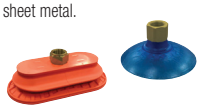
VACUUM CUPS & FITTINGS

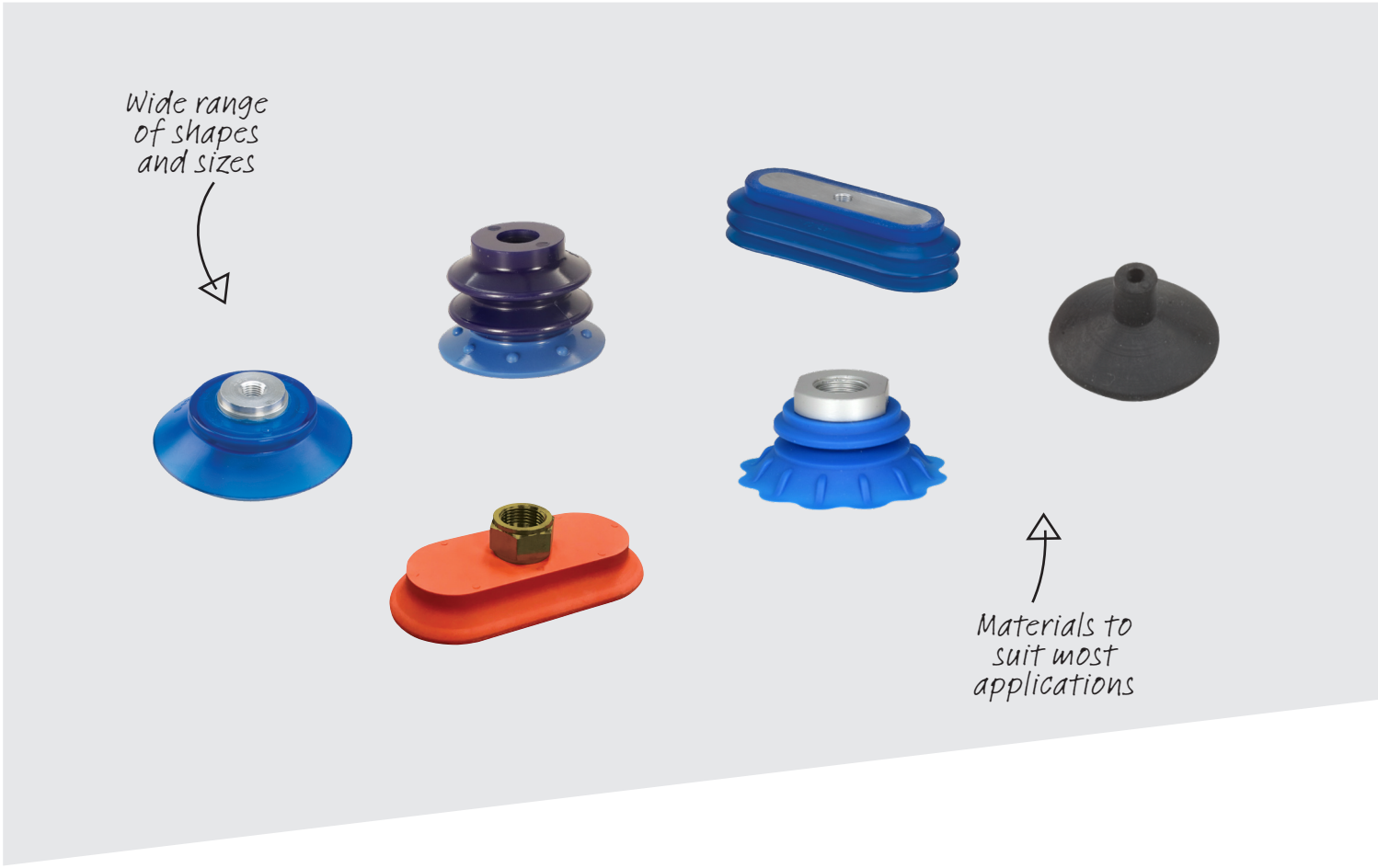
IMI Norgren offers an extensive line of vacuum cups and fittings to meet most every need. Our vacuum cups are available in a variety of materials, shapes and sizes.

Fast Find Guide

Please note: These products represent only part of the IMI Precision Engineering vacuum cup range. If you can't see the option you require please contact us.

Vacuum Cups & Fittings

Food Handling Appl. Cups FDA compliant cup options available to better suit food handling applications.  Page 159	**Packaging Appl. Cups** Specially designed cups allowing for gentle package handling operations.  Page 161	**Sheet Metal Appl. Cups** Various cups available that were designed specifically to grip sheet metal.  Page 163	**Electronic Cups** Similar to the ultra miniature cups, designed to to pick up small electronic components.  Page 168	**Ultra Miniature Cups** For extremely small parts such as computer and electronic components.  Page 169	**General Purpose - Oval Cups** Oval cups have heavy load capabilities due to their rigid design.  Page 170
General Purpose - Single Bellows Cups Allows the cup to conform to the work piece while accomodating variations in part presentation.  Page 174	**General Purpose - Multi Bellows Cups** Allows the cup to conform to the work piece, single and dual durometer options available.  Page 181	**General Purpose - Flat Cups** Allow for a firm grip on the work piece. Options available with and without cleats.  Page 185	**Vacuum Fittings** To connect cups and spring levelers to vacuum generators.  Page 196	**Push-In-Fittings** To connect all vacuum components.  Page 219	



Vacuum Cups

IMI Norgren offers a wide range of vacuum cup styles, materials, sizes and capabilities. Fittings in multiple styles are available individually or as a cup assembly for each cup group.

Engineering GREAT Solutions

Find out more
www.imi-precision.com

IMI NORGREN

VACUUM CUPS

- Wide range of sizes – 0.09" to 7.9" in diameter
- Flat and bellows cups available to provide flexibility
- Round and oval cups
- Non-contact vacuum pads
- Variety of materials available
  Dual durometer for long wear and excellent sealing
  FDA-approved material

Vacuum Cup Material Specifications

Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory. Below is a general description of the various materials available and their characteristics.

Materials	Temperature Range	Wear Resistance	Oil Resistance	Series	Durometer	Application
Conductive NBR	+14°F to +213°F (-10°C to +100°C)	Excellent	Excellent	NBG, NCG, NFD, NFG, NFR, NSG, NUB, NUX, NUU	55	Dissipates static electicity to protect electronics with wide operating temperature ranges
Conductive NBR	5°F to 250°F (-15°C to +121°C)	Good	Good	NVC-VI	-	Dissipates static electricity to protect electronics with wide operating temperature range
Conductive Silicone	+22°F to +356°F (-30°C to +180°C)	Fair	Fair	NBG, NCG	50	Dissipates static electricity to protect electronics with wide operating temperature range
Conductive Silicone	+22°F to +356°F (-30°C to +180°C)	Fair	Fair	NCF, NFD, NFG, NFR, NSB, NUB, NUC, NUU	55	Dissipates static electricity to protect electronics with wide operating temperature range
(High Temperature) Conductive Silicone	+22°F to +356°F (-30°C to +180°C)	Good	Good	NVC-VI	-	ESD
EPDM - Grey	-22°F to +302°F (-30°C to +150°C)	Good	Fair	NFG	50	Chemical Resistance
EPDM - Grey	-22°F to +302°F (-30°C to +150°C)	Good	Fair	NBG, NCG, NFD, NUB, NUC, NUU	55	Chemical Resistance
Fluorine Rubber	+14°F to +446°F (-10°C to +230°C)	Excellent	Good	NBG, NFD, NFG, NFH, NHB, NUB, NUC, NUU	65	Excellent chemical resistance and high operating temperatures
High Temperature/ Mark Free - Blue	+14°F to +320°F (-10°C to +160°C)	Excellent	Excellent	NFG, NFT	60	High temperature applications, non-marking
Mark Free NBR	-4°F to +230°F (-20°C to +110°C)	Excellent	Excellent	NUB, NUU, NBG, NFG	55	Excellent wear capabilities without marking work piece
NBR - Black	-4°F to +230°F (-20°C to +110°C	Very Good	Very Good	NFD, NSB, NUB, NUC, NUU	50	General-purpose material with good oil and abrasions performance
NBR - Black	-4°F to +230°F (-20°C to +110°C	Very Good	Very Good	NBG, NCF, NCG, NFG, NFH, NFR, NHB, NSF, NSG	55	General-purpose material with good oil and abrasions performance
NBR - Green	-4°F to +230°F (-20°C to +110°C	Very Good	Very Good	NOF, NRF	45	General-purpose material with good oil and abrasions performance
NBR - Orange	-4°F to +230°F (-20°C to +110°C	Very Good	Very Good	NOB, NOF, NRB, NRF	60	General-purpose material with good oil and abrasions performance
(Dual Durometer) Polyurethane - Light Blue/Yellow	+50°F to +122°F (+10°C to +50°C	Excellent	Very Good	NSM	30-55	Longer bellow life, chemical resistance
(Dual Durometer) Polyurethane - Light Blue/Dark Blue	+50°F to +122°F (+10°C to +50°C	Excellent	Very Good	NDB, NDM,	30-60	Longer bellow life, chemical resistance
Polyurethane - Blue	+50°F to +122°F (+10°C to +50°C	Excellent	Very Good	NDB, NDM, NPF	60	Better wearing lip material
Polyurethane - Green	+32°F to +151°F (0°C to +66°C	Excellent	Very Good	NDM, NSM	55	Better wearing lip material
Polyurethane - Light Blue	+50°F to +122°F (+10°C to +50°C	Excellent	Very Good	NPF	70	Better wearing lip material, hard and ridged
Polyurethane - Yellow	+50°F to +122°F (+10°C to +50°C	Excellent	Very Good	NDB, NPF	40	Better wearing lip material, soft and flexible
Silicone - Blue	-40°F to +392°F (-40°C to +200°C	Fair	Fair	NWP	35	Good for high temperature performance and non-marking
(High Temperature) Silicone - White	-67°F to +482°F (-55°C to +250°C	Good	Good	NVC-VI	-	Non-ESD
Silicone - Red	-40°F to +392°F (-40°C to +200°C	Fair	Fair	NBLP	40	High temperature performance and non-marking

Vacuum Cup Selection Guide

Materials	Temperature Range	Wear Resistance	Oil Resistance	Series	Durometer	Application
Silicone - Red	-40°F to +392°F (-40°C to +200°C	Fair	Fair	NCF, NSB, NSF	50	FDA compliant, high temperature performance and non-marking
Silicone - White	-40°F to +392°F (-40°C to +200°C	Fair	Fair	PRF, NUB, NUC, NUU	45	High temperature performance and non-marking
Silicone - White	-40°F to +392°F (-40°C to +200°C	Fair	Fair	NCF, NSB, NSF	50	High temperature performance and non-marking
Vinyl - Blue	+32°F to +125°F (0°C to +52°C	Excellent	Fair	NVC-B, NVC-F, NVC-MB, NVCO	20-75	General-purpose material with excellent wear capabilities
Vinyl - Blue	+32°F to +125°F (0°C to +52°C	Excellent	Fair	NOV	55	General-purpose material with excellent wear capabilities
(Oil Resistance) Vinyl	+32°F to +125°F (0°C to +52°C	Good	Excellent	NVC-B, NVC-F, NVC-MB, NVCO	40-60	Excellent for oil resistance applications

Vacuum Cup Terms and Definitions:

Bellows: The fold or collapsible area that allows the cup to compress like an accordion

Convolution: The folded area of a bellows cup that makes up 1 external "V"

Cleats: Bottom protrusions used for maintaining a larger vacuum area

Durometer: Method by which the hardness of a material is gauged

Insert/Fitting: Metal piece bonded or inserted into the material to allow fastening by threads or bolts

Vacuum cup: Cup that requires the use of an external vacuum source to adhere to a surface

Vacuum Level: The magnitude of suction created by a vacuum generator typically measured in inches of mercury "Hg or [mbar]

Vacuum Flow: The volume of free air induced by the vacuum generator per unit of time, typically measured in SCFM (L/min)

Porosity: Ability of air to pass through a material

Standard Atmospheric Pressure Measured at Sea Level: 1 ATM = 14.7 PSI = 29.92"Hg = 760 mmHg = 1 bar

Facts to Remember:

50 mmHg = 1 PSI
1mmHg = 1 torr (vacuum)
1"Hg = 25.4 mmHg
2"Hg = 1 PSI
29.92"Hg = 100 Kpa
14.7 PSI = 100 Kpa
14.7 PSI = 29.92"Hg
14.7 PSI = 760 mmHg

Conversion Chart – Vacuum vs. Pressure				
% Vacuum	"Hg	mmHg	bar	PSI
10	3	76.92	-0.1	-1.47
20	6	153.85	-0.2	-2.94
30	9	230.77	-0.3	-4.41
40	12	307.69	-0.4	-5.88
50	15	384.62	-0.5	-7.35
60	18	461.54	-0.6	-8.82
70	21	538.46	-0.7	-10.29
80	24	615.38	-0.8	-11.76
90	27	692.31	-0.9	-13.23
100	30	769.23	-1.0	-14.70

Vacuum Cup Selection Guide

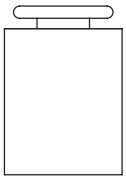
As is true in most vacuum applications, there is more than one correct answer. In order to successfully find the best cup(s) and generators for a specific task, it is helpful to review the guidelines below.

Vacuum Cup Sizing

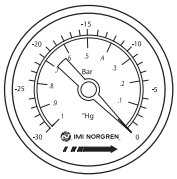
Choose the cup size, quantity, material and style based on the size of the object being handled, its weight, orientation, surface temperature, conditions and space available to mount the cups.

I. Determine the cup size by using the "Vacuum Cup Holding Force Calculation:"

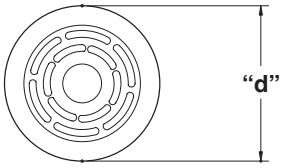
Force = **Pressure** X **Area**



Object Weight
Safety Factor * Lbs (Kg)



Convert "Hg TO PSI,
Divide by 2
(2Hg" = 1 PSI)
PSI (Kpa)



Area = $\pi(d/4^2)$
π = 3.14
in^2 (cm^2)

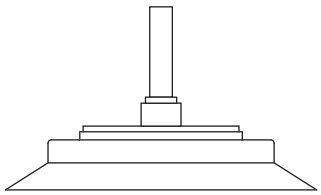
or Area = πr^2

Force = Pressure x Area

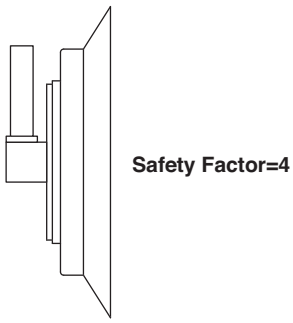
F = the weight of the objects in lbs(kg) multiplied by the safety factor, see below.
P = the expected vacuum level in PSI (Kpa) (2Hg" = 1 PSI)
A = the area of the Vacuum cup measured by in^2 [cm^2]

Safety Factors:

Always include safety factors when calculating lifting capabilities.



Safety Factor=2



Safety Factor=4

Horizontal Lift = 2

Safety factor of 2 is recommended when cup face is in horizontal position.

Vertical Lift = 4

Safety factor of 4 is recommended when cup face is in a vertical position.

Vacuum Cup Selection Guide

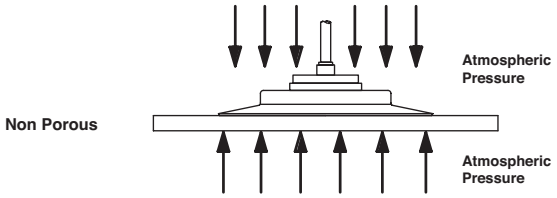
II. Determine Type of Material to be handled: Non-Porous, Porous, Flexible/ Non-Porous

Materials being handled in pick & place applications can be grouped into three categories – non-porous, porous and flexible. It is important to determine what type of material you are working with in order to determine the cup type, and the fitting choices. IMI Norgren offers a variety of cup styles – including bellows, multi-bellows, round, oval, flat (with and without cleats), cups with removable fittings and cups with permanent fittings.

Non-Porous Materials: steel, glass, laminated chipboard, rigid plastic, semiconductors, etc.

Handling non-porous materials is the easiest application for choosing a vacuum cup and vacuum generator because there is no vacuum flow (leakage). The cup seals to the surface of the object enabling the generator to reach its maximum vacuum level.

Typically, flat cleated cups are used for non-porous applications because the rigid, low profile design resists peeling away. In horizontal applications, where there is a large array of cups, bellows cups may be an option as they offer the pliability needed to ensure that all cups make contact with the object(s) being handled.



Example: Holding Force Calculation for Non-Porous Materials

Application: lift a 100 lb [45.36 kg] steel plate, 1/8" [3mm] thick, measuring 4' x 4' [121.9cm X 121.9cm] from a horizontal stack and place into a press.

IMI Norgren recommends an "H" series generator when handling non-porous materials. All "H" series generators generate 14 PSI [28"Hg, 0.965 bar].

$$F = P * A$$

Force = 200 lbs [90.72 kg](weight x safety factor/horizontal lift or 100 lbs [45.36 kg] x 2)
Pressure = 14 PSI [.965 bar] (convert 28"Hg to PSI by dividing by 2)

If **F** (200 lbs [90.72 kg]) = **P** (14 PSI [.965 bar]) * **A** (Solve for **A**)

A = 200/14 [90.72/.965] which is 14.3 in^2 [94.01 cm^2] – "**A**" represents the total area of the cup or all the cups combined to lift this load horizontally

Determine the Number of Cups Needed to Determine the Diameter of each Cup

Whereas the metal is only 1/8" [3mm] thick, it will tend to drop. IMI Norgren recommends using 2 rows of 3 cups each for a total of 6 cups.

Therefore, 14.3 in^2 [94.01 cm^2] divided by 6 cups = 2.38 in^2 [15.67 cm^2] is the area per cup

Solve for the diameter (**d**) using the equation:

A = π * [d^2 / 4] or pr^2	[**A** = π (* d^2 / 4) or pr^2]
$\mathbf{d}^2$ = 4 x 2.38 / p or d^2 = 3.03 in^2	[$\mathbf{d}^2$ = 4 x 15.67/ p or d^2 = 19.96 cm^2]
d = sq. root of 3.03 or 1.74 in	[**d** = sq. root of 19.96 or 44.7mm]

Solution: Choose a flat cup with cleats with a diameter of 1.75" [44.45mm] or greater. With plenty of space on the steel plate to position cups, choosing a larger cup will add to the holding force and take into account any acceleration or deceleration loads during transfer.

Vacuum Cup Selection Guide

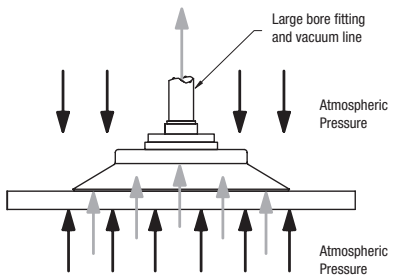
Porous Materials: corrugated, woven materials, or objects with extremely rough or uneven surfaces

When handling porous materials, it is important that the flow path between the object and the vacuum generator is as large as necessary to allow the generator to draw away the air that leaks through the surface or from gaps between the cup and the surface. Pay close attention to the bore size of the fitting in the cup, as well as the size of the vacuum lines. To confirm vacuum lines are sized properly, see the Operating and Installation Instructions section for each generator.

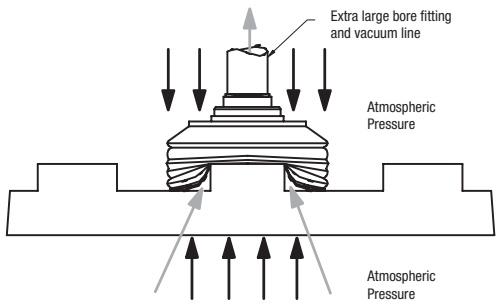
When calculating the holding force for porous materials, the vacuum level that will be achieved is not normally known because the leak rate of the material is unknown. To move forward and determine the diameter of the vacuum cups, assume that system will reach a vacuum level of 8 PSI [16"Hg, 0.542 bar].

IMI Norgren recommends the "M" series vacuum generators to maximize flow and minimize compressed air usage when handling porous materials. To ensure that the vacuum level of 8 PSI [16"Hg, .542 bar] is achieved, contact IMI Norgren Tech Support for a generator recommendation.

Leakage Flow - Porous



Leakage Flow - Uneven Surface



Example: Holding Force Calculation for Porous Materials or Uneven Surfaces

Application: lift a 100 lb [45.36 kg]corrugated box with vacuum cups in the horizontal plane.
Remember the safety factor and the equation **F** = **P** * **A**.

200 lbs [90.72 kg] = 8 PSI [.542 bar] x **A** - Solve for **A** – the total vacuum cup(s) area.

A = 200 [90.72]/8 [.542 bar] = 25 in^2 [164.35 cm^2] of combined cup area. Assume the number of cups used will be 4.

Determine the Number of Cups Needed to Determine the Diameter of each Cup

Divide the total area by the number of cups (25/4)[164.35/4] – area of each cup is 6.25 in^2 [41.09 cm^2].

Solve for the diameter (d^2) using the equation: **A** = π * $d^2/4$, 6.25 = 3.14 (d^2)/4 [**A** = π * $d^2/4$, 41.09 = 3.14 ($d^2/4$)]
d = square root of (6.25 * 4/3.14) = 2.82 [**d** = square root of (41.09 * 4/3.14) = 72.3 mm]

Solution: Choose a flat cup with cleats or bellows cups with a diameter of 3" [76.2mm] or greater. (Dimensions have been rounded up.)
In this situation, IMI Norgren recommends a NVP80-250M vacuum generator.

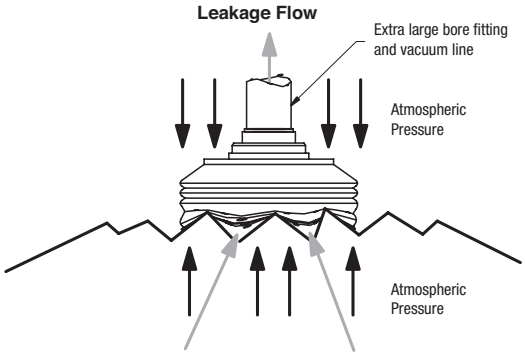
Vacuum Cup Selection Guide

Flexible Materials: plastic films, baked goods, IV bags, paper bags – things that wrinkle

When handling flexible packaging materials, it is critical that the cup fitting and the vacuum line have a very large bore. Flexible materials wrinkle, causing large leak paths. The cup and the vacuum generator must be sized to accommodate that leak rate. The bore of the fitting must be close to a 1:2 ratio to the diameter of the cup.

Typically, handling flexible materials does not involve heavy weights. Calculating cup holding force is not required. Choose a cup with a very thin flexible lip to ensure the cup conforms to the wrinkled material. Multi-bellows cups work well in these applications because of their flexibility.

The interaction between the vacuum cup and the flexible material is critical. Because the leakage flow rates are so high, it is necessary to use our NCDF Series of high flow (air amplifier) vacuum generators. With so many variables affecting performance, IMI Norgren strongly suggests that a sample of the material be sent to our in-house test facility for a generator and cup recommendation.



SPECIALTY CUPS

Specialty Cups – Food Handling

- The NBLP Series of vacuum cups provide a soft compliant cup with a thin lip. This soft, long multi-bellow cup has extreme flexibility allowing it to conform to a wide variety of parts and shapes making this cup an ideal fit for specialty applications in food handling processes. An optional insert can be added to prevent any flexible materials from being sucked too far inside the cup.

Specialty Cups - Food Handling: NBLP Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NBLP30XXXX		1.18 (30)	1.10 (707)	1.44 (36.50)	0.83 (21.10)	0.52 (13.20)	0.35 (9.00)	Yes	SI40	-	0.4 (10.2)	14
NBLP30XXXXLD		1.18 (30)	1.10 (707)	1.44 (36.50)	0.83 (21.10)	0.52 (13.20)	0.35 (9.00)	Yes	SI40	-	0.4 (11.2)	14
NBLP30XXXXSD		1.18 (30)	1.10 (707)	1.44 (36.50)	0.83 (21.10)	0.52 (13.20)	0.35 (9.00)	Yes	SI40	-	0.4 (11.2)	14
NBLP40XXXX		1.57 (40)	1.95 (1257)	1.57 (40.00)	0.91 (23.20)	1.02 (26.00)	0.47 (12.00)	Yes	SI40	-	0.4 (12.4)	16
NBLP40XXXXLD		1.57 (40)	1.95 (1257)	1.57 (40.00)	0.91 (23.20)	1.02 (26.00)	0.47 (12.00)	Yes	SI40	-	0.5 (13.4)	16
NBLP40XXXXSD		1.57 (40)	1.95 (1257)	1.57 (40.00)	0.91 (23.20)	1.02 (26.00)	0.47 (12.00)	Yes	SI40	-	0.5 (13.4)	16
NBLP50XXXX		1.97 (50)	3.04 (1963)	2.17 (55.00)	0.98 (25.00)	1.57 (40.00)	0.67 (17.00)	Yes	SI40	-	1.0 (29.0)	17
NBLP50XXXXLD		1.97 (50)	3.04 (1963)	2.17 (55.00)	0.98 (25.00)	1.57 (40.00)	0.67 (17.00)	Yes	SI40	-	1.1 (30.0)	17
NBLP50XXXXSD		1.97 (50)	3.04 (1963)	2.17 (55.00)	0.98 (25.00)	1.57 (40.00)	0.67 (17.00)	Yes	SI40	-	1.1 (30.0)	17

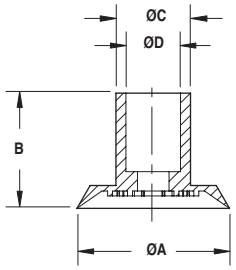
* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NBLP30SI40SD** (for Silicone material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

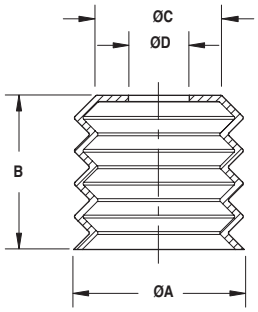
Optional inserts:

SD - rigid plastic insert to improve performance with flexible packaging material

LD - ridged plastic insert to improve performance with semi ridged packaging

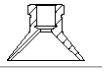
Material	Color	Temperature Range
SI40 - Silicone	White	-40°F to +392°F (-40°C to +200°C)





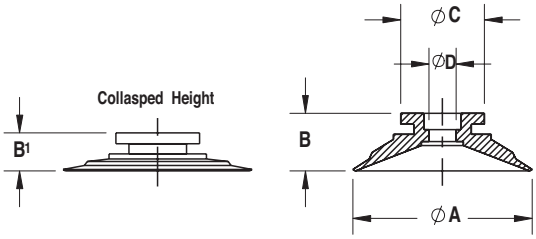
- The NFD Series of vacuum cups are part of our universal cup series that uses a common fitting system. The deep cup allows the cup to conform to spherical objects used in various types of applications. The white silicone cup is ideal for use in food applications.

Specialty Cups - Food Handling: NFD Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NFD010NB50		0.47 (12)	0.18 (113)	0.59 (10.00)	0.17 (4.30)	0.51 (13.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55	0.0 (0.9)	2
NFD016XXXX		0.71 (18)	0.39 (254)	0.63 (16.00)	0.17 (4.30)	0.51 (13.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55	0.0 (1.3)	2
NFD025XXXX		1.10 (28)	0.95 (616)	0.79 (20.00)	0.18 (4.50)	0.59 (15.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55	0.1 (2.5)	7
NFD040XXXX		1.61 (41)	2.05 (1320)	1.10 (28.00)	0.18 (4.50)	0.71 (18.00)	0.28 (7.00)	No	NB50, WS45	CN55, CS55, FL65, EP55	0.2 (6.7)	19

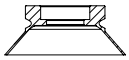
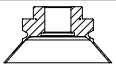
* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NFD040WS45** (for Silicone material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB50 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS45 - Silicone	White	-40°F to +392°F (-40°C to +200°C
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
FL65 - Fluorine Rubber	Black	-14°F to +446°F (-10°C to +230°C)
EP55 - EPDM	Grey	-22°F to +302°F (-30°C to +150°C)



- The NWP Series possesses a thin, wavy lip that is ideal for packaging applications. This thin wavy lip accomodates for wrinkles in plastic packaging. The silicone cup offers a wide operating temperature and has a unique fitting design preventing thin material from blocking the vacuum flow.

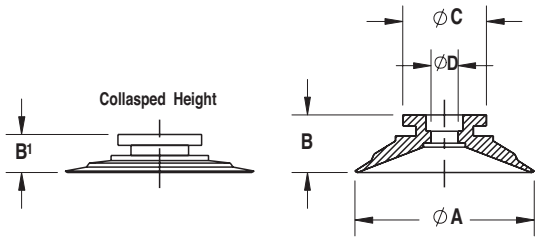
Specialty Cups – Packaging: NWP Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NWP060BS35		2.36 (60.00)	4.38 (2827.43)	1.26 (32.00)	0.67 (17.00)	1.64 (41.60)	0.28 (7.00)	Yes	BS35	-	0.4 (11.0)	30*
NWP060BS35G38F		2.36 (60.00)	4.38 (2827.43)	1.26 (32.00)	0.67 (17.00)	1.64 (41.60)	0.28 (7.00)	Yes	BS35	-	1.1 (32.0)	G 3/8 F

Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required. The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

*For fitting group 30, please contact our customer service team at 1-800-514-0129 or email sales.usa@imi-precision.com

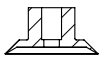
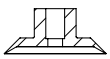
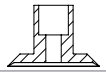
Material	Color	Temperature Range
BS35 - Silicone	Blue	-94°F to +536°F (-70°C to +280°C)



Specialty Cups – Packaging

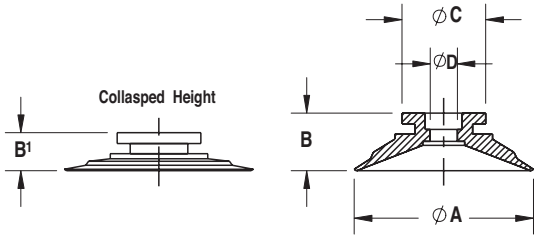
- The NFT Series is designed specifically for handling packaging. The thin lip of these cups allows for gently grabbing flexible materials without creating leaks.

Specialty Cups – Packaging: NFT Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NFT015XXXX		0.57 (14.5)	0.26 (165)	0.39 (10.00)	0.36 (9.10)	0.35 (9.00)	0.14 (3.50)	Yes	WS50, HD60	-	0.0 (0.6)	3
NFT020XXXX		0.82 (20.9)	0.53 (343)	0.41 (10.40)	0.35 (8.90)	0.41 (10.50)	0.14 (3.50)	Yes	WS50, HD60	-	0.0 (0.8)	3
NFT024XXXX		0.96 (24.4)	0.72 (468)	0.43 (10.80)	0.36 (9.10)	0.39 (10.00)	0.14 (3.50)	Yes	WS50, HD60	-	0.0 (0.9)	3
NFT030XXXX		1.20 (30.6)	1.14 (735)	0.86 (21.80)	0.75 (19.10)	0.61 (15.60)	0.26 (6.60)	Yes	WS50, HD60	-	0.1 (2.9)	3
NFT034XXXX		1.36 (34.5)	1.45 (935)	0.91 (23.00)	0.85 (21.60)	0.58 (14.80)	0.23 (5.80)	Yes	WS50, HD60	-	0.1 (3.5)	3

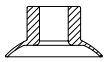
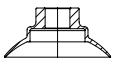
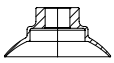
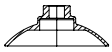
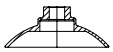
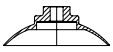
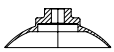
* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NFT020HD60** (for High Temp./Mark-Free material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
HD60 - High Temp./Mark Free	White	+14°F to +320°F (-10°C to +160°C)



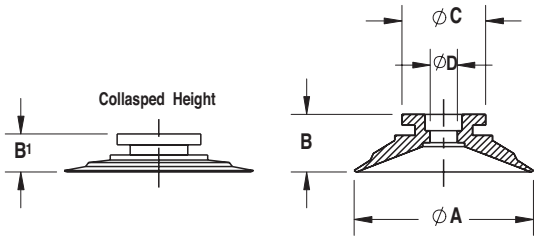
- The PRF Series of round flat cups offer a unique cleat profile for gripping sheet metal. The cleat profile prevents the cup from slipping on the work piece while providing a firm grip. The use of hard polyurethane material makes the cup resistant to abrasion and wear.

Specialty Cups – Sheet Metal: PRF Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
PRF030XXXXG38F		1.32 (33.5)	1.37 (881)	0.79 (20)	0.69 (17.50)	0.73 (18.50)	0.28 (7.00)	Yes	PU70	-	0.1 (4.1)	G 3/8 F
PRF030XXXXN38F		1.32 (33.5)	1.37 (881)	0.79 (20)	0.69 (17.50)	0.73 (18.50)	0.21 (5.30)	Yes	PU70	-	0.1 (4.1)	3/8 NPT F
PRF050XXXXG38F		2.13 (54)	3.56 (2290)	9.17 (233)	0.98 (25.00)	0.87 (22.00)	0.28 (7.00)	Yes	PU70	-	0.4 (10.2)	G 3/8 F
PRF050XXXXN38F		2.13 (54)	3.56 (2290)	9.17 (233)	0.98 (25.00)	0.87 (22.00)	0.21 (5.30)	Yes	PU70	-	0.4 (10.2)	G 3/8 F
PRF080XXXXG38F		3.35 (85)	8.81 (5675)	9.17 (233)	1.08 (27.50)	0.71 (18.00)	0.28 (7.00)	Yes	PU70	-	0.9 (25.2)	G 3/8 F
PRF080XXXXN38F		3.35 (85)	8.81 (5675)	9.17 (233)	1.08 (27.50)	0.71 (18.00)	0.21 (5.30)	Yes	PU70	-	0.9 (25.2)	3/8 NPT F
PRF100XXXXG38F		4.06 (103)	12.95 (8332)	1.32 (33.50)	1.50 (38.00)	0.71 (18.00)	0.28 (7.00)	Yes	PU70	-	1.5 (42.0)	G 3/8 F
PRF100XXXXN38F		4.06 (103)	12.95 (8332)	1.32 (33.50)	1.50 (38.00)	0.71 (18.00)	0.21 (5.30)	Yes	PU70	-	1.5 (42.0)	3/8 NPT F

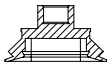
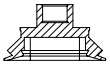
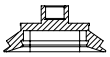
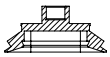
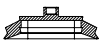
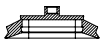
* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **PRF030PU70G38F** (for Polyurethane material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
PU70 - Polyurethane	Light Blue	-50°F to +122°F (10°C to +50°C)



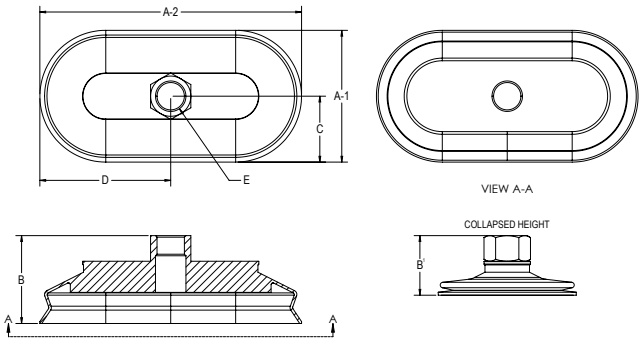
- The NOB Series of oval bellow cups offer a unique profile for gripping sheet metal. The cleat profile prevents the cup from slipping on the work piece while providing a firm grip. The use of 60 durometer NBR material makes the cup resistant to abrasion and wear. These cups are ideal for applications with curved surfaces, glass, oily materials, and automotive industries.

Specialty Cups – Sheet Metal: NOB Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NOB030X060XXXXG38F		1.31x2.05 (32x52)	2.24 (1444)	0.79 (20)	0.55 (14)	-	0.21 (5.30)	Yes	NB60	-	1.1 (31.2)	G 3/8 F
NOB030X060XXXXN38F		1.31x2.05 (32x52)	2.24 (1444)	0.79 (20)	0.55 (14)	-	0.21 (5.30)	Yes	NB60	-	1.1 (31.2)	3/8 NPT F
NOB040X080XXXXG38F		16.5x3.23 (42x82)	4.75 (3065)	9.17 (233)	0.56 (14.20)	-	0.21 (5.30)	Yes	NB60	-	1.4 (39.6)	G 3/8 F
NOB040X080XXXXN38F		16.5x3.23 (42x82)	4.75 (3065)	9.17 (233)	0.56 (14.20)	-	0.21 (5.30)	Yes	NB60	-	1.4 (39.6)	3/8 NPT F
NOB070X140XXXXG38F		2.83x5.63 (72x143)	13.90 (8968)	1.32 (33.50)	0.65 (16.50)	-	0.21 (5.30)	Yes	NB60	-	5.0 (140.4)	G 3/8 F
NOB070X140XXXXN38F		2.83x5.63 (72x143)	13.90 (8968)	1.32 (33.50)	0.65 (16.50)	-	0.21 (5.30)	Yes	NB60	-	5.0 (140.4)	3/8 NPT F

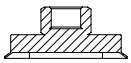
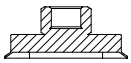
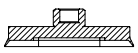
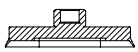
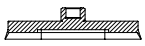
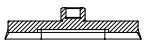
* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NOB030X060NB60G38F** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB60 - NBR	Orange	-4°F to +230°F (-20°C to +110°C)



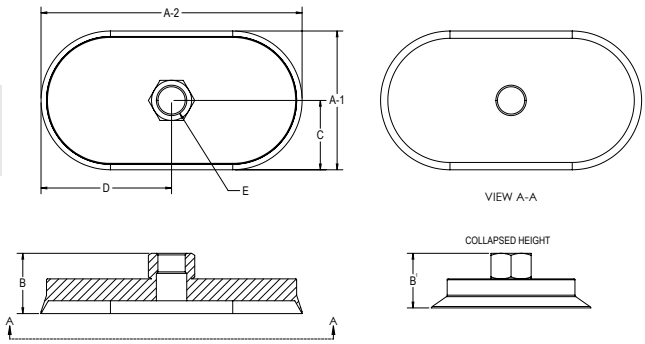
- The NOF Series of oval flat cups offer a unique cleat profile for gripping sheet metal. The cleat profile prevents the cup from slipping on the work piece while providing a firm grip. The use of NBR material makes the cup resistant to abrasion and wear making the cups ideal for applications with curved surfaces, glass, oily materials, and objects in automotive industry.

Specialty Cups – Sheet Metal: NOF Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NOF023X060XXXXG38F		0.98x2.44 (25x62)	2.19 (1416)	0.47 (12.00)	0.35 (9.00)	- (-)	0.21 (5.30)	Yes	NB60	NB45	1.0 (29.0)	G 3/8 F
NOF023X060XXXXN38F		0.98x2.44 (25x62)	2.19 (1416)	0.47 (12.00)	0.35 (9.00)	- (-)	0.21 (5.30)	Yes	NB60	NB45	1.0 (29.0)	3/8 NPT F
NOF050X100XXXXG38F		2.13x5.63 (54x103)	7.65 (4936)	0.63 (16.00)	0.43 (11.00)	- (-)	0.21 (5.30)	Yes	NB60	NB45	2.0 (56.0)	G 3/8 F
NOF050X100XXXXN38F		2.13x5.63 (54x103)	7.65 (4936)	0.63 (16.00)	0.43 (11.00)	- (-)	0.21 (5.30)	Yes	NB60	NB45	2.0 (56.0)	3/8 NPT F
NOF070X140XXXXG38F		2.99x5.63 (76x143)	14.92 (9628)	0.71 (18.00)	0.47 (12.00)	- (-)	0.21 (5.30)	Yes	NB60	NB45	2.7 (77.0)	G 3/8 F
NOF070X140XXXXN38F		2.99x5.63 (76x143)	14.92 (9628)	0.71 (18.00)	0.47 (12.00)	- (-)	0.21 (5.30)	Yes	NB60	NB45	2.7 (77.0)	3/8 NPT F

* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NOF050X100NB60N38F** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

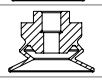
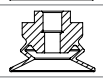
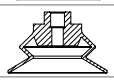
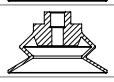
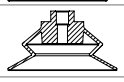
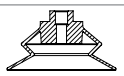
Material	Color	Temperature Range
NB60 - NBR	Orange	-4°F to +230°F (-20°C to +110°C)



Specialty Cups – Sheet Metal

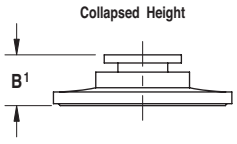
- The NRB Series of round bellow cups offer a unique cleat profile that prevents the cup from slipping on the work piece while still providing a firm grip. The use of 60 durometer NBR material makes the cup resistant to abrasion and wear.

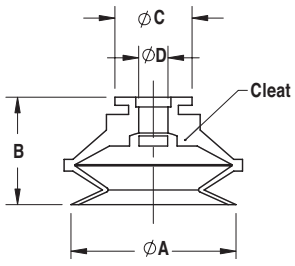
Specialty Cups – Sheet Metal: NRB Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NRB030XXXXG38F		1.26 (32)	1.25 (804)	1.10 (18.00)	0.73 (18.50)	1.02 (25.80)	0.24 (6.00)	Yes	NB60	-	0.05 (14.4)	G 3/8 F
NRB030XXXXN38F		1.26 (32)	1.25 (804)	1.10 (18.00)	0.73 (18.50)	1.02 (25.80)	0.24 (6.00)	Yes	NB60	-	0.05 (14.4)	3/8 NPT F
NRB050XXXXG38F		2.05 (52)	3.30 (2124)	1.46 (37.00)	1.00 (25.50)	1.46 (37.00)	0.24 (6.00)	Yes	NB60	-	0.9 (25.2)	G 3/8 F
NRB050XXXXN38F		2.05 (52)	3.30 (2124)	1.46 (37.00)	1.00 (25.50)	1.46 (37.00)	0.24 (6.00)	Yes	NB60	-	0.9 (25.2)	3/8 NPT F
NRB080XXXXG38F		3.25 (82)	8.19 (5281)	1.99 (50.50)	1.10 (28.00)	1.57 (40.00)	0.24 (6.00)	Yes	NB60	-	2.2 (61.2)	G 3/8 F
NRB080XXXXN38F		3.25 (82)	8.19 (5281)	1.99 (50.50)	1.10 (28.00)	1.57 (40.00)	0.24 (6.00)	Yes	NB60	-	2.2 (61.2)	3/8 NPT F
NRB100XXXXG38F		4.04 (102.50)	12.79 (8252)	2.20 (56.00)	1.22 (31.00)	1.57 (40.00)	0.24 (6.00)	Yes	NB60	-	3.3 (92.4)	G 3/8 F
NRB100XXXXN38F		4.04 (102.50)	12.79 (8252)	2.20 (56.00)	1.22 (31.00)	1.57 (40.00)	0.24 (6.00)	Yes	NB60	-	3.3 (92.4)	3/8 NPT F

* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NRB030NB60N38F** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

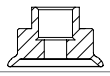
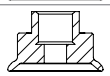
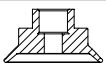
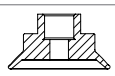
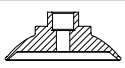
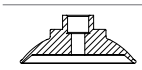
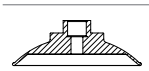
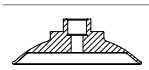
Material	Color	Temperature Range
NB60 - NBR	Orange	-4°F to +230°F (-20°C to +110°C)





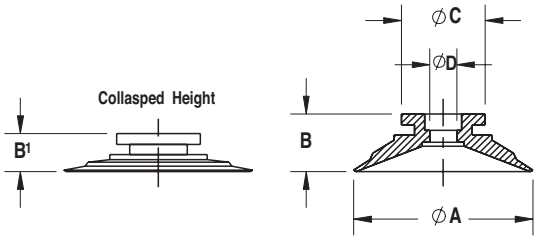
- The NRF Series of round flat cups offer a unique cleat profile for gripping sheet metal. The cleat profile prevents the cup from slipping on the work piece while providing a firm grip. The of NBR material makes the cup resistant to abrasion and wear.

Specialty Cups: NRF Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NRF030XXXXG38F		1.26 (32)	1.25 (804)	0.79 (20.00)	0.68 (17.30)	1.02 (25.80)	0.87 (22.00)	Yes	NB60	NB45	0.05 (13.2)	G 3/8 F
NRF030XXXXN38F		1.26 (32)	1.25 (804)	0.79 (20.00)	0.68 (17.30)	1.02 (25.80)	0.87 (22.00)	Yes	NB60	NB45	0.05 (13.2)	3/8 NPT F
NRF050XXXXG38F		2.05 (52)	3.30 (2124)	1.10 (28.00)	0.96 (24.30)	1.46 (37.00)	0.87 (22.00)	Yes	NB60	NB45	0.8 (24.0)	G 3/8 F
NRF050XXXXN38F		2.05 (52)	3.30 (2124)	1.10 (28.00)	0.96 (24.30)	1.46 (37.00)	0.87 (22.00)	Yes	NB60	NB45	0.8 (24.0)	3/8 NPT F
NRF080XXXXG38F		3.23 (82)	8.19 (5281)	1.34 (34.00)	1.10 (28.00)	1.57 (40.00)	0.87 (22.00)	Yes	NB60	NB45	1.8 (51.6)	G 3/8 F
NRF080XXXXN38F		3.23 (82)	8.19 (5281)	1.34 (34.00)	1.10 (28.00)	1.57 (40.00)	0.87 (22.00)	Yes	NB60	NB45	1.8 (51.6)	3/8 NPT F
NRF100XXXXG38F		4.06 (103.00)	12.95 (8332)	1.42 (36.00)	1.06 (28.80)	1.57 (40.00)	0.87 (22.00)	Yes	NB60	NB45	2.4 (68.4)	G 3/8 F
NRF100XXXXN38F		4.06 (103.00)	12.95 (8332)	1.42 (36.00)	1.06 (28.80)	1.57 (40.00)	0.87 (22.00)	Yes	NB60	NB45	2.4 (68.4)	3/8 NPT F

* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NRF100NB60N38F** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB60 - NBR	Orange	-4°F to +230°F (-20°C to +110°C)
NB45 - NBR	Green	-4°F to +230°F (-20°C to +110°C)



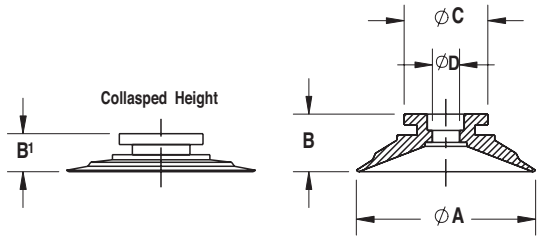
- The NSF Series of vacuum cups are small flat vacuum cups that are designed to pick up small electronic components.

Specialty Cups: NSF Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NSF3.5XXXX		0.14 (3.5)	0.01 (10)	0.21 (5.40)	0.20 (5.00)	0.10 (2.50)	0.05 (1.05)	No	NB50, SI50	-	0.02 (0.0)	Pencil
NSF5.5XXXX		0.22 (5.5)	0.04 (24)	0.22 (5.50)	0.20 (5.00)	0.11 (2.80)	0.05 (1.20)	No	NB50, SI50	-	0.3 (0.0)	Pencil

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **BSF3.5NB55** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

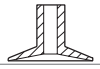
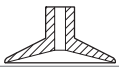
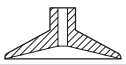
Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
SI50 - Silicone	Red	-40°F to +392°F (-40°C to +200°C)



ULTRA MINIATURE FLAT CUPS

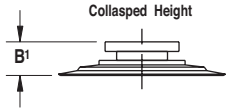
- Ultra-Miniature Cups are ideal for use in picking up extremely small parts.

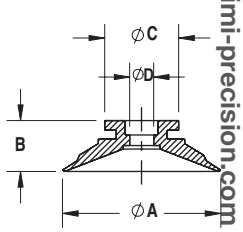
Ultra-Miniature Cups: NVC Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)
NVC-VI093-*		0.09 (2.40)	0.01 (4.00)	0.16 (4.10)	0.08 (2.00)	0.03 (0.76)	0.02 (0.50)	No	B	S	0 (0)
NVC-VI125-*		0.13 (3.20)	0.01 (8.00)	0.18 (4.60)	0.10 (2.50)	0.03 (0.76)	0.04 (0.90)	No	B	ESD or S	0 (0)
NVC-VI250-*		0.25 (6.40)	0.05 (32.00)	0.20 (5.10)	0.13 (3.30)	0.06 (1.50)	0.04 (0.90)	No	B	ESD or S	0 (0)
NVC-VI375-*		0.38 (9.50)	0.11 (71.00)	0.25 (6.40)	0.13 (3.30)	0.06 (1.50)	0.04 (0.90)	No	B	ESD or S	0 (0.10)
NVC-VI500-*		0.50 (12.70)	0.20 (127.00)	0.30 (7.60)	0.16 (4.10)	0.06 (1.50)	0.04 (0.90)	No	B	ESD or S	0 (0.10)
NVC-VI625-*		0.63 (15.90)	0.31 (198.00)	0.31 (7.90)	0.16 (4.10)	0.06 (1.50)	0.04 (0.90)	No	B	ESD or S	0.01 (0.30)
NVC-VI750-*		0.75 (19.10)	0.44 (285.00)	0.32 (8.10)	0.16 (4.10)	0.06 (1.50)	0.04 (0.90)	No	B	ESD or S	0.02 (0.50)

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **NVC-VI093-*** (for Buna-N material). See Chart below for material specifications.

Material	Color	Temperature Range
B - Buna-N static dissipative (ESD-safe) non-marking	Black	-5°F to +250°F (-15°C to +121°C)
ESD - Hi-Temp conductive (ESD-safe) silicone	Black	-65°F to +445°F (-55°C to +230°C)
S - Hi-Temp (non-ESD-safe) silicone	Clear	-65°F to +480°F (-55°C to +250°C)

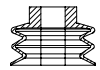
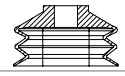




OVAL CUPS

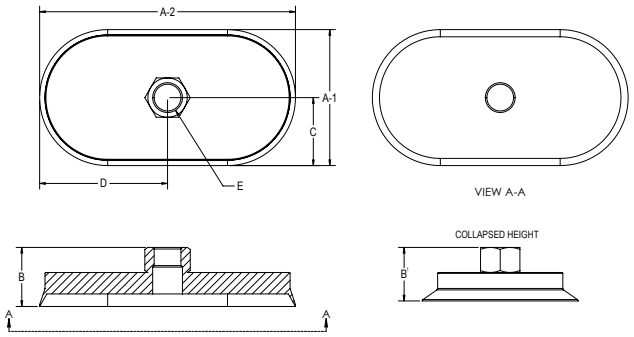
- NOV Series of vacuum cups are designed for unique applications. With a soft flexible oval cup, these cups are made to gently pick up parts. The use of vinyl material provides excellent wear characteristics. These cups are ideal for applications for curved surface objects, electronics (PCB), glass, oily materials, and pharmaceuticals.

Oval Cups: NOV Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NOV035X028VI55		1.38x1.10 (35x28)	1.26 (812)	0.96 (24.50)	0.49 (12.50)	- (-)	0.39 (10.00)	No	VI55	-	0.2 (5.9)	6
NOV045X028VI55		1.77x1.10 (45x028)	1.69 (1092)	0.96 (24.50)	0.49 (12.50)	- (-)	0.39 (10.00)	No	VI55	-	0.3 (8.2)	6

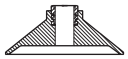
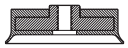
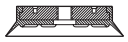
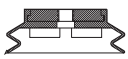
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section5

Material	Color	Temperature Range
VI55 - Vinyl	Blue	-32°F to +140°F (0°C to +60°C)



- Oval cups have heavy load capabilities due to their rigid design and large vacuum work area. They have the largest lifting force because they provide the most surface area for a given footprint.

Oval Cups: NVC Style

Part Number		A-1 in. (mm)	A - 2 in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	E	F	H	Cleats	Standard Material	Optional Material	Weight oz (g)
NVC-89		1.14 (29.00)	2.78 (70.60	5.85 (3774)	1.13 (28.70)	0.95 (2.41)	0.57 (14.50)	1.39 (35.30)	1/4 NPTF	- (-)	- (-)	No	V	ORV, GS or P	1 (27)
NVC-83		1.56 (39.60)	4.09 (103.90)	3.16 (2039)	1.30 (33.00)	1.20 (30.50)	0.78 (19.80)	2.05 (51.90)	1/4 NPTF	- (-)	- (-)	No	V	ORV, GS or P	3.20 (91)
NVC-183-2X4		2.00 (50.80)	4.00 (101.60)	7.14 (4606)	1.00 (25.40)	0.70 (17.80)	1.00 (25.40)	2.00 (50.80)	1/4 NPTF	- (-)	- (-)	Yes	V	ORV, GS or P	2.70 (76)
NVC-183-2X6		2.00 (50.80)	6.00 (152.40)	11.14 (7187)	0.98 (24.90)	0.75 (19.10)	1.00 (25.40)	4.00 (101.60)	1.00 (25.40)	1/4 NPTF	- (-)	Yes	V	ORV, GS or P	4.70 (134)
NVC-90-2X10		2.00 (50.80)	10.00 (254.00)	19.14 (12348)	0.82 (20.80)	0.55 (14.00)	1.00 (25.40)	6.50 (165.10)	1.75 (44.50)	1/4 NPTF	- (-)	No	V	ORV, GS or P	4.90 (139)
NVC-90-3X8		3.00 (76.20)	8.00 (203.20)	22.06 (14232)	1.10 (27.80)	0.75 (19.10)	1.50 (38.10)	5.00 (127.00)	1.50 (38.10)	3/8 NPTF	- (-)	Yes	V	ORV, GS or P	11 (312)
NVC-90-3X10		3.00 (76.20)	10.00 (254.00)	28.06 (18103)	1.10 (27.80)	0.73 (18.50)	1.50 (38.10)	7.00 (177.80)	1.50 (38.10)	3/8 NPTF	- (-)	Yes	V	ORV, GS or P	14 (397)
NVC-32-3.5X5.0		3.50 (88.90)	5.00 (127.00)	11.87 (7658)	1.82 (46.20)	1.02 (25.90)	1.75 (44.50)	2.50 (63.50)	3/8 NPTF	- (-)	- (-)	Yes	V	ORV, GS or P	6.70 (190)
NVC-129		3.25 (82.60)	7.87 (199.90)	23.30 (150.32)	1.83 (46.50)	0.80 (20.30)	1.63 (41.30)	3.94 (100.00)	1/2 NPTF	- (-)	- (-)	Yes	V	ORV, GS or P	13.20 (373)
NVC-90-6X10		6.00 (152.40)	10.00 (254.00)	58.06 (37458)	1.19 (30.20)	0.73 (18.50)	2.00 (50.80)	6.00 (152.40)	2.00 (50.80)	6.00 (152.40)	Consult Factory	Yes	V	ORV, GS or P	24 (680)

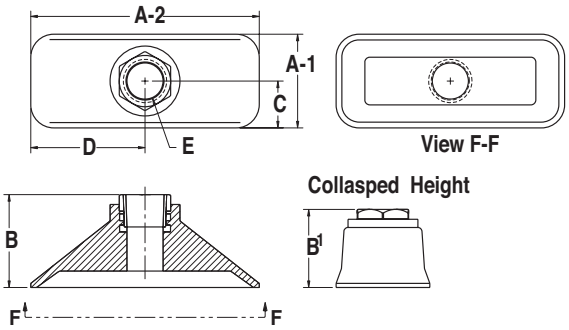
* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **NVC-129-GS** (for Silicone material). See Chart below for material specifications. **Fittings:** To order fittings, please reference the fitting groups section for the approriate part numbers. The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.
Custom mounting holes available. Consult factory.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)

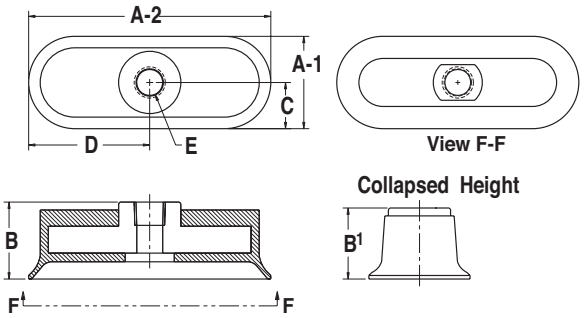
Oval Cups

Oval

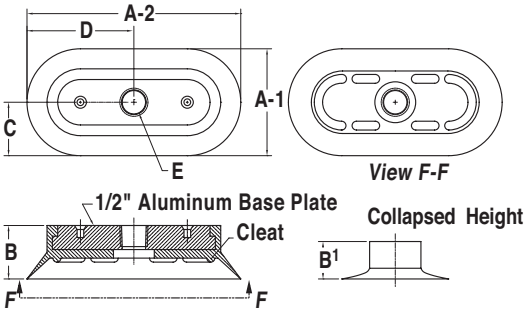
NVC-89



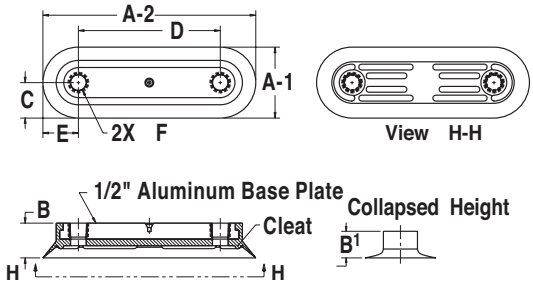
NVC-83



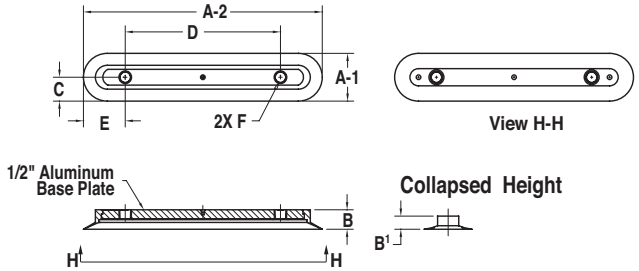
NVC-183-2X4



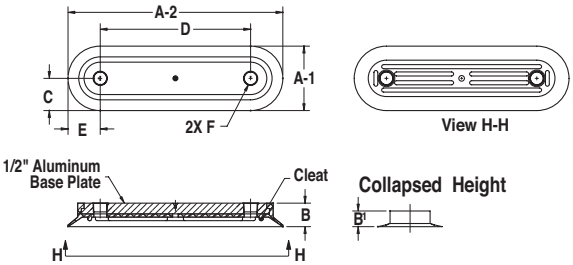
NVC-183-2X6



NVC-90-2X10



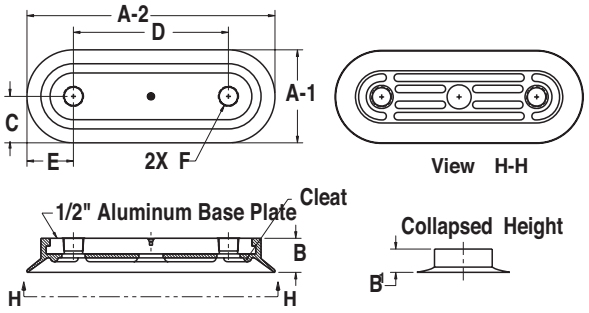
NVC-90-3X10



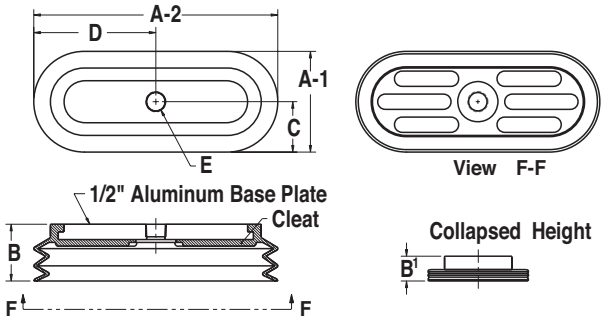
Custom mounting holes available. Consult factory.

Oval

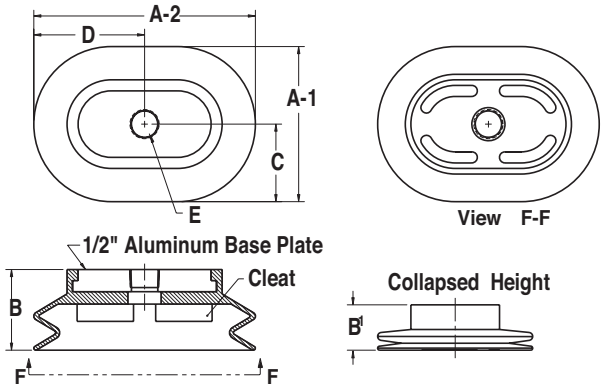
NVC-90-3X8



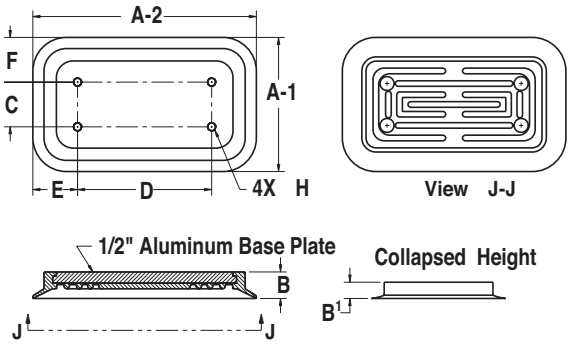
NVC-129



NVC-32-3.5X5.0



NVC-90-6X10

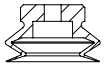
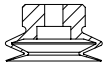
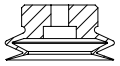
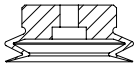
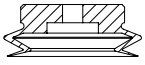
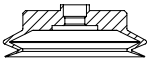


Custom mounting holes available. Consult factory.

SINGLE BELLOWS CUPS

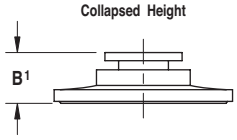
- The NBG Series of vacuum cups are a general purpose line of single bellow cups. The single bellow allows the cup to conform to the work piece while accomodating variations in part presentation. With a choice between NBR material for excellent wear capabilities and white silicone for FDA approved for food handling applications, the NBG Series is an ideal fit.

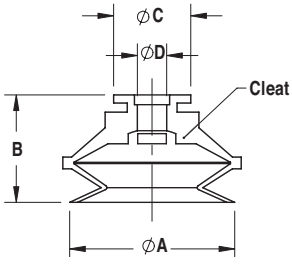
Single Bellows Cups: NBG Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NBG006XXXX		0.24 (6.00)	0.04 (28.00)	0.35 (9.00)	0.19 (4.80)	0.30 (7.50)	0.16 (4.00)	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.0 (0.2)	13
NBG008XXXX		0.31 (8.00)	0.08 (50)	0.35 (9.00)	0.20 (5.00)	0.31 (8.00)	0.16 (4.00)	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.0 (0.3)	13
NBG010XXXX		0.39 (10.00)	0.12 (79)	0.37 (9.50)	0.26 (6.50)	0.43 (11.00)	0.16 (4.00)	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.0 (0.6)	13
NBG015XXXX		0.59 (15.00)	0.27 (177)	0.43 (11.00)	0.30 (7.70)	0.47 (12.00)	0.16 (4.00)	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.0 (0.8)	13
NBG020XXXX		0.79 (20)	0.49 (314)	0.51 (13.00)	0.30 (7.50)	0.59 (15.00)	0.18 (4.60)	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.1 (1.9)	4
NBG025XXXX		0.98 (25)	0.76 (491)	0.61 (15.50)	0.35 (9.00)	0.69 (17.50)	0.18 (4.60)	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.1 (3.2)	4
NBG030XXXX		1.18 (30.00)	1.10 (707)	0.71 (18.00)	0.43 (11.00)	0.79 (20.00)	0.23 5.80	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.2 (5.0)	45
NBG035XXXX		1.38 (35)	2.49 (962)	0.72 (18.00)	0.43 (11.00)	0.98 (25.00)	0.23 5.80	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.3 (8.1)	45
NBG040XXXX		1.57 (40)	1.95 (1257)	0.71 (18.00)	0.43 (10.80)	0.98 (25.00)	0.23 5.80	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.4 (11.1)	45
NBG050XXXX		1.97 (50)	3.04 (1963)	0.79 (20.00)	0.43 (11.00)	1.18 (30.00)	0.23 5.80	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	0.8 (21.3)	5
NBG060XXXX		2.36 (60)	4.38 (2827)	0.79 (20.00)	0.47 (12.00)	1.57 (40.00)	0.31 7.80	Yes	NB55, WS50	CN55, CS50, EP55, FL65, HP55	1.3 (35.5)	M10x1.25

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NBG015WS50** (for Silicone material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

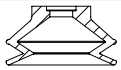
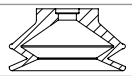
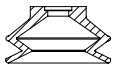
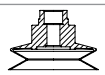
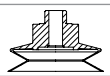
Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS50 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
FL65 - Fluorine Rubber	Black	14°F to +446°F (-10°C to +230°C)
EP55 - EPDM	Grey	14°F to +446°F (-10°C to +230°C)
HP55 - Mark Free NBR	Black	-4°F to +230°F (-20°C to +110°C)





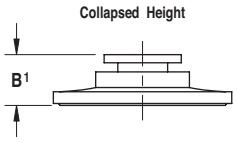
- The NDB Series of vacuum cups is a polyurethane series of bellow cups. This series is offered in both single durometer and dual durometer material. Single durometer cups provide a lower pricepoint, but dual durometer cups provide a longer overall life. The single bellow cups allow the cup to conform to the work piece while accommodating variation in part presentation.

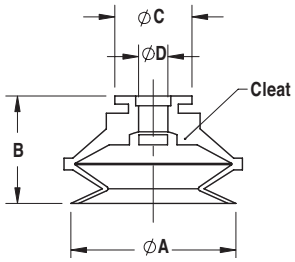
Single Bellows Cups: NDB Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NDB010PU40		0.43 (10.90)	0.15 (93)	0.65 (16.50)	0.45 (11.50)	0.35 (9.00)	0.20 (5.00)	Yes	PU40, PU60, PD36	-	0.0 (0.9)	2
NDB015XXXX		0.63 (16)	0.31 (201)	0.75 (19.00)	0.52 (13.20)	0.35 (9.00)	0.22 (5.50)	Yes	PU40, PU60, PD36	-	0.1 (1.5)	2
NDB020XXXX		0.83 (21)	0.54 (346)	0.71 (18.00)	0.41 (10.50)	0.47 (12.00)	0.20 (5.00)	Yes	PU40, PU60, PD36	-	0.1 (1.9)	4
NDB030XXXX		1.24 (31.5)	1.21 (779)	0.66 (16.80)	0.40 (10.20)	0.66 (16.80)	0.26 (6.50)	Yes	PU40, PU60, PD36	-	0.2 (4.6)	45
NDB040XXXX		1.65 (42)	2.15 (1385)	0.88 (22.40)	0.54 (13.60)	0.88 (22.40)	0.26 (6.50)	Yes	PU40, PU60, PD36	-	0.4 (11.6)	45
NDB050XXXX		2.07 (52.5)	3.36 (2165)	1.15 (29.30)	0.67 (17.00)	1.10 (28.00)	0.41 (10.50)	Yes	PU40, PU60, PD36	-	0.7 (20.4)	12
NDB070XXXXG38F		2.76 (70)	5.97 (3848)	2.87 (73.00)	0.79 (20.00)	1.89 (48.00)	0.28 7.00	Yes	PU40, PU60, PD36	-	2.1 (60.0)	G 3/8 F
NDB070XXXXG38M		2.76 (70)	5.97 (3848)	2.87 (73.00)	0.79 (20.00)	1.83 (46.50)	0.24 6.00	Yes	PU40, PU60, PD36	-	2.1 (60.00)	G 3/8 M

* How to Order: All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NDB015PU40** (for Polyurethane material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
PU40 - Polyurethane	Yellow	+50°F to +230°F (+10°C to +122°C)
PU60 - Polyurethane	Green	+50°F to +230°F (+10°C to +122°C)
PD36 - Polyurethane	Light Blue	+50°F to +230°F (+10°C to +122°C)

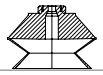




Single Bellows Cups

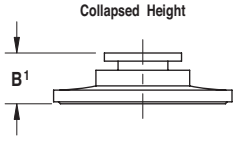
- The NUB Series of vacuum cups are a universal series of single bellow cups. The NUB, NUC, NFD, and NUU Series share common fitting series and offer interchangeability to adapt to different applications. The single bellow NUB Series allows the cup to conform to the work piece while accomodating variation in part presentation.

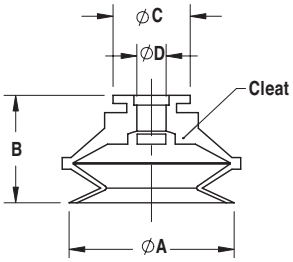
Single Bellows Cups: NUB Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NUB013XXXX		0.51 (13.0)	0.21 (133)	0.73 (18.50)	0.43 (11.00)	0.41 (10.40)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.1 (1.7)	2
NUB016XXXX		0.63 (16)	0.31 (201)	0.79 (20.00)	0.45 (11.50)	0.47 (11.90)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.1 (2.1)	2
NUB020XXXX		0.79 (20)	0.49 (314)	0.93 (23.50)	0.51 (13.00)	0.43 (11.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.1 (3.0)	7
NUB032XXXX		1.26 (32)	1.25 (804)	1.14 (29.00)	0.59 (15.00)	0.43 (11.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.3 (7.2)	7
NUB040XXXX		1.57 (40)	1.95 (1257)	1.95 (34.00)	0.71 (18.00)	0.57 (14.50)	0.28 (7.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.5 (13.6)	27
NUB050XXXX		1.97 (50)	3.04 (1963)	1.50 (38.00)	0.75 (19.00)	0.57 (14.50)	0.29 7.00	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.7 (19.9)	27

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NUB020NB50** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

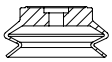
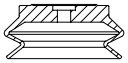
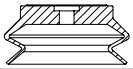
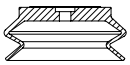
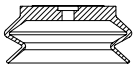
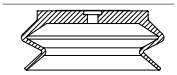
Material	Color	Temperature Range
NB50 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS45 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
FL65 - Fluorine Rubber	Black	14°F to +446°F (-10°C to +230°C)
EP55 - EPDM	Grey	-22°F to +302°F (-30°C to +150°C)
HP50 - Mark Free NBR	Black	-4°F to +230°F (-20°C to +110°C)





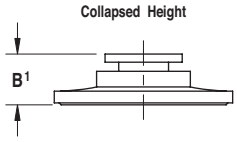
- The NHB Series of vacuum cups is designed for lifting heavy loads. Unlike most cups where a fitting is pushed into the cup, the NHB Series uses screws to mechanically couple the fitting to the cup. This mechanical cup prevents the cup from separating from the cup.

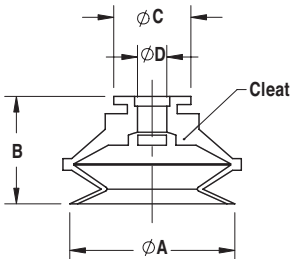
Single Bellows Cups: NHB Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NHB040XXXX		1.63 (41.5)	2.10 (1353)	0.51 (13.00)	0.30 (7.50)	1.18 (30.00)	0.24 (6.00)	No	NB55. WS50	FL65	0.6 (16.2)	22
NHB050XXXX		2.05 (52)	3.29 (2124)	0.65 (16.50)	1.18 (30.00)	1.59 (40.50)	0.24 (6.00)	No	NB55. WS50	FL65	1.1 (31.9)	22
NHB063XXXX		2.56 (65)	5.14 (3318)	0.85 (21.05)	0.24 (6.00)	1.97 (50.00)	0.31 (8.00)	No	NB55. WS50	FL65	2.2 (61.0)	23
NHB080XXXX		3.27 (83)	8.39 (5411)	1.08 (27.50)	0.37 (9.50)	2.52 (64.00)	0.31 (8.00)	No	NB55. WS50	FL65	3.7 (103.8)	23
NHB100XXXX		4.06 (103)	12.92 (8332)	1.87 (47.50)	0.47 (12.00)	3.15 (80.00)	0.39 (10.00)	No	NB55. WS50	FL65	7.0 (198.5)	24
NHB125XXXX		5.06 (128.5)	20.10 (12969)	2.20 (56.00)	0.47 (12.00)	4.13 (105.00)	0.39 10.00	No	NB55. WS50	FL65	13.4 (380.7)	24

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NHB080WS50** (for Silicone material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
FL65 - Fluorine Rubber	Black	+14°F to +446°F (-10°C to +230°C)

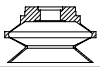




Single Bellows Cups

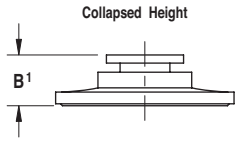
- The NSB Series of vacuum cups is a general purpose line of single bellow cups. The single bellow cup allows the cup to conform to the work piece while accommodating variation in part presentation. With a choice between NBR material for excellent wear capabilities and red silicone material for wide temperature ranges, the NSB Series is an economical choice for various applications.

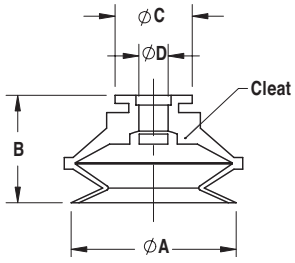
Single Bellows Cups: NSB Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NSB005XXXX		0.23 (5.8)	0.04 (26)	0.36 (9.20)	0.30 (7.50)	0.20 (5.20)	0.08 (2.00)	Yes	NB50, SI50	CN55, WS50	0.0 (0.2)	1
NSB008XXXX		0.35 (8.8)	0.09 (61)	0.53 (13.50)	0.21 (5.40)	0.24 (6.00)	0.08 (2.00)	Yes	NB50, SI50	CN55, WS50	0.0 (0.4)	1
NSB010XXXX		0.43 (11)	0.15 (95)	0.63 (16.00)	0.35 (9.00)	0.37 (9.30)	0.14 (3.50)	Yes	NB50, SI50	CN55, WS50	0.0 (0.7)	2
NSB012XXXX		0.47 (12)	0.18 (113)	0.65 (16.50)	0.43 (11.00)	0.42 (10.75)	0.14 (3.50)	Yes	NB50, SI50	CN55, WS50	0.0 (1.3)	2
NSB020XXXX		0.87 (22)	0.59 (380)	0.75 (19.00)	0.39 (10.00)	0.57 (14.50)	0.20 (5.00)	Yes	NB50, SI50	CN55, WS50	0.1 (3.1)	4
NSB030XXXX		1.34 (34)	1.41 (908)	1.02 (26.00)	0.28 (7.00)	0.78 (19.90)	0.25 (6.40)	Yes	NB50, SI50	CN55, WS50	0.3 (7.5)	45
NSB050XXXX		2.09 (53)	3.42 (2206)	1.38 (35.00)	0.59 (15.00)	1.06 (27.00)	0.41 10.50	Yes	NB50, SI50	CN55, WS50	0.8 (21.5)	12

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NSB005SI50** (for Silicone material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB50 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
SI50 - Silicone	Red	-40°F to +392°F (-40°C to +200°C)
CS55 - Conductive NBR	Black	-22°F to +356°F (-30°C to +180°C)
WS50 - Conductive Silicone	White	-40°F to +392°F (-40°C to +200°C)



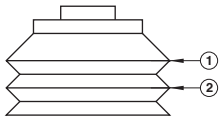


- Bellows cups conform to curved or uneven surfaces and the bellows sections compensate for inconsistent stack heights.

Single Bellows Cups (1 Convolution): NVC Style

Bellows cups have a pliable outer rim that will conform to curved or uneven surfaces while the bellows sections compensate for inconsistent stack heights. Under vacuum the accordion-style bellows cup will collapse on contact. The collapsing action simulates a short cylinder stroke lifting the product for a short distance, possibly saving the need for a separate lifting mechanism.

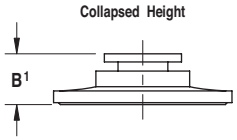
This bellows has a total of 2 convolutions

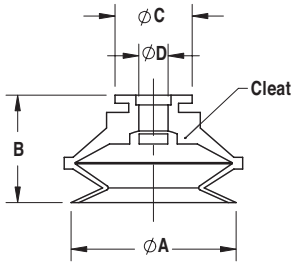


Part Number		Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVC-B5		1	0.18 (4.60)	0.03 (20)	0.50 (12.7)	0.45 (11.4)	0.12 (3.00)	0.06 (1.50)	No	V	ORV, GS or P	0 (0)	1
NVC-B6		1	0.25 (6.40)	0.05 (31)	0.45 (11.4)	0.39 (9.9)	0.14 (3.60)	0.06 (1.50)	No	V	ORV, GS or P	0 (0)	1
NVC-B10-5		1	0.41 (10.4)	0.13 (85)	0.65 (16.50)	0.48 (12.20)	0.31 (7.90)	0.16 (4.10)	No	V	ORV, GS or P	0.02 (0.60)	2
NVC-B3		1	0.51 (13.00)	0.20 (132)	0.56 (14.20)	0.28 (7.10)	0.31 (7.90)	0.15 (3.80)	No	V	ORV, GS or P	0.02 (0.60)	2

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. See Chart below for material specifications. **Fittings:** To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required. The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)

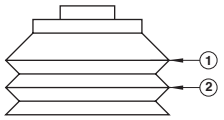




Single Bellows Cups (1 Convolution): NVC Style

Bellows cups have a pliable outer rim that will conform to curved or uneven surfaces while the bellows sections compensate for inconsistent stack heights. Under vacuum the accordion-style bellows cup will collapse on contact. The collapsing action simulates a short cylinder stroke lifting the product for a short distance, possibly saving the need for a separate lifting mechanism.

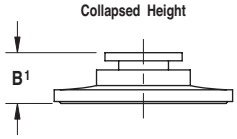
This bellows has a total of 2 convolutions

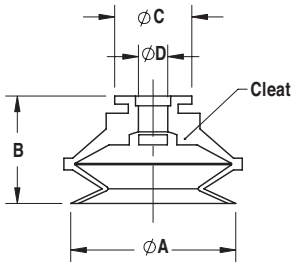


Part Number		Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq.mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVC-B15		1	0.61 (15.50)	0.29 (189)	0.81 (20.6)	0.57 (14.50)	0.36 (9.10)	0.14 (3.60)	No	V	ORV, GS or P	0.05 (1.00)	3
NVC-B2		1	0.75 (19.10)	0.44 (285)	0.71 (18.00)	0.43 (10.90)	0.51 (13.00)	0.26 (6.60)	No	V	ORV, GS or P	0.07 (2.00)	NF
NVC-B20		1	0.80 (20.30)	0.50 (324)	0.78 (19.80)	0.63 (16.00)	0.38 (9.70)	0.16 (4.10)	No	V	ORV, GS or P	0.07 (2.00)	3
NVC-124		1	1.02 (25.90)	0.82 (527)	1.45 (36.80)	0.97 (24.60)	0.64 (16.30)	0.34 (8.60)	No	V	ORV, GS or P	0.18 (5.00)	NF
NVC-B1		1	1.20 (30.50)	1.13 (730)	1.23 (31.2)	0.84 (21.30)	0.54 (13.70)	- (-)	No	V	ORV, GS or P	0.42 (12)	1/8 NPTF
NVC-32C		1	2.00 (50.80)	3.14 (2027)	1.61 (40.90)	0.85 (21.60)	0.73 (18.50)	0.38 (9.70)	Yes	V	ORV, GS or P	0.67 (19)	NF
NVC-32C-1		1	2.00 (50.80)	3.14 (2027)	1.59 (40.40)	0.85 (21.60)	0.75 (19.10)	0.50 (12.70)	Yes	V	ORV, GS or P	0.53 (15)	NF
NVC-32C1-F		1	2.00 (50.80)	3.14 (2027)	1.50 (38.10)	0.85 (21.60)	1.00 (25.40)	- (-)	Yes	V	ORV, GS or P	1.13 (32)	1/4 NPTF
NVC-32B		1	2.78 (70.60)	6.07 (3916)	1.82 (46.20)	0.79 (20.10)	1.00 (25.40)	- (-)	Yes	V	ORV, GS or P	1.66 (47)	1/4 NPTF

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required. The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)





MULTI BELLOWS CUPS

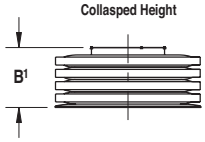
- The NCG Series of vacuum cups is a general purpose line of multi-bellow cups. The multiple bellows allows the cup to conform to the work piece while accomodating variations in part presentation. This cup is offered in NBR material which provides excellent wear capabilities and white silicone FDA compliance material.

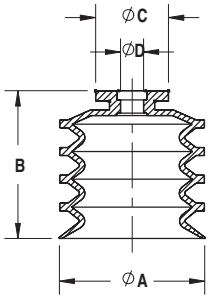
Multi Bellows Cups: NCG Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NCG010XXXX		0.35 (9)	0.10 (64)	0.59 (15.00)	0.35 (9.00)	0.35 (9.00)	0.20 (5.00)	Yes	NB55, WS50	CN55, CN50, EP55	0.0 (0.7)	3
NCG015XXXX		0.60 (15.2)	0.28 (181)	0.90 (22.80)	0.35 (9.00)	0.39 (10.00)	0.20 (5.00)	Yes	NB55, WS50	CN55, CN50, EP55	0.1 (1.7)	3
NCG018XXXX		0.73 (18.6)	0.42 (272)	0.91 (23.00)	0.35 (9.00)	0.39 (10.00)	0.20 (5.00)	Yes	NB55, WS50	CN55, CN50, EP55	0.1 (2.0)	3
NCG020XXXX		0.81 (20.6)	0.52 (333)	0.91 (23.00)	0.35 (9.00)	0.39 (10.00)	0.20 (5.00)	Yes	NB55, WS50	CN55, CN50, EP55	0.1 (3.1)	3
NCG030XXXX		1.26 (32)	1.25 (804)	1.48 (37.50)	0.67 (17.00)	0.71 (18.00)	0.31 (8.00)	Yes	NB55, WS50	CN55, CN50, EP55	0.4 (10.8)	8
NCG040XXXX		1.65 (42)	2.15 (1385)	1.81 (46.00)	0.67 (17.00)	0.79 (20.00)	0.31 (8.00)	Yes	NB55, WS50	CN55, CN50, EP55	0.8 (21.4)	8
NCG060XXXX		2.44 (62)	4.68 (3019)	2.17 (55.00)	0.71 (18.00)	0.85 21.50	0.31 (8.00)	Yes	NB55, WS50	CN55, CN50, EP55	2.1 (58.5)	8
NCG090XXXX		3.46 (88)	9.43 (6082)	3.44 (87.50)	1.02 (26.00)	0.98 25.00	0.47 12.00	Yes	NB55, WS50	CN55, CN50, EP55	5.6 (160.0)	9

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NCG040NB55** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
PU40 - Polyurethane	Yellow	+50°F to +230°F (+10°C to +122°C)
PU60 - Polyurethane	Green	+50°F to +230°F (+10°C to +122°C)
PD36 - Polyurethane	Light Blue	+50°F to +230°F (+10°C to +122°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CN50 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
EP55 - EPDM	Black	-22°F to +356°F (-30°C to +180°C)

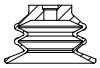
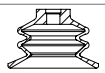
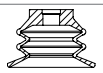




Multi Bellows Cups

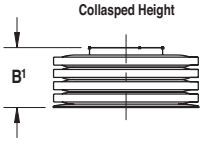
- The NSM Series of vacuum cups is a polyurethane series of multi-bellow cups and is offered in both single durometer and dual durometer material. The single durometer cups have a lower pricepoint, but the dual durometer will provide a longer life. The NSM Series has a thinner lip and softer materials allowing for the cup to better conform to curved or uneven surfaces.

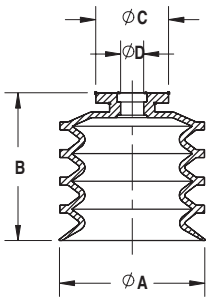
Multi Bellows Cups: NSM Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NSM025XXXX		0.98 (25)	0.76 (491)	0.61 (15.50)	0.39 (10.00)	0.47 (12.00)	0.20 (5.00)	Yes	PU55, PD35	-	0.1 (1.9)	4
NSM035XXXX		1.38 (35)	1.49 (962)	0.88 (22.30)	0.55 (13.90)	0.65 (16.50)	0.20 (5.00)	Yes	PU55, PD35	-	0.2 (4.5)	4
NSM045XXXX		1.77 (45)	2.47 (1590)	1.15 (29.30)	0.70 (17.80)	0.66 (16.80)	0.26 (6.60)	Yes	PU55, PD35	-	0.4 (10.4)	5
NSM055XXXX		2.17 (55)	3.68 (2376)	1.43 (36.30)	0.92 (23.40)	1.08 (27.50)	0.41 10.50	Yes	PU55, PD35	-	2.3 (65.0)	6

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NSM045PU55** (for Polyurethane material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

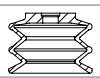
Material	Color	Temperature Range
PU55 - Polyurethane	Green	+50°F to +122°F (+10°C to +50°C)
PD35 - Polyurethane	Light Blue/Dark Blue	+50°F to +122°F (+10°C to +50°C)





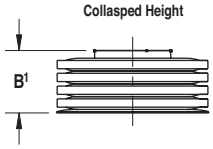
- The NDM Series of vacuum cups is a polyurethane series of multi-bellow cups and is offered in both single and dual durometer material. The single durometer cups have a lower pricepoint, but the dual durometer will provide a longer life. These cups are ideal for applications such as automotive, curved surface objects, masonry, and packaging boxes.

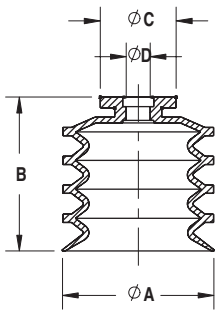
Multi Bellows Cups: NDM Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NDM020XXXX		0.83 (21)	0.54 (346)	0.55 (14.00)	0.41 (10.30)	0.47 (12.00)	0.16 (4.00)	Yes	PU55, PU60, PD36	-	0.1 (1.8)	4
NDM025XXXX		1.02 (26)	0.82 (531)	0.55 (14.00)	0.46 (11.60)	0.61 (15.40)	0.16 (4.00)	Yes	PU55, PU60, PD36	-	0.1 (3.4)	4
NDM030XXXX		1.18 (30)	1.10 (707)	0.55 (14.00)	0.52 (13.30)	0.65 (16.50)	0.16 (4.00)	Yes	PU55, PU60, PD36	-	0.1 (1.6)	4
NDM035XXXX		1.38 (35)	1.49 (962)	0.55 (14.00)	0.61 (15.50)	0.83 (21.00)	0.16 (4.00)	Yes	PU55, PU60, PD36	-	0.2 (5.1)	45
NDM040XXXX		1.57 (40)	1.95 (1257)	0.55 (14.00)	0.70 (17.80)	0.87 (22.00)	0.16 (4.00)	Yes	PU55, PU60, PD36	-	0.4 (10.00)	45
NDM050XXXX		1.97 (50)	3.04 (1963)	0.57 (14.50)	0.87 (22.10)	1.08 (27.50)	0.16 (4.00)	Yes	PU55, PU60, PD36	-	0.7 (19.7)	12
NDM070XXXXG38F		2.76 (70)	5.97 (3848)	0.73 (18.50)	1.18 (29.90)	1.56 39.70	0.28 7.00	Yes	PU55, PU60, PD36	-	2.3 (65.0)	G 3/8 F
NDM070XXXXG38M		2.76 (70)	5.97 (3848)	0.77 (19.50)	1.18 (29.90)	1.56 39.70	0.24 6.00	Yes	PU55, PU60, PD36	-	2.3 (65.0)	G 3/8 M

* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NDM070PU60G38M** (for Polyurethane material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

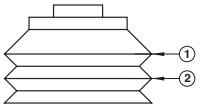
Material	Color	Temperature Range
P55 - Polyurethane	Green	+50°F to +122°F (+10°C to +50°C)
P60 - Polyurethane	Blue	+50°F to +122°F (+10°C to +50°C)
P36 - Dual Durometer	Light Blue/Dark Blue	+50°F to +230°F (+10°C to +122°C)





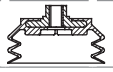
Multi Bellows Cups (2,3,4 Convolutions)

- Bellows cups have a pliable outer rim that will conform to curved or uneven surfaces while the bellows sections compensate for inconsistent stack heights. Under vacuum the accordion-style bellows cup will collapse on contact. The collapsing action simulates a short cylinder stroke lifting the product for a short distance, possibly saving the need for a separate lifting mechanism.



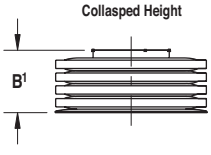
This bellows has a total of 2 convolutions

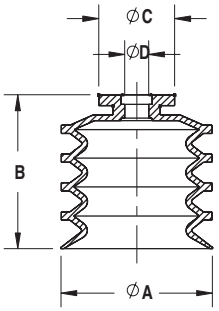
Multi-Bellows Cups (2, 3, 4 Convolutions): NVC Style

Part Number		Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVC-B10-2		2	0.38 (9.70)	0.11 (73)	0.75 (19.10)	0.48 (12.20)	0.19 (4.80)	0.06 (1.50)	No	V	ORV, GS or P	0 (0)	1
NVC-33A5		3	0.75 (19.10)	0.44 (285)	1.00 (25.40)	0.37 (9.40)	0.67 (17.00)	0.44 (11.20)	No	V	ORV, GS or P	0.11 (3)	NF
NVC-33A3		2	0.89 (22.60)	0.62 (401)	1.02 (25.90)	0.55 (14.00)	0.67 (17.00)	0.43 (10.90)	No	V	ORV, GS or P	0.14 (4)	NF
NVC-33A2		2	1.25 (31.80)	1.23 (792)	1.43 (36.30)	0.87 (22.10)	0.68 (17.30)	- (-)	No	V	ORV, GS or P	0.60 (17)	1/4 NPTF
NVC-33A		3	1.42 (36.10)	1.58 (1022)	2.08 (52.80)	1.14 (29.00)	0.68 (17.30)	- (-)	No	V	ORV, GS or P	0.71 (20)	1/4 NPTF
NVC-32D		2	2.00 (50.80)	3.14 (2027)	1.65 (41.90)	0.75 (19.10)	0.75 (19.10)	- (-)	No	V	ORV, GS or P	1.02 (29)	1/4 NPTF
NVC-130		4	3.31 (84.10)	8.60 (5551)	2.75 (69.90)	1.14 (29.00)	2.42 (61.50)	- (-)	Yes	V	ORV, GS or P	4.76 (135)	3/4 NPTF
NVC-104-4.5		2	4.50 (114.30)	15.90 (10261)	2.50 (63.50)	1.50 (38.10)	3.50 (88.90)	- (-)	Yes	V	ORV, GS or P	7.4 (209)	3/8 NPTF

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. See Chart below for material specifications. **Fittings:** To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required. The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)

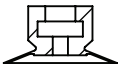
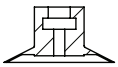
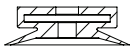




FLAT CUPS

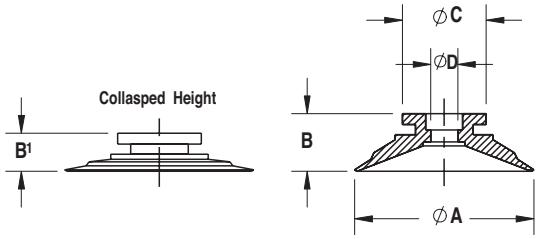
- The NSG Series is a line of flat vacuum cups that have a thin lip. Flat cups allow for a firm grip on the work piece. The flexible lip allows the cup to conform better to variations in workpiece surfaces.

Flat Cups: NSG Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NSG015XXXX		0.59 (15)	0.27 (177)	0.30 (7.50)	0.26 (6.60)	0.33 (8.50)	0.08 (2.00)	Yes	NB55, WS50	CN55, CS55	0.0 (0.3)	13
NSG020XXXX		0.79 (20)	0.49 (314)	0.39 (10.00)	0.35 (8.80)	0.35 (9.00)	0.08 (2.00)	Yes	NB55, WS50	CN55, CS55	0.0 (0.9)	13
NSG025XXXX		0.98 (25)	0.76 (491)	0.39 (10.00)	0.33 (8.50)	0.87 (22.00)	0.12 (3.00)	Yes	NB55, WS50	CN55, CS55	0.1 (2.3)	M6X1
NSG030XXXX		1.18 (30)	1.10 (707)	0.43 (11.00)	0.36 (9.20)	0.87 (22.00)	0.12 (3.00)	Yes	NB55, WS50	CN55, CS55	0.1 (2.7)	M6X1

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NSG020NB55** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section5

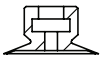
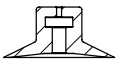
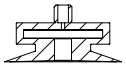
Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)



Flat Cups

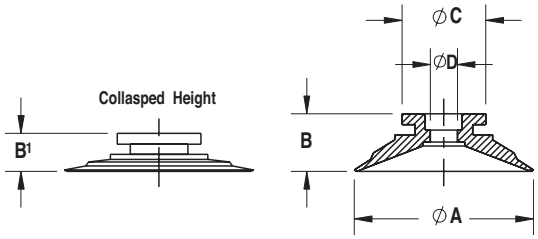
- The NFR Series of flat cups have a thin lip and short travel. This series is very similar to the NSG Series by offering a thin lip to better conform to the workpiece. The shorter stroke of the NFR Series allows for faster cycle times by gripping the workpiece more quickly.

Flat Cups: NFR Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NFR015XXXX		0.59 (15)	0.27 (177)	0.30 (7.50)	0.28 (7.00)	0.33 (8.50)	0.08 (2.00)	Yes	NB55, WS50	CN55, CS55	0.0 (0.4)	13
NFR020XXXX		0.79 (20)	0.49 (314)	0.39 (10.00)	0.36 (9.20)	0.33 (8.50)	0.08 (2.00)	Yes	NB55, WS50	CN55, CS55	0.0 (0.9)	13
NFR030XXXX		1.18 (30)	1.10 (707)	0.43 (11.00)	0.42 (10.70)	0.59 (15.00)	0.12 (3.00)	Yes	NB55, WS50	CN55, CS55	0.1 (3.3)	M6X1

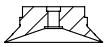
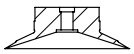
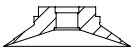
* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NFR015NB55** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section5

Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)



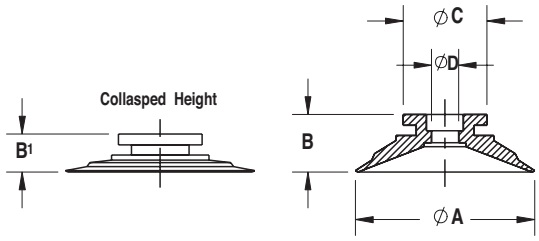
- The NCF Series of vacuum cups is a general-purpose line of flat cups. The NCF Series offers larger diameters and includes cleats. The cleat allows the cup to grip firmly to flat work pieces without losing vacuum.

Flat Cups: NCF Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NCF020XXXX		0.87 (22)	0.59 (380)	0.31 (8.00)	0.28 (7.00)	0.55 (14.00)	0.20 (5.00)	Yes	NB55, SI50	CS55, WS50	0.0 (0.2)	4
NCF025XXXX		1.06 (27)	0.89 (573)	0.35 (9.00)	0.31 (8.00)	0.55 (13.90)	0.20 (5.00)	Yes	NB55, SI50	CS55, WS50	0.0 (0.2)	4
NCF030XXXX		1.26 (32)	1.25 (804)	0.39 (10.00)	0.35 (8.80)	0.39 (10.00)	0.20 (5.00)	Yes	NB55, SI50	CS55, WS50	0.0 (0.2)	4

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NCF020CS55** (for conductive silicone material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section 5

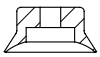
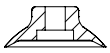
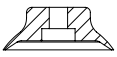
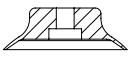
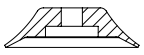
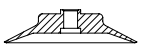
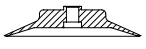
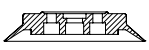
Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
SI50 - Silicone	Red	-40°F to +392°F (-40°C to +200°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)



Flat Cups

- The NFG Series offers a wide range for flat vacuum cups from 2.5mm to 200mm. Flat cups are ideal for gripping smooth flat surfaces. This series is available in standard NBR material and silicone or 6 other alternative materials and can be adapted to most applications.

Flat Cups: NFG Style

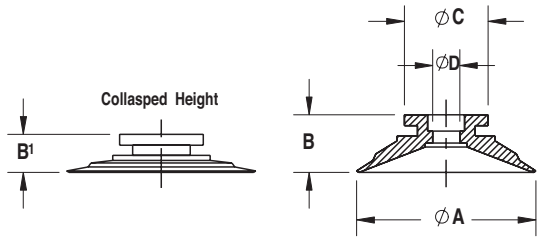
Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NFG002XXXX		0.10 (2.5)	0.01 (5.00)	0.16 (4.00)	0.14 (3.50)	0.16 (4.00)	0.08 (2.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.0 (0.2)	25
NFG3.5XXXX		0.15 (3.9)	0.02 (12.00)	0.16 (4.00)	0.14 (3.50)	0.16 (4.00)	0.08 (2.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.0 (0.04)	25
NFG005XXXX		0.20 (5)	0.03 (20)	0.26 (6.50)	0.22 (5.70)	0.30 (7.50)	0.16 (4.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.0 (0.2)	13
NFG006XXXX		0.26 (6.5)	0.05 (33)	0.26 (6.50)	0.22 (5.70)	0.30 (7.50)	0.16 (4.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.0 (0.2)	13
NFG010XXXX		0.41 (10.5)	0.13 (87)	0.30 (7.50)	0.24 (6.00)	0.33 (8.50)	0.16 (4.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.0 (0.3)	13
NFG015XXXX		0.61 (15.5)	0.29 (189)	0.31 (8.00)	0.24 (6.10)	0.47 (12.00)	0.16 (4.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.0 (0.5)	13
NFG020XXXX		0.83 (21)	0.54 (346)	0.39 (10.00)	0.30 (7.70)	0.59 (15.00)	0.24 (6.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.1 (1.6)	4
NFG025XXXX		1.00 (25.5)	0.79 (511)	0.55 (14.00)	0.43 (11.00)	0.63 (16.00)	0.24 (6.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.1 (2.8)	45
NFG030XXXX		1.18 (30)	1.10 (707)	0.47 (12.00)	0.39 (10.00)	0.55 (14.00)	0.24 (6.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.1 (3.5)	45
NFG035XXXX		1.42 (36)	1.58 (1018)	0.55 (14.00)	0.43 (11.00)	0.83 (21.00)	0.24 (6.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.2 (6.4)	45
NFG040XXXX		1.65 (42)	2.15 (1385)	0.55 (14.00)	0.41 (10.50)	0.94 (24.00)	0.24 (6.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.3 (8.5)	45
NFG050XXXX		2.01 (51)	3.17 (2043)	0.59 (15.00)	0.43 (11.00)	1.06 (27.00)	0.31 (8.00)	No	NNB55, WS50	CN55, CS55, FL65, EP55, HP50	0.3 (9.8)	5
NFG060XXXX		2.36 (60)	4.38 (2827)	0.63 (16.00)	0.43 (11.00)	1.50 (38.00)	0.35 (8.80)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	0.9 (25.2)	G 1/8 F
NFG080XXXX		3.15 (80)	7.79 (5027)	0.71 (18.00)	0.47 (12.00)	2.07 (52.50)	0.35 (8.80)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	1.7 (48.0)	1/8 NPT F
NFG095XXXX		3.66 (93)	10.53 (6793)	0.73 (18.50)	0.47 (12.00)	2.64 (67.00)	0.35 (8.80)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	2.6 (72.5)	1/8 NPT F
NFG120XXXX		4.72 (120)	17.53 (11310)	0.94 (24.00)	0.71 (18.00)	3.57 (90.60)	0.55 (14.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	5.7 (162.0)	24
NFG150XXXX		5.91 (150)	27.39 (17671)	1.22 (31.00)	0.87 (22.00)	4.13 (105.00)	0.51 (13.00)	No	NB55, WS50	CN55, CS55, FL65, EP55, HP50	11.6 (330.1)	24

Flat Cups: NFG Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NFG150WS60		5.91 (150)	27.39 (17671)	1.22 (31.00)	0.87 (22.00)	4.13 (105.00)	0.51 (13.00)	No	NB55, WS50	CN55, CS55, FL65, EP50, HD60	11.6 (330.1)	24
NFG200XXX		5.91 (150)	48.69 (31416)	1.42 (36.00)	0.91 (23.00)	5.54 (140.80)	0.51 (13.00)	No	NB55, WS50	CN55, CS55, FL65, EP50, HD60	19.4 (550.0)	24

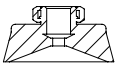
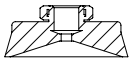
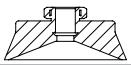
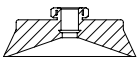
* **How to Order:** All part numbers with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NFG002NB55** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section5

Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
FL65 - Fluorine Rubber	Black	14°F to +446°F (-10°C to +230°C)
EP50 - EPDM	Grey	-22°F to +302°F (-30°C to +150°C)
HD60 - High Temp./Mark Free	Blue	+14°F to +320°F (-10°C to +160°C)



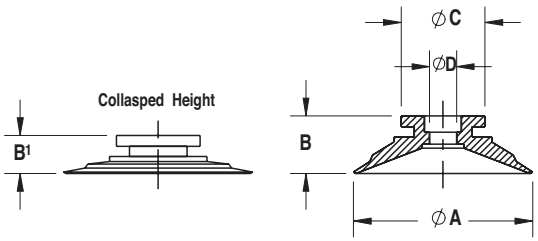
- The NUU is part of the universal cup group that uses common fitting series. The smooth cup allows the cup to apply even gripping forces to the work piece.

Flat Cups: NUU Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NUU020XXXX		0.79 (20)	0.49 (314)	0.55 (14.00)	0.39 (10.00)	0.59 (15.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.1 (1.5)	7
NUU025XXXX		0.98 (25)	0.76 (491)	0.55 (14.00)	0.39 (10.00)	0.59 (15.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.1 (2.0)	7
NUU032XXXX		1.26 (32)	1.25 (804)	0.57 (14.50)	0.39 (10.00)	0.59 (15.00)	0.16 (4.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.1 (2.4)	7
NUU040XXXX		1.57 (40)	1.95 (1257)	0.73 (18.50)	0.47 (12.00)	0.71 (18.00)	0.28 (7.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.2 (6.0)	27
NUU050XXXX		1.97 (50)	3.04 (1963)	0.77 (19.50)	0.47 (12.00)	0.71 (18.00)	0.28 (7.00)	No	NB50, WS45	CN55, CS55, FL65, EP55, HP50	0.3 (7.9)	27

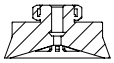
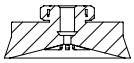
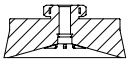
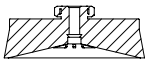
* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NUU020NB50** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB50 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS45 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
FL65 - Fluorine Rubber	Black	14°F to +446°F (-10°C to +230°C)
EP55 - EPDM	Grey	-22°F to +302°F (-30°C to +150°C)
HP50 - Mark Free NBR	Black	-4°F to +230°F (-20°C to +110°C)



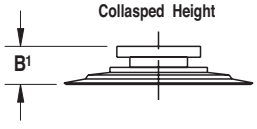
- The NUC Series is designed to lift large heavy objects. The cup bolts onto a ridged plate ensuring the cup will not peel off the fitting when carrying large objects.

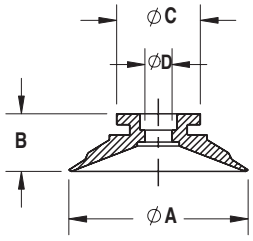
Flat Cups: NUC Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NUC020XXXX		0.79 (20)	0.49 (314)	0.55 (14.00)	0.48 (12.20)	0.59 (15.00)	0.16 (4.00)	Yes	NB50, WS45	CN55, CS55, FL65, EP55	0.1 (1.7)	7
NUC025XXXX		0.98 (25)	0.76 (491)	0.55 (14.00)	0.48 (12.20)	0.59 (15.00)	0.16 (4.00)	Yes	NB50, WS45	CN55, CS55, FL65, EP55	0.1 (2.0)	7
NUC032XXXX		1.26 (32)	1.25 (804)	0.57 (14.50)	0.48 (12.20)	0.59 (15.00)	0.16 (4.00)	Yes	NB50, WS45	CN55, CS55, FL65, EP55	0.1 (2.7)	7
NUC040XXXX		1.57 (40)	1.95 (1257)	0.73 (18.50)	0.60 (15.20)	0.71 (18.00)	0.28 (7.00)	Yes	NB50, WS45	CN55, CS55, FL65, EP55	0.2 (6.1)	27
NUC050XXXX		1.97 (50)	3.04 (1963)	0.77 (19.50)	0.62 (15.70)	0.71 (18.00)	0.28 (7.00)	Yes	NB50, WS45	CN55, CS55, FL65, EP55	0.3 (8.3)	27

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NUC050NB50** (for NBR material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
NB50 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS45 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
CN55 - Conductive NBR	Black	-14°F to +212°F (-10°C to +100°C)
CS55 - Conductive Silicone	Black	-22°F to +356°F (-30°C to +180°C)
FL65 - Fluorine Rubber	Black	14°F to +446°F (-10°C to +230°C)
EP55 - EPDM	Black	-22°F to +302°F (-30°C to +150°C)





Flat Cups

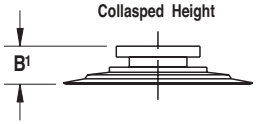
- The NFH Series is designed to lift large heavy objects. The cup bolts onto a ridged plate ensuring the cup will not peel off the fitting when carrying large objects.

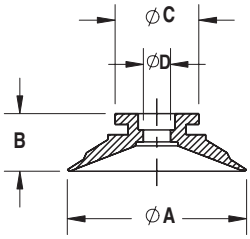
Flat Cups: NFH Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NFH040NB55		1.65 (42)	2.15 (1385)	0.45 (11.50)	0.28 (7.00)	1.26 (32.00)	0.24 (6.00)	Yes	NB55, WS50	FL65	0.5 (13.9)	22
NFH050XXXX		2.05 (52)	3.29 (2124)	0.45 (11.50)	0.33 (8.50)	1.65 (42.00)	0.24 (6.00)	Yes	NB55, WS50	FL65	0.9 (25.4)	22
NFH063XXXX		2.56 (65)	5.14 (3318)	0.57 (14.50)	0.33 (8.50)	2.01 (51.00)	0.31 (8.00)	Yes	NB55, WS50	FL65	1.8 (50.1)	23
NFH080XXXX		3.23 (82)	8.19 (5281)	0.65 (16.50)	0.33 (8.50)	2.68 (68.00)	0.31 (8.00)	Yes	NB55, WS50	FL65	2.7 (77.1)	23
NFH100XXXX		4.06 (103)	12.92 (8332)	0.83 (21.00)	0.33 (8.50)	3.15 (80.00)	0.39 (10.00)	Yes	NB55, WS50	FL65	5.5 (154.8)	24
NFH125XXXX		5.00 (127)	19.63 (12668)	0.83 (21.00)	0.45 (11.50)	4.09 (104.00)	0.39 (10.00)	Yes	NB55, WS50	FL65	9.7 (274)	24

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NFH125WS50** (for Silicone material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

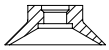
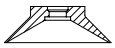
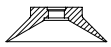
Material	Color	Temperature Range
NB55 - NBR	Black	-4°F to +230°F (-20°C to +110°C)
WS50 - Silicone	White	-40°F to +392°F (-40°C to +200°C)
FL65 - Fluorine Rubber	Black	14°F to +446°F (-10°C to +230°C)





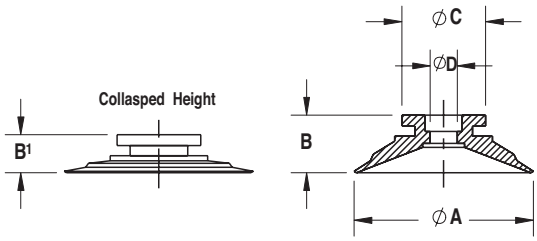
- The NPF Series of polyurethane round flat cups with cleats offers extended life compared to the NBR or silicone material. These cups have integrated cleats providing an excellent grip on the work piece and reduces lateral slippage.

Flat Cups: NPF Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B¹ - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NPF020XXXX		0.26 (22)	0.59 (380)	0.34 (8.60)	0.28 (7.00)	0.47 (12.00)	0.20 (5.00)	Yes	PU40, PU60	-	0.0 (1.2)	4
NPF030XXXX		1.22 (31)	1.17 (755)	0.41 (10.50)	0.33 (8.50)	0.62 (15.80)	0.20 (5.00)	Yes	PU40, PU60	-	0.1 (2.4)	4
NPF040XXXX		1.61 (41)	2.05 (1320)	0.55 (14.00)	0.45 (11.50)	0.83 (21.00)	0.26 (6.50)	Yes	PU40, PU60	-	0.2 (5.7)	45

* **How to Order:** All part numbers ending with an "XXXX" requires the customer to specify a material type to complete part number.
I.E. **NPF020UU40** (for Polyurethane material). See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

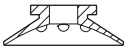
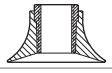
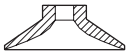
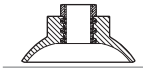
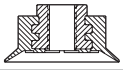
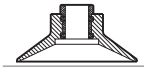
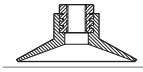
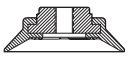
Material	Color	Temperature Range
PU40 - Polyurethane	Yellow	+50°F to +230°F (+10°C to +122°C)
PU60 - Polyurethane	Green	+50°F to +230°F (+10°C to +122°C)



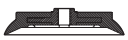
Flat Cups

- Flat cups without cleats are flexible and work well in applications that do not require lifting heavy loads. Flat cups with cleats are strong with a rigid, low profile that will lift heavy loads. The low profile allows heavy loads to be lifted vertically without the cup "peeling" away from the product surface or deforming the object being lifted. These cups perform well when gripping smooth, flat, heavy objects such as steel or glass.

Flat Cups (with or without Cleats): NVC Style

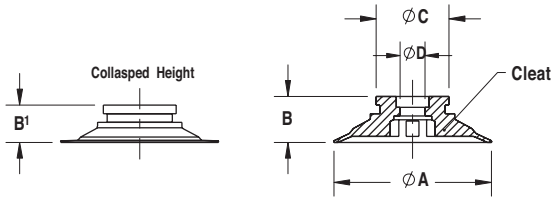
Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVC-1		0.22 (5.60)	0.04 (25)	0.21 (5.30)	0.19 (4.80)	0.22 (5.60)	0.06 (1.50)	No	V	ORV, GS or P	0 (0)	NF
NVC-165A		0.37 (9.40)	0.11 (69)	0.25 (6.40)	0.22 (5.60)	0.37 (9.40)	0.21 (5.30)	No	V	ORV, GS or P	0 (0)	NF
NVC-25		0.59 (15.00)	0.27 (176)	0.53 (13.50)	0.53 (13.50)	0.46 (11.70)	0.25 (6.40)	No	V	ORV, GS or P	0.04 (1)	NF
NVC-36B		1.02 (25.90)	0.82 (527)	0.34 (8.60)	0.25 (6.40)	0.56 (14.20)	0.24 (6.10)	Yes	V	ORV, GS or P	0.04 (1)	NF
NVC-10		1.04 (26.40)	0.85 (548)	0.90 (22.90)	0.70 (17.80)	0.62 (15.70)	- (-)	No	V	ORV, GS or P	0.32 (9)	1/8 NPTF
NVC-11		1.19 (30.20)	1.11 (718)	0.88 (22.40)	0.75 (19.10)	0.75 (19.10)	- (-)	No	V	ORV, GS or P	0.49 (14)	1/4 NPTF
NVC-2EA		1.34 (34.00)	1.41 (910)	0.90 (22.90)	0.83 (21.10)	0.62 (15.70)	- (-)	Yes	V	ORV, GS or P	0.21 (6)	1/8 NPTM
NVC-12		1.40 (35.60)	1.54 (993)	0.82 (20.80)	0.75 (19.10)	0.75 (19.10)	- (-)	No	V	ORV, GS or P	0.56 (16)	1/4 NPTF
NVC-37A		1.51 (38.40)	1.79 (1115)	1.19 (30.20)	0.92 (23.40)	0.89 (22.60)	- (-)	No	V	ORV, GS or P	0.67 (19)	1/4 NPTF
NVC-8		1.51 (38.40)	1.79 (1155)	0.56 (14.20)	0.43 (10.90)	0.55 (14.00)	0.23 (5.80)	No	V	ORV, GS or P	0.21 (6)	NF
NVC-168		2.00 (50.80)	3.14 (2027)	1.02 (25.90)	0.68 (17.30)	1.10 (27.90)	- (-)	No	V	ORV, GS or P	0.99 (28)	1/4 NPTF
NVC-59		2.00 (50.80)	3.14 (2027)	1.00 (25.40)	0.82 (20.80)	1.53 (38.90)	- (-)	Yes	V	ORV, GS or P	2.08 (59)	1/4 NPTF
NVC-49		2.44 (62.00)	4.68 (3017)	2.20 (55.90)	1.99 (50.50)	1.04 (26.40)	- (-)	Yes	V	ORV, GS or P	1.52 (43)	1/4 NPTF
NVC-106		2.50 (63.50)	4.91 (3167)	1.18 (30.00)	0.80 (20.30)	1.09 (27.70)	- (-)	No	V	ORV, GS or P	1.02 (29)	1/4 NPTF
NVC-30		3.06 (77.70)	7.35 (4744)	1.45 (36.80)	1.10 (27.90)	1.15 (29.20)	- (-)	No	V	ORV, GS or P	2.61 (74)	1/4 NPTF
NVC-27A		3.25 (82.60)	8.30 (5352)	1.20 (30.50)	0.95 (24.10)	2.23 (56.60)	- (-)	Yes	V	ORV, GS or P	3.28 (93)	1/4 NPTF

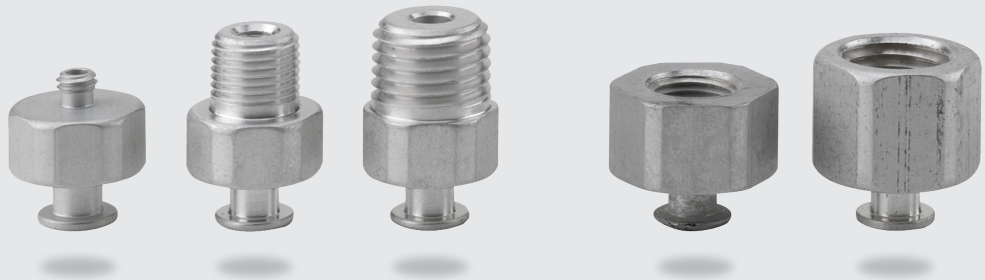
Flat Cups (with or without Cleats): NVC Style

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B[1] - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVC-27		4.25 (108.00)	14.19 (9152)	1.30 (33.00)	0.85 (21.60)	2.73 (69.30)	- (-)	Yes	V	ORV, GS or P	4.03 (122)	1/4 NPTF
NVC-63		4.75 (120.70)	17.72 (11432)	1.25 (31.80)	0.90 (22.90)	1.67 (42.40)	- (-)	Yes	V	ORV, GS or P	4.09 (116)	3/8 NPTF
NVC-34		6.25 (158.80)	30.68 (19793)	1.37 (34.80)	0.85 (21.60)	5.00 (127.00)	- (-)	Yes	V	ORV, GS or P	16.0 (454)	3/8 NPTF

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. See Chart below for material specifications.
Fittings: To order fittings, please reference the fitting groups section for the approriate part numbers. NF indicates no fitting is required.
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see vacuum fitting section.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)





Vacuum Cup Fittings

Designed with large thru bores, IMI Norgren fittings connect to vacuum cups, vacuum generators and spring levelers ensuring unrestricted vacuum flow for safe material handling operations. For plumbing flexibility, IMI Norgren offers 12 different fitting groups with various thread sizes.

Fittings

- Clear chromate coated aluminum or brass
- Available in metric and imperial threads
- See cup specification for appropriate fitting group
- Large through bore to maximize flow
- Easily replace cup without replacing fitting
- Holds cup securely

To Specify

- Size the cup first based on application requirements. Then choose the fitting size. Please note IMI Norgren's Cup Section includes recommended fitting groups for each cup.

Engineering GREAT Solutions

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IMI NORGREN

VACUUM CUP FITTINGS

Fitting Group Selection Guide

Fitting Group	Male										Female									
	10-32	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	M5	G1/8	G1/4	G3/8	G1/2	10-32	1/8 NPT	1/4 NPT	3/8 NPT	1/2 NPT	M5	G1/8	G1/4	G3/8	G1/2
VCF1	•																			
VCF2	•																			
VCF3	•																			
VCF4	•	•	•			•	•	•				•	•				•			
VCF45	•	•	•			•	•	•				•	•				•	•		
VCF5		•	•	•			•					•	•	•			•			
VCF6		•	•	•				•				•	•	•			•	•		
VCF7	•	•						•				•								
VCF8		•	•									•	•					•		
VCF9		•	•	•				•				•	•	•				•		
VCF11		•					•					•					•			
VCF12		•	•	•			•	•	•			•	•	•			•	•	•	
VCF13	•	•				•	•					•					•			
VCF14		•	•	•			•	•	•			•	•	•			•	•	•	
VCF16			•	•				•	•				•	•				•	•	
VCF17				•	•				•	•				•	•				•	•
VCF19		•	•	•			•	•	•			•	•	•			•	•	•	
VCF22												•	•				•	•		
VCF23												•	•	•			•	•	•	
VCF24												•	•	•			•	•	•	
VCF25	•					•														
VCF26			•					•					•					•		
VCF27			•					•					•					•		
VCF28			•					•					•					•		

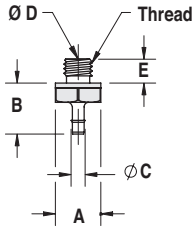
VACUUM CUP FITTINGS

Fitting Groups 1, 2, 3

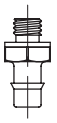
NVCF1-1032M

NVCF2-1032M

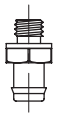
NVCF3-1032M



NVCF1-1032M



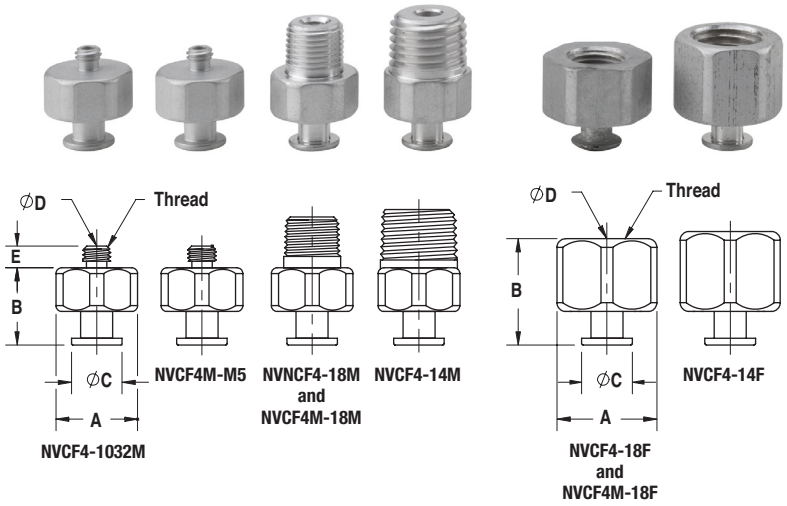
NVCF2-1032M



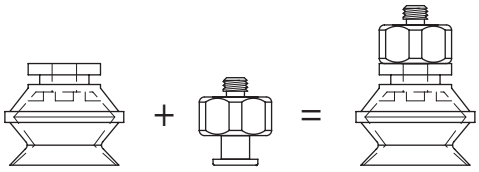
NVCF3-1032M

Part Number	Thread Size	Dimensions A - Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF1-1032M	10-32 Male	0.31 (7.90)	0.35 (8.90)	0.10 (2.50)	0.05 (1.40)	0.16 (4.10)	0.07 (2)	Brass
NVCF2-1032M	10-32 Male	0.31 (7.90)	0.44 (11.20)	0.24 (6.10)	0.09 (2.20)	0.16 (4.10)	0.10 (2.80)	Brass
NVCF3-1032M	10-32 Male	0.31 (7.90)	0.39 (9.90)	0.24 (6.10)	0.09 (2.40)	0.16 (4.10)	0.10 (2.80)	Brass

Fitting Groups 4

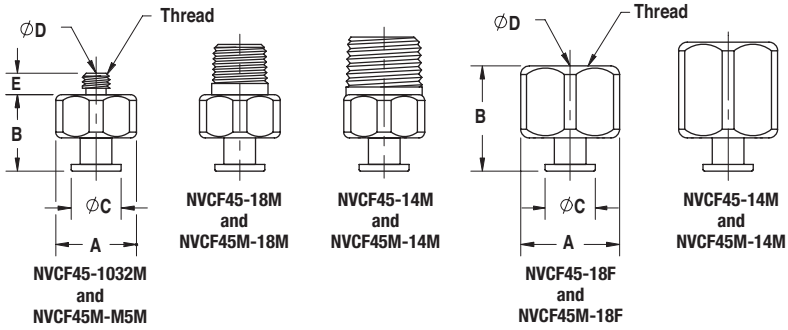


Part Number	Thread Size	Dimensions A - Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF4-1032M	10-32 Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.09 (2.40)	0.15 (3.80)	0.20 (5.70)	Aluminum
NVCF4-18M	1/8 NPT Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.17 (4.40)	0.35 (8.90)	0.20 (5.70)	Aluminum
NCF4-14M	1/4 NPT Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.17 (4.40)	0.40 (10.20)	0.30 (8.50)	Aluminum
NVCF4-18F	1/8 NPT Female	0.69 (17.40)	0.73 (18.50)	0.35 (8.80)	0.17 (4.40)	N/A N/A	0.30 (8.50)	Aluminum
NVCF4-14F	1/4 NPT Female	0.69 (17.40)	0.78 (19.80)	0.35 (8.80)	0.17 (4.40)	N/A N/A	0.30 (8.50)	Aluminum
NVCF4M-M5	M5 X 0.8 Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.09 (2.40)	0.15 (3.80)	0.20 (5.70)	Aluminum
NVCF4M-18M	G1/8 Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.17 (4.40)	0.35 (8.90)	0.20 (5.70)	Aluminum
NVCF4M-18F	G1/8 Female	0.56 (17.50)	0.73 (18.50)	0.35 (8.80)	0.17 (4.40)	N/A N/A	0.30 (8.50)	Aluminum

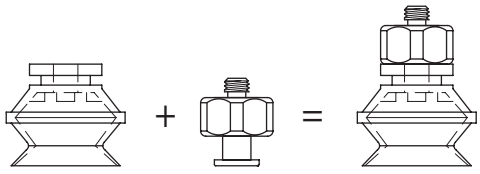


Example: Cup with Fitting

Fitting Groups 45

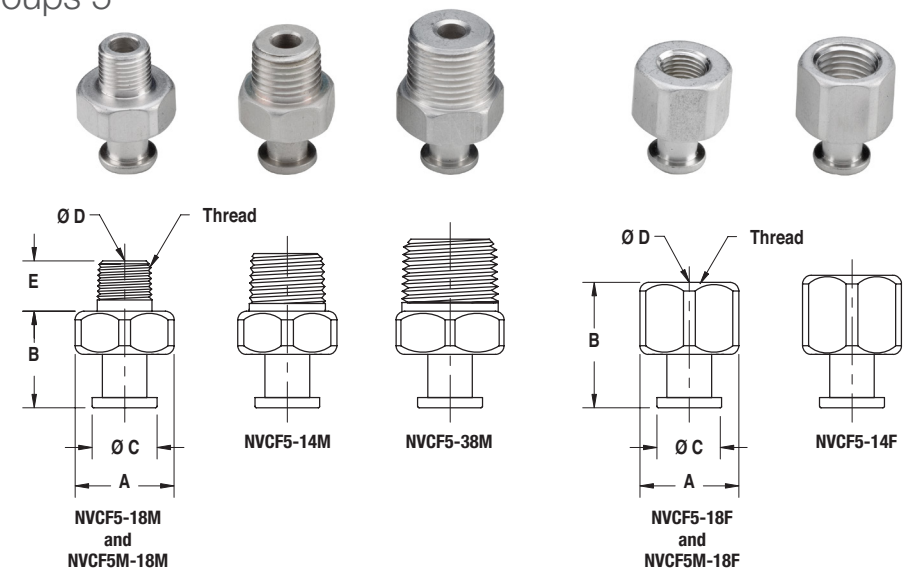


Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF45-1032M	10-32 Male	0.75 (19.05)	0.60 (15.11)	0.45 (11.43)	0.09 (2.36)	0.15 (3.81)	(0.30) (8.5)	Aluminum
NVCF45-18F	1/8 NPT Female	0.75 (19.05)	0.80 (20.19)	0.45 (11.43)	0.22 (5.56)	N/A	(0.30) (8.50)	Aluminum
NVCF45-18M	1/8 NPT Male	0.75 (19.05)	0.60 (15.11)	0.45 (11.43)	0.22 (5.59)	0.35 (8.89)	(0.30) (8.50)	Aluminum
NVCF45-14F	1/4 NPT Female	0.75 (19.05)	0.85 (21.59)	0.45 (11.43)	0.22 (5.59)	N/A	(0.30) (8.50)	Aluminum
NVCF45-14M	1/4 NPT Male	0.75 (19.05)	0.60 (15.11)	0.45 (11.43)	0.22 (5.59)	0.40 (10.16)	(0.30) (8.50)	Aluminum
NVCF45M-M5M	M5 Male	0.75 (19.05)	0.60 (15.11)	0.45 (11.43)	0.09 (2.36)	0.15 (3.81)	(0.30) (8.50)	Aluminum
NVCF45M-18F	G 1/8 Female	0.75 (19.05)	0.80 (20.32)	0.45 (11.43)	0.22 (5.59)	N/A	(0.30) (8.50)	Aluminum
NVCF45M-18M	G 1/8 Male	0.75 (19.05)	0.60 (15.11)	0.45 (11.43)	0.22 (5.59)	0.35 (8.89)	(0.30) (8.50)	Aluminum
NVCF45M-14F	G 1/4 Female	0.75 (19.05)	0.85 (21.59)	0.45 (11.43)	0.22 (5.59)	N/A	(0.30) (8.50)	Aluminum
NVCF45M-14M	G 1/4 Male	0.75 (19.05)	0.60 (15.11)	0.45 (11.43)	0.22 (5.59)	0.40 (10.16)	(0.30) (8.50)	Aluminum

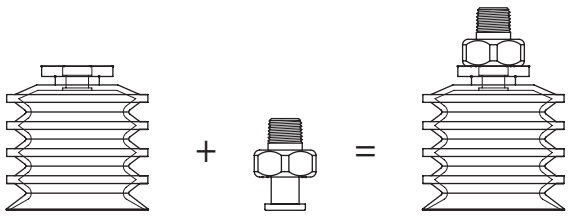


Example: Cup with Fitting

Fitting Groups 5

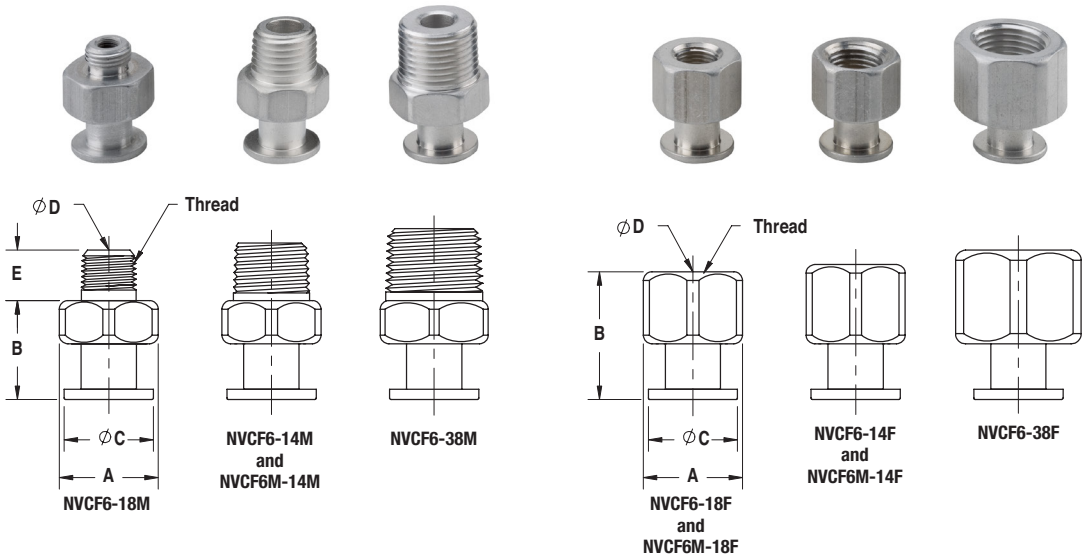


Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF5-18M	1/8 NPT Male	0.69 (17.40)	0.67 (17.00)	0.45 (11.40)	0.22 (5.60)	0.35 (8.90)	0.30 (8.50)	Aluminum
NVCF5-14M	1/4 NPT Male	0.69 (17.40)	0.67 (17.00)	0.45 (11.40)	0.22 (5.60)	0.40 (10.20)	0.30 (8.50)	Aluminum
NVCF5-38M	3/8 NPT Male	0.75 (19.10)	0.67 (17.00)	0.45 (11.40)	0.22 (5.60)	0.50 (12.70)	0.40 (11.00)	Aluminum
NVCF5-18F	1/8 NPT Female	0.69 (17.40)	0.87 (22.10)	0.45 (11.40)	0.22 (5.60)	N/A N/A	0.30 (8.50)	Aluminum
NVCF5-14F	1/4 NPT Female	0.69 (17.40)	0.92 (23.40)	0.45 (11.40)	0.22 (5.60)	N/A N/A	0.30 (8.50)	Aluminum
NVCF5M-18M	G1/8 Male	0.69 (17.40)	0.87 (22.10)	0.45 (11.40)	0.22 (5.60)	0.35 (8.90)	0.30 (8.50)	Aluminum
NVCF5M-18F	G1/8 Female	0.69 (17.40)	0.87 (22.10)	0.45 (11.40)	0.22 (5.60)	N/A N/A	0.30 (8.50)	Aluminum

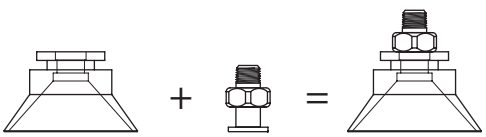


Example: Cup with Fitting

Fitting Groups 6

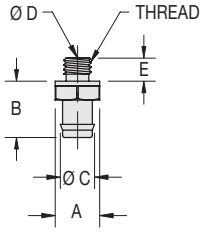


Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF6-18M	1/8 NPT Male	0.69 (17.40)	0.69 (17.40)	0.62 (15.70)	0.28 (7.10)	0.35 (8.90)	0.40 (11.00)	Aluminum
NVCF6-14M	1/4 NPT Male	0.69 (17.40)	0.69 (17.40)	0.62 (15.70)	0.28 (7.10)	0.40 (10.20)	0.30 (8.50)	Aluminum
NVCF6-38M	3/8 NPT Male	0.75 (19.10)	0.69 (17.40)	0.62 (15.70)	0.28 (7.10)	0.50 (12.70)	0.50 (14.00)	Aluminum
NVCF6-18F	1/8 NPT Female	0.69 (17.40)	0.89 (22.50)	0.62 (15.70)	0.28 (7.10)	N/A N/A	0.30 (8.50)	Aluminum
NVCF6-14F	1/4 NPT Female	0.69 (17.40)	0.94 (23.70)	0.62 (15.70)	0.28 (7.10)	N/A N/A	0.40 (11.00)	Aluminum
NVCF6-38F	3/8 NPT Female	0.88 (22.20)	1.04 (26.30)	0.62 (15.70)	0.28 (7.10)	N/A N/A	0.40 (11.00)	Aluminum
NVCF6M-14M	G 1/4 Male	0.69 (17.40)	0.69 (17.40)	0.62 (15.70)	0.28 (7.10)	0.40 (10.20)	0.30 (8.50)	Aluminum
NVCF6M-14F	G 1/4 Female	0.69 (17.40)	0.94 (23.70)	0.62 (15.70)	0.28 (7.10)	N/A N/A	0.40 (11.00)	Aluminum
NVCF6M-18F	G 1/8 Female	0.69 (17.40)	0.89 (22.50)	0.62 (15.70)	0.28 (7.10)	N/A N/A	0.30 (8.50)	Aluminum

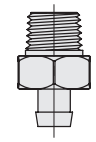


Example: Cup with Fitting

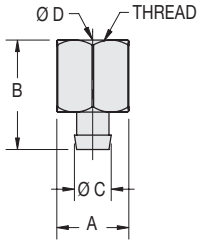
Fitting Groups 7



NVCF7-1032M



NVCF7-18M



NVCF7-18F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF7-1032M	10-32 Male	0.31 (7.9)	0.39 (9.9)	0.24 (6.1)	0.09 (2.4)	0.16 (4.1)	0.01 (2.8)	Brass
NVCF7-18M	1/8 NPT	0.50 (12.7)	0.49 (12.4)	0.26 (6.5)	0.16 (4.1)	0.30 (7.6)	0.4 (11)	Brass
NVCF7-18F	1/8 NPT Female	0.50 (12.7)	0.76 (19.3)	0.26 (6.5)	0.16 (4.1)	N/A N/A	0.4 (11)	Brass

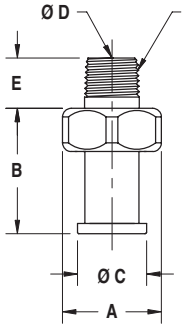
Fitting Groups 8

NVCF8-18M

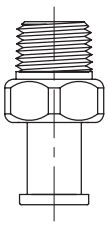
NVCF8-14M and NVCF8M-14M

NVCF8-18F

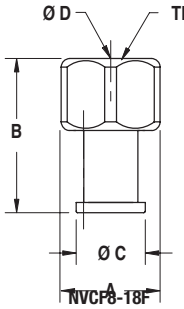
NVCF8-14F and NVCF8M-14F



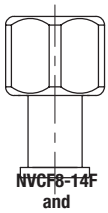
NVCF8-18M



NVCF8-14M and NVCF8M-14M



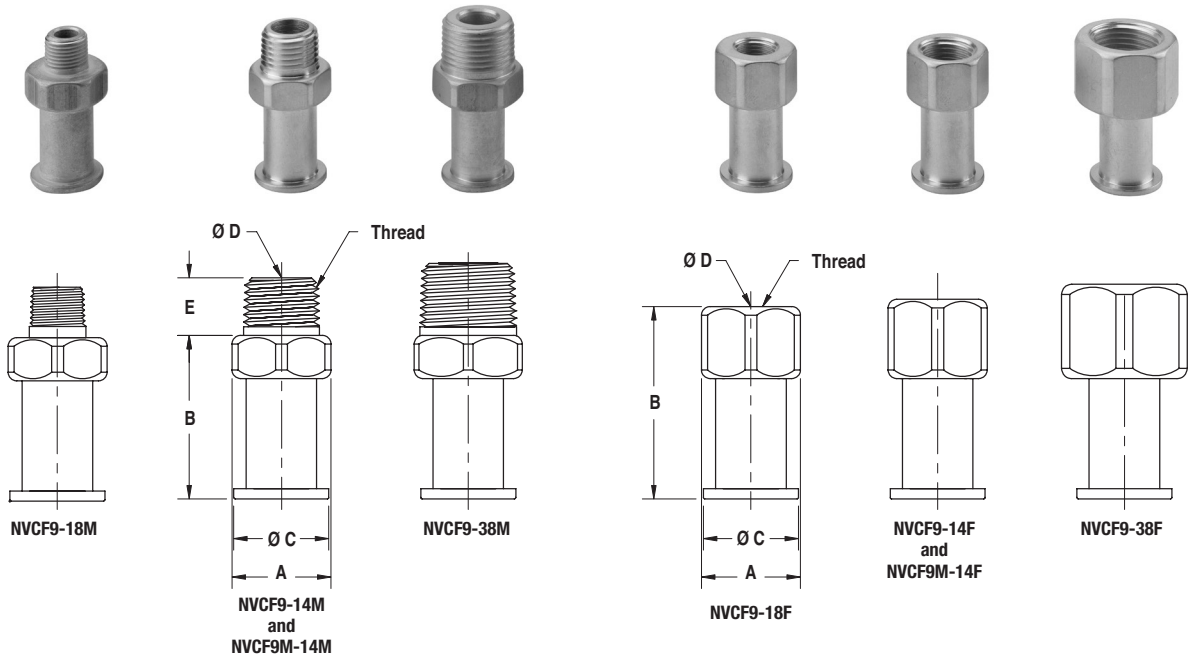
NVCF8-18F



NVCF8-14F and NVCF8M-14F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF8-18M	1/8 NPT Male	0.69 (17.40)	0.87 (22.10)	0.48 (12.20)	0.28 (7.10)	0.35 (8.90)	0.30 (8.50)	Aluminum
NVCF8-14M	1/4 NPT Male	0.69 (17.40)	0.87 (22.10)	0.48 (12.20)	0.28 (7.10)	0.40 (10.20)	0.30 (8.50)	Aluminum
NVCF8-18F	1/8 NPT Female	0.69 (17.40)	1.07 (27.20)	0.48 (12.20)	0.28 (7.10)	N/A N/A	0.30 (8.50)	Aluminum
NVCF8-14F	1/4 NPT Female	0.69 (17.40)	1.12 (28.40)	0.48 (12.20)	0.28 (7.10)	N/A N/A	0.30 (8.50)	Aluminum
NVCF8M-14M	G 1/4 Male	0.69 (17.40)	0.74 (18.80)	0.48 (12.20)	0.28 (7.10)	0.45 (11.40)	0.30 (8.50)	Aluminum
NVCF8M-14F	G 1/4 Female	0.69 (17.40)	1.12 (28.40)	0.48 (12.20)	0.28 (7.10)	N/A N/A	0.30 (8.50)	Aluminum

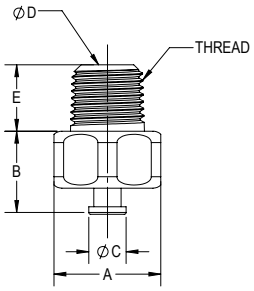
Fitting Groups 9



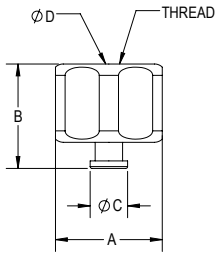
Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF9-18M	1/8 NPT Male	0.69 (17.40)	1.14 (28.80)	0.66 (16.80)	0.22 (5.60)	0.35 (8.90)	0.40 (11.00)	Aluminum
NVCF9-14M	1/4 NPT Male	0.69 (17.40)	1.14 (28.80)	0.66 (16.80)	0.34 (8.60)	0.40 (10.20)	0.40 (11.00)	Aluminum
NVCF9-38M	3/8 NPT Male	0.75 (19.10)	1.14 (28.80)	0.66 (16.80)	0.34 (8.60)	0.50 (12.70)	0.60 (17.00)	Aluminum
NVCF9-18F	1/8 NPT Female	0.69 (17.40)	1.34 (33.90)	0.66 (16.80)	0.34 (8.60)	N/A N/A	0.40 (11.00)	Aluminum
NVCF9-14F	1/4 NPT Female	0.69 (17.40)	1.39 (35.20)	0.66 (16.80)	0.34 (8.60)	N/A N/A	0.40 (11.00)	Aluminum
NVCF9-38F	3/8 NPT Female	0.88 (22.40)	1.49 (37.80)	0.66 (16.80)	0.34 (8.60)	N/A N/A	0.50 (14.00)	Aluminum
NVCF9M-14M	G 1/4 Male	0.69 (17.40)	1.14 (28.80)	0.66 (16.80)	0.34 (8.60)	0.40 (10.20)	0.40 (11.00)	Aluminum
NVCF9M-14F	G 1/4 Female	0.69 (17.40)	1.39 (35.20)	0.66 (16.80)	0.34 (8.60)	N/A N/A	0.40 (11.00)	Aluminum

Example: Cup with Fitting

Fitting Groups 11

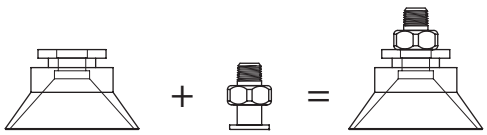


NVCF11-18M and NVCF11M-18M



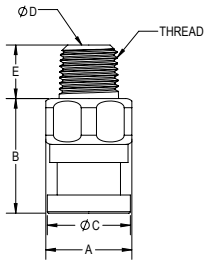
NVCF11-18F and NVCF11M-18F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF11M-18F	G1/8 Female	0.56 (14.3)	0.55 (14.0)	0.20 (5.0)	0.05 (1.4)	N/A N/A	0.13 (3.61)	Aluminum
NVCF11M-18M	G1/8 Male	0.56 (14.3)	0.44 (11.1)	0.20 (5.0)	0.05 (1.4)	0.35 (8.9)	0.18 (5.04)	Aluminum
NVCF11-18F	1/8 NPT Female	0.56 (14.3)	0.55 (14.0)	0.20 (5.0)	0.05 (1.4)	N/A N/A	0.13 (3.61)	Aluminum
NVCF11-18M	1/8 NPT Male	0.56 (14.3)	0.44 (11.1)	0.20 (5.0)	0.05 (1.4)	0.35 (8.9)	0.18 (5.04)	Aluminum

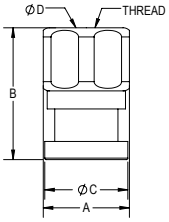


Example: Cup with Fitting

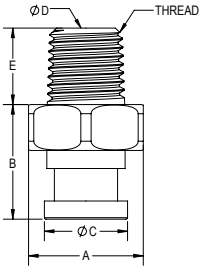
Fitting Groups 12



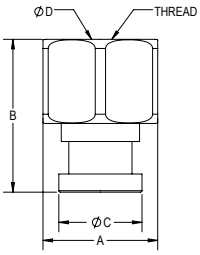
NVCF12-18M and NVCF12M-18M



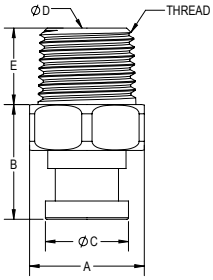
NVCF12-18F and NVCF12M-18F



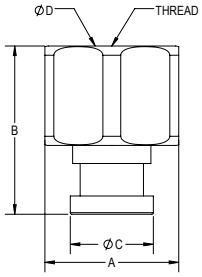
NVCF12-14M and NVCF12M-14M



NVCF12-14F and NVCF12M-14F

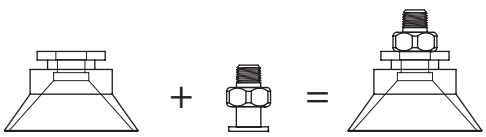


VCF12-38M and I-VCF12-38M



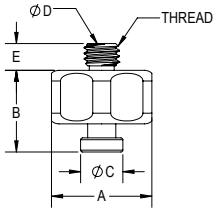
VCF12-38F and I-VCF12-38F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF12M-14F	G 1/4 Female	0.75 (19.1)	1.00 (25.4)	0.54 (13.8)	0.22 (5.60)	N/A N/A	0.37 (10.56)	Aluminum
NVCF12M-14M	G 1/4 Male	0.75 (19.1)	0.75 (19.1)	0.54 (13.8)	0.22 (5.60)	0.5 (12.7)	0.40 (11.44)	Aluminum
NVCF12M-18F	G 1/8 Female	0.56 (14.3)	0.86 (21.9)	0.54 (13.8)	0.22 (5.60)	N/A N/A	0.21 (6.08)	Aluminum
NVCF12M-18M	G 1/8 Male	0.56 (14.3)	0.75 (19.1)	0.54 (13.8)	0.22 (5.60)	0.35 8.9	0.24 (6.70)	Aluminum
NVCF12M-38F	G 3/8 Female	0.88 (22.2)	1.10 (27.9)	0.54 (13.8)	0.22 (5.60)	N/A N/A	0.51 (14.38)	Aluminum
NVCF12M-38M	G 3/8 Male	0.88 (22.2)	0.75 (19.1)	0.54 (13.8)	0.22 (5.60)	0.5 12.7	0.49 (13.88)	Aluminum
NVCF12-14F	1//4 NPT Female	0.75 (19.1)	1.00 (25.4)	0.54 (13.8)	0.28 (7.1)	N/A N/A	0.37 (10.58)	Aluminum
NVCF12-14M	1/4 NPT Male	0.75 (19.1)	0.75 (19.1)	0.54 (13.8)	0.22 (5.60)	0.5 12.7	0.40 (11.44)	Aluminum
NVCF12-18F	1/8 NPT Female	0.56 (14.3)	0.45 (11.4)	0.54 (13.8)	0.22 (5.60)	N/A N/A	0.21 (6.08)	Aluminum
NVCF12-18M	1/8 NPT Male	0.56 (14.3)	0.75 (19.1)	0.54 (13.8)	0.22 (5.60)	0.35 8.9	0.24 (6.70)	Aluminum
NVCF12-38F	3/8 NPT Female	0.88 (22.2)	1.10 (27.9)	0.54 (13.8)	0.27 (6.7)	N/A N/A	0.51 (14.38)	Aluminum
NVCF12-38M	3/8 NPT Male	0.75 (19.1)	0.75 (19.1)	0.54 (13.8)	0.22 (5.60)	0.5 12.7	0.49 (13.88)	Aluminum

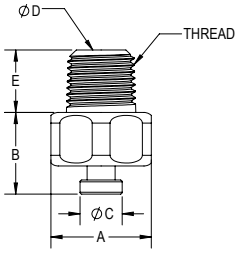


Example: Cup with Fitting

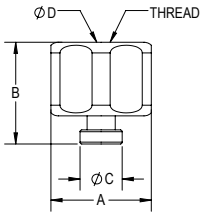
Fitting Groups 13



NVCF13-1032M and NVCF13M-M5M

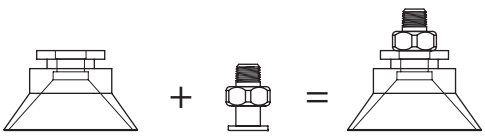


NVCF13-18M and NVCF13M-18M



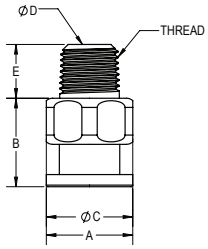
NVCF13-18F and NVCF13M-18F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF13M-18F	G 1/8 Female	0.56 (14.3)	0.46 (11.6)	0.24 (6.0)	0.05 (1.4)	N/A N/A	0.13 (3.56)	Aluminum
NVCF13M-18M	G 1/8 Male	0.56 (14.3)	0.46 (11.6)	0.24 (6.0)	0.05 (1.4)	0.35 (8.9)	0.16 (4.66)	Aluminum
NVCF13M-M5M	M5x0.8 Male	0.56 (14.3)	0.46 (11.6)	0.24 (6.0)	0.05 (1.4)	0.15 (3.8)	0.13 (3.68)	Aluminum
NVCF13-1032M	10-32 Male	0.56 (14.3)	0.46 (11.6)	0.24 (6.0)	0.05 (1.4)	0.15 3.8	0.13 (3.68)	Aluminum
NVCF13-18F	1/8 NPT Female	0.56 (14.3)	0.57 (14.5)	0.24 (6.0)	0.05 (1.4)	N/A N/A	0.13 (3.56)	Aluminum
NVCF13-18M	1/8 NPT Male	0.56 (14.3)	0.46 (11.6)	0.24 (6.0)	0.05 (1.4)	0.35 8.9	0.16 (4.66)	Aluminum

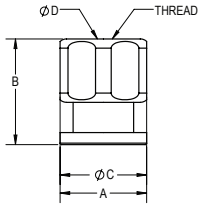


Example: Cup with Fitting

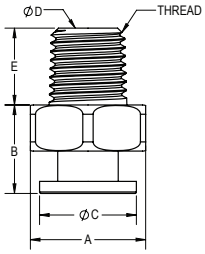
Fitting Groups 14



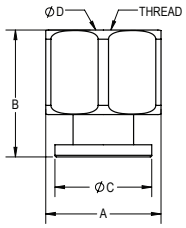
NVCF14-18M and NVCF14M-18M



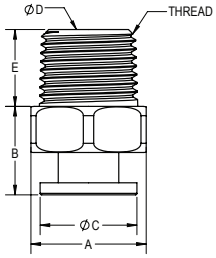
NVCF14-18F and NVCF14M-18F



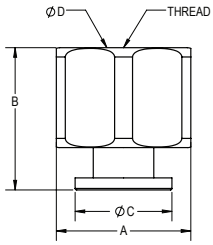
NVCF14-14M and NVCF14M-14M



NVCF14-14F and NVCF14M-14F



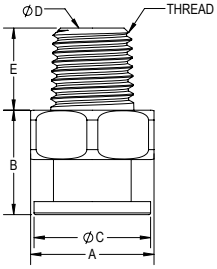
NVCF14-38M and NVCF14M-38M



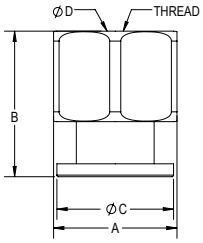
NVCF14-38F and NVCF14M-38F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF14M-14F	G 1/4 Female	0.75 (19.1)	0.83 (21.0)	0.63 (16.0)	0.27 (6.8)	N/A N/A	0.34 (9.71)	Aluminum
NVCF14M-14M	G 1/4 Male	0.75 (19.1)	0.58 (14.6)	0.63 (16.0)	0.27 (6.8)	0.5 (12.7)	0.33 (9.42)	Aluminum
NVCF14M-18F	G 1/8 Female	0.56 (14.3)	0.69 (17.5)	0.63 (16.0)	0.27 (6.8)	N/A N/A	0.16 (4.43)	Aluminum
NVCF14M-38F	G 3/8 Female	0.88 (22.2)	0.93 (23.5)	0.63 (16.0)	0.27 (6.8)	N/A N/A	0.48 (13.56)	Aluminum
NVCF14M-38M	G 3/8 Male	0.88 (22.2)	0.58 (14.6)	0.63 (16.0)	0.27 (6.8)	0.5 12.7	0.42 (11.87)	Aluminum
NVCF14-14F	1/4 NPT Female	0.75 (19.1)	0.83 (21.0)	0.63 (16.0)	0.27 (6.8)	N/A N/A	0.34 (9.71)	Aluminum
NVCF14-14M	1/4 NPT Male	0.75 (19.1)	0.58 (14.6)	0.63 (16.0)	0.27 (6.8)	0.5 12.7	0.33 (9.42)	Aluminum
NVCF14-18F	1/8 NPT Female	0.56 (14.3)	0.69 (17.5)	0.63 (16.0)	0.27 (6.8)	N/A N/A	0.16 (4.43)	Aluminum
NVCF14-38F	3/8 NPT Female	0.88 (22.2)	0.93 (23.5)	0.63 (16.0)	0.27 (6.8)	N/A N/A	0.48 (13.56)	Aluminum
NVCF14-38M	3/8 NPT Male	0.75 (19.1)	0.58 (14.6)	0.63 (16.0)	0.27 (6.8)	0.5 12.7	0.42 (11.87)	Aluminum

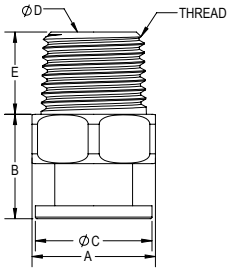
Fitting Groups 16



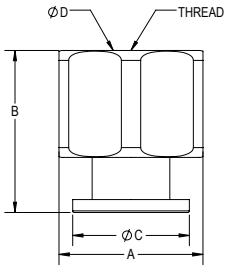
NVCF16-14M and NVCF16M-14M



NVCF16-14F and NVCF16M-14F



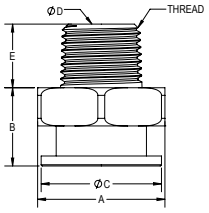
NVCF16-38M and NVCF16M-38M



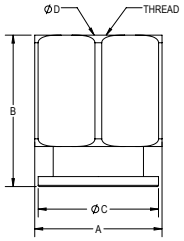
NVCF16-38F and NVCF16M-38F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF16M-14F	G 1/4 Female	0.75 (19.1)	0.89 (22.5)	0.71 (18.0)	0.35 (8.8)	N/A N/A	0.36 (10.08)	Aluminum
NVCF16M-14M	G 1/4 Male	0.75 (19.1)	0.64 (16.1)	0.71 (18.0)	0.35 (8.8)	0.5 (12.7)	0.30 (8.57)	Aluminum
NVCF16M-38F	G 3/8 Female	0.88 (22.2)	0.99 (25.0)	0.71 (18.0)	0.35 (8.8)	N/A N/A	0.49 (13.94)	Aluminum
NVCF16M-38M	G 3/8 Male	0.88 (22.2)	0.64 (16.1)	0.71 (18.0)	0.35 (8.8)	0.5 12.7	0.39 (11.02)	Aluminum
NVCF16-14F	1/4 NPT Female	0.75 (19.1)	0.89 (22.5)	0.71 (18.0)	0.35 (8.8)	N/A N/A	0.36 (10.08)	Aluminum
NVCF16-14M	1/4 NPT Male	0.75 (19.1)	0.63 (16.1)	0.71 (18.0)	0.35 (8.8)	0.5 12.7	0.30 (8.57)	Aluminum
NVCF16-38F	3/8 NPT Female	0.88 (22.2)	0.99 (25.0)	0.71 (18.0)	0.35 (8.8)	N/A N/A	0.49 (13.94)	Aluminum
NVCF16-38M	3/8 NPT Male	0.75 (19.1)	0.64 (16.1)	0.71 (18.0)	0.35 (8.8)	0.5 12.7	0.39 (11.02)	Aluminum

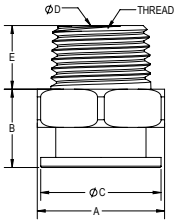
Fitting Groups 17



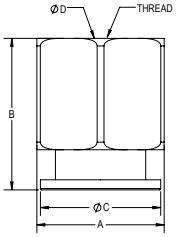
NVCF17-38M and NVCF17M-38M



NVCF17-38F and NVCF17M-38F

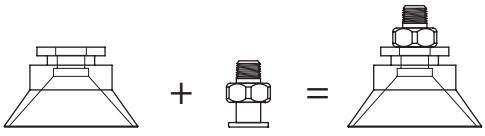


NVCF17-12M and NVCF17M-12M



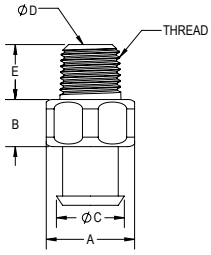
NVCF17-12F and NVCF17M-12F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF17M-12F	G 1/2 Female	1.00 (25.4)	1.19 (30.2)	0.95 (24.0)	0.58 (14.8)	N/A N/A	0.77 (21.84)	Aluminum
NVCF17M-12M	G 1/2 Male	1.00 (25.4)	0.65 (16.5)	0.95 (24.0)	0.58 (14.8)	0.5 (12.7)	0.49 (13.96)	Aluminum
NVCF17M-38F	G 3/8 Female	0.88 (22.2)	0.97 (24.5)	0.95 (24.0)	0.58 (14.8)	N/A N/A	1.02 (28.78)	Aluminum
NVCF17M-38M	G 3/8 Male	1.00 (25.4)	0.62 (15.6)	0.95 (24.0)	0.38 (9.5)	0.5 12.7	0.66 (18.59)	Aluminum
NVCF17-38F	3/8 NPT Female	1.00 (25.4)	1.19 (30.2)	0.95 (24.0)	0.46 (11.7)	N/A N/A	1.02 (28.78)	Aluminum
NVCF17-38M	3/8 NPT Male	1.00 (25.4)	0.62 (15.6)	0.95 (24.0)	0.38 (9.5)	0.5 12.7	0.66 (18.59)	Aluminum
NVCF17-12F	1/2 NPT Female	1.00 (25.4)	1.19 (30.2)	0.95 (24.0)	0.58 (14.8)	N/A N/A	0.77 (21.84)	Aluminum
NVCF17-38M	1/2 NPT Male	1.00 (25.4)	0.62 (15.6)	0.95 (24.0)	0.58 (14.8)	0.5 12.7	0.66 (18.59)	Aluminum

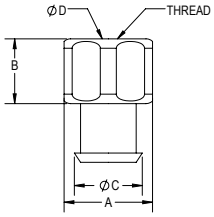


Example: Cup with Fitting

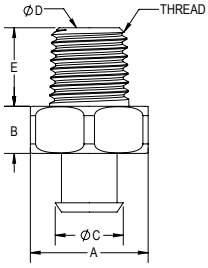
Fitting Groups 19



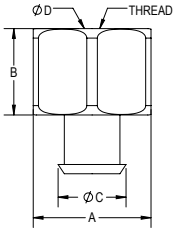
NVCF19-18M and NVCF19M-18M



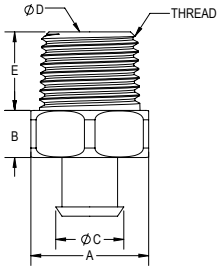
NVCF19-18F and NVCF19M-18F



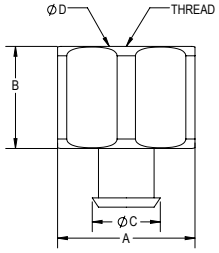
NVCF19-14M and NVCF19M-14M



NVCF19-14F and NVCF19M-14F

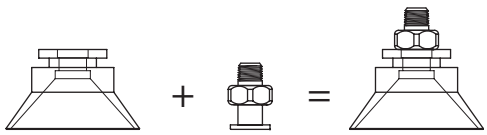


NVCF19-38M and NVCF19M-38M



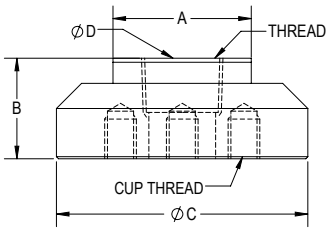
NVCF19-38F and NVCF19M-38F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF19M-14F	G 1/4 Female	0.75 (19.1)	0.92 (23.5)	0.43 (11.0)	0.23 (5.8)	N/A N/A	0.33 (9.31)	Aluminum
NVCF19M-14M	G 1/4 Male	0.75 (19.1)	0.67 (17.1)	0.43 (11.0)	0.23 (5.8)	0.5 (12.7)	0.34 (9.53)	Aluminum
NVCF19M-18F	G 1/8 Female	0.56 (14.3)	0.79 (20.0)	0.43 (11.0)	0.23 (5.8)	N/A N/A	0.15 (4.28)	Aluminum
NVCF19M-18M	G 1/8 Male	0.56 (14.3)	0.67 (17.1)	0.43 (11.0)	0.23 (5.8)	0.35 8.9	0.17 (4.81)	Aluminum
NVCF19M-38F	G 3/8 Female	0.88 (22.2)	1.02 (26.0)	0.43 (11.0)	0.23 (5.8)	N/A N/A	0.46 (13.16)	Aluminum
NVCF19M-38M	G 3/8 Male	0.88 (22.2)	1.17 (29.8)	0.43 (11.0)	0.23 (5.8)	0.5 12.7	0.42 (11.98)	Aluminum
NVCF19-14F	1/4 NPT Female	0.75 (19.1)	0.92 (23.5)	0.43 (11.0)	0.23 (5.8)	N/A N/A	0.33 (9.31)	Aluminum
NVCF19-14M	1/4 NPT Male	0.75 (19.1)	0.67 (17.1)	0.43 (11.0)	0.23 (5.8)	0.5 12.7	0.34 (9.53)	Aluminum
NVCF19-18F	1/8 NPT Male	0.56 (14.3)	0.79 (20.00)	0.43 (11.0)	0.23 (5.8)	N/A N/A	0.15 (4.28)	Aluminum
NVCF19-18M	1/8 NPT Male	0.56 (14.3)	0.67 (17.1)	0.43 (11.0)	0.23 (5.8)	0.35 8.9	0.17 (4.81)	Aluminum
NVCF19-38F	3/8 NPT Male	0.88 (22.2)	1.02 (26.0)	0.43 (11.0)	0.23 (5.8)	N/A N/A	0.46 (13.16)	Aluminum
NVCF19-38M	3/8 NPT Male	0.75 (19.1)	0.67 (17.1)	0.43 (11.0)	0.23 (5.8)	0.5 12.7	0.42 (11.98)	Aluminum

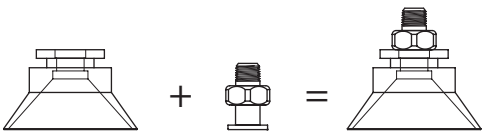


Example: Cup with Fitting

Fitting Groups 22

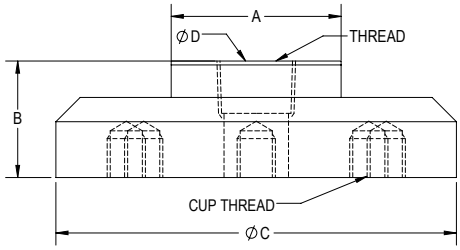


Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF22M-14F	G 1/4 Female	0.69 (17.5)	0.50 (12.7)	1.25 (31.8)	0.45 (11.5)	N/A N/A	0.60 (17.15)	Aluminum
NVCF22M-18F	G 1/8 Female	0.69 (17.5)	0.50 (12.7)	1.25 (31.8)	0.34 (8.7)	N/A N/A	0.67 (18.87)	Aluminum
NVCF22-14F	1/4 NPT Female	0.75 (19.1)	0.50 (12.7)	1.25 (31.8)	0.44 (11.1)	N/A N/A	0.60 (17.15)	Aluminum
NVCF22-18F	1/8 NPT Female	0.75 (19.1)	0.50 (12.7)	1.25 (31.8)	0.33 (8.4)	N/A N/A	0.67 (18.87)	Aluminum

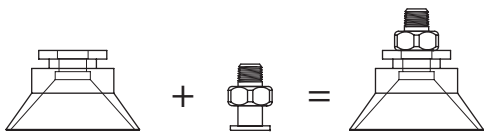


Example: Cup with Fitting

Fitting Groups 23

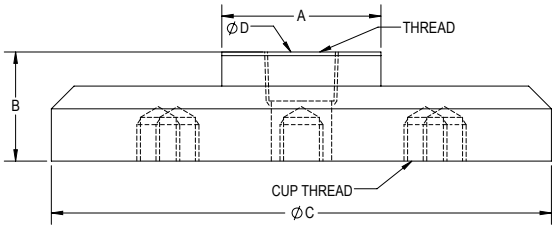


Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF23M-14F	G 1/4 Female	0.88 (22.2)	0.60 (15.2)	2.06 (52.4)	0.47 (11.8)	N/A N/A	2.08 (59.00)	Aluminum
NVCF23M-18F	G 1/8 Female	0.88 (22.2)	0.60 (15.2)	2.06 (52.4)	0.35 (8.8)	N/A N/A	2.15 (61.01)	Aluminum
NVCF23M-38F	G 3/8 Female	0.88 (22.2)	0.60 (15.2)	2.06 (52.4)	0.60 (15.2)	N/A N/A	1.98 (56.06)	Aluminum
NVCF23-14F	1/4 NPT Female	0.88 (22.2)	0.60 (15.2)	2.06 (52.4)	0.44 (11.1)	N/A N/A	2.08 (59.00)	Aluminum
NVCF23-18F	1/8 NPT Female	0.88 (22.2)	0.60 (15.2)	2.06 (52.4)	0.33 (8.4)	N/A N/A	2.15 (61.01)	Aluminum
NVCF23-38F	3/8 NPT Female	0.88 (22.2)	0.60 (15.2)	2.06 (52.4)	0.56 (14.3)	N/A N/A	1.98 (56.06)	Aluminum

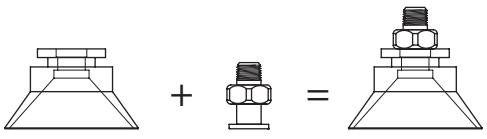


Example: Cup with Fitting

Fitting Groups 24

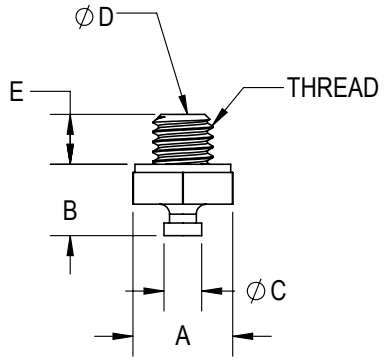


Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF24M-14F	G 1/4 Female	0.88 (22.2)	0.60 (15.2)	2.75 (69.9)	0.47 (11.8)	N/A N/A	3.71 (105.5)	Aluminum
NVCF24M-18F	G 1/8 Female	0.88 (22.2)	0.60 (15.2)	2.75 (69.9)	0.35 (8.8)	N/A N/A	3.78 (107.05)	Aluminum
NVCF24M-38F	G 3/8 Female	0.88 (22.2)	0.60 (15.2)	2.75 (69.9)	0.60 (15.2)	N/A N/A	3.60 (102.09)	Aluminum
NVCF24-14F	1/4 NPT Female	0.88 (22.2)	0.60 (15.2)	2.75 (69.9)	0.44 (11.1)	N/A N/A	3.71 (105.5)	Aluminum
NVCF24-18F	1/8 NPT Female	0.88 (22.2)	0.60 (15.2)	2.75 (69.9)	0.33 (8.4)	N/A N/A	3.78 (107.05)	Aluminum
NVCF24-38F	3/8 NPT Female	0.88 (22.2)	0.60 (15.2)	2.75 (69.9)	0.56 (14.3)	N/A N/A	3.60 (102.09)	Aluminum



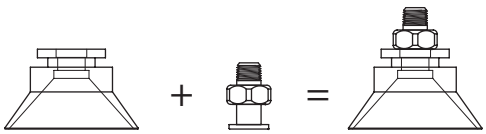
Example: Cup with Fitting

Fitting Groups 25



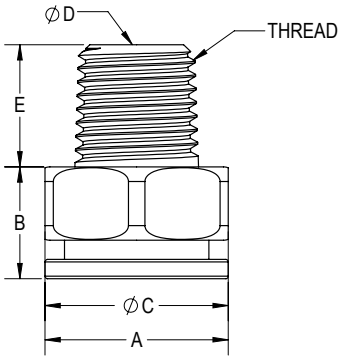
NVCF25-1032 and NVCF25M-M5M

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF25-1032	10-32 Male	0.31 (8.0)	0.20 (5.1)	0.12 (3.0)	0.05 1.2	0.182 4.6	0.07 (1.90)	Aluminum
NVCF25M-M5M	M5 Male	0.31 (8.0)	0.20 (5.1)	0.12 (3.0)	0.05 1.2	0.182 4.6	0.07 (1.90)	Aluminum

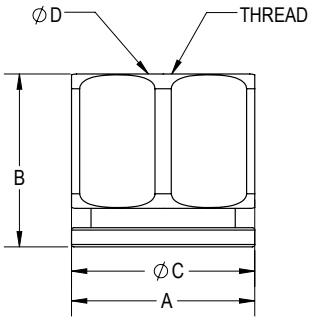


Example: Cup with Fitting

Fitting Groups 26

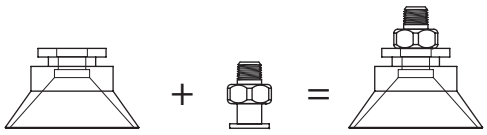


NVCF26-14M and NVCF26M-14M



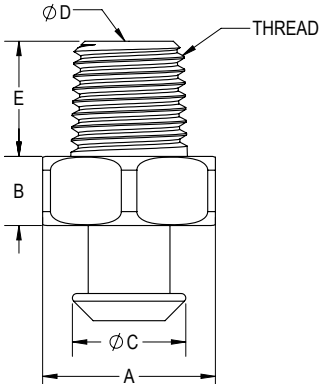
NVCF26-14F and NVCF26M-14F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF26-14F	1/4 NPT Female	0.75 (19.1)	0.71 (18.0)	0.76 (19.3)	0.28 (7.1)	N/A N/A	0.36 (10.30)	Aluminum
NVCF26-14M	1/4 NPT Male	0.75 (19.1)	0.46 (11.6)	0.76 (19.3)	0.22 (5.6)	0.5 (12.7)	0.38 (10.87)	Aluminum
NVCF26M-14M	G 1/4 Male	0.75 (19.1)	0.46 (11.6)	0.76 (19.3)	0.22 (5.6)	0.5 (12.7)	0.38 (10.87)	Aluminum
NVCF26M-14F	G 1/4 Female	0.75 (19.1)	0.71 (18.0)	0.76 (19.3)	0.22 (5.6)	N/A N/A	0.36 (10.30)	Aluminum

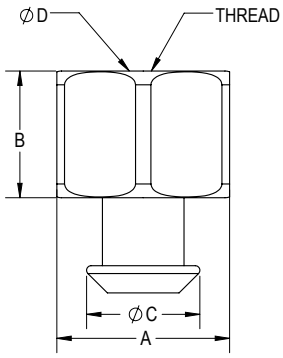


Example: Cup with Fitting

Fitting Groups 27

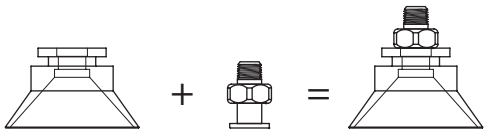


NVCF27-14M and NVCF27M-14M



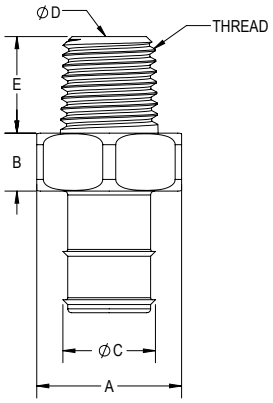
NVCF27-14F and NVCF27M-14F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF27-14F	1/4 NPT Female	0.75 (19.1)	0.96 (24.5)	0.49 (12.5)	0.25 (6.4)	N/A N/A	0.33 (9.42)	Aluminum
NVCF27-14M	1/4 NPT Male	0.75 (19.1)	0.71 (23.6)	0.49 (10.9)	0.25 (5.6)	0.5 (12.7)	0.33 (9.42)	Aluminum
NVCF27M-14F	G 1/4 Female	0.75 (19.1)	0.96 (24.5)	0.49 (12.5)	0.25 (6.4)	N/A N/A	0.33 (9.42)	Aluminum
NVCF27M-14M	G 1/4 Male	0.75 (19.1)	0.71 (18.1)	0.49 (12.5)	0.25 (6.4)	0.5 (12.7)	0.33 (9.42)	Aluminum

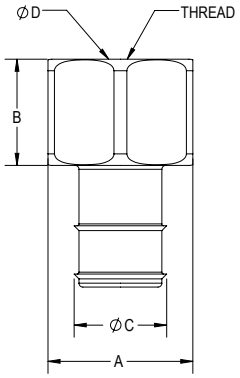


Example: Cup with Fitting

Fitting Groups 28

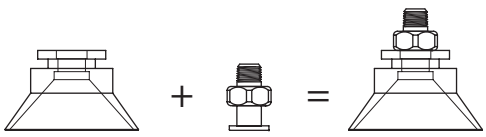


NVCF28-14M and NVCF28M-14M

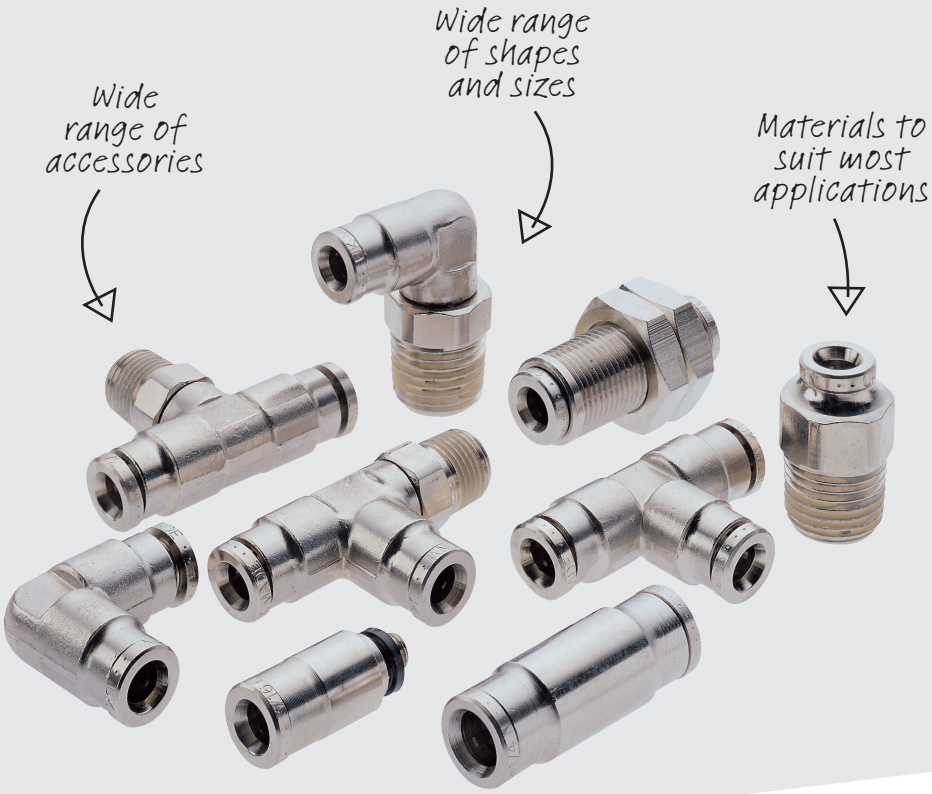


NVCF28-14F and NVCF28M-14F

Part Number	Thread Size	Dimensions A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF28-14F	1/4 NPT Female	0.75 (19.1)	1.18 (30.0)	0.43 (10.9)	0.22 (5.6)	N/A N/A	0.40 (11.33)	Aluminum
NVCF28-14M	1/4 NPT Male	0.75 (19.1)	0.93 (23.6)	0.43 (10.9)	0.22 (5.6)	0.5 (12.7)	0.41 (11.67)	Aluminum
NVCF28M-14F	G 1/4 Female	0.75 (19.1)	1.18 (30.0)	0.43 (10.9)	0.22 (5.6)	N/A N/A	0.41 (11.67)	Aluminum
NVCF28M-14M	G 1/4 Male	0.75 (19.1)	0.93 (23.6)	0.43 (10.9)	0.22 (5.6)	0.142 (3.6)	0.41 (11.67)	Aluminum



Example: Cup with Fitting



Push-in-Fittings

IMI Precision Engineering offers one of the most comprehensive ranges of pneumatic fittings in the industry. Selecting the right fitting is critical to the application.

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IMI NORGREN

PNEUFIT® PUSH-IN FITTINGS

Inch Ø 1/8" to 1/2" O/D tube

- For simple and quick assembly of pneumatic circuits.
- Positive tube connection.
- Wide range of types available.
- Reliable and corrosion resistant.

Technical Data

Fluid:
Compressed air, nitrogen, inert and non-combustible gases compatible with materials of construction.
Note: For other types of fluids or compressed gases, please consult factory.

Working Pressure:
29.5" Hg vacuum to 260 psig
(750 mm Hg to 18 bar)
Note: Flow Control working pressures:
5 to 150 psig
(.3 to 10 bar)

Working Temperature:
-4° to 175°F (-20° to 80°C)

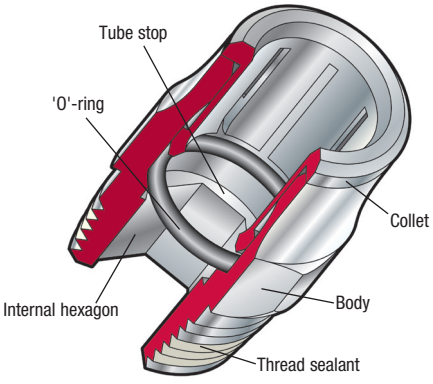
Materials
Body, swivel fitting and collet: Nickel plated brass
O-ring: Silicone free Nitrile
Sealing washer (parallel male threads): silicone free nitrile
Tubing: Nylon 11 or 12, Polyurethane (95 durometer or above) and LDPE (Low Density Polyethylene).
Note: Lower durometer polyurethane may be used, however, an internal tube support is required to prevent internal collapse of the tube wall.
Thread Sealant: Precote 5 thread sealant is factory applied to the circumference of tapered male threads.

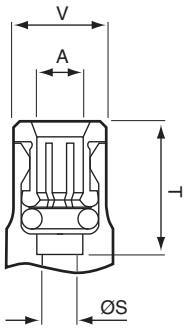
Recommended tightening torques

NPT or UNF Thread	Tightening torque ft lbs (Nm)
10-32 UNF	0.75 – 1 (1-1.4)
1/8"	5.0 – 6.5 (6.9 – 8.8)
1/4"	8.7 – 10.1 (11.8 – 13.7)
3/8"	15.9 – 17.3 (21.6 – 23.5)
1/2"	20.2 – 21.7 (27.4 – 29.4)

Tube O.D.'s and tube tolerances

Tube O.D.	O.D. Tube Tolerances Nylon	Polyurethane
1/8" to 1/2"	+0.002" (+0.05 mm)	±0.005" (±0.12)



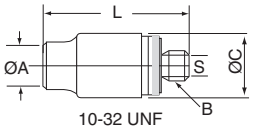


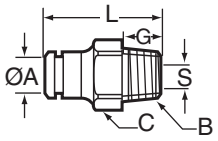
Dimensions inches (mm)

A O.D. Tube	S	T	V
1/8''	0.09 (2.3)	0.53 (13.5)	0.26 (6.6)
5/32'' (4)	0.11 (2.8)	0.55 (14.1)	0.30 (7.6)
3/16''	0.13 (3.4)	0.59 (15.1)	0.38 (9.7)
1/4''	0.17 (4.3)	0.61 (15.5)	0.42 (10.7)
5/16''	0.24 (4.4)	0.65 (16.5)	0.51 (13.1)
3/8''	0.30 (7.6)	0.83 (21.1)	0.59 (15.1)
1/2''	0.38 (9.7)	0.96 (24.4)	0.71 (18.0)

PNEUFIT® PUSH-IN FITTINGS

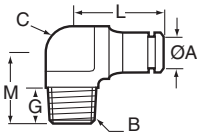
Inch Ø 1/8" to 1/2" O/D tube





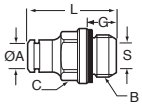
Pneufit® Male Adapter

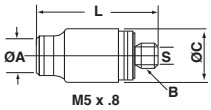
Part Number	A Tube O.D.	B NPT or UNF Thread	C A/F	G	L	S Hex
124250110	1/8"	10-32 UNF	0.35	0.20	0.79	3/32"
124250116	1/8"	1/16	3/8"	0.37	0.80	3/32"
124250118	1/8"	1/8	7/16"	0.37	0.67	3/32"
124250128	1/8"	1/4	9/16"	0.56	0.95	3/32"
124250210	5/32"	10-32 UNF	0.35	0.20	0.85	3/32"
124250218	5/32"	1/8	7/16"	0.37	0.89	1/8"
124250228	5/32"	1/4	9/16"	0.56	1.04	1/8"
124250318	3/16"	1/8	7/16"	0.37	0.96	5/32"
124250328	3/16"	1/4	9/16"	0.56	1.04	5/32"
124250410	1/4"	10-32 UNF	0.43	0.20	0.94	3/32"
124250418	1/4"	1/8	7/16"	0.37	0.98	5/32"
124250428	1/4"	1/4	9/16"	0.56	1.11	5/32"
124250438	1/4"	3/8	11/16"	0.56	1.07	3/16"
124250518	5/16"	1/8	1/2"	0.37	1.12	3/16"
124250528	5/16"	1/4	9/16"	0.56	1.23	1/4"
124250538	5/16"	3/8	11/16"	0.56	1.13	1/4"
124250618	3/8"	1/8	11/16"	0.37	1.32	3/16"
124250628	3/8"	1/4	11/16"	0.56	1.47	1/4"
124250638	3/8"	3/8	11/16"	0.56	1.41	5/16"
124250648	3/8"	1/2	7/8"	0.75	1.45	5/16"
124250728	1/2"	1/4	7/8"	0.56	1.67	1/4"
124250738	1/2"	3/8	7/8"	0.56	1.63	3/8"
124250748	1/2"	1/2	7/8"	0.75	1.70	3/8"



Pneufit® Fixed Male Elbow

Part Number	A Tube O.D.	B NPT Thread	C A/F	G	L	M
124450118	1/8"	1/8	0.28	0.37	0.67	0.66
124450218	5/32"	1/8	0.28	0.37	0.67	0.66
124450228	5/32"	1/4	0.43	0.56	0.72	0.92
124450318	3/16"	1/8	0.28	0.37	0.72	0.67
124450328	3/16"	1/4	0.43	0.56	0.79	0.92
124450418	1/4"	1/8	0.31	0.37	0.77	0.70
124450428	1/4"	1/4	0.43	0.56	0.79	0.92
124450438	1/4"	3/8	0.63	0.56	0.84	1.1
124450518	5/16"	1/8	0.43	0.37	0.84	0.74
124450528	5/16"	1/4	0.43	0.56	0.84	0.92
124450618	3/8"	1/8	0.52	0.37	1.05	0.8
124450628	3/8"	1/4	0.52	0.56	1.05	0.98
124450638	3/8"	3/8	0.63	0.56	1.05	1.1
124450648	3/8"	1/2	0.94	0.75	1.13	1.36
124450728	1/2"	1/4	0.63	0.56	1.25	1.03
124450738	1/2"	3/8	0.63	0.56	1.25	1.1
124450748	1/2"	1/2	0.94	0.75	1.25	1.36

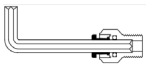




Pneufit® ISO G Male Adapter

Part number	A Ø tube	B ISO G or Metric thread	C A/F	G	L	S Hex
102250405	4	M5 x .8	9.0 Ø	5.0	21.9	2.5
102250418	4	1/8	10	7.2	23.0	3.0
102250605	6	M5 x .8	11.0 Ø	5.0	23.7	2.5
102250628	6	1/4	13	9.8	23.7	4.0
102250818	8	1/8	13	7.2	26.7	5.0
102250828	8	1/4	14	9.8	28.2	6.0
102251028	10	1/4	17	9.8	33.7	7.0

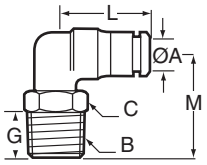
Pneufit® ISO G Male Connector



All straight male connectors have an internal hex for the use of an Allen Wrench to allow the fitting to be mounted in any position. This also permits close porting not possible with a standard open end or socket wrench.

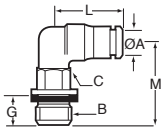
PNEUFIT® PUSH-IN FITTINGS

Inch Ø 1/8" to 1/2" O/D tube



Pneufit® Swivel Male Elbow

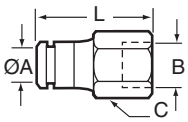
Part Number	A Tube O.D.	B NPT or UNF Thrd	C A/F	G	L	M
124470110	1/8"	10-32 UNF	5/16"	0.20	0.63	0.70
124470118	1/8"	1/8	7/16"	0.37	0.63	0.82
124470128	1/8"	1/4	9/16"	0.37	0.68	1.07
124470210	5/32"	10-32 UNF	5/16"	0.20	0.67	0.70
124470218	5/32"	1/8	7/16"	0.37	0.67	0.86
124470228	5/32"	1/4	9/16"	0.56	0.67	1.07
124470328	3/16"	1/4	9/16"	0.56	0.72	1.09
124470410	1/4"	10-32 UNF	5/16"	0.20	0.77	0.71
124470418	1/4"	1/8	7/16"	0.37	0.77	0.9
124470428	1/4"	1/4	9/16"	0.56	0.77	1.11
124470438	1/4"	3/8	3/4"	0.56	0.8	1.15
124470518	5/16"	1/8	9/16"	0.37	0.84	0.96
124470528	5/16"	1/4	9/16"	0.56	0.84	1.15
124470618	3/8"	1/8	9/16"	0.37	1.05	1.05
124470628	3/8"	1/4	11/16"	0.56	1.05	1.26
124470638	3/8"	3/8	3/4"	0.56	1.05	1.26
124470648	3/8"	1/2	7/8"	0.75	1.05	1.48
124470728	1/2"	1/4	3/4"	0.56	1.25	1.37
124470738	1/2"	3/8	3/4"	0.56	1.25	1.41
124470748	1/2"	1/2	7/8"	0.75	1.25	1.62



Pneufit® ISO R Swivel Male Elbow

Part number	A O/D tube	B ISO R thread	C A/F	G	L	M
101470418	4	1/8	10	7.7	16.9	20.5
101470628	6	1/4	4	11.1	19.6	25.1
101470818	8	1/8	14	7.7	21.3	23.0
101470828	8	1/4	14	11.1	21.3	26.1
101471028	10	1/4	17	11.1	26.7	28.8
101471038	10	3/8	17	12.7	26.7	30.5

CAUTION: Swivel adapters are not suitable for use in continuously rotating or gyrating applications.



Pneufit® Female Adapter

Part Number	A Tube O.D.	B NPT Thread	C A/F	L
124260118	1/8"	1/8	9/16"	1.14
124260128	1/8"	1/4	11/16"	1.38
124260218	5/32"	1/8	9/16"	1.14
124260228	5/32"	1/4	11/16"	1.42
124260418	1/4"	1/8	9/16"	1.19
124260428	1/4"	1/4	11/16"	1.46
124260518	5/16"	1/8	9/16"	1.23
124260528	5/16"	1/4	11/16"	1.50
124260628	3/8"	1/4	11/16"	1.66
124260638	3/8"	3/8	7/8"	1.70