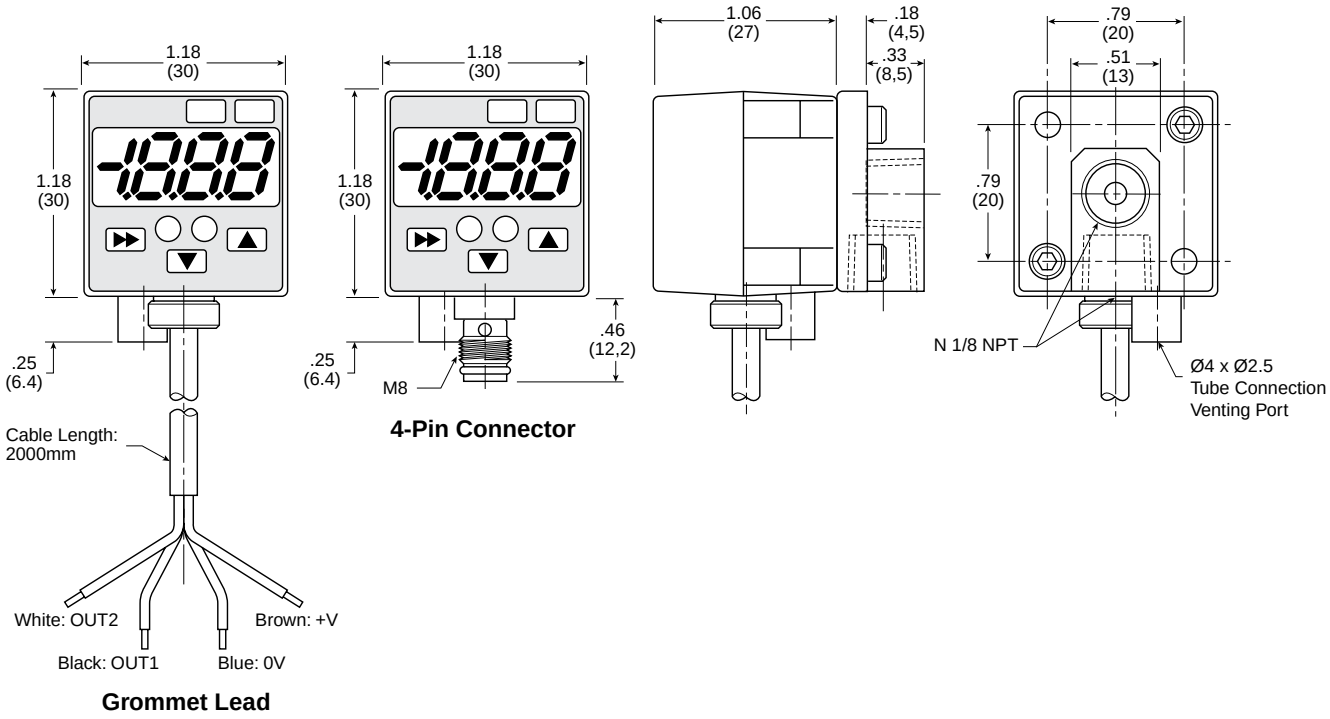
Dimensions

N

1/8" Female

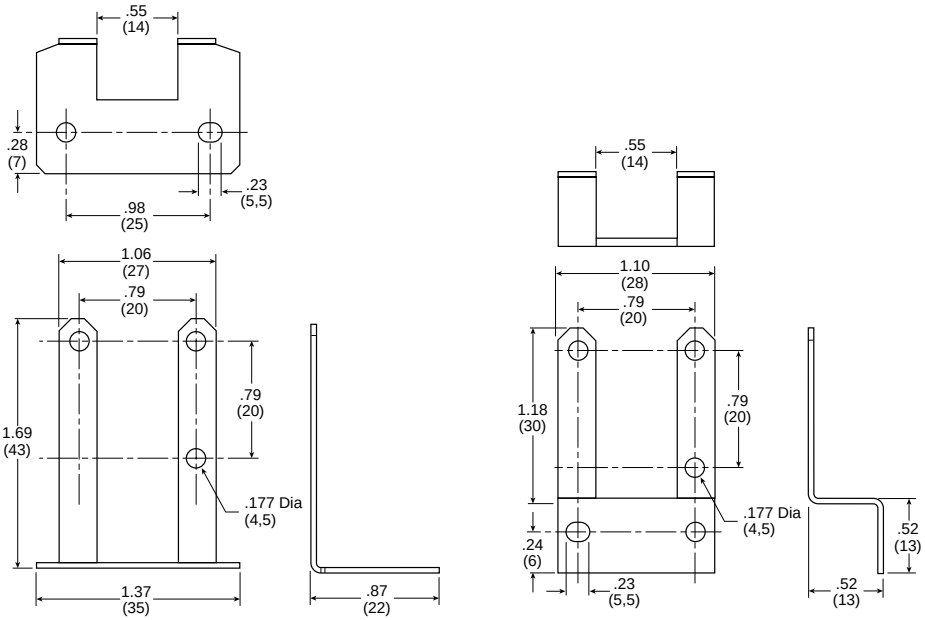


Grommet Lead

4-Pin Connector

MPS-ACCK1

Mounting Brackets (Included)



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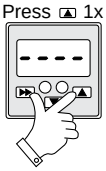
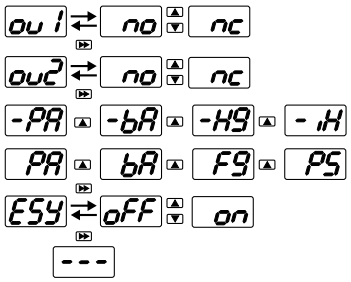
See page C52 for Symbol Explanation

1 Hold ⏩ Press ▲ 1x

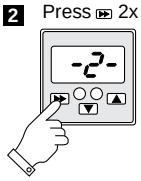


Output Set Open or Closed Selecting Units of Measure

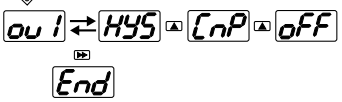
Easy Mode Activation



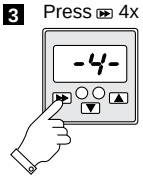
2 Press ⏩ 2x



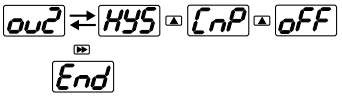
Output Mode 1 Hysteresis or Window Comparator



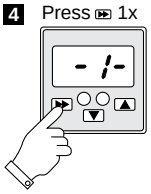
3 Press ⏩ 4x



Output Mode 2 Hysteresis or Window Comparator

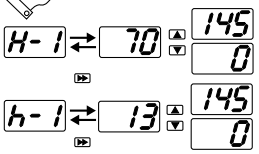


4 Press ⏩ 1x



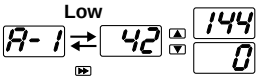
Output 1 Switch Point Setting

Hysteresis Mode

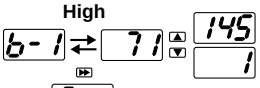


Window Comparator Mode

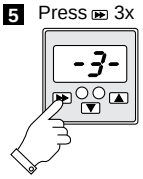
Low



High

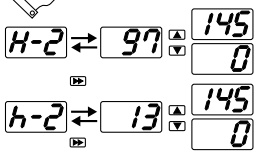


5 Press ⏩ 3x



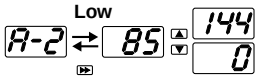
Output 2 Switch Point Setting

Hysteresis Mode

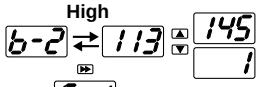


Window Comparator Mode

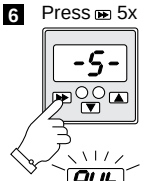
Low



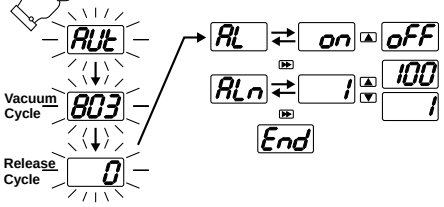
High



6 Press ⏩ 5x

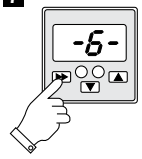


Automatic Teach Mode & Auto Surveillance

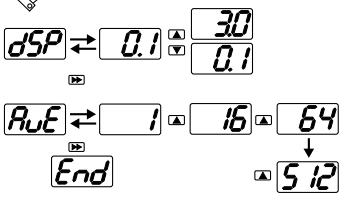


Note: When Auto Surveillance is turned on P1 is added to Output 1 setting, Output 2 is turned off and P-1 becomes Output 2.

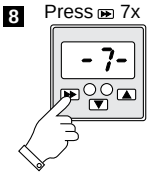
7 Press ⏩ 6x



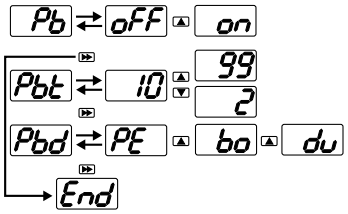
Display Refresh Settings / Output Response Time Interval



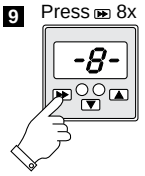
8 Press ⏩ 7x



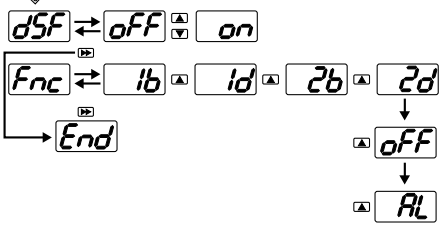
Display Peak Value Bottom Value or Their Difference



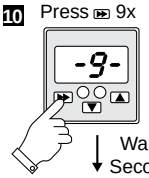
9 Press ⏩ 8x



Special Display Features



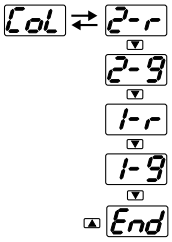
10 Press ⏩ 9x



Display Color Choices Red and / or Green, Energy Save

Or Press ▼ 1x to Return

Wait 3 Seconds



	Output	
	On	Off
2-r	Red	Green
2-9	Green	Red
1-r	Red	Red
1-9	Green	Green

11 Hold ⏩ Press ▼ 1x

Lock

Hold ⏩ Press ▼ 1x

Unlock

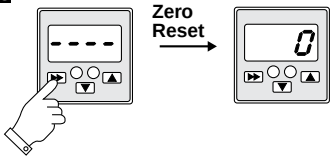
12 Press ▲ 1x

Peak Value

Press ▼ 1x

Bottom Value

13 Press ⏩ for 3 Seconds Zero Reset



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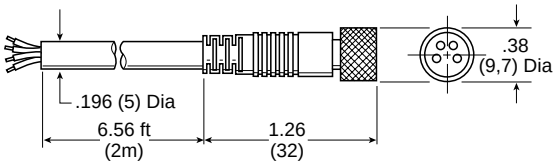
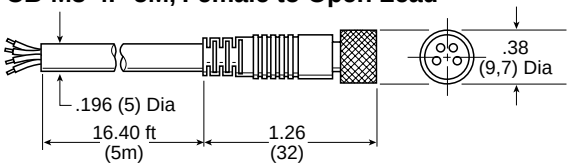
Accessories

Cables

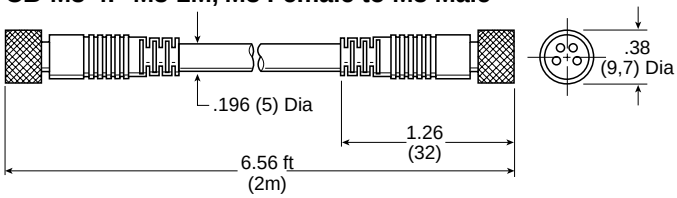
CB-M8-4P-2M, Female to Open Lead



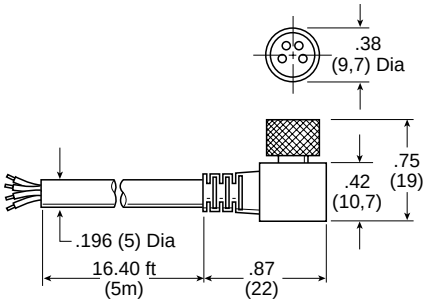
CB-M8-4P-5M, Female to Open Lead



CB-M8-4P-M8-2M, M8 Female to M8 Male

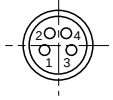


CB-M8-4P-5M-90, Female to Open Lead

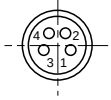


Pin Out Connection

Female Interface
4-Pin, M8



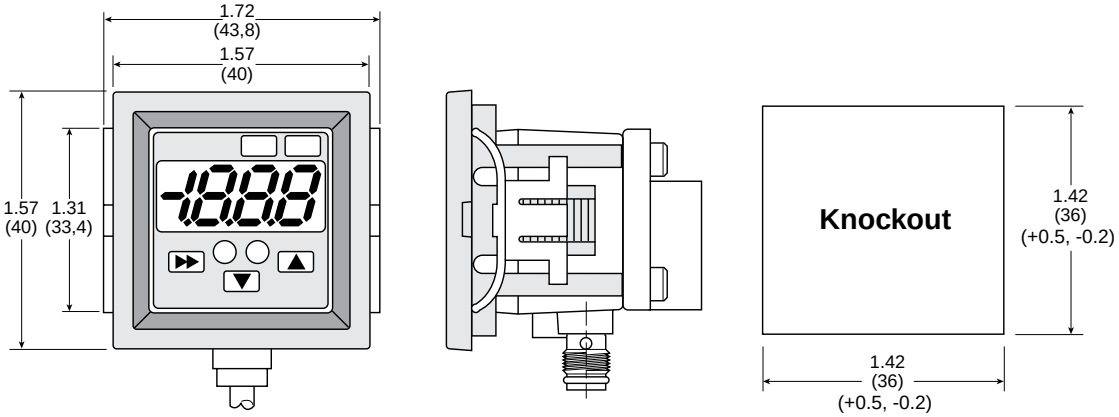
Male Interface
4-Pin, M8



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

MPS-ACCH7

Panel Mounting Bracket



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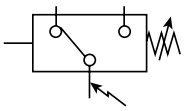
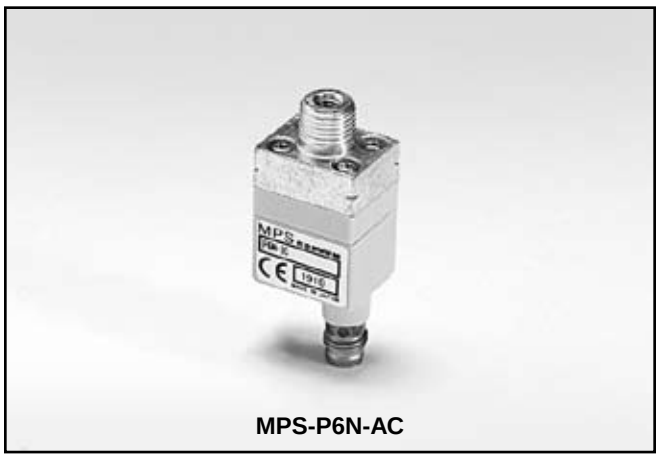
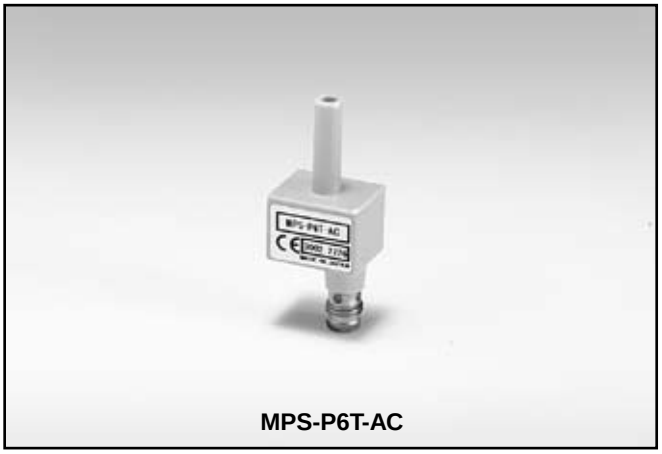
MPS-6





MPS-P6N-AC



MPS-P6T-AC

Features

- **Pressure Ranges:**
  Vacuum Pressure ..... 0 to -30 inHg
  Positive Pressure ..... 0 to 145 PSI
- **Sensor Outputs:**
  1 Open and 1 Closed NPN or PNP Open Collector Transistor Output, 30VDC, 125mA
  1 Analog Output, 1 to 5 VDC
- **Switch Point 2/3 Trimmer**
- **Fixed Hysteresis 2%**
- **Output Response Time Less Than 1 Millisecond**
- **Analog Output Type Compatible with MPS-7 Display**
- **CE Marked**
- **Air and Non-Corrosive Gases**

MPS-6 Programming Options

Fixed Outputs	✔
Units of Measure change	
EZY Mode	
Hysteresis Mode	✔
Window Comparator Mode	
Auto Teach Mode	
Auto Surveillance Mode	
Display Refresh Settings	
Output Response Time	
Display Peak / Bottom Difference Value	
Special Display Features	
Lockout Option	
Peak Value at a Touch	
Bottom Value at a Touch	
Zero Reset	
Red / Green LED Display Options	
Peak Surveillance Mode	
Energy Savings Mode	
Scan Mode	
Password Lockout	
Error Output Mode	
Setting of Decimal Point	

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MPS-6 Ordering Numbers

(Bold Items are Most Popular)

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	1/8 NPSF*	PNP Sourcing	4 Pin, M8	**MPS-V6N-PC**
		NPN Sinking		**MPS-V6N-NC**
		1-5VDC analog		**MPS-V6N-AC**
	6mm Tube Stud	PNP Sourcing	4 Pin, M8	**MPS-V6T-PC**
		NPN Sinking		**MPS-V6T-NC**
		1-5VDC analog		**MPS-V6T-AC**
0 to 145 PSI	1/8 NPSF*	PNP Sourcing	4 Pin, M8	**MPS-P6N-PC**
		NPN Sinking		**MPS-P6N-NC**
		1-5VDC analog		**MPS-P6N-AC**
	6mm Tube Stud	PNP Sourcing	4 Pin, M8	**MPS-P6T-PC**
		NPN Sinking		**MPS-P6T-NC**
		1-5VDC analog		**MPS-P6T-AC**

* BSPP(G) and BSPT(R) are available. Replace N with G or R for port thread type
Example : MPS-V6N-PC (NPT) , MPS-V6G-PC (BSPP) or MPS-V6R-PC (BSPT)

Note: To connect MPS-6 Series Analog Sensor to MPS-7 Series Remote Panel Display, use M8 to AMP Connector Cable CB-M8-4P-2E.

CB-M8-4P-2E

Specifications

Media	Air and Non-Corrosives Gases
Pressure Port	**(N)** 1/8" NPT Male, **(T)** 6mm Tube Stud (Consult Factory for BSPP or BSPT Port)
Proof Pressure	**(V)** 72.5 PSI, **(P)** 217.5 PSI
Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical Connection	**(C)** 4-Pin, M8 Connector
Power Supply	10.8 to 30 VDC, Ripple Vp-p 10% max., Reverse Voltage Protection
Switch Output	1 Output Signal Open and Closed, NPN or PNP, 30VDC, 125mA
Linear Output	Analog Output 1 to 5 VDC
Switch Point Setting	2/3 Turn Trimmer
Hysteresis Setting	≤ 2% of F.S.
Output Response Time	<1ms
Repeatability	≤0.2% F.S.
Thermal Error	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)
General Protection	IP40, CE Marked, EN55011 Class B, EN50082-2
Current Consumption	< 20mA
Spike Protection	400 VP, 1 µs, Surge Protection
Dielectric Strength	1000VAC, 1min.
Insulation Resistance	> 100M ohm at 500VDC
Vibration Resistance	10 to 55Hz, 0.75mm Amplitude, XYZ, 2 hrs.
Shock Resistance	100 G, XYZ
Material	**Housing:** Polycarbonate, **Pressure Port:** Zinc Die-cast
Mass	**T Port:** 0.25 oz. (7g), **N, R, G Port:** 0.88 oz (25g)

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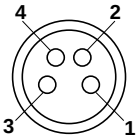
Sensor Pin Out

Pin #

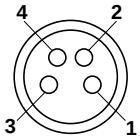
1 Brown: 24VDC
2 White: NPN / PNP Open Collector Output
3 Blue: 0VDC
4 Black: NPN / PNP Open Collector Output



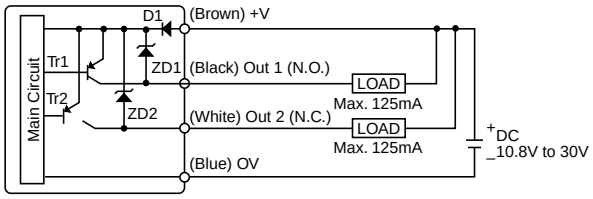
Sensor Pin Out with Analog Output

Pin #

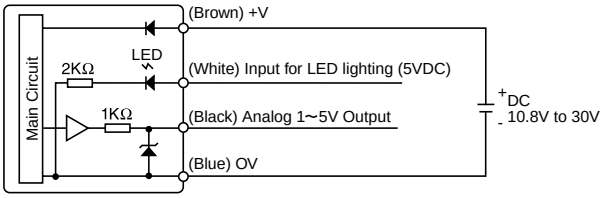
1 Brown: 24VDC
2 White: LED In 5VDC
3 Blue: 0VDC
4 Black: Analog 1 to 5VDC



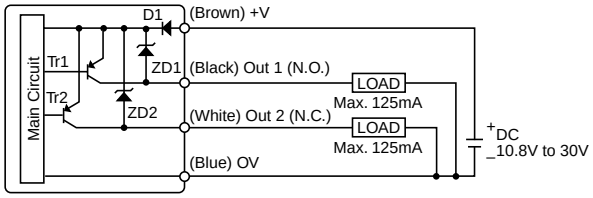
Internal Circuit



NPN Open Collector



Analog



PNP Open Collector

⚠ Cautions

The MPS-6 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

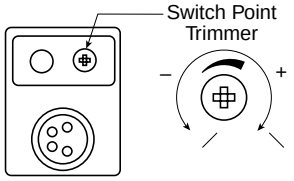
- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.

Trimmer Adjustment

Rotate the potentiometer trimmer to increase or decrease pressure switch point output. Excessive force or exceeding the limits of the trimmers may cause damage.



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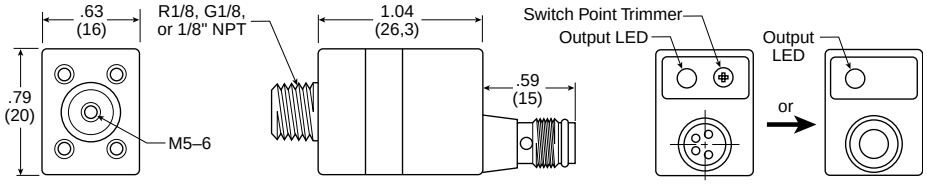
Dimensions

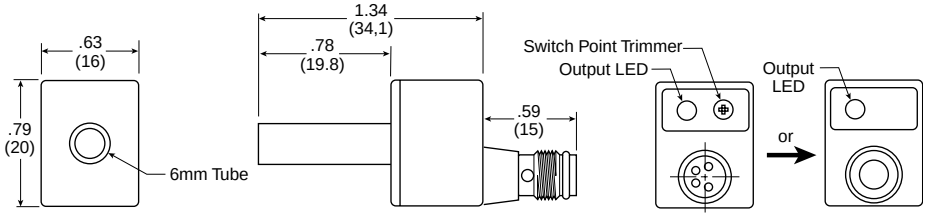
N, R, G

1/8" Male, M5 Female, M8, 4-Pin



T6

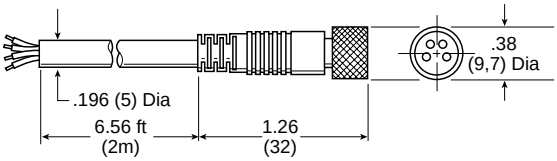
Tube Stud, M8, 4-Pin



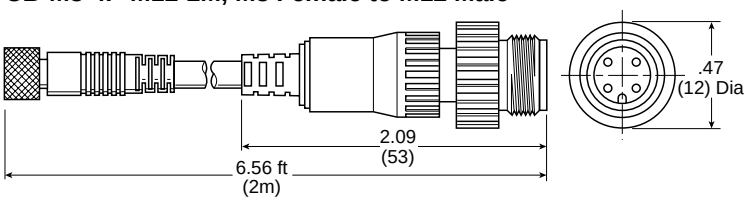
Accessories

Cables

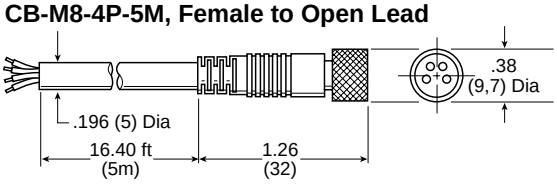
CB-M8-4P-2M, Female to Open Lead



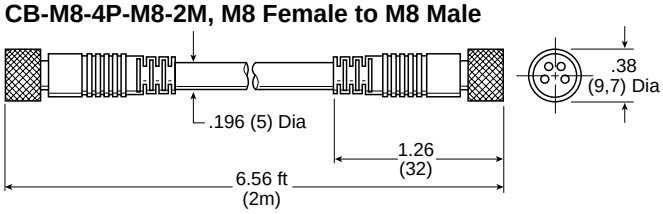
CB-M8-4P-M12-2M, M8 Female to M12 Male



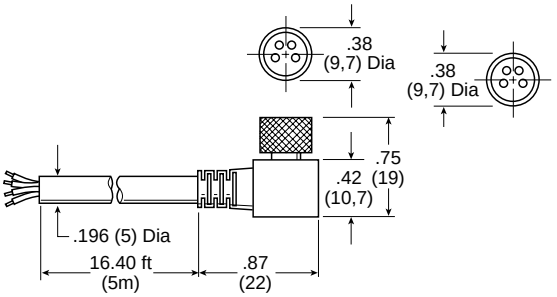
CB-M8-4P-5M, Female to Open Lead



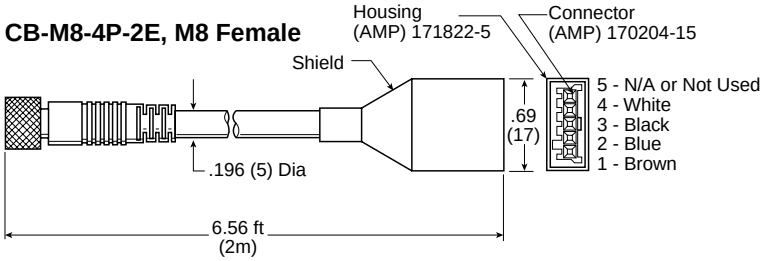
CB-M8-4P-M8-2M, M8 Female to M8 Male



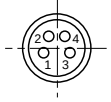
CB-M8-4P-5M-90, Female to Open Lead



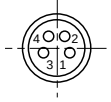
CB-M8-4P-2E, M8 Female



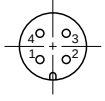
Female Interface 4-Pin, M8



Male Interface 4-Pin, M8



Male Interface 4-Pin, M12



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

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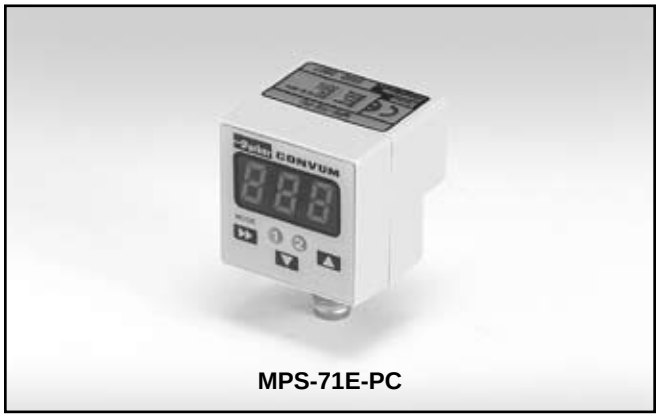
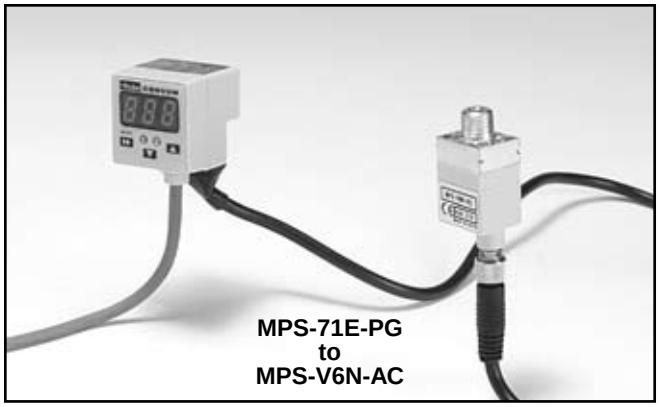
MPS-7



MPS-71E-PC

MPS-74E-NG



MPS-71E-PG to MPS-V6N-AC

Mounting Bracket Included with Sensors.

Features

- **One Display with Output Programming Capability for MPS-5, 6, or 8 Analog Sensors**
- **Displays Pressure and Converts Analog Signal from Remote Sensor to NPN or PNP Open Collector Transistor Output, 30VDC, 125mA**
- **Compatible with 1 to 4 Remote Sensors**
- **MPS-71 Response Time Less Than 2.0 Milliseconds**
- **MPS-74 Response Time Less Than 5 Milliseconds**
- **CE Marked**

Programming Options

	MPS-71	MPS-74
Outputs Change N.O. / N.C.	✔	✔
Units of Measure change	✔	✔
EZY Mode	✔	
Hysteresis Mode	✔	✔
Window Comparator Mode	✔	✔
Auto Teach Mode	✔	
Auto Surveillance Mode	✔	
Display Refresh Settings	✔	
Output Response Time	✔	
Display Peak / Bottom Difference Value	✔	
Special Display Features	✔	
Lockout Option	✔	✔
Peak Value at a Touch	✔	
Bottom Value at a Touch	✔	
Zero Reset	✔	
Red / Green LED Display Options		
Peak Surveillance Mode		✔
Energy Savings Mode	✔	✔
Scan Mode		✔
Password Lockout		
Error Output Mode		
Setting of Decimal Point		

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MPS-7 Ordering Numbers

(Bold Items are Most Popular)

Number of Remote Sensors	Outputs per Remote Sensor	Output Circuit	Electrical Connector	Part Number**
1 Remote Sensor	2	PNP Sourcing	4 Pin, M8	**MPS-71E-PC**
		NPN Sinking		**MPS-71E-NC**
		PNP Sourcing	2M Lead Wire	**MPS-71E-PG**
		NPN Sinking		**MPS-71E-NG**
4 Remote Sensors	1	PNP Sourcing	2M Lead Wire	**MPS-74E-PG**
		NPN Sinking		**MPS-74E-NG**

** Mounting Bracket Included

Note: To connect MPS-7 Series Remote Panel Display to MPS-5 or MPS-6 Series Analog Sensors, use M8 to AMP Connector Cable CB-M8-4P-2E.

Note: To connect MPS-7 Series Remote Panel Display to MPS-8 Series Analog Sensors, order MPS-8 Sen.

CB-M8-4P-2E

Specifications

Remote Pressure Range	Vacuum (V)	Positive (P)	Compound (R)	Low (L)
Units of Measure Display Resolution	bar: 0.001 kPa: 0.1 mmHg: 1 inHg: 0.1	bar: 0.01 MPa: 0.001 kgf/cm²: 0.01 PSI: 1	bar: 0.01 kPa: 1 kgf/cm²: 0.01 PSI: 0.1	bar: 0.001 kPa: 0.1 kgf/cm²: 0.001 PSI: 0.1
Proof Pressure	See Remote Sensor Specifications			
Operating Temperature	32 to 122°F (0 to 50°C)			
Storage Temperature	14 to 140°F (-10 to 60°C)			
Humidity	35 to 85% RH			
Electrical Connection	**(G)** Grommet Open Lead, **(C)** M8			
Power Supply	10.8 to 30VDC, Ripple (P-P) 10% Max., Reverse Voltage Protection			
Display	**MPS-71:** 3-Digit, 7-Segment LED, **MPS-74:** 4-Digit, 7-Segment LED			
Display Refresh	**MPS-71:** 0.1 to 3.0 sec. (Factory set at 0.1), **MPS-74:** 0.2 Fixed			
Circuit	NPN (Sinking), PNP (Sourcing) Open Collector Transistor, 30VDC, 125mA			
74 - 1 Switch Output **71 - 2 Switch Outputs**	Output Signals, NPN or PNP, LED Indicator			
Response Time	MPS-71 <2ms, MPS-74 <5ms			
Repeatability	± 0.2% F.S.			
Thermal Error	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)			
General Protection	IP40, CE Marked			
Current Consumption	MPS-71 <45mA, MPS-74 <75mA			
Vibration Resistance	10 to 55Hz, 1.5mm, XYZ, 2 hrs.			
Shock Resistance	10 G, XYZ			
Material	**Body:** Polycarbonate			
Mass	**MPS-71:** .90 oz. (25g), **MPS-74:** 1.0 oz. (30g)			

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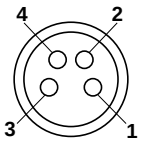
MPS-71 Open Collector Wiring

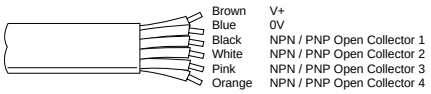
Pin #	Grommet Lead Only
1 Brown:	24VDC
2 Black:	NPN / PNP Open Collector 1
3 Blue:	0VDC
4 White:	NPN / PNP Open Collector 2

MPS-74 Open Collector Wiring

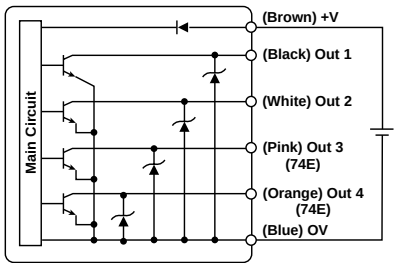
Pin #	Grommet Lead Only
Brown:	24VDC
Black:	NPN / PNP Open Collector 1
Blue:	0VDC
White:	NPN / PNP Open Collector 2
Pink:	NPN / PNP Open Collector 3
Orange:	NPN / PNP Open Collector 4

Sensor Male Pin Out





Internal Circuit



MPS-71 & MPS-74 NPN / PNP Open Collector

⚠ Cautions

The MPS-7 Central Display is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the MPS-7 Series and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.

Installation

- Avoid short-circuiting the MPS-7 Series. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install using Panel Mount Bracket or Back Mount Brackets.

Error Messages

Display	Description	Solutions
Err	Zero Reset Error	Reset Zero Below 3% of F.S.
PErr	Peak Value Error	Check Vacuum Source
Er1	System Error (Internal)	Contact Factory
CE1	Over current of Output 1	Load current exceeds maximum 125mA.
CE2	Over current of Output 2	
CE3	Over current of Output 3 (MPS-74)	
CE4	Over current of Output 4 (MPS-74)	
FFF –FF	Applied pressure exceeds pressure range	Apply pressures within the rating of the sensor

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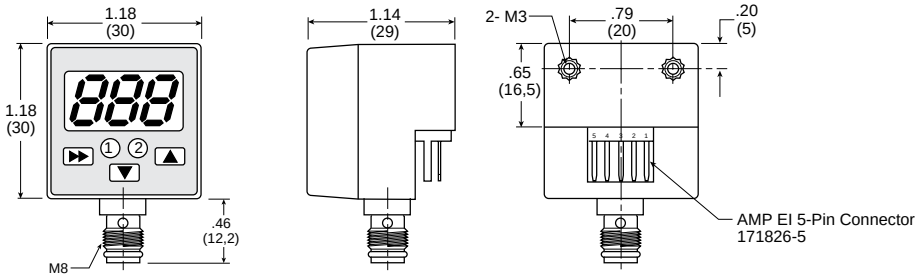
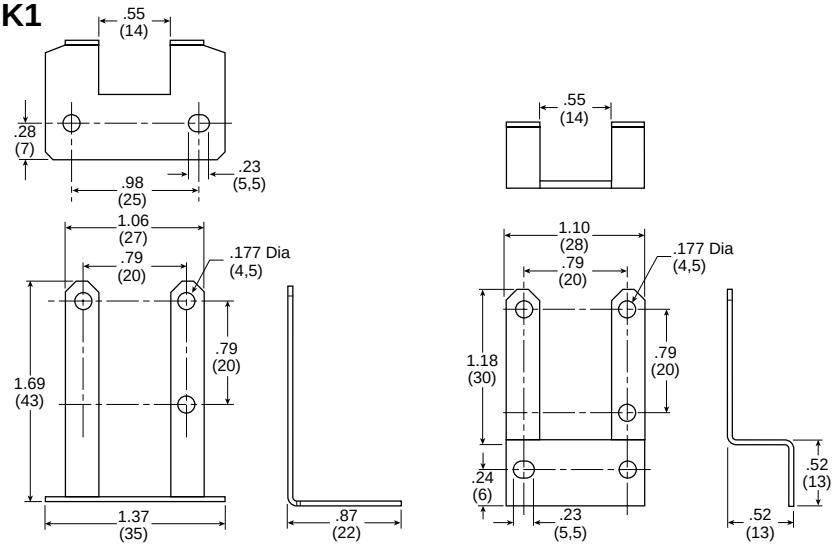
Dimensions

MPS-71

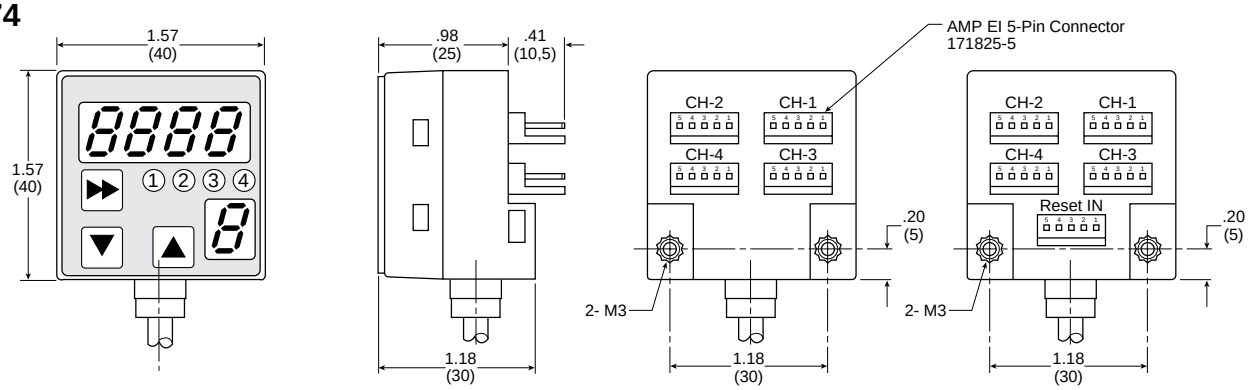


MPS-ACCK1

Mounting Bracket (Included)

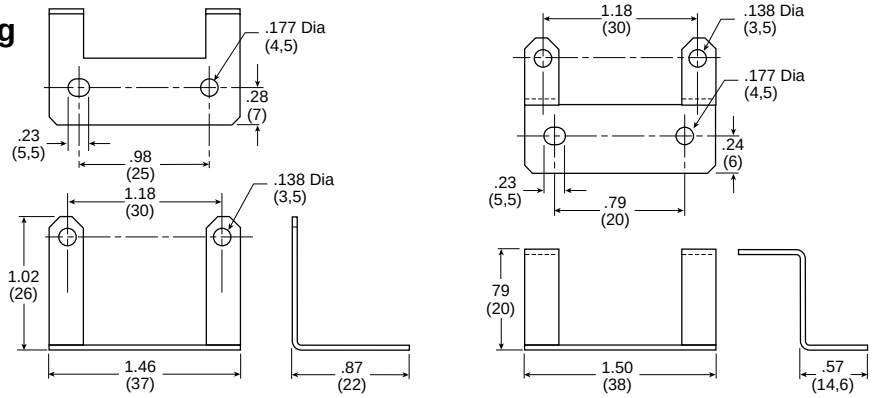


MPS-74



MPS-ACCK3

Mounting Bracket (Included)



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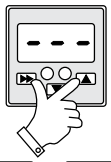
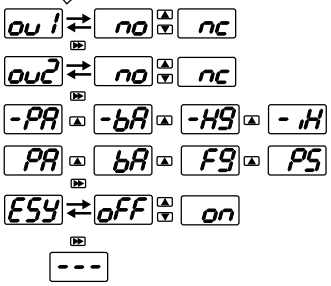
See page C52 for Symbol Explanation

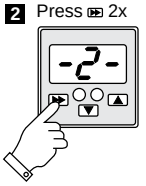
1 Hold ⏭ Press ▲ 1x



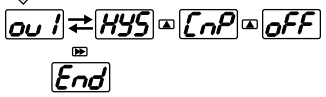
Output Set Open or Closed
Easy Mode Activation



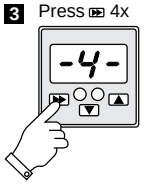
2 Press ⏭ 2x



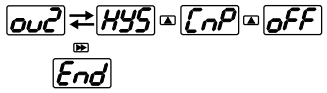
Output Mode 1 Hysteresis or Window Comparator



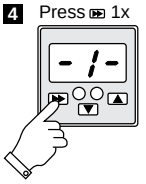
3 Press ⏭ 4x



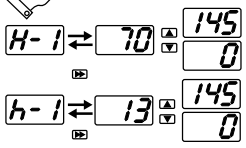
Output Mode 2 Hysteresis or Window Comparator



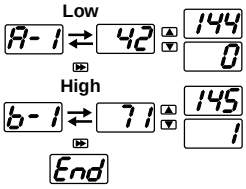
4 Press ⏭ 1x



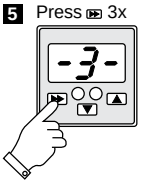
Output 1 Switch Point Setting
Hysteresis Mode



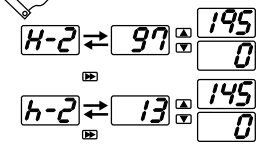
Window Comparator Mode



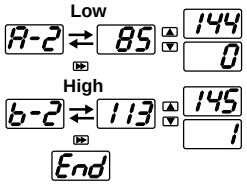
5 Press ⏭ 3x



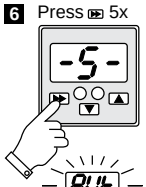
Output 2 Switch Point Setting
Hysteresis Mode



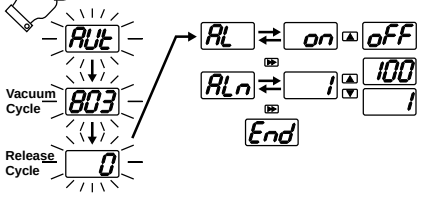
Window Comparator Mode



6 Press ⏭ 5x

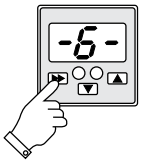


Automatic Teach Mode & Auto Surveillance

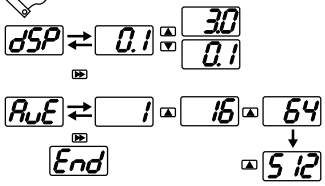


Note: When Auto Survelillance is turned on P1 is added to Output 1 setting, Output 2 is turned off and P-1 becomes Output 2.

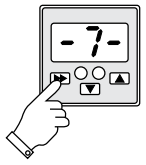
7 Press ⏭ 6x



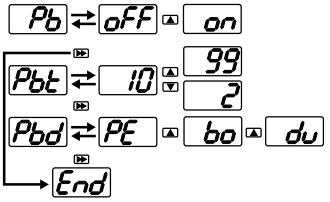
Display Refresh Settings / Output Response Time Interval



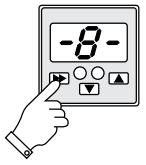
8 Press ⏭ 7x



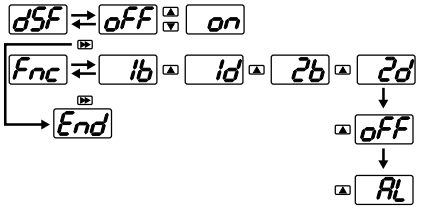
Display Peak Value Bottom Value or Their Difference



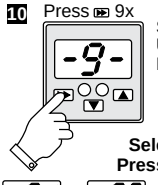
9 Press ⏭ 8x



Special Display Features

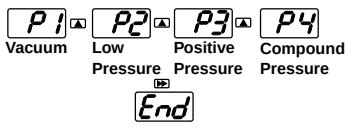


10 Press ⏭ 9x

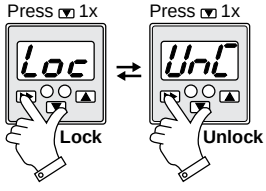


Select Units of Measure

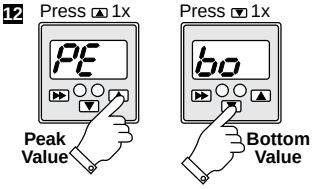
Select Pressure



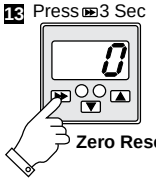
11 Hold ⏭ Press ▼ 1x — Hold ⏭ Press ▼ 1x



12 Press ▲ 1x — Press ▼ 1x



13 Press ⏭ 3 Sec



Zero Reset

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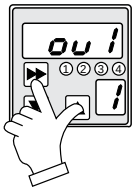
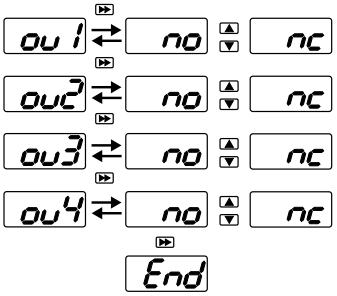
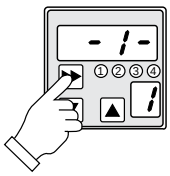
1 Hold ⏭
Press ▲ 1x



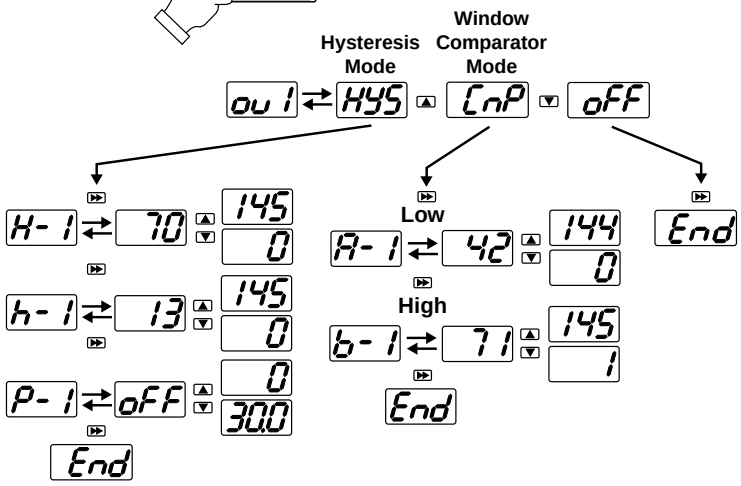
Output Selection
Normally Open / Normally Closed



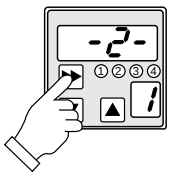
2 Press ⏭ 1x



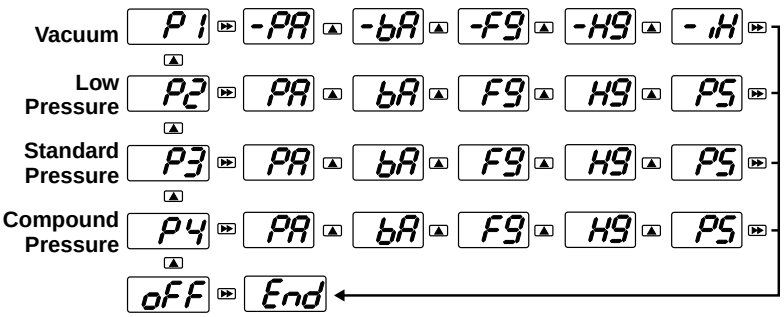
Select Output Mode
Hysteresis or Window Comparator
Output Setting
Peak Surveillance
(Repeat Procedure for Each Channel)



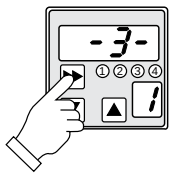
3 Press ⏭ 2x



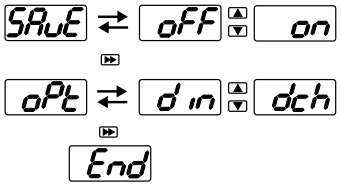
Select Remote Pressure
Select Unit of Measure



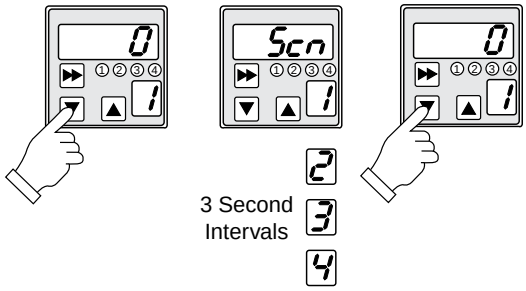
4 Press ⏭ 3x



Energy Saving Mode
Digital IN Mode (Remote Zero Reset)

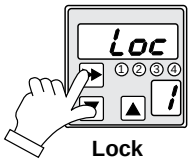


5 Press ▼ and Hold 3 Seconds
Scan Mode



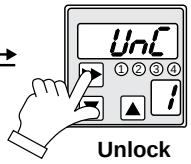
Press ▼ 1x to Deactivate

6 Hold ⏭
Press ▼ 1x



Lock

Hold ⏭
Press ▼ 1x



Unlock

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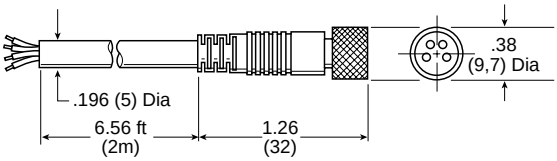
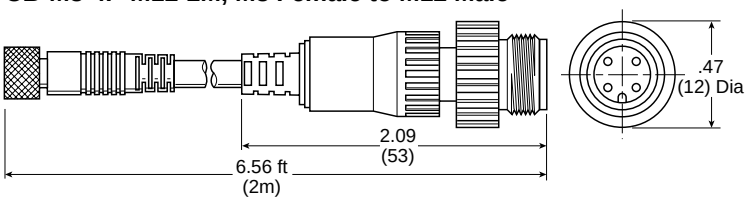
Accessories

Cables (Applicable to MPS-71E Display Units Only)

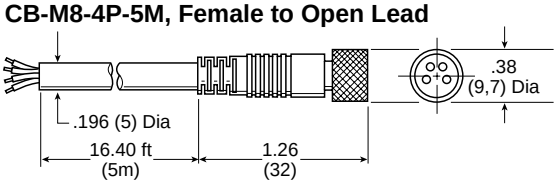
CB-M8-4P-2M, Female to Open Lead



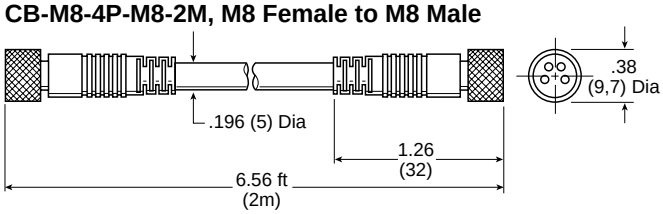
CB-M8-4P-M12-2M, M8 Female to M12 Male



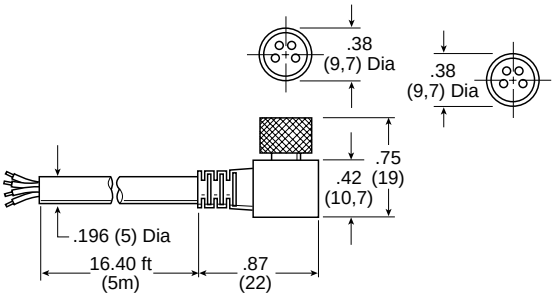
CB-M8-4P-5M, Female to Open Lead



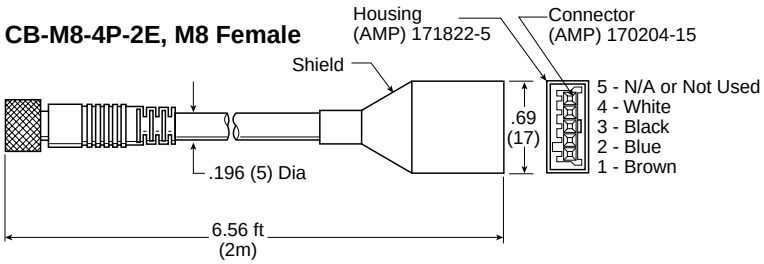
CB-M8-4P-M8-2M, M8 Female to M8 Male



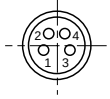
CB-M8-4P-5M-90, Female to Open Lead



CB-M8-4P-2E, M8 Female

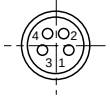


Female Interface
4-Pin, M8

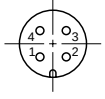


Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

Male Interface
4-Pin, M8



Male Interface
4-Pin, M12



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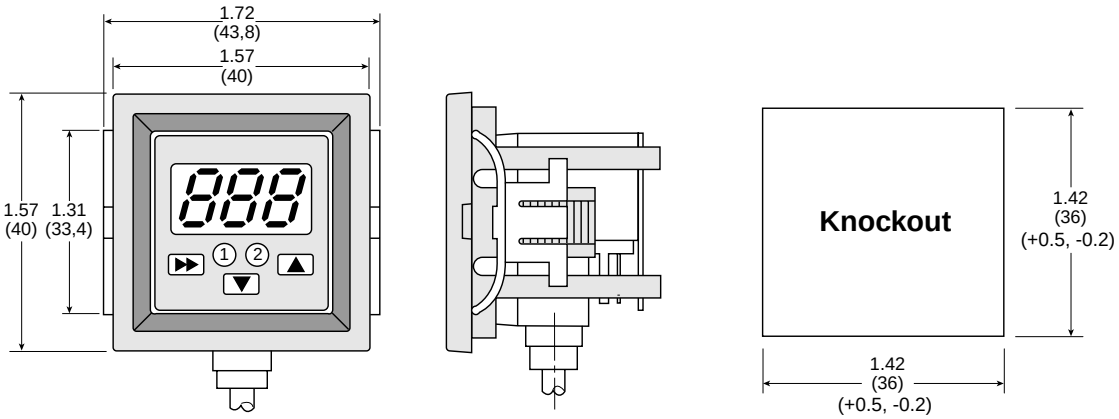
Accessories

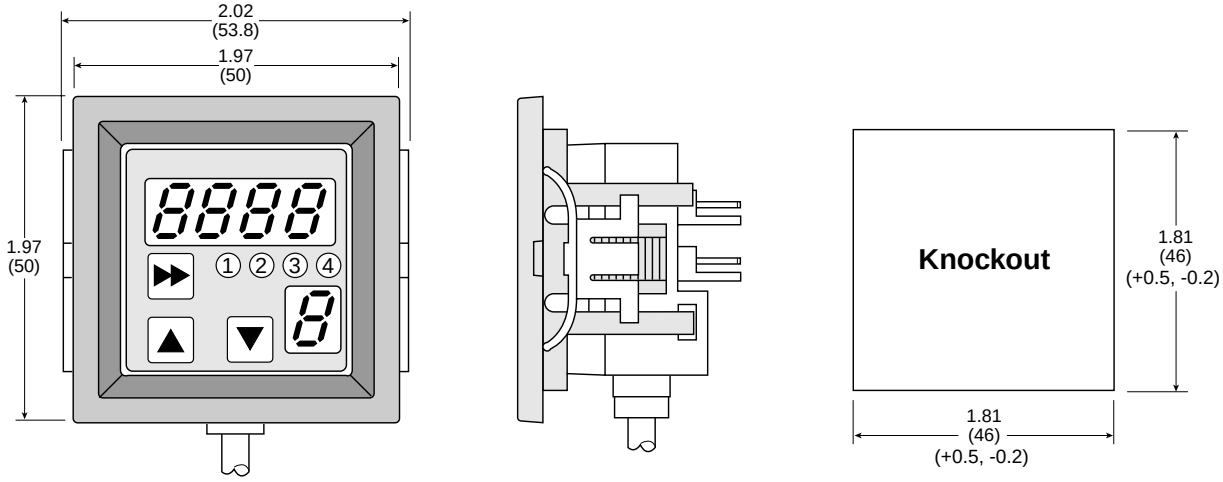
MPS-ACCH4

Panel Mounting Bracket for MPS-71



MPS-ACCH5

Panel Mounting Bracket for MPS-74



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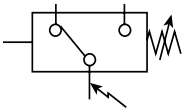
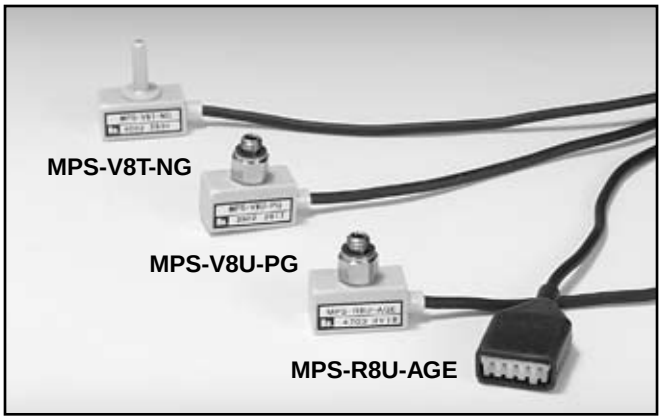
MPS-8





Features

- **Pressure Ranges:**
  Vacuum Pressure .....0 to -30 inHg
  Compound .....-14.7 to 72.5 PSI
- **Sensor Outputs:**
  1 NPN / PNP Open Collector Transistor Output, 30VDC, 125mA
  1 Analog Output, 1 to 5VDC
- **Switch Point 2/3 Trimmer Adjustment**
- **Fixed Hysteresis 2%**
- **10mm Wide**
- **Compatible with MPS-7 Display**
- **CE Marked**
- **Air and Non-Corrosive Gases**

MPS-8 Programming Options

Fixed Outputs	✔
Units of Measure change	
EZY Mode	
Hysteresis Mode	✔
Window Comparator Mode	
Auto Teach Mode	
Auto Surveillance Mode	
Display Refresh Settings	
Output Response Time	
Display Peak / Bottom Difference Value	
Special Display Features	
Lockout Option	
Peak Value at a Touch	
Bottom Value at a Touch	
Zero Reset	
Red / Green LED Display Options	
Peak Surveillance Mode	
Energy Savings Mode	
Scan Mode	
Password Lockout	
Error Output Mode	
Setting of Decimal Point	

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MPS-8 Ordering Numbers

(Bold Items are Most Popular)

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
0 to -30 inHg	M5 Bottom Swivel Male	PNP Sourcing	4 Pin, M8	**MPS-V8U-PG**
		NPN Sinking		**MPS-V8U-NG**
		1-5VDC Analog	2m grommet, MPS-7 Connector*	**MPS-V8U-AGE**
	4mm Tube Stud	PNP Sourcing	4 Pin, M8	MPS-V8T-PG
		NPN Sinking		MPS-V8T-NG
		1-5vVDC Analog	2m grommet, MPS-7 Connector*	MPS-V8T-AGE
-14.7 to 72.5 PSI	M5 Bottom Swivel Male	1-5VDC Analog	2m grommet, MPS-7 Connector*	**MPS-R8U-AGE**
	4mm Tube Stud	1-5VDC Analog	2m grommet, MPS-7 Connector*	MPS-R8T-AGE

* For 2m Grommet Only Connection, cut off GE connector for lead wires

Specifications

Media	Air and Non-Corrosive Gases
Pressure Port	M5 Female, M5 Male Swivel, 4mm Tube Stud
Proof Pressure	**(V)** 72.5 PSI, **(R)** 116 PSI
Operating Temperature	32 to 122°F (0 to 50°C)
Storage Temperature	14 to 140°F (-10 to 60°C)
Humidity	35 to 85% RH
Electrical Connection	**(G)** Grommet Open Lead; **(GE)** Clip Type for use with MPS-7 Series
Power Supply	10.8 to 30VDC, Ripple Vp-p 10% Max., Reverse Voltage Protection
Switch Output	1 Output, Normally Open, NPN or PNP Open Collector Transistor, 30VDC, 125mA
Linear Output	Analog Output 1 to 5VDC
Switch Point Setting	2/3 Trimmer
Hysteresis	≤ 2% of F.S. Fixed
Response Time	≤1ms
Repeatability	≤ 0.2% F.S.
Thermal Error	1% over ±25°C (77°C) Temperature Change: Range 32 to 122°F (0 to 50°C)
General Protection	IP40, CE Marked, EMC Rating: EN55011 Class B, EN50082-2
Current Consumption	< 20mA
Spike Protection	Vp-p 400v, 0.5ms Surge Protection
Dielectric Strength	1000VAC, 1min.
Insulation Resistance	> 100M ohms at 500VDC
Vibration Resistance	10 to 55Hz, 1.5mm amplitude, XYZ, 2 hrs.
Shock Resistance	100 G, XYZ
Material	**Body:** Polycarbonate; **Pressure Port**: Anodized Aluminum
Mass	0.14 oz. (4g)

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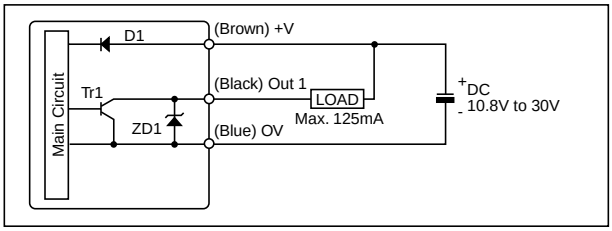
Open Collector Wiring

Grommet Lead Only
Brown: 24VDC
Blue: 0VDC
Black: NPN / PNP Open Collector

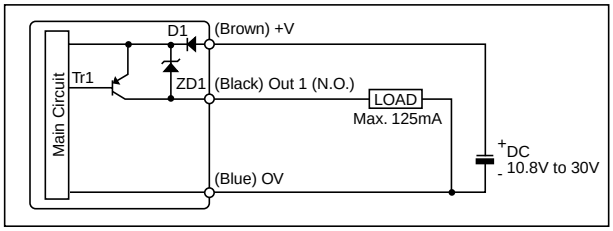
Analog Wiring

Grommet Lead Only
Brown: 24VDC
Blue: 0VDC
Black: Analog 1 to 5VDC

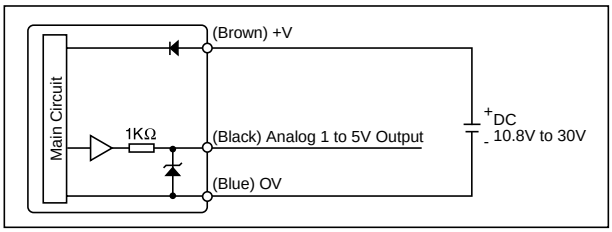
Internal Circuit



NPN Open Collector



PNP Open Collector



Analog

⚠ Cautions

The MPS-8 Pressure Sensor is designed to monitor pressure and is not a safety measure to prevent accidents.

The compatibility of the sensor is the responsibility of the designer of the system and specifications.

Operating Environment

- Parker Sensors have not been investigated for explosion-proof construction in hazardous environments.
- Do not use with flammable gases, liquids, or in hazardous environments.
- Avoid installing the sensor in locations where excessive voltage surges could damage or affect the performance of the sensor.

Operations

- Dedicate a power supply of 10.8 to 30VDC to the sensor and set the ripple to Vp-p10% or less. Avoid excessive voltage. Avoid voltage surges.
- A small amount of internal voltage drop is possible. Ensure the power supply minus any internal voltage drop exceeds the operating load.
- Verify the operating media is compatible with the specified sensor. Check the chemical make-up, operating temperatures, and maximum pressure ranges of the system before installing.
- Installation of air dryer system is recommended to remove moisture.

Installation

- Never insert an object into the pressure port other than an appropriate fluid connector.
- Avoid short-circuiting the sensor. Connect the brown lead to V+ and blue lead to 0V.
- Do not connect the output lead wires (black / white) to the power supply.
- Outputs not being used should be trimmed and insulated.
- Install using the metal mounting base.

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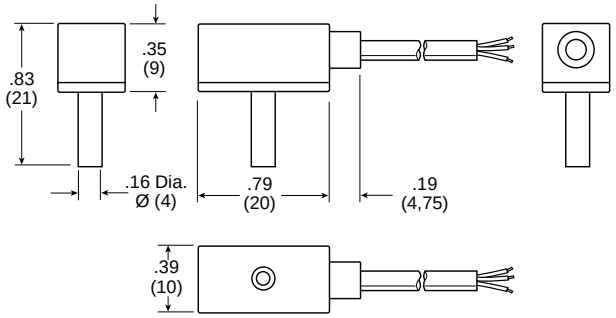
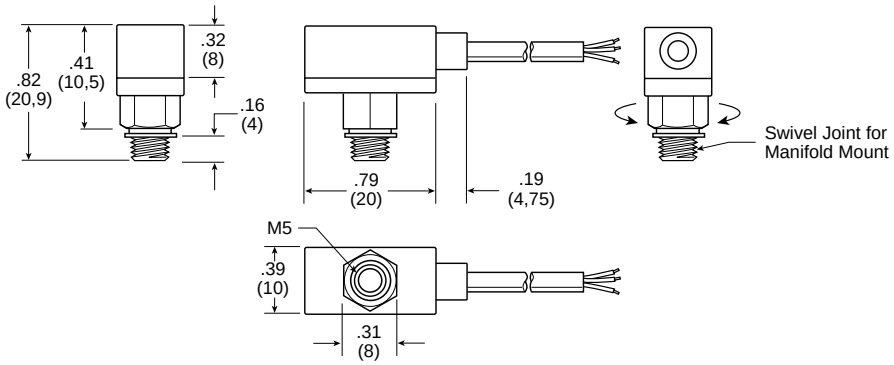
Dimensions

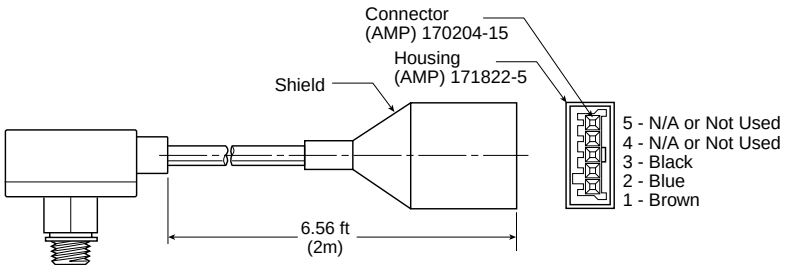
MPS-8T
4mm Tube Stud



MPS-8U
M5 Male Swivel, Grommet



2m Grommet
MPS-7 Connector



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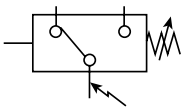
SCPSD



Features

- **Stainless Steel or Ceramic Diaphragms**
- **UL Listed and CE Marked**
- **Pressure Ranges**
  - **-14.7 to 250 PSI ..... 0 to 3000 PSI**
  - **0 to 1000 PSI ..... 0 to 5000 PSI**
  - **0 to 2000 PSI ..... 0 to 9000 PSI**
- **Sensor Outputs**
  - **2 PNP Open Collector Transistor Output, 30 VDC, 100mA**
  - **Optional Additional Current, 4 to 20mA**
- **Selectable Units of Measure**
  - **PSI, bar, Mpa**
- **Output Response Time Less than 5.0ms**
- **Error Message**
- **Polarity Protected**
- **Short Circuit Protected**
- **4 Digit LED**
- **Display Swivels 290°**

SCPSD-1000P-1727

SCPSD-600-14-15

SCPSD Programming Options

Outputs Change N.O. / N.C.	✔
Units of Measure change	✔
EZY Mode	
Hysteresis Mode	✔
Window Comparator Mode	
Auto Teach Mode	
Auto Surveillance Mode	
Display Refresh Settings	✔
Output Response Time	✔
Display Peak / Bottom Difference Value	✔
Special Display Features	
Lockout Option	
Peak Value at a Touch	
Bottom Value at a Touch	
Zero Reset	✔
Red / Green LED Display Options	
Peak Surveillance Mode	
Energy Savings Mode	✔
Scan Mode	
Password Lockout	✔
Error Output Mode	✔
Setting of Decimal Point	✔

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SCPSD Ordering Numbers

(Bold Items are Most Popular)

Pressure Range	Port Size	Output Circuit	Electrical Connector	Part Number
-14.7 to 100 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-0100P-0727
-14.7 to 100 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	SCPSD-0100P-1727
-14.7 to 250 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	**SCPSD-0250P-0727**
-14.7 to 250 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-0250P-1727**
0 to 1000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	**SCPSD-1000P-1725**
0 to 1000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-1000P-1727**
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	**SCPSD-3000P-0727**
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-3000P-1727**
0 to 3000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	**SCPSD-3000P-1725**
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-5000P-0727
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	**SCPSD-5000P-1727**
0 to 5000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP with 4-20MA	M12, 5 Pin	**SCPSD-5000P-1725**
0 to 9000 PSI	7/16-20 UNF-2b (SAE-4)	(2) PNP	M12, 4 Pin	SCPSD-9000P-0727
0 to 9000 PSI	7/16-20 UNF-2b (SAE-4)	(1) PNP with 4-20MA	M12, 4 Pin	SCPSD-9000P-1727
-1 to 16 Bar	1/4 BSPP Male	(2) PNP	M12, 4 Pin	**SCPSD-016-04-17**
-1 to 16 Bar	1/4 BSPP Male	(2) PNP with 4-20ma	M12, 5 Pin	**SCPSD-016-14-15**
0 to 250 Bar	1/4 BSPP Male	(2) PNP	M12, 4 Pin	**SCPSD-250-04-17**
0 to 250 Bar	1/4 BSPP Male	(2) PNP with 4-20ma	M12, 5 Pin	**SCPSD-250-14-15**
0 to 600 Bar	1/4 BSPP Male	(2) PNP	M12, 4 Pin	SCPSD-600-04-17
0 to 600 Bar	1/4 BSPP Male	(2) PNP with 4-20ma	M12, 5 Pin	SCPSD-600-14-15

Specifications

Pressure Code	0100	0250	016	1000	3000	5000	9000	250	600
Units of Measure	PSI ,bar, MPA								
Measure Range (PSI, *bar*)	-14.7 to 100	-14.7 to 250	*-1 to 16*	0 to 1000	0 to 3000	0 to 5000	0 to 9000	*0 to 250*	*0 to 600*
Overload Pressure (PSI, *bar*)	360	725	*40*	2900	7250	11600	21750	*500*	*1200*
Burst Pressure (PSI, *bar*)	360	725	*50*	11600	17400	24650	31900	*1200*	*2200*
Sensing Element	Ceramic			Stainless Steel					
Parts in Contact with Media	Stainless Steel 1.4404			Stainless Steel 1.4404, 1.4542, NBR*					
	Ceramic AL203, NBR*								
	*FPDM, EPDM Special Request								
Switch Cycles	>100 Million								
Output Response Time	< 10ms								
Power Supply	15 to 30VDC, Class 2 Power Supply								
Short Circuit Protection	Yes, 2.4 Amp / Open Collector Output								
Reverse Polarity Protection	Yes								
Overload Protection	Yes								
Current Consumption	< 100mA								
Output Circuit	2 PNP (Sourcing) Open Collector Transistor								
Analog Output	0/4…20mA, Programmable, freely scaleable								
Output Functions	Hysteresis, Window Comparator								
Switching Voltage	-1.5VDC								
Maximum Current Output	1A with 2 Open Collector Outputs, .5A per Output								
Accuracy	± 0.5% F.S. Typ., ± 1% Max.								
Repeatability	± 0.25% F.S.								
Display Accuracy	± 0.5% F.S. Typ., ± 1 Digit								
Thermal Error Max.	±0.03% F.S. at -4 to 185°F (-20 to 85°C)								
Material	Pressure Die-cast Zinc Z 410: Surface-finishing								
Display Material	Polyester								
General Protection	IP 67, EN60529, UL, CE Marked, EMC-EN50082-2 Class B, EN 50081-2								
Temperature Range of Media	-4 to 185°F (-20 to 85°C)								
Ambiant Temperature Range	-4 to 185°F (-20 to 85°C)								
Storage Temperature	-40 to 212°F (-40 to 100°C)								
Display	4-Digit, 7-Segment LED, Red, 9mm Height								
Tightening Torque	35Nm								
Vibration Resistance	20G, 10 to 500Hz, IEC60068-2-6								
Shock Resistance	50 G, XYZ, 11ms, IEC60068-2-29								
Mass	10.6 oz. (300g)								

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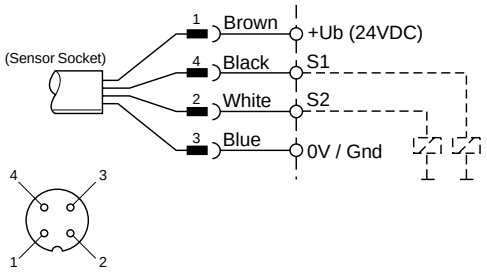
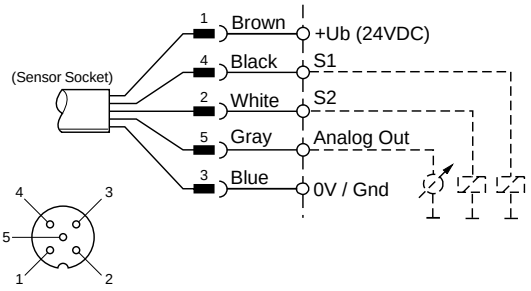
Internal Circuit

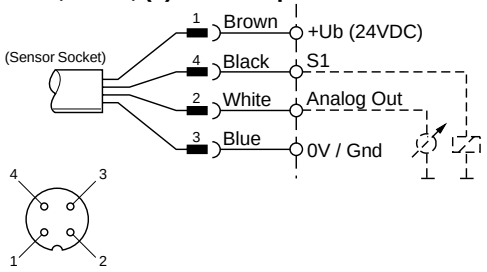
M12, 4-Pin, (2) PNP Outputs



M12, 5-Pin, (2) PNP Outputs with 4 to 20mA Analog



M12, 4-Pin, (1) PNP Output with 4 to 20mA Analog



Note: M12, 5-Pin Female Cable Connector will fit on both M12, 4-Pin and 5-Pin Male Sensor Connector.

Installation

Mechanical:

⚠ **CAUTION: Install and de-install the SCPSD only when there is no pressure present.**

Attach the SCPSD to the appropriate process connection. Installation should be undertaken only with a 22mm, across flats spanner. Ensure that the digital display is placed in the best viewing position by using the rotational housing adjustment. Turn the SCPSD manually to the required position. Maximum 290°.

Excessive turning beyond the easily detectable end stop will lead to damage.

The housing can be attached:

- with self-tapping screws into two blind holes at the back of the housing
- with the mounting plate provided
- with cable ties

Electrical:

⚠ **CAUTION: The SCPSD may be installed only by a qualified electrician in accordance with the respective national and international regulations.**

Protect the SCPSD from electromagnetic influences and over-voltages.

Optional installation tips which are shown by experience to reduce the influence of interference:

- Use shorter cables
- Avoid short distances between connecting leads and power consuming devices and interference generating electrical and electronic equipment
- Use free running diodes

Avoid static and dynamic over-pressures which exceed the specified overload pressure. Even when the overload pressure is exceeded only for a short time the SCPSD may be damaged. Parker SensoControl diagnostic systems are recommended for measuring pressure peaks exactly.

If there is a danger of excessively high pressure peaks, it is recommended to:

- use an SCPSD with a higher nominal instrument pressure (analog output can then be correspondingly matched)
- install a standard throttling device upstream from the SCPSD

Error Messages

Display	Description
Att	The set value is lower than the other respective parameters. When Enter is activated, the smaller value is matched up.
Err1	System Error (Internal)
Err2	Nominal instrument pressure range was exceeded by 10%. Please check system pressure.
Err3	Nominal instrument pressure range has been exceeded Error in analog electronics. Please check system pressure.

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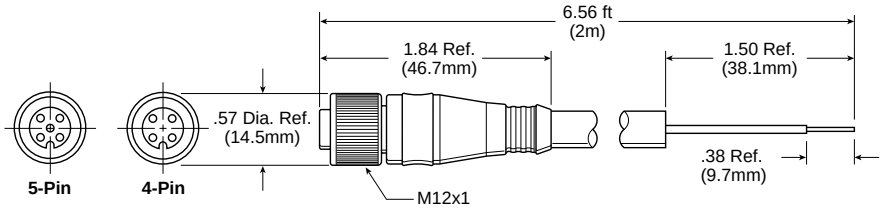
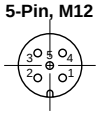
Cables (IP 67 Rated)

CB-M12-4P-2M, Female to Open Lead
CB-M12-5P-2M, Female to Open Lead

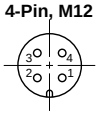


Female Interface 5-Pin, M12



Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black
5	Gray

Female Interface 4-Pin, M12

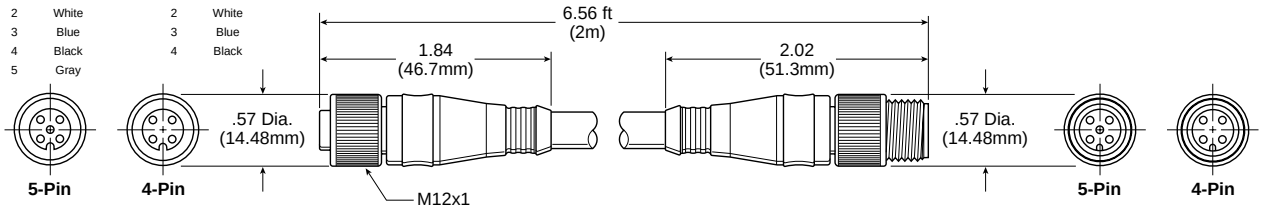


Cable Pin	Color
1	Brown
2	White
3	Blue
4	Black

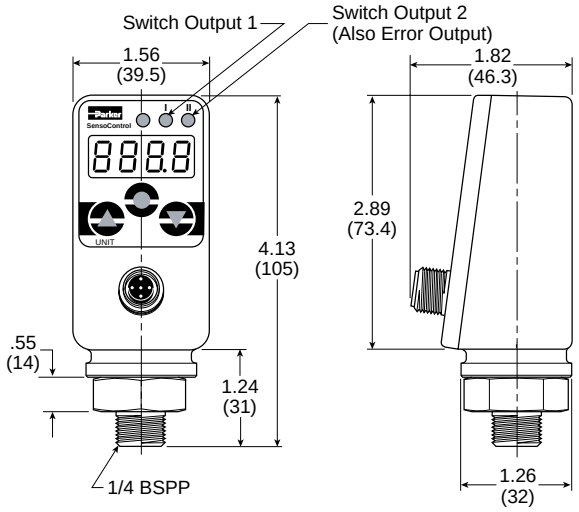
Male Interface 5-Pin, M12

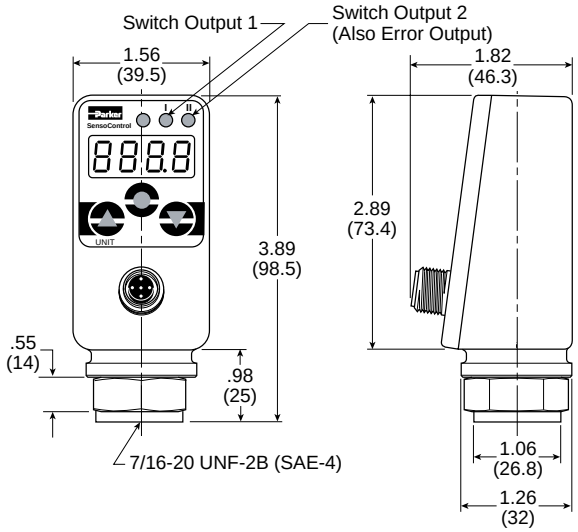
Male Interface 4-Pin, M12

CB-M12-4P-M12-2M, Female to Male
CB-M12-5P-M12-2M, Female to Male



Dimensions





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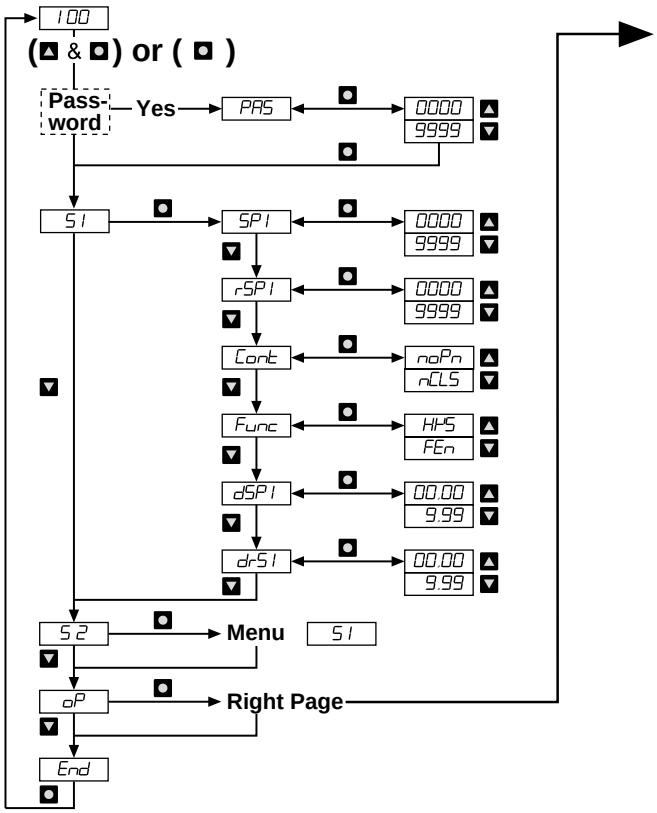
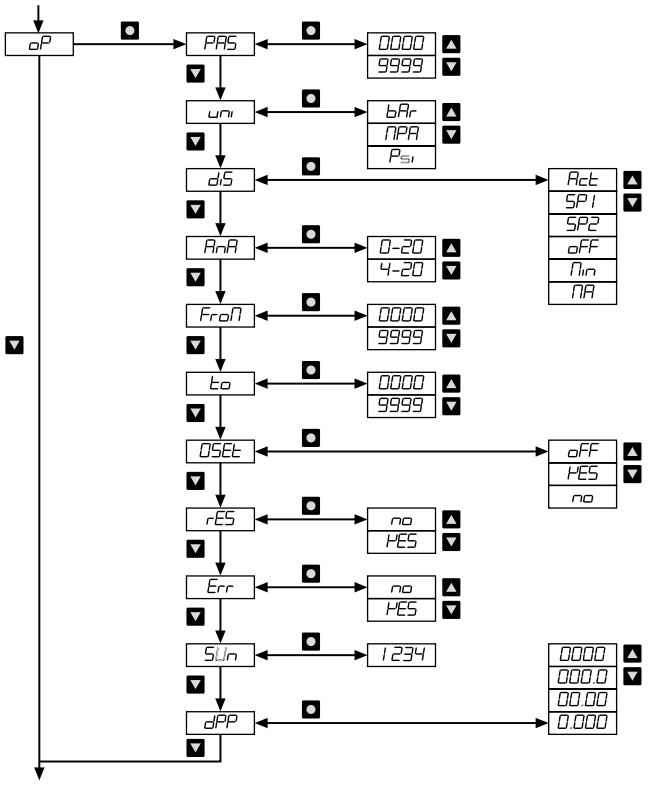


To Program Outputs and Options of SCPSD, press and hold the ▲ (Up Arrow Icon) then press the ■ (Circle Icon) until Pro6 is displayed. Release all buttons and follow menu to program outputs and options.



To Review Programed Outputs and Options of SCPSD, press and hold the ■ (Circle Icon) until Pro6 is displayed. Release the ■ (Circle Icon) and follow menu to program option and status.

Parameters Shown in Digital Display

To program switch outputs in menu ***S1*** (S1 = output 1) or ***S2*** (S2 = output 2), press ▲ and hold, then press ■ . Pro6 will be displayed for 2 seconds.

PRS This is dedicated to a password. Entry into the programming mode can be secured only when the correct figures have been entered

Menu for programming the switch outputs:
S1 ***S1*** = Switch output 1
S2 ***S2*** = Switch output 2 (Menu is not active if S2 is being used as an error output)

Switching point (SP): upper limiting value / pressure, at which the switch output changes its status.
SP1 ***SP1*** = Switch output 1; input as pressure value (e.g. 400 bar)
SP2 ***SP2*** = Switch output 2; input as pressure value (e.g. 430 bar)

Reverse switching point (rSP): lower limiting value/pressure at which switch output changes its status.
rSP1 ***rSP1*** = Reverse switching point (rSP1) of switch output 1; input as pressure value (e.g. 390 bar)
rSP2 ***rSP2*** = Reverse switching point (rSP2) of switch output 2; input as pressure value (e.g. 420 bar)
The reverse switching point is always smaller than its respective switching point. If the reverse switching point is set higher than the switching point, the reverse switching point will be set automatically 0.5% of the instrument nominal pressure below the switching point. The warning sign ***Att*** (attention) will appear, which can be cleared with Enter. ■

cont Switch output as
noPn = closer
nCLS = opener

Func Selection of switching functions:
HySt = Hysteresis function
FEn = Window function

Delay times; input from ***0*** to ***9.99*** s.
dSPI ***dSPI*** = delay time switching point output 1
drSL ***drSI*** = delay time reverse switching point output 1
dSP2 ***dSP2*** = delay time switching point output 2
drS2 ***drS2*** =delay time reverse switching point output 2

■

Options Program (See Next Page)

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Settings for Options Program

oP Options program

PA5 Password input
0000 = no password
Example password *1234* = 1234

uni Setting of units:
bAr = bar ***NPA***= MPa ***PSi***= PSI

diS Display: Value which will be shown on the digital display in run mode.
Act = Actual system pressure
Nin = Minimum system pressure; (pressure troughs)
NA = Maximum system pressure; (pressure peaks)
SPI = Switch point 1
SP2 = Switch point 2
OFF = off indication

AnA Setting of analog output (see point 4)
0-20 = 0-20 mA ***4-20*** = 4-20 mA

FroN Calibration of starting value (0 or 4 mA) for the analog output. Settable from 0 to nominal instrument pressure.
Example for ***AnA*** = *4-20:*
0000 = at 0 bar the analog output yields 4 mA.
⚠ The starting value is always smaller than the end value. If the starting value is set greater than the end value, then the starting value will be automatically set 5% of the nominal instrument pressure below that of the end value. The warning sign ***Att 1*** will appear, which can be cleared with the Enter sign.

to Calibration of end value (20mA) for the analog output. Settable from 0 up to nominal instrument pressure.
0010 = at 10 bar the analogue output yields 20 mA.

0Set Zero adjustment: The actual pressure will be stored as a new zero point. For safety reasons this is limited to the range ± 5% of the nominal instrument pressure. Application example: a system with a continuous residual pressure, but which should be displayed as 0 bar.
OFF = factory calibration
yES = undertake zeroing adjustment now
no = go back to the menu and do not make any new zeroing adjustments. After a zeroing adjustment, a pressure of up to 20 bar can be displayed as 0 on a 400 bar SCPSD. Before working on a system, it must be ensured that there is no pressure in it.

rES Clearing the minimum and maximum value memory
yES = yes, clear memory now
no = no, do not clear memory

Err Programming switch output 2 as an error output
yES = yes
no = no
Switch Output 2 can be used optionally as an error output to display pressure switch function errors. As an error output it is normally closed, and in case of errors ***(Err 1, Err 2, Err 3)*** it is open. At the same time LED II lights up. The display and the output remain active until the error is cleared.

SUn Indication of Software Version

dPP Setting of the decimal point. (The maximum number of decimal points depends on the nominal pressure of the SCPSD instrument)
0000 = no decimal point
000.0 = 1 decimal point
00.00 = 2 decimal points
0.000 = 3 decimal points

End End of programming mode

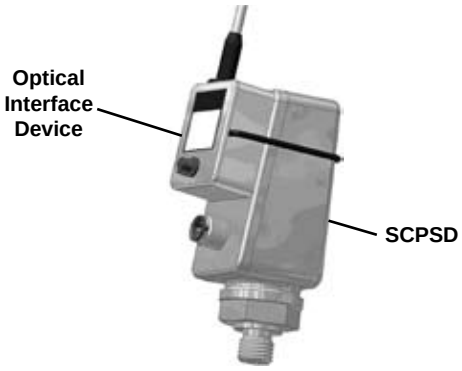
Electrical Test Unit (M12, 5-Pin)

SCSN-450-PSD

SCPSD Programming Kit

SCSD-PRG-KIT

Optical Interface Device that allows read / write and storing of SCPSD configuration data. Kit includes optical interface device, electrical test unit with PC cable (RS232 connector) and software.



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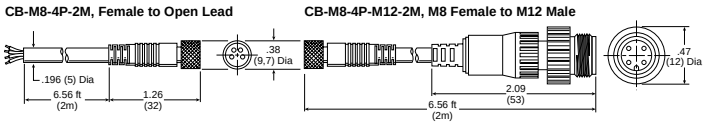
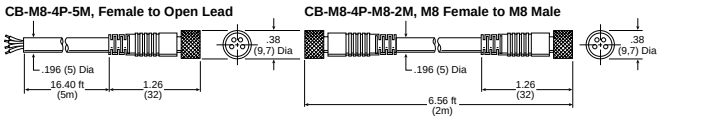
Features

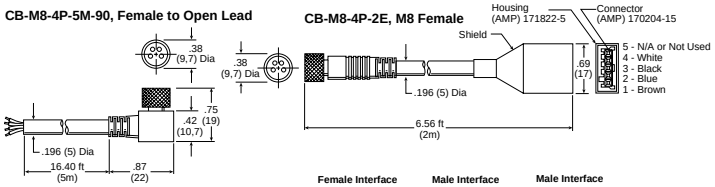
- **M8, M12 Male / Female Connector**
- **Length: 2m or 5m**
- **Cover: PVC or PUR**
- **Connection Type: Swivel Straight or Angled**
- **IP 67 Swivel Connector**

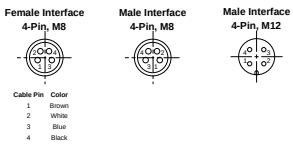
Common Part Numbers

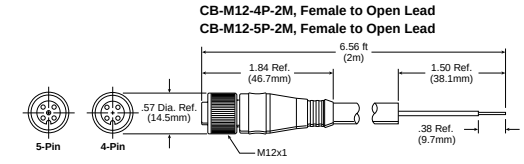
Item	Connector	Contacts	Length	Cover
CB-M8-4P-2M	M8 Female	4	2m	PVC
CB-M8-4P-5M	M8 Female	4	5m	PUR
CB-M8-4P-5M-90	M8 Angled Female	4	5m	PUR
CB-M8-4P-M12-2M	M8 Female to M12 Male	4	2m	PVC
CB-M8-4P-M8-2M	M8 Female to M8 Male	4	2m	PVC
CB-M8-4P-2E	M8 Female to MPS-7 Connector	4	2m	PVC
CB-M12-4P-2M	M12 Female	4	2m	PVC
CB-M12-5P-2M	M12 Female	5	2m	PVC
CB-M12-4P-M12-2M	M12 Female to M12 Male	4	2m	PVC
CB-M12-5P-M12-2M	M12 Female to M12 Male	5	2m	PVC

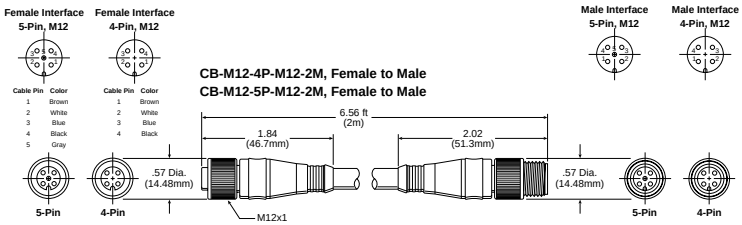












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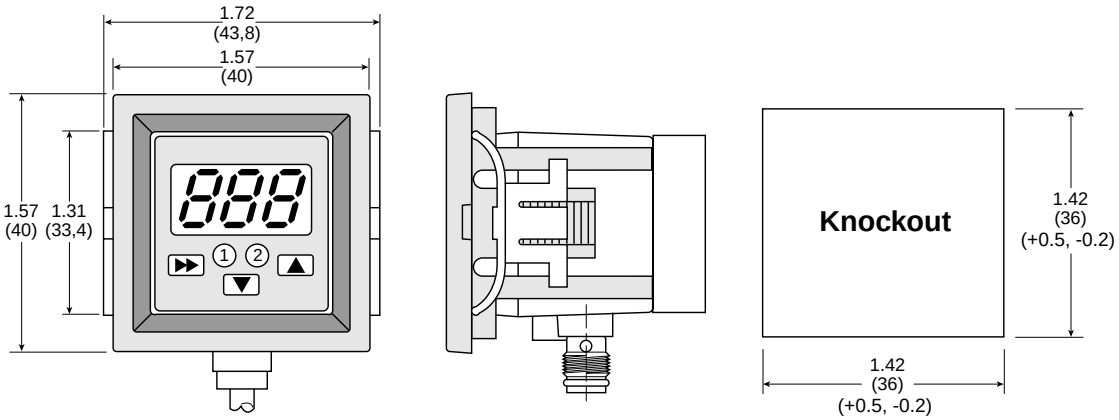
Panel Mounting Kits

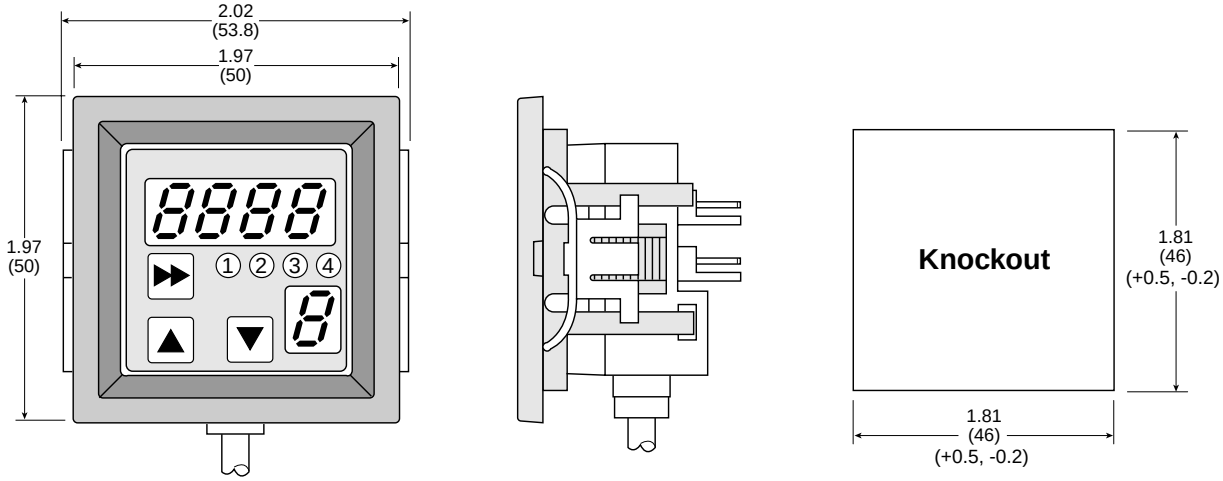
Description	For Use With
MPS-ACCH7	MPS-32
MPS-ACCH4	MPS-71
MPS-ACCH5	MPS-74

Panel Knockout Dimensions

MPS-ACCH7, MPS-ACCH4



MPS-ACCH5



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ou1		Output 1
ou2		Output 2
ou3		Output 3
ou4		Output 4
nc		Output Normally Closed (Passing)
no		Output Normally Open (Non-Passing)
-PA	PA	Pressure Units (Pascal). Negative Units for Vacuum Sensors
-bA	bA	Pressure Units (Bar). Negative Units for Vacuum Sensors
-H9	H9	Pressure Units (mm.Hg). Negative Units for Vacuum Sensors
-.H		Pressure Units (in.Hg). Negative Units for Vacuum Sensors
-F9	F9	Pressure Units (kgf/cm^2). Negative Units for Vacuum Sensors
PS		Pressure Units (PSI)
ESY		Easy Mode. Sensor will only allow changes to set points
oFF		Off, or Energy Saving Display; reduces current consumption of Sensor
on		On
HYS		Hysteresis Mode. Select Hysteresis Set Point and Hysteresis Range
CnP		Windows Comparative Mode Select High and Low Set Point
H-1		Hysteresis Mode Set Point. Output 1
H-2		Hysteresis Mode Set Point. Output 2
h-1		Hysteresis Mode. Hysteresis Range Output 1
h-2		Hysteresis Mode. Hysteresis Range Output 2
A-1		Windows Comparative Mode Low Set Point Output 1
b-1		Windows Comparative Mode High Set Point Output 1
A-2		Windows Comparative Mode Low Set Point Output 2
b-2		Windows Comparative Mode High Set Point Output 2
AUt		Automatic Teach Mode. Automatically sets Outputs 1 and 2 while cycling system. Output 1 set to Hysteresis Mode, Output 2 set to Window Comparative Mode
AL		Auto Surveillance Mode On/Off. Set after Automatic Teach
ALn		Auto Surveillance based on cycles times. Provides output if Peak Value is not obtained in a specified number of cycles. (1-100)
dSP		Display Refresh Setting. Display updates from .1 to 1 sec. .3 sec factory set. Does not affect Sensor Response Time
AUE		Output Response Time. Multiples the sensor response time. Increases sensor response time. (Anti-chatter Mode)
Pb		Pressure Value Display Mode. Displays Pressure for a specific time period and then updates for next time period
Pbt		Time Range for Pressure Value Display Mode
Pbd		Value Setting for Pressure Value Display Mode
PE		Display Peak Value over selected time range
bo		Display Bottom Value over selected time range
du		Display Difference over selected time range
dSF		Display Function Mode. On/Off
Fnc		Display Function. Selects display types.
1b		Display blinks pressure when Output 1 is Passing Normal when Output 1 is Non-Passing
2b		Display blinks pressure when Output 2 is Passing Normal when Output 2 is Non-Passing
1d		Display shows pressure when Output 1 is Passing Display shows special screen when Non-Passing
2d		Display shows pressure when Output 2 is Passing Display shows special screen when Non-Passing
SEt		Select Switch Output setting for MPS-31
CoL		Color Setting for MPS-31
Pot		MPS-4, Port Reference Selection
A		MPS-4, Display change of B port to A port static
b		MPS-4, Display change of A port to B port static
Ab		MPS-4, Display change of A port to change of B port
P1		MPS-7, Pressure Range Selection Vacuum
P2		MPS-7, Pressure Range Selection Low Pressure
P3		MPS-7, Pressure Range Selection Positive Pressure
P4		MPS-7, Pressure Range Selection Compound Pressure
SAvE		MPS-7, Energy Savings Mode, reduces current consumption
P-1		MPS-7, Peak Surveillance
oPt		Digital Input Sensors Only. Digital Input Mode for remote Zero reset of sensors
d in		Digital Input
dch		Digital Channel
Scn		MPS-7 Scan Mode. Sensor scans and displays each channel for 3 sec.
Loc		Locked. Sensor programs cannot be changed
UnC		Unlocked. Sensor programs can be changed
Zero Reset		Sets Sensors reference point to current atmospheric conditions

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Glossary

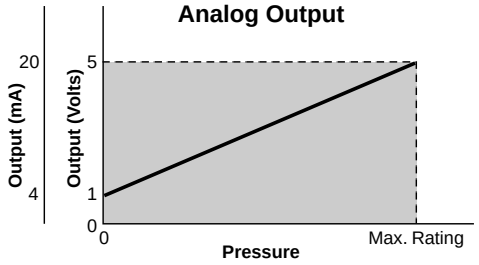
__A__

Accuracy

The PERCENTAGE difference between the true value and that indicated by an instrument is the measure of the instrument's accuracy. It is expressed as a percentage of the full-scale value of the reading according to the type of instrument.

Analog Output

An analog output provides an output voltage that is proportional and linear to the pressure measured by the sensor. This output signal provides continuous feedback to the analog card of the PLC.



Automatic Surveillance Mode

Sensor automatically surveys vacuum cycle to determine if the Peak Vacuum Level was attained after H-1. Output 2 changes state if the Peak Vacuum Level of the system is not reached over a consecutive number of surveillance's programmed. Up to 100 consecutive cycles can be programmed.

Peak Vacuum Level and number of surveillance's are programmed at the end of the Automatic Teach Mode.

Automatic Teach Mode

Programming feature that automatically sets switch points during the vacuum cycle.

Sets Output 1 to Hysteresis Mode and Output 2 to Window Comparator Mode. 60% of maximum vacuum level displayed during setup operation of the system.

Output 1: Hysteresis Mode

H-1 = (Peak Vacuum Level minus Bottom Vacuum Level) x 0.6 + Bottom Vacuum Level

h-1 = (H-1) x 0.05

Output 2: Window Comparator Mode

A-2 = (H-1) x 0.8

B-2 = Peak Vacuum Level x 0.8

__C__

Cable Connector Type

4-Pin, M8 cable connector referred to as PICO or Micro connector. 4-Pin, 5-Pin, M12 cable connector referred to as Mini connector.

Channel Selection

The MPS-74 display allows the user to select up to 4 separate channels to monitor remote sensors.

Class 2 Power Supply

Power source not exceeding 30VDC and 8 amps.

Connection Port Size

Pressure port connections on the back or bottom of the sensor.

Current Consumption

Maximum current consumed during operation. Does not include the load current.

__D__

Display Resolution

Resolution is 1/1024. The least possible measurable unit to display on the display. This will vary with the units of measure and is adjustable on some sensors.

Shown below are the different unit increments displayed for different pressures.

Compound	Low Pressure	Vacuum	Pressure
bar: 0.01	bar: 0.001	bar: 0.001	bar: 0.01
kPa: 1	kPa: 0.1	kPa: 0.1	mPa: 0.001
kgf/cm^2: 0.01	kgf/cm^2: 0.001	mmHg: 1	kgf/cm^2: 0.01
PSI: 0.1	PSI: 0.1	inHg: 0.1	PSI: 1

Dielectric Strength

Sensors ability to withstand excess voltages.

Digital Display Unit

Minimum unit displayed on the sensor.

DIN Rail

A rail mounting bracket equivalent to DIN Standard, adaptable to the MPS-2 sensors.

__E__

Error Message

Error message is displayed if the pressures, inputs, or outputs exceed the parameters of the sensor.

__F__

Full Scale

Abbreviated as F.S. this is the operating pressure scale of the sensor.

__G__

Grommet Type

Electrical lead from the sensor.

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__H__

Hysteresis

The difference in pressure below the switch point pressure which controls the ON-OFF status of the output signal. (See Output Modes)

__I__

Input Impedance

The source of the electrical response of the sensing element expressed in ohms.

IP Ratings

IP40 - Protected against solid foreign objects of 0.04" (1mm) and greater.

Non-protected against the penetration of liquids.

IP65 - Dust tight.

Protected against water jets.

IP67 - Dust tight.

Protected against the effects of temporary immersion water.

Insulation Resistance

Resistance between electrical circuit and the body, expressed in ohms at a voltage rating.

Internal Voltage Drop

Caused by the resistance of an electrical part in an electronic circuit. Example is a 2-wire pneumatic pressure switch.

__L__

LED

Electronic Display Technology

Load Current

Amount of current flowing through the sensor once the output is activated.

Lock-Out Mode

Prevents accidental changes to the sensor settings.

__M__

Maximum Operating Pressure

Maximum operating pressure the sensor is rated for. Exceeding this pressure could damage the unit and will display FFF.

__N__

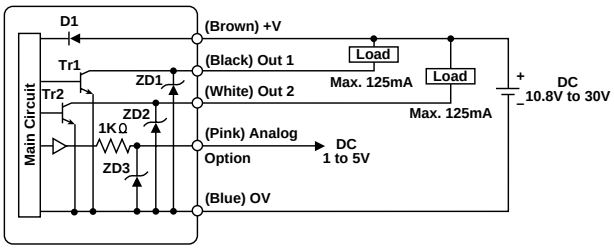
Noise Resistance

Amount of electrical noise in the surrounding environment that could affect the sensor performance.

NPN Pressure Sensor Output

NPN type open collector transistor outputs are solid state circuits that provide sinking output capabilities. When the transistor is on, the current for the load flows into the transistor. This output “sinks” toward 0VDC, 0mA.

NPN Output (With Analog Output)



__O__

ON / OFF Output

The electrical state of the output signal.

Open Collector Transistor

Output circuit that sinks (NPN) or sources (PNP) at the pressure switch-point setting.

Operating Humidity Range

Humidity range for proper operation of equipment.

Operating Indicator Light

LED indicator is on when ON-OFF output is ON.

Operating Pressure Range

The pressure range the unit was designed to operate in.

Operating Temperature Range

Acceptable temperature range for the specifications listed in the catalog.

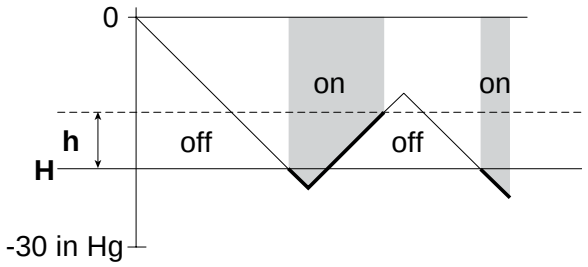
Operating Voltage

Voltage range for normal operation.

Output Modes

Switch Point with Hysteresis Settings

This output mode provides one switch point **(H)** and a hysteresis pressure adjustment. When the switch point pressure is achieved, the output (NPN / PNP) is activated if normally open or deactivated if normally closed. Typically, this mode is used for pressure confirmation. For positive pressure applications, this operating mode does not provide any output or alarms beyond the switch point in the case of excessive pressures.



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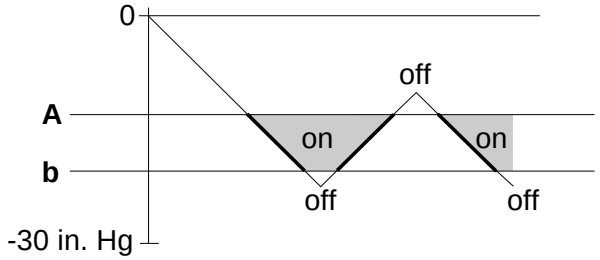
Glossary

The hysteresis setting **(h)** is the difference in pressure below the switch point pressure which controls the on / off status of the output.

Window Comparator Setting

This output mode provides two switch points **(A)** and **(b)** that control the output signals (NPN / PNP) between the two pressures. This creates a “window” that the sensor can provide an output and is sometimes referred to as “high / low” setting. The window comparator Mode provides an output or alarm when pressures exceed the upper limit.



Output Response Time

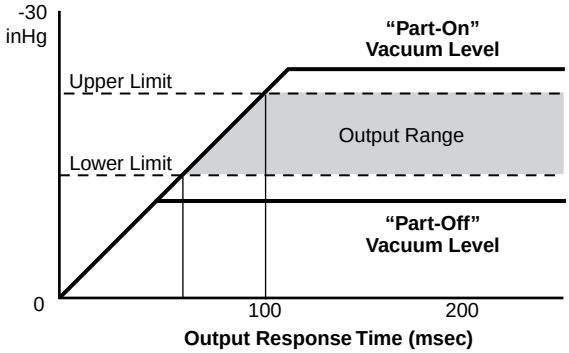
Response time of the output signal after the pressure switch point is achieved. Measured in milliseconds.

Output Settings

Maximize the difference between the “Part -Off” and “Part-On” vacuum levels by selecting the appropriate tubing I.D. and length from the generator to the cup. The part present output must be set between the “Part -Off” and “Part-On” vacuum levels. If the difference between the “Part -Off” and “Part-On” vacuum levels is minimal, remote sensing at the suction cup is recommended with MPS-6 or MPS-8 sensors.

For most material handling applications, the part present output can be set near the upper limit of the output range.

For high speed pick and place applications, the part present output can be set near the lower limit of the output range. This reduces the output response time of the sensor. Output response and accuracy are critical to the overall performance of the system. Remote sensors are recommended here.



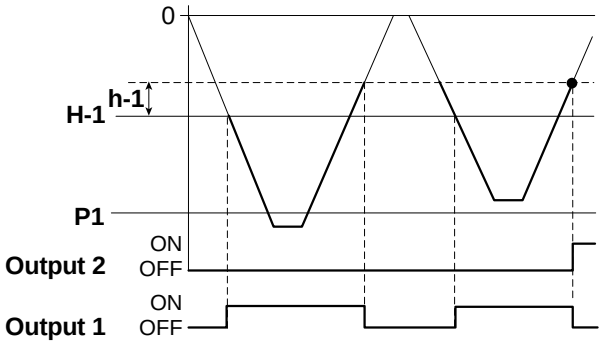
__P__

Panel Mounting Brackets

Brackets used to panel mount the sensor.

Peak Surveillance

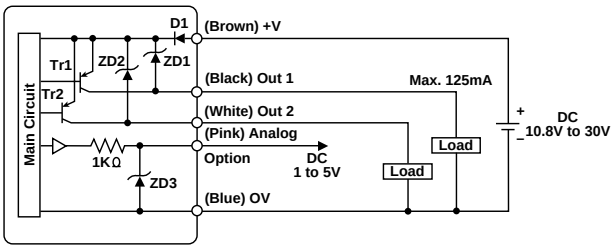
Maintenance function that can monitor peak values of the system. During the pressure cycle, if peak pressure (P-1) is not attained after set point (H-1)is attained, an error code *PErr* is displayed on the sensor.



PNP Pressure Sensor Output

PNP type open collector transistor outputs are solid state circuits that provide sourcing output capabilities. When the transistor is on, the current for the load flows out of the transistor. This output “sources” toward 24VDC, 125mA.

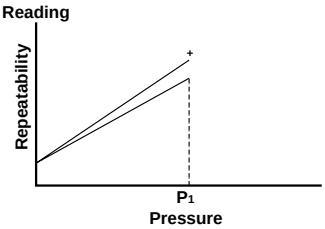
PNP Output (With Analog Output)



__R__

Repeatability

The repeatability refers to the sensor’s ability to provide the same output with consecutive applications of the same pressure input.



Repeatability is represented as a percentage of the full scale value of the sensor. All Parker sensors are rated ± 0.2% F.S. P1 would be represented as 145 PSI x 0.002 = ±0.29 PSI.

Reverse Voltage Protection

Diode circuitry to prevent "cross-wire" damage during installation of the sensor.

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__S__

Setpoints

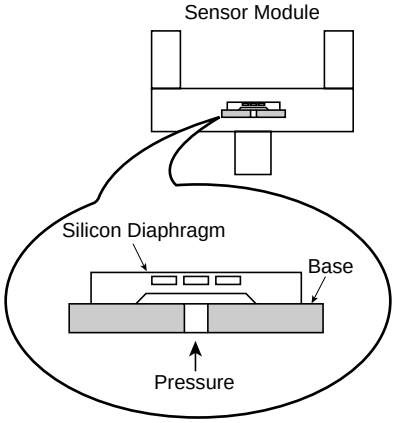
The number of the ON-OFF output signals in one product. Product with 2 setting points means 2 output type.

Shock Resistance

The amount of vibration the sensor can withstand without affecting performance.

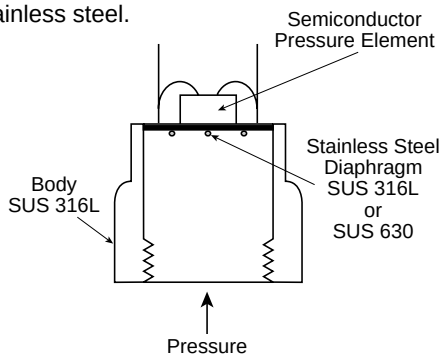
Silicon Diaphragm

This type of sensor is used for air and non-corrosive gas applications.



Stainless Steel Diaphragm

This type of sensor is used for liquids, non-corrosive to 316L or 630 stainless steel.



Switch Output

This is a reference to a digital or NPN / PNP open collector transistor output from the sensor. The technology is binary logic.

__T__

Thermal Error

Temperature characteristics vary with applications. The performance of the sensor can be affected by changes in ambient temperatures. The sensor rating is represented by a percentage of the F.S.

__W__

Wetted Parts

Sensor body parts that are in contact with process-type fluids are refered to as wetted parts.

__Z__

Zero Reset

The sensor technology is PSIA. Periodically, the sensor's atmospheric reference may need to be adjusted manually or automatically as a result of small changes in the atmospheric reference point.

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Vacuum Control Valves

Section D

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FSV

Operation

When the flow of air from the cup side to the generator side is greater than the switching flow rate of the valve, the float is drawn back against the spring and seals on the housing. In this state, flow passes through an orifice on the float. Vacuum flow is “Checked”. (See Figure 1).

When the cup comes in contact and seals on a product, flow is reduced and the spring forces the float towards the cup side inlet. This breaks the seal at the float and the full open state is restored. (See Figure 2).

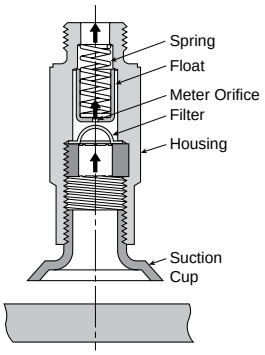


Figure 1
(Closed, Metered Flow)

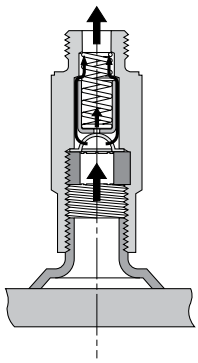
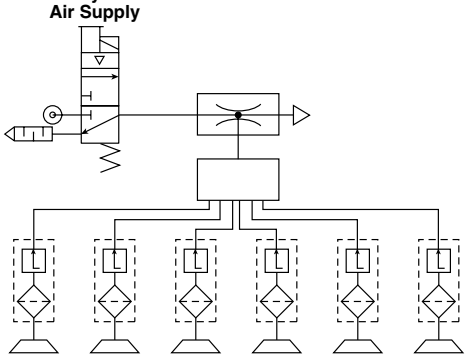


Figure 2
(Open, Full Flow)

Normally Closed
Air Supply



Features

- **Pick and Place Randomly Placed Products**
- **Minimize Vacuum Loss when Cup Seal is Lost**
- **Direct Mounting to Cups**
- **1/8 to G3/8 Connection**
- **Integrated Bronze Filter**

Application

Maintaining an acceptable level of vacuum is critical to the performance of vacuum systems that have a single source vacuum generator with multiple cups. The Parker Flow Sensing Valve assists in maintaining an acceptable vacuum level if the vacuum cup does not make a proper seal. The valve will automatically close if the cup loses the seal with the product during a pick and place motion.

The Parker Flow Sensing Valve is a normally open valve that switches to a closed metered state when the vacuum flow rate from the cup side to the generator side is greater than the switching flow rate of the flow sensing valve. The Flow Sensing Valve “Checks” the vacuum flow. The vacuum flow rate of the generator must be more than the switching flow rate of the Flow Sensing Valve or it will not switch to a “Checked” position.

When using multiple Flow Sensing Valves per generator, the flow rate of the generator must be more than the combined switching flow rates of the flow valves and any other leak path. For example, a CV20-HSN has a maximum flow rate of 3.88 SCFM and a 1/8 Flow Sensing Valve has a switching flow rate of 0.28 SCFM. Therefore 13 Flow Sensing Valves can be connected in parallel to a CV20-HSN.

Once a Flow Sensing Valve is “Checked”, a small amount of by-pass flow occurs. This leakage allows a generator to be turned on prior to the cup being in place on a product and is the flow path used to evacuate the cup volume. The by-pass flow will decrease the maximum degree of vacuum in a system, and is considered a leak path when the cup is not sealed on a product. Blow off functions will still operate by forcing the Flow Sensing Valve to a full open position, allowing the part to be blown off.

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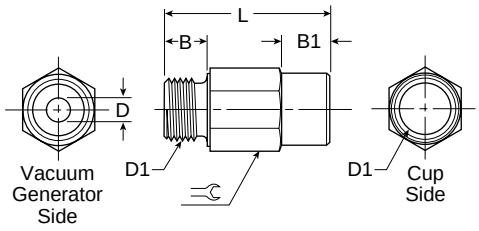
Ordering Information

Part Number	Description
FSV-G1	1/8" BSPP
FSV-G2	1/4" BSPP
FSV-G3	3/8" BSPP

Specifications

Description	FSV-G1	FSV-G2	FSV-G3
Switching Flow Rate	0.28 SCFM		0.875 SCFM
Nominal Size	4mm		
Housing Material	Anodized Aluminum		
Filter Material	Al-Niro Mesh		
Temperature Range	14° F to 140° F (-10° C to 60° C)		
Maximum Pressure	145 PSI		115 PSI
Media	Atmospheric Air		
Weight (grams)	0.009	0.016	0.029



Dimensions

	B	B1	D	D1	L	⌯
FSV-G1	0.26 (6.5)	0.43 (11)	0.16 (4)	G	1.42 (36)	0.51 (13)
FSV-G2	0.33 (8.5)	0.43 (11)	0.16 (4)	G1/4	1.50 (38)	0.67 (17)
FSV-G3	0.47 (12)	0.51 (13)	0.16 (4)	G3/8	1.65 (42)	0.87 (22)

inches (mm)

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CH01

Features

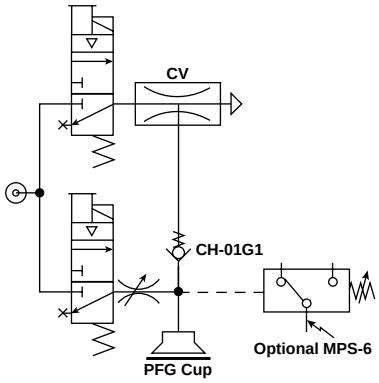
- **Poppet Design**
- **Low Leakage**
- **Low Cracking Pressure**

Characteristics

The CH Check valve is used to hold a degree of vacuum downstream from the check valve when the vacuum generator upstream from the check valve is turned off. A separate blow-off connection downstream from the CH check valve is required to destroy the vacuum pressure and blow off the part.

This check valve is an open or passing flow path when there is a differential pressure from the pad side to the generator side.

Normally Closed Air Supply with Blow-off & Optional Sensor



Specifications

Operating Temperature Range:
32°F to 140°F (0° to 60°C)

Operating Vacuum Range:
-4.25 to -13.89 PSIG (-8.7 to -28.3 inHg)

Port Size:
Pad Side = 1/4", Generator Side = 1/8"

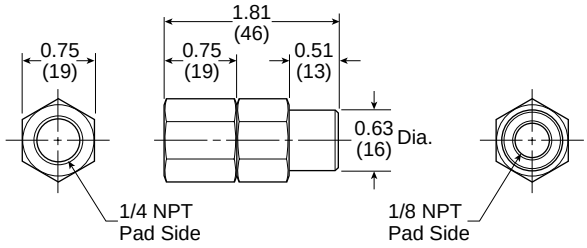
Leakage Rate:
0.2 PSI / Minute (0.4 inHg / Minute)

Cracking Pressure:
2.9 PSIG (5.9 inHg)

Materials

Valve Body / Fittings ..... Brass / Aluminum
Seals .....BUNA
Spring ..... SUS

Dimensions



Ordering Information

Part Number	Description
CH-01G1	BSPP Ports
CH-01N1	NPT Ports

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Vacuum Accessories

Section E

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VF & VFL

Always filtrate the vacuum system to protect the components from damaging particles absorbed from the environment. Elements should be replaced periodically to prevent slower response and overall performance of the system.

Part Numbers

Item	Application	Male Connection
VF-2G	CV-05, CV-10, MCA-05	G1/8"
VF-3G	CV-05, CV-10, MCA-05	G1/8"
VF-5G	CV-15, MCA-10/13	G1/4"
VF-6G	CV-20/25/30	G3/8"
VFL-44	General Use	4mm - Tube
VFL-66	General Use	6mm - Tube
VFL-88	General Use	8mm - Tube

Spare Parts - Filter Elements

Item	For Filter
VF-2E	VF-2
VF-3E	VF-3
VF-5E	VF-5
VF-6E	VF-6
VFL-E	VFL-44, 66
VFL-88E	VFL-88
VFL-46H	Mounting Bracket for VFL-44, 66, 88
VF-3K	Cover, O-ring for VF-3, VF-5, VF-6
VFL-44K	Housing O-ring Kit for VFL-44
VFL-66K	Housing O-ring Kit for VFL-66
VFL-88K	Housing O-rings Kit for VFL-88

Specifications

Media	Non-Corrosive Air
Operating Vacuum	0 to 28 inHg
Maximum Pressure	60 PSI
Operating Temperature	32 to 140°F
Filtration	120 µm (VF-2); 130 µm (VF-3, VF-5, VF-6); 37 µm (MC2-F, CVR-2F); 130 µm (CVK-F) (VFL-44, 66, 88); 130 µm

Materials

Item	Material Housing	Material Element	Weight (oz.)
VF-2G	Aluminum	Acrylic, Stainless Steel	1.54
VF-3G	Aluminum	PC, Polyvinyl	3.10
VF-5G	Aluminum	PC, Polyvinyl	5.15
VF-6G	Aluminum	PC, Polyvinyl	8.25
VFL-44	Poly-Carbonate	PC, Polyvinyl	0.67
VFL-66	Poly-Carbonate	PC, Polyvinyl	0.74
VFL-88	Poly-Carbonate	PC, Polyvinyl	0.81

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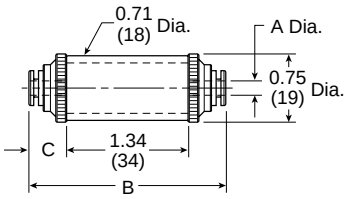
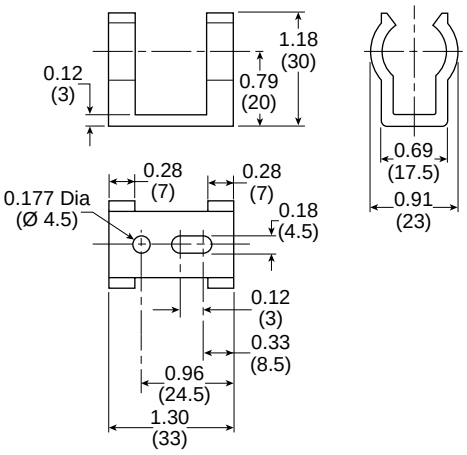
Dimensions

VFL Series

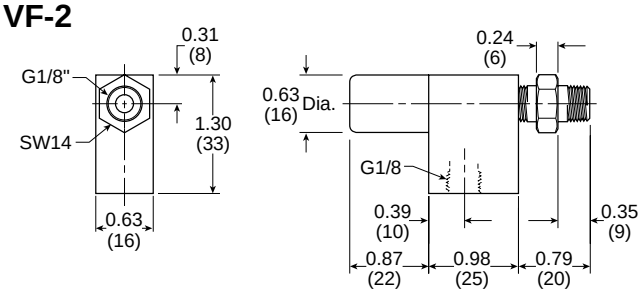


Item	A	B	C
VFL-44	0.16 (4)	2.17 (55)	0.41 (10.5)
VFL-66	0.24 (6)	2.28 (58)	0.47 (12)
VFL-88	0.31 (8)	2.44 (62)	0.55 (14)

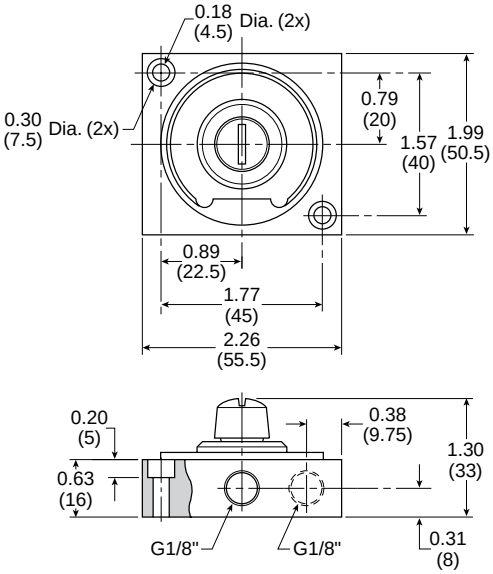
VFL-46H Mtg. Bracket



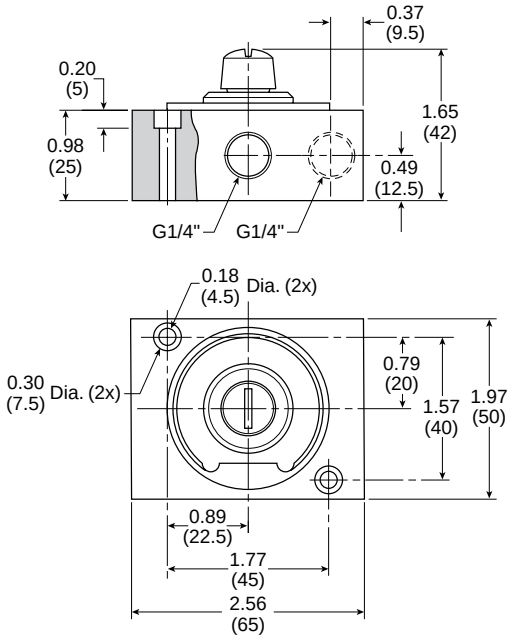
VF-2



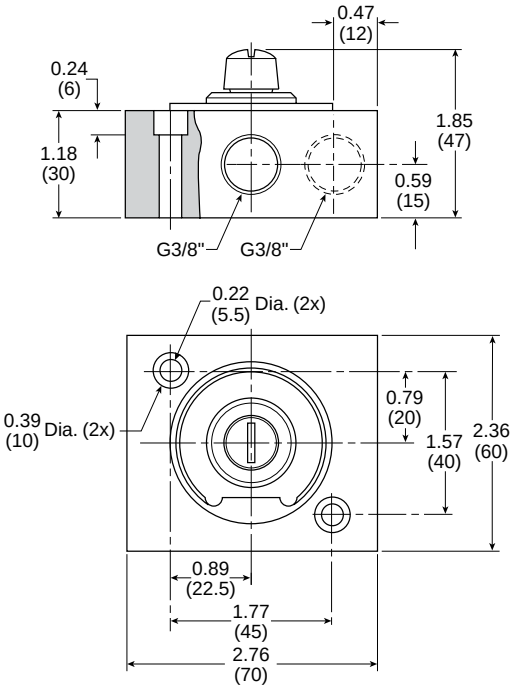
VF-3



VF-5



VF-6



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VFP

Parker plastic in-line filters provide easy monitoring, economy and safety. These shatterproof filters are airtight and can withstand high pressures.

A 10 micron porous plastic element prolongs element life under the most adverse environmental conditions.

- To filter dust and other small particles from the vacuum flow
- Reduces the risk of operation breakdown or stoppage in the vacuum pump
- Replaceable filter element
- Made in the U.S.A.

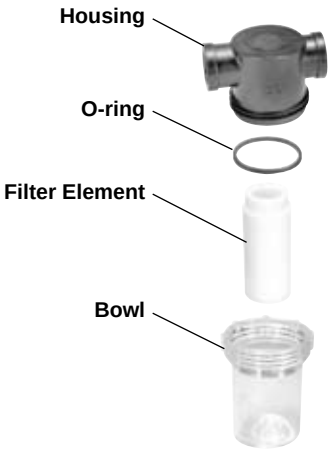
Part Numbers

Item	Size	Part Number
Clear Bowl Kit (Includes O-ring)	1/8, 1/4, 3/8	PS577601
	1/2, 3/4	PS577602
	1, 1-1/2	PS577603
BUNA O-ring	1/8, 1/4, 3/8	PS577701
	1/2, 3/4	PS577702
	1, 1-1/2	PS577703
Filter Element Kit*	1/8	PS577801
	1/4	PS577801
	3/8	PS577801
	1/2	PS577802
	3/4	PS577802
	1	PS577803
	1-1/2	PS577804

* All Filter Elements are sold as a 3-pack.

Specifications

Media		Non-Corrosive Air
Operating Vacuum Pressure Range		-14.5 to 0 PSI (0 to 28 inHg)
Material	**Housing**	Polypropylene (PP)
	Bowl	Polyamide Nylon (PA)
	Filter Element	Polyethylene (PE)
Temperature Range		-4°F to 176°F (-20°C to 80°C)
Removal Efficiency		10 µm
Maximum Pressure		150 PSI



Materials

Description	Units	VFP0CFC01	VFP1CFC01	VFP2CFC01	VFP3CFC01	VFP4CFC01	VFP5CFC01	VFP6CFC01
Weight	oz	1.70	1.98	2.47	6.61	6.42	15.00	18.80
Flow Nominal	s/cf	0.05	0.07	0.09	0.53	0.53	1.48	3.00
Volume Internal	in^3	2.10	2.40	2.70	11.90	12.50	30.20	41.20
Filter Area	in^2	4.90	4.90	4.90	16.00	16.00	29.50	35.00

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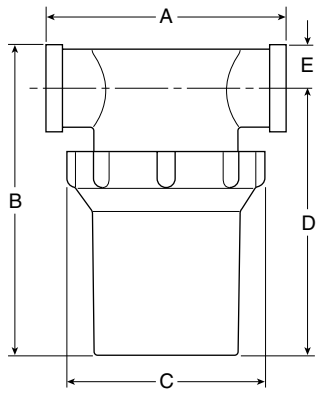
Model Number Index **(Bold Items are Most Popular)**

VFP 0 C F C 0 1

Port Size	Bowl Option	Filter Element	Engineering Level	Thread Type	Element
0 1/8"	**C Clear Bowl**	**F 10µm**	**C Current**	**0 NPT**	**1 Standard Element Included**
1 1/4"				1 BSP	**3 Includes (3) Replacement Elements**
2 3/8"					
3 1/2"					
4 3/4"					
5 1"					
6 1-1/2"					



Dimensions

Item	A	B	C	D	E
VFP0CFC01	3.1 (78.7)	2.4 (61)	1.9 (48.3)	2.0 (50.8)	0.4 (10.2)
VFP1CFC01	3.1 (78.7)	2.4 (61)	1.9 (48.3)	2.0 (50.8)	0.4 (10.2)
VFP2CFC01	3.1 (78.7)	2.4 (61)	1.9 (48.3)	2.0 (50.8)	0.4 (10.2)
VFP3CFC01	3.6 (91.4)	5.1 (129.5)	2.9 (73.6)	4.4 (111.6)	0.7 (17.8)
VFP4CFC01	3.6 (91.4)	5.1 (129.5)	2.9 (73.6)	4.6 (116.9)	0.5 (12.7)
VFP5CFC01	4.9 (124.5)	6.4 (162.6)	4.0 (101.6)	5.6 (142.2)	0.8 (20.3)
VFP6CFC01	5.2 (132.1)	8.1 (209.9)	4.0 (101.6)	6.9 (175.3)	1.2 (30.5)

inches (mm)

No tools required for filter change.

Easily replace filter elements by hand without removing the entire filter from the system.

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Silencers

Protect the environment against harmful noise levels with quality silencers.

Specifications

Media	Non-Corrosive Air
Maximum Pressure	128 PSI
Operating Temperature	41 to 132°F
Silencing Effect	20 dB

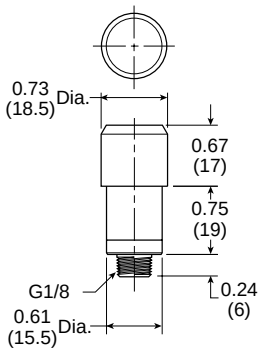
Part Numbers

Item	For Generator Series	Male Connection
MSS-01	CV-05, CV-10, MCA-05	G1/8"
MSS-02	CV-05, CV-10, MCA-05	G1/8"
MSM-01	CV-15, MCA-10/13	G1/4"
MSL-02	CV-20	G1/2"
MS6-01	CV-25, CV-30	G3/4"

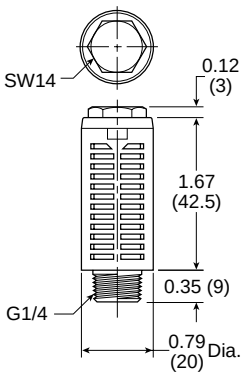
Materials

Item	Material Housing	Material Element	Media	Weight (oz.)
MSS-01	Polyacetal	Felt, Urethane	Air	0.17
MSS-02	Polyacetal	Stainless Steel	Oil	0.17
MSM-01	Polyurethane	Felt	Air	0.24
MSL-02	Nylon	Vinyl	Air	0.88
MS6-01	Nylon	Polyvinyl Forma	Air	2.01

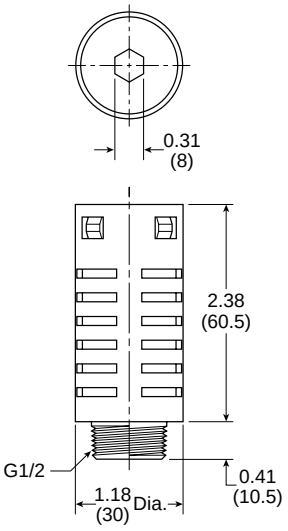
Dimensions



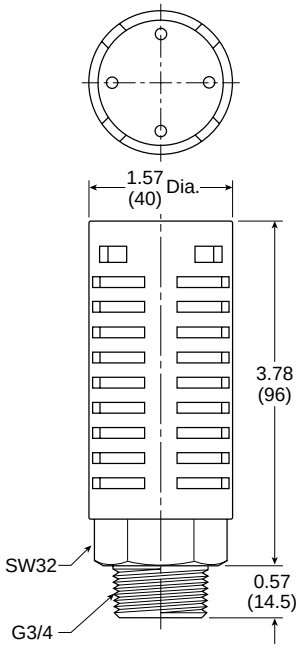
MSS-01



MSM-01



MSL-02



MS6-01

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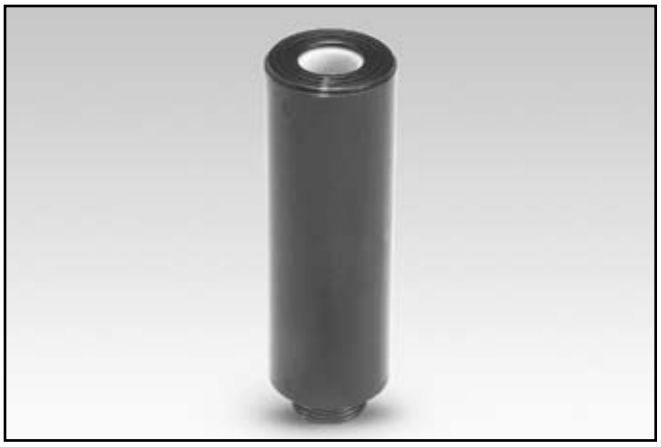
SIS-001



Protect the environment against harmful noise levels with quality silencers.

Flow thru silencer dampens noise generated by vacuum generators and allows particles exhausted by the generator to flow thru the open end of the silencer.

Can be added to CV-25 Series Vacuum Generator.

Specifications

Media	Non-Corrosive Air
Maximum Pressure	128 PSI
Operating Temperature	41 to 132°F
Silencing Effect	20 dB

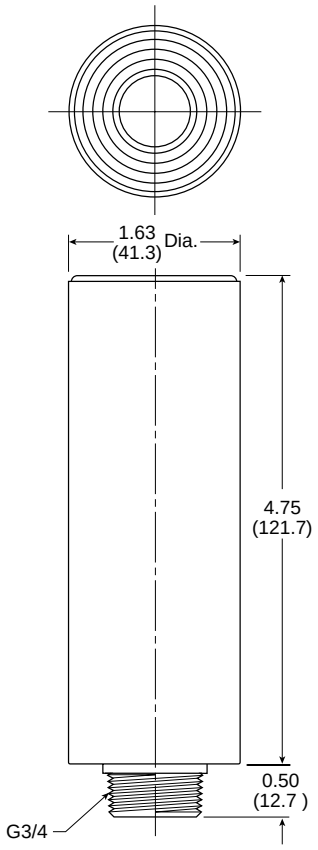
Part Number

Item	For Generator Series	Male Connection
SIS-001	CH Series	G3/4"

Materials

Item	Material Housing	Material Element	Media	Weight (oz.)
SIS-001	Polyacetal	Felt, Urethane	Air	0.17

Dimensions



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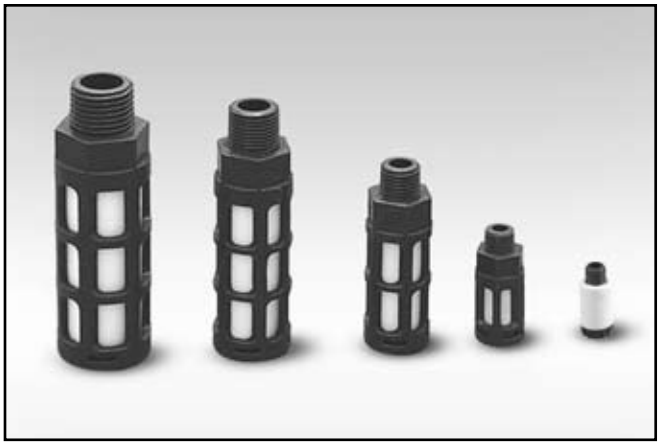
ASN



Features

- **Compact**
- **Lightweight**
- **Easy to install**
- **Excellent noise reduction**
- **Protects components from contamination**
- **NPT & BSPT threads available**

Application

The plastic silencer is designed to give excellent noise reduction with a minimum effect on air efficiency. The “Trimline” design allows for locating the silencer in the tightest places without extra plumbing or fittings. Fits directly into the exhaust port of most commercial valves. Open surface area of element allows for rapid discharge of air without undesirable back pressure.

Specifications

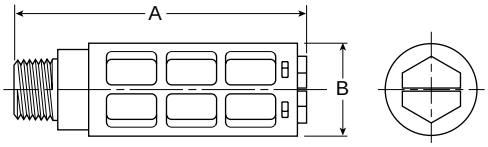
Pressure Rating:
0 to 150 PSIG
(0 to 10 bar, 0 to 1034 kPa)

Temperature Rating:
14°F to 140°F (-10°C to 60°C)

Materials

Body .....Acetal (Plastic)
Element ..... Polyethylene

Dimensions



Thread Size	Part Number		A	B	Maximum Flow (SCFM) 100 PSIG Inlet	Sound Pressure Level (dBA)	
	NPT	BSPT				20 PSIG Inlet	100 PSIG Inlet
M5	AS-5		0.43 (11)	0.32 (8)	15	69	79
1/8”	ASN-6	AS-6	1.57 (40)	0.63 (16)	51	69	81
1/4”	ASN-8	AS-8	2.56 (65)	0.83 (21)	124	67	84
3/8”	ASN-10	AS-10	3.35 (85)	0.98 (25)	247	83	98
1/2”	ASN-15	AS-15	3.74 (95)	1.18 (30)	370	69	96

inches (mm)

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Safety Guide For Selecting And Using Pneumatic Division Products And Related Accessories

⚠ WARNING:

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF PNEUMATIC DIVISION PRODUCTS, ASSEMBLIES OR RELATED ITEMS ("PRODUCTS") CAN CAUSE DEATH, PERSONAL INJURY, AND PROPERTY DAMAGE. POSSIBLE CONSEQUENCES OF FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THESE PRODUCTS INCLUDE BUT ARE NOT LIMITED TO:

- Unintended or mistimed cycling or motion of machine members or failure to cycle
- Work pieces or component parts being thrown off at high speeds.
- Failure of a device to function properly for example, failure to clamp or unclamp an associated item or device.
- Explosion
- Suddenly moving or falling objects.
- Release of toxic or otherwise injurious liquids or gasses.

Before selecting or using any of these Products, it is important that you read and follow the instructions below.

1. GENERAL INSTRUCTIONS

1.1. Scope: This safety guide is designed to cover general guidelines on the installation, use, and maintenance of Pneumatic Division Valves, FRLs (Filters, Pressure Regulators, and Lubricators), Vacuum products and related accessory components.

1.2. Fail-Safe: Valves, FRLs, Vacuum products and their related components can and do fail without warning for many reasons. Design all systems and equipment in a fail-safe mode, so that failure of associated valves, FRLs or Vacuum products will not endanger persons or property.

1.3 Relevant International Standards: For a good guide to the application of a broad spectrum of pneumatic fluid power devices see: ISO 4414:1998, Pneumatic Fluid Power – General Rules Relating to Systems. See www.iso.org for ordering information.

1.4. Distribution: Provide a copy of this safety guide to each person that is responsible for selection, installation, or use of Valves, FRLs or Vacuum products. Do not select, or use Parker valves, FRLs or vacuum products without thoroughly reading and understanding this safety guide as well as the specific Parker publications for the products considered or selected.

1.5. User Responsibility: Due to the wide variety of operating conditions and applications for valves, FRLs, and vacuum products Parker and its distributors do not represent or warrant that any particular valve, FRL or vacuum product is suitable for any specific end use system. This safety guide does not analyze all technical parameters that must be considered in selecting a product. The user, through its own analysis and testing, is solely responsible for:

- Making the final selection of the appropriate valve, FRL, Vacuum component, or accessory.
- Assuring that all user's performance, endurance, maintenance, safety, and warning requirements are met and that the application presents no health or safety hazards.
- Complying with all existing warning labels and / or providing all appropriate health and safety warnings on the equipment on which the valves, FRLs or Vacuum products are used; and,
- Assuring compliance with all applicable government and industry standards.

1.6. Safety Devices: Safety devices should not be removed, or defeated.

1.7. Warning Labels: Warning labels should not be removed, painted over or otherwise obscured.

1.8. Additional Questions: Call the appropriate Parker technical service department if you have any questions or require any additional information. See the Parker publication for the product being considered or used, or call 1-800-CPARKER, or go to www.parker.com, for telephone numbers of the appropriate technical service department.

2. PRODUCT SELECTION INSTRUCTIONS

2.1. Flow Rate: The flow rate requirements of a system are frequently the primary consideration when designing any pneumatic system. System components need to be able to provide adequate flow and pressure for the desired application.

2.2. Pressure Rating: Never exceed the rated pressure of a product. Consult product labeling, Pneumatic Division catalogs or the instruction sheets supplied for maximum pressure ratings.

2.3. Temperature Rating: Never exceed the temperature rating of a product. Excessive heat can shorten the life expectancy of a product and result in complete product failure.

2.4. Environment: Many environmental conditions can affect the integrity and suitability of a product for a given application. Pneumatic Division products are designed for use in general purpose industrial applications. If these products are to be used in unusual circumstances such as direct sunlight and/or corrosive or caustic environments, such use can shorten the useful life and lead to premature failure of a product.

2.5. Lubrication and Compressor Carryover: Some modern synthetic oils can and will attack nitrile seals. If there is any possibility of synthetic oils or greases migrating into the pneumatic components check for compatibility with the seal materials used. Consult the factory or product literature for materials of construction.

2.6. Polycarbonate Bowls and Sight Glasses: To avoid potential polycarbonate bowl failures:

- Do not locate polycarbonate bowls or sight glasses in areas where they could be subject to direct sunlight, impact blow, or temperatures outside of the rated range.
- Do not expose or clean polycarbonate bowls with detergents, chlorinated hydro-carbons, keytones, esters or certain alcohols.
- Do not use polycarbonate bowls or sight glasses in air systems where compressors are lubricated with fire resistant fluids such as phosphate ester and di-ester lubricants.

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2.7. Chemical Compatibility: For more information on plastic component chemical compatibility see Pneumatic Division technical bulletins Tec-3, Tec-4, and Tec-5

2.8. Product Rupture: Product rupture can cause death, serious personal injury, and property damage.
- Do not connect pressure regulators or other Pneumatic Division products to bottled gas cylinders.
- Do not exceed the maximum primary pressure rating of any pressure regulator or any system component.
- Consult product labeling or product literature for pressure rating limitations.

3. PRODUCT ASSEMBLY AND INSTALLATION INSTRUCTIONS

3.1. Component Inspection: Prior to assembly or installation a careful examination of the valves, FRLs or vacuum products must be performed. All components must be checked for correct style, size, and catalog number. DO NOT use any component that displays any signs of nonconformance.

3.2. Installation Instructions: Parker published Installation Instructions must be followed for installation of Parker valves, FRLs and vacuum components. These instructions are provided with every Parker valve or FRL sold, or by calling 1-800-CPARKER, or at www.parker.com.

3.3. Air Supply: The air supply or control medium supplied to Valves, FRLs and Vacuum components must be moisture-free if ambient temperature can drop below freezing

4. VALVE AND FRL MAINTENANCE AND REPLACEMENT INSTRUCTIONS

4.1. Maintenance: Even with proper selection and installation, valve, FRL and vacuum products service life may be significantly reduced without a continuing maintenance program. The severity of the application, risk potential from a component failure, and experience with any known failures in the application or in similar applications should determine the frequency of inspections and the servicing or replacement of Pneumatic Division products so that products are replaced before any failure occurs. A maintenance program must be established and followed by the user and, at minimum, must include instructions 4.2 through 4.10.

4.2. Installation and Service Instructions: Before attempting to service or replace any worn or damaged parts consult the appropriate Service Bulletin for the valve or FRL in question for the appropriate practices to service the unit in question. These Service and Installation Instructions are provided with every Parker valve and FRL sold, or are available by calling 1-800-CPARKER, or by accessing the Parker web site at www.parker.com.

4.3. Lockout / Tagout Procedures: Be sure to follow all required lockout and tagout procedures when servicing equipment. For more information see: OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – (Lockout / Tagout)

4.4. Visual Inspection: Any of the following conditions requires immediate system shut down and replacement of worn or damaged components:
- Air leakage: Look and listen to see if there are any signs of visual damage to any of the components in the system. Leakage is an indication of worn or damaged components.
- Damaged or degraded components: Look to see if there are any visible signs of wear or component degradation.
- Kinked, crushed, or damaged hoses. Kinked hoses can result in restricted air flow and lead to unpredictable system behavior.
- Any observed improper system or component function: Immediately shut down the system and correct malfunction.
- Excessive dirt build-up: Dirt and clutter can mask potentially hazardous situations.

Caution: Leak detection solutions should be rinsed off after use.

4.5. Routine Maintenance Issues:
- Remove excessive dirt, grime and clutter from work areas.
- Make sure all required guards and shields are in place.

4.6. Functional Test: Before initiating automatic operation, operate the system manually to make sure all required functions operate properly and safely.

4.7. Service or Replacement Intervals: It is the user's responsibility to establish appropriate service intervals. Valves, FRLs and vacuum products contain components that age, harden, wear, and otherwise deteriorate over time. Environmental conditions can significantly accelerate this process. Valves, FRLs and vacuum components need to be serviced or replaced on routine intervals. Service intervals need to be established based on:
- Previous performance experiences.
- Government and / or industrial standards.
- When failures could result in unacceptable down time, equipment damage or personal injury risk.

4.8. Servicing or Replacing of any Worn or Damaged Parts: To avoid unpredictable system behavior that can cause death, personal injury and property damage:
- Follow all government, state and local safety and servicing practices prior to service including but not limited to all OSHA Lockout Tagout procedures (OSHA Standard – 29 CFR, Part 1910.147, Appendix A, The Control of Hazardous Energy – Lockout / Tagout).
- Disconnect electrical supply (when necessary) before installation, servicing, or conversion.
- Disconnect air supply and depressurize all air lines connected to system and Pneumatic Division products before installation, service, or conversion.
- Installation, servicing, and / or conversion of these products must be performed by knowledgeable personnel who understand how pneumatic products are to be applied.
- After installation, servicing, or conversions air and electrical supplies (when necessary) should be connected and the product tested for proper function and leakage. If audible leakage is present, or if the product does not operate properly, do not put product or system into use.
- Warnings and specifications on the product should not be covered or painted over. If masking is not possible, contact your local representative for replacement labels.

4.9. Putting Serviced System Back into Operation: Follow the guidelines above and all relevant Installation and Maintenance Instructions supplied with the valve FRL or vacuum component to insure proper function of the system.

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Offer of Sale

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1.Terms and Conditions of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by Buyer in any acceptance of an offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of 18 months from date of shipment from Parker Hannifin Corporation. THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED.

NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGN OR SPECIFICATIONS.

5. Limitation of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitations, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer, or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgements resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of sale of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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Catalog 0802-5 5/2009

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