

# World-class Vacuum Pump Solutions

Engineering  
GREAT Solutions



# Engineering GREAT solutions

*We deliver GREAT solutions for our customers tackling the world's most demanding engineering challenges.*

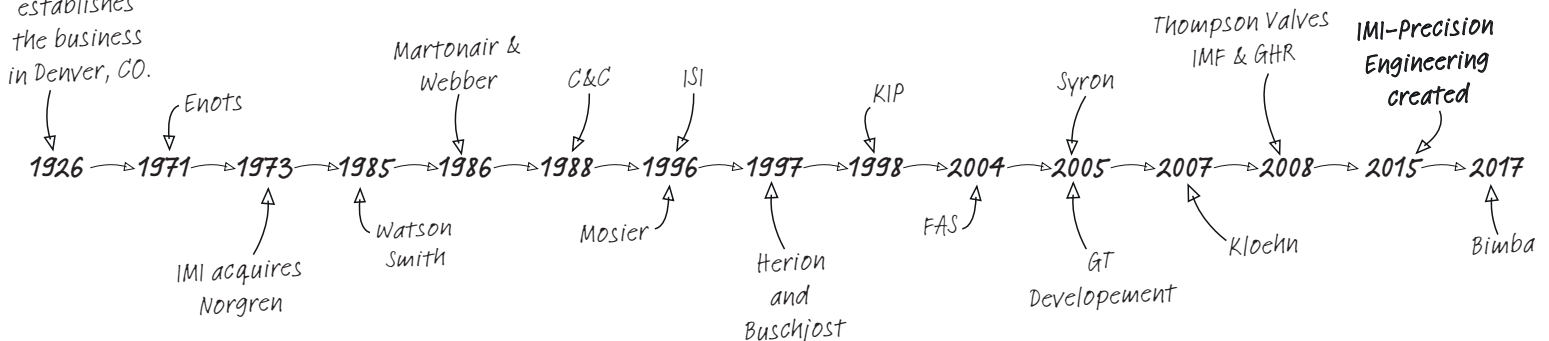
**IMI Precision Engineering** is a world leader in motion and fluid control technologies. Wherever precision, speed and engineering reliability are essential, we deliver exceptional solutions which improve the productivity and efficiency of our customers' equipment.

Part of IMI plc, (listed on the London Stock Exchange since 1966), IMI Precision Engineering has \$1,214m in sales generated from a sales and service network in 75 countries, as well as manufacturing capabilities in the USA, Germany, China, UK, Switzerland, Czech Republic, Mexico and Brazil. We support this with our global centers of technical excellence and facilities for CFD design and R&D testing. We employ a dedicated team of field engineers, sector specialists and key account managers – all committed to providing excellent service to our customers.

As a business, we aim to UNDERSTAND our customers' challenges. We then CONNECT our products, people and expertise in order to DELIVER exceptional service and solutions. Together these actions IMPROVE the performance of our customers' machinery.

We call this Engineering Great. We deliver it to customers through a world-class portfolio of high performance products, and strong partnerships for problem-solving utilizing our global network of support.

Carl Norgren establishes the business in Denver, CO.



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marvelous  
machines**



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# Product selection applications guide

There are hundreds of applications for IMI Norgren products. Often, there is more than one solution for a given application – it all depends on the object being picked up. Contact our vacuum experts to find the best IMI Norgren solution for your application.

Application:	Vacuum Pumps and Accessories							
	NJ Series	NVP Series	NVDF Series	NHVP Series	NCDF Series	NDF Series	EOAT	Vacuum Cups
Air Bearing					•			
Air Blower / Dryer / Cooling					•			
Air Wiper					•	•		
Assembly / Flexible Manufacturing	•	•	•		•		•	•
Bag/Box Opening	•	•	•		•		•	•
Coating / Spraying			•		•			
Chip Removal					•	•		
Circuit Board Testing	•	•					•	•
Cooling of Electronics					•			
Degassing	•	•	•	•				
Dirt, Dust & Debris Tolerant	•	•	•	•	•	•	•	•
Ejecting Molded Parts	•	•				•	•	•
Erecting Corrugated Boxes	•	•	•				•	•
Evacuation of Molds	•	•	•	•				•
Evaporation Control	•	•	•	•	•			
Exhaust / Ventilation			•		•	•		
Food Processing	•	•	•		•	•	•	•
Fume / Dust / Chip Removal			•		•	•		
Gas Sampling & Analysis	•	•		•				
Inflation / Deflation					•			
Labeling	•	•	•				•	•
Leak Detection	•	•		•				
Liquid Blending / Mixing	•					•		
Liquids / Creams	•	•	•	•				
Loading / Unloading Hoppers						•		
Mandrel Collection					•	•		
Material Transfer:			•			•	•	
Small Parts			•			•	•	
Pellets						•	•	
Powders / Bulk Solids			•			•	•	
Medical / Dental / Lab Suction	•	•	•	•				
Packaging	•	•	•		•	•	•	•
Palletizing	•	•	•				•	•
Paper Feeding / Printing	•	•	•		•		•	•
Pick & Place:	•	•	•		•		•	•
Corrugated Sheet / Boxes	•	•	•				•	•
Electronic Components	•	•	•		•			•
Fragile Items	•	•	•		•		•	•
Flexible Materials	•	•	•		•			•
Glass	•	•	•		•		•	•
Metals	•	•	•		•		•	•
Plastics	•	•	•		•		•	•
Stone Brick Concrete	•	•	•				•	•
Pneumatic Conveying	•	•	•		•	•	•	
Powders	•	•	•			•		
Sampling	•	•	•		•	•		•
Stamping	•	•	•	•	•			•
Thermoforming	•	•	•		•		•	•
Trim, Selvege & Fiber Collection			•		•	•		
Vacuum Chuck	•	•	•					
Vacuum Clamping	•	•	•	•				
Vacuum Filling	•	•	•			•		
Vacuum Impregnation	•	•	•	•				
Vacuum Molding	•	•	•	•				
Vacuum Packaging	•	•	•		•		•	•
Vacuum Toilets	•	•	•					
Veneering	•	•	•	•				
Waste & Spill Clean-ups	•	•	•			•		
Custom Sizes, Shapes, & Threads	•	•	•	•	•	•	•	•
Specialty Materials	•		•		•	•	•	•

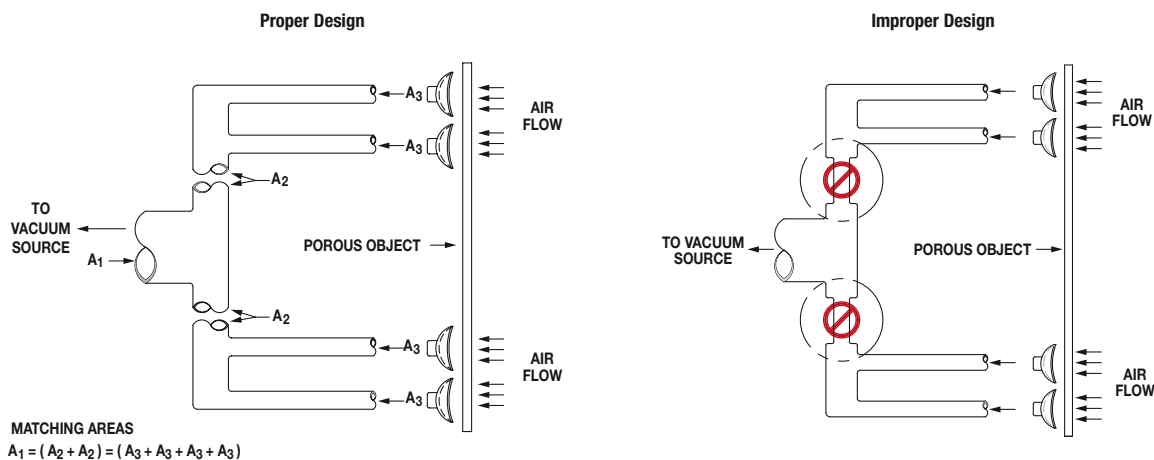
# How vacuum pumps work

To ensure an efficient vacuum system, emphasis should be placed on the vacuum flow path beginning with the object being handled or vessel being evacuated and ending at the vacuum source. Improper sizing of the system components is the most common vacuum system design flaw that we have seen in the field. Vacuum is a low pressure power source (max value of 14.7 PSI, [1 bar]) whose effectiveness is easily reduced by restrictions from tubing, valves, fittings, etc.

An excellent analogy is a person trying to breathe through a cocktail straw. It's almost impossible to survive because the small flow path will not allow enough air to reach your lungs. A drinking straw with its larger flow path let's you breathe much easier by allowing more air flow.

To determine if your system is restricting vacuum flow, place a vacuum gauge at the pump. If the gauge reads vacuum when nothing is connected to the suction cup or a vessel is not attached, the system is restricting flow. If the system is not working, i.e. not picking up a porous object or not evacuating a vessel fast enough, a larger vacuum pump will not fix the system until the flow path size is increased.

In applications where a restriction cannot be eliminated, i.e. when deflating a ball prior to shipping – use a vacuum source that can generate a high vacuum level. IMI Norgren H Series pumps provide the fastest evacuation possible.



Plumbing a vacuum system is very similar to a municipal water distribution system where the lines closest to the pump are the largest and get smaller as they get to your house (vacuum cup/vessel). The area of each branch of tubing should match that of the next branch and the main trunk line should be sized to handle the maximum flow.

**Remember that just a small change in diameter causes a large change in area — a 2x change in diameter increases the area 4x.**

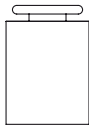

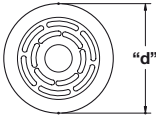
# Vacuum pump selection guide

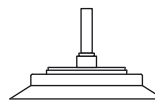
## 1. Pick and Place/Material Handling:

Pick & Place/Material Handling refers to lifting, gripping, rotating and positioning of an object through the use of a vacuum pump with a vacuum cup.

Use the Equation: Force = Pressure X Area to determine:

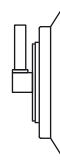
- > Lifting capacity of the pump and cup
- > Required vacuum area, i.e. diameter of the cup – see cup section for a more detailed explanation
- > Required vacuum level of vacuum pump

<b>FORCE</b>		<b>PRESSURE</b>		<b>AREA</b>
	=		X	
OBJECT WEIGHT SAFETY FACTOR * Lbs (Kg)		CONVERT "Hg TO PSI, DIVIDE BY 2 (2Hg" = 1 PSI) PSI (Kpa)		AREA = $\pi(d^2/4)$ or AREA = $\pi r^2$ $\pi = 3.14$ in <sup>2</sup> (cm <sup>2</sup> )



### Safety Factors

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 vertical position.

### Force = Pressure x Area where:

**F** = the weight of the objects in lbs [kg] multiplied by the safety factor above

**P** = the expected vacuum level in PSI [Kpa], remember to convert "Hg to PSI by dividing by 2

**A** = the area of the Vacuum Cup measured in square inches. Use the equation  $A = \pi \cdot d^2 / 4$

### 3 Vacuum Level Ranges:

- > **"L" or "F" Series** 0-10"Hg, [0 to 339mbar] for low vacuum / high flow applications
- > **"M" or "D" Series** 0-20"Hg, [0 to 677mbar] for medium vacuum / high flow applications
- > **"H" or "S" Series** 0-28"Hg, [0 to 948mbar] for high vacuum / standard flow applications

### 3 Types of Material:

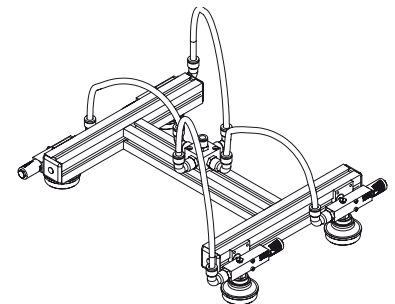
- > Non-porous materials: steel, glass laminated chipboard, rigid plastic, semiconductors, etc.
- > Porous materials: corrugated, wood, foam, felt, woven materials, objects with extremely rough or uneven surfaces
- > Flexible materials: plastic films, baked good, IV bags, paper bags – things that wrinkle

### Inexact Science:

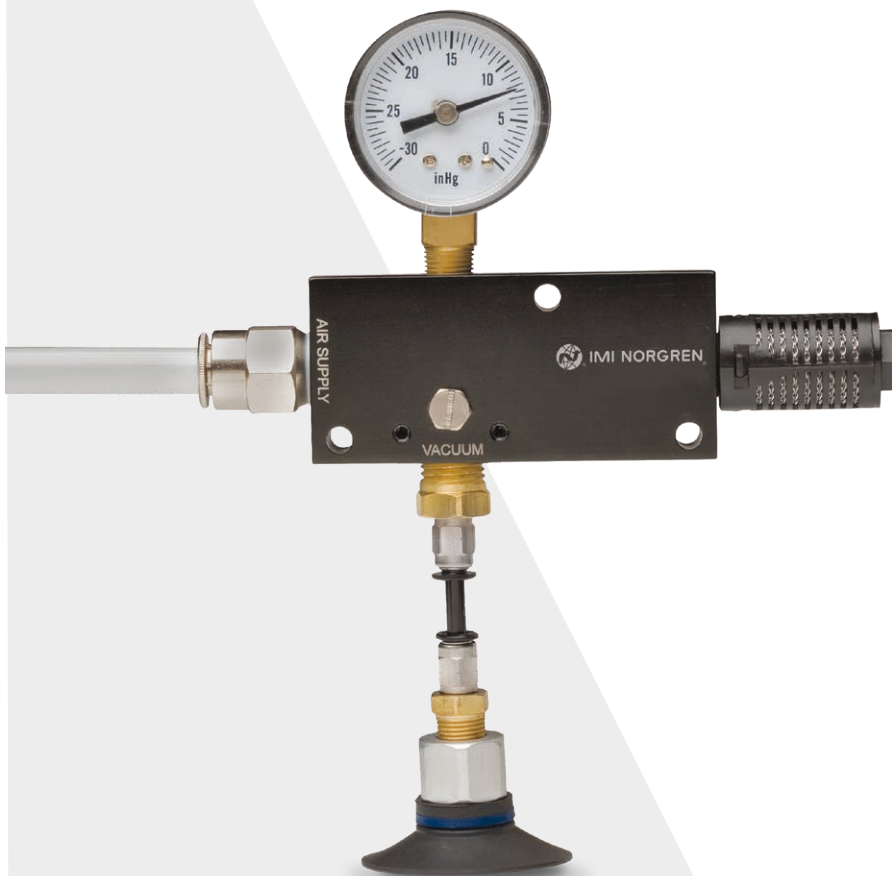
When handling porous materials such as corrugated or heavy fabric, it may be hard to choose the exact pump required because the leakage rate is not normally known. It is best to run a trial to test the ability of the pump to overcome the leakage. For existing systems, consult IMI Norgren for the equivalent pump size.

### System Speed:

Cycle rate of the pump/cup system is determined by the evacuation speed of the venturi. See Vessel Evacuation.



Increase safety, reliability and speed by using one pump and one cup at each location. Should one cup fail the others will maintain their grip.



## 2. Vessel Evacuation:

In many process applications it is necessary to evacuate a vessel for the purpose of purging gases, leak testing and degassing viscous fluids. It may also be simply the length of tubing between the pump and cup that needs to be evacuated.

Knowing the pump's evacuation speed will help determine process completion time or the production rate of a pick & place system. To find the speed, use the evacuation charts listed in the performance data for each venturi pump. Note that the charts are based on a volume of one cubic foot or one liter of volume to a given vacuum level in "Hg or mbar.

1. Determine the total volume to be evacuated – vessel and/or vacuum lines (cu. ft.), 1728 cu. in = 1 cu. ft.
2. Desired vacuum level Hg [mbar] is determined by customer
3. Time to reach vacuum level (seconds) – determined by customer



## ● Application #1

### Evacuate Vacuum Lines Between Vacuum Cup and Pump

#### Application #1 Assumptions:

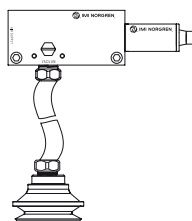
Desired Vacuum level: 28"Hg [948 mbar]  
 Evacuation time: 10 seconds or less  
 Vacuum line: 3/8" ID, 3 ft length [10mm ID, 100cm length]

1. Volume = Area of Tubing ID x Length

$$\frac{\pi d^2}{4} \times L = \frac{\pi (.375)^2}{4} \times 36" = 3.976 \text{ cu. in.}$$

$$\left[ \frac{\pi d^2}{4} \times L = \frac{\pi (1\text{cm})^2}{4} \times 100\text{cm} = 78 \text{ cm}^3 \right]$$

2. Convert cu. in. to cu. ft – divide by 1728  
**3.976 / 1728 = 0.0023cu. ft.** (volume of tubing)  
 [Convert cu. cm to liters - divide by 1000  
**78 / 1000 = 0.078 liters** (volume of tubing)]
3. Go to Evacuation Time chart – find desired vacuum level.  
**28"Hg = 790.80 seconds per cu. ft.**  
**[948 mbar = 27.9 seconds per liter]**
4. Multiply cu. ft **(0.0023 x 790.80) = 1.82 seconds**  
 [Multiply liters **(0.078 x 27.9) = 2.17 seconds]**



#### Answer:

Depending on the style of pump and options needed, choose from either the NVP Series or NJ Series pumps – both series have the ability to meet your application requirements.

## ● Application #2

### Evacuate Vessel and Vacuum Lines Find Total System Volume

#### Application #2 Assumptions:

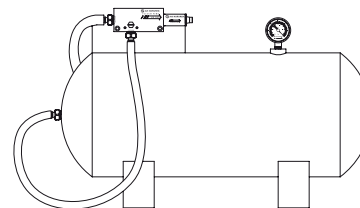
Desired Vacuum level: 28"Hg [948 mbar]  
 Evacuation time: 5 minutes or less  
 Vessel volume: 2 cu ft [50 liters]  
 Vacuum line: 3/8" ID, 3 ft length [10mm ID, 100cm length]

1. Add vessel volume + tubing volume (See Application 1.1 & 1.2)  
**2 cu. ft + 0.0023 cu. ft. = 2.0023 cu ft.**  
**[50 liters + 0.078 liters = 50.078 liters]**
2. Go to Evacuation Time chart – find desired vacuum level.  
 (Assumption: 28"Hg [948 mbar]) (Note: Chart is based on Evacuation in seconds.)
3. To find required time, start with smallest pump first.  
 (Assumption: Evacuation Time - 5 minutes or less.)

Multiply cu. ft. [liters] x Evacuation Time in Seconds / divide by 60 for minutes

Model # 60H = (2.0023 x 790.8) / 60 = 26.39 min. - over 5 minutes  
 (Metric) = (50.078 x 27.9) / 60 = 23.29 min. - over 5 minutes

Model # 150H = (2.0023 x 125) / 60 = 4.17 min - under 5 minutes  
 (Metric) = (50.078 x 4.4) / 60 = 3.67 minutes - under 5 minutes



#### Answer:

Depending on the style of pump and options needed, choose from either the NVP Series or NJ Series pumps – both series have the ability to meet your application requirements.

Model #	Evacuation Time in Seconds Based on 1 Cu. Ft. Volume /"Hg										
	0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg	27"Hg	28"Hg
N60H	0.00	15.00	29.80	50.60	74.20	102.80	135.90	183.20	245.90	410.20	790.80
N150H	0.00	2.30	3.80	6.50	10.20	14.10	21.30	44.90	55.00	81.00	125.00

Model #	Evacuation Time in Seconds Based on 1 Liter Volume/mbar										
	0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
N60H	0.0	0.5	1.1	1.8	2.6	3.6	4.8	6.5	8.7	14.5	27.9
N150H	0.0	0.1	0.1	0.2	0.4	0.5	0.8	1.6	1.9	2.9	4.4

# Vacuum terms and definitions

## Air Consumption:

The volume of compressed air required to power the pump.

## Atmospheric Pressure:

The atmosphere that surrounds the Earth can be considered a reservoir of low pressure air. Its weight exerts a pressure that varies with temperature, humidity and altitude.

## Barometer:

A device usually filled with mercury that measures atmospheric pressure.

## Compressed Air Considerations:

1HP @ 80 PSI generates approximately 4 SCFM of flow.

## Standard or Average Atmospheric Pressure at Sea Level:

29.92"Hg or [760 mmHg]

## Vacuum Flow:

The volume of free air induced by the vacuum pump per unit of time, expressed as standard cubic feet per minute – SCFM or [liters per minute - LPM]

## Vacuum Force:

Equal to the vacuum level X the area of the vacuum surface, i.e. holding area of a vacuum cup.

## Vacuum Level/Elevation:

The magnitude of the suction created by the vacuum pump. The unit of measure is inches of Hg ("Hg) or (mbar). Vacuum level is affected by elevation and barometric pressure. For each 1,000 feet of elevation, vacuum level decreases by 1" of Hg.

## Venturi's, Ejectors, Transducers, Generators, Eductors:

All of these are different names for air powered vacuum pumps.

## 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 vs. Elevation:** Vacuum Level = The magnitude of suction created by the vacuum pump. Vacuum level is affected by elevation and barometric pressure. For each 1,000 feet of elevation, the vacuum level that the pump can achieve decreases by approximately 1"Hg [33.9mbar].

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# Questions to ask when sizing a vacuum system

Vacuum technology is the quickest, safest and most efficient method of moving products from point A to B. When designing a system, knowing the size, weight, porosity, texture and other physical features of the product is critical to selecting the right pump/cup combination to meet your cycle times, performance requirements or evacuation speeds. Below is a simple checklist to help you gather the pertinent information to begin the design process.

- Weight? \_\_\_\_\_
- What is the material to be held, lifted, rotated, etc.? \_\_\_\_\_
- Overall Dimensions? \_\_\_\_\_
- Surface Conditions (Rough, Smooth, Curved)? \_\_\_\_\_
- Temperature of Product? \_\_\_\_\_
- Porosity (Example: Corrugated cardboard vs. Steel, Glass)? \_\_\_\_\_
- Available surface to grip with vacuum cups or other device? \_\_\_\_\_
- Overall Cycle Time? \_\_\_\_\_
- Percent of cycle that vacuum is used? \_\_\_\_\_
- How is vacuum released (Compressed air through an air valve, or vented)? \_\_\_\_\_
- What size vacuum line (Inside diameter & length)? \_\_\_\_\_
- Is a surge tank used to store vacuum? \_\_\_\_\_
- What pressure is available (80 PSI, 5.5 bar, etc.)? \_\_\_\_\_
- What vacuum level is desired? \_\_\_\_\_

## **If an existing application:**

- What vacuum level is being achieved? \_\_\_\_\_
- What is being used now to generate vacuum (electric or air powered pump)? \_\_\_\_\_
- Customer complaints? (Expensive, noisy, high temperature, maintenance, etc.)? \_\_\_\_\_
- Model Number of existing pump? \_\_\_\_\_
- If suction cups are used, what size (Outside Diameter)? \_\_\_\_\_
- What style of suction cup (Flat, Bellows, Oval, Cleated, etc.)? \_\_\_\_\_
- How many suction cups are connected to one pump? \_\_\_\_\_
- What vacuum level is necessary to perform the task? \_\_\_\_\_
- Is there physical space to run one pump per suction cup? \_\_\_\_\_

# MODULAR VENTURI VACUUM PUMPS









The NVP Series provides maximum design flexibility by using a modular component approach. Integrating a venturi vacuum pump, sensors, and switches within one assembly, the NVP Series provides complete vacuum systems capable of interfacing with control systems.



# Fast Find Guide

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

## ● Modular Venturi Vacuum Pumps

<p><b>NVP00</b> Min Series - Vacuum level up to 28"Hg, flow up to 0.50 SCFM, compact / lightweight with blowoff option</p>  <p>Page 14</p>	<p><b>NVP10</b> Mid Series - Vacuum level up to 28"Hg, flow up to 3.50 SCFM, with blowoff, multi-port options</p>  <p>Page 19</p>	<p><b>NVP20</b> Mid Series - Vacuum level up to 28"Hg, flow up to 3.50 SCFM, with blowoff, multi-port, air saver options</p>  <p>Page 27</p>	<p><b>NVP50</b> Mid Series - Vacuum level up to 28"Hg, flow up to 3.50 SCFM, with blowoff, air saver options</p>  <p>Page 37</p>	<p><b>NRTM</b> Mid Series - Vacuum level up to 28"Hg, flow up to 3.50 SCFM, Direct replacement for multi-stage</p>  <p>Page 42</p>
<p><b>NVP80</b> Max Series Vacuum level up to 28"Hg, flow up to 9.50 SCFM</p>  <p>Page 46</p>	<p><b>NVP90</b> Max Series Vacuum level up to 28"Hg, flow up to 28.00 SCFM</p>  <p>Page 58</p>	<p><b>NHVP</b> High Vac Series Vacuum level up to 29.5"Hg, flow up to 6.00 SCFM</p>  <p>Page 68</p>		

# NVP00

- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Operating Temperature**  
-30° to ~250° F (-34° to 121°C)

**Materials**  
Pump Body: Anodized Aluminum

**Supply line**  
Min. 5/32" (4mm)

**Vacuum line**  
1/4" (6mm)

**Mounting holes**  
Mounting holes accept 4-40 [M3] screws

**Control valve**  
3 way/2 position (faster part release), minimum orifice – 0.062" [1.57mm]

**Performance level designations**  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP00)  
Pneumatic blow-off (NVPOX)



## Standard Models

## Accessories

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP00-60M-S04A00	20"Hg	0.5 SCFM	0.5 SCFM	NST2 Silencer
NVP00-60H-S04A00	28"Hg	0.5 SCFM	0.8 SCFM	NST2 Silencer

## Option selector

NVP★00-60★-S★A★

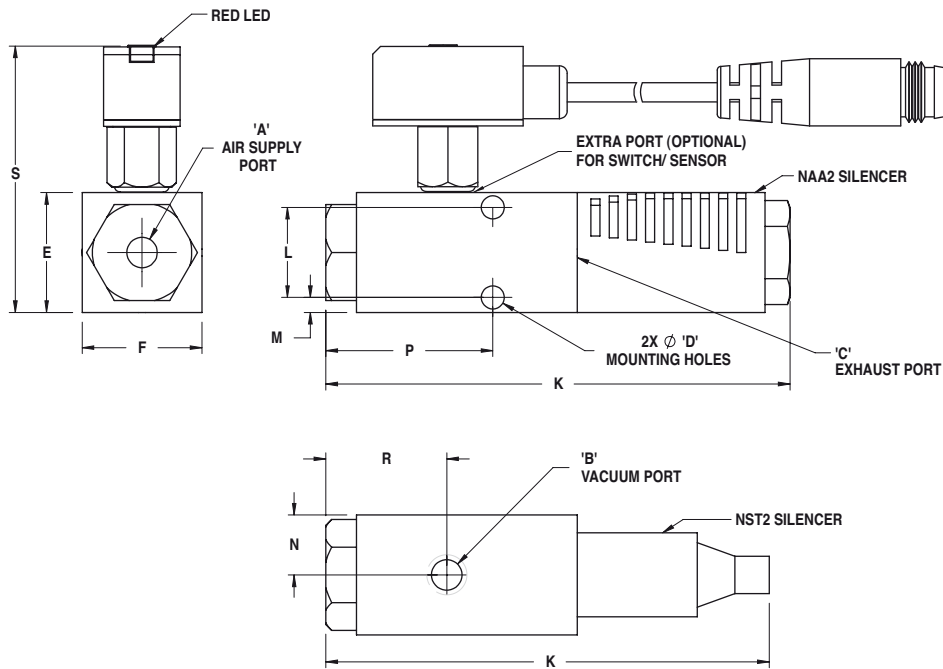
Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories (standard)	A00
NVPM (Metric Thread)	M	Extra Port if Available / NVTMV-QD-6	A02
<b>Vacuum Flow Level</b>	<b>Substitute</b>	Extra Port if Available / NVSMN-QD-6	A04
20"Hg @ 80PSI (Standard)	M	Extra Port if Available / NVSMP-QD-6	A06
28"Hg @ 80PSI (Standard)	H	<b>Silencers</b>	<b>Substitute</b>
20"Hg @ 60PSI	Y	None	S00
28"Hg @ 60PSI	Z	NAA2 (58dB)	S01
		NST2 (68dB)	S04

● Accessories

Standard Models	Silencer	Inline Fitting	Elbow Fitting	Vacuum Fitting	Bellows Cup	Flat Cup	Spring Leveler
<b>NVP00-60M-S04A00</b>	NST2	124250210	124470210	NVCF1-1032M	NVCD-***	NVC-***	NVSL1_***
<b>NVP00-60H-S04A00</b>	NST2	124250210	124470210	NVCF1-1032M	NVCD-***	NVC-***	NVSL1_***

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	K	L	M	N	P	R	S
<b>NVP00-60*-S01A0*</b>	Imperial	10-32	10-32	1/8 NPTF	0.12	0.62	0.62	2.42	0.47	0.08	0.31	0.89	0.63	1.36
<b>NVP00-60*-S04A0*</b>	Imperial	10-32	10-32	1/8 NPTF	0.12	0.62	0.62	2.35	0.47	0.08	0.31	0.89	0.63	1.36
<b>NVPM00-60*-S01A0*</b>	(Metric)	(M5)	(M5)	(G 1/8)	(3.00)	(15.75)	(15.75)	(61.47)	(11.94)	(2.03)	(7.87)	(22.60)	(16.00)	(34.53)
<b>NVPM00-60*-S04A0*</b>	(Metric)	(M5)	(M5)	(G 1/8)	(3.00)	(15.75)	(15.75)	(59.69)	(11.94)	(2.03)	(7.87)	(22.60)	(16.00)	(34.53)

# NVPOX

Pneumatic Blow-off

- All in one vacuum and blow-off - only compressed air required
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Operating temperature**  
-30° to ~250° F (-34° to 121°C)

**Materials**  
Pump Body: Anodized Aluminum

**Pump options**  
B1 adjustable version allows the user to set the intensity of the blow-off from no blow-off to full blow-off

**Cycle rates**  
Up to 900/min

**Blow-off response time**  
Instantaneous

**Blow-off Duration**  
100 milliseconds (based on system design)

**Orientation**  
Any

**Supply line**  
Min. 5/32" (4mm)

**Vacuum line**  
1/4" (6mm)

**Mounting holes**  
Mounting holes accept 4-40 [M3] screws

**Control valve**  
3 way/2 position (faster part release), minimum orifice – 0.093" [2.5mm]

**Performance level designations**  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVPO0)  
Pneumatic blow-off (NVPOX)



## Standard Models

## Accessories

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVPOX-60M-S04A00	20"Hg	0.5 SCFM	0.5 SCFM	NST2 Silencer
NVPOX-60H-S04A00	28"Hg	0.5 SCFM	0.8 SCFM	NST2 Silencer

## Option selector

NVP★OX★★-60★-S★★A★★

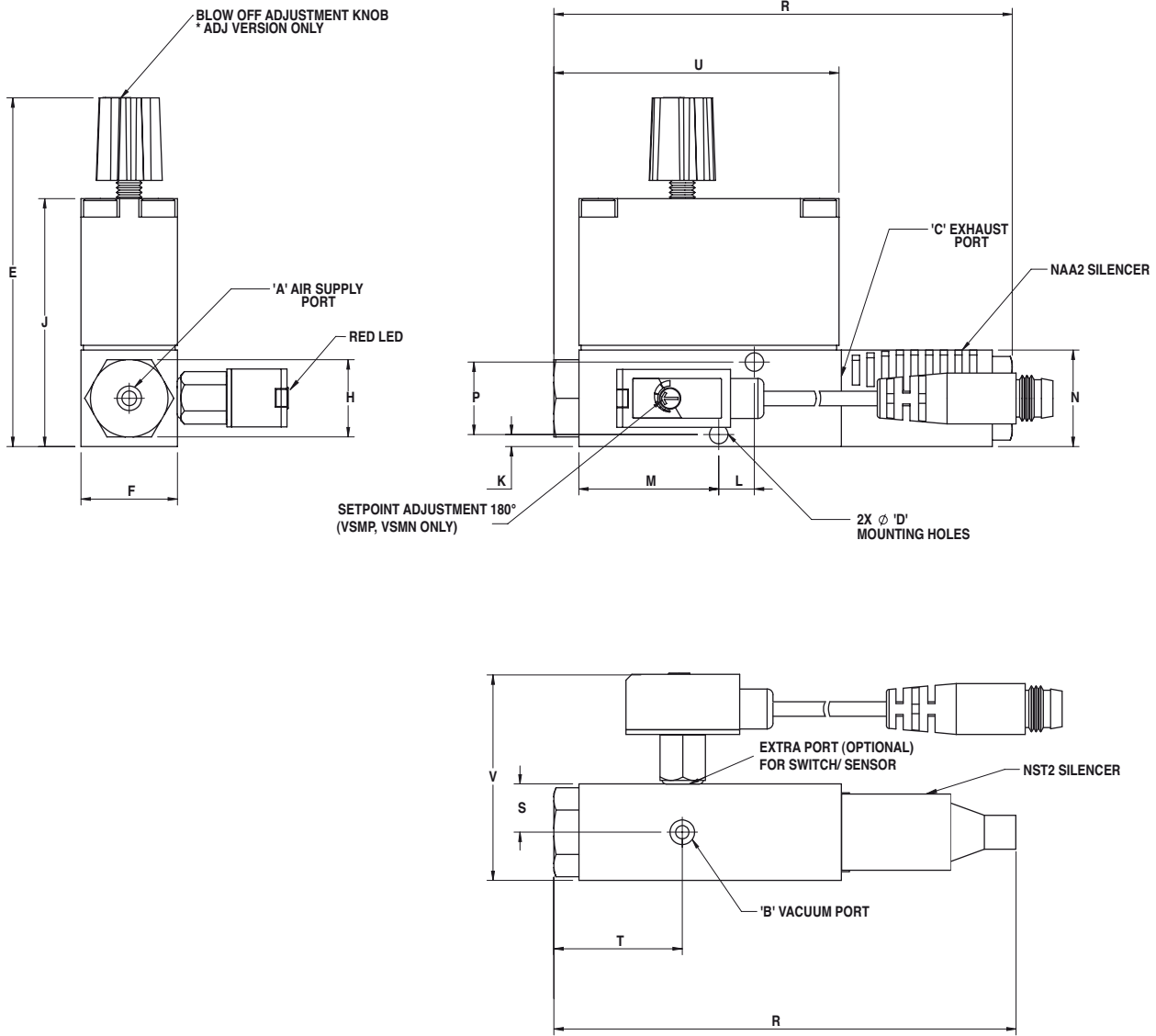
Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories (standard)	A00
NVPM (Metric Thread)	M	Extra Port if Available / NVTMV-QD-6	A02
<b>Blowoff</b>	<b>Substitute</b>	Extra Port if Available / NVSMN-QD-6	A04
Non-adjustable (Standard)	B0	Extra Port if Available / NVSMP-QD-6	A06
Adjustable	B1		
<b>Vacuum Level</b>	<b>Substitute</b>	<b>Silencers</b>	<b>Substitute</b>
20"Hg @ 80PSI (Standard)	M	None	S00
28"Hg @ 80PSI (Standard)	H	NAA2 (58dB)	S01
		NST2 (68dB)	S04



# NVPOX

Pneumatic Blow-off

## ● Dimensions inches (mm)

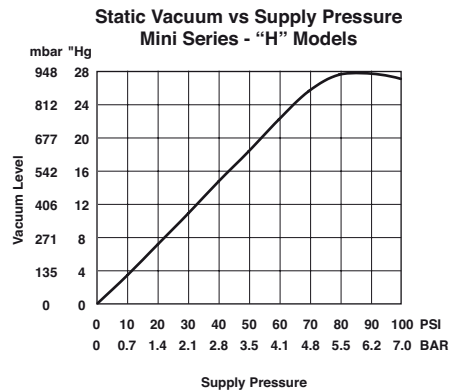
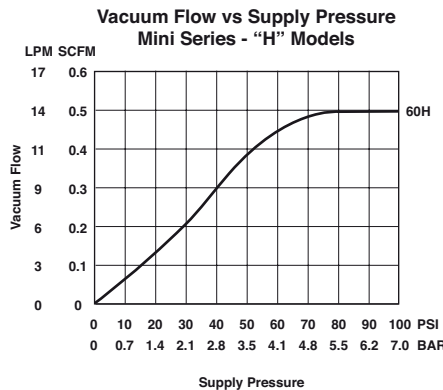
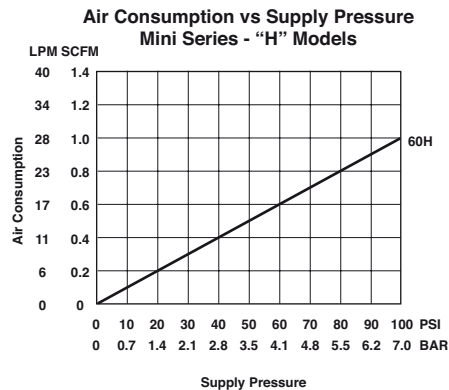
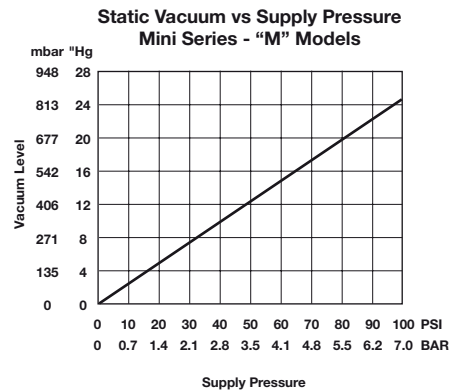
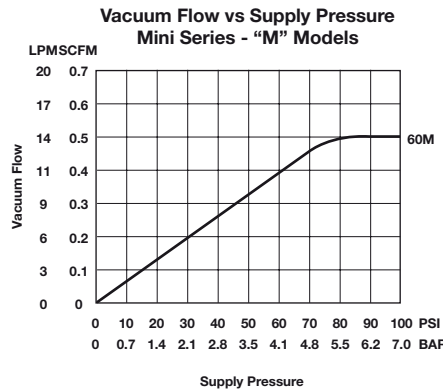
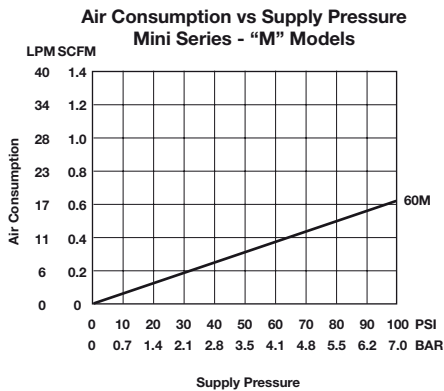


Model	Units	A	B	C	D	E*	F	J	K	L	M	N	P	R	S	T	U	V
NVPOXB0-60*-S01A0*	Imperial	10-32	10-32	1/8 NPTF	0.12	2.26	0.63	1.61	0.078	0.23	0.91	0.63	0.47	2.97	0.31	0.83	1.85	1.36
NVPOXB0-60*-S04A0*	Imperial	10-32	10-32	1/8 NPTF	0.12	2.26	0.63	1.61	0.078	0.23	0.91	0.63	0.47	2.90	0.31	0.83	1.85	1.36
NVPMOXB0-60*-S01A0*	(Metric)	(M5)	(M5)	(G 1/8)	(3.00)	(57.40)	(16.00)	(40.89)	(1.98)	(5.84)	(23.11)	(15.88)	(11.91)	(75.44)	(7.87)	(21.08)	(46.99)	(34.53)
NVPMOXB0-60*-S04A0*	(Metric)	(M5)	(M5)	(G 1/8)	(3.00)	(57.40)	(16.00)	(40.89)	(1.98)	(5.84)	(23.11)	(15.88)	(11.91)	(73.66)	(7.87)	(21.08)	(46.99)	(34.53)

● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
60M	0.50 (14.16)	Vacuum Flow	0.50	0.40	0.30	0.22	0.15	0.08	0.03	0.00	-	-	-	-
		SCFM (L/min)	(14.20)	(11.30)	(8.50)	(6.20)	(4.20)	(2.30)	(0.80)	(0.00)	(-)	(-)	(-)	(-)
		Evacuation time (seconds)	0.00 (0.00)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227 (8.00)	(-)	(-)	(-)	(-)
60H	0.80 (22.70)	Vacuum Flow	0.50	0.38	0.32	0.30	0.27	0.23	0.20	-	0.13	0.05	0.02	0.00
		SCFM (L/min)	(14.20)	(10.80)	(9.10)	(8.50)	(7.60)	(6.50)	(5.70)	(-)	(3.70)	(1.40)	(0.60)	(0.00)
		Evacuation time (seconds)	0.00 (0.00)	15.00 (0.50)	29.80 (1.10)	50.60 (1.80)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	(-)	182.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NVP10

- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid:**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-30° to ~250° F (-34° to ~121°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum  
Silencer Body: Nylon

**Supply/Vacuum Line**  
1/4" OD for sizes 60 and 90  
3/8" OD for sizes 100 and 150

**Mounting Holes**  
Mounting holes accept 4-40 [M3] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP10)  
Pneumatic blow-off (NVP1X)  
Multi-port (NVP10M0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP10-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer
NVP10-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer
NVP10-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer
NVP10-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer
NVP10-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer
NVP10-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer

## Accessories

## Option selector

**NVP★10-★★★★-S★★A★★**

Series	Substitute
NVP (Imperial Thread)	
NVPM (Metric Thread)	<b>M</b>

Vacuum Flow Level	Substitute
Venturi Cartridge 60	<b>60</b>
Venturi Cartridge 90	<b>90</b>
Venturi Cartridge 100	<b>100</b>
Venturi Cartridge 150	<b>150</b>

Vacuum Level	Substitute
10"Hg @ 80PSI (Standard)	<b>L</b>
20"Hg @ 80PSI (Standard)	<b>M</b>
28"Hg @ 80PSI (Standard)	<b>H</b>
10"Hg @ 60PSI	<b>X</b>
20"Hg @ 60PSI	<b>Y</b>
28"Hg @ 60PSI	<b>Z</b>

Accessories	Substitute
Extra Port if Available / No Accessories	<b>A00</b>
Extra Port if Available / NVTMV-QD-6	<b>A02</b>
Extra Port if Available / NVSMN-QD-6	<b>A04</b>
Extra Port if Available / NVSMP-QD-6	<b>A06</b>

Silencers	Substitute
None	<b>S00</b>
NAA4 (62dB)	<b>S02</b>
NST4 (68dB)	<b>S05</b>
NSTAA4 (58dB)	<b>S12</b>

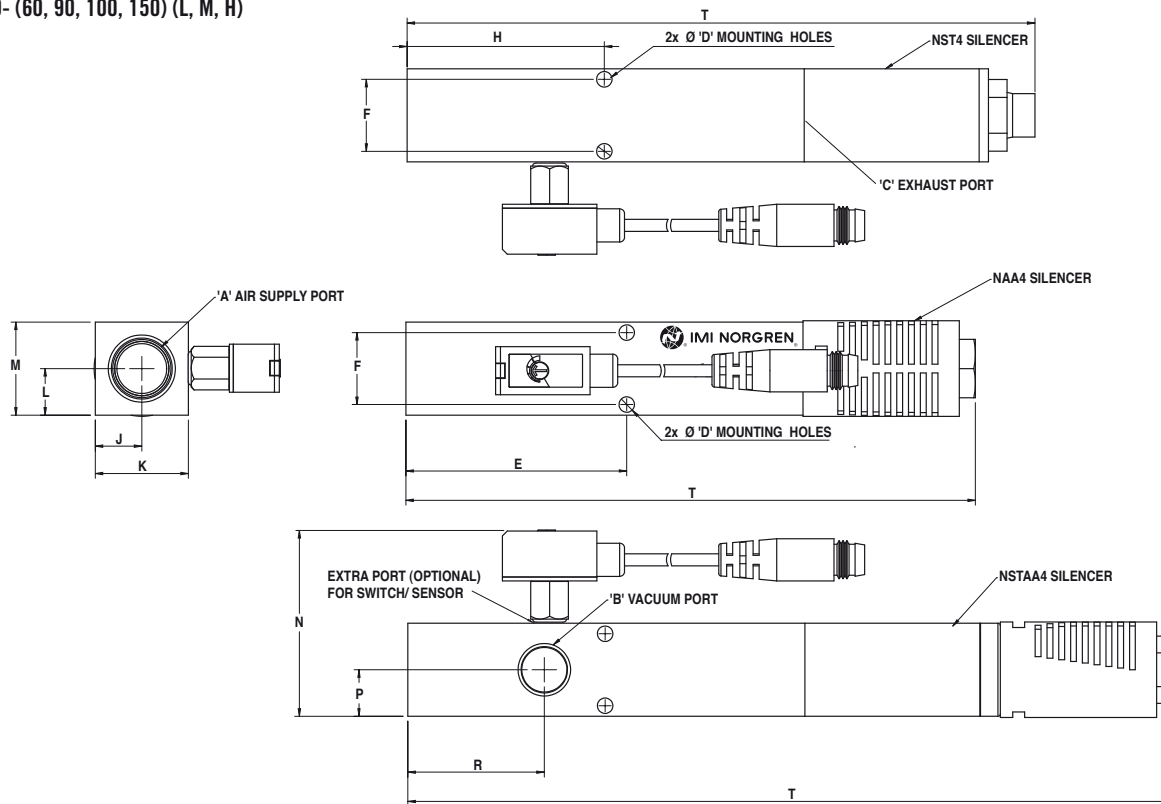
● Accessories

Model	Silencer	Inline Fitting	Swivel Elbow	Vacuum Fitting	Bellows Cup	Flat Cup	Spring Leveler
NVP10-90M-S05A00	NST4	124250428	124470428	NVCF45-18M	NVCD-***	NVC-***	NVSL2-***
NVP10-90H-S05A00	NST4	124250428	124470428	NVCF45-18M	NVCD-***	NVC-***	NVSL2-***
NVP10-100M-S05A00	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL2-***
NVP10-100H-S05A00	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL2-***
NVP10-150M-S05A00	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL2-***
NVP10-150H-S05A00	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL2-***

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory

● Dimensions inches (mm)

NVP10- (60, 90, 100, 150) (L, M, H)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T
NVP10-***-A0*S02	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	1.78	0.58	1.59	0.38	0.75	0.38	0.75	1.48	0.38	1.10	4.59
NVP10-***-A0*S05	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	1.78	0.58	1.59	0.38	0.75	0.38	0.75	1.48	0.38	1.10	5.06
NVP10-***-A0*S12	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	1.78	0.58	1.59	0.38	0.75	0.38	0.75	1.48	0.38	1.10	6.17
NVPM10-***-A0*S02	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.05)	(45.21)	(14.73)	(40.39)	9.53	(19.05)	(9.53)	(19.05)	(37.60)	(9.53)	(27.94)	(116.59)
NVPM10-***-A0*S05	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.05)	(45.21)	(14.73)	(40.39)	9.53	(19.05)	(9.53)	(19.05)	(37.60)	(9.53)	(27.94)	(128.52)
NVPM10-***-A0*S12	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.05)	(45.21)	(14.73)	(40.39)	9.53	(19.05)	(9.53)	(19.05)	(37.60)	(9.53)	(27.94)	(156.59)

# NVP1X

Pneumatic Blow-off

- All in one vacuum and blow-off - only compressed air required
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
32° to ~125° F (0° to ~52°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Pump Options**  
B1 adjustable version allows the user to set the intensity of the blow-off from no blow-off to full blow-off

**Cycle Rates**  
Up to 120/min

**Blow-off Response Time**  
Instantaneous

**Blow-off Duration**  
100 milliseconds (based on system design)

**Orientation**  
Any

**Supply / Vacuum Line**  
1/4" OD for sizes 60 and 90  
3/8" OD for sizes 100 and 150

**Mounting Holes**  
Mounting holes accept 4-40 [M3] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP10)  
Pneumatic blow-off (NVP1X)  
Multi-port (NVP10M0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer	Blowoff
NVP1XB0-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer	Non-Adjustable
NVP1XB0-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer	Non-Adjustable
NVP1XB0-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer	Non-Adjustable
NVP1XB0-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer	Non-Adjustable
NVP1XB0-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer	Non-Adjustable
NVP1XB0-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer	Non-Adjustable

## Accessories

## Option selector

Series	Substitute	NVP★1XB★-★★★★-S★★A★★		Accessories	Substitute
NVP (Imperial Thread)				Extra Port if Available / No Accessories	A00
NVPM (Metric Thread)	M			Extra Port if Available / NVTMV-QD-6	A02
<b>Blowoff</b>	<b>Substitute</b>			Extra Port if Available / NVSMN-QD-6	A04
Non-adjustable (Standard)	B0			Extra Port if Available / NVSMP-QD-6	A06
Adjustable	B1			<b>Silencers</b>	<b>Substitute</b>
<b>Vacuum Flow Level</b>	<b>Substitute</b>			None	S00
Venturi Cartridge 60	60			NAA4 (62dB)	S02
Venturi Cartridge 90	90			NST4 (68dB)	S05
Venturi Cartridge 100	100			NSTAA4 (58dB)	S12
Venturi Cartridge 150	150				
<b>Vacuum Level</b>	<b>Substitute</b>				
10"Hg @ 80PSI (Standard)	L				
20"Hg @ 80PSI (Standard)	M				
28"Hg @ 80PSI (Standard)	H				
10"Hg @ 60PSI	X				
20"Hg @ 60PSI	Y				
28"Hg @ 60PSI	Z				

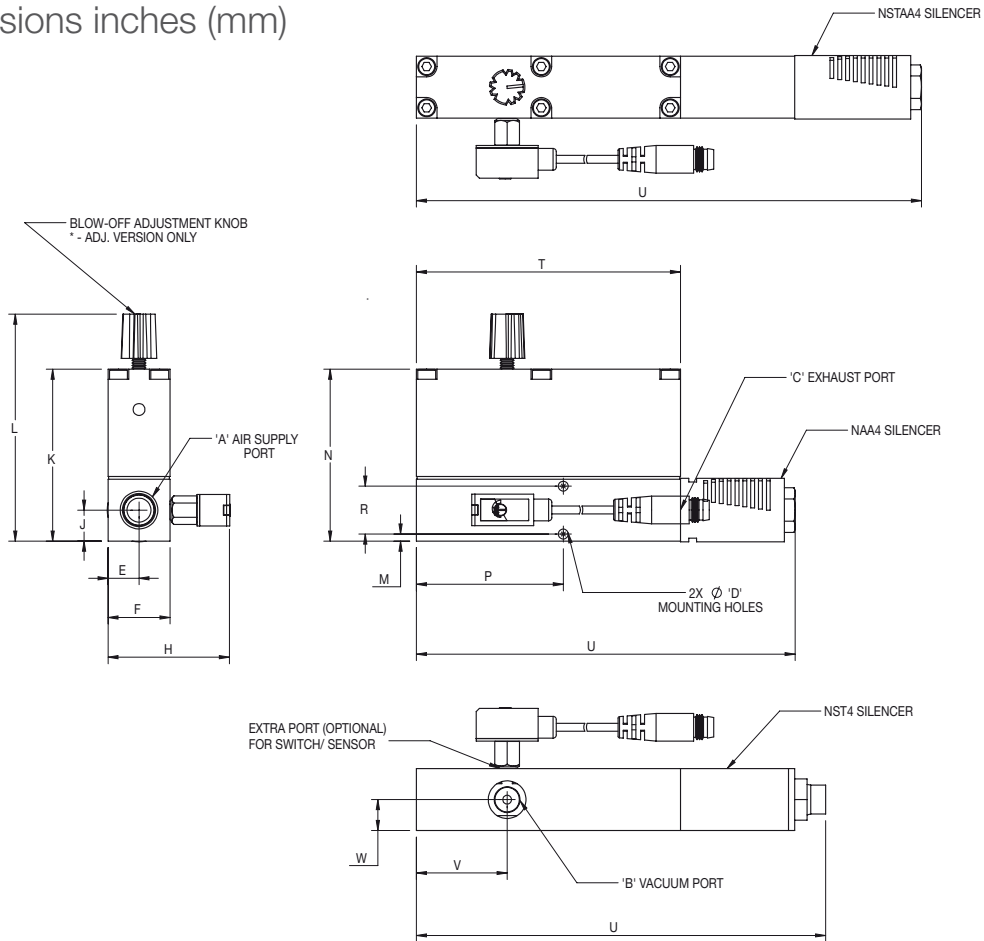
**NVP1X**  
Pneumatic Blow-off

● Accessories

Model	Silencer	Inline Fitting	Swivel Elbow	Vacuum Fitting	Bellows Cup	Flat Cup	Spring Leveler
<b>NVP1XB0-90M-S05A00</b>	NST4	124250428	124470428	NVCF45-18M	NVCD-***	NVC-***	NVSL3-***
<b>NVP1XB0-90H-S05A00</b>	NST4	124250428	124470428	NVCF45-18M	NVCD-***	NVC-***	NVSL3-***
<b>NVP1XB0-100M-S05A00</b>	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL3-***
<b>NVP1XB0-100H-S05A00</b>	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL3-***
<b>NVP1XB0-150M-S05A00</b>	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL3-***
<b>NVP1XB0-150H-S05A00</b>	NST4	124250628	124470628	NVCF45-18M	NVCD-***	NVC-***	NVSL3-***

\*Proper selection of vacuum cups depends on the application. Cups are available in various diameters, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T	U	V	W
<b>NVP1XB0-***-S02A00</b>	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	0.38	0.75	1.49	0.38	2.08	2.75	0.09	2.08	1.78	0.58	3.20	6.18	1.10	0.38
<b>NVP1XB0-***-S05A00</b>	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	0.38	0.75	1.49	0.38	2.08	2.75	0.09	2.08	1.78	0.58	3.20	4.60	1.10	0.38
<b>NVP1XB0-***-S12A00</b>	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	0.38	0.75	1.49	0.38	2.08	2.75	0.09	2.08	1.78	0.58	3.20	5.06	1.10	0.38
<b>NVPM1XB0-***-S02A00</b>	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.05)	(9.65)	(19.05)	(37.82)	(9.53)	(52.83)	(69.85)	(2.29)	(52.83)	(45.21)	(14.73)	(81.28)	(156.97)	(27.94)	(9.53)
<b>NVPM1XB0-***-S05A00</b>	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.05)	(9.65)	(19.05)	(37.82)	(9.53)	(52.83)	(69.85)	(2.29)	(52.83)	(45.21)	(14.73)	(81.28)	(116.84)	(27.94)	(9.53)
<b>NVPM1XB0-***-S12A00</b>	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.05)	(9.65)	(19.05)	(37.82)	(9.53)	(52.83)	(69.85)	(2.29)	(52.83)	(45.21)	(14.73)	(81.28)	(128.52)	(27.94)	(9.53)

# NVP10M0

Multi-Port

- Multi-port version - distribute vacuum to multiple locations
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-30° to ~250° F (-34° to ~121°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply / Vacuum Line**  
1/4" OD for sizes 60 and 90  
3/8" OD for sizes 100 and 150

**Mounting Holes**  
Mounting holes accept 4-40 [M3] screws

**Control Valve** 3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP10)  
Pneumatic blow-off (NVP1X)  
Multi-port (NVP10M0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP10M0-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer
NVP10M0-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer
NVP10M0-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer
NVP10M0-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer
NVP10M0-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer
NVP10M0-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer

## Accessories

## Option selector

NVP★10M0-★★★★-S★★A★★

Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	A00
NVPM (Metric Thread)	M	Extra Port if Available / NVTMV-QD-6	A02
<b>Vacuum Flow Level</b>	<b>Substitute</b>	Extra Port if Available / NVSMN-QD-6	A04
Venturi Cartridge 60	60	Extra Port if Available / NVSMP-QD-6	A06
Venturi Cartridge 90	90		
Venturi Cartridge 100	100	<b>Silencers</b>	<b>Substitute</b>
Venturi Cartridge 150	150	None	S00
<b>Vacuum Level</b>	<b>Substitute</b>	NAA4 (62dB)	S02
10"Hg @ 80PSI (Standard)	L	NST4 (68dB)	S05
20"Hg @ 80PSI (Standard)	M	NSTAA4 (58dB)	S12
28"Hg @ 80PSI (Standard)	H		
10"Hg @ 60PSI	X		
20"Hg @ 60PSI	Y		
28"Hg @ 60PSI	Z		

# NVP10M0

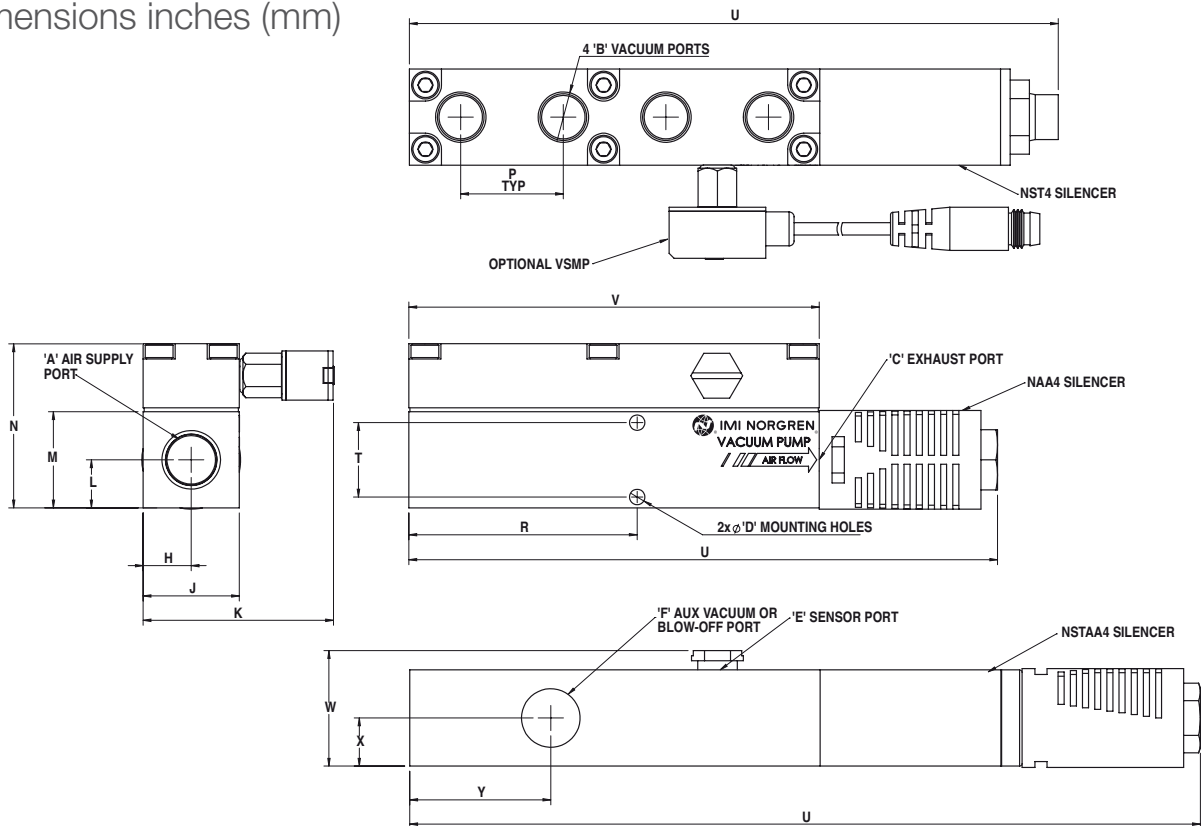
Multi-Port

## Accessories

Model	Silencer	Inline Fitting	Swivel Elbow	Vacuum Fitting
NVP10M0-90M-S05A00	NST4	124250428	124470428	124470418
NVP10M0-90H-S05A00	NST4	124250428	124470428	124470418
NVP10M0-100M-S05A00	NST4	124250628	124470628	124470618
NVP10M0-100H-S05A00	NST4	124250628	124470628	124470618
NVP10M0-150M-S05A00	NST4	124250628	124470628	124470618
NVP10M0-150H-S05A00	NST4	124250628	124470628	124470618

\*Proper selection of vacuum cups depends on the application. Cups are available in various diameters, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

## Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T	U	V	W
NVP10M0-***-S02A00	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.13	10-32	1/8 NPTF	0.38	0.75	1.49	0.38	0.75	1.28	0.80	1.78	0.58	4.59	3.20	0.92
NVP10M0-***-S05A00	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.13	10-32	1/8 NPTF	0.38	0.75	1.49	0.38	0.75	1.28	0.80	1.78	0.58	5.06	3.20	0.92
NVP10M0-***-S12A00	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.13	10-32	1/8 NPTF	0.38	0.75	1.49	0.38	0.75	1.28	0.80	1.78	0.58	6.17	3.20	0.92
NVPM10M0-***-S02A00	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.30)	M5	(G 1/8)	(9.65)	(19.05)	(37.73)	(9.53)	(19.05)	(32.49)	(20.32)	(45.21)	(14.73)	(116.60)	(9.70)	(23.24)
NVPM10M0-***-S05A00	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.30)	M5	(G 1/8)	(9.65)	(19.05)	(37.73)	(9.53)	(19.05)	(32.49)	(20.32)	(45.21)	(14.73)	(128.50)	(9.70)	(23.24)
NVPM10M0-***-S12A00	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.30)	M5	(G 1/8)	(9.65)	(19.05)	(37.73)	(9.53)	(19.05)	(32.49)	(20.32)	(45.21)	(14.73)	(156.59)	(9.70)	(23.24)



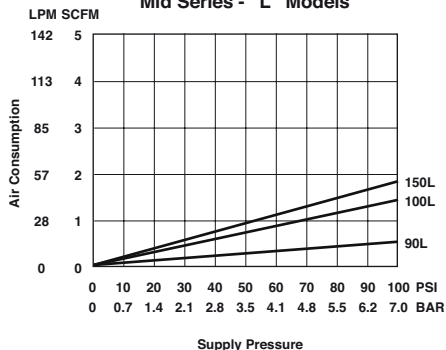
● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
90L	0.50 (14.2)	Vacuum Flow SCFM (L/min)	1.30 (36.80)	1.10 (31.10)	0.70 (19.80)	0.20 (5.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.26 (0.10)	7.93 (0.30)	18.65 (0.70)	39.63 (1.40)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
100L	1.40 (39.6)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	1.60 (45.30)	1.10 (31.10)	0.50 (14.20)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.33 (0.10)	4.66 (0.20)	10.88 (0.40)	24.00 (0.90)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
150L	1.80 (51)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	2.50 (70.80)	1.90 (53.80)	0.70 (19.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.54 (0.10)	4.36 (0.20)	10.77 (0.40)	22.83 (0.80)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
60M	0.50 (14.2)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.40 (11.30)	0.30 (8.50)	0.22 (6.20)	- (-)	0.15 (4.20)	0.08 (2.30)	0.03 (0.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	- (-)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227.00 (8.00)	- (-)	- (-)	- (-)	- (-)
90M	1.40 (39.6)	Vacuum Flow SCFM (L/min)	1.40 (39.60)	1.25 (35.40)	1.20 (34.00)	1.05 (29.70)	- (-)	0.85 (24.10)	0.65 (18.40)	0.25 (7.10)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.75 (0.10)	7.20 (0.30)	12.40 (0.40)	- (-)	19.10 (0.70)	29.90 (1.10)	52.00 (1.80)	104.00 (3.70)	- (-)	- (-)	- (-)	- (-)
100M	1.80 (51)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	- (-)	1.60 (45.30)	1.25 (35.40)	0.80 (22.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.65 (0.10)	5.80 (0.20)	9.90 (0.30)	- (-)	16.20 (0.60)	22.90 (0.80)	36.20 (1.30)	56.60 (2.00)	- (-)	- (-)	- (-)	- (-)
150M	2.80 (79.3)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	3.20 (90.60)	2.95 (83.50)	2.75 (77.90)	- (-)	2.50 (70.80)	1.80 (51.00)	0.95 (26.90)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.35 (0.00)	3.20 (0.10)	5.20 (0.20)	- (-)	7.70 (0.30)	11.80 (0.40)	23.40 (0.80)	52.00 (1.80)	- (-)	- (-)	- (-)	- (-)
60H	0.80 (22.7)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.38 (10.80)	0.32 (9.10)	0.30 (8.50)	- (-)	0.27 (7.60)	0.23 (6.50)	0.20 (5.70)	- (-)	0.13 (3.70)	0.05 (1.40)	0.02 (0.60)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	15.00 (0.50)	29.80 (1.10)	50.60 (1.80)	- (-)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	- (-)	183.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)
90H	1.80 (51)	Vacuum Flow SCFM (L/min)	1.20 (34.00)	1.00 (28.30)	0.95 (26.90)	0.90 (25.50)	- (-)	0.85 (24.10)	0.75 (21.20)	0.70 (19.80)	- (-)	0.52 (14.70)	0.47 (13.30)	0.20 (5.70)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	- (-)	32.50 (1.10)	47.00 (1.70)	65.40 (2.30)	- (-)	92.20 (3.30)	130.00 (4.60)	222.20 (7.80)	281.30 (9.90)
100H	2.80 (79.3)	Vacuum Flow SCFM (L/min)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	1.57 (44.50)	- (-)	1.40 (39.60)	1.25 (35.40)	1.05 (29.70)	- (-)	0.84 (23.80)	0.70 (19.80)	0.35 (9.90)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.70 (0.10)	6.50 (0.20)	11.20 (0.40)	- (-)	17.50 (0.60)	25.80 (0.90)	38.40 (1.40)	- (-)	55.20 (1.90)	79.20 (2.80)	166.70 (5.90)	251.80 (8.90)
150H	4.80 (135.9)	Vacuum Flow SCFM (L/min)	3.20 (90.60)	2.80 (79.30)	2.50 (70.80)	2.30 (65.10)	- (-)	2.00 (56.60)	1.60 (45.30)	1.40 (39.60)	- (-)	1.20 (34.00)	0.80 (22.70)	0.50 (14.20)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.30 (0.10)	3.80 (0.10)	6.50 (0.20)	- (-)	10.20 (0.40)	14.20 (0.50)	21.30 (0.80)	- (-)	44.90 (1.60)	55.00 (1.90)	81.00 (2.90)	125.00 (4.40)

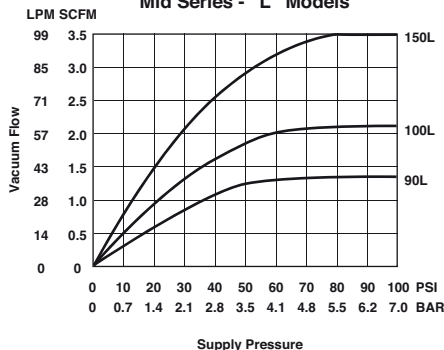
Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)

● Performance Data

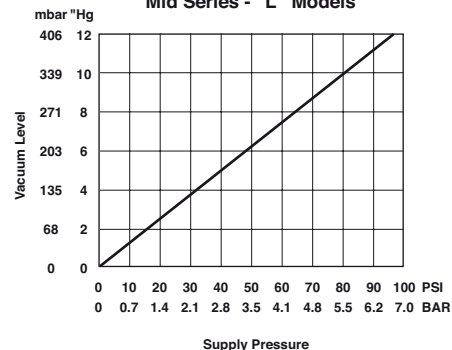
**Air Consumption vs Supply Pressure**  
Mid Series - "L" Models



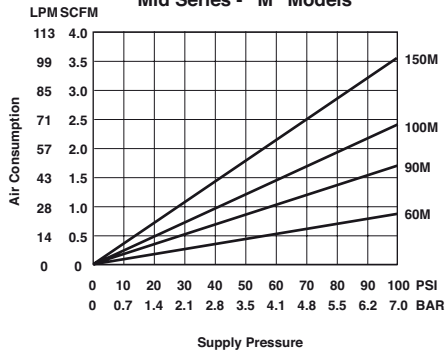
**Vacuum Flow vs Supply Pressure**  
Mid Series - "L" Models



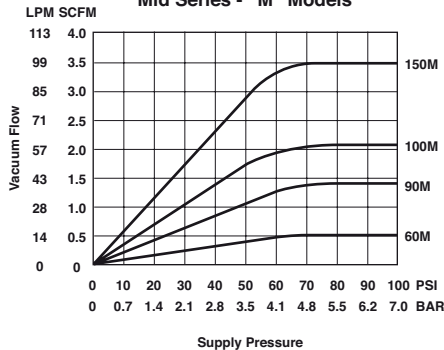
**Static Vacuum vs Supply Pressure**  
Mid Series - "L" Models



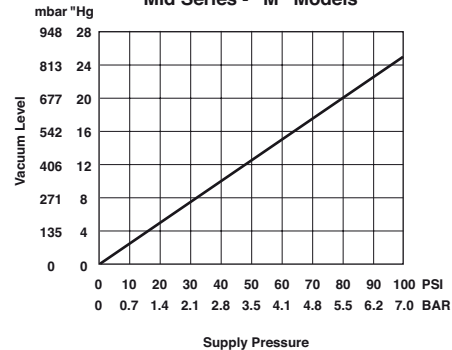
**Air Consumption vs Supply Pressure**  
Mid Series - "M" Models



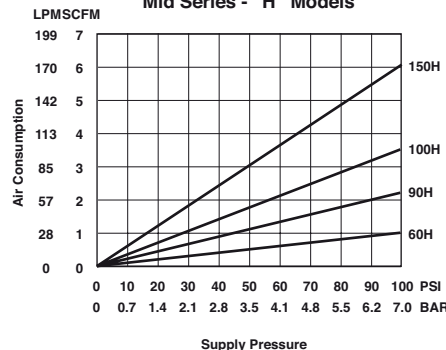
**Vacuum Flow vs Supply Pressure**  
Mid Series - "M" Models



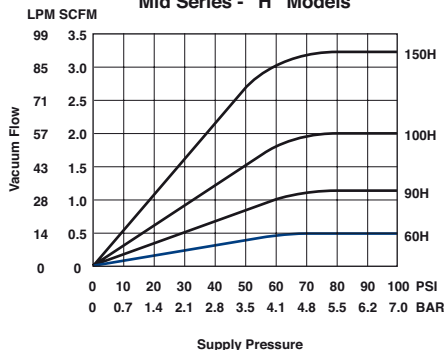
**Static Vacuum vs Supply Pressure**  
Mid Series - "M" Models



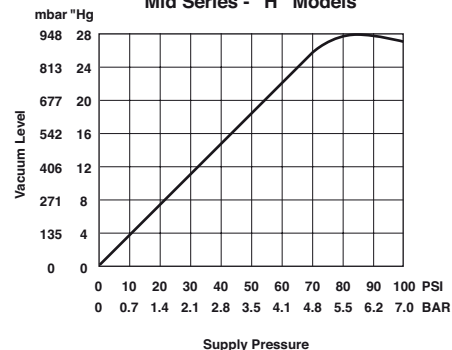
**Air Consumption vs Supply Pressure**  
Mid Series - "H" Models



**Vacuum Flow vs Supply Pressure**  
Mid Series - "H" Models



**Static Vacuum vs Supply Pressure**  
Mid Series - "H" Models



Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NVP20

- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid:**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-30° to ~250° F (-34° to ~121°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply/Vacuum Line**  
1/4" OD for sizes 60 and 90  
3/8" OD for sizes 100 and 150

**Mounting Holes**  
Mounting holes accept 10-32[M5] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP20)  
Pneumatic blow-off (NVP2X)  
Multi-port (NVP20M0)  
Air Saver (NVP20C0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP20-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer
NVP20-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer
NVP20-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer
NVP20-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer
NVP20-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer
NVP20-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer

## Accessories

## Option selector

Series		Substitute		Accessories		Substitute	
NVP (Imperial Thread)				Extra Port if Available / No Accessories			<b>A00</b>
NVPM (Metric Thread)			<b>M</b>	Extra Port if Available / NVTMV-QD-6			<b>A02</b>
				Extra Port if Available / NVSMN-QD-6			<b>A04</b>
				Extra Port if Available / NVSMP-QD-6			<b>A06</b>
Vacuum Flow Level		Substitute		Silencers		Substitute	
Venturi Cartridge 60			<b>60</b>	None			<b>S00</b>
Venturi Cartridge 90			<b>90</b>	NAA4 (62dB)			<b>S02</b>
Venturi Cartridge 100			<b>100</b>	NST4 (68dB)			<b>S05</b>
Venturi Cartridge 150			<b>150</b>	NSTAA4 (58dB)			<b>S12</b>
Vacuum Level		Substitute					
10"Hg @ 80PSI (Standard)			<b>L</b>				
20"Hg @ 80PSI (Standard)			<b>M</b>				
28"Hg @ 80PSI (Standard)			<b>H</b>				
10"Hg @ 60PSI			<b>X</b>				
20"Hg @ 60PSI			<b>Y</b>				
28"Hg @ 60PSI			<b>Z</b>				

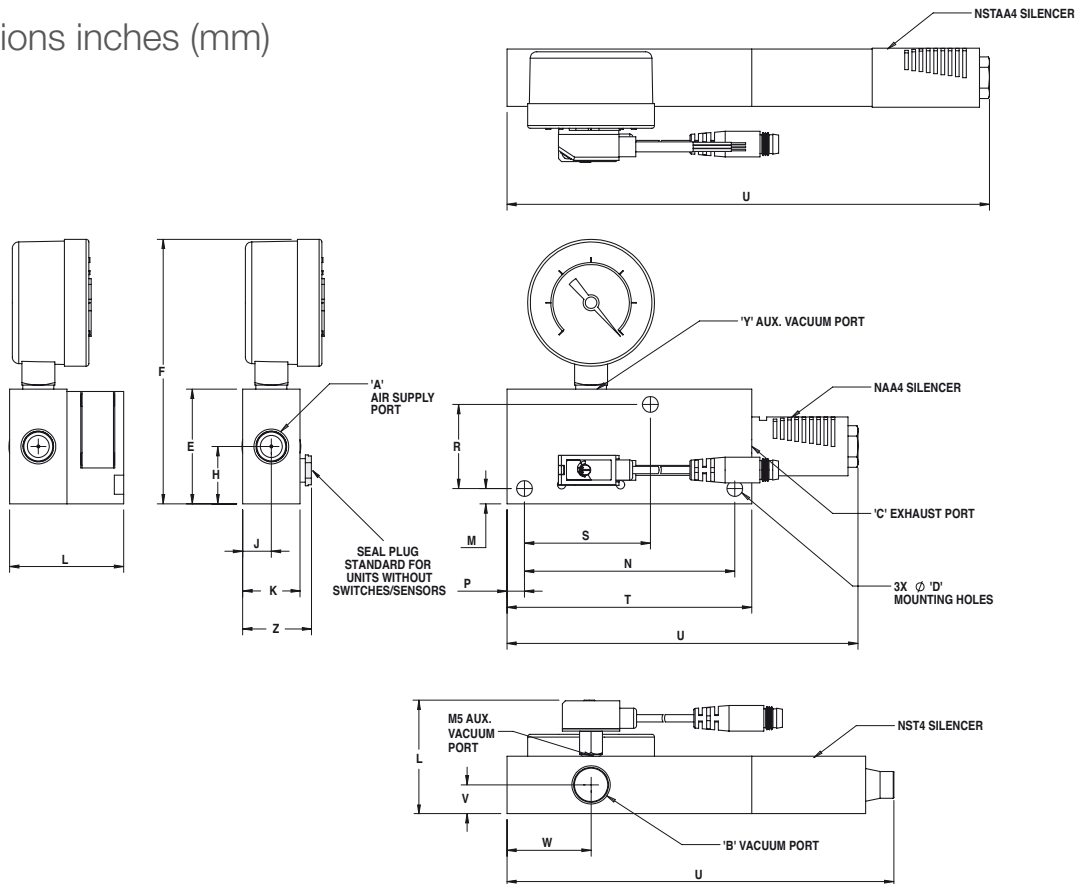
**NVP★20-★★★★-S★★A★★**

● Accessories

Model	Silencer	Inline Fitting	Swivel Elbow	Vacuum Fitting	Bellows Cup	Flat Cup	Spring Leveler
NVP20-90M-S05A00	NST4	124250428	124470428	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP20-90H-S05A00	NST4	124250428	124470428	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP20-100M-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP20-100H-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP20-150M-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP20-150H-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***

\*Proper selection of vacuum cups depends on the application. Cups are available in various diameters, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	Y	Z
NVP20-****-S02A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	1.50	3.46	0.75	0.38	0.75	N/A	0.20	2.75	0.23	1.10	1.65	3.20	4.59	0.38	1.10	1/8 NPTF	0.92
NVP20-****-S05A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	1.50	3.46	0.75	0.38	0.75	N/A	0.20	2.75	0.23	1.10	1.65	3.20	5.06	0.38	1.10	1/8 NPTF	0.92
NVP20-****-S12A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	1.50	3.46	0.75	0.38	0.75	N/A	0.20	2.75	0.23	1.10	1.65	3.20	6.31	0.38	1.10	1/8 NPTF	0.92
NVP20-****-S**A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	1.50	3.46	0.75	0.38	0.75	1.49	0.20	2.75	0.23	1.10	1.65	3.20	N/A	0.38	1.10	1/8 NPTF	N/A
NVPM20-****-S02A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(38.1)	(87.88)	(19.05)	(9.53)	(19.05)	N/A	(5.08)	(69.85)	(5.84)	(27.94)	(41.91)	(81.82)	(116.59)	(9.53)	(27.94)	(G 1/8)	(23.24)
NVPM20-****-S05A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(38.1)	(87.88)	(19.05)	(9.53)	(19.05)	N/A	(5.08)	(69.85)	(5.84)	(27.94)	(41.91)	(81.82)	(128.52)	(9.53)	(27.94)	(G 1/8)	(23.24)
NVPM20-****-S12A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(38.1)	(87.88)	(19.05)	(9.53)	(19.05)	N/A	(5.08)	(69.85)	(5.84)	(27.94)	(41.91)	(81.82)	(160.27)	(9.53)	(27.94)	(G 1/8)	(23.24)
NVPM20-****-S**A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(38.1)	(87.88)	(19.05)	(9.53)	(19.05)	(37.85)	(5.08)	(69.85)	(5.84)	(27.94)	(41.91)	(81.82)	N/A	(9.53)	(27.94)	(G 1/8)	N/A

# NVP2X

Pneumatic Blow-off

- All in one vacuum and blow-off - only compressed air required
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid:**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
32° to ~125° F (0° to ~52°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Pump Options**  
B1 adjustable version allows the user to set the intensity of the blow-off from no blow-off to full blow-off

**Cycle Rates**  
Up to 120/min

**Blow-off Response Time**  
Instantaneous

**Blow-off Duration**  
100 milliseconds (based on system design)

**Orientation**  
Any

**Supply/Vacuum Line**  
1/4" OD for sizes 60 and 90  
3/8" OD for sizes 100 and 150

**Mounting Holes**  
Mounting holes accept 10-32 [M5] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP20)  
Pneumatic blow-off (NVP2X)  
Multi-port (NVP20M0)  
Air Saver (NVP20C0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer	Blowoff
NVP2XB0-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer	Non-Adjustable
NVP2XB0-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer	Non-Adjustable
NVP2XB0-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer	Non-Adjustable
NVP2XB0-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer	Non-Adjustable
NVP2XB0-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer	Non-Adjustable
NVP2XB0-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer	Non-Adjustable

## Accessories

## Option selector

**NVP★2XB★-★ ★ ★ ★-S★ ★ A★ ★**

Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	<b>A00</b>
NVPM (Metric Thread)	<b>M</b>	Extra Port if Available / NVTMV-QD-6	<b>A02</b>
<b>Blowoff</b>	<b>Substitute</b>	Extra Port if Available / NVSMN-QD-6	<b>A04</b>
Non-adjustable (Standard)	<b>B0</b>	Extra Port if Available / NVSMP-QD-6	<b>A06</b>
Adjustable	<b>B1</b>		
<b>Vacuum Flow Level</b>	<b>Substitute</b>	<b>Silencers</b>	<b>Substitute</b>
Venturi Cartridge 60	<b>60</b>	None	<b>S00</b>
Venturi Cartridge 90	<b>90</b>	NAA4 (62dB)	<b>S02</b>
Venturi Cartridge 100	<b>100</b>	NST4 (68dB)	<b>S05</b>
Venturi Cartridge 150	<b>150</b>	NSTAA4 (58dB)	<b>S12</b>
<b>Vacuum Level</b>	<b>Substitute</b>		
10"Hg @ 80PSI (Standard)	<b>L</b>		
20"Hg @ 80PSI (Standard)	<b>M</b>		
28"Hg @ 80PSI (Standard)	<b>H</b>		
10"Hg @ 60PSI	<b>X</b>		
20"Hg @ 60PSI	<b>Y</b>		
28"Hg @ 60PSI	<b>Z</b>		



For further information, visit [www.imi-precision.com](http://www.imi-precision.com) and use the new improved search function. If you cannot see the option you require please contact us.



# NVP2X

Pneumatic Blow-off

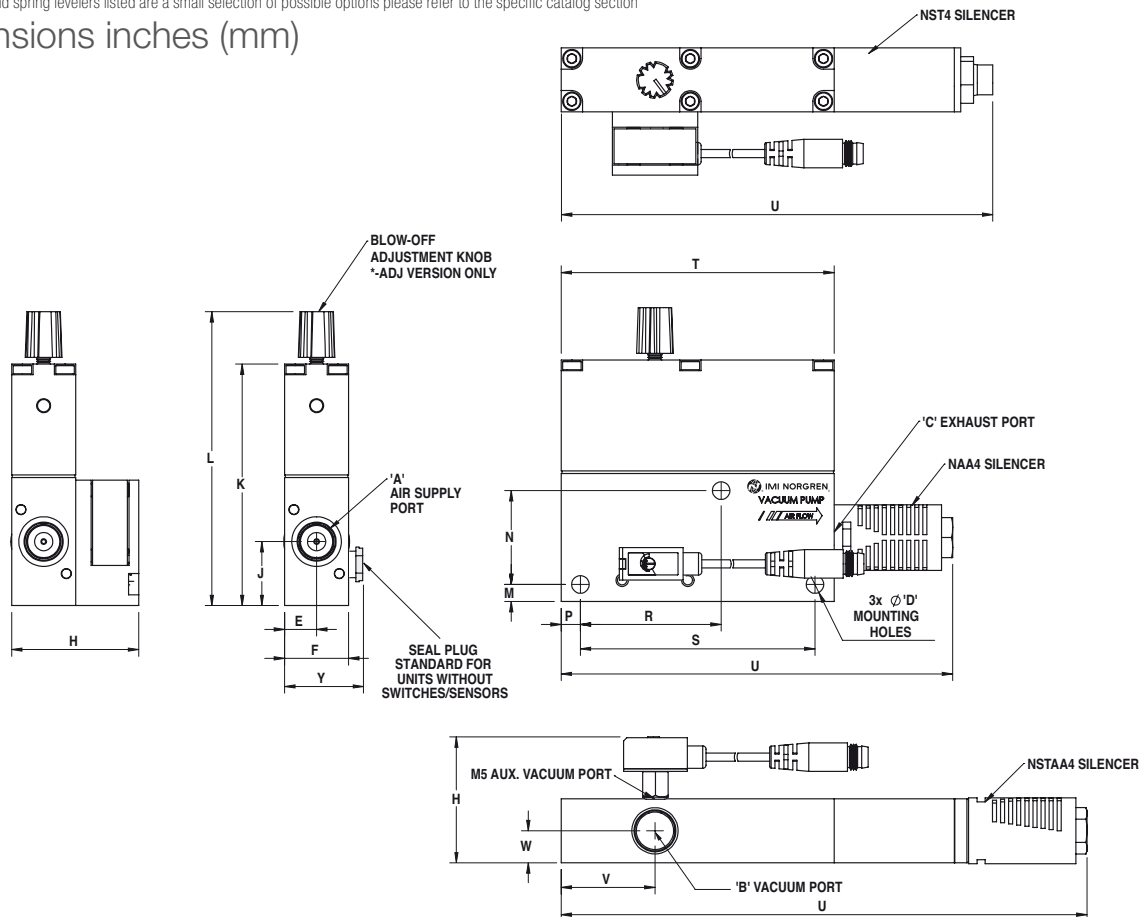
## Accessories

Model	Silencer	Inline Fitting	Swivel Elbow	Vacuum Fitting	Bellows Cup	Flat Cup	Spring Leveler
NVP2X-90M-S05A00	NST4	124250428	124470428	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP2X-90H-S05A00	NST4	124250428	124470428	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP2X-100M-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP2X-100H-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP2X-150M-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP2X-150H-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory

\*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

## Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	Y
NVP2XB0-****-S02A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	0.38	0.75	N/A	0.75	2.83	3.49	0.20	1.10	0.23	1.65	2.75	3.20	4.59	1.10	0.375	0.92
NVP2XB0-****-S05A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	0.38	0.75	N/A	0.75	2.83	3.49	0.20	1.10	0.23	1.65	2.75	3.20	5.06	1.10	0.375	0.92
NVP2XB0-****-S12A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	0.38	0.75	N/A	0.75	2.83	3.49	0.20	1.10	0.23	1.65	2.75	3.20	6.31	1.10	0.375	0.92
NVP2XB0-****-S**A0*	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	0.38	0.75	1.49	0.75	2.83	3.49	0.20	1.10	0.23	1.65	2.75	3.20	N/A	1.10	0.375	N/A
NVPM2XB0-****-S02A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(9.65)	(19.05)	N/A	(19.05)	(71.88)	(88.65)	(5.08)	(27.94)	(5.84)	(41.91)	(69.85)	(81.82)	(116.59)	(27.94)	(9.53)	(23.24)
NVPM2XB0-****-S05A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(9.65)	(19.05)	N/A	(19.05)	(71.88)	(88.65)	(5.08)	(27.94)	(5.84)	(41.91)	(69.85)	(81.82)	(128.52)	(27.94)	(9.53)	(23.24)
NVPM2XB0-****-S12A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(9.65)	(19.05)	N/A	(19.05)	(71.88)	(88.65)	(5.08)	(27.94)	(5.84)	(41.91)	(69.85)	(81.82)	(160.27)	(27.94)	(9.53)	(23.24)
NVPM2XB0-****-S**A0*	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(9.65)	(19.05)	(37.85)	(19.05)	(71.88)	(88.65)	(5.08)	(27.94)	(5.84)	(41.91)	(69.85)	(81.82)	N/A	(27.94)	(9.53)	N/A

# NVP20M0

Multi-Port

- Multi-port version - distribute vacuum to multiple locations
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid:**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-30° to ~250° F (-34° to ~121°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply/Vacuum Line**  
1/4" OD for sizes 60 and 90  
3/8" OD for sizes 100 and 150

**Mounting Holes**  
Mounting holes accept 10-32 [M5] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

## Performance Level Designations

"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications vacuum/high flow applications

**Product options**  
Standard (NVP20)  
Pneumatic blow-off (NVP2X)  
Multi-port (NVP20M0)  
Air Saver (NVP20C0)



## Standard Models

## Accessories

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP10M0-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer
NVP10M0-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer
NVP10M0-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer
NVP10M0-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer
NVP10M0-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer
NVP10M0-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer

## Option selector

NVP★20M0-★★★★-S★★A★★

Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	A00
NVPM (Metric Thread)	M	Extra Port if Available / NVTMV-QD-6	A02
<b>Vacuum Flow Level</b>	<b>Substitute</b>	Extra Port if Available / NVSMN-QD-6	A04
Venturi Cartridge 60	60	Extra Port if Available / NVSMP-QD-6	A06
Venturi Cartridge 90	90		
Venturi Cartridge 100	100		
Venturi Cartridge 150	150		
<b>Vacuum Level</b>	<b>Substitute</b>	<b>Silencers</b>	<b>Substitute</b>
10"Hg @ 80PSI (Standard)	L	None	S00
20"Hg @ 80PSI (Standard)	M	NAA4 (62dB)	S02
28"Hg @ 80PSI (Standard)	H	NST4 (68dB)	S05
10"Hg @ 60PSI	X	NSTAA4 (58dB)	S12
20"Hg @ 60PSI	Y		
28"Hg @ 60PSI	Z		

# NVP20M0

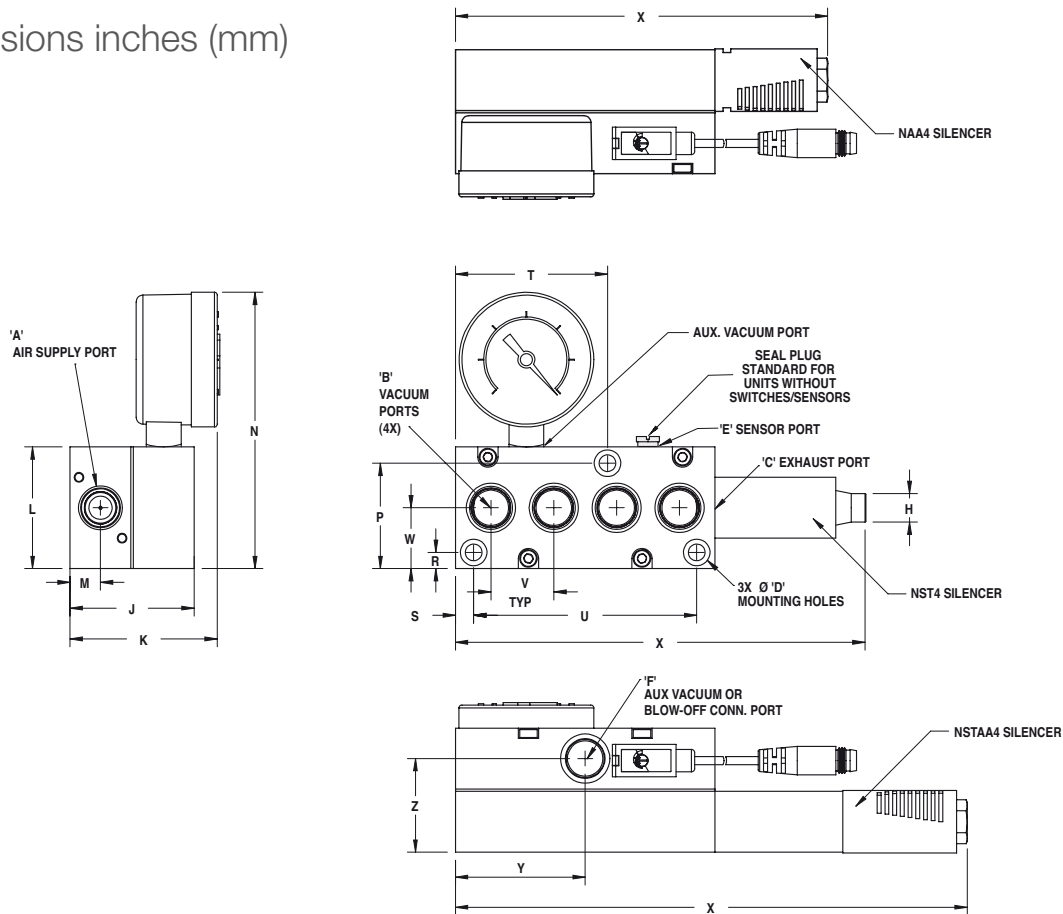
## Multi-Port

### Accessories

Model	Silencer	Inline Fitting	Pneuffit Swivel Male Elbow	Pneuffit Swivel Male Elbow
NVP20M0-90M-S05A00	NST4	124250428	124470428	124470428
NVP20M0-90H-S05A00	NST4	124250428	124470428	124470428
NVP20M0-100M-S05A00	NST4	124250628	124470628	124470628
NVP20M0-100H-S05A00	NST4	124250628	124470628	124470628
NVP20M0-150M-S05A00	NST4	124250628	124470628	124470628
NVP20M0-150H-S05A00	NST4	124250628	124470628	124470628

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

### Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
NVP20M0-***-S02A00	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	10-32	1/4 NPTF	N/A	1.53	1.82	1.50	0.38	3.40	1.30	0.20	0.23	1.90	2.75	0.78	0.75	4.59	1.60	1.16
NVP20M0-***-S05A00	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	10-32	1/4 NPTF	0.35	1.53	1.82	1.50	0.38	3.40	1.30	0.20	0.23	1.90	2.75	0.78	0.75	5.05	1.60	1.16
NVP20M0-***-S12A00	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	10-32	1/4 NPTF	N/A	1.53	1.82	1.50	0.38	3.40	1.30	0.20	0.23	1.90	2.75	0.78	0.75	6.31	1.60	1.16
NVPM20M0-***-S02A00	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.30)	(M5)	(G 1/4)	N/A	(38.90)	(46.20)	(38.10)	(9.70)	(86.40)	(33.00)	(5.10)	(5.80)	(48.20)	(69.90)	(19.80)	(19.10)	(116.60)	(40.60)	(29.50)
NVPM20M0-***-S05A00	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.30)	(M5)	(G 1/4)	(8.90)	(38.90)	(46.20)	(38.10)	(9.70)	(86.40)	(33.00)	(5.10)	(5.80)	(48.20)	(69.90)	(19.80)	(19.10)	(128.30)	(40.60)	(29.50)
NVPM20M0-***-S12A00	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.30)	(M5)	(G 1/4)	N/A	(38.90)	(46.20)	(38.10)	(9.70)	(86.40)	(33.00)	(5.10)	(5.80)	(48.20)	(69.90)	(19.80)	(19.10)	(160.30)	(40.60)	(29.50)



# NVP20C0

Air Saver

- Energy efficient – compressed air on only when needed, automatic shut-off
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid:**  
Filtered (100 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-30° to ~250° F (-34° to ~121°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply/Vacuum Line**  
1/4" OD for sizes 60 and 90  
3/8" OD for sizes 100 and 150

**Mounting Holes**  
Mounting holes accept 10-32 [M5] screws

**Performance Level Designations**  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

### Pump Selection

1. Determine the desired evacuation time (speed)
2. Calculate the total volume of air to be evacuated in the system including vacuum lines, vessel/cavity size, cups, etc.
3. Determine the desired vacuum level, "Hg/mbar Application ex.: Evacuate 2 cu.ft. of air in 1 minute (60 sec) at a vacuum level of 21"Hg  
Formula: Time (60 sec)/Cu. ft (2) = 30 seconds per cu. ft. (evacuation speed)

### Product options

- Standard (NVP20)
- Pneumatic blow-off (NVP2X)
- Multi-port (NVP20M0)
- Air Saver (NVP20C0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP20C0-60M-S02A00	20"Hg	0.50 SCFM	0.50 SCFM	NAA4 Silencer
NVP20C0-60H-S02A00	28"Hg	0.50 SCFM	0.80 SCFM	NAA4 Silencer
NVP20C0-90M-S02A00	20"Hg	1.40 SCFM	1.40 SCFM	NAA4 Silencer
NVP20C0-90H-S02A00	28"Hg	1.20 SCFM	1.80 SCFM	NAA4 Silencer
NVP20C0-100M-S02A00	20"Hg	2.10 SCFM	1.80 SCFM	NAA4 Silencer
NVP20C0-100H-S02A00	28"Hg	2.00 SCFM	2.80 SCFM	NAA4 Silencer
NVP20C0-150M-S02A00	20"Hg	3.50 SCFM	2.80 SCFM	NAA4 Silencer
NVP20C0-150H-S02A00	28"Hg	3.80 SCFM	4.80 SCFM	NAA4 Silencer

## Accessories

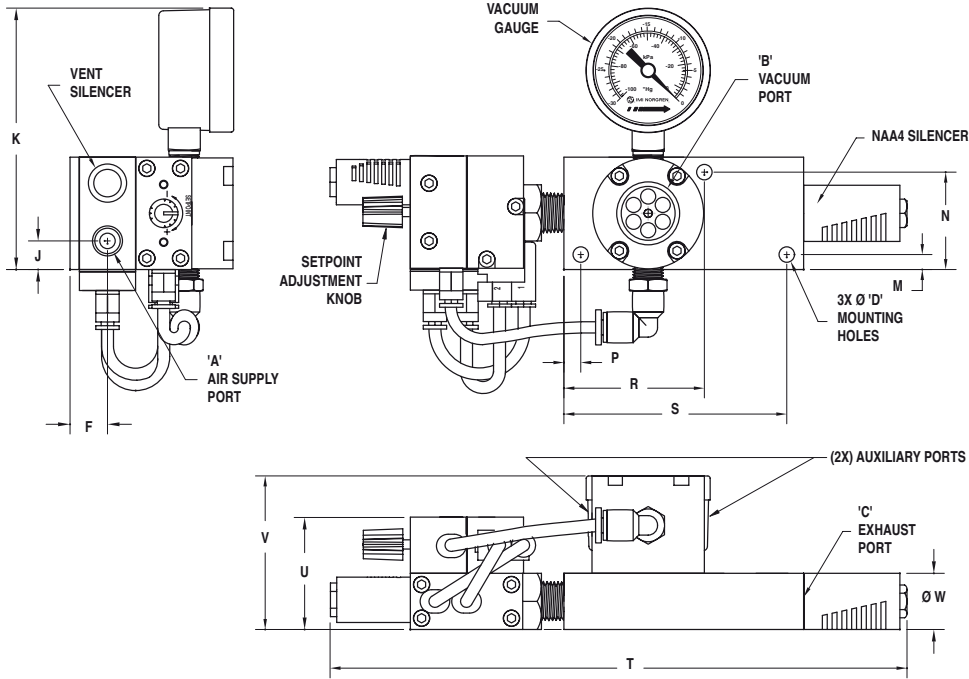
## Option selector

Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	A00
NVPM (Metric Thread)	M		
Vacuum Flow Level	Substitute	Silencers	Substitute
Venturi Cartridge 60	60	None	S00
Venturi Cartridge 90	90	NAA4 (62dB)	S02
Venturi Cartridge 100	100		
Venturi Cartridge 150	150		
Vacuum Level	Substitute		
20"Hg @ 80PSI (Standard)	M		
28"Hg @ 80PSI (Standard)	H		
20"Hg @ 60PSI	Y		
28"Hg @ 60PSI	Z		

**NVP★20C0-★★★★-S★★A★★**

**NVP20C0**  
Air Saver

● Dimensions inches (mm)



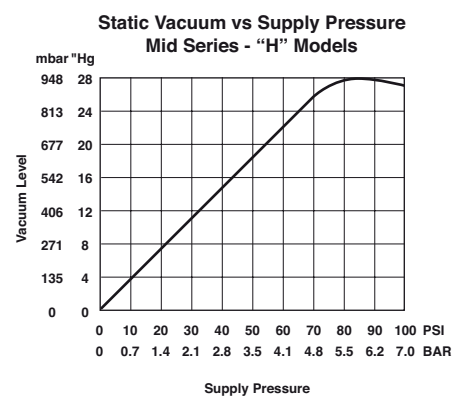
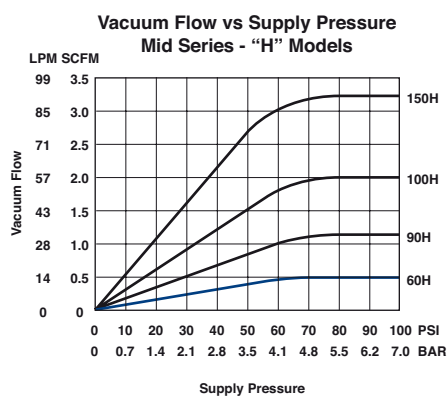
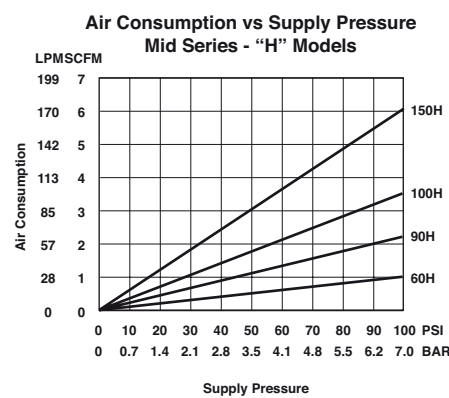
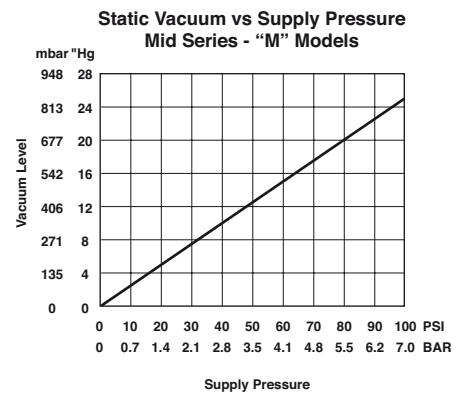
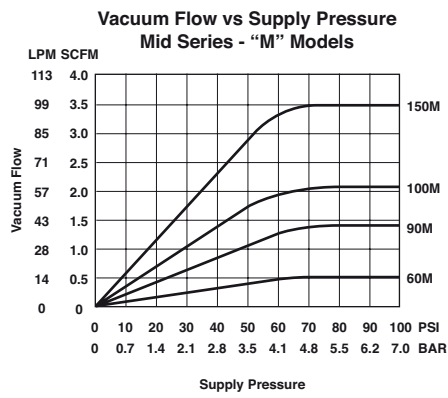
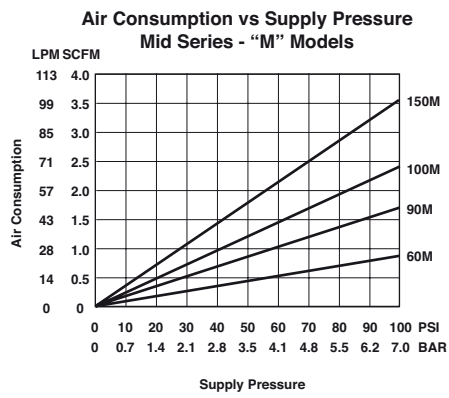
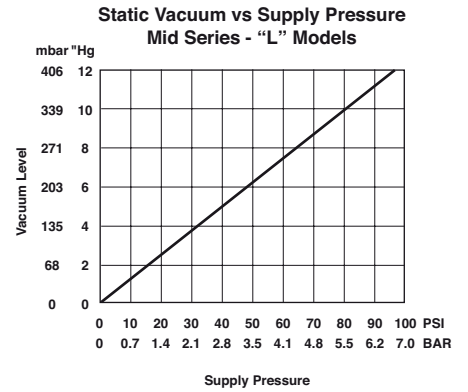
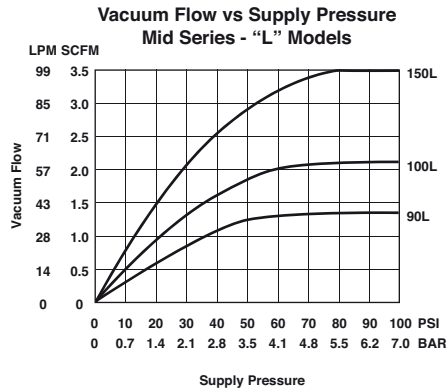
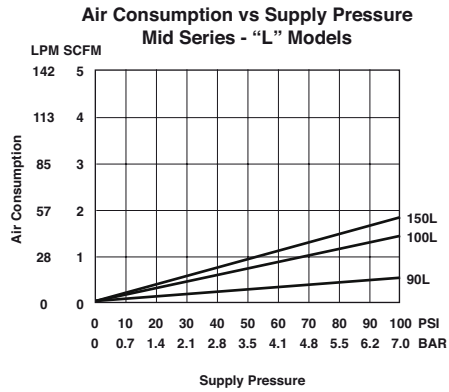
Models	Units	A	B	C	D	E	F	J	K	M	N	P	R	S	T	U	V	W
NVP20C0-***-S02A00	Imperial	1/8 NPTF	1/2 NPTF	1/4 NPTF	0.21	1/8 NPTF	0.375	0.34	3.87	0.20	1.30	0.23	1.88	2.95	7.53	1.47	2.20	0.75
NVPM20C0-***-S02A00	(Metric)	(G 1/8)	(G 1/2)	(G 1/4)	(5.20)	(G 1/8)	(9.5)	(8.60)	(98.30)	(5.10)	(33.00)	(5.70)	(47.60)	(74.90)	(191.30)	(37.30)	(55.90)	(19.10)

● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
90L	0.50 (14.2)	Vacuum Flow SCFM (L/min)	1.30 (36.80)	1.10 (31.10)	0.70 (19.80)	0.20 (5.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.26 (0.10)	7.93 (0.30)	18.65 (0.70)	39.63 (1.40)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
100L	1.40 (39.6)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	1.60 (45.30)	1.10 (31.10)	0.50 (14.20)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.33 (0.10)	4.66 (0.20)	10.88 (0.40)	24.00 (0.90)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
150L	1.80 (51)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	2.50 (70.80)	1.90 (53.80)	0.70 (19.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.54 (0.10)	4.36 (0.20)	10.77 (0.40)	22.83 (0.80)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
60M	0.50 (14.2)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.40 (11.30)	0.30 (8.50)	0.22 (6.20)	- (-)	0.15 (4.20)	0.08 (2.30)	0.03 (0.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	- (-)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227.00 (8.00)	- (-)	- (-)	- (-)	- (-)
90M	1.40 (39.6)	Vacuum Flow SCFM (L/min)	1.40 (39.60)	1.25 (35.40)	1.20 (34.00)	1.05 (29.70)	- (-)	0.85 (24.10)	0.65 (18.40)	0.25 (7.10)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.75 (0.10)	7.20 (0.30)	12.40 (0.40)	- (-)	19.10 (0.70)	29.90 (1.10)	52.00 (1.80)	104.00 (3.70)	- (-)	- (-)	- (-)	- (-)
100M	1.80 (51)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	- (-)	1.60 (45.30)	1.25 (35.40)	0.80 (22.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.65 (0.10)	5.80 (0.20)	9.90 (0.30)	- (-)	16.20 (0.60)	22.90 (0.80)	36.20 (1.30)	56.60 (2.00)	- (-)	- (-)	- (-)	- (-)
150M	2.80 (79.3)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	3.20 (90.60)	2.95 (83.50)	2.75 (77.90)	- (-)	2.50 (70.80)	1.80 (51.00)	0.95 (26.90)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.35 (0.00)	3.20 (0.10)	5.20 (0.20)	- (-)	7.70 (0.30)	11.80 (0.40)	23.40 (0.80)	52.00 (1.80)	- (-)	- (-)	- (-)	- (-)
60H	0.80 (22.7)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.38 (10.80)	0.32 (9.10)	0.30 (8.50)	- (-)	0.27 (7.60)	0.23 (6.50)	0.20 (5.70)	- (-)	0.13 (3.70)	0.05 (1.40)	0.02 (0.60)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	15.00 (0.50)	29.80 (1.10)	50.60 (1.80)	- (-)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	- (-)	183.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)
90H	1.80 (51)	Vacuum Flow SCFM (L/min)	1.20 (34.00)	1.00 (28.30)	0.95 (26.90)	0.90 (25.50)	- (-)	0.85 (24.10)	0.75 (21.20)	0.70 (19.80)	- (-)	0.52 (14.70)	0.47 (13.30)	0.20 (5.70)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	- (-)	32.50 (1.10)	47.00 (1.70)	65.40 (2.30)	- (-)	92.20 (3.30)	130.00 (4.60)	222.20 (7.80)	281.30 (9.90)
100H	2.80 (79.3)	Vacuum Flow SCFM (L/min)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	1.57 (44.50)	- (-)	1.40 (39.60)	1.25 (35.40)	1.05 (29.70)	- (-)	0.84 (23.80)	0.70 (19.80)	0.35 (9.90)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.70 (0.10)	6.50 (0.20)	11.20 (0.40)	- (-)	17.50 (0.60)	25.80 (0.90)	38.40 (1.40)	- (-)	55.20 (1.90)	79.20 (2.80)	166.70 (5.90)	251.80 (8.90)
150H	4.80 (135.9)	Vacuum Flow SCFM (L/min)	3.20 (90.60)	2.80 (79.30)	2.50 (70.80)	2.30 (65.10)	- (-)	2.00 (56.60)	1.60 (45.30)	1.40 (39.60)	- (-)	1.20 (34.00)	0.80 (22.70)	0.50 (14.20)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.30 (0.10)	3.80 (0.10)	6.50 (0.20)	- (-)	10.20 (0.40)	14.20 (0.50)	21.30 (0.80)	- (-)	44.90 (1.60)	55.00 (1.90)	81.00 (2.90)	125.00 (4.40)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)

● Performance Data



Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NVP50

- Integral check valve and air pilot controlled blowoff for rapid part release or vacuum line clean out
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-23° to ~122° F (-5° to ~50°C)

**Operating Pressure**  
80 PSI (5.5 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply Line**  
1/4" OD (6mm) tube recommended

**Vacuum Line**  
3/8" OD (10mm) tube recommended

**Pilot Line**  
5/32" OD (4mm) tube recommended

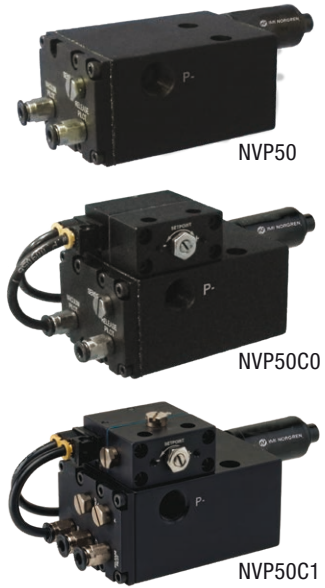
**Mounting Holes**  
0.201" diameter

## Performance Level Designations

"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

## Models

There are three versions of the NVP50 Series available:  
NVP50 – Air pilot vacuum control and blow-off.  
NVP50C0 – Integrated air saver circuit, for reduced air consumption and pilot controlled blow-off.  
NVP50C1 – Air pilot controlled vacuum with integrated air saver circuit, and pilot controlled blow-off. The NVP50-ASP, also, has a pneumatic signal output for vacuum setpoint notification.



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP50-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer
NVP50-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer
NVP50-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer
NVP50-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer
NVP50-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer
NVP50-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer

## Accessories

## Option selector

Series		Substitute		Accessories		Substitute	
NVP (Imperial Thread)				Extra Port if Available / No Accessories			A00
NVPM (Metric Thread)			M				
Blowoff		Substitute		Silencers		Substitute	
None (standard)				None			S00
Air Saver			C0	NST4 (68dB)			S05
Air Saver w/ Full Pilot Control			C1				
Vacuum Flow Level		Substitute					
Venturi Cartridge 60			60				
Venturi Cartridge 90			90				
Venturi Cartridge 100			100				
Venturi Cartridge 150			150				
Vacuum Level		Substitute					
10"Hg @ 80PSI (Standard)			L*				
20"Hg @ 80PSI (Standard)			M				
28"Hg @ 80PSI (Standard)			H				

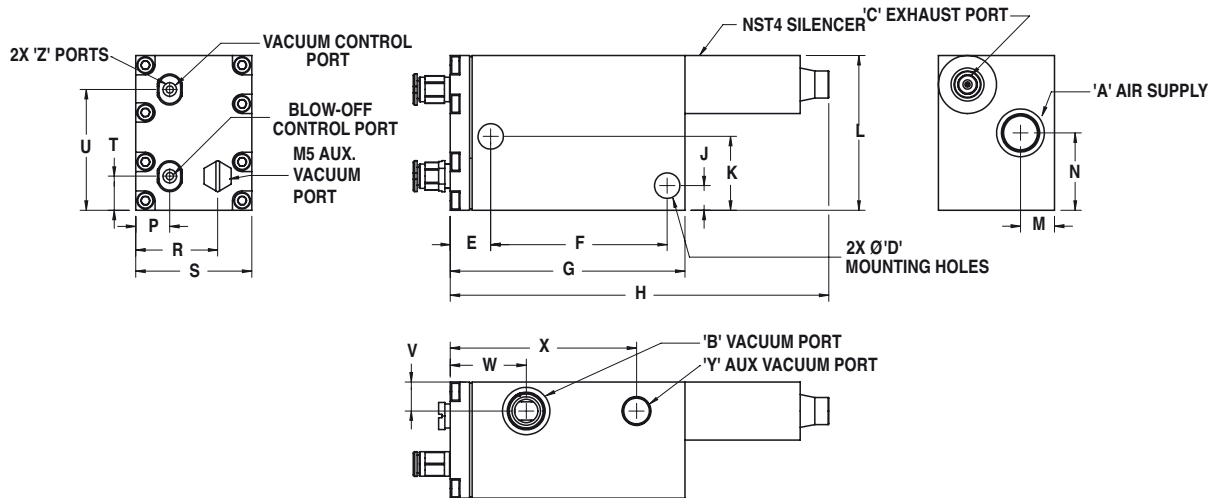
\* Not available in 60 series

● Accessories

Model	Silencer	Inline Fitting	Swivel Elbow	Vacuum Fitting	Bellows Cup	Flat Cup	Spring Leveler
NVP50-90M-S05A00	NST4	124250428	124470428	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP50-90H-S05A00	NST4	124250428	124470428	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP50-100M-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP50-100H-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP50-150M-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***
NVP50-150H-S05A00	NST4	124250628	124470628	NVCF45-14M	NVCD-***	NVC-***	NVSL3-***

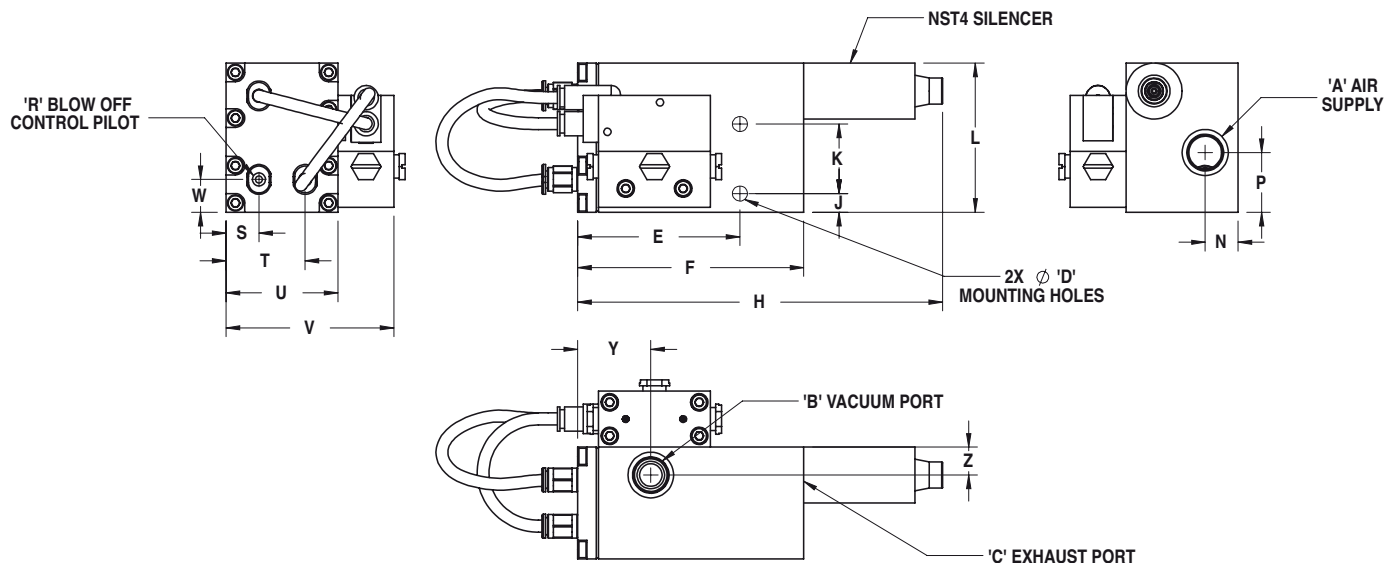
\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)

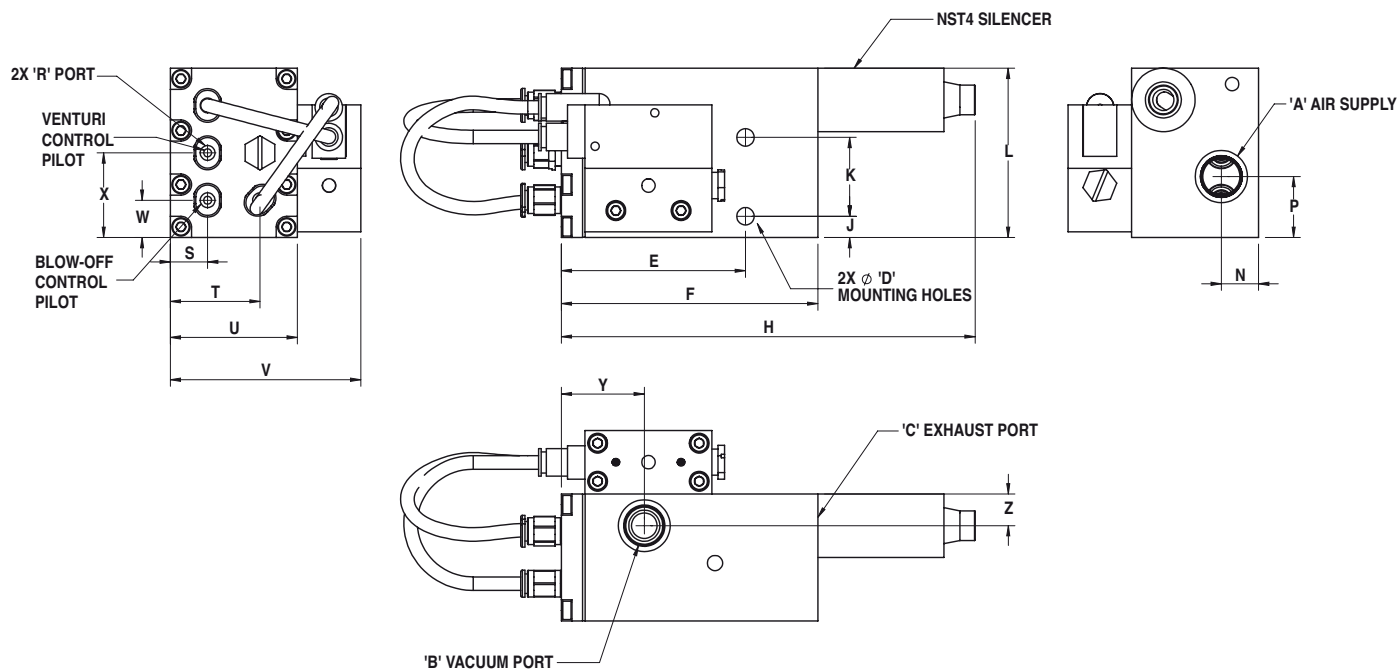


Model	Units	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
NVP50-****-S05A00	Imperial	1/4	1/4	1/4	0.21	0.52	2.28	3.03	4.89	0.25	0.95	2.00	0.44	1.00	0.44	1.06	1.50	0.44	1.56	0.38	0.98	2.41	1/8	5/32
		NPTF	NPTF	NPTF																			NPTF	
NVPM50-****-S05A00	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(13.21)	(57.91)	(76.96)	(124.21)	(6.35)	(24.23)	(50.80)	(11.18)	(25.40)	(11.18)	M3	(38.10)	(11.18)	(39.62)	(9.65)	(24.89)	(61.11)	(G 1/8)	(M3)

● Dimensions inches (mm)



Models	Units	A	B	C	D	E	F	H	J	K	L	N	P	R	S	T	U	V	W	Y	Z
NVP50C0-****-S05A00	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	2.18	3.03	4.89	0.25	0.93	2.00	0.44	0.72	5/32	0.44	1.06	1.50	2.25	0.44	0.98	0.38
NVPM50C0-****-S05A00	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(55.37)	(76.96)	(124.21)	(6.35)	(23.62)	(50.80)	(11.18)	(18.29)	M3	(11.18)	(26.92)	(38.10)	(57.15)	(11.18)	(24.89)	(9.53)



Model	Units	A	B	C	D	E	F	H	J	K	L	N	P	R	S	T	U	V	W	X	Y	Z
NVP50C1-****-S05A00	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	2.18	3.03	4.89	0.25	0.93	2.00	0.44	0.72	5/32	0.44	1.06	1.50	2.25	0.44	1.00	0.98	0.38
NVPM50C1-****-S05A00	(Metric)	(G 1/4)	(G 1/4)	(G 1/4)	(5.33)	(55.37)	(76.96)	(124.21)	(6.35)	(23.62)	(50.80)	(11.18)	(18.29)	(M3)	(11.18)	(26.92)	(38.10)	(57.15)	(11.18)	(25.40)	(24.89)	(9.53)

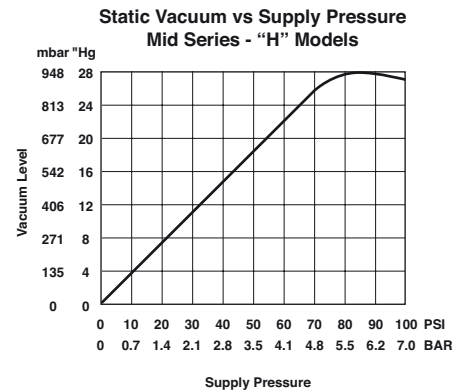
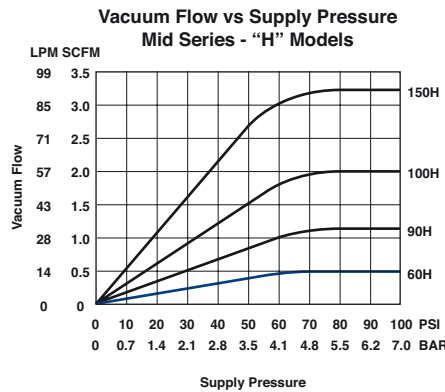
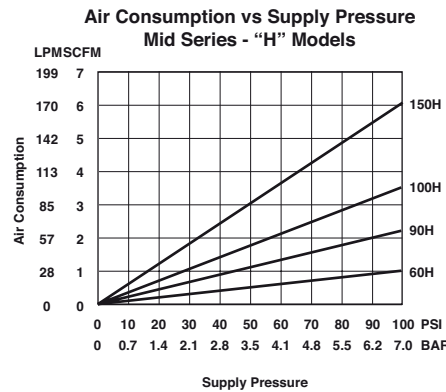
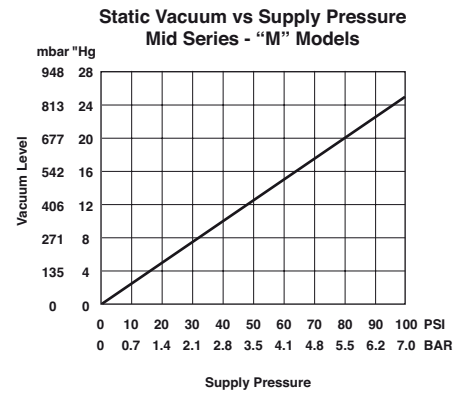
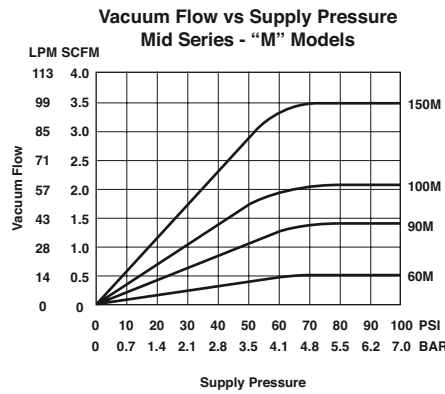
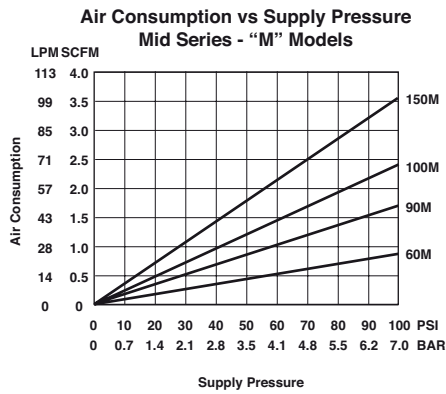
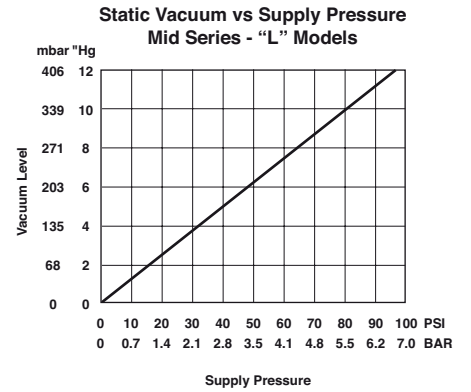
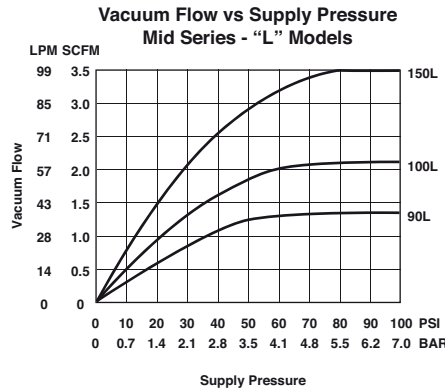
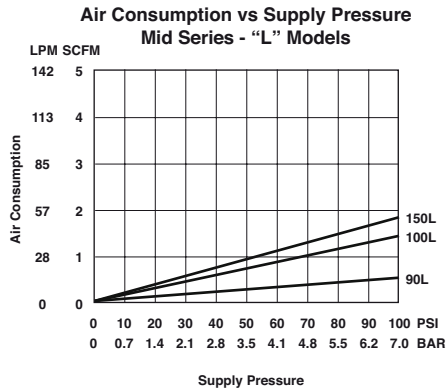
## ● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
90L	0.50 (14.2)	Vacuum Flow SCFM (L/min)	1.30 (36.80)	1.10 (31.10)	0.70 (19.80)	0.20 (5.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.26 (0.10)	7.93 (0.30)	18.65 (0.70)	39.63 (1.40)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
100L	1.40 (39.6)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	1.60 (45.30)	1.10 (31.10)	0.50 (14.20)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.33 (0.10)	4.66 (0.20)	10.88 (0.40)	24.00 (0.90)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
150L	1.80 (51)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	2.50 (70.80)	1.90 (53.80)	0.70 (19.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.54 (0.10)	4.36 (0.20)	10.77 (0.40)	22.83 (0.80)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
60M	0.50 (14.2)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.40 (11.30)	0.30 (8.50)	0.22 (6.20)	- (-)	0.15 (4.20)	0.08 (2.30)	0.03 (0.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	- (-)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227.00 (8.00)	- (-)	- (-)	- (-)	- (-)
90M	1.40 (39.6)	Vacuum Flow SCFM (L/min)	1.40 (39.60)	1.25 (35.40)	1.20 (34.00)	1.05 (29.70)	- (-)	0.85 (24.10)	0.65 (18.40)	0.25 (7.10)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.75 (0.10)	7.20 (0.30)	12.40 (0.40)	- (-)	19.10 (0.70)	29.90 (1.10)	52.00 (1.80)	104.00 (3.70)	- (-)	- (-)	- (-)	- (-)
100M	1.80 (51)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	- (-)	1.60 (45.30)	1.25 (35.40)	0.80 (22.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.65 (0.10)	5.80 (0.20)	9.90 (0.30)	- (-)	16.20 (0.60)	22.90 (0.80)	36.20 (1.30)	56.60 (2.00)	- (-)	- (-)	- (-)	- (-)
150M	2.80 (79.3)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	3.20 (90.60)	2.95 (83.50)	2.75 (77.90)	- (-)	2.50 (70.80)	1.80 (51.00)	0.95 (26.90)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.35 (0.00)	3.20 (0.10)	5.20 (0.20)	- (-)	7.70 (0.30)	11.80 (0.40)	23.40 (0.80)	52.00 (1.80)	- (-)	- (-)	- (-)	- (-)
60H	0.80 (22.7)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.38 (10.80)	0.32 (9.10)	0.30 (8.50)	- (-)	0.27 (7.60)	0.23 (6.50)	0.20 (5.70)	- (-)	0.13 (3.70)	0.05 (1.40)	0.02 (0.60)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	15.00 (0.50)	29.80 (1.10)	50.60 (1.80)	- (-)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	- (-)	183.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)
90H	1.80 (51)	Vacuum Flow SCFM (L/min)	1.20 (34.00)	1.00 (28.30)	0.95 (26.90)	0.90 (25.50)	- (-)	0.85 (24.10)	0.75 (21.20)	0.70 (19.80)	- (-)	0.52 (14.70)	0.47 (13.30)	0.20 (5.70)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	- (-)	32.50 (1.10)	47.00 (1.70)	65.40 (2.30)	- (-)	92.20 (3.30)	130.00 (4.60)	222.20 (7.80)	281.30 (9.90)
100H	2.80 (79.3)	Vacuum Flow SCFM (L/min)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	1.57 (44.50)	- (-)	1.40 (39.60)	1.25 (35.40)	1.05 (29.70)	- (-)	0.84 (23.80)	0.70 (19.80)	0.35 (9.90)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.70 (0.10)	6.50 (0.20)	11.20 (0.40)	- (-)	17.50 (0.60)	25.80 (0.90)	38.40 (1.40)	- (-)	55.20 (1.90)	79.20 (2.80)	166.70 (5.90)	251.80 (8.90)
150H	4.80 (135.9)	Vacuum Flow SCFM (L/min)	3.20 (90.60)	2.80 (79.30)	2.50 (70.80)	2.30 (65.10)	- (-)	2.00 (56.60)	1.60 (45.30)	1.40 (39.60)	- (-)	1.20 (34.00)	0.80 (22.70)	0.50 (14.20)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.30 (0.10)	3.80 (0.10)	6.50 (0.20)	- (-)	10.20 (0.40)	14.20 (0.50)	21.30 (0.80)	- (-)	44.90 (1.60)	55.00 (1.90)	81.00 (2.90)	125.00 (4.40)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



● Performance Data



Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NRTM

- Designed to replace failed or clogged multi-stage pumps – maximize productivity and minimize downtime
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-30° to ~250° F (-34° to ~121°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply/Vacuum Line**  
3/8" OD (10mm tube)  
3/8" OD (10mm tube)

**Mounting Holes**  
Mounting holes accept 10-32[M5] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

**Performance Level Designations**  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

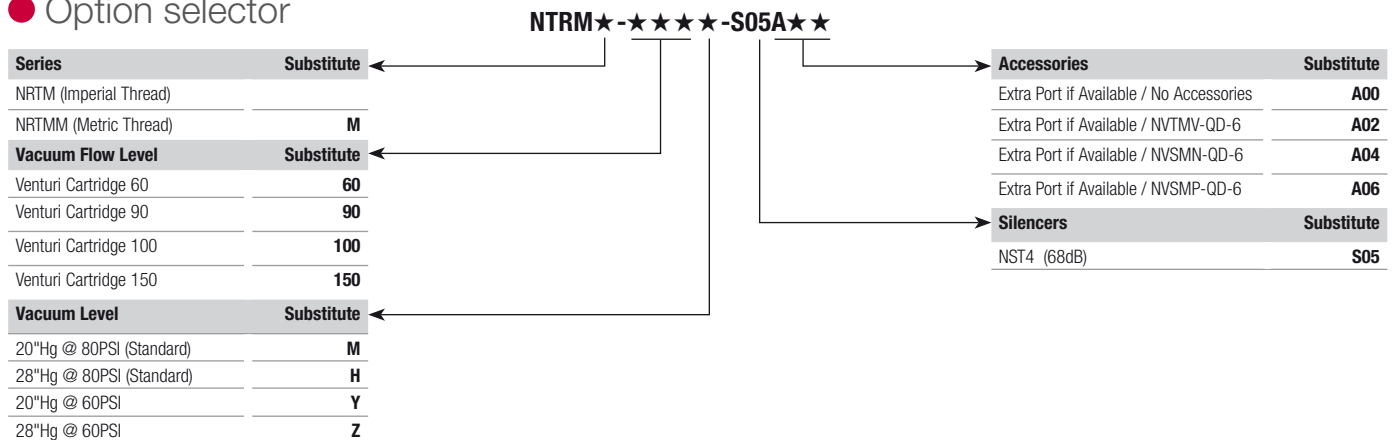


## Standard Models






Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NRTM-60M-S05A00	20"Hg	0.50 SCFM	0.50 SCFM	NST4 Silencer
NRTM-60H-S05A00	28"Hg	0.50 SCFM	0.80 SCFM	NST4 Silencer
NRTM-90M-S05A00	20"Hg	1.40 SCFM	1.40 SCFM	NST4 Silencer
NRTM-90H-S05A00	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer
NRTM-100M-S05A00	20"Hg	2.10 SCFM	1.80 SCFM	NST4 Silencer
NRTM-100H-S05A00	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer
NRTM-150M-S05A00	20"Hg	3.50 SCFM	2.80 SCFM	NST4 Silencer
NRTM-150H-S05A00	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer

## Accessories

## Option selector

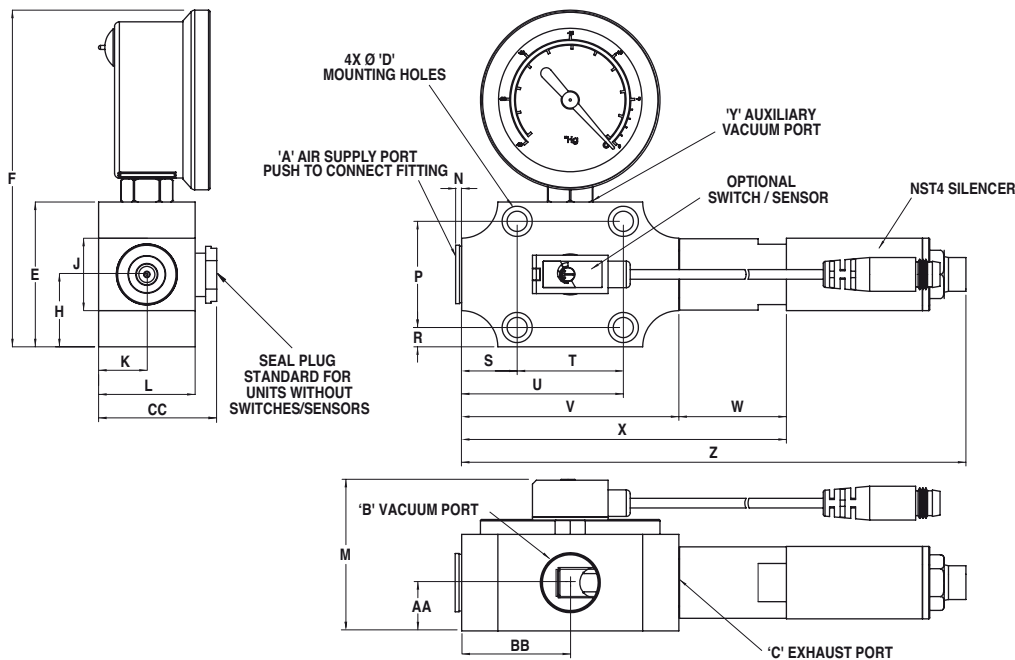


● Accessories

Model	Silencer	Vacuum Gauge	1.5" Extrusion Mounting Kit - Face Mount	Vacuum Fitting	Bellows Cup
					
NRTM-60M-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***
NRTM-60H-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***
NRTM-90M-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***
NRTM-90H-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***
NRTM-100M-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***
NRTM-100H-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***
NRTM-150M-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***
NRTM-150H-S05A00	NST4	NVG-150-F	NMK-NUB14-40-RTM	NVCF10-38-NPS	NVCD-B70P***

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
 \*\*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)



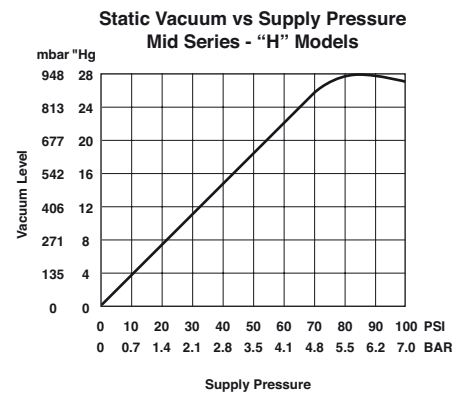
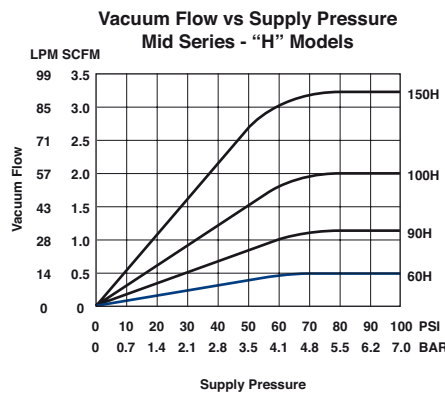
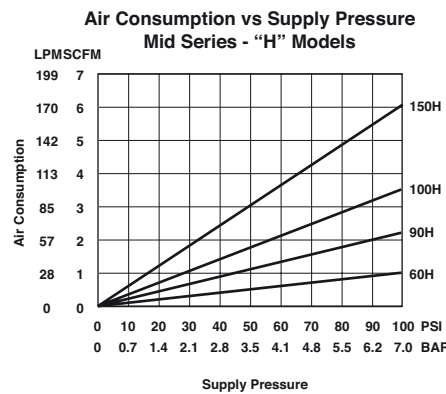
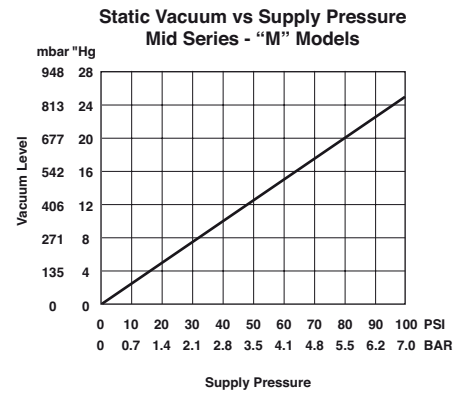
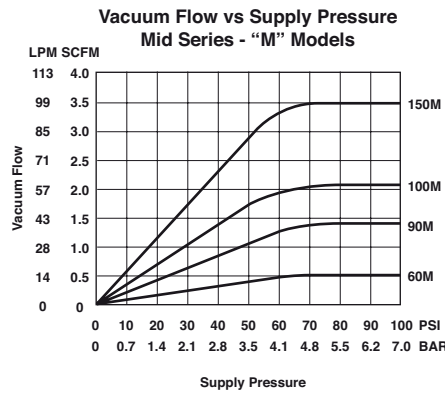
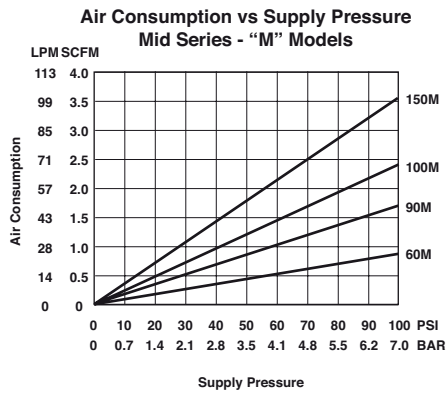
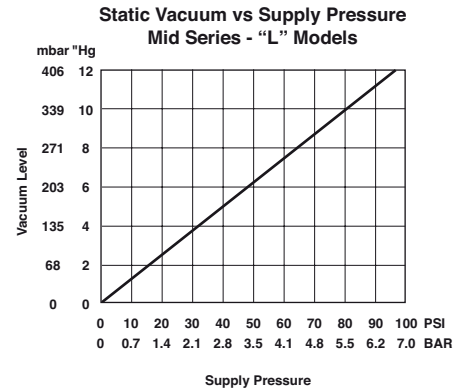
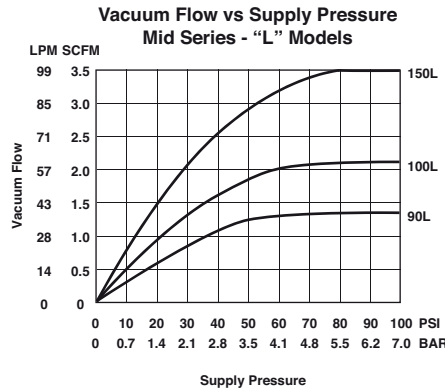
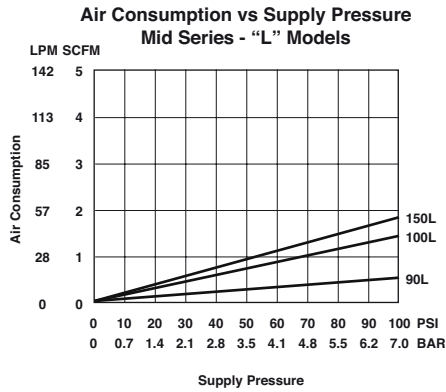
Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z	AA	BB	CC
NRTM-****-S05A00	Imperial	3/8 PTC	3/8 NPS	1/4-18 NPS	0.21	1.50	3.49	0.75	0.75	0.50	1.00	N/A	0.06	1.10	0.20	0.58	1.10	1.68	2.25	1.11	3.36	1/8 NPT	5.22	0.50	1.13	1.17
NRTM-****-S05A0*	Imperial	3/8 PTC	3/8 NPS	1/4-18 NPS	0.21	1.50	3.49	0.75	0.75	0.50	1.00	1.56	0.06	1.10	0.20	0.58	1.10	1.68	2.25	1.11	3.36	1/8 NPT	5.22	0.50	1.13	N/A
NRTMM-****-S05A00	(Metric)	(3/8 PTC)	(3/8 NPS)	(1/4-18 NPS)	(5.33)	(38.10)	(88.57)	(88.57)	(19.05)	(12.70)	(25.4)	N/A	(1.60)	(27.94)	(5.08)	(14.61)	(27.94)	(42.55)	(57.13)	(28.27)	(85.40)	1/8 NPT	(132.64)	(12.70)	(28.58)	(29.72)
NRTMM-****-S05A0*	(Metric)	(3/8 PTC)	(3/8 NPS)	(1/4-18 NPS)	(5.33)	(38.10)	(88.57)	(88.57)	(19.05)	(12.70)	(25.4)	(39.62)	(1.60)	(27.94)	(5.08)	(14.61)	(27.94)	(42.55)	(57.13)	(28.27)	(85.40)	1/8 NPT	(132.64)	(12.70)	(28.58)	(N/A)

## ● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
90L	0.50 (14.2)	Vacuum Flow SCFM (L/min)	1.30 (36.80)	1.10 (31.10)	0.70 (19.80)	0.20 (5.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.26 (0.10)	7.93 (0.30)	18.65 (0.70)	39.63 (1.40)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
100L	1.40 (39.6)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	1.60 (45.30)	1.10 (31.10)	0.50 (14.20)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.33 (0.10)	4.66 (0.20)	10.88 (0.40)	24.00 (0.90)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
150L	1.80 (51)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	2.50 (70.80)	1.90 (53.80)	0.70 (19.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.54 (0.10)	4.36 (0.20)	10.77 (0.40)	22.83 (0.80)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
60M	0.50 (14.2)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.40 (11.30)	0.30 (8.50)	0.22 (6.20)	- (-)	0.15 (4.20)	0.08 (2.30)	0.03 (0.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	- (-)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227.00 (8.00)	- (-)	- (-)	- (-)	- (-)
90M	1.40 (39.6)	Vacuum Flow SCFM (L/min)	1.40 (39.60)	1.25 (35.40)	1.20 (34.00)	1.05 (29.70)	- (-)	0.85 (24.10)	0.65 (18.40)	0.25 (7.10)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.75 (0.10)	7.20 (0.30)	12.40 (0.40)	- (-)	19.10 (0.70)	29.90 (1.10)	52.00 (1.80)	104.00 (3.70)	- (-)	- (-)	- (-)	- (-)
100M	1.80 (51)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	- (-)	1.60 (45.30)	1.25 (35.40)	0.80 (22.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.65 (0.10)	5.80 (0.20)	9.90 (0.30)	- (-)	16.20 (0.60)	22.90 (0.80)	36.20 (1.30)	56.60 (2.00)	- (-)	- (-)	- (-)	- (-)
150M	2.80 (79.3)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	3.20 (90.60)	2.95 (83.50)	2.75 (77.90)	- (-)	2.50 (70.80)	1.80 (51.00)	0.95 (26.90)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.35 (0.00)	3.20 (0.10)	5.20 (0.20)	- (-)	7.70 (0.30)	11.80 (0.40)	23.40 (0.80)	52.00 (1.80)	- (-)	- (-)	- (-)	- (-)
60H	0.80 (22.7)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.38 (10.80)	0.32 (9.10)	0.30 (8.50)	- (-)	0.27 (7.60)	0.23 (6.50)	0.20 (5.70)	- (-)	0.13 (3.70)	0.05 (1.40)	0.02 (0.60)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	15.00 (0.50)	29.80 (1.10)	50.60 (1.80)	- (-)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	- (-)	183.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)
90H	1.80 (51)	Vacuum Flow SCFM (L/min)	1.20 (34.00)	1.00 (28.30)	0.95 (26.90)	0.90 (25.50)	- (-)	0.85 (24.10)	0.75 (21.20)	0.70 (19.80)	- (-)	0.52 (14.70)	0.47 (13.30)	0.20 (5.70)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	- (-)	32.50 (1.10)	47.00 (1.70)	65.40 (2.30)	- (-)	92.20 (3.30)	130.00 (4.60)	222.20 (7.80)	281.30 (9.90)
100H	2.80 (79.3)	Vacuum Flow SCFM (L/min)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	1.57 (44.50)	- (-)	1.40 (39.60)	1.25 (35.40)	1.05 (29.70)	- (-)	0.84 (23.80)	0.70 (19.80)	0.35 (9.90)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.70 (0.10)	6.50 (0.20)	11.20 (0.40)	- (-)	17.50 (0.60)	25.80 (0.90)	38.40 (1.40)	- (-)	55.20 (1.90)	79.20 (2.80)	166.70 (5.90)	251.80 (8.90)
150H	4.80 (135.9)	Vacuum Flow SCFM (L/min)	3.20 (90.60)	2.80 (79.30)	2.50 (70.80)	2.30 (65.10)	- (-)	2.00 (56.60)	1.60 (45.30)	1.40 (39.60)	- (-)	1.20 (34.00)	0.80 (22.70)	0.50 (14.20)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.30 (0.10)	3.80 (0.10)	6.50 (0.20)	- (-)	10.20 (0.40)	14.20 (0.50)	21.30 (0.80)	- (-)	44.90 (1.60)	55.00 (1.90)	81.00 (2.90)	125.00 (4.40)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)

● Performance Data



Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NVP80

- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (100 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-100° to ~400° F (-73° to ~204°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply Line**  
3/8" OD (10mm)

**Vacuum Line**  
3/8" OD (10mm)

**Mounting Holes**  
Mounting holes accept 10-32[M5] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

**Performance Level Designations**  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP80)  
Pneumatic blow-off (NVP8X)  
Multi-port (NVP80M0)  
Air Saver (NVP80C0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP80-200M-S08A00	20"Hg	6.00 SCFM	4.80 SCFM	NST6A Silencer
NVP80-200H-S08A00	28"Hg	5.40 SCFM	7.80 SCFM	NST6A Silencer
NVP80-250M-S10A00	20"Hg	9.50 SCFM	7.80 SCFM	NST8A Silencer
NVP80-250H-S10A00	28"Hg	9.00 SCFM	12.50 SCFM	NST8A Silencer

## Accessories

## Option selector

**NVP★80-★★★★-★★★A★★**

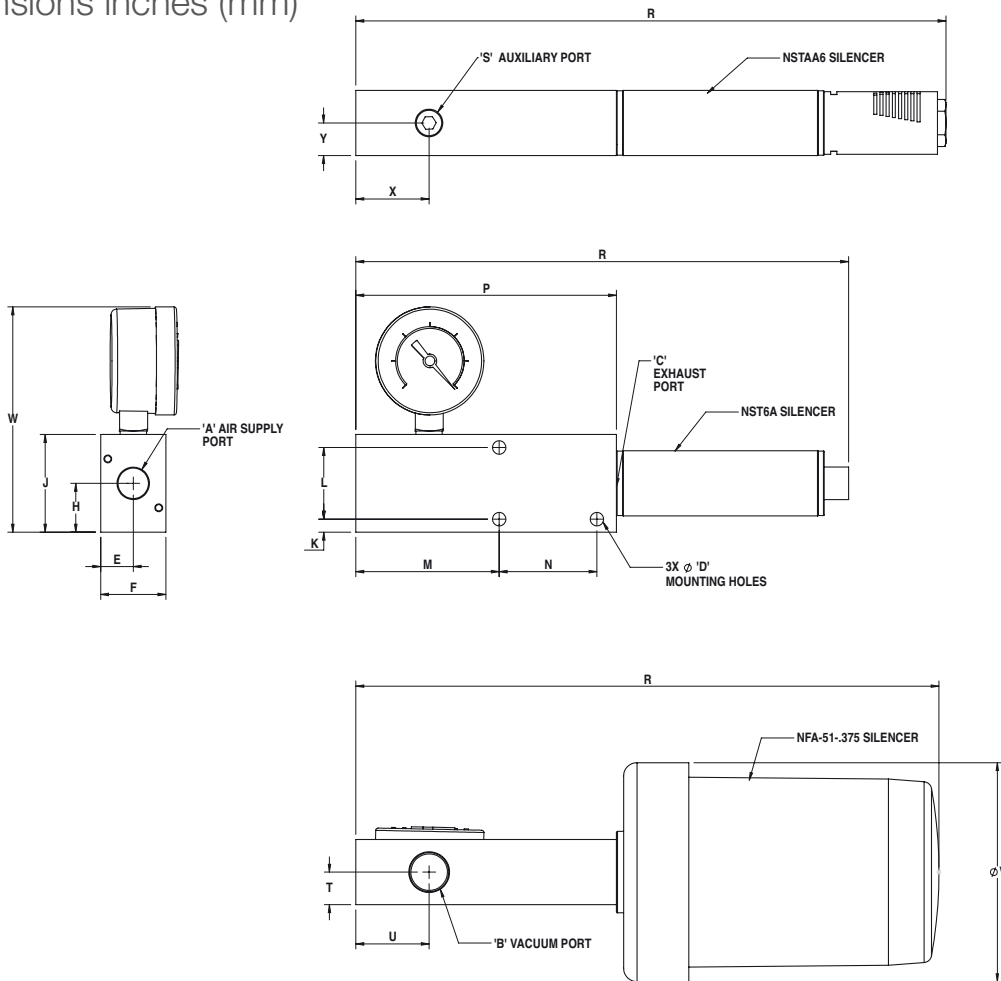
Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	<b>A00</b>
NVPM (Metric Thread)	<b>M</b>	<b>Silencers (for NVP*80-200*)</b>	<b>Substitute</b>
<b>Vacuum Flow Level</b>	<b>Substitute</b>	None	<b>S00</b>
Venturi Cartridge 200	<b>200</b>	NAA6 (70dB)	<b>S03</b>
Venturi Cartridge 250	<b>250</b>	NST6A (72dB)	<b>S08</b>
<b>Vacuum Level</b>	<b>Substitute</b>	NSTAA6 (64dB)	<b>S13</b>
20"Hg @ 80PSI (Standard)	<b>M</b>	NFA-51-.375 (72dB)	<b>S26</b>
28"Hg @ 80PSI (Standard)	<b>H</b>	<b>Silencers (for NVP*80-250*)</b>	<b>Substitute</b>
20"Hg @ 60PSI	<b>Y</b>	None	<b>S00</b>
28"Hg @ 60PSI	<b>Z</b>	NFA-51-.500 (72dB)	<b>S27</b>
		NFA-51-.500 - No Elbow (72dB)	<b>S37</b>
		NST8A (74dB)	<b>S10</b>
		NST8B (76dB)	<b>S11</b>

● Accessories

Model	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Fitting	Bellows Cup	Flat Cup
NVP80-200M-S08A00	NST6A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NVCR-F40P-*
NVP80-200H-S08A00	NST6A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NVCR-F40P-*
NVP80-250M-S10A00	NST-8A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NVCR-F40P-*
NVP80-250H-S10A00	NST-8A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NVCR-F40P-*

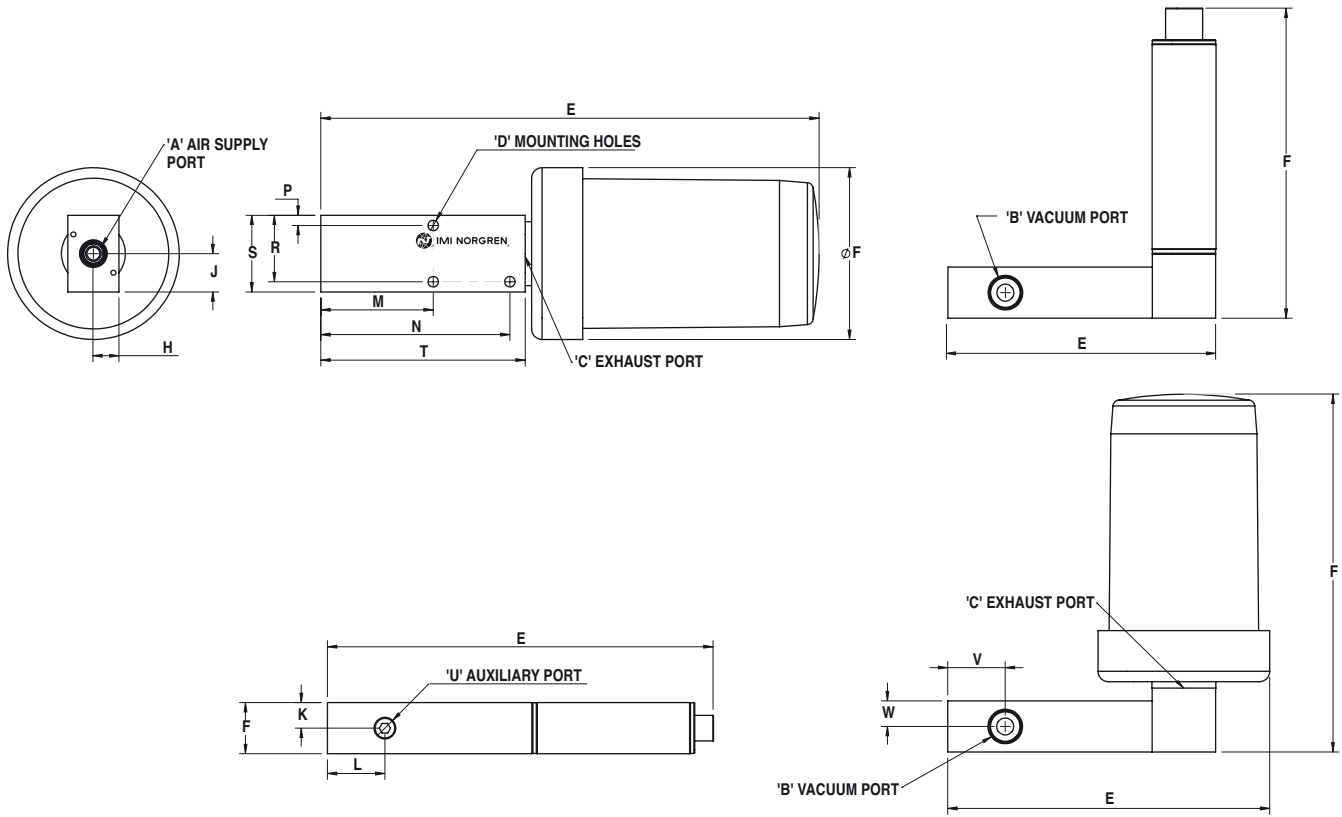
\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
NVP80-200*-S08A00	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.20	1.50	4.00	7.57	1/8 NPTF	0.50	1.13	3.36	3.46	1.12	0.50
NVP80-200*-S13A00	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.20	1.50	4.00	9.05	1/8 NPTF	0.50	1.13	3.36	3.46	1.12	0.50
NVP80-200*-S26A00	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.20	1.50	4.00	9.74	1/8 NPTF	0.50	1.13	3.36	3.46	1.12	0.50
NVPM80-200*-S08A00	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(5.30)	(12.70)	(25.40)	(19.10)	(38.10)	(5.10)	(27.90)	(55.90)	(38.10)	(101.60)	(192.30)	G 1/8	(12.70)	(28.70)	(85.30)	(87.90)	(28.40)	(12.7)
NVPM80-200*-S13A00	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(5.30)	(12.70)	(25.40)	(19.10)	(38.10)	(5.10)	(27.90)	(55.90)	(38.10)	(101.60)	(229.90)	G 1/8	(12.70)	(28.70)	(85.30)	(87.90)	(28.40)	(12.7)
NVPM80-200*-S26A00	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(5.30)	(12.70)	(25.40)	(19.10)	(38.10)	(5.10)	(27.90)	(55.90)	(38.10)	(101.60)	(247.40)	G 1/8	(12.70)	(28.70)	(85.30)	(87.90)	(28.40)	(12.7)

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
NVP80-250*-S27A00	Imperial	1/4 NPTF	3/8 NPTF	1/2 NPTF	0.21	6.30	7.00	0.50	0.75	0.50	1.13	2.20	3.70	0.20	1.30	1.50	4.00	1/8 NPTF	1.13	0.50
NVP80-250*-S37A00	Imperial	1/4 NPTF	3/8 NPTF	1/2 NPTF	0.21	9.75	3.36	0.50	0.75	0.50	1.13	2.20	3.70	0.20	1.30	1.50	4.00	1/8 NPTF	1.13	0.50
NVP80-250*-S10A00	Imperial	1/4 NPTF	3/8 NPTF	1/2 NPTF	0.21	7.54	1.00	0.50	0.75	0.50	1.13	2.20	3.70	0.20	1.30	1.50	4.00	1/8 NPTF	1.13	0.50
NVP80-250*-S11A00	Imperial	1/4 NPTF	3/8 NPTF	1/2 NPTF	0.21	5.24	6.06	0.50	0.75	0.50	1.13	2.20	3.70	0.20	1.30	1.50	4.00	1/8 NPTF	1.13	0.50
NVPM80-250*-S27A00	(Metric)	(G 1/4)	(G 3/8)	(G 1/2)	(5.30)	(160.00)	(177.90)	(12.70)	(19.10)	(12.70)	(28.60)	(55.90)	(94.00)	(5.10)	(33.00)	(38.10)	(101.60)	(G 1/8)	(28.60)	(12.70)
NVPM80-250*-S37A00	(Metric)	(G 1/4)	(G 3/8)	(G 1/2)	(5.30)	(247.70)	(85.30)	(12.70)	(19.10)	(12.70)	(28.60)	(55.90)	(94.00)	(5.10)	(33.00)	(38.10)	(101.60)	(G 1/8)	(28.60)	(12.70)
NVPM80-250*-S10A00	(Metric)	(G 1/4)	(G 3/8)	(G 1/2)	(5.30)	(191.50)	(25.40)	(12.70)	(19.10)	(12.70)	(28.60)	(55.90)	(94.00)	(5.10)	(33.00)	(38.10)	(101.60)	(G 1/8)	(28.60)	(12.70)
NVPM80-250*-S11A00	(Metric)	(G 1/4)	(G 3/8)	(G 1/2)	(5.30)	(133.10)	(153.90)	(12.70)	(19.10)	(12.70)	(28.60)	(55.90)	(94.00)	(5.10)	(33.00)	(38.10)	(101.60)	(G 1/8)	(28.60)	(12.70)



# NVP8X

Pneumatic Blow-off

- All in one vacuum and blow-off - only compressed air required
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (100 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
32° to ~125° F (0° to ~52°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Pump Options**  
B1 adjustable version allows the user to set the intensity of the blow-off from no blow-off to full blow-off

**Cycle Rates**  
Up to 900/min

**Blow-off Response Time**  
Instantaneous

**Blow-off Duration**  
100 milliseconds (based on system design)

**Orientation**  
Any

**Supply Line**  
3/8" OD (10mm) tube

**Vacuum Line**  
3/8" OD (10mm) tube

**Mounting Holes**  
Mounting holes accept 10-32 [M5] screws

**Control Valve**  
3 way/2 position, minimum orifice – 0.156" [4mm]

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP80)  
Pneumatic blow-off (NVP8X)  
Multi-port (NVP80MO)  
Air Saver (NVP80CO)

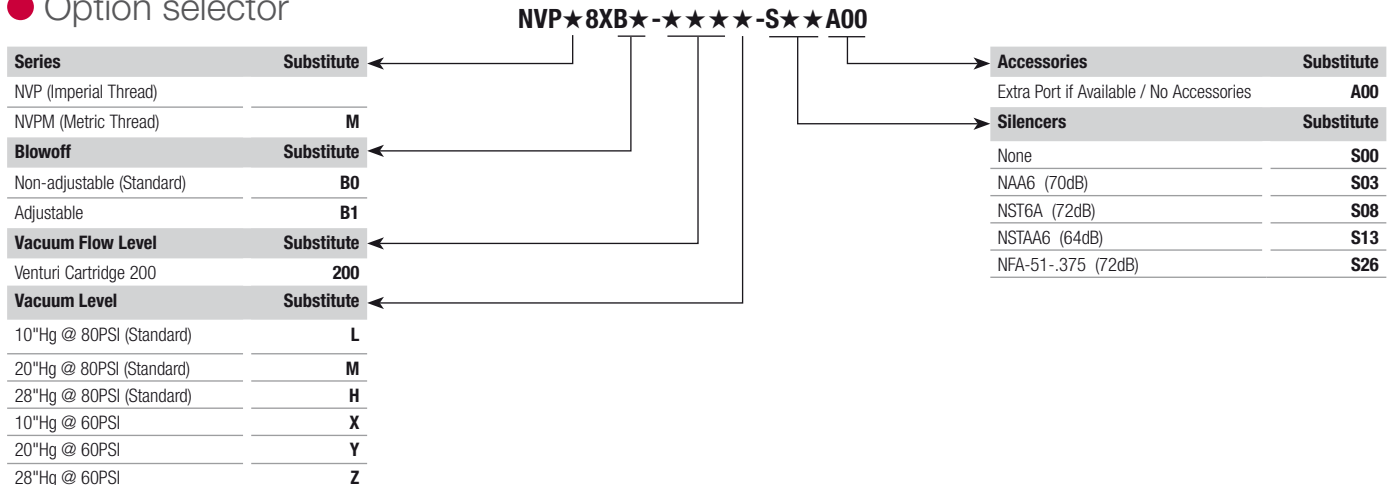


## Standard Models

## Accessories

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP8XB0-200M-S08A00	20"Hg	6.00 SCFM	4.80 SCFM	NST6A Silencer
NVP8XB0-200H-S08A00	28"Hg	5.40 SCFM	7.80 SCFM	NST6A Silencer

## Option selector



# NVP8X

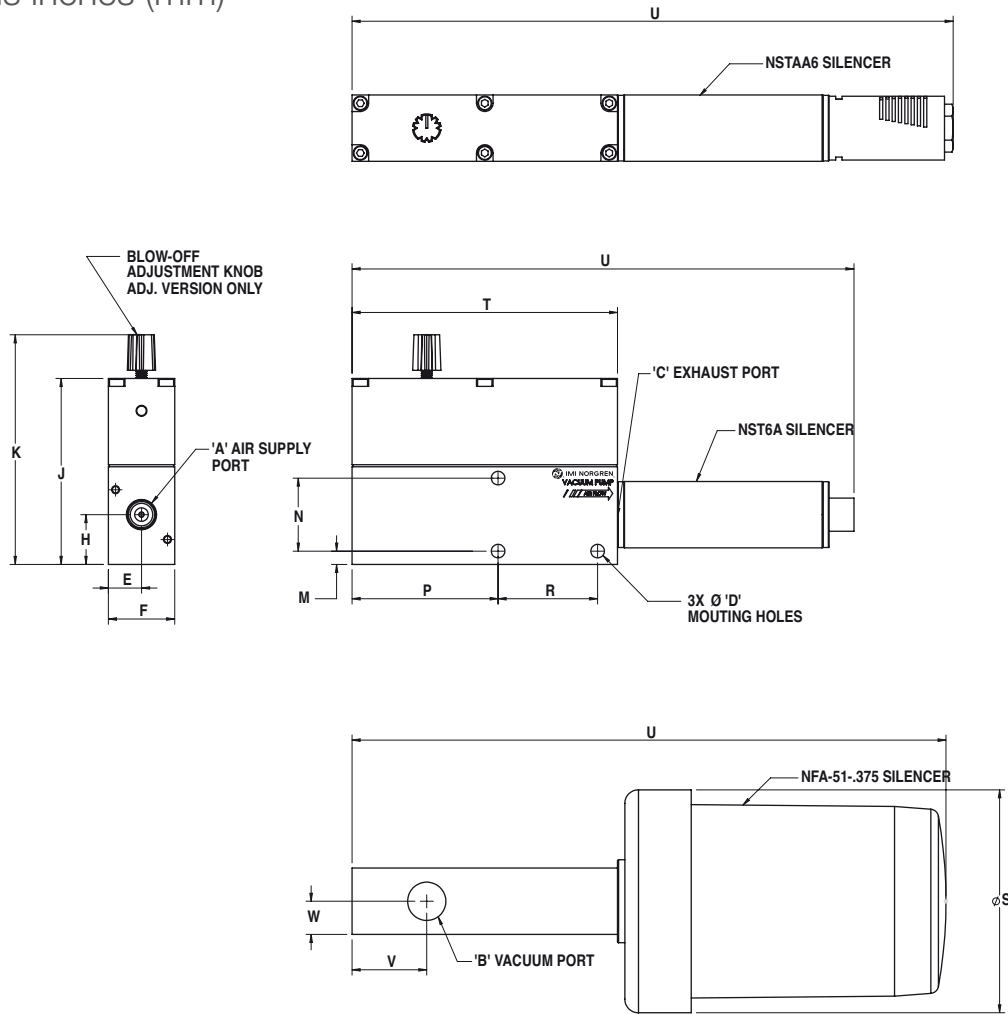
Pneumatic Blow-off

## Accessories

Model	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Fitting	Bellows Cup	Flat Cup
NVP8XB0-200M-S08A00	NST6A	124250628	124470628	VCF5-38M, VCF6-38M	NVCR-B***-*	NVCR-F***-*
NVP8XB0-200H-S08A00	NST6A	124250628	124470628	VCF5-38M, VCF6-38M	NVCR-B***-*	NVCR-F***-*

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory. The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

## Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K*	M	N	P	R	S	T	U	V	W
NVP8XB0-****-S08A00	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	0.21	0.50	1.00	0.75	2.80	3.46	0.20	1.10	2.20	1.50	3.36	4.00	7.56	1.13	0.50
NVP8XB0-****-S13A00	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	0.50	1.00	0.75	2.80	3.46	0.20	1.10	2.20	1.50	3.36	4.00	9.06	1.13	0.50
NVP8XB0-****-S26A00	Imperial	1/4 NPTF	1/4 NPTF	1/4 NPTF	0.21	0.50	1.00	0.75	2.80	3.46	0.20	1.10	2.20	1.50	3.36	4.00	9.70	1.13	0.50
NVPM8XB0-****-S08A00	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(5.30)	(12.70)	(25.40)	(19.10)	(71.10)	(87.90)	(5.10)	(27.90)	(55.90)	(38.10)	(85.30)	(101.60)	(192.00)	(28.60)	(12.70)
NVPM8XB0-****-S13A00	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(5.30)	(12.70)	(25.40)	(19.10)	(71.10)	(87.90)	(5.10)	(27.90)	(55.90)	(38.10)	(85.30)	(101.60)	(230.10)	(28.60)	(12.70)
NVPM8XB0-****-S26A00	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(5.30)	(12.70)	(25.40)	(19.10)	(71.10)	(87.90)	(5.10)	(27.90)	(55.90)	(38.10)	(85.30)	(101.60)	(246.40)	(28.60)	(12.70)

# NVP80M0

Multi-port

- Multi-port version - distribute vacuum to multiple locations
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (100 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-100° to ~400° F (-73° to ~204°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply Line**  
3/8" OD (10mm)

**Vacuum Line**  
3/8" OD (10mm)

**Mounting Holes**  
Mounting holes accept 10-32 [M5] screws

**Control Valve**  
3 way/2 position (faster part release), minimum orifice – 0.25" [6mm]

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP80)  
Pneumatic blow-off (NVP8X)  
Multi-port (NVP80M0)  
Air Saver (NVP80C0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP80M0-200M-S08A00	20"Hg	6.00 SCFM	4.80 SCFM	NST6A Silencer
NVP80M0-200H-S08A00	28"Hg	5.40 SCFM	7.80 SCFM	NST6A Silencer
NVP80M0-250M-S10A00	20"Hg	9.50 SCFM	7.80 SCFM	NST8A Silencer
NVP80M0-250H-S10A00	28"Hg	9.00 SCFM	12.50 SCFM	NST8A Silencer

## Accessories

## Option selector

Series		Substitute		Accessories		Substitute	
NVP (Imperial Thread)				Extra Port if Available / No Accessories			<b>A00</b>
NVPM (Metric Thread)			<b>M</b>	Extra Port if Available / NVTMV-QD-6			<b>A02</b>
				Extra Port if Available / NVSMN-QD-6			<b>A04</b>
				Extra Port if Available / NVSMP-QD-6			<b>A06</b>
Vacuum Flow Level		Substitute		Silencers (for NVP*80-200*)		Substitute	
Venturi Cartridge 200			<b>200</b>	None			<b>S00</b>
Venturi Cartridge 250			<b>250</b>	NAA6 (70dB)			<b>S03</b>
				NST6A (72dB)			<b>S08</b>
				NSTAA6 (64dB)			<b>S13</b>
Vacuum Level		Substitute		Silencers (for NVP*80-250*)		Substitute	
10"Hg @ 80PSI (Standard)			<b>L</b>	NST8A (74dB)			<b>S10</b>
20"Hg @ 80PSI (Standard)			<b>M</b>				
28"Hg @ 80PSI (Standard)			<b>H</b>				
10"Hg @ 60PSI			<b>X</b>				
20"Hg @ 60PSI			<b>Y</b>				
28"Hg @ 60PSI			<b>Z</b>				

NVP★80M0-★ ★ ★ ★ -S★ ★ A★ ★

# NVP80MO

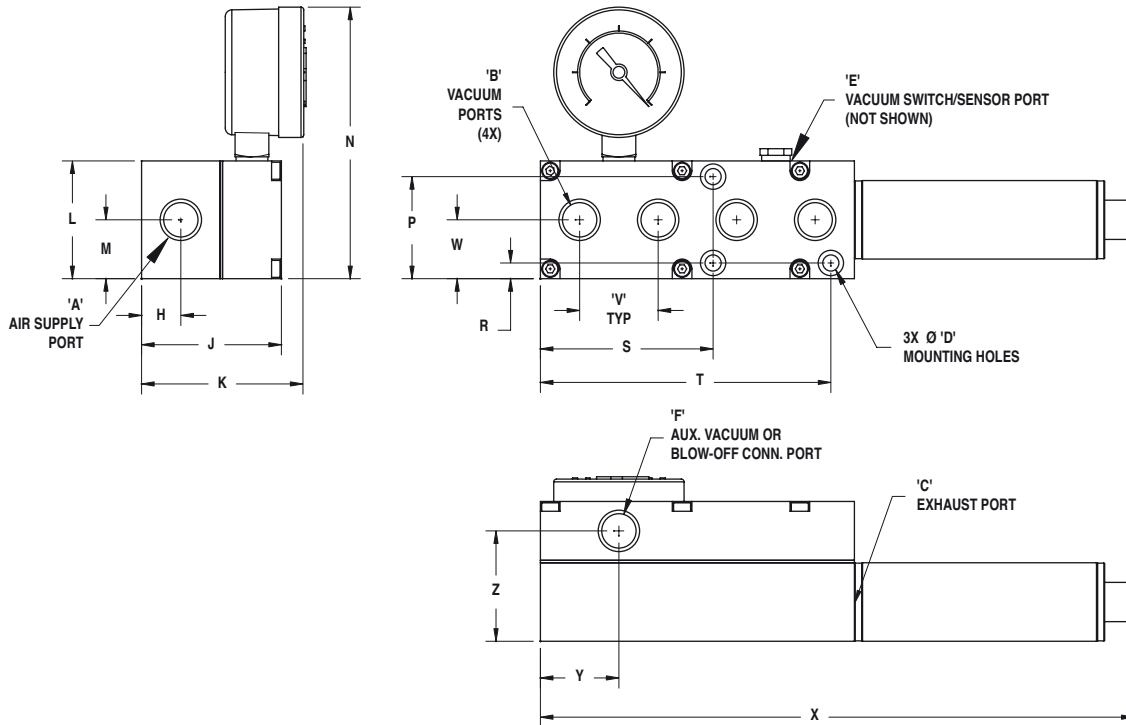
## Multi-port

### Accessories

Model	Silencer	Inline Fitting	Pneufit Swivel Male Elbow	Vacuum Swivel Fitting
NVP80MO-200M-S08A00	NST6A	124250628	124470628	124470628
NVP80MO-200H-S08A00	NST6A	124250628	124470628	124470628
NVP80MO-250M-S10A00	NST6A	124250638	124470638	124470628
NVP80MO-250H-S10A00	NST6A	124250638	124470638	124470628

\*Proper selection of vacuum cups depends on the application. Cups are available in various diameters, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

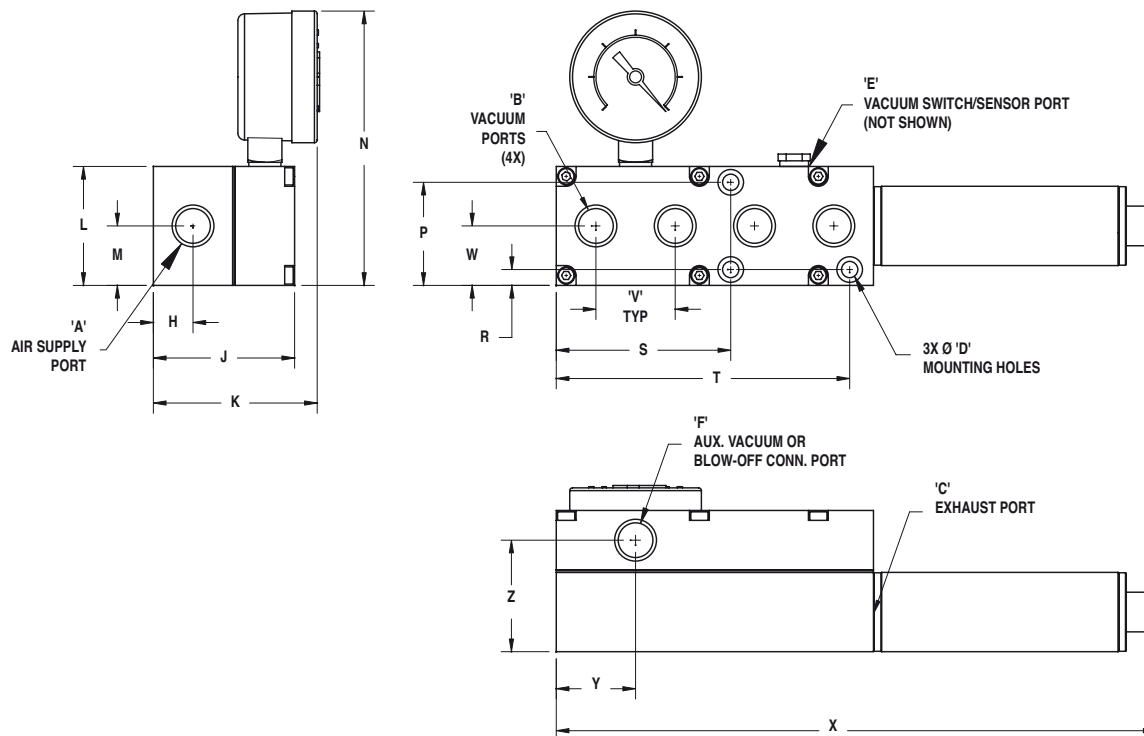
### Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	V	W	X	Y	Z
NVP80MO-200*-S03A00	Imperial	1/4 NPTF	1/4 NPTF	3/8 NPTF	0.21	10-32	1/4 NPTF	0.50	1.78	2.06	1.50	0.75	3.46	1.30	0.20	2.20	3.70	1.00	0.75	6.00	1.00	1.41
NVP80MO-200*-S08A00	Imperial	1/4 NPTF	1/4 NPTF	3/8 NPTF	0.21	10-32	1/4 NPTF	0.50	1.78	2.06	1.50	0.75	3.46	1.30	0.20	2.20	3.70	1.00	0.75	7.56	1.00	1.41
NVP80MO-200*-S13A00	Imperial	1/4 NPTF	1/4 NPTF	3/8 NPTF	0.21	10-32	1/4 NPTF	0.50	1.78	2.06	1.50	0.75	3.46	1.30	0.20	2.20	3.70	1.00	0.75	9.00	1.00	1.41
NVPM80MO-200*-S03A00	(Metric)	(G 1/4)	(G 1/4)	(G 3/8)	(5.2)	(M5)	(G 1/4)	(12.70)	(45.20)	(52.20)	(38.10)	(19.10)	(87.90)	(33.00)	(5.10)	(55.90)	(94.00)	(25.40)	(19.10)	(152.40)	(25.40)	(35.70)
NVPM80MO-200*-S08A00	(Metric)	(G 1/4)	(G 1/4)	(G 3/8)	(5.2)	(M5)	(G 1/4)	(12.70)	(45.20)	(52.20)	(38.10)	(19.10)	(87.90)	(33.00)	(5.10)	(55.90)	(94.00)	(25.40)	(19.10)	(192.00)	(25.40)	(35.70)
NVPM80MO-200*-S13A00	(Metric)	(G 1/4)	(G 1/4)	(G 3/8)	(5.2)	(M5)	(G 1/4)	(12.70)	(45.20)	(52.20)	(38.10)	(19.10)	(87.90)	(33.00)	(5.10)	(55.90)	(94.00)	(25.40)	(19.10)	(228.60)	(25.40)	(35.70)

NVP80M0  
Multi-port

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	V	W	X	Y	Z
NVP8XB0-250*-S03A00	Imperial	3/8 NPTF	1/4 NPTF	1/2 NPTF	0.21	10-32	1/4 NPTF	0.50	1.78	2.07	1.50	0.75	3.46	1.30	0.20	2.20	3.70	1.00	0.75	7.56	1.00	1.41
NVPM8XB0-250*-S03A00	(Metric)	(G 3/8)	(G 1/4)	(G 1/2)	(5.20)	M5	(G 1/4)	(12.70)	(45.20)	(52.50)	(38.10)	(19.10)	(87.90)	(33.00)	(5.10)	(55.90)	(94.00)	(25.40)	(19.10)	(192.10)	(25.40)	(35.70)

# NVP80CO

Air Saver

- Energy efficient – compressed air on only when needed, automatic shut-off
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

### Fluid

Filtered (100 Micron) unlubricated, non-corrosive dry gases

### Operating Temperature

-30° to ~250° F (-34° to 121°C)

### Operating Pressure

80 PSI (5.5 bar) Standard or 3/8" OD (10mm) for sizes 200 and 250

### Materials

Pump Body: Anodized Aluminum

### Supply/Vacuum Line

3/8" OD (10mm) for size 200

1/2" OD (12mm) for size 250

### Mounting Holes

Mounting holes accept 10-32 [M5] screws

### Control Valve

3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]

### Performance Level Designations

"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

### Pump Selection

1. Determine the desired evacuation time (speed)
2. Calculate the total volume of air to be evacuated in the system including vacuum lines, vessel/cavity size, cups, etc.
3. Determine the desired vacuum level, "Hg/mbar

Application ex.: Evacuate 2 cu.ft. of air in 1 minute (60 sec) at a vacuum level of 21"Hg  
Formula: Time (60 sec)/Cu. ft (2) = 30 seconds per cu.ft. (evacuation speed)

### Product options

Standard (NVP80)

Pneumatic blow-off (NVP8X)

Multi-port (NVP80M0)

Air Saver (NVP80CO)



## ● Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP80CO-200M-S08A00	20"Hg	6.00 SCFM	4.80 SCFM	NST6A Silencer
NVP80CO-200H-S08A00	28"Hg	5.40 SCFM	7.80 SCFM	NST6A Silencer
NVP80CO-250M-S10A00	20"Hg	9.50 SCFM	7.80 SCFM	NST8A Silencer
NVP80CO-250H-S10A00	28"Hg	9.00 SCFM	12.50 SCFM	NST8A Silencer

## Accessories

# NVP80C0

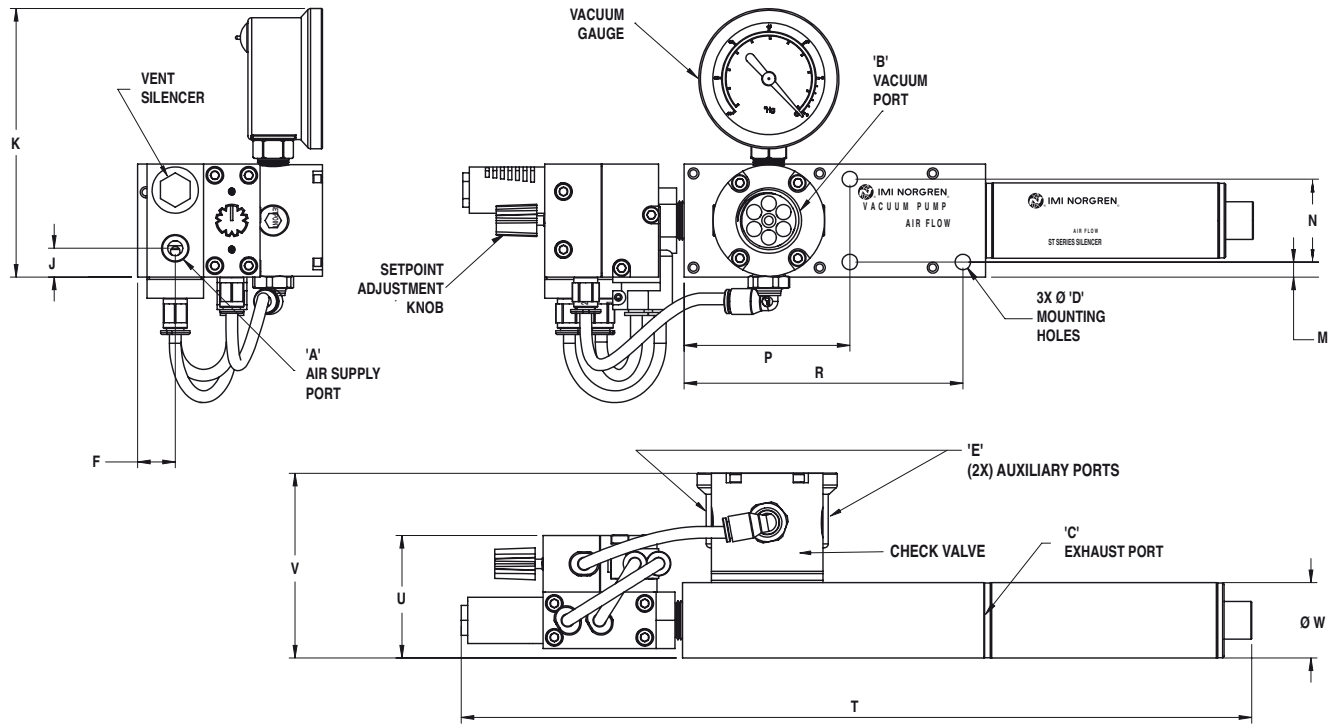
Air Saver

## Option selector

NVP★80C0-★★★★-S08A00

<b>Series</b>	<b>Substitute</b>	<b>Accessories</b>	<b>Substitute</b>
NVP (Imperial Thread)		Extra Port if Available / No Accessories	A00
NVPM (Metric Thread)	M	<b>Silencers</b>	<b>Substitute</b>
<b>Vacuum Flow Level</b>	<b>Substitute</b>	NST6A (72dB)	S08
Venturi Cartridge 200	200		
Venturi Cartridge 250	250		
<b>Vacuum Level</b>	<b>Substitute</b>		
20"Hg @ 80PSI (Standard)	M		
28"Hg @ 80PSI (Standard)	H		
20"Hg @ 60PSI	Y		
28"Hg @ 60PSI	Z		

## Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	J	K	M	N	P	R	T	U	V	W
NVP80C0-***-S02A00	Imperial	1/8 NPTF	1/2 NPTF	3/8 NPTF	0.21	1/8 NPTF	0.50	0.34	3.49	0.20	1.30	2.20	3.70	10.41	1.60	2.30	1.00
NVPM20C0-***-S02A00	(Metric)	(G 1/8)	(G 1/2)	(G 3/8)	(5.20)	(G 1/8)	(12.7)	(8.60)	(88.60)	(5.10)	(33.00)	(55.90)	(94.00)	(264.50)	(40.60)	(58.40)	(25.40)

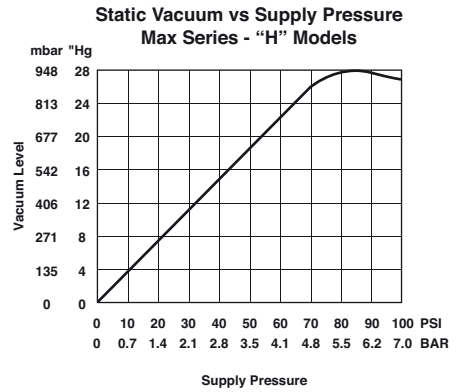
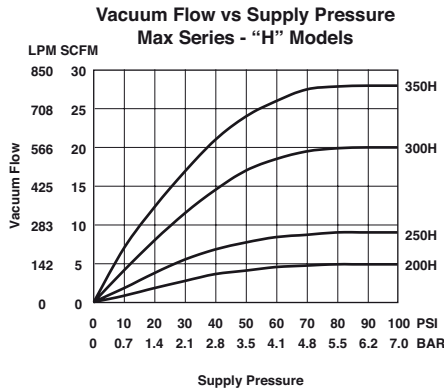
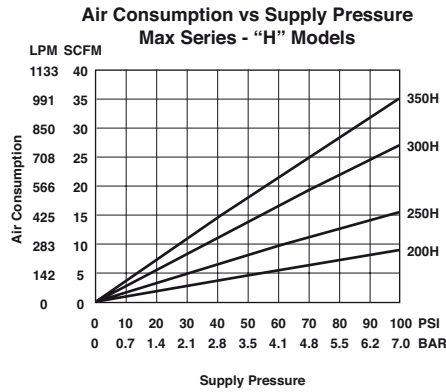
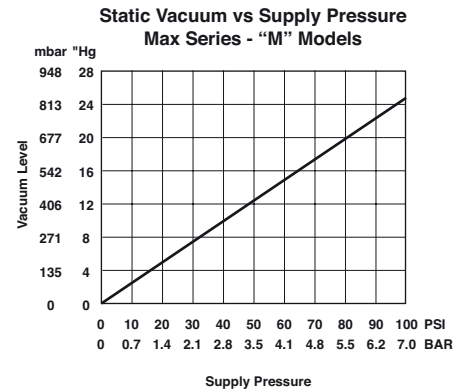
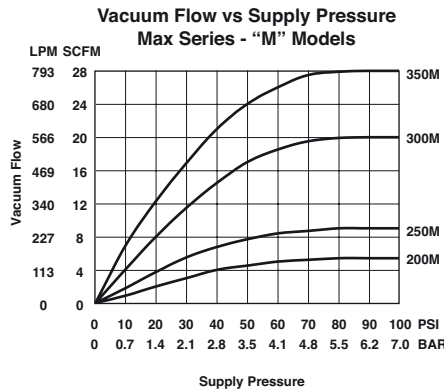
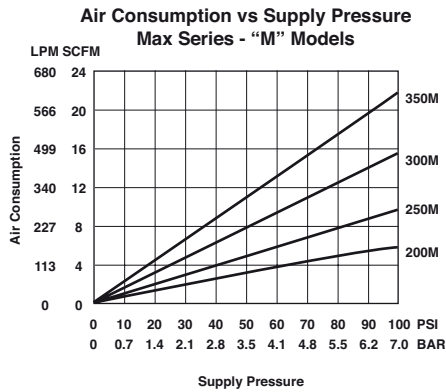
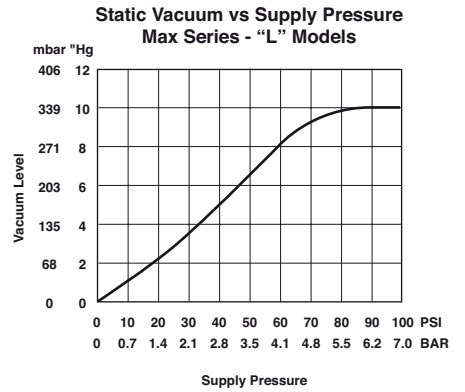
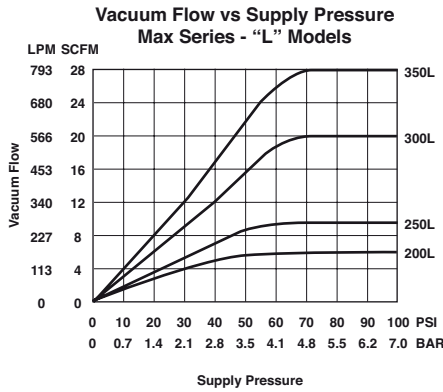
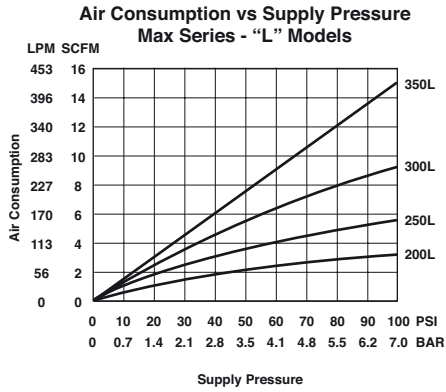
## ● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
200L	2.80 (79.3)	Vacuum Flow SCFM (L/min)	6.00 (169.90)	5.80 (164.20)	4.30 (121.80)	1.70 (48.10)	0 (0)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.77 (0)	2.05 (0.10)	4.62 (0.20)	13.34 (0.50)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
250L	4.80 (135.9)	Vacuum Flow SCFM (L/min)	9.50 (269)	7.90 (223.70)	5.70 (161.40)	2.20 (62.30)	0 (0)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.52 (0)	1.28 (0)	3.08 (0.10)	7.95 (0.30)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
200M	4.80 (135.9)	Vacuum Flow SCFM (L/min)	6.00 (169.90)	5.30 (150.10)	4.90 (138.80)	4.00 (113.30)	- (-)	3.50 (99.10)	2.50 (70.80)	1.10 (31.10)	0 (0)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.75 (0)	1.90 (0.10)	3.20 (0.10)	- (-)	5.30 (0.20)	8.70 (0.30)	17.10 (0.60)	42.60 (1.50)	- (-)	- (-)	- (-)	- (-)
250M	7.80 (220.9)	Vacuum Flow SCFM (L/min)	9.50 (269)	9.20 (260.5)	8.30 (235)	7.00 (198.20)	- (-)	4.70 (133.10)	3.40 (96.30)	2.20 (62.30)	0 (0)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.45 (0)	1.10 (0)	2.40 (0.10)	- (-)	3.80 (0.10)	6.00 (0.20)	9.70 (0.30)	15.40 (0.50)	- (-)	- (-)	- (-)	- (-)
200H	7.80 (220.9)	Vacuum Flow SCFM (L/min)	5.40 (152.90)	4.70 (133.10)	3.85 (109)	3.30 (93.40)	- (-)	3.00 (85)	2.60 (73.60)	2.10 (59.50)	- (-)	1.60 (45.30)	1.20 (34)	0.60 (17)	0 (0)
		Evacuation time (seconds)	0 (0)	1.20 (0)	2.10 (0.10)	3.40 (0.10)	- (-)	5.20 (0.20)	7.70 (0.30)	11.50 (0.40)	- (-)	20.00 (0.70)	33.50 (1.20)	62.60 (2.20)	98.10 (3.50)
250H	12.50 (354)	Vacuum Flow SCFM (L/min)	9.00 (254.90)	8.50 (240.70)	7.85 (222.30)	7.00 (198.20)	- (-)	6.50 (184.10)	5.30 (150.10)	3.90 (110.40)	- (-)	2.50 (70.80)	1.80 (51)	0.90 (25.50)	0 (0)
		Evacuation time (seconds)	0 (0)	0.75 (0)	1.30 (0)	2.20 (0.10)	- (-)	3.50 (0.10)	5.60 (0.20)	9.10 (0.30)	- (-)	17.40 (0.60)	30.10 (1.10)	56.00 (2)	76.00 (2.70)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



● Performance Data



Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NVP90

- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (100 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-100° to ~400° F (-73° to ~204°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply Line**  
1/2" OD (12mm)

**Vacuum Line**  
1/2" OD (12mm), preferred 3/4" (22mm) for lines exceeding 3' (1M)

**Mounting Holes**  
Mounting holes accept 10-32[M5] screws

**Performance Level Designations**  
"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

**Product options**  
Standard (NVP90)  
Multi-port (NVP90M0)  
Air Saver (NVP90C0)



## Standard Models

## Accessories

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP90-300M-S27A00	20"Hg	20.00 SCFM	12.50 SCFM	NFA-51-.500 Silencer
NVP90-300H-S27A00	28"Hg	20.00 SCFM	22.00 SCFM	NFA-51-.500 Silencer
NVP90-350M-S27A00	20"Hg	28.00 SCFM	22.00 SCFM	NFA-51-.500 Silencer
NVP90-350H-S27A00	28"Hg	28.00 SCFM	28.00 SCFM	NFA-51-.500 Silencer

## Option selector

NVP★90-★ ★ ★ ★ -S★ ★ A00

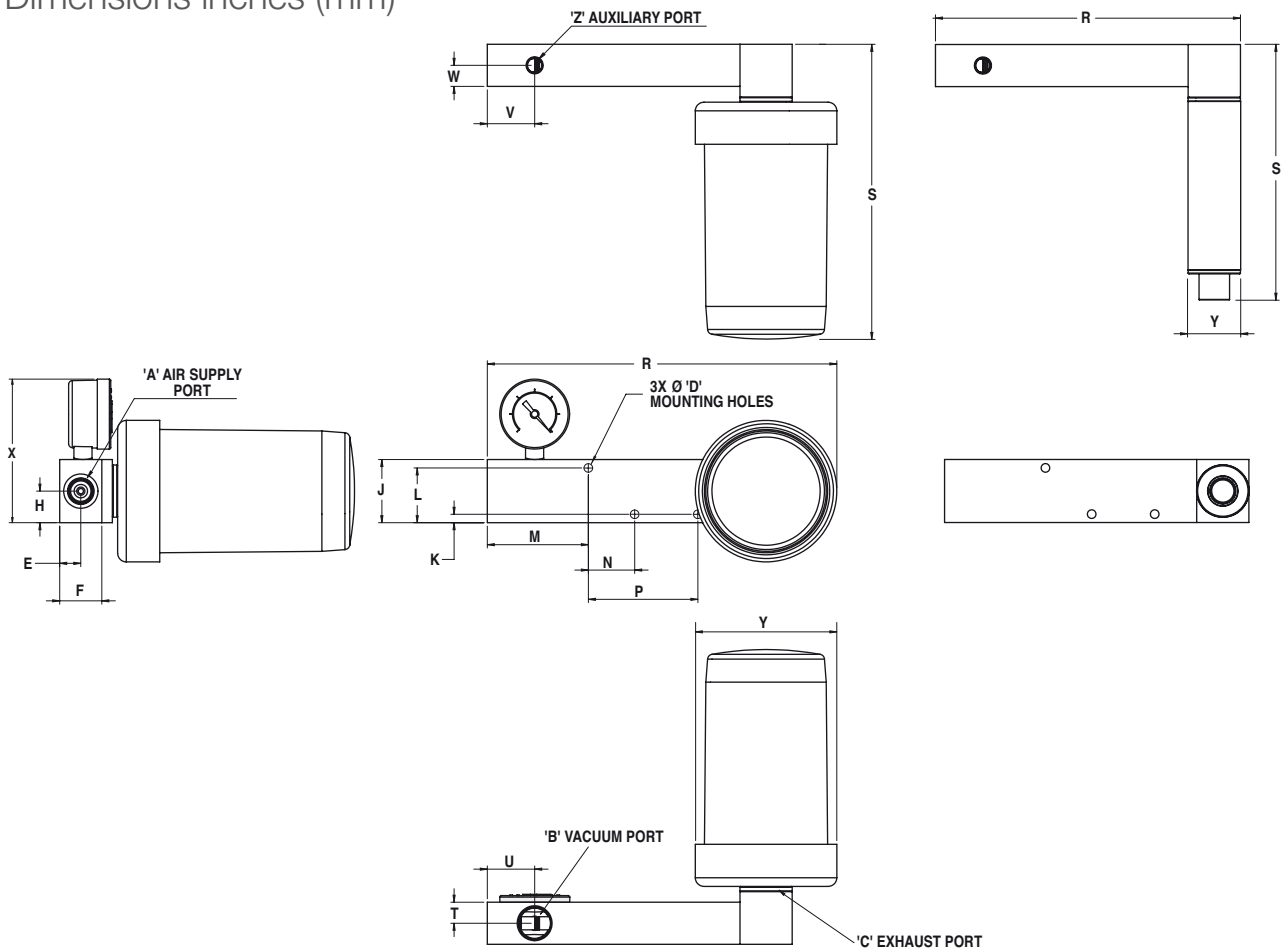
Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	A00
NVPM (Metric Thread)	M		
Vacuum Flow Level	Substitute	Silencers	Substitute
Venturi Cartridge 300	300	None	S00
Venturi Cartridge 350	350	NFA-51-.500 (72dB)	S27
		NFA-51-.500 - No Elbow (72dB)	S37
		NST8B (76dB)	S11
		NST8B - No Elbow (76dB)	S31
Vacuum Level	Substitute		
10"Hg @ 80PSI (Standard)	L		
20"Hg @ 80PSI (Standard)	M		
28"Hg @ 80PSI (Standard)	H		
10"Hg @ 60PSI	X		
20"Hg @ 60PSI	Y		
28"Hg @ 60PSI	Z		

● Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Gauge
NVP90-300M-S27A00	NFA-51-.500 Silencer	124250738	124470738	NVG-150-F
NVP90-300H-S27A00	NFA-51-.500 Silencer	124250738	124470738	NVG-150-F
NVP90-350M-S27A00	NFA-51-.500 Silencer	124250738	124470738	NVG-150-F
NVP90-350H-S27A00	NFA-51-.500 Silencer	124250738	124470738	NVG-150-F

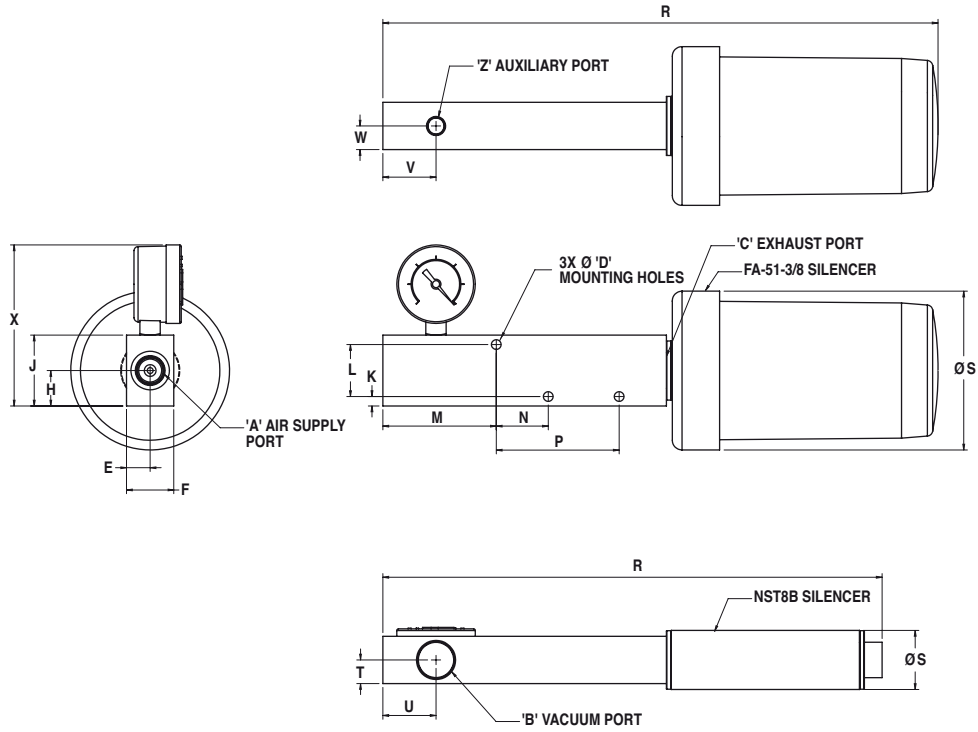
\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
NVP90-3***-S27A00	Imperial	3/8 NPTF	1/2 NPTF	1/2 NPTF	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.40	1.10	2.60	8.30	7.00	0.50	1.13	1.13	0.50	3.36	3.41	1/8 NPTF
NVP90-3***-S11A00	Imperial	3/8 NPTF	1/2 NPTF	1/2 NPTF	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.40	1.10	2.60	7.24	6.07	0.50	1.13	1.13	0.50	3.36	1.25	1/8 NPTF
NVPM90-3***-S27A00	(Metric)	(G 3/8)	(G 1/2)	(G 1/2)	(5.30)	(12.70)	(25.40)	(19.10)	(38.10)	(5.10)	(27.90)	(61.00)	(27.90)	(66.00)	(298.45)	(177.80)	(12.70)	(28.60)	(28.60)	(12.70)	(86.6)	(86.60)	(G 1/8)
NVPM90-3***-S11A00	(Metric)	(G 3/8)	(G 1/2)	(G 1/2)	(5.30)	(12.70)	(25.40)	(19.10)	(38.10)	(5.10)	(27.90)	(61.00)	(27.90)	(66.00)	(268.22)	(154.20)	(12.70)	(28.60)	(28.60)	(12.70)	(86.6)	(31.80)	(G 1/8)

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
NVP90-3***-S27A00	Imperial	3/8 NPTF	1/2 NPTF	1/2 NPTF	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.40	1.10	2.60	11.75	3.36	0.50	1.13	1.13	0.50	3.41	1/8 NPTF
NVP90-3***-S11A00	Imperial	3/8 NPTF	1/2 NPTF	1/2 NPTF	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.40	1.10	2.60	10.56	1.25	0.50	1.13	1.13	0.50	3.41	1/8 NPTF
NVPM90-3***-S27A00	(Metric)	(G 3/8)	(G 1/2)	(G 1/2)	(5.30)	(12.70)	(25.40)	(19.10)	(38.10)	(5.10)	(27.90)	(61.00)	(27.90)	(66.00)	(298.45)	(85.30)	(12.70)	(28.60)	(28.60)	(12.70)	(86.60)	(G 1/8)
NVPM90-3***-S11A00	(Metric)	(G 3/8)	(G 1/2)	(G 1/2)	(5.30)	(12.70)	(25.40)	(19.10)	(38.10)	(5.10)	(27.90)	(61.00)	(27.90)	(66.00)	(268.22)	(31.80)	(12.70)	(28.60)	(28.60)	(12.70)	(86.60)	(G 1/8)

# NVP90M0

Multi-port

- Multi-port version - distribute vacuum to multiple locations
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

### Fluid

Filtered (100 Micron) unlubricated, non-corrosive dry gases

### Operating Temperature

-100° to ~400° F (-73° to ~204°C)

### Operating Pressure

80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

### Materials

Pump Body: Anodized Aluminum

### Supply Line

1/2" OD (12mm)

### Vacuum Line

1/2" OD (12mm), preferred 3/4" (22mm) for lines exceeding 3' (1M)

### Mounting Holes

Mounting holes accept 10-32[M5] screws

### Control Valve

3 way/2 position (faster part release), minimum orifice – 0.25" [6mm]

### Performance Level Designations

"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications

"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

### Product options

Standard (NVP90)

Multi-port (NVP90M0)

Air Saver (NVP90C0)



## Standard Models

## Accessories

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP90M0-300M-S11A00	20"Hg	20.00 SCFM	12.50 SCFM	NST8B Silencer
NVP90M0-300H-S11A00	28"Hg	20.00 SCFM	22.00 SCFM	NST8B Silencer
NVP90M0-350M-S11A00	20"Hg	28.00 SCFM	22.00 SCFM	NST8B Silencer
NVP90M0-350H-S11A00	28"Hg	28.00 SCFM	28.00 SCFM	NST8B Silencer

# NVP90M0






Multi-port

## Option selector

NVP★90M0-★★★★-S11A★★

Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	A00
NVPM (Metric Thread)	M	Extra Port if Available / NVTMV-QD-6	A02
Vacuum Flow Level	Substitute	Extra Port if Available / NVSMN-QD-6	A04
Venturi Cartridge 300	300	Extra Port if Available / NVSMP-QD-6	A06
Venturi Cartridge 350	350	Silencers	
Vacuum Level	Substitute	NST8B (76dB)	S11
10"Hg @ 80PSI (Standard)	L		
20"Hg @ 80PSI (Standard)	M		
28"Hg @ 80PSI (Standard)	H		
10"Hg @ 60PSI	X		
20"Hg @ 60PSI	Y		
28"Hg @ 60PSI	Z		

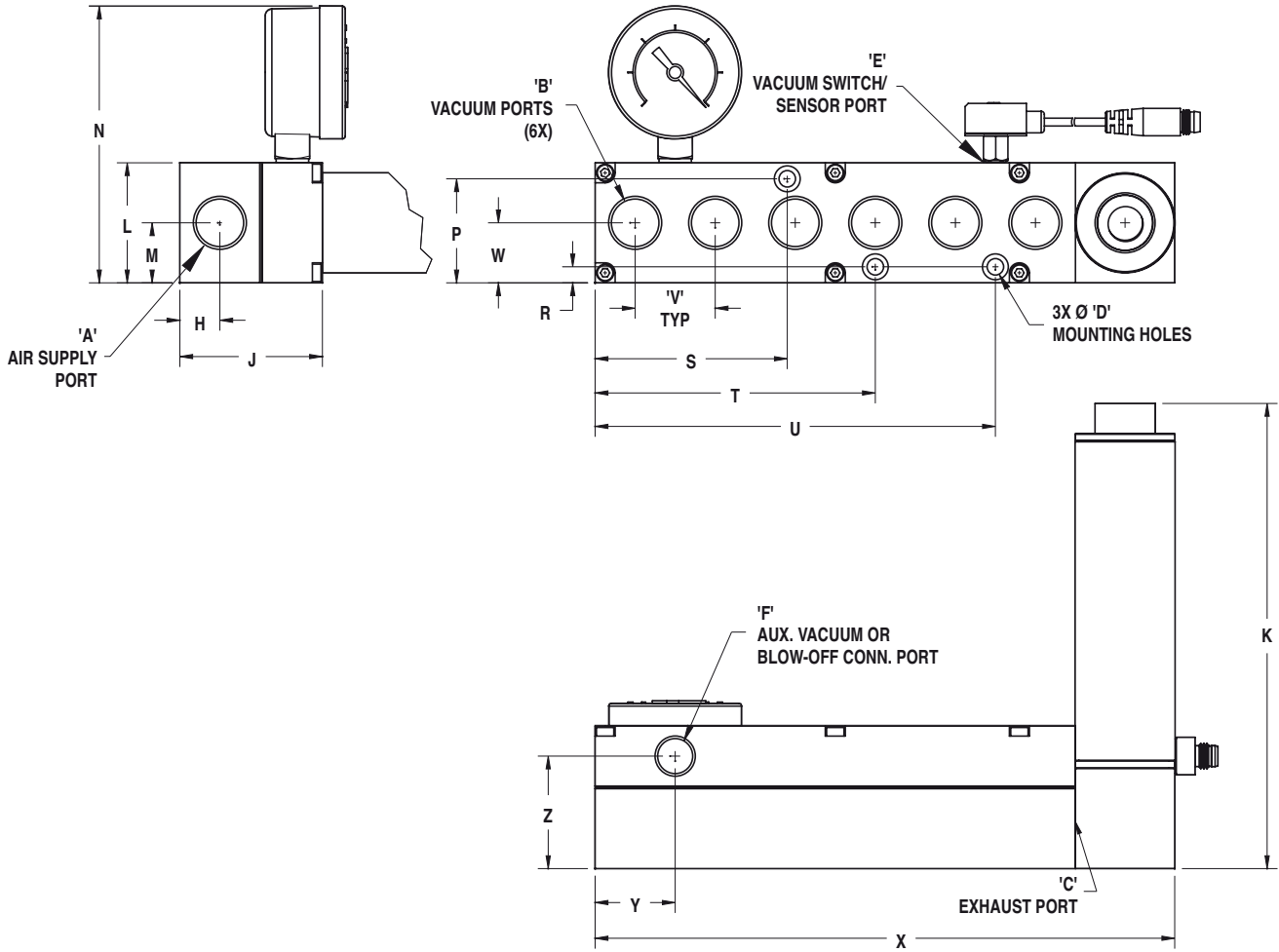
## Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Swivel Fitting	Vacuum Gauge
					
NVP90M0-300M-S11A00	NST8B Silencer	124250738	124470738	124470748	NVG-150-F
NVP90M0-300H-S11A00	NST8B Silencer	124250738	124470738	124470748	NVG-150-F
NVP90M0-350M-S11A00	NST8B Silencer	124250738	124470738	124470748	NVG-150-F
NVP90M0-350H-S11A00	NST8B Silencer	124250738	124470738	124470748	NVG-150-F

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

NVP90M0  
Multi-port

● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
NVP90M0-3***-S11A00	Imperial	3/8 NPTF	1/2 NPTF	1/2 NPTF	0.21	1/8 NPTF	1/8 NPTF	0.50	1.78	6.07	1.50	0.75	3.41	1.30	0.20	2.40	3.50	5.00	1.00	0.75	7.25	1.00	1.41
NVPM90M0-3***-S11A00	(Metric)	(G 3/8)	(G 1/2)	(G 1/2)	(5.30)	(G 1/8)	(G 1/8)	(12.70)	(45.20)	(154.20)	(38.10)	(19.10)	(86.60)	(33.00)	(5.10)	(61.00)	(88.90)	(127.00)	(25.40)	(19.10)	(184.20)	(25.40)	(35.80)

# NVP90C0

Air Saver

- Energy efficient – compressed air on only when needed, automatic shut-off
- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

### Fluid

Filtered (100 Micron) unlubricated, non-corrosive dry gases

### Operating Temperature

-30° to ~250° F (-34° to ~121°C)

### Operating Pressure

80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

### Materials

Pump Body: Anodized Aluminum

### Supply Line

1/2" OD (12mm)

### Vacuum Line

1/2" OD (12mm)

### Mounting Holes

Mounting holes accept 10-32[M5] screws

### Performance Level Designations

"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

### Pump Selection

1. Determine the desired evacuation time (speed)
2. Calculate the total volume of air to be evacuated in the system including vacuum lines, vessel/cavity size, cups, etc.
3. Determine the desired vacuum level, "Hg/mbar Application ex.: Evacuate 2 cu.ft. of air in 1 minute (60 sec) at a vacuum level of 21"Hg  
Formula: Time (60 sec)/Cu. ft (2) = 30 seconds per cu.ft. (evacuation speed)

### Product options

Standard (NVP90)  
Multi-port (NVP90M0)  
Air Saver (NVP90C0)



## Standard Models

Part number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Silencer
NVP90C0-300M-S11A00	20"Hg	20.00 SCFM	12.50 SCFM	NST8B Silencer
NVP90C0-300H-S11A00	28"Hg	20.00 SCFM	22.00 SCFM	NST8B Silencer
NVP90C0-350M-S11A00	20"Hg	28.00 SCFM	22.00 SCFM	NST8B Silencer
NVP90C0-350H-S11A00	28"Hg	28.00 SCFM	28.00 SCFM	NST8B Silencer

## Accessories



# NVP90C0

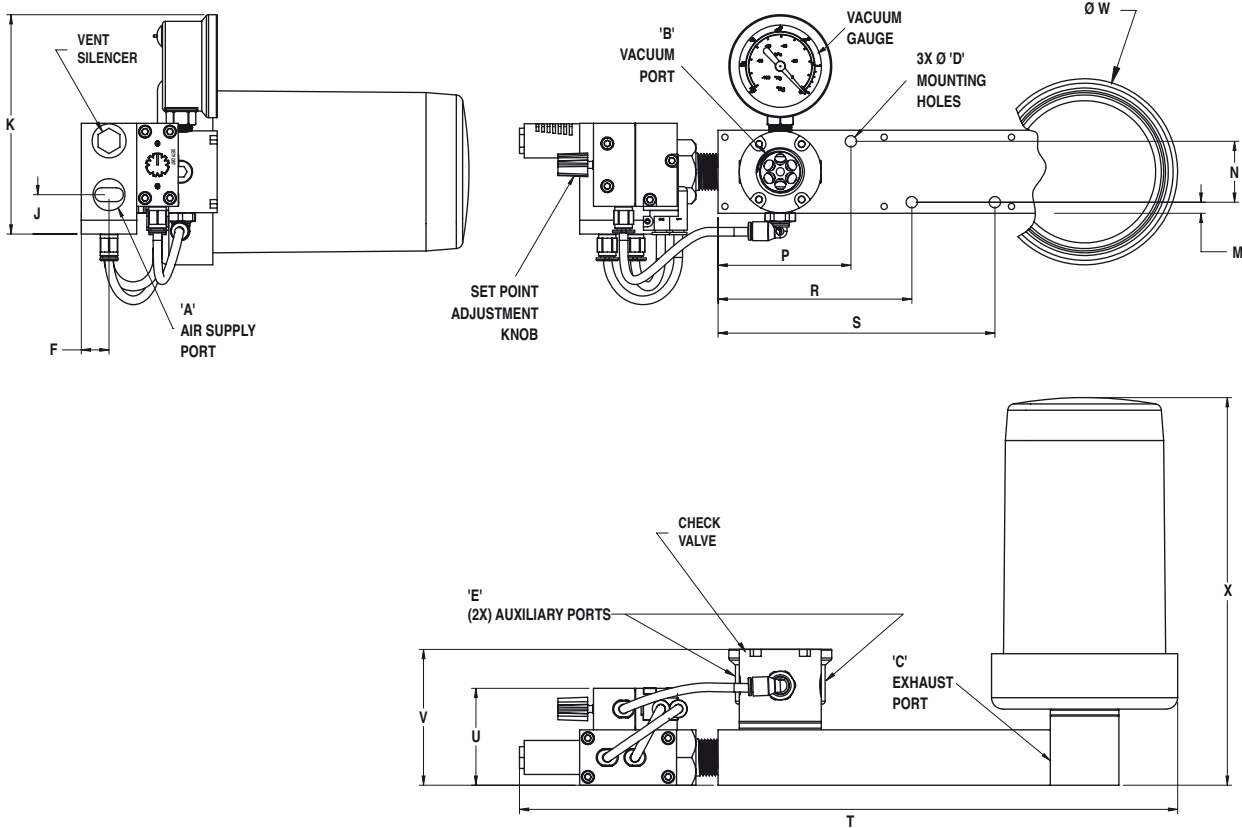
Air Saver

## Option selector

NVP★90C0-★★★★-S★★A00

Series	Substitute	Accessories	Substitute
NVP (Imperial Thread)		Extra Port if Available / No Accessories	<b>A00</b>
NVPM (Metric Thread)	<b>M</b>	Silencers	
<b>Vacuum Flow Level</b>	<b>Substitute</b>	NST8B (76dB)	<b>S11</b>
Venturi Cartridge 300	<b>300</b>	NFA-51-.500 (72dB)	<b>S27</b>
Venturi Cartridge 350	<b>350</b>		
Vacuum Level		Substitute	
20"Hg @ 90PSI (Standard)	<b>M</b>		
28"Hg @ 90PSI (Standard)	<b>H</b>		
20"Hg @ 60PSI	<b>Y</b>		
28"Hg @ 60PSI	<b>Z</b>		

## Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	J	K	M	N	P	R	S	T	U	V	W	X
NVP90M0-3***-S27A00	Imperial	3/8 NPTF	1/2 NPTF	1/2 NPTF	0.21	1/8 NPTF	0.50	0.74	3.90	0.20	1.30	2.40	3.50	5.00	11.20	1.72	2.30	3.23	7.00
NVPM90M0-3***-S27A00	(Metric)	(G 3/8)	(G 1/2)	(G 1/2)	(5.30)	(G 1/8)	(12.70)	(18.90)	(99.00)	(5.10)	(33.00)	(61.00)	(88.90)	(127.00)	(284.50)	(43.70)	(58.40)	(82.00)	(177.80)

# NVP90C0

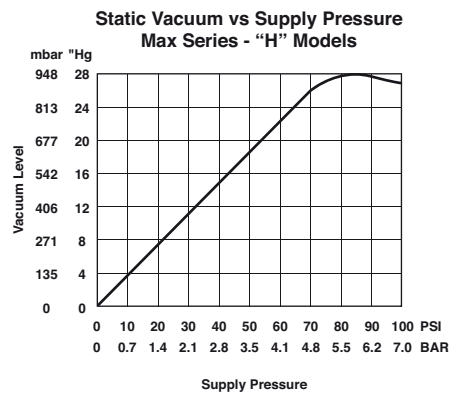
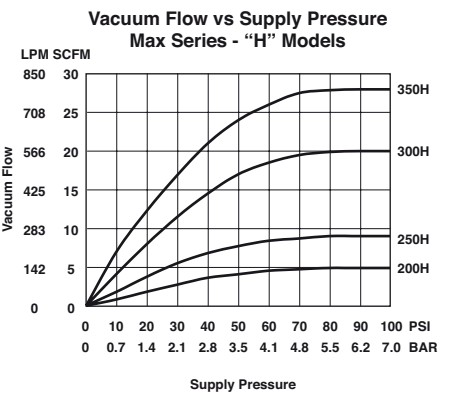
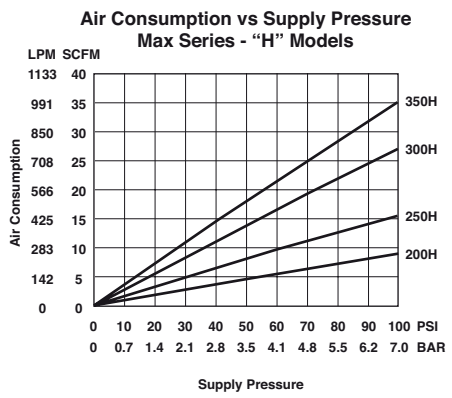
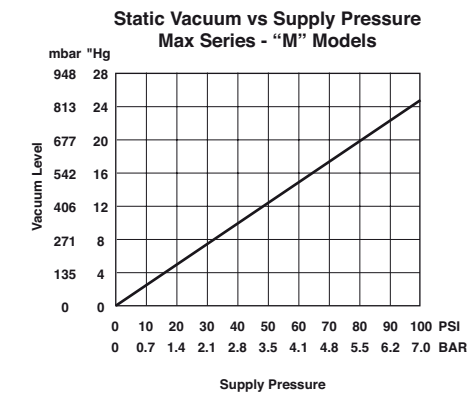
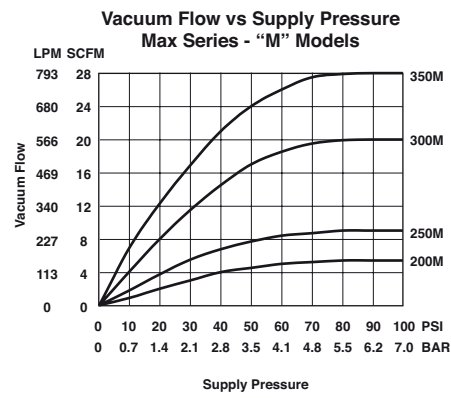
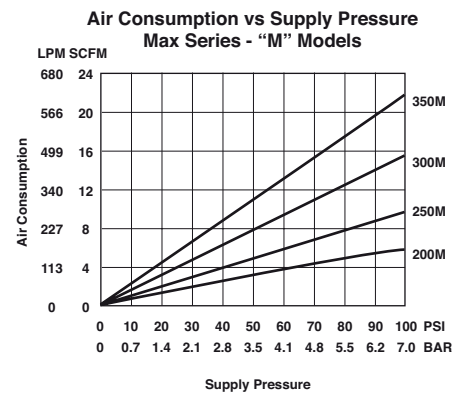
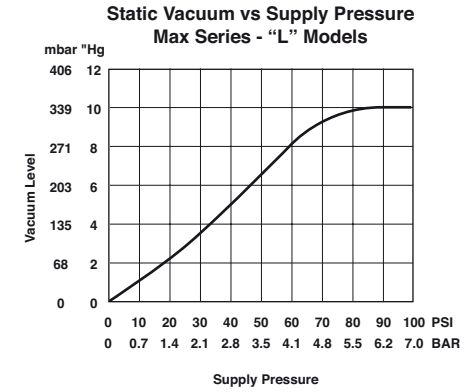
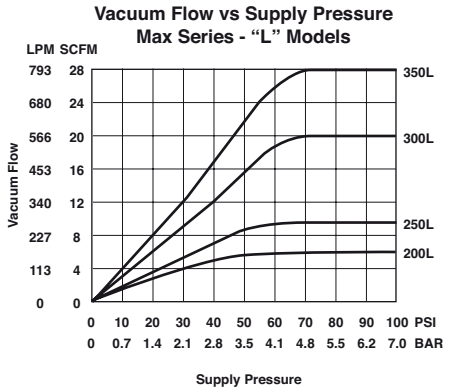
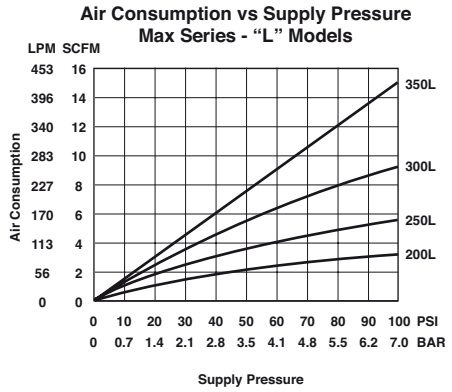
Air Saver

## ● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
300M	12.50 (354)	Vacuum Flow SCFM (L/min)	20.00 (566.30)	19.00 (530.80)	16.30 (461.60)	13.80 (390.80)	- (-)	8.10 (229.40)	5.50 (155.70)	3.30 (93.40)	0 (0)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.10 (0)	- (-)	1.80 (0.10)	2.70 (0.10)	4.60 (0.20)	8.70 (0.30)	- (-)	- (-)	- (-)	- (-)
350M	22.00 (623)	Vacuum Flow SCFM (L/min)	28.00 (792.90)	24.00 (679.60)	19.40 (549.30)	16.80 (475.70)	- (-)	14.50 (410.60)	11.20 (317.10)	4.80 (135.90)	0 (0)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.00 (0)	- (-)	1.50 (0.10)	2.10 (0.10)	4.30 (0.20)	8.40 (0.30)	- (-)	- (-)	- (-)	- (-)
300H	22.00 (623)	Vacuum Flow SCFM (L/min)	20.00 (566.30)	17.00 (481.40)	14.00 (396.40)	12.70 (359.60)	- (-)	12.00 (339.80)	10.00 (238.20)	7.40 (209.50)	- (-)	4.90 (138.80)	2.70 (76.50)	1.30 (36.80)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0.80 (0)	1.20 (0)	- (-)	2.00 (0.10)	2.80 (0.10)	3.90 (0.10)	- (-)	5.90 (0.20)	11.10 (0.40)	32.70 (1.20)	60.00 (2.10)
350H	28.00 (792.90)	Vacuum Flow SCFM (L/min)	28.00 (792.30)	22.00 (623.00)	18.70 (529.50)	15.90 (450.20)	- (-)	14.50 (410.60)	11.80 (334.10)	8.10 (229.40)	- (-)	5.70 (161.40)	4.50 (127.40)	2.25 (63.70)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.20 (0)	- (-)	1.90 (0.10)	2.30 (0.10)	3.40 (0.10)	- (-)	5.30 (0.20)	8.80 (0.30)	26.00 (0.90)	44.00 (1.60)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)

● Performance Data



**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NHVP

## High Vacuum Pump

- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 29.5"Hg [999mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

### Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
-30° to ~250° F (-34° to ~121°C)

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Materials**  
Pump Body: Anodized Aluminum

**Supply / Vacuum Line**  
3/8" OD (10mm) tube for sizes 100 / 200  
1/2" OD (12mm) tube for size 300

**Mounting Holes**  
Mounting holes accept 4-40[M3] screws for size 100  
Mounting holes accept 10-32[M5] screws for sizes 200 / 300



### Standard Models

### Accessories

Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Accessories
NHVP-100-S05A00	29.5"Hg	1.30 SCFM	4.90 SCFM	NST4 Silencer
NHVP-200-S10A00	29.5"Hg	3.45 SCFM	8.60 SCFM	NST8A Silencer
NHVP-300-S11A00	29.5"Hg	6.00 SCFM	22.00 SCFM	NST8B Silencer

### Option selector

NHVP★-★★★-S★★A00

Series	Substitute	Accessories
NVP (Imperial Thread)		Extra Port if Available / No Accessories <b>A00</b>
NVPM (Metric Thread)	<b>M</b>	<b>Silencer for NHVP-100</b>
<b>Size</b>	<b>Substitute</b>	NST4 (68dB) <b>S05</b>
NHVP 100	<b>100</b>	<b>Silencer for NHVP-200</b>
NHVP 200	<b>200</b>	NST8A (74dB) <b>S10</b>
NHVP 300	<b>300</b>	<b>Silencer for NHVP-300</b>
		NST8B (76dB) <b>S11</b>

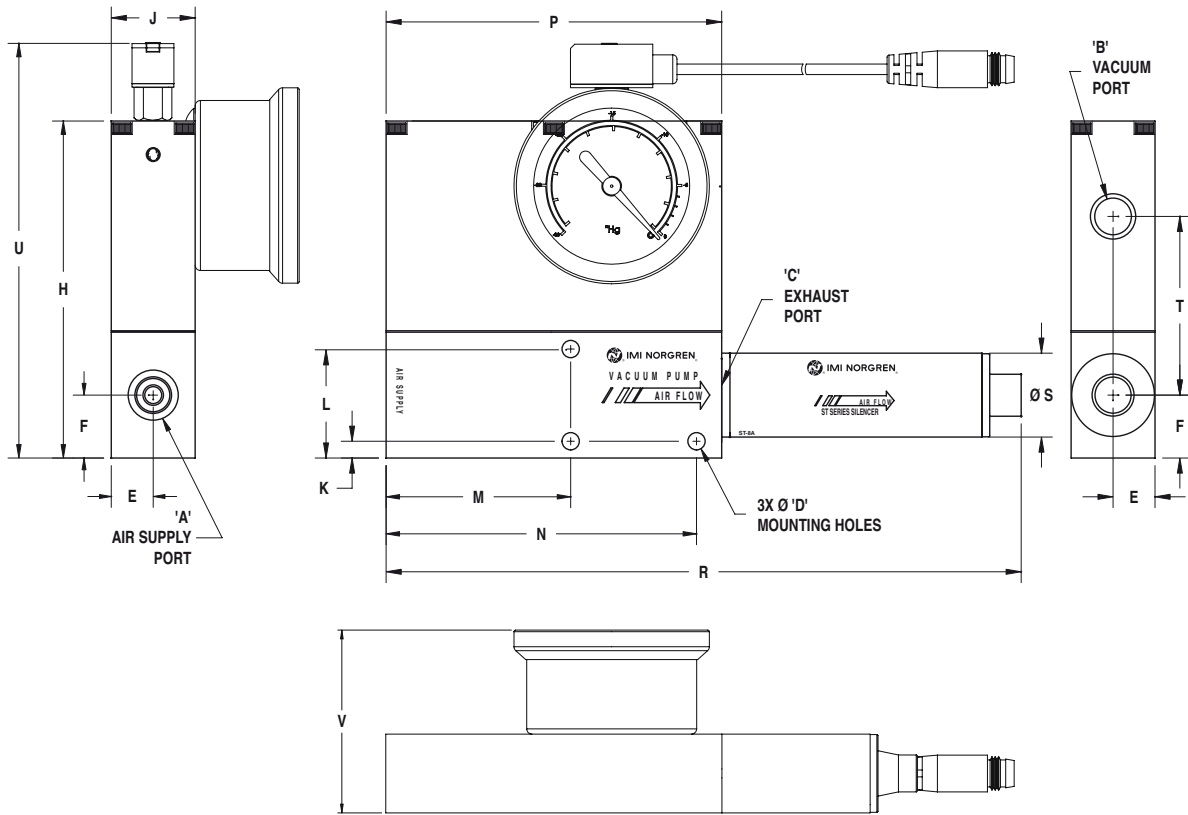
### Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Swivel Fitting	Vacuum Gauge	Flat Cup
NVP80-200M-S08A00	NST6A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NVCR-F40P-*
NVP80-200H-S08A00	NST6A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NCR-F40P-*
NVP80-250M-S10A00	NST8A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NVCR-F40P-*
NVP80-250H-S10A00	NST8A	124250628	124470618	NVCF5-38M	NVCR-B****-*	NVCR-F40P-*

\*Proper selection of vacuum cups depends on the application. Cups are available in various diameters, colors and materials. If you do not see what you are looking for, please consult factory  
\*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

# NHVP High Vacuum Pump

## ● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V
NHVP-100-S05A00	Imperial	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	0.38	0.38	2.28	0.75	0.09	0.67	1.78	N/A	3.20	5.06	0.75	1.28	3.02	2.00
NHVP-200-S10A00	Imperial	1/4 NPTF	1/4 NPTF	1/2 NPTF	0.21	0.50	0.75	4.02	1.00	0.20	N/A	2.20	3.70	4.00	7.57	1.00	2.13	4.76	2.00
NHVP-300-S11A00	Imperial	3/8 NPTF	1/4 NPTF	1/2 NPTF	0.21	0.50	0.75	4.02	1.00	0.20	N/A	2.50	4.00	5.00	9.81	1.25	2.12	4.76	2.00
NHVP-100-S05A00	(Metric)	(G 1/4)	(G 1/8)	(G 1/4)	(3.10)	(9.70)	(9.70)	(57.90)	(19.10)	(2.30)	(17.00)	(45.20)	N/A	(81.30)	(128.50)	(19.10)	(32.50)	(76.70)	(50.80)
NHVP-200-S10A00	(Metric)	(G 1/4)	(G 1/4)	(G 1/2)	(5.30)	(12.70)	(19.10)	(102.10)	(25.40)	(5.10)	N/A	(55.90)	(94.00)	(101.60)	(192.30)	(25.40)	(54.10)	(120.90)	(50.80)
NHVP-300-S11A00	(Metric)	(G 3/8)	(G 1/4)	(G 1/2)	(5.30)	(12.70)	(19.10)	(102.10)	(25.40)	(5.10)	N/A	(63.50)	(101.60)	(127.00)	(249.20)	(31.80)	(53.80)	(120.90)	(50.80)

## ● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	12"Hg (406)	15"Hg (508)	18"Hg (609)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
NHVP-100	4.90 (138.80)	Vacuum Flow SCFM (L/min)	1.30 (36.80)	1.20 (34)	1.10 (31.10)	1.00 (28.30)	0.90 (25.50)	0.90 (25.50)	0.90 (25.50)	0.80 (22.70)	0.60 (17)	0.30 (8.50)	0 (0)
		Evacuation time (seconds)	0 (0)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	32.50 (1.10)	1.10 (40)	40.00 (1.40)	52.50 (1.90)	72.50 (2.60)	135.50 (4.80)	281.30 (9.90)
NHVP-200	8.60 (243.50)	Vacuum Flow SCFM (L/min)	3.45 (97.70)	3.25 (92)	3.05 (86.40)	2.75 (77.90)	2.45 (69.40)	2.05 (58)	1.90 (53.80)	1.60 (45.30)	1.30 (36.80)	0.90 (25.50)	0 (0)
		Evacuation time (seconds)	0 (0)	2.30 (0.10)	3.80 (0.10)	6.50 (0.20)	10.20 (0.40)	14.10 (0.50)	20.00 (0.70)	29.50 (1)	44.00 (1.60)	67.50 (2.40)	125.00 (4.40)
NHVP-300	22.00 (623)	Vacuum Flow SCFM (L/min)	6.00 (169.90)	5.10 (144.40)	4.70 (133.10)	4.40 (124.60)	4.10 (116.10)	3.60 (101.90)	3.00 (85)	2.60 (73.60)	1.80 (51)	0.90 (25.50)	0 (0)
		Evacuation time (seconds)	0 (0)	1.20 (0)	2.10 (0.10)	3.40 (0.10)	5.20 (0.20)	7.70 (0.30)	11.50 (0.40)	16.30 (0.60)	24.00 (0.80)	39.50 (1.40)	98.10 (3.50)

# CYLINDRICAL VENTURI VACUUM PUMPS

The NJ-Series Venturi Vacuum Pumps utilize a fixed cartridge venturi design and features a cylindrical design for ease of installation and mounting into in-line pneumatic plumbing.

*Durable construction*



*Inline mounting*







*High vacuum levels*

# Fast Find Guide

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

## ● Cylindrical Venturi Vacuum Pumps

<p><b>NJ</b> Cylindrical Series - Vacuum level up to 28"Hg, flow up to 28.00 SCFM, robust design</p>  <p>Page 72</p>	<p><b>NVPI</b> Cylindrical In-line Series - Vacuum level up to 24"Hg</p>  <p>Page 86</p>	<p><b>NMPVG</b> Mini Cylindrical In-line Series - Vacuum level up to 27"Hg</p>  <p>Page 88</p>	<p><b>NVPIA</b> Cylindrical In-line Series - Vacuum level up to 25"Hg Atmospheric release</p>  <p>Page 91</p>
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# NJ MIN SERIES

- Durable – rugged aluminum body construction
- Strong hold – powerful vacuum up to 27" Hg [914mbar]
- Fast response – mounts in-line, close to vacuum point - no delay due to long plumbing lines
- Efficient – minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – no electricity needed
- Reliable operation – straight-through design with no moving parts

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gasses

### Operating Pressure

80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

### Operating Temperature

-100° to 400° F (-73° to ~204°C)

### Materials

Pump Body: Anodized Aluminum

Silencer Body: Brass

### Supply / Vacuum Line

Min. 5/32" OD (4mm), 1/4" OD (6mm) tube preferred for lines exceeding 3' (1M)



## Standard Models






Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Accessories	Material
NJS-40UM-S32M01	27" Hg	0.23 SCFM	0.52 SCFM	NVCF2-1032M Silencer	Aluminum

## Option selector

Series	Substitute	Materials	Substitute
NJS Imperial Thread 27" Hg [914mbar]	NJS	Aluminum (Standard)	M01
NJSM Metric Thread 27" Hg [914mbar]	NJSM	303 Stainless Steel	M05
		304 Stainless Steel	M06
		316 Stainless Steel	M07
		PVC	M09
		Delrin (Black)	M10
		Delrin (White)	M11
		PEEK	M14
Vacuum Flow Level	Substitute	Silencers	Substitute
Venturi Cartridge 40 @ 80 PSI (Standard)	40UM	None (Standard)	S00
Venturi Cartridge 40 @ 60 PSI	4XUM	NVCF2-1032M	S32

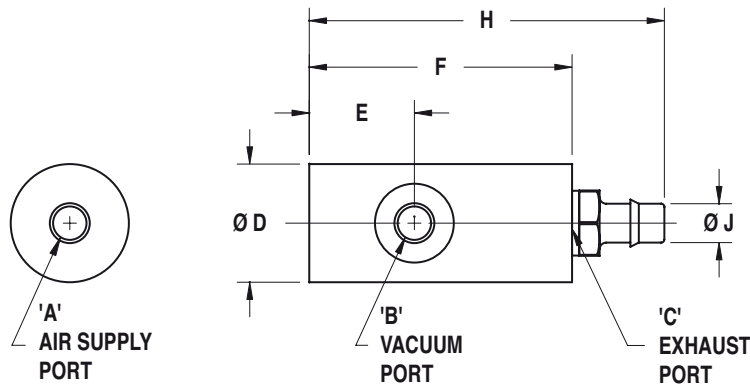
**NJS★-40★★-S★★M★★**

## Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Fitting	Flat Cup	Spring Leveler
						
NJS-40UM-S32M01	NVCF2 Silencer	124250410	124470410	NVCF3-1032M	NVCR-F***-*	NVSL1-*
NJS-40UM-S32M05	NVCF2 Silencer	124250410	124470410	NVCF3-1032M	NVCR-F***-*	NVSL1-*



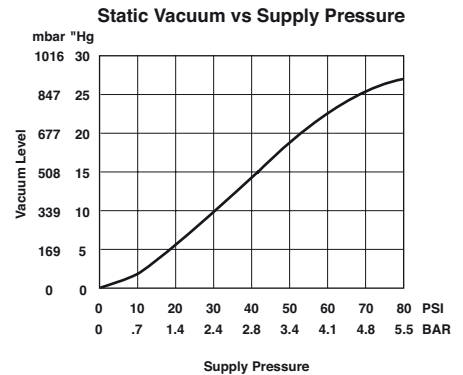
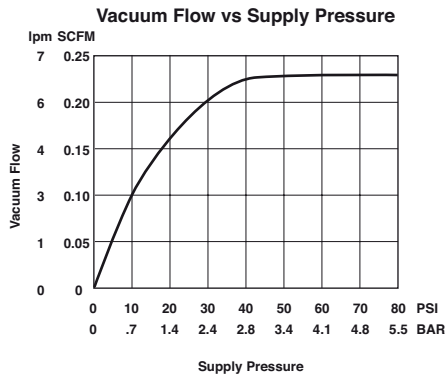
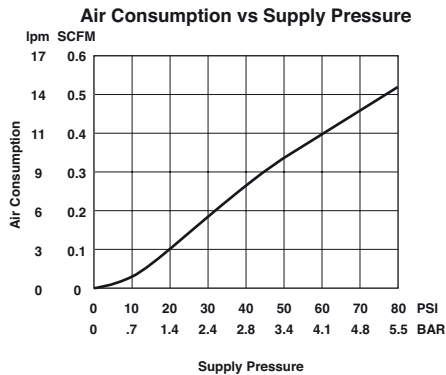
● Dimensions inches (mm)



Model	Units	A	B	C	D	E	F	H	J
NJS-40UM-S00M01	Imperial	10-32F	10-32F	10-32F	0.56	0.45	1.45	N/A	N/A
NJS-40UM-S32M01	Imperial	10-32F	10-32F	10-32F	0.56	0.45	1.45	1.90	0.19
NJSM-40UM-S00M01	(Metric)	(M5)	(M5)	(M5)	(14.30)	(11.40)	(36.80)	-	-
NJSM-40UM-S32M01	(Metric)	(M5)	(M5)	(M5)	(14.30)	(11.40)	(36.80)	(48.30)	(4.70)

● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)
NJS-40UM	0.52 (14.70)	Vacuum Flow SCFM (L/min)	0.23 (6.50)	0.20 (5.70)	0.17 (4.80)	0.15 (4.20)	- (-)	0.13 (3.70)	0.10 (2.80)	0.08 (2.30)	- (-)	0.05 (1.40)	0.03 (0.80)	0 (0)
		Evacuation time (seconds)	0 (0)	24.80 (0.90)	54.40 (1.90)	89.50 (3.20)	- (-)	130.30 (4.60)	178.30 (6.30)	240.40 (8.50)	- (-)	334.50 (11.80)	516.70 (18.20)	1028 (36.30)



Warnings

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

Warranty

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NJ MIN SERIES

- Durable – rugged aluminum body construction
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Fast response – mounts in-line, close to vacuum point - no delay due to long plumbing lines
- Efficient – minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – no electricity needed
- Reliable operation – straight-through design with no moving parts

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gasses

### Operating Pressure

80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

### Operating Temperature

-100° to 400°F (-73° to ~204°C), without silencer

### Materials

Pump Body: Anodized Aluminum

Silencer Body : Varies by Size

### Supply Line / Vacuum Line

1/4" OD (10mm) for sizes 60M and 90M

3/8" OD (6mm) for sizes 100M and 150M

### Performance Level Designations

"NJF" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications

"NJD" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications

"NJS" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications



## Standard Models

Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Accessories	Material
<b>NJF-90M-S05M01</b>	10"Hg	1.30 SCFM	0.50 SCFM	NST4 Silencer	Aluminum
<b>NJF-100M-S05M01</b>	10"Hg	2.10 SCFM	1.40 SCFM	NST4 Silencer	Aluminum
<b>NJF-150M-S05M01</b>	10"Hg	3.50 SCFM	1.80 SCFM	NST4 Silencer	Aluminum
<b>NJS-90M-S05M01</b>	28"Hg	1.20 SCFM	1.80 SCFM	NST4 Silencer	Aluminum
<b>NJS-100M-S05M01</b>	28"Hg	2.00 SCFM	2.80 SCFM	NST4 Silencer	Aluminum
<b>NJS-150M-S05M01</b>	28"Hg	3.20 SCFM	4.80 SCFM	NST4 Silencer	Aluminum

## Option selector

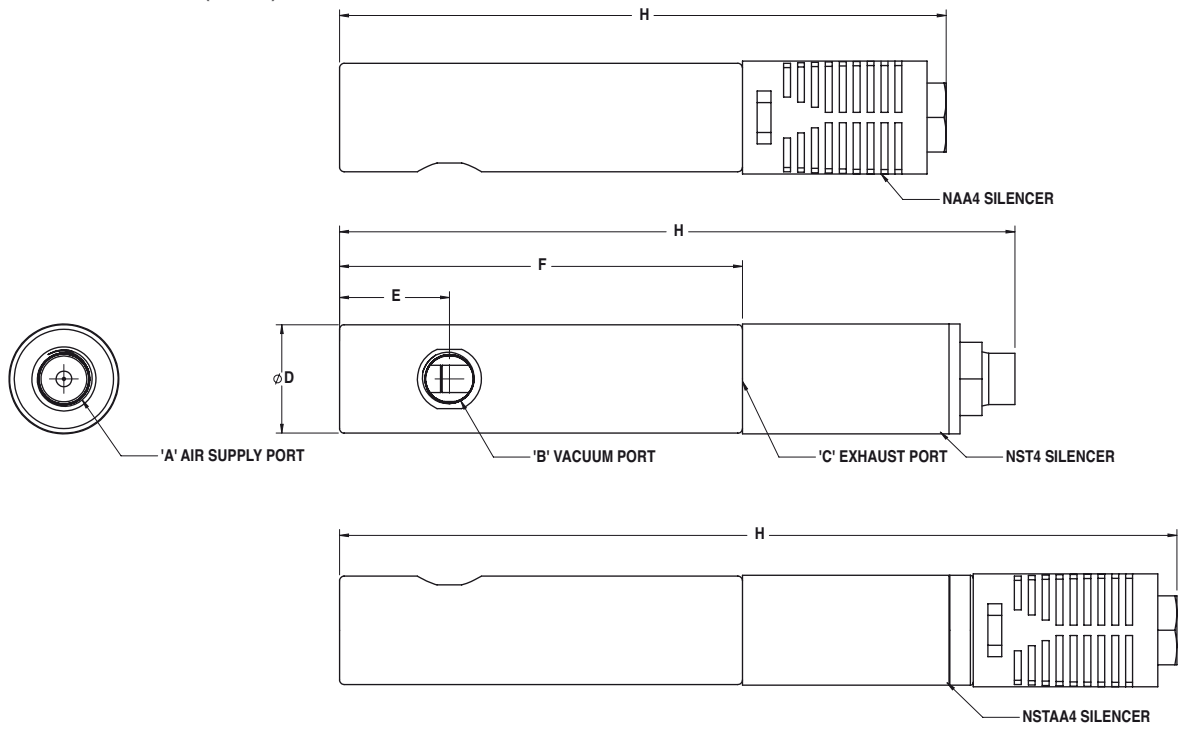
Series	Substitute	Materials	Substitute
NJF Imperial Thread 10"Hg [339mbar]	<b>NJF</b>	Aluminum (Standard)	<b>M01</b>
NJD Imperial Thread 20"Hg [677mbar]	<b>NJD</b>	303 Stainless Steel	<b>M05</b>
NJS Imperial Thread 28"Hg [948mbar]	<b>NJS</b>	304 Stainless Steel	<b>M06</b>
NJFM Metric Thread 10"Hg [339mbar]	<b>NJFM</b>	316 Stainless Steel	<b>M07</b>
NJDM Metric Thread 20"Hg [677mbar]	<b>NJDM</b>	PVC	<b>M09</b>
NJSM Metric Thread 28"Hg [948mbar]	<b>NJSM</b>	Delrin (Black)	<b>M10</b>
		Delrin (White)	<b>M11</b>
		Teflon	<b>M12</b>
		PEEK	<b>M14</b>
Vacuum Flow Level	Substitute	Silencers	Substitute
Venturi Cartridge 60M @ 80 PSI (Standard)	<b>60M</b>	None (Standard)	<b>S00</b>
Venturi Cartridge 90M @ 80 PSI (Standard)	<b>90M</b>	NAA4 (62dB)	<b>S02</b>
Venturi Cartridge 100M @ 80 PSI (Standard)	<b>100M</b>	NST4 (68dB)	<b>S05</b>
Venturi Cartridge 150M @ 80 PSI (Standard)	<b>150M</b>	NSTAA4 (58dB)	<b>S12</b>
Venturi Cartridge 60M @ 60 PSI	<b>6XM</b>		
Venturi Cartridge 90M @ 60 PSI	<b>9XM</b>		
Venturi Cartridge 100M @ 60 PSI	<b>10XM</b>		
Venturi Cartridge 150M @ 60 PSI	<b>15XM</b>		

NJ★-★★★-S★★M★★

● Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Fitting	Bellows Cup	Spring Leveler
<b>NJF-90M-S05M01</b>	NST4 Silencer	124250418	124470418	NVCF45-18M	NVCD-B**.*	NVSL2-***
<b>NJF-100M-S05M01</b>	NST4 Silencer	124250618	124470618	NVCF45-18M	NVCD-B**.*	NVSL2-***
<b>NJF-150M-S05M01</b>	NST4 Silencer	124250618	124470618	NVCF45-18M	NVCD-B**.*	NVSL2-***
<b>NJS-90M-S05M01</b>	NST4 Silencer	124250418	124470418	NVCF45-18M	NVCD-B**.*	NVSL2-***
<b>NJS-100M-S05M01</b>	NST4 Silencer	124250618	124470618	NVCF45-18M	NVCD-B**.*	NVSL2-***
<b>NJS-150M-S05M01</b>	NST4 Silencer	124250618	124470618	NVCF45-18M	NVCD-B**.*	NVSL2-***

● Dimensions inches (mm)

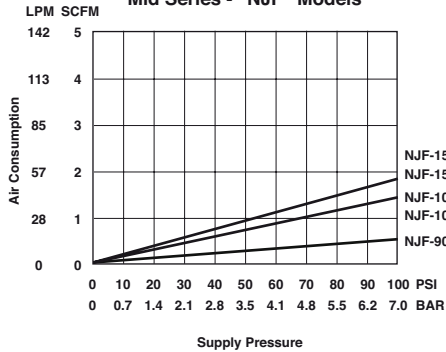


Model	Units	A	B	C	D	E	F	H
<b>NJ*-****-S00M01</b>	Imperial	1/8 NPTF	1/8 NPTF	1/4 NPTF	0.75	0.75	2.75	-
<b>NJ*-****-S02M01</b>	Imperial	1/8 NPTF	1/8 NPTF	1/4 NPTF	0.75	0.75	2.75	4.20
<b>NJ*-****-S05M01</b>	Imperial	1/8 NPTF	1/8 NPTF	1/4 NPTF	0.75	0.75	2.75	4.61
<b>NJ*-****-S12M01</b>	Imperial	1/8 NPTF	1/8 NPTF	1/4 NPTF	0.75	0.75	2.75	5.72
<b>NJ*M-****-S00M01</b>	(Metric)	(G 1/8)	(G 1/8)	(G 1/4)	(19.10)	(19.10)	(69.60)	-
<b>NJ*M-****-S02M01</b>	(Metric)	(G 1/8)	(G 1/8)	(G 1/4)	(19.10)	(19.10)	(69.60)	(105.20)
<b>NJ*M-****-S05M01</b>	(Metric)	(G 1/8)	(G 1/8)	(G 1/4)	(19.10)	(19.10)	(69.60)	(117.10)
<b>NJ*M-****-S12M01</b>	(Metric)	(G 1/8)	(G 1/8)	(G 1/4)	(19.10)	(19.10)	(69.60)	(145.30)

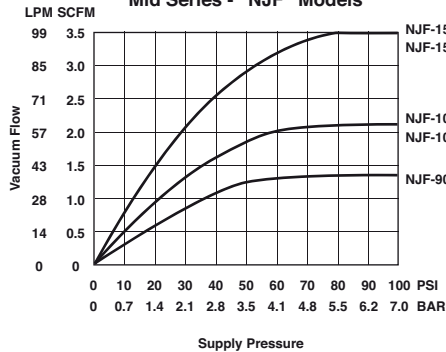
Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)
NJF-90	0.50 (14.20)	Vacuum Flow SCFM (L/min)	1.30 (36.8)	1.10 (31.1)	0.70 (19.8)	0.20 (5.7)	0 (0)
		Evacuation time (seconds)	0 (0)	3.26 (0.10)	7.93 (0.30)	18.65 (0.70)	39.63 (1.40)
NJF-100M NJF-100	1.40 (39.60)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	1.60 (45.30)	1.10 (31.10)	0.50 (14.20)	0 (0)
		Evacuation time (seconds)	0 (0)	2.33 (0.1)	4.66 (0.20)	10.88 (0.40)	24.09 (0.9)
NJF-150M NJF-150	1.80 (51)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	2.50 (70.80)	1.90 (53.80)	0.70 (19.80)	0 (0)
		Evacuation time (seconds)	0 (0)	2.05 (0.10)	4.62 (0.20)	11.80 (0.40)	22.80 (0.80)

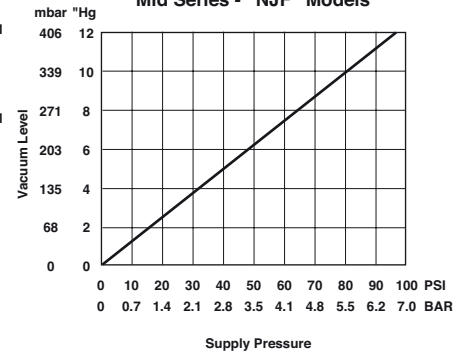
Air Consumption vs Supply Pressure  
Mid Series - "NJF" Models



Vacuum Flow vs Supply Pressure  
Mid Series - "NJF" Models

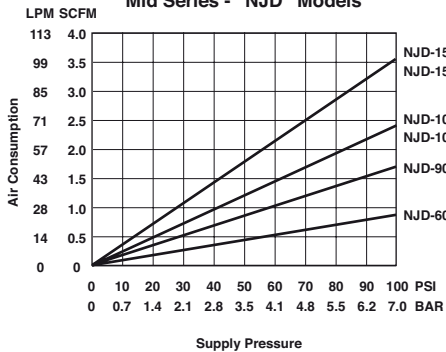


Static Vacuum vs Supply Pressure  
Mid Series - "NJF" Models

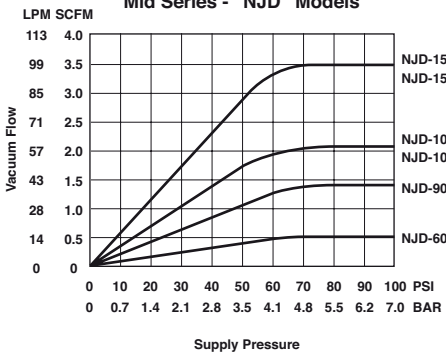


Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)
NJD-60M	0.50 (14.20)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.40 (11.30)	0.30 (8.50)	0.22 (6.20)	0.15 (4.20)	0.08 (2.30)	0.03 (0.80)	0 (0)
		Evacuation time (seconds)	0 (0)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227 (8)
NJD-90M	1.40 (39.60)	Vacuum Flow SCFM (L/min)	1.40 (39.60)	1.25 (35.40)	1.20 (34)	1.05 (29.70)	0.85 (24.10)	0.65 (18.40)	0.25 (7.10)	0 (0)
		Evacuation time (seconds)	0 (0)	3.75 (0.10)	7.20 (0.30)	12.40 (0.40)	19.10 (0.70)	29.90 (1.10)	52 (1.80)	104 (3.70)
NJD-100M NJD-100	1.80 (51)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	2 (56.60)	1.85 (52.40)	1.75 (49.60)	1.60 (45.30)	1.25 (35.40)	0.80 (22.70)	0 (0)
		Evacuation time (seconds)	0 (0)	2.65 (0.10)	5.80 (0.20)	9.90 (0.30)	16.20 (0.60)	22.90 (0.80)	36.20 (1.30)	56.60 (2)
NJD-150M NJD-150	2.80 (79.30)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	3.20 (90.60)	2.95 (83.50)	2.75 (77.90)	2.50 (70.80)	1.80 (51)	0.95 (26.90)	0 (0)
		Evacuation time (seconds)	0 (0)	1.35 (0)	3.20 (0.10)	5.20 (0.20)	7.70 (0.30)	11.80 (0.40)	23.40 (0.80)	52 (1.80)

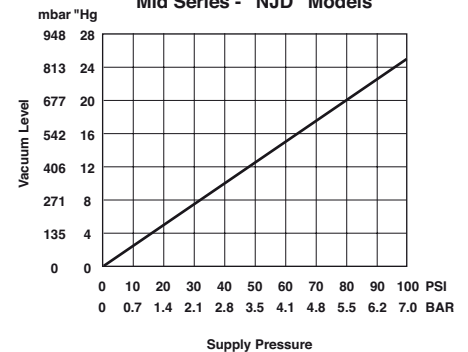
Air Consumption vs Supply Pressure  
Mid Series - "NJD" Models



Vacuum Flow vs Supply Pressure  
Mid Series - "NJD" Models



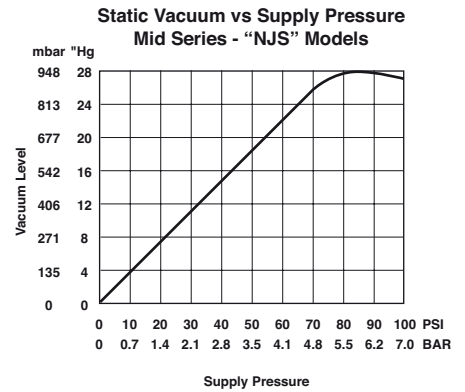
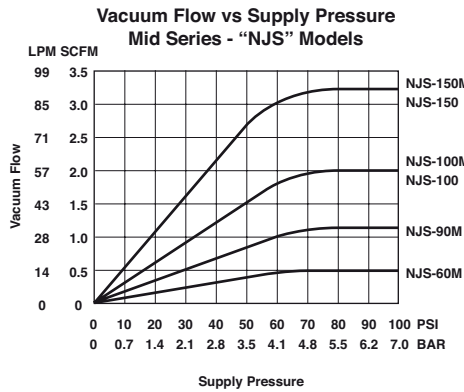
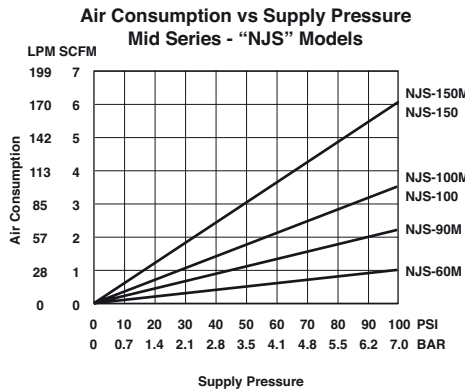
Static Vacuum vs Supply Pressure  
Mid Series - "NJD" Models



● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
NJS-60M	0.80 (22.70)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.38 (10.80)	0.32 (9.10)	0.30 (8.50)	- (-)	0.27 (7.60)	0.23 (6.50)	0.20 (5.70)	- (-)	0.13 (3.70)	0.05 (1.40)	0.02 (0.60)	0 (0)
		Evacuation time (seconds)	0 (0)	15 (0.50)	29.80 (1.10)	50.60 (1.80)	- (-)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	- (-)	183.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)
NJS-900M	1.80 (51)	Vacuum Flow SCFM (L/min)	1.20 (34)	1 (28.30)	0.95 (26.90)	0.90 (25.50)	- (-)	0.85 (24.10)	0.75 (21.20)	0.70 (19.80)	- (-)	0.52 (14.70)	0.47 (13.30)	0.20 (5.70)	0 (0)
		Evacuation time (seconds)	0 (0)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	- (-)	32.50 (1.10)	47 (1.70)	65.40 (2.30)	- (-)	92.20 (3.30)	130 (4.60)	222.20 (7.80)	281.30 (9.90)
NJS-100M NJS-100	2.80 (79.30)	Vacuum Flow SCFM (L/min)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	1.57 (44.50)	- (-)	1.40 (39.60)	1.25 (35.40)	1.05 (29.70)	- (-)	0.84 (23.80)	0.70 (19.80)	0.35 (9.90)	0 (0)
		Evacuation time (seconds)	0 (0)	2.70 (0.10)	6.50 (0.20)	11.20 (0.40)	- (-)	17.50 (0.60)	25.80 (0.90)	38.40 (1.40)	- (-)	55.20 (1.90)	79.20 (2.80)	166.70 (5.90)	251.80 (8.90)
NJS-150M NJS-150	4.80 (135.90)	Vacuum Flow SCFM (L/min)	3.20 (90.60)	2.80 (79.30)	2.50 (70.80)	2.30 (65.10)	- (-)	2 (56.60)	1.60 (45.30)	1.40 (39.60)	- (-)	1.20 (34)	0.80 (22.70)	0.50 (14.20)	0 (0)
		Evacuation time (seconds)	0 (0)	2.30 (0.10)	3.80 (0.10)	6.50 (0.20)	- (-)	10.20 (0.40)	14.20 (0.50)	21.30 (0.80)	- (-)	44.9 (1.60)	55 (1.90)	81 (2.90)	125 (4.40)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



Warnings

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

Warranty

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NJ MID SERIES

- Durable – rugged aluminum body construction
- Strong hold – powerful vacuum up to 28”Hg [948mbar]
- Fast response – mounts in-line, close to vacuum point - no delay due to long plumbing lines
- Efficient – minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – no electricity needed
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
 Filtered (50 Micron) unlubricated, non-corrosive dry gasses

**Operating Pressure**  
 80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Operating Temperature**  
 -100° to 400°F (-73° to ~204°C) without silencer

**Materials**  
 Pump Body: Anodized Aluminum  
 Silencer Body : Varies by Size

**Supply Line / Vacuum Line**  
 3/8" OD (10mm) for sizes 100-200  
 1/2" OD (12mm) for size 250

**Performance Level Designations**  
 "NJF" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
 "NJD" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
 "NJS" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications



## Standard Models

Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Accessories	Material
NJF-200-S08M01	10"Hg	6.00 SCFM	2.80 SCFM	NST6A Silencer	Aluminum
NJF-250-S09M01	10"Hg	9.50 SCFM	4.80 SCFM	NST6B Silencer	Aluminum
NJS-200-S08M01	28"Hg	5.40 SCFM	7.80 SCFM	NST6A Silencer	Aluminum
NJS-250-S09M01	28"Hg	9.00 SCFM	12.50 SCFM	NST6B Silencer	Aluminum

## Option selector

NJ★-★★★-S★★M★★

Series	Substitute
NJF Imperial Thread 10"Hg [339mbar]	<b>NJF</b>
NJD Imperial Thread 20"Hg [677mbar]	<b>NJD</b>
NJS Imperial Thread 28"Hg [948mbar]	<b>NJS</b>
NJFM Metric Thread 10"Hg [339mbar]	<b>NJFM</b>
NJDM Metric Thread 20"Hg [677mbar]	<b>NJDM</b>
NJSM Metric Thread 28"Hg [948mbar]	<b>NJSM</b>

Vacuum Flow Level	Substitute
Venturi Cartridge 100 @ 80 PSI (Standard)	<b>100</b>
Venturi Cartridge 150 @ 80 PSI (Standard)	<b>150</b>
Venturi Cartridge 200 @ 80 PSI (Standard)	<b>200</b>
Venturi Cartridge 250 @ 80 PSI (Standard)	<b>250</b>
Venturi Cartridge 100 @ 100 PSI	<b>10X</b>
Venturi Cartridge 150 @ 100 PSI	<b>15X</b>
Venturi Cartridge 200 @ 200 PSI	<b>20X</b>
Venturi Cartridge 250 @ 200 PSI	<b>25X</b>

Materials	Substitute
Aluminum (Standard)	<b>M01</b>
303 Stainless Steel	<b>M05</b>
304 Stainless Steel	<b>M06</b>
316 Stainless Steel	<b>M07</b>
PVC	<b>M09</b>
Delrin (Black)	<b>M10</b>
Delrin (White)	<b>M11</b>
Teflon	<b>M12</b>
PEEK	<b>M14</b>

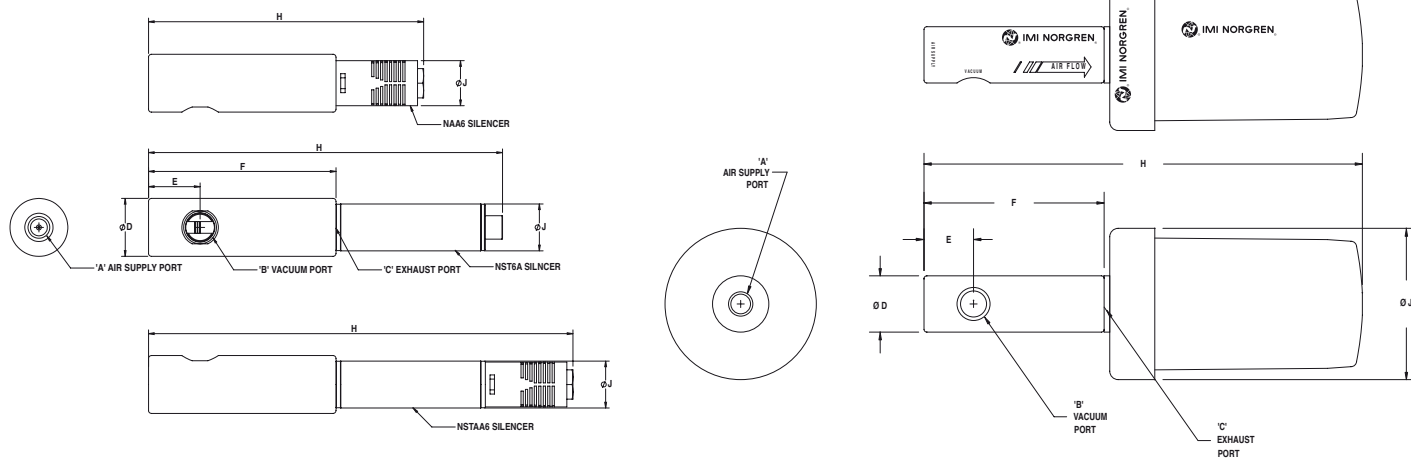
Silencers	Substitute
None	<b>S00</b>
NAA6 (70dB)	<b>S03</b>
NST6A (72dB)	<b>S08</b>
NST6B (72dB)	<b>S09</b>
NSTAA6 (64dB)	<b>S13</b>
NFA-51-.375 (72dB)	<b>S26</b>

● Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Fitting	Bellows Cup	Spring Leveler
<b>NJF-200-S08M01</b>	NST6A Silencer	124250628	124470628	VCF5-38M	NVCR-B***.*	NVCR-F***.*
<b>NJF-250-S09M01</b>	NST6B Silencer	124250728	124470728	VCF5-38M	NVCR-B***.*	NVCR-F***.*
<b>NJS-200-S08M01</b>	NST6A Silencer	124250628	124470628	VCF5-38M	NVCR-B***.*	NVCR-F***.*
<b>NJS-250-S09M01</b>	NST6B Silencer	124250728	124470728	VCF5-38M	NVCR-B***.*	NVCR-F***.*

\*Proper selection of vacuum cups depends on the application. Cups are available in various diameters, colors and materials. If you do not see what you are looking for, please consult factory  
 \*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)

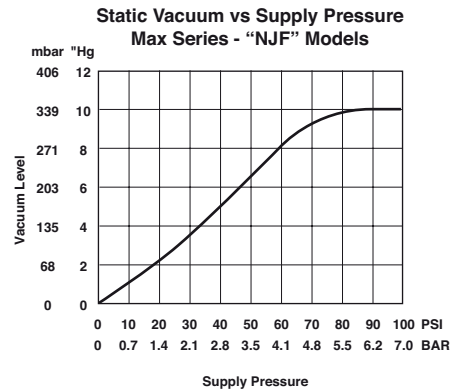
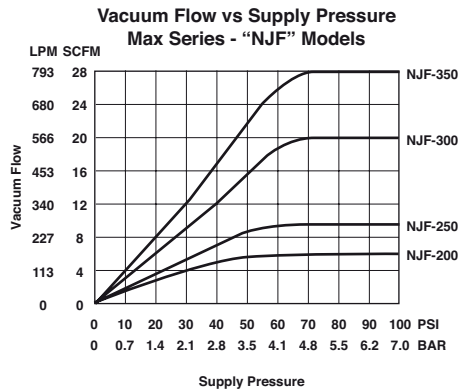
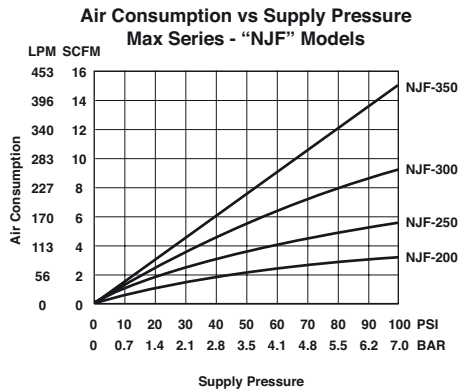


Model	Units	A	B	C	D	E	F	H	J
<b>NJ*-***-S00M01</b>	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	4.00	-	-
<b>NJ*-***-S03M01</b>	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	4.00	5.87	0.96
<b>NJ*-***-S08M01</b>	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	4.00	7.55	1.00
<b>NJ*-***-S13M01</b>	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	4.00	9.06	1.00
<b>NJ*-***-S26M01</b>	Imperial	1/4 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	4.00	9.74	3.36
<b>NJ*M-***-S00M01</b>	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(31.80)	(27.90)	(101.60)	-	-
<b>NJ*M-***-S03M01</b>	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(31.80)	(27.90)	(101.60)	(149.10)	(24.40)
<b>NJ*M-***-S08M01</b>	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(31.80)	(27.90)	(101.60)	(191.80)	(25.40)
<b>NJ*M-***-S13M01</b>	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(31.80)	(27.90)	(101.60)	(230.00)	(25.40)
<b>NJ*M-***-S26M01</b>	(Metric)	(G 1/4)	(G 3/8)	(G 3/8)	(31.80)	(27.90)	(101.60)	(247.30)	(85.30)

● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)
NJF-200	2.80 (79.30)	Vacuum Flow SCFM (L/min)	6.00 (169.9)	5.80 (164.20)	4.30 (121.80)	1.70 (48.10)	0 (0)
		Evacuation time (seconds)	0 (0)	0.77 (0)	2.05 (0.10)	4.62 (0.20)	13.34 (0.50)
NJF-250	4.80 (135.90)	Vacuum Flow SCFM (L/min)	9.50 (269)	7.90 (223.70)	5.70 (161.40)	2.20 (62.30)	0 (0)
		Evacuation time (seconds)	0 (0)	0.52 (0)	1.28 (0)	3.08 (0.10)	7.95 (0.30)
NJF-300	7.8 (220.90)	Vacuum Flow SCFM (L/min)	20.00 (566.30)	14.00 (399.40)	9.50 (269)	3.50 (99.10)	0 (0)
		Evacuation time (seconds)	0 (0)	0.26 (0)	0.77 (0)	1.80 (0.10)	4.10 (0.10)
NJF-350	12.50 (354)	Vacuum Flow SCFM (L/min)	28.00 (792.90)	18.00 (509.70)	12.30 (348.30)	4.50 (127.40)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0.52 (0)	1.28 (0)	2.82 (0.10)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



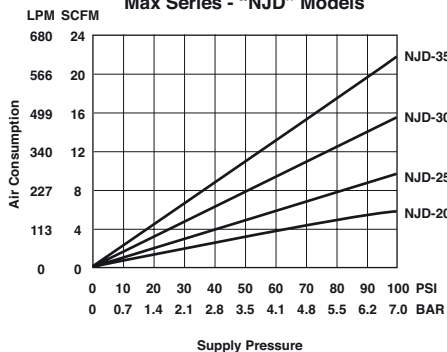


● Performance Data

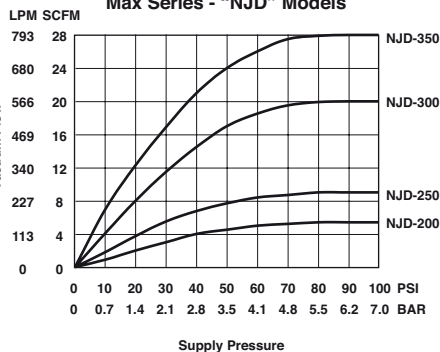
Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)
NJD-200	4.80 (135.90)	Vacuum Flow SCFM (L/min)	6.00 (169.9)	5.30 (150.10)	4.90 (138.80)	4.00 (113.30)	3.50 (99.10)	2.50 (70.80)	1.10 (31.10)	0 (0)
		Evacuation time (seconds)	0 (0)	0.75 (0)	1.90 (0.10)	3.20 (0.10)	5.30 (0.20)	8.70 (0.30)	17.10 (0.60)	42.60 (1.50)
NJD-250	7.80 (220.90)	Vacuum Flow SCFM (L/min)	9.50 (269)	9.20 (260.50)	8.30 (235)	7.00 (198.20)	4.70 (133.10)	3.40 (96.30)	2.20 (62.30)	0 (0)
		Evacuation time (seconds)	0 (0)	0.45 (0)	1.10 (0)	2.40 (0.10)	3.80 (0.10)	6.00 (0.20)	9.70 (0.30)	15.40 (0.50)
NJD-300	12.50 (354)	Vacuum Flow SCFM (L/min)	20.00 (566.30)	19.00 (538)	16.30 (461.60)	13.80 (390.80)	8.10 (229.40)	5.50 (155.70)	3.30 (93.40)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.10 (0)	1.80 (0.10)	2.70 (0.10)	4.60 (0.20)	8.70 (0.30)
NJD-350	22.00 (623)	Vacuum Flow SCFM (L/min)	28.00 (792.90)	24.00 (679.60)	19.40 (549.30)	16.80 (475.70)	14.50 (410.60)	11.20 (317.10)	4.80 (135.90)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.00 (0)	1.50 (0.10)	2.10 (0.10)	4.30 (0.2)	8.40 (0)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)

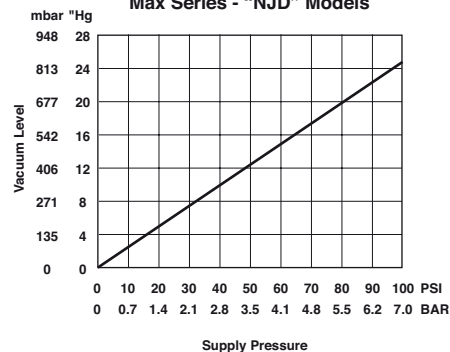
**Air Consumption vs Supply Pressure**  
Max Series - "NJD" Models



**Vacuum Flow vs Supply Pressure**  
Max Series - "NJD" Models



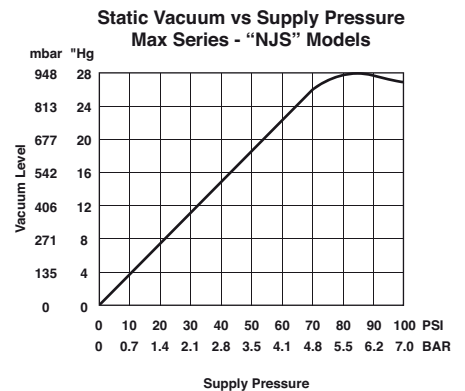
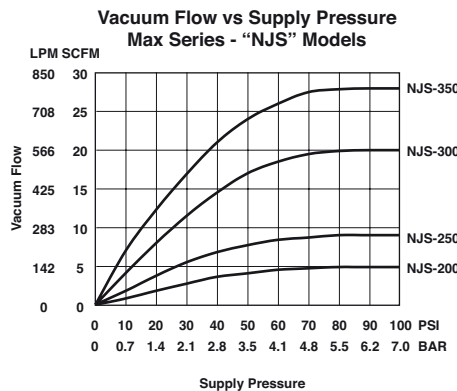
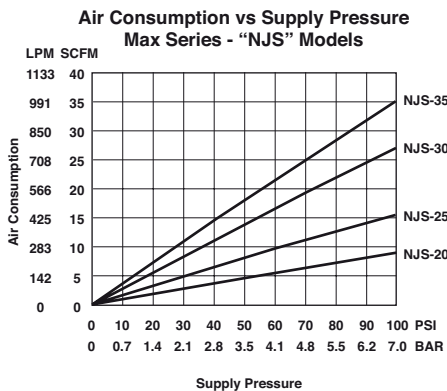
**Static Vacuum vs Supply Pressure**  
Max Series - "NJD" Models



● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
NJS-200	7.80 (220.90)	Vacuum Flow SCFM (L/min)	5.40 (152.90)	4.70 (133.10)	3.85 (109)	3.30 (93.40)	- (-)	3.00 (85)	2.60 (73.60)	2.10 (59.50)	- (-)	1.60 (45.30)	1.20 (34)	0.60 (17)	0 (0)
		Evacuation time (seconds)	0 (0)	1.20 (0.10)	2.10 (0.10)	3.40 (0.10)	- (-)	5.20 (0.20)	7.70 (0.30)	11.50 (0.40)	- (-)	20.00 (0.70)	33.50 (1.20)	62.60 (2.20)	98.10 (3.50)
NJS-250	12.50 (354)	Vacuum Flow SCFM (L/min)	9.00 (254.90)	8.50 (240.70)	7.85 (222.30)	7.00 (198.20)	- (-)	6.50 (184.10)	5.30 (150.10)	3.90 (110.40)	- (-)	2.50 (70.80)	1.80 (51)	0.90 (25.50)	0 (0)
		Evacuation time (seconds)	0 (0)	0.75 (0)	1.30 (0)	2.20 (0.10)	- (-)	3.50 (0.10)	5.60 (0.20)	9.10 (0.30)	- (-)	17.40 (0.60)	30.10 (1.10)	56.00 (2)	76.00 (2.70)
NJS-300	22.00 (623)	Vacuum Flow SCFM (L/min)	20.00 (566.30)	17.00 (481.40)	14.00 (396.40)	12.70 (359.60)	- (-)	12.00 (339.80)	10.00 (238.20)	7.40 (209.50)	- (-)	4.90 (138.80)	2.70 (76.50)	1.30 (36.80)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0.80 (0)	1.20 (0)	- (-)	2.00 (0.10)	2.80 (0.10)	3.90 (0.10)	- (-)	5.90 (0.20)	11.10 (0.40)	32.70 (1.20)	60.00 (2.10)
NJS-350	28.00 (792.90)	Vacuum Flow SCFM (L/min)	28.00 (792.9)	22.00 (623)	18.70 (529.50)	15.90 (450.20)	- (-)	14.50 (410.60)	11.80 (334.10)	8.10 (229.40)	- (-)	5.70 (161.40)	4.50 (127.40)	2.25 (63.70)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.20 (0)	- (-)	1.90 (0.10)	2.30 (0.10)	3.40 (0.10)	- (-)	5.30 (0.20)	8.80 (0.30)	26.00 (0.90)	44.00 (1.60)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NJ MAX SERIES

- Durable – rugged aluminum body construction
- Strong hold – powerful vacuum up to 28"Hg [948mbar]
- Fast response – mounts in-line, close to vacuum point - no delay due to long plumbing lines
- Efficient – minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – no electricity needed
- Reliable operation – straight-through design with no moving parts

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gasses

**Operating Pressure**  
80 PSI (5.5 bar) Standard or 60 PSI (4.1 bar)

**Operating Temperature**  
-100° to 400°F (-73° to ~204°C) without silencer

**Materials**  
Pump Body: Anodized Aluminum  
Silencer Body : Varies by Size

**Supply Line**  
1/2" OD (12mm)

### Vacuum Line

1/2" OD (12mm) preferred - 3/4" OD (19mm) for lines exceeding 3' (1m)

### Performance Level Designations

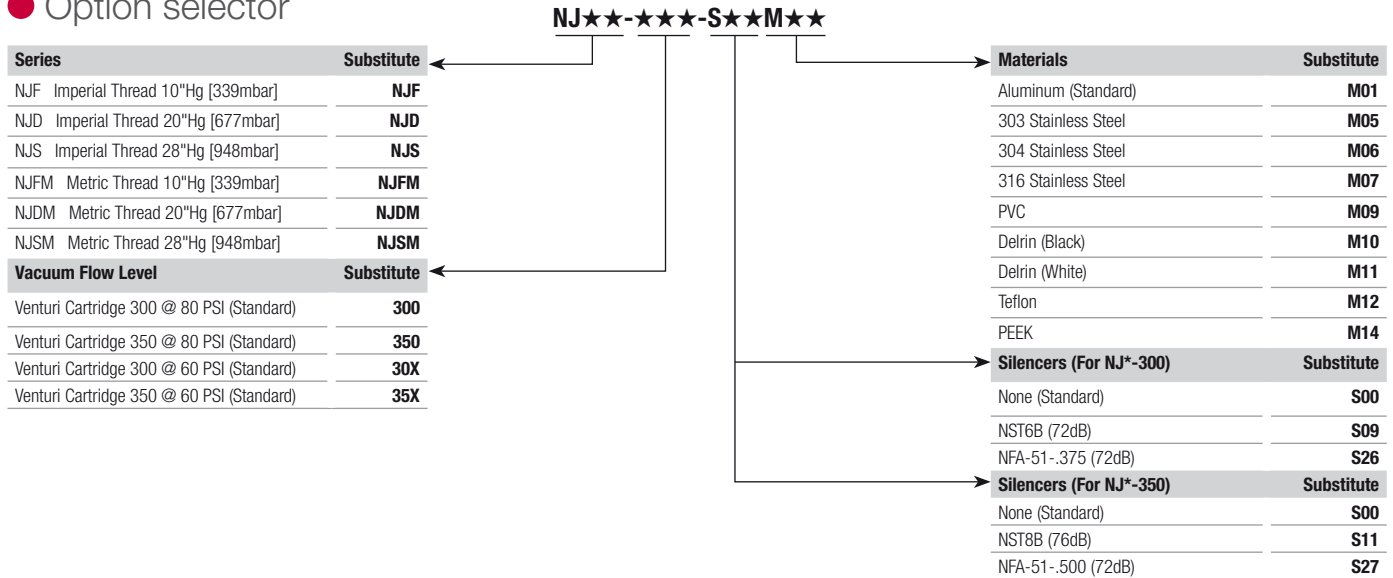
"NJF" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications  
"NJD" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications  
"NJS" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications



## Standard Models

Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption	Accessories	Material
NJF-300-S09M01	10"Hg	20.00 SCFM	7.80 SCFM	NST6B Silencer	Aluminum
NJF-350-S11M01	10"Hg	28.00 SCFM	12.50 SCFM	NST8B Silencer	Aluminum
NJS-300-S09M01	28"Hg	20.00 SCFM	22.00 SCFM	NST6B Silencer	Aluminum
NJS-350-S11M01	28"Hg	28.00 SCFM	28.00 SCFM	NST8B Silencer	Aluminum

## Option selector

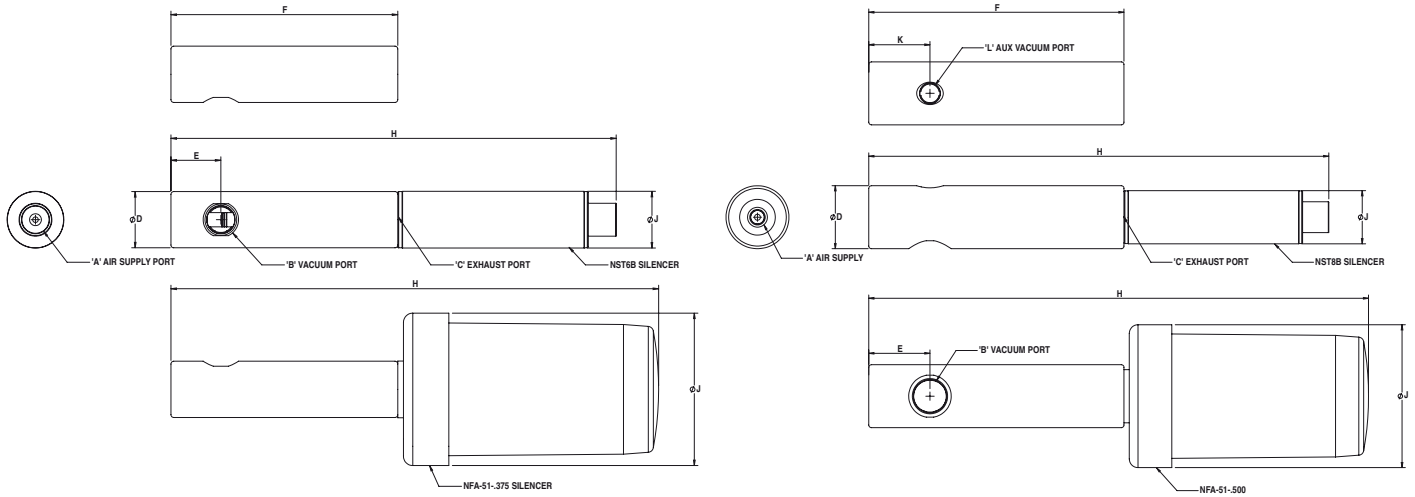


## Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting	Vacuum Fitting	Bellows Cup	Spring Leveler
						
NJF-300-S09M01	NST6B Silencer	124250738	124470738	VCF5-38M	NVCR-B***.*	NVCR-F***.*
NJF-350-S11M01	NST8B Silencer	124250748	124470738	-	-	-
NJS-300-S09M01	NST6B Silencer	124250738	124470738	VCF5-38M	NVCR-B***.*	NVCR-F***.*
NJS-350-S11M01	NST8B Silencer	124250748	124470738	-	-	-

\*Proper selection of vacuum cups depends on the application. Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory  
\*The fittings, cups, and spring levelers listed are a small selection of possible options please refer to the specific catalog section

● Dimensions inches (mm)

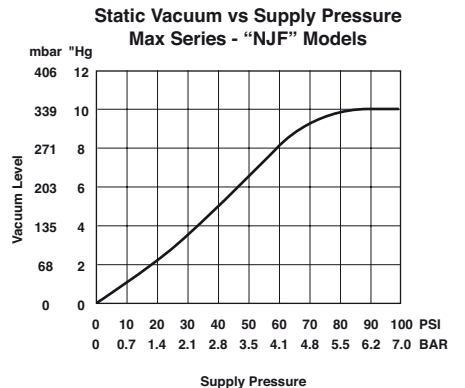
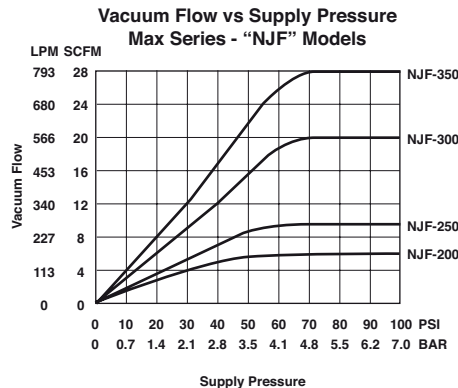
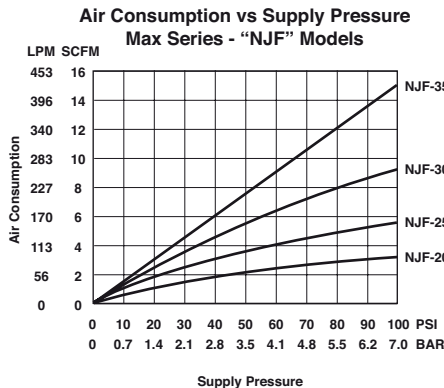


Model	Units	A	B	C	D	E	F	H	J	K	L
NJ*-300-S00M01	Imperial	3/8 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	5.00	-	-	N/A	N/A
NJ*-300-S09M01	Imperial	3/8 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	5.00	9.81	1.25	N/A	N/A
NJ*-300-S26M01	Imperial	3/8 NPTF	3/8 NPTF	3/8 NPTF	1.25	1.10	5.00	10.74	3.36	N/A	N/A
NJ*-350-S00M01	Imperial	1/2 NPTF	1/2 NPTF	1/2 NPTF	1.5	1.44	6.00	-	-	1.44	1/4 NPTF
NJ*-350-S11M01	Imperial	1/2 NPTF	1/2 NPTF	1/2 NPTF	1.5	1.44	6.00	10.82	1.25	1.44	1/4 NPTF
NJ*-350-S27M01	Imperial	1/2 NPTF	1/2 NPTF	1/2 NPTF	1.5	1.44	6.00	11.75	3.36	1.44	1/4 NPTF
NJ*M-300-S00M01	(Metric)	(G 3/8)	(G 3/8)	(G 3/8)	31.8	27.9	(127)	(-)	(-)	(N/A)	(N/A)
NJ*M-300-S09M01	(Metric)	(G 3/8)	(G 3/8)	(G 3/8)	31.8	27.9	(127)	(249.2)	(31.8)	(N/A)	(N/A)
NJ*M-300-S26M01	(Metric)	(G 3/8)	(G 3/8)	(G 3/8)	31.8	27.9	(127)	(272.7)	(85.3)	(N/A)	(N/A)
NJ*M-350-S00M01	(Metric)	(G 1/2)	(G 1/2)	(G 1/2)	(31.8)	(36.5)	(152.4)	(-)	(-)	(36.5)	(G 1/4)
NJ*M-350-S11M01	(Metric)	(G 1/2)	(G 1/2)	(G 1/2)	(31.8)	(36.5)	(152.4)	(247.7)	(31.8)	(36.5)	(G 1/4)
NJ*M-350-S27M01	(Metric)	(G 1/2)	(G 1/2)	(G 1/2)	(31.8)	(36.5)	(152.4)	(298.5)	(85.3)	(36.5)	(G 1/4)

● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)
NJF-300	7.80 (220.90)	Vacuum Flow SCFM (L/min)	20.00 (566.3)	14.00 (369.4)	9.50 (269)	3.5 (99.1)	0 (0)
		Evacuation time (seconds)	0 (0)	0.26 (0)	0.77 (0)	1.8 (0.1)	4.10 (0.10)
NJF-350	12.50 (354)	Vacuum Flow SCFM (L/min)	28.00 (792.90)	18.00 (509.70)	12.30 (348.30)	4.5 (127.4)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0.52 (0)	1.28 (0)	2.82 (0.10)

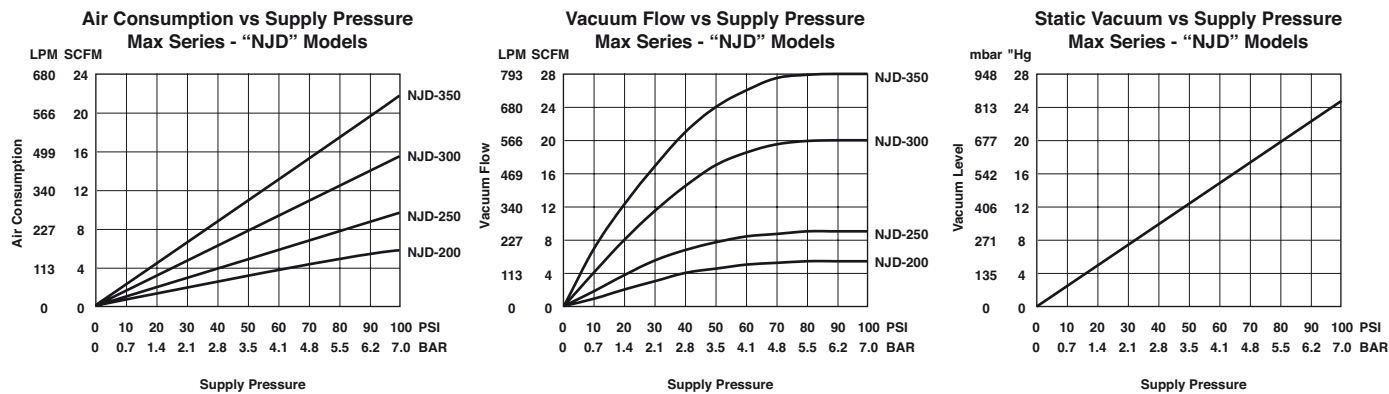
Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



● Performance Data

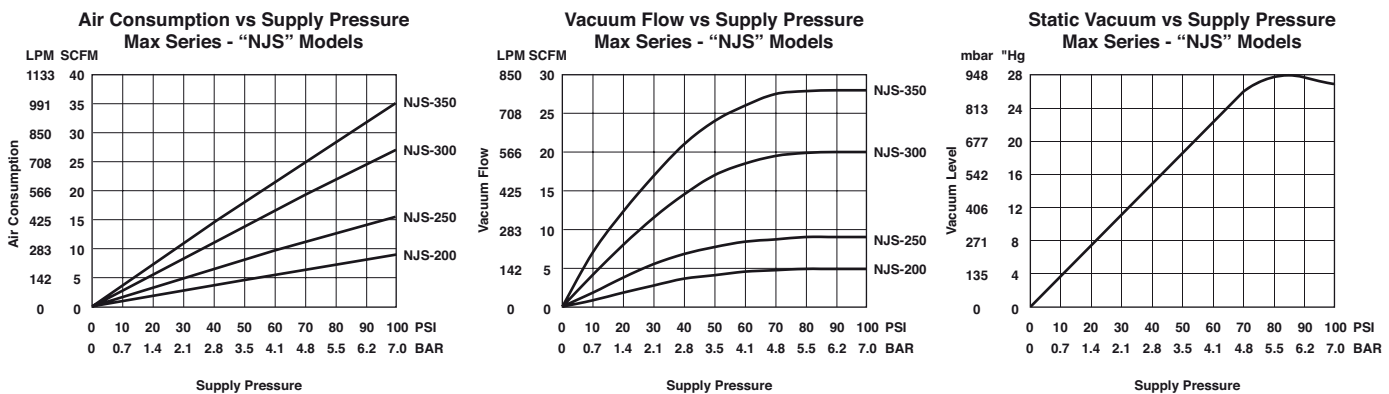
Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)
NJD-300	12.50 (354)	Vacuum Flow SCFM (L/min)	20.00 (566.30)	19.00 (538)	16.30 (461.60)	13.80 (390.80)	8.10 (229.40)	5.50 (155.70)	3.30 (93.40)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.10 (0)	1.80 (0.10)	2.70 (0.10)	4.60 (0.20)	8.70 (0.30)
NJD-350	22.00 (623)	Vacuum Flow SCFM (L/min)	28.00 (792.90)	24.00 (679.60)	19.40 (549.30)	16.80 (475.70)	14.50 (410.60)	11.20 (317.10)	4.80 (135.90)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.00 (0)	1.50 (0.10)	2.10 (0.10)	4.30 (0.20)	8.40 (0)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
NJS-300	22.00 (623)	Vacuum Flow SCFM (L/min)	20.00 (566.30)	17.00 (481.40)	14.00 (396.40)	12.70 (359.60)	- (-)	12.00 (339.80)	10.00 (238.20)	7.40 (209.50)	- (-)	4.90 (138.80)	2.70 (76.50)	1.30 (36.80)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0.80 (0)	1.20 (0)	- (-)	2.00 (0.10)	2.80 (0.10)	3.90 (0.10)	- (-)	5.90 (0.20)	11.10 (0.40)	32.70 (1.20)	60.00 (2.10)
NJS-350	28.00 (792.9)	Vacuum Flow SCFM (L/min)	28.00 (792.90)	22.00 (623)	18.70 (529.50)	15.90 (450.20)	- (-)	14.50 (410.60)	11.80 (334.1)	8.10 (229.4)	- (-)	5.7 (161.4)	4.5 (127.4)	2.25 (63.7)	0 (0)
		Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	1.20 (0)	- (-)	1.90 (0.10)	2.30 (0.10)	3.40 (0.10)	- (-)	5.30 (0.20)	8.80 (0.30)	26.00 (0.90)	44.00 (1.60)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NVPI

- High Productivity – non-clogging design reduces downtime
- Strong hold – powerful vacuum up to 24"Hg [813mbar]
- Mounts Easily – compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gases

### Operating Temperature

-30° to ~250°F (-34° to ~121°C)

### Operating Pressure

80 PSI (5.5 bar) Standard or

60 PSI (4.1 bar)

### Materials

Pump Body: Anodized Aluminum

Supply Line 1/4" OD (6mm) tube

Vacuum Line 1/4" OD (6mm) tube

### Mounting Holes

5/8"-18 male thread (optional jam nut: JN)

### Control Valve

3 way/2 position (faster part release),

minimum orifice – 0.125" [3mm]



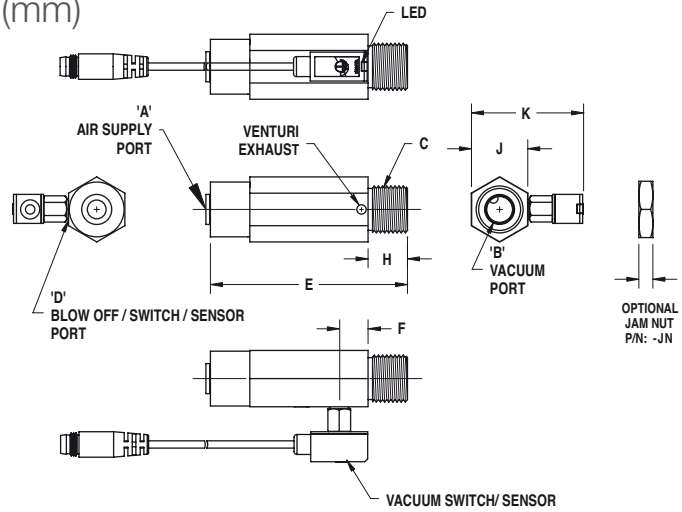
## Standard Models

Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption
NVPI-90H-NN-A00	24"Hg	1.20 SCFM	1.80 SCFM
NVPI-90H-JN-A00	24"Hg	1.20 SCFM	1.80 SCFM

## Option selector

Series	Substitute	NVPI-90★-★★A★★		Accessories	Substitute
NVPI (Imperial Thread)				Extra Port if Available / No Accessories	A00
<b>Operating Pressure</b>	<b>Substitute</b>			Extra Port if Available / NVTMV-QD-6	A02
90H @ 80PSI (Standard)	90H			Extra Port if Available / NVSMN-QD-6	A04
90H @ 60PSI (Standard)	90Z			Extra Port if Available / NVSMP-QD-6	A06
				<b>Jam Nut</b>	<b>Substitute</b>
				No Jam Nut (Standard)	NN
				Jam Nut	JN

● Dimensions inches (mm)

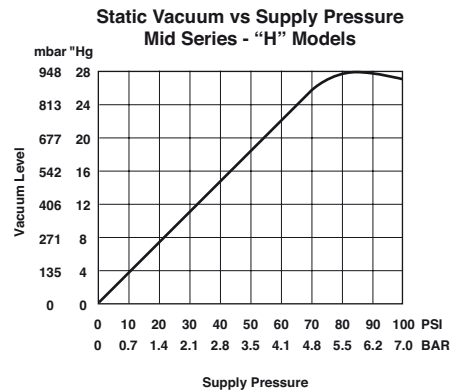
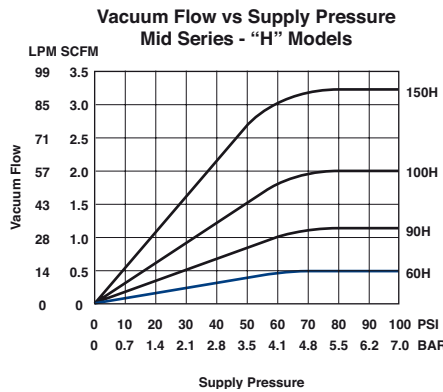
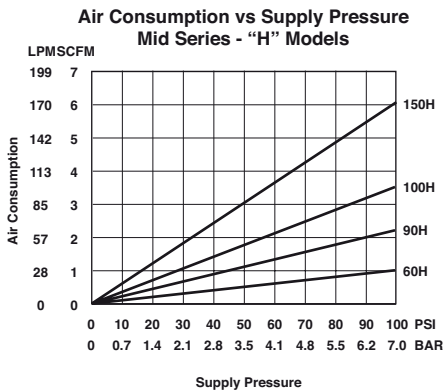


Model	Units	A	B	C	D	E	F	H	J	K	L
NVPI-90H-JN-A00	Imperial	1/4 PTC	1/8 NPTF	5/8-18 UNF	M5	2.63	0.32	0.53	0.75	0.91	0.19
NVPI-90H-JN-A**	Imperial	1/4 PTC	1/8 NPTF	5/8-18 UNF	M5	2.63	0.32	0.53	0.75	1.50	0.19

● Performance Data

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg
			(0)	(102)	(203)	(305)	(406)	(508)	(609)	(711)	(813)
NVPI-90H	1.80 (51.0)	Vacuum Flow SCFM (L/min)	1.20 (34.00)	1.00 (28.30)	0.95 (26.90)	0.90 (25.5)	0.85 (24.10)	0.75 (21.2)	0.70 (19.80)	0.52 (14.7)	0.47 (13.30)
		Evacuation time (seconds)	0 (0)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	32.50 (1.10)	47.00 (1.70)	65.40 (2.30)	92.20 (3.30)	130.00 (4.60)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)  
Evacuation speed is linear with volume. A 2 cu. ft. volume will take twice as long to evacuate as a 1 cu. ft. volume.



Warnings

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

Warranty

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NMPVG

- Lightweight and compact for easy point-of-use installation
- Strong hold – powerful vacuum up to 27.1"Hg [918mbar]
- Inline mounting with push-to-connect fittings for quick installation
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable operation – straight-through design with no moving parts
- Built-in silencers for quiet operation

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gases

### Operating Temperature

32° to -120° F (0° to 99°C)

### Operating Pressure

72 PSI (5.0 bar)

### Materials

Pump Body: Nylon

Fitting: Nickel plated brass

### Supply Line

6mm OD

### Vacuum Line

6mm OD

### Exhaust Line

8mm OD (NMPVGM-T Model only)



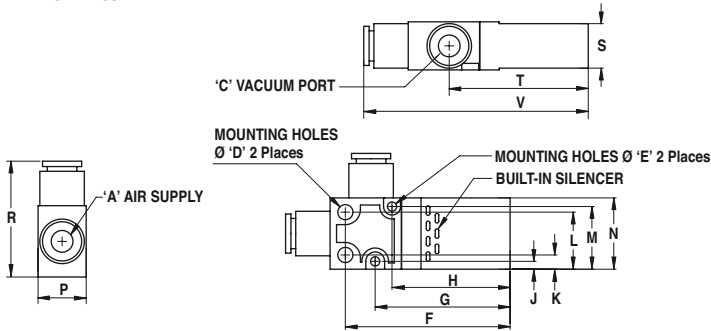
## ● Standard Models

Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption
NMPVGM-B-55H	27.1"Hg	0.45 SCFM	0.80 SCFM
NMPVGM-B-95H	27.1"Hg	1.34 SCFM	2.45 SCFM
NMPVGM-T-85H	26.8"Hg	0.99 SCFM	1.60 SCFM
NMPVGM-I-35H	26.8"Hg	0.25 SCFM	0.40 SCFM
NMPVGM-I-85H	26.8"Hg	0.99 SCFM	1.60 SCFM
NMPVGM-I-35H-18M	26.8"Hg	0.25 SCFM	0.40 SCFM
NMPVGM-I-85H-18M	26.8"Hg	0.99 SCFM	1.60 SCFM

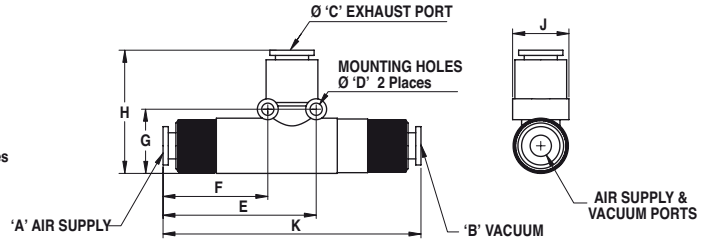


● Dimensions inches (mm)

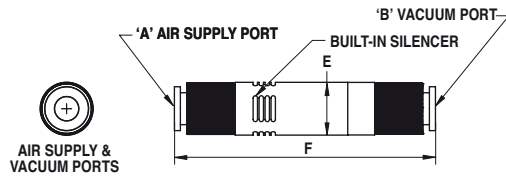
NMPVGM-B-55H  
NMPVGM-B-95H



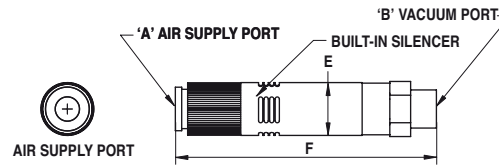
NMPVGM-T-85H



NMPVGM-I-35H  
NMPVGM-I-85H



NMPVGM-I-35H-18M  
NMPVGM-I-85H-18M



## ● Dimensions inches (mm)

Model	Units	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	V
NMPVGM-B-55H	Imperial	6mm PTC	-	6mm PTC	0.17	0.1	1.82	1.49	1.3	0.09	0.16	0.63	0.69	0.79	0.53	1.28	0.49	1.54	2.48
	(Metric)	(6mm PTC)	(-)	(6mm PTC)	(4.0)	(3.0)	(46)	(38)	(33)	(2)	(4.0)	(16)	(18)	(20)	(14)	(33)	(13)	(39)	(63)
NMPVGM-B-95H	Imperial	6mm PTC	-	6mm PTC	0.17	0.1	1.82	1.49	1.3	0.09	0.16	0.63	0.69	0.79	0.53	1.28	0.49	1.54	2.48
	(Metric)	(6mm PTC)	(-)	(6mm PTC)	(4.0)	(3.0)	(46)	(38)	(33)	(2)	(4.0)	(16)	(18)	(20)	(14)	(33)	(13)	(39)	(63)
NMPVGM-T-85H	Imperial	6mm PTC	6mm PTC	8mm PTC	0.14	1.73	1.18	0.73	1.39	0.59	2.91	-	-	-	-	-	-	-	-
	(Metric)	(6mm PTC)	(6mm PTC)	(8mm PTC)	(3.5)	(43.9)	(30.1)	(18.4)	(35.4)	(15)	(74)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
NMPVGM-I-35H	Imperial	6mm PTC	6mm PTC	-	-	0.52	2.58	-	-	-	-	-	-	-	-	-	-	-	-
	(Metric)	(6mm PTC)	(6mm PTC)	(-)	(-)	(13)	(66)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
NMPVGM-I-85H	Imperial	6mm PTC	6mm PTC	-	-	0.62	2.91	-	-	-	-	-	-	-	-	-	-	-	-
	(Metric)	(6mm PTC)	(6mm PTC)	(-)	(-)	(16)	(74)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
NMPVGM-I-35H-18M	Imperial	6mm PTC	G 1/8	-	-	0.52	2.58	-	-	-	-	-	-	-	-	-	-	-	-
	(Metric)	(6mm PTC)	(G 1/8)	(-)	(-)	(13)	(66)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
NMPVGM-I-85H-18M	Imperial	6mm PTC	G 1/8	-	-	0.62	2.91	-	-	-	-	-	-	-	-	-	-	-	-
	(Metric)	(6mm PTC)	(G 1/8)	(-)	(-)	(16)	(74)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)

Model	Air Consumption SCFM (L/min)	Maximum Vacuum "Hg (mbar)	Maximum Vacuum Flow SCFM (L/min)
NMPVGM-B-55H	0.80	27.10	0.45
	(22.60)	(918.00)	(12.70)
NMPVGM-B-95H	2.45	27.10	1.34
	(69.40)	(918.00)	(37.94)
NMPVGM-T-85H	1.60	26.80	0.99
	(45.30)	(908.00)	(28.00)
NMPVGM-I-35H	0.40	26.80	0.25
	(11.30)	(908.00)	(7.10)
NMPVGM-I-85H	1.60	26.80	0.99
	(45.30)	(908.00)	(28.00)
NMPVGM-I-35H-18M	0.40	26.80	0.25
	(11.30)	(908.00)	(7.10)
NMPVGM-I-85H-18M	1.60	26.80	0.99
	(45.30)	(908.00)	(28.00)

### Warnings

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

### Warranty

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# NVPIA

- Lightweight and compact for easy point-of-use installation
- Strong hold – powerful vacuum up to 25"Hg [846mbar]
- Integrated vacuum fitting for quick installation
- Quick release – without hard blow-off
- Safe handling of fragile objects
- Efficient – minimal air consumption
- Built-in silencers for quiet operation

## Technical Data

**Fluid**  
Filtered (50 Micron) unlubricated, non-corrosive dry gases

**Operating Temperature**  
32° to ~120° F (0° to 99°C)

**Operating Pressure**  
45 PSI (3.0 bar)

**Materials**  
Pump Body: White Acetal

**Supply Line Port**  
10-32 Female press fitting

**Vacuum Port**  
0.35 diameter barb




**Performance Level Designations**  
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications



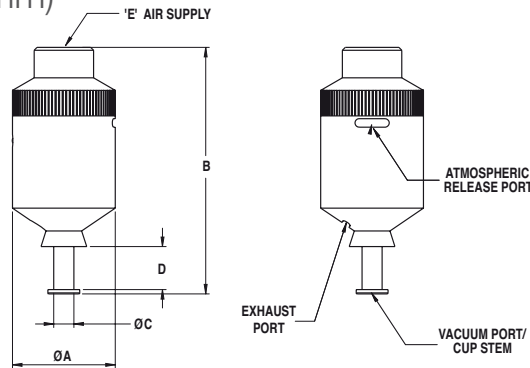
## Standard Models

Part Number	Max. Vacuum Level	Max. Vacuum Flow	Air Consumption
NVPIA-60H-M11	25"Hg	0.50 SCFM	0.80 SCFM

## Accessories

Part Number	Vacuum Cup Translucent Silicone 34 mm diameter	Vacuum Cup Red Silicone 34 mm diameter	Vacuum Cup Red Silicone 37 mm diameter
			
NVPIA-60H-M11	NVCC-E-034-S	NVCC-E-034-SR	NVCC-E-037-SR

## Dimensions inches (mm)



Model	Units	A	B	C	D	E
NVPIA-60H-M11	Imperial	1.13	2.70	0.22	0.47	#10-32
	(Metric)	(28.70)	(68.70)	(5.60)	(11.90)	(#10-32)

### Warnings

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

### Warranty

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# VARIABLE VACUUM PUMPS

The NVDF Series is a unique IMI Norgren innovation that places the vacuum port and exhaust path inline making a straight-through venturi vacuum pump. These compact pumps offer high flow rates, high vacuum levels, and are field adjustable without the need for a separate regulator. Developed for extremely dirty and dusty environments, NVDF pumps do not clog, lose suction or require a vacuum filter.



# Fast Find Guide

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

## ● Variable Vacuum Pumps

### **NVDF Series**

Adjustable vacuum level up to 25"Hg, flow 2.00-120.00 SCFM, straight-through non clogging design



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# NVDF

- Adjustable vacuum level and flow rate
- Powerful vacuum up to 25"Hg [847mbar]
- High flow, up to 120 SCFM [3398 LPM]
- Energy efficient – customer controlled with high performance to air consumption ratio
- Safe operation – No electricity needed at the pump and no heat generated
- Reliable operation – straight-through design with no moving parts

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gases

### Operating Pressure

Above 50 PSI (3.4bar)

### Operating Temperature

-100° to 400° F (-73° to ~204°C)

### Materials

Pump Body: Anodized Aluminum

Silencer Body: Varies by Size



	NVDF 10, 15, 20, 25	NVDF 37	NVDF 50	NVDF 75
<b>Supply Line</b>	3/8" (10mm)	1/2" (12mm)	1/2" (12mm)	5/8" (16mm)
<b>Vacuum Line</b>	3/8" (10mm)	5/8" (16mm)	3/4" (19mm) ID hose	1.0" (25mm) ID hose




Note: Tubing size is based on 0.062 wall – polyethylene & polyurethane.

## Option selector

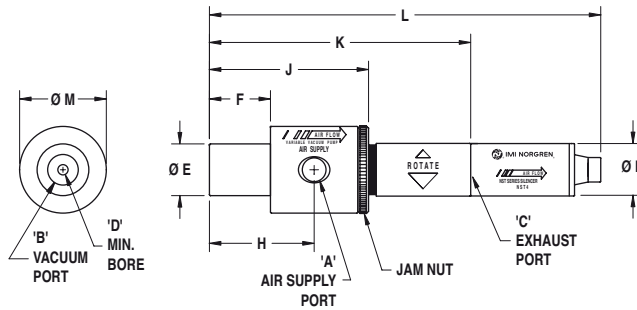
NVDF★-★★-P★★-S★★M★★

Series	Substitute	Material	Substitute
NVDF (Imperial Thread)		Anodized aluminum (standard)	<b>M01</b>
NVDFM (Metric Thread)	<b>M</b>	303 stainless steel	<b>M05</b>
<b>Size</b>	<b>Substitute</b>	304 stainless steel	<b>M06</b>
NVDF-10	<b>10</b>	316 stainless steel	<b>M07</b>
NVDF-15	<b>15</b>	PVC	<b>M09</b>
NVDF-20	<b>20</b>	PTFE (Teflon®)	<b>M12</b>
NVDF-25	<b>25</b>	PEEK	<b>M14</b>
NVDF-37	<b>37</b>	Black Acetal (Delrin®)	<b>M10</b>
NVDF-50	<b>50</b>	White Acetal (Delrin®)	<b>M11</b>
NVDF-75	<b>75</b>	<b>Silencer</b>	<b>Substitute</b>
<b>Vacuum Level Preset</b>	<b>Substitute</b>	None	<b>S00</b>
(Indicate 10-25"Hg, ex. 25"Hg = P25)	<b>XX</b>	<b>Silencer (for NVDF-10, NVDF-15)</b>	<b>Substitute</b>
(none - factory standard)		NST4	<b>S05</b>
		<b>Silencer (for NVDF-20)</b>	<b>Substitute</b>
		NST4A	<b>S06</b>
		NST4A2	<b>S07</b>
		<b>Silencer (for NVDF-37)</b>	<b>Substitute</b>
		NST8B	<b>S11</b>
		<b>Silencer (for NVDF-50)</b>	<b>Substitute</b>
		NST12C	<b>S20</b>
		<b>Silencer (for NVDF-75)</b>	<b>Substitute</b>
		NST16C	<b>S21</b>

● Accessories

Standard Models	Silencer	Inline Fitting	Swivel Elbow Fitting
			
NVDF-10-PXX-S05M01	NST4 Silencer	124250618	124470618
NVDF-15-PXX-S05M01	NST4 Silencer	124250618	124470618
NVDF-20-PXX-S05M01	NST4 Silencer	124250618	124470618
NVDF-25-PXX-S07M01	NST4A2 Silencer	124250618	124470618
NVDF-37-PXX-S11M01	NST8B Silencer	124250738	124470738
NVDF-50-PXX-S20M01	NST12C Silencer	124250738	124470738
NVDF-75-PXX-S21M01	NST16C Silencer	-	-

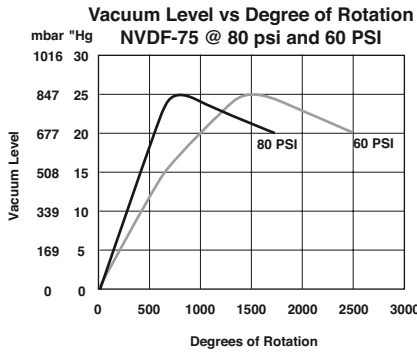
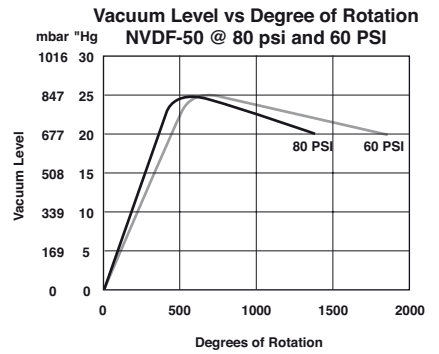
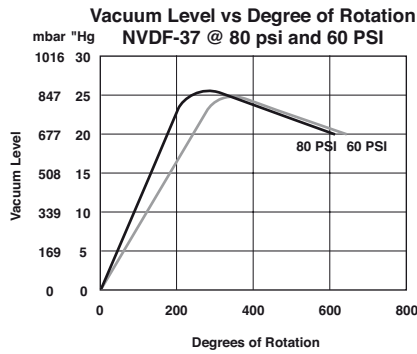
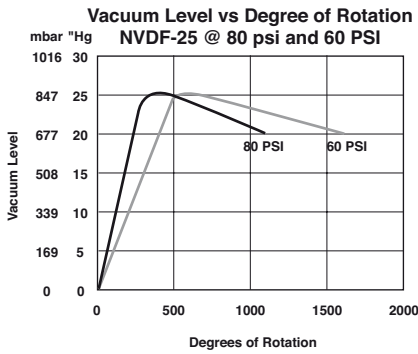
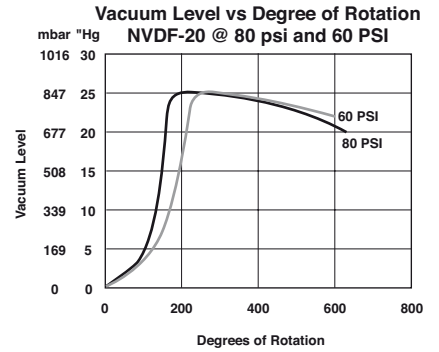
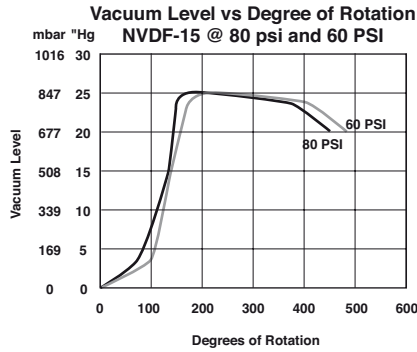
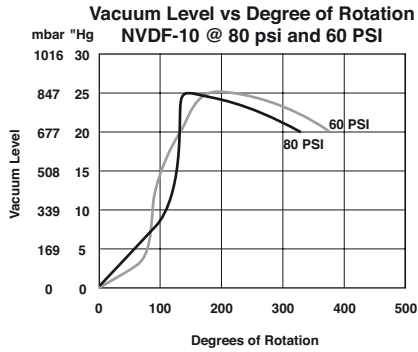
● Dimensions inches (mm)



MODEL	A	B	C	D	E	F	H	J	K	L	M	N	WEIGHT
NVDF-10-P**-S00M** (NVDFM-10-P**-S00M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.13 (3.20)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	- (-)	1.24 (31.50)	- (-)	3.7oz (105g)
NVDF-10-P**-S05M** (NVDFM-10-P**-S05M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.13 (3.20)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	5.60 (142.20)	1.24 (31.50)	0.75 (19.10)	4.3oz (122g)
NVDF-15-P**-S00M** (NVDFM-15-P**-S00M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.15 (3.70)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	- (-)	1.24 (31.50)	- (-)	3.7oz (105g)
NVDF-15-P**-S05M** (NVDFM-15-P**-S05M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.15 (3.70)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	5.60 (142.20)	1.24 (31.50)	0.75 (19.10)	4.3oz (122g)
NVDF-20-P**-S00M** (NVDFM-20-P**-S00M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.19 (4.80)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	- (-)	1.24 (31.50)	- (-)	3.7oz (105g)
NVDF-20-P**-S05M** (NVDFM-20-P**-S05M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.19 (4.80)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	5.60 (142.20)	1.24 (31.50)	0.75 (19.10)	4.3oz (122g)
NVDF-25-P**-S00M** (NVDFM-25-P**-S00M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.27 (6.70)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	- (-)	1.24 (31.50)	- (-)	3.6oz (102g)
NVDF-25-P**-S07M** (NVDFM-25-P**-S07M**)	1/8 NPTF (G 1/8)	1/4 NPTF (G 1/4)	1/4 NPTF (G 1/4)	0.27 (6.70)	0.74 (18.80)	0.87 (22.10)	1.50 (38.10)	2.27 (57.70)	3.73 (94.70)	6.29 (159.80)	1.24 (31.50)	1.00 (25.40)	5.0oz (142g)
NVDF-37-P**-S00M** (NVDFM-37-P**-S00M**)	3/8 NPTF (G 3/8)	1/2 NPTF (G 1/2)	1/2 NPTF (G 1/2)	0.38 (9.50)	0.99 (25.10)	1.50 (38.10)	2.37 (60.20)	3.45 (87.60)	6.04 (153.40)	- (-)	1.74 (44.20)	0	9.7oz (275g)
NVDF-37-P**-S11M** (NVDFM-37-P**-S11M**)	3/8 NPTF (G 3/8)	1/2 NPTF (G 1/2)	1/2 NPTF (G 1/2)	0.38 (9.50)	0.99 (25.10)	1.50 (38.10)	2.37 (60.20)	3.45 (87.60)	6.04 (153.40)	10.84 (275.30)	1.74 (44.20)	1.25 (31.80)	12.7oz (360g)
NVDF-50-P**-S00M** (NVDFM-50-P**-S00M**)	3/8 NPTF (G 3/8)	1/2 NPTF (G 1/2)	3/4 NPTF (G 3/4)	0.50 (12.70)	1.24 (31.50)	1.50 (38.10)	2.50 (63.50)	3.70 (94)	6.06 (153.90)	- (-)	1.97 (50)	- (-)	14.3oz (405g)
NVDF-50-P**-S20M** (NVDFM-50-P**-S20M**)	3/8 NPTF (G 3/8)	1/2 NPTF (G 1/2)	3/4 NPTF (G 3/4)	0.50 (12.70)	1.24 (31.50)	1.50 (38.10)	2.50 (63.50)	3.70 (94)	6.06 (153.90)	13 (330.20)	1.97 (50)	2.00 (50.80)	11b 6oz (618g)
NVDF-75-P**-S00M** (NVDFM-75-P**-S00M**)	1/2 NPTF (G 1/2)	3/4 NPTF (G 3/4)	1 NPTF (G 1)	0.75 (19.10)	1.49 (37.80)	1.50 (38.10)	2.50 (63.50)	3.70 (94)	6.95 (176.50)	- (-)	2.22 (56.40)	- (-)	11b 3oz (544g)
NVDF-75-P**-S21M** (NVDFM-75-P**-S21M**)	1/2 NPTF (G 1/2)	3/4 NPTF (G 3/4)	1 NPTF (G 1)	0.75 (19.10)	1.49 (37.80)	1.50 (38.10)	2.50 (63.50)	3.70 (94)	6.95 (176.50)	13.88 (352.60)	2.22 (56.40)	2.00 (50.80)	11b 6oz (763g)

● Performance Data

Degrees of rotation vs Vacuum Level ("Hg)





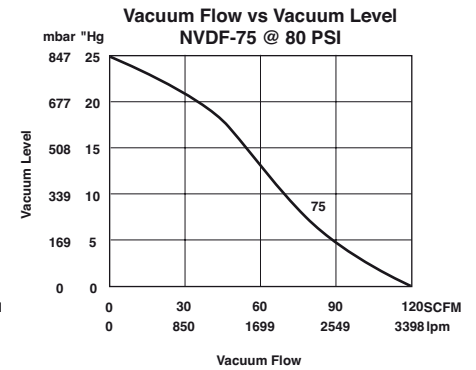
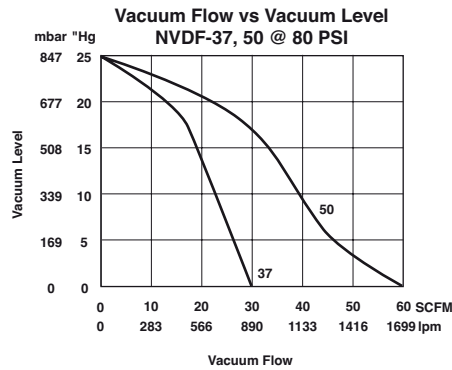
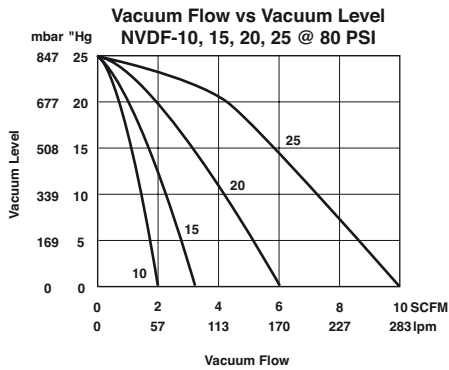
● Performance Data

Model	Pressure	0"	3"	6"	9"	12"	15"	18"	21"	24"	25"
NVDF-10	@ 80PSI	0	30	60	100	115	120	125	130	134	135
	@ 60PSI	0	60	70	80	90	110	120	140	160	170
NVDF-15	@ 80PSI	0	80	90	105	120	135	145	150	160	165
	@ 60PSI	0	90	100	110	120	130	145	165	19-0	195
NVDF-20	@ 80PSI	0	90	105	120	150	160	170	175	185	190
	@ 60PSI	0	100	135	165	175	185	200	215	235	240
NVDF-25	@ 80PSI	0	100	140	180	195	210	250	275	340	355
	@ 60PSI	0	145	180	205	260	320	370	440	510	530
NVDF-37	@ 80PSI	0	60	90	100	125	155	180	195	220	230
	@ 60PSI	0	65	90	115	165	190	210	255	290	300
NVDF-50	@ 80PSI	0	80	130	170	200	260	340	390	460	490
	@ 60PSI	0	100	170	190	260	360	420	480	560	600
NVDF-75	@ 80PSI	0	95	170	260	350	450	540	630	710	730
	@ 60PSI	0	145	260	350	475	610	730	1080	1370	1440

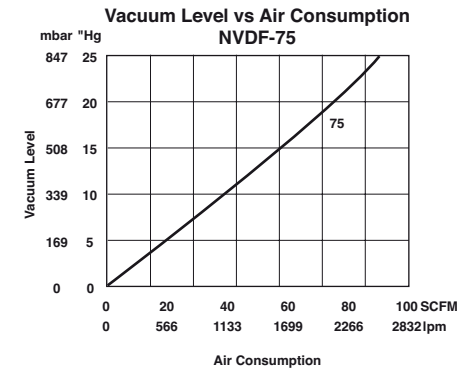
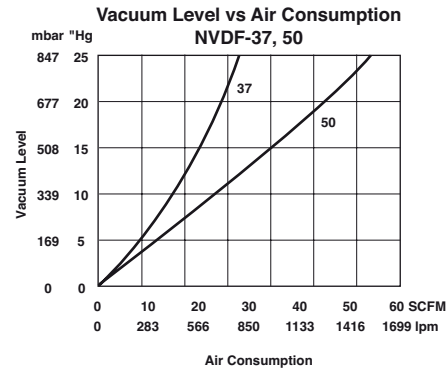
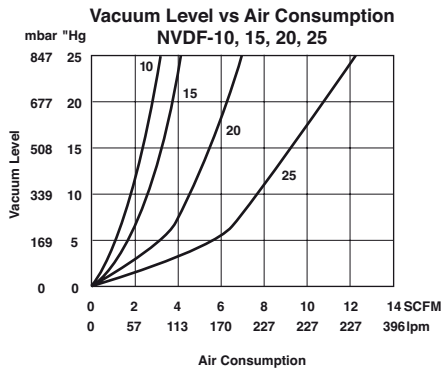
● Performance Data

Model	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	12"Hg (406)	15"Hg (508)	18"Hg (609)	21"Hg (711)	24"Hg (813)	25"Hg (846)
NVDF-10	Vacuum Flow SCFM (L/min)	2.00 (56.6)	1.80 (51)	1.60 (45.30)	1.40 (39.60)	1.30 (36.80)	1.20 (34)	1.10 (31.20)	0.75 (21.20)	0.25 (7.10)	0 (0)
	Evacuation time (seconds)	0 (0)	3.34 (0.10)	7.95 (0.30)	13.6 (0.50)	20.53 (0.70)	28.48 (1)	38.74 (1.40)	53.88 (1.90)	84.15 (3)	104.94 (3.70)
NVDF-15	Vacuum Flow SCFM (L/min)	3.20 (90.60)	2.80 (79.30)	2.50 (70.80)	2.20 (62.30)	1.80 (51)	1.60 (45.30)	1.30 (36.80)	0.90 (25.50)	0.40 (11.30)	0 (0)
	Evacuation time (seconds)	0 (0)	2.57 (0.10)	5.90 (0.20)	15.30 (0.40)	15.39 (0.50)	22.06 (0.80)	31.05 (1.10)	46.18 (1.60)	75.69 (2.70)	97.5 (3.40)
NVDF-20	Vacuum Flow SCFM (L/min)	6.00 (169.90)	5.60 (158.60)	5.00 (141.60)	4.20 (118.90)	3.60 (102)	3.00 (85)	2.60 (73.60)	1.80 (51)	0.90 (25.50)	0 (0)
	Evacuation time (seconds)	0 (0)	1.03 (0.10)	2.57 (0.10)	4.11 (0.10)	6.41 (0.20)	9.49 (0.30)	13.34 (0.50)	19.50 (0.70)	31.05 (1.10)	38.23 (1.30)
NVDF-25	Vacuum Flow SCFM (L/min)	10.00 (283.20)	9.20 (260.50)	8.30 (235.10)	7.50 (212.40)	6.60 (186.90)	5.80 (164.30)	5.20 (147.30)	3.80 (107.60)	1.30 (36.80)	0 (0)
	Evacuation time (seconds)	0 (0)	0.51 (0)	1.03 (0)	1.80 (0.10)	2.82 (0.10)	4.11 (0.10)	5.90 (0.20)	9.75 (0.30)	17.19 (0.60)	21.55 (0.80)
NVDF-37	Vacuum Flow SCFM (L/min)	30.00 (849.60)	27.00 (764.60)	25.00 (708)	23.00 (651.40)	21.00 (594.70)	18.00 (509.80)	16.00 (453.10)	11.00 (311.50)	3.00 (85)	0 (0)
	Evacuation time (seconds)	0 (0)	0 (0)	0.51 (0)	1.03 (0)	1.28 (0)	2.05 (0.10)	3.08 (0.10)	4.87 (0.20)	8.47 (0.30)	12.83 (0.50)
NVDF-50	Vacuum Flow SCFM (L/min)	60.00 (1699.20)	52.00 (1472.60)	45.00 (1274.40)	41.00 (1161.10)	38.00 (1076.20)	35.00 (991.20)	28.00 (793)	19.00 (538.10)	5.00 (141.60)	0 (0)
	Evacuation time (seconds)	0 (0)	0 (0)	0.20 (0)	0.48 (0)	0.73 (0)	1.08 (0)	1.54 (0.10)	2.73 (0.10)	4.45 (0.20)	6.92 (0.20)
NVDF-75	Vacuum Flow SCFM (L/min)	120.00 (3398.40)	99.00 (2803.70)	83.00 (2350.60)	74.00 (2095.70)	62.00 (1755.80)	51.00 (1444.30)	46.00 (1302.70)	34.00 (962.90)	9.00 (254.90)	0 (0)
	Evacuation time (seconds)	0 (0)	0 (0)	0 (0)	0 (0)	0.12 (0)	0.38 (0)	0.7 (0)	1.09 (0)	3.07 (0.10)	5.38 (0.20)

NVDF Series – Vacuum Flow vs. Vacuum Level



NVDF Series – Vacuum Level vs. Air Consumption



## ● Performance Data

Part Numer	Silencer	With Silencer		Without Silencer	
		Open Flow	Sealed Vacuum	Open Flow	Sealed Vacuum
NVDF-10-P**-S05M**	NST4	70db	68db	88db	76db
NVDF-15-P**-S05M**	NST4	74db	68db	88db	90db
NVDF-20-P**-S05M**	NST4	78db	80db	86db	100db
NVDF-20-P**-S06M**	NST4A	76db	80db	86db	100db
NVDF-25-P**-S06M**	NST4A	82db	80db	90db	100db
NVDF-25-P**-S07M**	NST4A2	84db	82db	90db	100db
NVDF-37-P**-S11M**	NST8B	88db	82db	102db	104db
NVDF-50-P**-S20M**	NST12C	82db	78db	96db	100db
NVDF-75-P**-S21M**	NST16C	98db	88db	112db	108db

Noise levels at 80PSI

## Operating Instructions

1. Loosen jam nut by rotating counter-clockwise. (Typically, unless pinned, your NVDF will arrive completely closed.)
2. Rotate exhaust body clockwise until closed, jam nut should be loose on exhaust body.
3. Attach air line to air supply port and vacuum line to vacuum port or connect cup to port. See chart for minimum recommended line sizes.
4. Turn on compressed air.
5. Rotate exhaust body counter-clockwise to the desired vacuum level using rotation chart on page 102.

Charts are based on 80 PSI [5.5 bar] and 60 PSI [4.1 bar] to provide a starting point. Pumps will achieve maximum vacuum levels at any pressure above 50 PSI [3.4 bar] (pressure regulator is not required). For a more precise reading, IMI Norgren recommends the use of a NVG-150 Vacuum Gauge to measure and/or set vacuum level. Consult factory.

6. After achieving desired vacuum level, tighten jam nut by rotating clockwise.

Note 1: Further rotation will increase the vacuum level, while the flow remains constant.

Note 2: NVDF-37 and larger, it may be necessary to turn compressed air off while making adjustments to relieve pressure on threads and make rotating easier.

Note 3: "Preset" NVDF's are permanently locked at the factory at a customer specified vacuum level and are not adjustable.

Note 4: "Preset" pumps are not returnable.

### Warnings

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

### Warranty

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# HIGH FLOW VACUUM/ BLOWER PUMPS

NCDF Series air amplifiers generate high vacuum flow, overcoming leaks inherent in handling porous and irregular shaped objects. The NCDF Series generates high output flow using a small volume of compressed air. This efficient use of air makes NCDF air amplifiers a cost effective alternative to electric blowers or raw compressed air.



# Fast Find Guide

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

## ● High Flow Vacuum/Blower Pumps

### **NCDF Series**

Vacuum level up to 9"Hg,  
flow 12.00-330.00 SCFM, air  
amplifier blower



Page 102

# NCDF

- Excellent for picking porous and irregular shaped materials
- Air amplification capability - amplify air by 40:1 ratio
- Field adjustable for individual applications
- Energy efficient, unlike regenerative blowers that must run continuously
- Ideal for adverse operating conditions

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gases

### Operating Pressure

Above 50 PSI (3.4bar)

### Operating Temperature

-100° to 400° F (-73° to 204°C)

### Materials

Pump Body: Anodized Aluminum

Silencer Body : Varies by Size



	NCDF20, 37	NCDF50, 75, 100, 150, 200
<b>Supply Line</b>	1/4" (4mm)	3/8" (10mm)
<b>Vacuum Line</b>	Minimum orifice 0.125"	Minimum orifice 0.250"

## Option selector

NCDF★-★-★-★-★-★-★-★-★-★-★-★-★-★-★-★

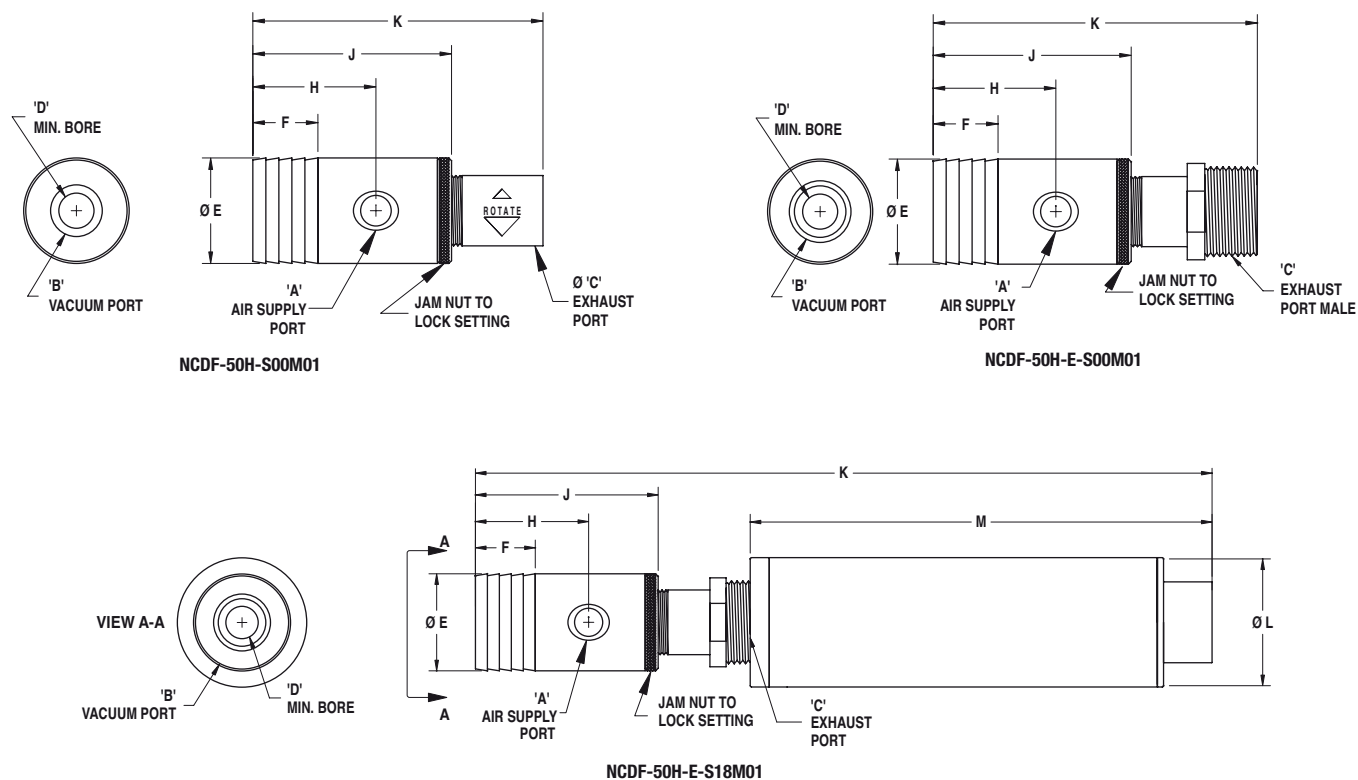
Series	Substitute	Material	Substitute
NCDF (Imperial Thread)		Anodized aluminum (standard)	M01
NCDFM (Metric Thread)	M	303 stainless steel	M05
		304 stainless steel	M06
		316 stainless steel	M07
		PVC	M09
		Black Acetal (Delrin®)	M10
		White Acetal (Delrin®)	M11
Size	Substitute	Silencer	Substitute
NCDF-20	20	None	S00
NCDF-20H	20H	<b>Silencer (for NCDF-20)</b>	Substitute
NCDF-37H	37H	NST4AX	S14
NCDF-50H	50H	<b>Silencer (for NCDF-37)</b>	Substitute
NCDF-75H	75H	NST6BX	S16
NCDF-100H	100H	<b>Silencer (for NCDF-50, 75)</b>	Substitute
NCDF-150H	150H	NST16FC	S18
NCDF-200H	200H	<b>Silencer (for NCDF-100)</b>	Substitute
		NST24FC	S19
NPT Exhaust Port Threads	Substitute	<b>Silencer (for NCDF-150)</b>	Substitute
Without Exhaust Port Threads	(blank)	NST2020	S22
With Exhaust Port Threads (Required for silencer)	E*		

\*External port threads required for attachment of silencers

● Accessories

Standard Models	Inline Fitting	Swivel Elbow Fitting
NCDF-20-E-S00M01	124250418	124470418
NCDF-20H-E-S00M01	124250418	124470418
NCDF-37H-S00M01	124250418	124470418
NCDF-50H-S00M01	124250428	124470628
NCDF-75H-S00M01	124250628	124470628
NCDF-100H-S00M01	124250628	124470628
NCDF-150H-S00M01	124250638	124470638

● Dimensions inches (mm)



● Dimensions inches (mm)

Part Number	A	B	C	D	E	F	H	J	K	L	M	Weight oz (g)
NCDF-20-E-S00M** (NCDFM-20-E-S00M**)	1/8 NPTF (G 1/8)	— (—)	1/4 NPTF (G 1/4)	0.25 (6.40)	1.25 (31.80)	— (—)	0.44 (11.20)	1.13 (28.70)	2.10 (53.30)	— (—)	— (—)	2.1 oz (60 grams)
NCDF-20H-E-S14M** (NCDFM-20H-E-S14M**)	1/8 NPTF (G 1/8)	— (—)	1/4 NPTF (G 1/4)	0.25 (6.40)	1.25 (31.80)	— (—)	0.44 (11.20)	1.13 (28.70)	2.10 (53.30)	1.00 (25.4)	3.57 (90.70)	3.7 oz (105 grams)
NCDF-20H-E-S00M** (NCDFM-20H-E-S00M**)	1/8 NPTF (G 1/8)	3/8 NPTF (G 3/8)	1/4 NPTF (G 1/4)	0.25 (6.4)	1.25 (31.80)	0.76 (19.30)	1.21 (30.70)	1.87 (47.50)	2.85 (72.40)	— (—)	— (—)	3.1 oz (88 grams)
NCDF-20H-E-S14M** (NCDFM-20H-E-S14M**)	1/8 NPTF (G 1/8)	3/8 NPTF (G 3/8)	1/4 NPTF (G 1/4)	0.25 (6.40)	1.25 (31.80)	0.76 (19.30)	1.21 (30.70)	1.87 (47.50)	6.15 (156.20)	1.00 (25.4)	3.57 (90.70)	5.2 oz (147 grams)
NCDF-37H-S00M** (NCDFM-37H-S00M**)	1/8 NPTF (G 1/8)	3/8 NPTF (G 3/8)	0.69 (17.5)	0.38 (9.50)	1.25 (31.80)	0.76 (19.30)	1.21 (30.70)	1.87 (47.50)	2.85 (72.40)	— (—)	— (—)	3.1 oz (88 grams)
NCDF-37H-E-S00M** (NCDFM-37H-E-S00M**)	1/8 NPTF (G 1/8)	3/8 NPTF (G 3/8)	3/8 NPTF (G 3/8)	0.38 (9.50)	1.25 (31.80)	0.76 (19.30)	1.21 (30.70)	1.87 (47.50)	2.85 (72.40)	— (—)	— (—)	3.1 oz (88 grams)
NCDF-37H-E-S16M** (NCDFM-37H-E-S16M**)	1/8 NPTF (G 1/8)	3/8 NPTF (G 3/8)	3/8 NPTF (G 3/8)	0.38 (9.5)	1.25 (31.80)	0.76 (19.30)	1.21 (30.70)	1.87 (47.50)	7.43 (188.70)	1.25 (31.80)	4.80 (121.90)	6.3 oz (179 grams)
NCDF-50H-S00M** (NCDFM-50H-S00M**)	1/4 NPTF (G 1/4)	1/2 NPTF (G 1/2)	0.99 (25.1)	0.5 (12.7)	1.49 (37.80)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.13 (104.90)	— (—)	— (—)	6.3 oz (179 grams)
NCDF-50H-E-S00M** (NCDFM-50H-E-S00M**)	1/4 NPTF (G 1/4)	1/2 NPTF (G 1/2)	1 NPT (G 1)	0.5 (12.07)	1.49 (37.80)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.63 (117.60)	— (—)	— (—)	7.3 oz (207 grams)
NCDF-50H-E-S18M** (NCDFM-50H-E-S18M**)	1/4 NPTF (G 1/4)	1/2 NPTF (G 1/2)	1 NPT (G 1)	0.50 (12.70)	1.49 (37.80)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	11.39 (289.30)	2.00 (50.80)	7.12 (180.80)	14.9 oz (422 grams)
NCDF-75H-S00M** (NCDFM-75H-S00M**)	1/4 NPTF (G 1/4)	1 NPTF (G 1)	1.23 (31.2)	0.75 (19.10)	1.97 (50)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.13 (104.90)	— (—)	— (—)	10.1 oz (286 grams)
NCDF-75H-E-S00M** (NCDFM-75H-E-S00M**)	1/4 NPTF (G 1/4)	1 NPTF (G 1)	1 NPTF (G 1)	0.75 (19.1)	1.97 (50)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	5.02 (127.50)	— (—)	— (—)	10.9 oz (309 grams)
NCDF-75H-E-S18M** (NCDFM-75H-E-S18M**)	1/4 NPTF (G 1/4)	1 NPTF (G 1)	1 NPTF (G 1)	0.75 (19.10)	1.97 (50)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	11.7 (297.20)	2.00 (50.80)	7.12 (180.80)	1lb 2oz (519 grams)
NCDF-100H-S00M** (NCDFM-100H-S00M**)	1/4 NPTF (G 1/4)	1 1/4 NPTF (G 1 1/4)	1.48 (37.6)	1.00 (25.40)	2.22 (56.40)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.13 (104.90)	— (—)	— (—)	11.5 oz (326 grams)
NCDF-100H-E-S00M** (NCDFM-100H-E-S00M**)	1/4 NPTF (G 1/4)	1 1/4 NPTF (G 1 1/4)	1 1/2 NPTF (G 1 1/2)	1.00 (25.40)	2.22 (56.40)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.64 (117.90)	— (—)	— (—)	13.2 oz (374 grams)
NCDF-100H-E-S19M** (NCDFM-100H-E-S19M**)	1/4 NPTF (G 1/4)	1 1/4 NPTF (G 1 1/4)	1 1/2 NPTF (G 1 1/2)	1.00 (25.40)	2.22 (56.40)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	12.00 (304.80)	2.00 (50.80)	7.85 (199.40)	1lb 5oz (595 grams)
NCDF-150H-S00M** (NCDFM-150H-S00M**)	3/8 NPTF (G 3/8)	2 NPTF (G 2)	1.99 (50.5)	1.50 (38.10)	2.72 (69.10)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.13 (104.90)	— (—)	— (—)	13.3 oz (377 grams)
NCDF-150H-E-S00M** (NCDFM-150H-E-S00M**)	3/8 NPTF (G 3/8)	2 NPTF (G 2)	2 NPTF (G 2)	1.5 (38.1)	2.72 (69.10)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.76 (120.90)	— (—)	0 (0)	1 lb (454 grams)
NCDF-150H-S22M** (NCDFM-150H-S22M**)	3/8 NPTF (G 3/8)	2 NPTF (G 2)	Slip fit (Slip Fit)	1.5 (38.10)	2.72 (69.10)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	17 (431.80)	3.46 (87.90)	13.62 (345.90)	1lb 8oz (692 grams)
NCDF-200H-S00M** (NCDFM-200H-S00M**)	3/8 NPTF (G 3/8)	2 1/2 NPTF (N/A)	2.49 (63.20)	2.00 (50.80)	3.22 (81.80)	0.93 (23.60)	1.75 (44.50)	2.83 (71.90)	4.13 (104.90)	— (—)	— (—)	1lb 0.5oz (468 grams)

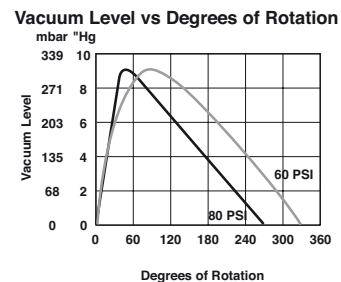
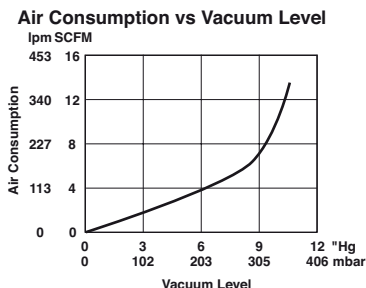
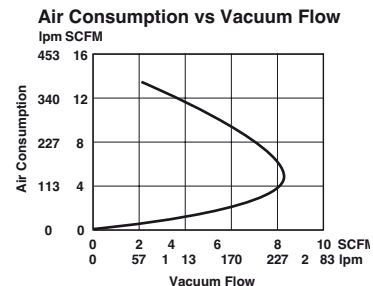


● Performance Data

Part Number	Air Consumption	Imperial	Metric
NCDF-20	Vacuum Level "Hg [mbar]	9	305
	Vacuum Flow SCFM [lpm]	12	340
	Maximum Exhaust Output SCFM [lpm]	16	453
NCDF-20H	Vacuum Level "Hg [mbar]	9	305
	Vacuum Flow SCFM [lpm]	12	340
	Maximum Exhaust Output SCFM [lpm]	16	453
NCDF-37H	Vacuum Level "Hg [mbar]	8	271
	Vacuum Flow SCFM [lpm]	28	793
	Maximum Exhaust Output SCFM [lpm]	36	1019
NCDF-50H	Vacuum Level "Hg [mbar]	7	237
	Vacuum Flow SCFM [lpm]	55	1557
	Maximum Exhaust Output SCFM [lpm]	70	1982
NCDF-75H	Vacuum Level "Hg [mbar]	5	169
	Vacuum Flow SCFM [lpm]	110	3115
	Maximum Exhaust Output SCFM [lpm]	140	3964
NCDF-100H	Vacuum Level "Hg [mbar]	3	102
	Vacuum Flow SCFM [lpm]	130	3681
	Maximum Exhaust Output SCFM [lpm]	180	5097
NCDF-150H	Vacuum Level "Hg [mbar]	3	102
	Vacuum Flow SCFM [lpm]	250	7079
	Maximum Exhaust Output SCFM [lpm]	300	8495
NCDF-200H	Vacuum Level "Hg [mbar]	1	34
	Vacuum Flow SCFM [lpm]	330	9345
	Maximum Exhaust Output SCFM [lpm]	390	11044

● Performance Data

NCDF-20/20H Series

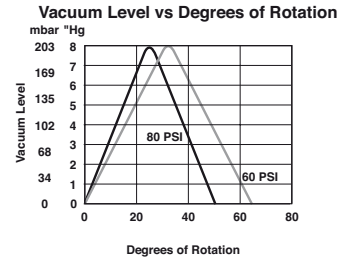
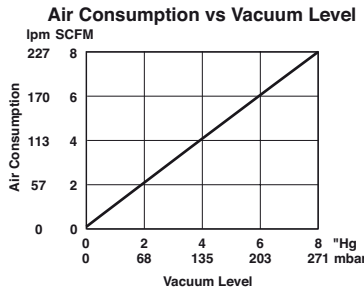
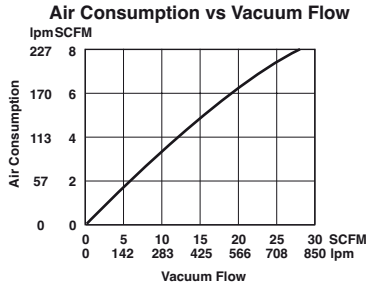


Note: Performance Charts represent average performance data. For reference only.

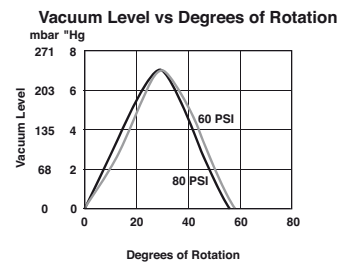
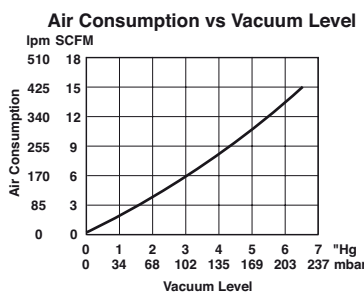
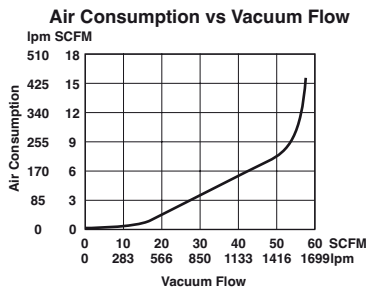
NCDF

● Performance Data

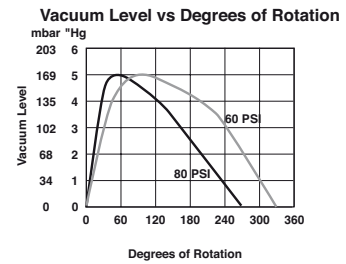
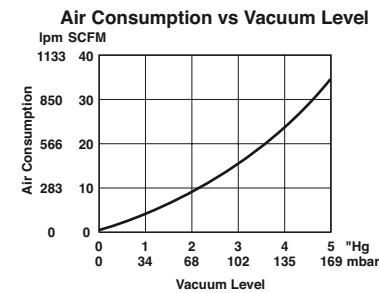
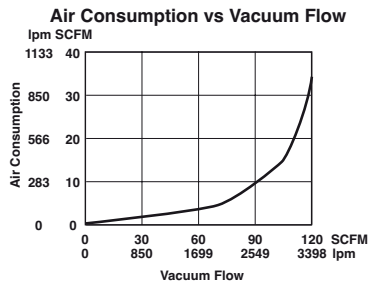
NCDF-37H Series



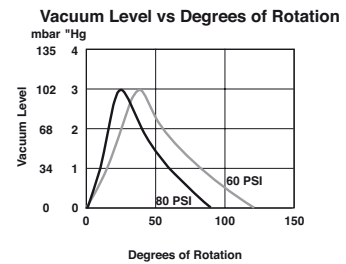
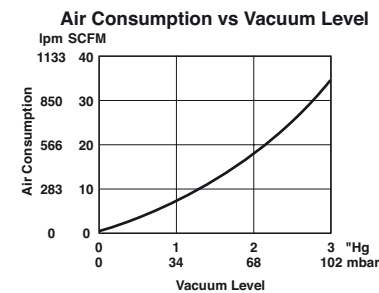
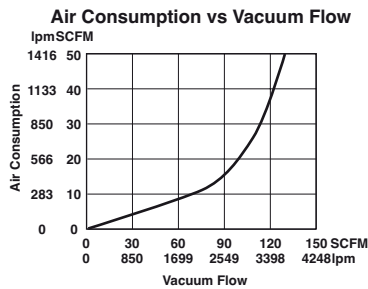
NCDF-50H Series



NCDF-75H Series



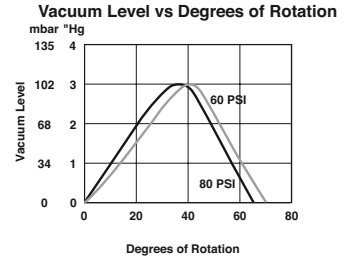
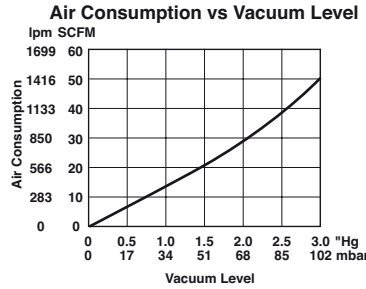
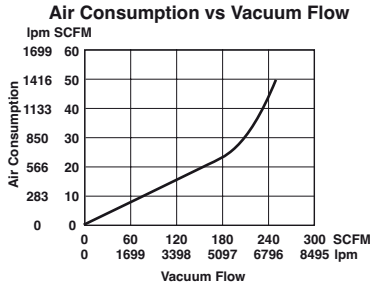
NCDF-100H Series



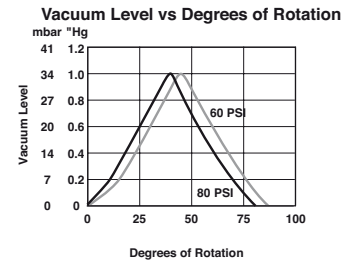
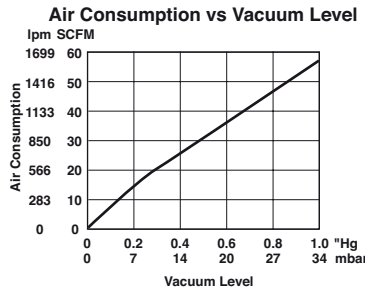
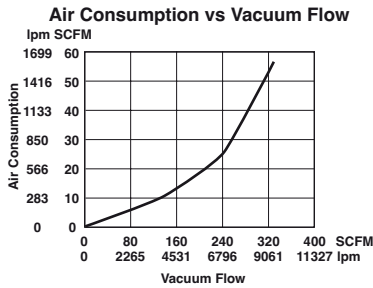
Note: Performance Charts represent average performance data. For reference only.

● Performance Data

**NCDF-150H Series**



**NCDF 200H Series**



Note: Performance Charts represent average performance data. For reference only.

● Air Consumption

Part Number	Silencer	With Silencer		Without Silencer	
		Open Flow	Sealed Vacuum	Open Flow	Sealed Vacuum
NCDF-20-E-S14M01	NST4AX	86dB	78dB	98dB	94dB
NCDF-20H-E-S14M01	NST4AX	86dB	78dB	98dB	94dB
NCDF-37H-E-S16M01	NST6BX	78dB	70dB	98dB	90dB
NCDF-50H-E-S18M01	NST16FC	78dB	72dB	100dB	92dB
NCDF-75H-E-S18M01	NST16FC	78dB	70dB	100dB	92dB
NCDF-100H-E-S19M01	NST24FC	82dB	72dB	102dB	92dB
NCDF-150H-E-S22M01	NST2020	88dB	72dB	106dB	96dB
NCDF-200H-S00M01	N/A	N/A	N/A	108dB	98dB

Noise levels at 80PSI

**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# MATERIAL TRANSFER VACUUM PUMPS

The NDF Series of high flow material conveying vacuum pumps provide a simple, reliable, and cost effective method of in-line transfer of bulk materials, complex shapes, individual objects, selsedge. The NDF pump's unique capability to create instantaneous vacuum flow and high air velocity, combined with its straight-through, smooth bore design allows material to pass directly through the pump at high speeds without interference or clogging.



*Straight  
through  
design*

*Materials  
pass directly  
through the  
pump*

# Fast Find Guide

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

## ● Material Transfer Vacuum Pumps

### **NDF Series**

Vacuum level up to 11"Hg,  
flow 4.00-600.00 SCFM, for bulk  
material conveyance



Page 110

# NDF

- Easily transfer a wide variety of materials
- Efficient – instant on and off, for low operating costs
- Fast response – installs close to vacuum point
- Easy to install – connect tubing to the vacuum and exhaust ports, and supply compressed air
- Safe operation – no electricity needed at the pump
- Ideal for adverse operating conditions

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gases

### Operating Pressure

Input pressure of 40 PSI or less is sufficient to move most bulk materials and individual objects

### Supply Pressure

Regulate the supply pressure to develop the necessary transfer speed of the application

### Operating Temperature



-100° to 400° F (-73° to 204°C)

### Materials

Pump Body: Anodized Aluminum



## Standard Models

Part Number	Inline Fitting	Swivel Elbow Fitting	Recommended Air Supply Line	Recommended Transfer Hose
				
NDF13-VSES-M01	124250418	124470418	1/4"	1/2" ID
NDF23-VSES-M01	124250418	124470418	1/4"	3/4" ID
NDF36-VSES-M01	124250618	124470618	3/8"	3/4" ID
NDF56-VSES-M01	124250628	124470628	3/8"	1" ID
NDF76-VSES-M01	124250738	124470738	1/2"	1 1/4" ID
NDF106-VSES-M01	124250738	124470738	1/2"	1 1/2" ID
NDF126-VSES-M01	124250738	124470738	1/2"	1 3/4" ID
NDF156-VSES-M01	124250738	124470738	1/2"	2" ID
NDF206-VSES-M01	124250738	124470738	1/2"	2 1/2" ID

● Option selector

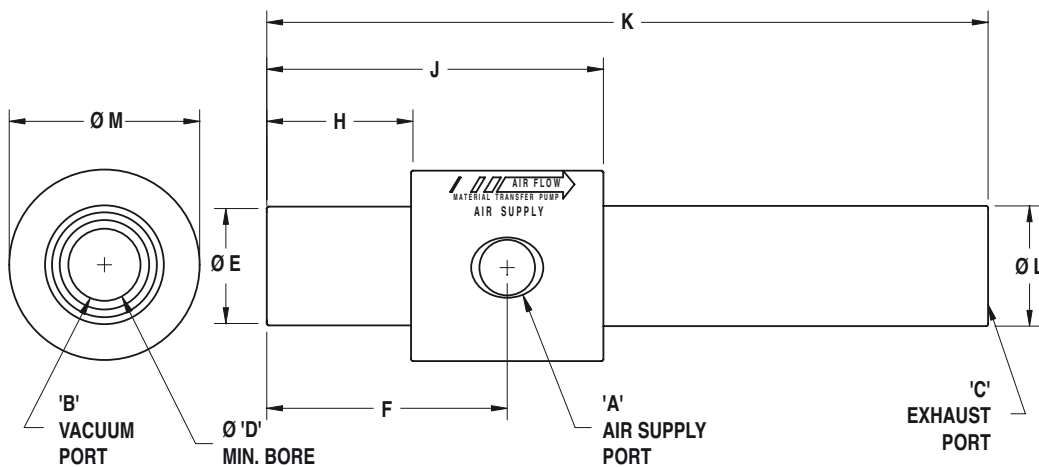
NDF★-★★-★★★-M★★

Series	Substitute
NDF (Imperial Thread)	
NDFM (Metric Thread)	M
Size	Substitute
NDF13	13
NDF23	23
NDF36	36
NDF56	56
NDF76	76
NDF106	106
NDF126	126
NDF156	156
NDF206	206
NDF306	306
NDF4012	4012
Vacuum Port Thread Options	Substitute
No thread (standard)	VS
Female (internal) thread	VF
Male (external) thread	VM
Exhaust Port Thread Options	Substitute
Exhaust port - no thread (standard)	ES
Exhaust port female - internal thread	EF
Exhaust port male (external) thread	EM

Material	Substitute
Anodized aluminum (standard)	M01
*303 stainless steel	M05
304 stainless steel	M06
316 stainless steel	M07
316L stainless steel	M08
PVC	M09
Black Acetal (Delrin®)	M10
White Acetal (Delrin®)	M11
PTFE (Teflon®)	M12
PEEK	M14

\*303 stainless steel only available for NDF-13,23, and 36 pumps

● Dimensions inches (mm)



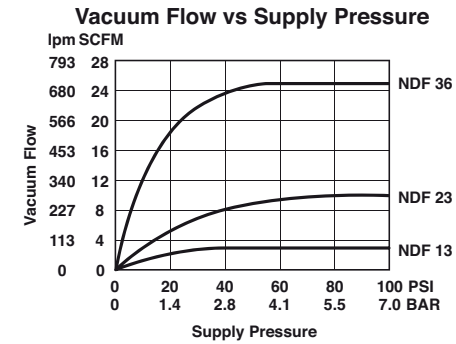
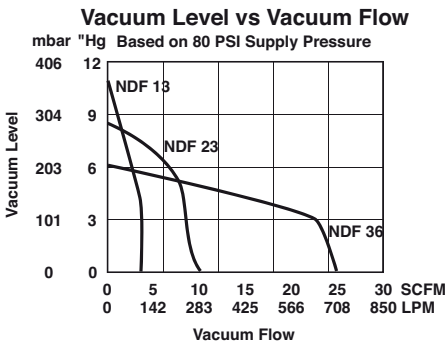
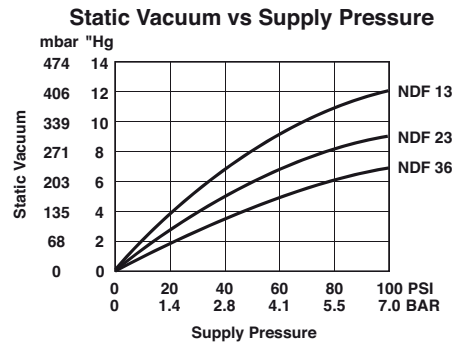
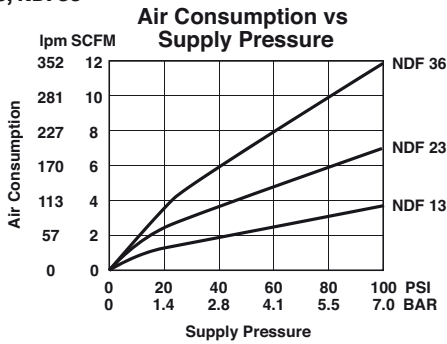
Model	A	B Optional Male Vacuum Thread	C Optional Male Exhaust Thread	B Optional Female Vacuum Thread	C Optional Female Vacuum Thread	D Minimum Bore	E	F	H	J	K	L	M	Weight lb / oz (kg)
<b>NDF13</b> (NDFM13)	1/8 NPTF (G1/8)	1/8 NPT (G1/8)	1/8 NPT (G1/8)	1/8 NPT (G1/8)	1/8 NPT (G1/8)	0.15 (3.80)	0.48 (12.20)	1.00 (25.40)	0.50 (12.70)	1.50 (38.10)	3.00 (76.20)	0.49 (12.40)	0.99 (25.10)	1.5oz (42.5g)
<b>NDF23</b> (NDFM23)	1/8 NPTF (G1/8)	3/8 NPT (G3/8)	3/8 NPT (G3/8)	1/4 NPT (G1/4)	1/4 NPT (G1/4)	0.25 (6.40)	0.73 (18.40)	1.25 (31.80)	0.75 (19.10)	1.75 (44.50)	3.50 (88.90)	0.74 (18.80)	1.24 (31.50)	3.2oz (91g)
<b>NDF36</b> (NDFM36)	1/8 NPTF (G1/8)	3/8 NPT (G3/8)	3/8 NPT (G3/8)	1/4 NPT (G1/4)	1/4 NPT (G1/4)	0.38 (9.70)	0.73 (18.40)	1.25 (31.80)	0.75 (19.10)	1.75 (44.50)	3.50 (88.90)	0.74 (18.80)	1.24 (31.50)	2.8oz (79g)
<b>NDF56</b> (NDFM56)	1/4 NPTF (G1/4)	1/2 NPT (G1/2)	1/2 NPT (G1/2)	1/2 NPT (G1/2)	1/2 NPT (G1/2)	0.50 (12.70)	0.99 (25)	1.62 (41.10)	1.00 (25.40)	2.25 (57.20)	5.50 (139.70)	1.00 (25.40)	1.48 (37.60)	6.2oz (176g)
<b>NDF76</b> (NDFM76)	3/8 NPTF (G3/8)	3/4 NPT (G3/4)	3/4 NPT (G3/4)	3/4 NPT (G3/4)	3/4 NPT (G3/4)	0.75 (19.10)	1.24 (31.40)	2.50 (63.50)	1.50 (38.10)	3.50 (88.90)	7.50 (190.50)	1.25 (31.80)	1.98 (50.30)	13.4oz (380g)
<b>NDF106</b> (NDFM106)	3/8 NPTF (G3/8)	1 NPT (G1)	1 NPT (G1)	1 NPT (G1)	1 NPT (G1)	1.00 (25.40)	1.46 (37.10)	2.50 (63.50)	1.50 (38.10)	3.50 (88.90)	7.50 (190.50)	1.48 (37.60)	2.23 (56.60)	1lb 5oz (468g)
<b>NDF126</b> (NDFM126)	3/8 NPTF (G3/8)	*	*	*	*	1.25 (31.80)	1.71 (43.40)	2.50 (63.50)	1.50 (38.10)	3.50 (88.90)	7.50 (190.50)	1.73 (43.90)	2.47 (62.70)	1lb 3oz (541g)
<b>NDF156</b> (NDFM156)	3/8 NPTF (G3/8)	1 1/2 NPT (G1 1/2)	1 1/2 NPT (G1 1/2)	1 1/4 NPT (G1 1/4)	1 1/4 NPT (G1 1/4)	1.50 (38.10)	1.96 (49.80)	2.50 (63.50)	1.50 (38.10)	3.50 (88.90)	7.50 (190.50)	1.98 (50.30)	2.73 (69.30)	1lb 5oz (607g)
<b>NDF206</b> (NDFM206)	3/8 NPTF (G3/8)	2 NPT (G2)	2 NPT (G2)	2 NPT (G2)	2 NPT (G2)	2.00 (50.80)	2.46 (62.50)	2.50 (63.50)	1.50 (38.10)	3.50 (88.90)	7.50 (190.50)	2.48 (63)	3.23 (82)	1lb 9oz (777g)
<b>NDF306</b> (NDFM306)	1/2 NPTF (G1/2)	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	3.00 (76.20)	3.46 (87.90)	2.50 (63.50)	1.50 (38.10)	3.50 (88.90)	8.50 (215.90)	3.48 (88.40)	4.47 (113.50)	3lbs 6oz (1.4kgs)
<b>NDF4012</b> (NDFM4012)	3/4 NPTF (G3/4)	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)	4.00 (101.60)	4.89 (124.20)	3.25 (82.60)	2.00 (50.80)	4.50 (114.30)	9.50 (241.30)	4.95 (125.70)	5.95 (151.10)	6lbs 11oz (3kgs)

\*Note: Consult factory

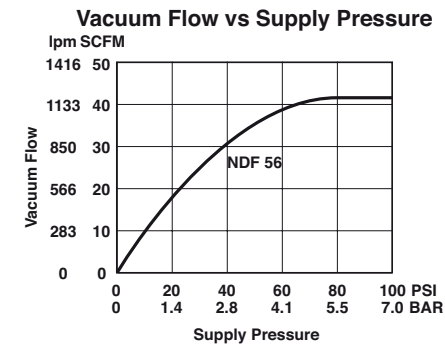
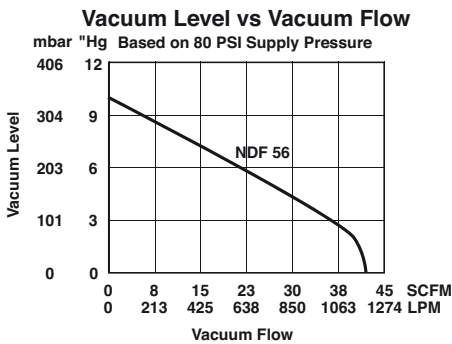
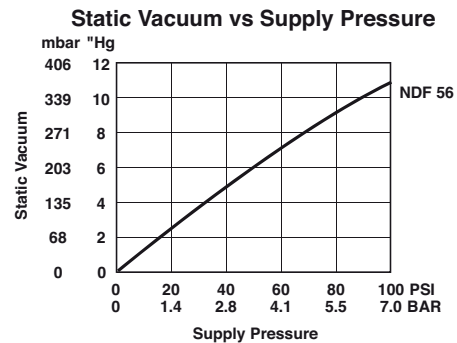
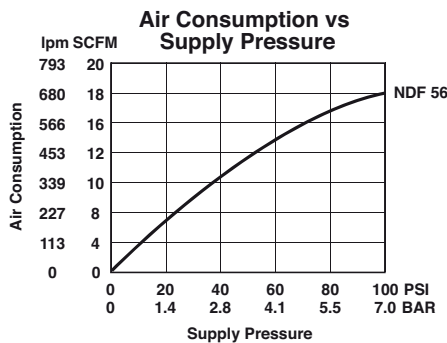


● Performance Data

**NDF13, NDF23, NDF36**



**NDF56**

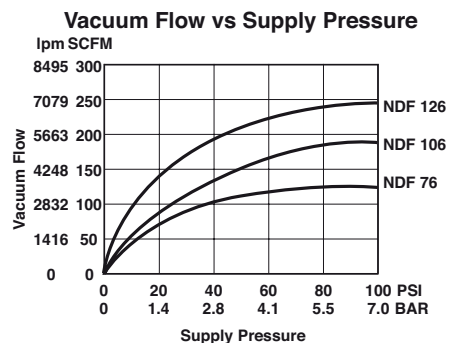
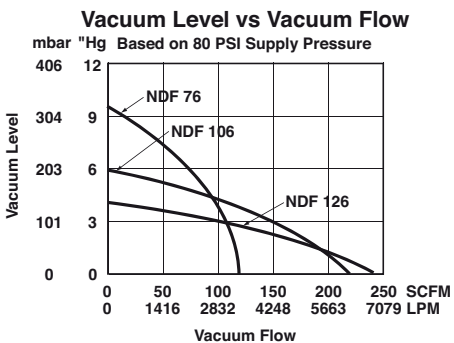
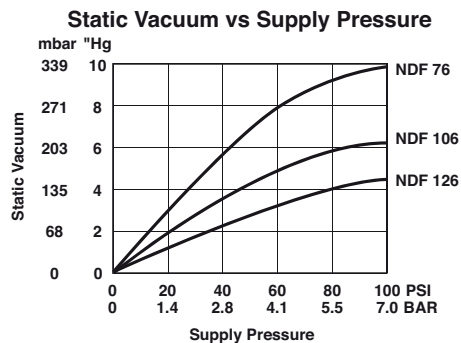
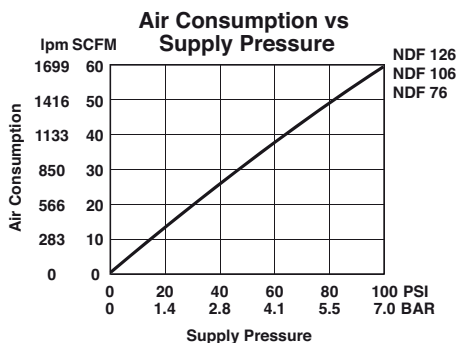


**Operating Note:** Above 40 PSI [2.7 bar], the increased energy consumed through rising air consumption is converted into increased vacuum level while vacuum flow stays constant. It is the vacuum flow that provides the motive force for the materials to be transferred. Higher vacuum levels are useful when lifting high molecular weight bulk materials and heavy individual objects long distances vertically.

**Note:** Performance Charts represent average performance data. For reference only.

● Performance Data

NDF76, NDF106, NDF126

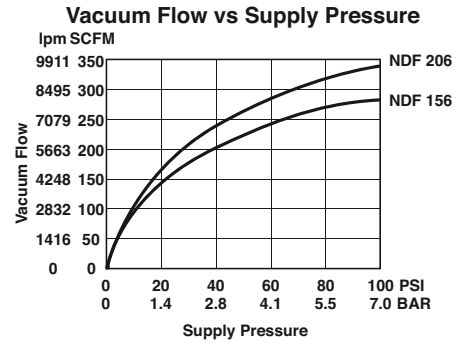
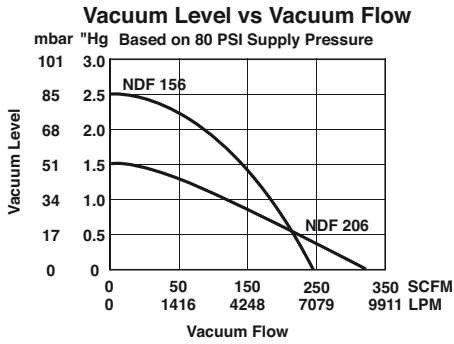
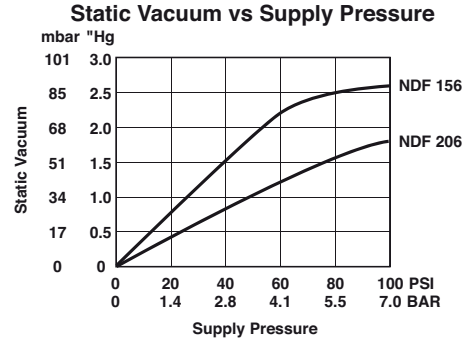
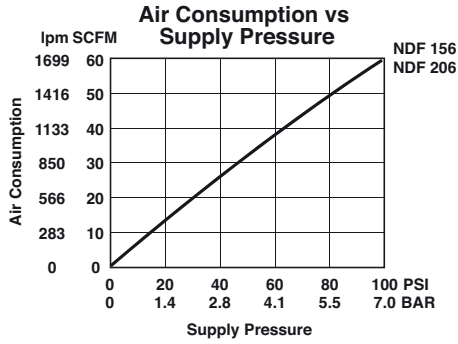


**Operating Note:** Above 40 PSI [2.7 bar], the increased energy consumed through rising air consumption is converted into increased vacuum level while vacuum flow stays constant. It is the vacuum flow that provides the motive force for the materials to be transferred. Higher vacuum levels are useful when lifting high molecular weight bulk materials and heavy individual objects long distances vertically.

**Note:** Performance Charts represent average performance data. For reference only.

● Performance Data

NDF156, NDF206

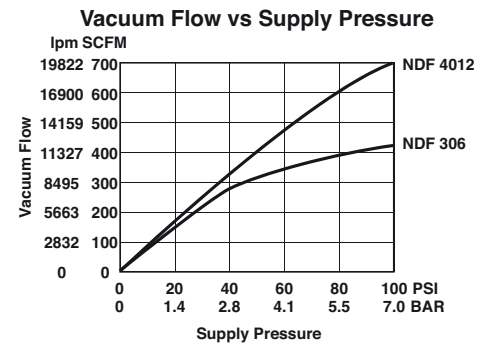
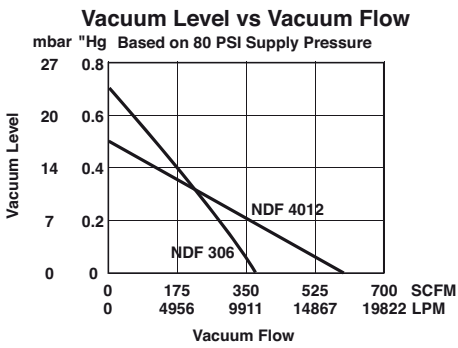
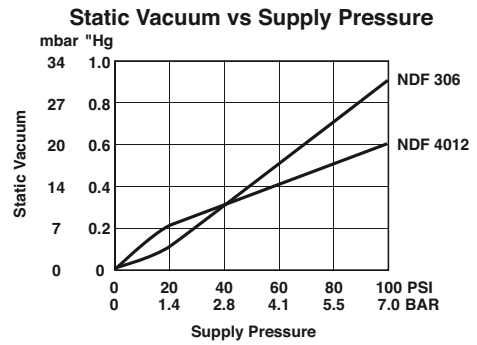
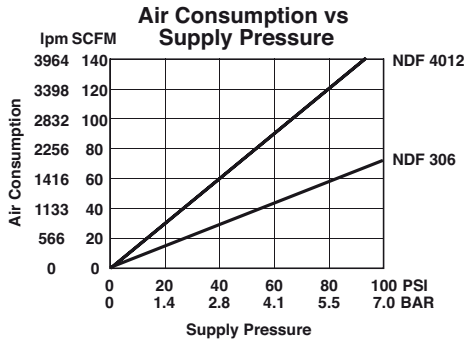


**Operating Note:** Above 40 PSI [2.7 bar], the increased energy consumed through rising air consumption is converted into increased vacuum level while vacuum flow stays constant. It is the vacuum flow that provides the motive force for the materials to be transferred. Higher vacuum levels are useful when lifting high molecular weight bulk materials and heavy individual objects long distances vertically.

**Note:** Performance Charts represent average performance data. For reference only.

● Performance Data

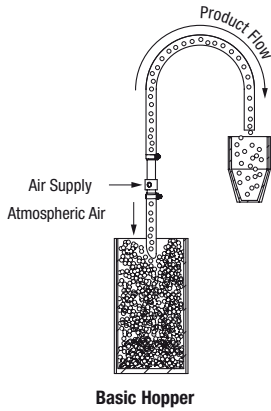
NDF306, NDF4012



## ● General Application Information

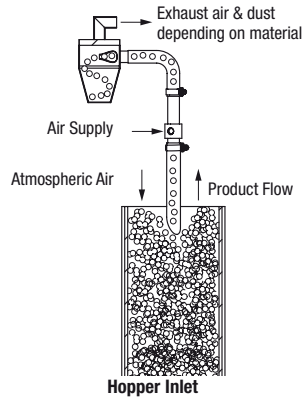
Sizing the correct NDF material transfer pump is based on the material density, particle size, transfer rate required (kg/min), elevation and length of transfer line. For application assistance, please contact IMI Norgren Technical Support. In many cases, customers send product to IMI Norgren to test at our in-house test facility.

### Transferring Bulk Materials:



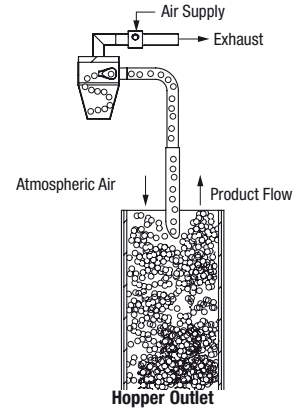
Basic Hopper

Place pump about 1/3 the overall distance from the suction. Allow the compressed air powering the pump to assist in pushing the material to the collection hopper.



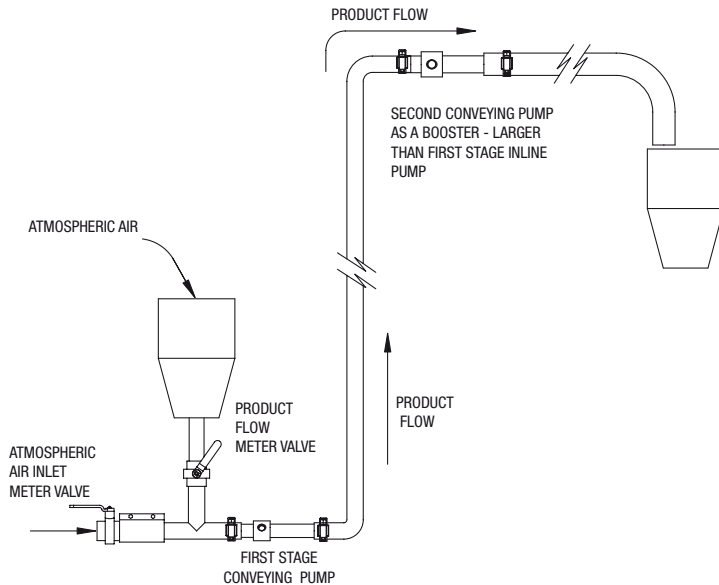
Hopper Inlet

Induced atmospheric air, compressed air and the material being transferred enter the collection hopper, where the material falls by gravity. The air vents out the top of the hopper. To capture lighter-than-air materials, connect a filter or dust collector to the hopper outlet.



Hopper Outlet

The NDF pump creates a vacuum in the collection hopper causing the material to flow up the conveyor tube into the collection hopper. Compressed air doesn't mix with the material, helping to prevent a cloud from forming when transferring fine, light powders. Material entering the hopper falls to the bottom faster due to the vacuum in the collection hopper. To reduce noise, add an optional silencer to the NDF pump exhaust.



Hopper to Hopper Butterfly Extended Distance

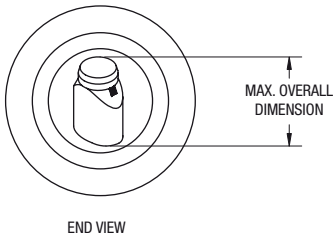
Transferring bulk and individual items vertically and horizontally over long distances may require a second conveying pump as a booster pump. To accept the flow generated by the first pump and to add power, add a booster pump that is larger than the first-stage pump. To maintain the proper balance between air intake and material intake use a valve to meter both.

### Caution

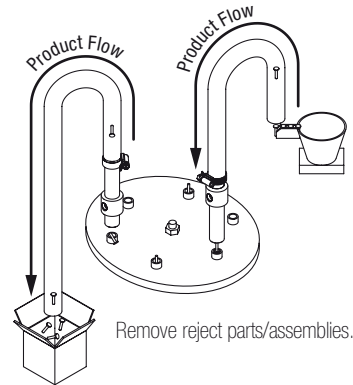
When conveying materials through plastic transfer lines, you must ground the transfer line to dissipate the static charge that develops from the friction of the air and material flowing over the transfer line surface.

## NDF

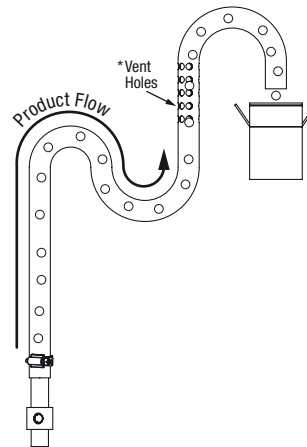
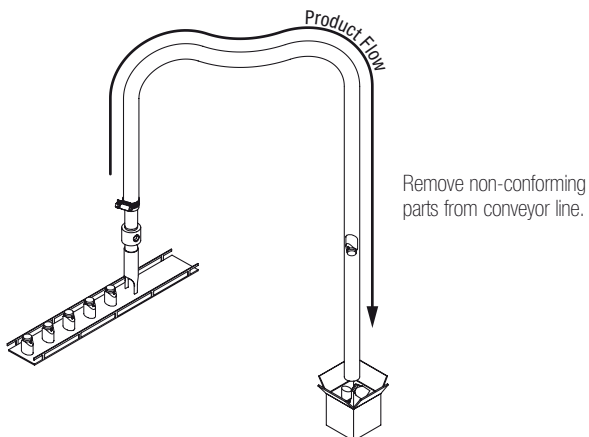
## Transferring Bulk Materials:



To size a NDF pump for transferring individual items, choose the pump with an inside diameter just slightly larger than the largest dimension of the object.



Load parts for assembly from a vibratory bowl feeder.

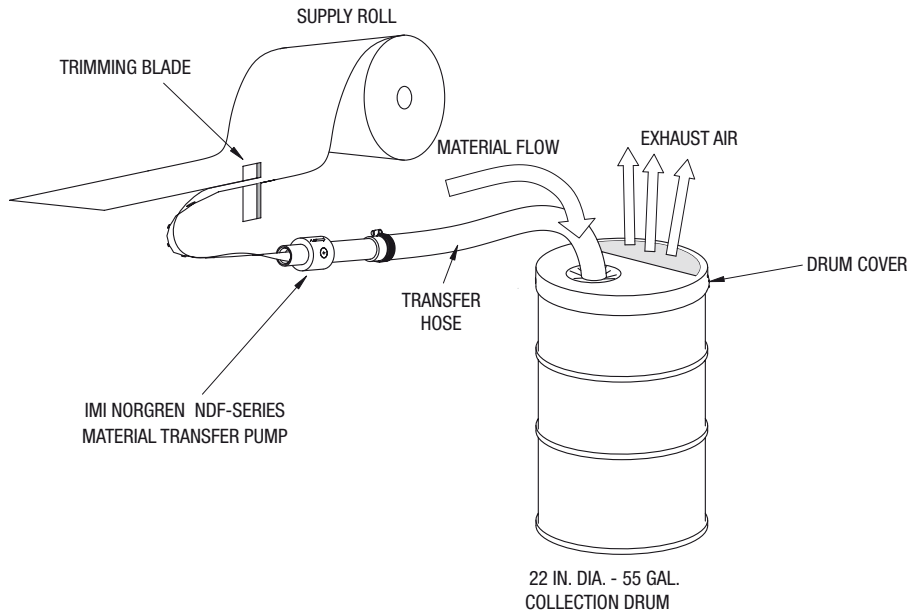


**Design Tip:** To prevent damage or to match the assembly speed, decrease the transfer speed by introducing a vertical bend into the tube, allowing gravity to work against the direction of travel.

\* To reduce transfer speed further, add holes in the tube to allow the air to vent.

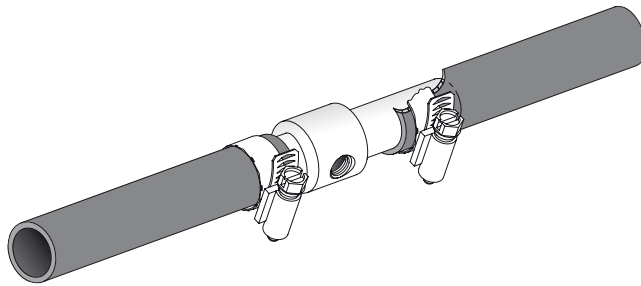
**Caution:** When conveying materials through plastic transfer lines, you must ground the transfer line to dissipate the static charge that develops from the friction of the air and material flowing over the transfer line surface.

**Trim, Selvage and Fiber Collection:**



**Installation Options**

For simple applications, place the NDF pump in the transfer line, slip the transfer hose over the outside diameter of the pump and secure in place with a hose clamp. When this type of installation is not desired or appropriate for the application, IMI Norgren offers the option of adding threads to the O.D. and the I.D.



**Warnings**

Improper selection, misuse, age or malfunction of components used in systems can cause failure in various modes. The system designer is warned to consider the failure modes of all component parts and to provide adequate safeguards to prevent personal injury or damage to equipment or property in the event of such failure modes. System designers and end users are cautioned to consult instruction sheets and specifications available from the factory. The system designer/end user is responsible for verifying that all requirements for the application are met.

**Warranty**

The products described herein are warranted subject to seller's Standard Terms and Condition of Sale, available at seller's website.

# 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.

*Wide range  
of shapes  
and sizes*



*Materials to  
suit most  
applications*






# 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

<p><b>Bellows</b> For curved or uneven surfaces and can provide compensation for inconsistent stack heights</p>  <p>Page 128</p>	<p><b>Flat</b> For heavy load applications</p>  <p>Page 133</p>	<p><b>Universal</b> For flat or slightly curved surfaces</p>  <p>Page 136</p>	<p><b>Dual Durometer</b> Provide long wear and excellent sealing for uneven and porous surfaces</p>  <p>Page 137</p>	<p><b>Oval</b> Heavy load capabilities due to rigid design and large work area</p>  <p>Page 138</p>	<p><b>Egg</b> For delicate, round objects used in food processing and electronic assembly applications</p>  <p>Page 141</p>
<p><b>Metal Detectable</b> For food processing and other applications where contamination is a concern</p>  <p>Page 142</p>	<p><b>Non-Marking</b> For foil, film, and glass applications</p>  <p>Page 143</p>	<p><b>Ultra-Miniature</b> For extremely small parts such as computer and electronics components</p>  <p>Page 144</p>	<p><b>Vacuum Fittings</b> To connect cups and spring levelers to vacuum pumps</p>  <p>Page 145</p>	<p><b>Push-In-Fittings</b> To connect all vacuum components</p>  <p>Page 154</p>	

Wide range  
of shapes  
and sizes



Materials to  
suit most  
applications

## 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](http://www.imi-precision.com)

# VACUUM CUPS

- Wide range of sizes – 0.09" to 2.75" 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
  - Metal detectable avoids contamination in food processing



## 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	Durometer	Application
*Vinyl	+32°F to +125°F (0°C to +52°C)	A20-A75 Range	General purpose material for most applications
Oil Resistant Vinyl	+32°F to +125°F (0°C to +52°C)	A40-A60 Range	Excellent for oil resistant applications
Polyurethane	+32°F to +150°F (0°C to +66°C)	A20-A70 Range	Good for chemical resistance and glass handling
Chloroprene	-40°F to +230°F (-40°C to +110°C)	A50-A60 Range	General purpose material with good oil resistance and low temperature performance
Nitrile	+32°F to +194°F (0°C to +90°C)	A50-A60 Range	General purpose material with good oil and abrasion resistance
Silicone-Grey	-50°F to +392°F (-46°C to +200°C)	A30-A60 Range	Good for applications involving high temperatures, food or non-marking situations
Silicone-Translucent	-92°F to +392°F (-69°C to +200°C)	A30-A60 Range	Good for applications involving high temperatures, food or non-marking situations
(Dual Durometer) Polyurethane	50°F to 122°F (10°C to 50°C)	A30 / A60	Good for chemical resistance and glass handling
Silicone-Red	-94°F to 536°F (-70°C to 280°C)	A30-A60 Range	Good for applications involving high temperatures, food or non-marking situations
Silicone-Blue	-94°F to 536°F (-70°C to 280°C)	A30-A60 Range	Good for applications involving high temperatures, food or non-marking situations
Natural Rubber	-40°F to 176°F (-40°C to 80°C)	A40	Good for non-marking situations and glass, solar panel and semiconductor/electronics handling

\*Standard durometer for vinyl cups is A50 ±5 points — may vary with color. Other Materials Available - please consult factory: FDA Vinyl, Anti-Static Vinyl, FDA Silicone.

### 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 pump typically measured in inches of mercury "Hg or [mbar]
- Vacuum Flow:** The volume of free air induced by the vacuum pump 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

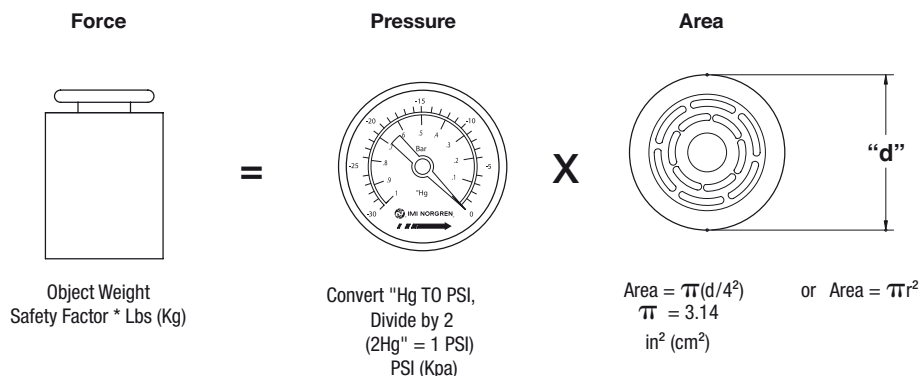
## Vacum Cup Selection Guide

As is true in most vacuum applications, there is more than one correct answer. In order to successfully find the best cup(s) and pumps 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

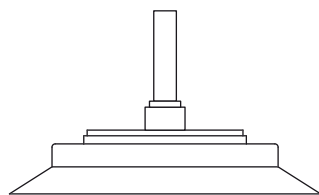
F = the weight of the objects in lbs(kg) multiplied by the safety factor, see below.

P = the expected vacuum level in PSI (Kpa) (2Hg" = 1 PSI)

A = the area of the Vacuum cup measured by in<sup>2</sup> [cm<sup>2</sup>]

### Safety Factors:

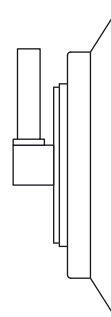
Always include safety factors when calculating lifting capabilities.



**Safety Factor=2**

### Horizontal Lift = 2

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



**Safety Factor=4**

### Vertical Lift = 4

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

## ● Vacuum Cup Selection Guide

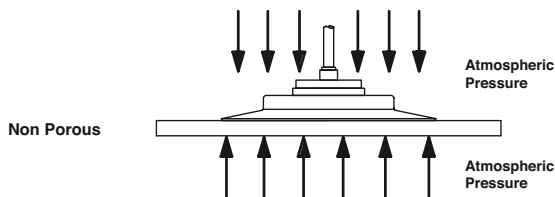
### II. Determine Type of Material to be handled: Non-Porous, Porous, Flexible/Non-Porous

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 pump because there is no vacuum flow (leakage). The cup seals to the surface of the object enabling the pump 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 pump when handling non-porous materials. All "H" series pumps 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<sup>2</sup> [94.01 cm<sup>2</sup>] – " $A$ " 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 droop. IMI Norgren recommends using 2 rows of 3 cups each for a total of 6 cups.

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

Solve for the diameter ( $d$ ) using the equation:  $A = \pi * [d^2 / 4]$  or  $pr^2$

$$d^2 = 4 * 2.38 / \pi \text{ or } d^2 = 3.03 \text{ in}^2$$

$$d = \text{sq. root of } 3.03 \text{ or } 1.74 \text{ in}$$

$$[A = \pi * [d^2 / 4] \text{ or } pr^2]$$

$$[d^2 = 4 * 15.67 / \pi \text{ or } d^2 = 19.96 \text{ cm}^2]$$

$$[d = \text{sq. root of } 19.96 \text{ or } 44.7\text{mm}]$$

**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.

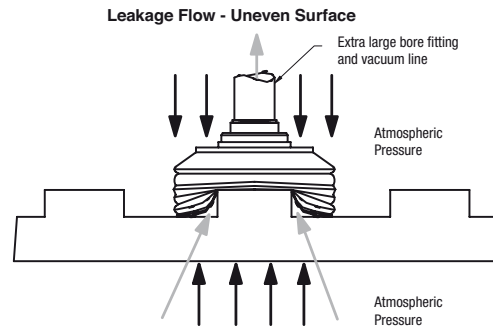
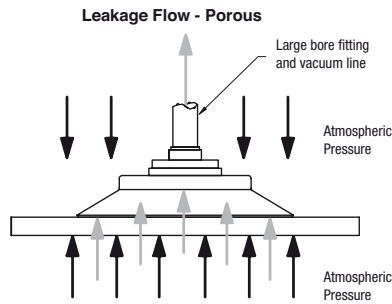
## ● Vacuum Cup Selection Guide

**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 pump is as large as necessary to allow the pump 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 pump.

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 pumps 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 pump recommendation.



### 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.

$A = 200 [90.72] / 8 [.542 \text{ bar}] = 25 \text{ in}^2 [164.35 \text{ cm}^2]$  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  $6.25 \text{ in}^2 [41.09 \text{ cm}^2]$ .

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

**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 pump.

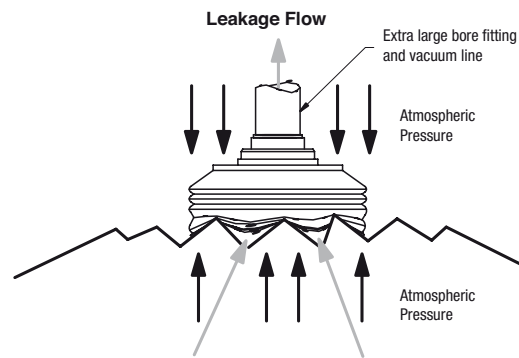
## ● Vacuum Cup Selection Guide

**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 pump 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 pumps. 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 pump and cup recommendation.



# VACUUM BELLOWS CUPS

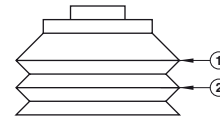
- Bellows cups conform to curved or uneven surfaces and the bellows sections compensate for inconsistent stack heights.










## ● Single Bellows Cups: 1 Convolution

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

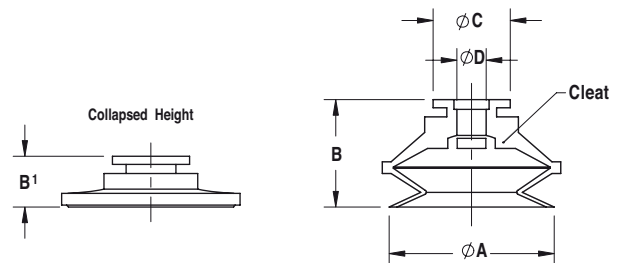


Part Number	Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B <sup>1</sup> - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVC-B5	 1	0.18 (4.60)	0.03 (20)	0.50 (12.7)	0.45 (11.4)	0.12 (3.00)	0.06 (1.50)	No	V	ORV, GS or P	0 (0)	1
NVCC-B-020-*	 1	0.20 (5.10)	0.03 (20)	0.45 (11.4)	0.35 (8.90)	0.28 (7.10)	0.16 (4.10)	No	N or S	-	0 (0)	2
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
NVCC-B-043-*	 1	0.43 (10.90)	0.15 (94)	0.66 (16.80)	0.48 (12.2)	0.41 (10.40)	0.15 (3.80)	No	N or S	-	0.03 (0.90)	7
NVCR-B10P-*	 1	0.43 (10.90)	0.15 (94)	0.67 (17.00)	0.46 (11.7)	0.36 (9.10)	0.15 (3.80)	No	C or S	-	0.03 (0.90)	3
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. I.E. NVCC-B-020-N (for Nitrile material). See Chart below for material specifications.

**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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)

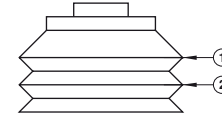




● Single Bellows Cups: 1 Convolution

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' - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVCC-B-051-*		1	0.51 (13.00)	0.20 (132)	0.63 (16.00)	0.45 (11.40)	0.41 (10.40)	0.16 (4.10)	No	N or S	-	0.05 1	7
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
NVCC-B-063-*		1	0.63 (16.00)	0.31 (201)	0.75 (19.10)	0.48 (12.20)	0.41 (10.40)	0.19 (4.80)	Yes	N or S	-	0.05 (1.00)	7
NVCR-B15P-*		1	0.65 (16.50)	0.33 (214)	0.77 (19.60)	0.50 (12.70)	0.36 (9.10)	0.15 (3.80)	No	C or S	-	0.05 (1.00)	3
NVCC-B-075-*		1	0.72 (18.30)	0.41 (263)	0.61 (15.50)	0.40 (10.20)	0.41 (10.40)	0.16 (4.10)	Yes	N or S	-	0.07 (2.00)	7
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
NVCR-B20P-*		1	0.85 (21.60)	0.57 (366)	0.79 (20.10)	0.38 (9.70)	0.56 (14.20)	0.22 (5.60)	Yes	C or S	-	0.10 (3.00)	4
NVC-B20P		1	0.87 (22.10)	0.59 (384)	0.73 (18.50)	0.40 (10.20)	0.57 (14.50)	0.19 (4.80)	Yes	V	ORV, GS or P	0.07 (2.00)	4
NVCC-B-087-*		1	0.87 (22.10)	0.59 (384)	0.75 (19.10)	0.45 (11.40)	0.39 (9.90)	0.19 (4.80)	Yes	N or S	-	0.07 (2.00)	7
NVCC-B-094-*		1	0.94 (23.90)	0.69 (448)	0.91 (23.10)	0.50 (12.70)	0.39 (9.90)	0.15 (3.80)	Yes	N or S	-	0.11 (3.00)	7
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

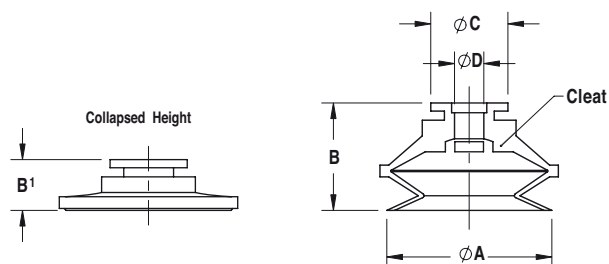
● Single Bellows Cups: 1 Convolution

Part Number	Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B <sup>1</sup> - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group	
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
NVCR-B30P-*		1	1.31 (33.30)	1.35 (870)	1.02 (25.90)	0.60 (15.20)	0.75 (19.10)	0.22 (5.60)	No	C or S	-	0.28 (8)	5
NVC-B30P		1	1.32 (33.50)	1.37 (883)	1.00 (25.40)	0.58 (14.70)	0.56 (14.20)	0.19 (4.80)	Yes	V	ORV, GS or P	0.21 (6)	4
NVCC-B-130-*		1	1.32 (33.50)	1.37 (883)	1.08 (27.40)	0.65 (16.50)	0.71 (18.00)	0.31 (7.90)	Yes	N or S	-	0.25 (7)	8
NVCR-B40P-*		1	1.69 (42.90)	2.24 (1447)	1.10 (27.90)	0.64 (16.30)	0.79 (20.10)	0.30 (7.60)	Yes	C or S	-	0.42 (12)	5
NVC-B40P		1	1.69 (42.90)	2.24 (1447)	1.10 (27.90)	0.52 (13.20)	0.79 (19.10)	0.25 (7.10)	Yes	V	-	0.42 (12)	5
NVCC-B-169-*		1	1.69 (42.90)	2.24 (1447)	1.10 (27.90)	0.70 (17.80)	0.71 (18.00)	0.31 (7.90)	Yes	N or S	-	0.39 (11)	8
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
NVCC-B-209-*		1	2.07 (52.60)	3.37 (2171)	1.34 (34.00)	0.85 (21.60)	0.71 (18.00)	0.31 (7.90)	Yes	N or S	-	0.78 (22)	8
NVC-B50P		1	2.10 (53.30)	3.46 (2235)	1.38 (35.10)	0.75 (19.10)	1.04 (26.40)	0.41 (10.40)	Yes	V	ORV, GS or P	0.78 (22)	6
NVCR-B50P-*		1	2.10 (53.30)	3.46 (2235)	1.43 (36.30)	0.75 (19.10)	1.04 (26.40)	0.41 (10.40)	Yes	C or S	-	0.88 (25)	6
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
NVCC-B-307-*		1	3.07 (78.00)	7.40 (4776)	1.80 (45.70)	1.25 (31.80)	0.98 (24.90)	0.47 (11.90)	Yes	N or S	-	2.15 (61)	9

\* How to Order: All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. NVCC-B-020-N (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate 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.

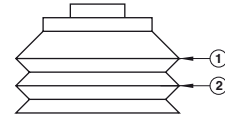
Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
ORV - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
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: 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



Part Number	Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B' - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVCC-B-021-*		0.21 (5.30)	0.03 (22)	0.53 (13.50)	0.47 (11.90)	0.27 (6.90)	0.16 (4.10)	No	N or S	-	0 (0)	3
NVCC-B-028-*		0.26 (6.60)	0.05 (34)	0.55 (14.00)	0.42 (10.70)	0.37 (9.40)	0.19 (4.80)	No	N or S	-	0 (0)	7
NVCC-B-035-*		0.35 (8.90)	0.10 (62)	0.59 (15.00)	0.46 (11.70)	0.36 (9.10)	0.19 (4.80)	No	N or S	-	0 (0)	7
NVC-B10-2		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
NVCC-B-055-*		0.56 (14.20)	0.25 (159)	0.91 (23.10)	0.62 (15.70)	0.40 (10.20)	0.19 (4.80)	No	N or S	-	0.07 (2)	7
NVCC-B-069-*		0.69 (17.50)	0.38 (248)	0.91 (23.10)	0.50 (12.70)	0.40 (10.20)	0.19 (4.80)	No	N or S	-	0.07 (2)	7
NVC-33A5		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
NVCR-BL20P-*		0.79 (20.10)	0.49 (316)	0.90 (22.90)	0.38 (9.70)	0.57 (14.50)	0.20 (5.10)	No	C or S	-	0.11 (3)	4
NVCC-B-079-*		0.79 (20.10)	0.49 (316)	0.91 (23.10)	0.50 (12.70)	0.40 (10.20)	0.19 (4.80)	No	N or S	-	0.07 (2)	7
NVC-33A3		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
NVCC-B-098-*		0.98 (24.90)	0.72 (467)	1.34 (34.00)	0.69 (17.50)	0.40 (10.20)	0.16 (4.10)	No	N or S	-	0.14 (4)	7
NVCR-BL30P-*		1.18 (30.00)	1.09 (706)	1.26 (32.00)	0.55 (14.00)	0.79 (20.10)	0.25 (6.40)	No	C or S	-	0.21 (6)	5

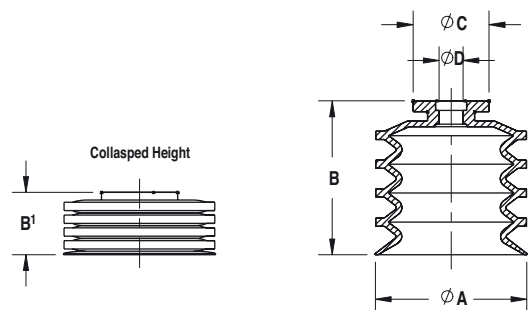
● Multi-Bellows Cups: 2, 3, 4 Convolutions

Part Number		Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B <sup>1</sup> - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
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
NVCC-B-126-*		2	1.28 (32.50)	1.29 (830)	1.48 (37.60)	0.90 (22.90)	0.73 (18.50)	0.31 (7.90)	No	N or S	-	0.35 (10)	8
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
NVCR-BL40P-*		4	1.58 (40.10)	1.96 (1265)	1.60 (40.60)	0.65 (16.50)	0.79 (20.10)	0.25 (6.40)	No	C or S	-	0.42 (12)	5
NVCC-B-165-*		2	1.65 (41.90)	2.14 (1379)	1.81 (46.00)	0.98 (24.90)	0.70 (17.80)	0.31 (7.90)	No	N or S	-	0.63 (18)	8
NVCR-BL50P-*		4	1.98 (50.30)	3.08 (1986)	2.04 (51.80)	0.90 (22.90)	1.07 (27.20)	0.41 (10.40)	No	C or S	-	0.85 (24)	6
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
NVCC-B-244-*		2	2.44 (62.00)	4.68 (3017)	2.17 (55.10)	0.81 (20.60)	0.70 (17.80)	0.31 (7.90)	No	N or S	-	1.34 (38)	8
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
NVCC-B-346-*		2	3.46 (87.90)	9.40 (6066)	3.44 (87.40)	1.81 (46.00)	0.97 (24.60)	0.47 (11.90)	Yes	N or S	-	5.86 (166)	9
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. I.E. NVCC-B-021-N (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate 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)



# VACUUM CUPS - FLAT

- 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

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B' - 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
NVCC-F-039-*		0.39 (9.90)	0.12 (77)	0.43 (10.90)	0.39 (9.90)	0.37 (9.40)	0.20 (5.10)	No	N or S	-	0 (0)	7
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
NVCC-F-059-*		0.59 (15.00)	0.27 (176)	0.44 (11.20)	0.36 (9.10)	0.36 (9.10)	0.20 (5.10)	No	N or S	-	0.04 (1)	7
NVCR-F15P-*		0.66 (16.80)	0.34 (221)	0.47 (11.90)	0.42 (10.70)	0.36 (9.10)	0.15 (3.80)	Yes	C or S	-	0.04 (1)	3
NVCC-F-079-*		0.79 (20.10)	0.49 (316)	0.45 (11.40)	0.35 (8.90)	0.33 (8.40)	0.20 (5.10)	No	N or S	-	0.04 (1)	7
NVCR-F20P-*		0.87 (22.10)	0.59 (384)	0.32 (8.10)	0.27 (6.90)	0.57 (14.50)	0.21 (5.30)	Yes	C or S	-	0.07 (2)	4
NVCC-F-100-*		1.00 (25.40)	0.79 (507)	0.50 (12.70)	0.35 (8.90)	0.38 (9.70)	0.20 (5.10)	No	N or S	-	0.07 (2)	7
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
NVCR-F25P-*		1.10 (27.90)	0.95 (613)	0.36 (9.10)	0.33 (8.40)	0.57 (14.50)	0.21 (5.30)	Yes	C or S	-	0.07 (2)	4
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

● Flat Cups: with or without Cleats

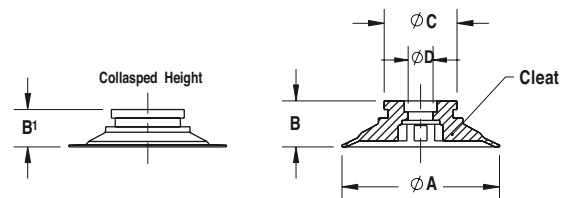
Part Number	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B' - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
NVCC-F-120-*	1.20 (30.50)	1.13 (730)	0.74 (18.80)	0.63 (16.00)	0.62 (15.70)	0.31 (7.90)	Yes	N or S	-	0.14 (4)	8
NVCR-F30P-*	1.27 (32.30)	1.27 (817)	0.39 (9.90)	0.35 (8.90)	0.57 (14.50)	0.20 (5.10)	Yes	C or S	-	0.11 (3)	4
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
NVCC-F-142-*	1.42 (36.10)	1.58 (1022)	0.79 (20.10)	0.63 (16.00)	0.62 (15.70)	0.31 (7.90)	Yes	N or S	-	0.21 (6)	8
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
NVCC-F-160-*	1.60 (40.60)	2.01 (1297)	0.79 (20.10)	0.64 (16.30)	0.63 (16.00)	0.31 (7.90)	Yes	N or S	-	0.21 (6)	8
NVCR-F40P-*	1.65 (41.90)	2.14 (1379)	0.48 (12.20)	0.39 (9.90)	0.76 (19.30)	0.26 (6.60)	Yes	C or S	-	0.21 (6)	5
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
NVCC-F-205-*	2.05 (52.10)	3.30 (2129)	0.85 (21.60)	0.67 (17.00)	0.70 (17.80)	0.31 (7.90)	Yes	N or S	-	0.42 (12)	8
NVCR-F50P-*	2.10 (53.30)	3.46 (2235)	0.69 (17.50)	0.62 (15.70)	1.04 (26.40)	0.43 (10.90)	Yes	C or S	-	0.46 (13)	6
NVCC-F-236-*	2.36 (59.90)	4.37 (2822)	0.87 (22.10)	0.67 (17.00)	0.70 (17.80)	0.31 (7.90)	Yes	N or S	-	0.56 (16)	8
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

(Continued on next page)

\* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. NVCC-F-236-N (for Nitrile material). See Chart below for material specifications.

**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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)

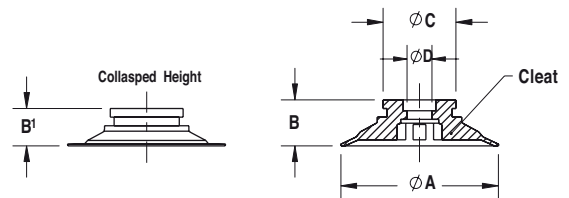


● Flat Cups: with or without Cleats

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B' - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)	Fitting Group
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
NVCC-F-295-*		2.95 (74.90)	6.83 (4409)	1.20 (30.50)	1.08 (27.40)	0.92 (23.40)	0.47 (11.90)	Yes	N or S	-	1.20 (34)	9
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
NVCC-F-374-*		3.74 (95.00)	10.99 (7087)	1.47 (37.30)	1.08 (27.40)	0.97 (24.60)	0.47 (11.90)	Yes	N or S	-	1.83 (52)	9
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. I.E. **NVCC-F-374-N** (for Nitrile material). See Chart below for material specifications.  
**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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
<b>V</b> - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
<b>ORV</b> - Oil Resistant Vinyl	Black	+32°F to +125°F (0°C to +52°C)
<b>P</b> - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
<b>N</b> - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
<b>GS</b> - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
<b>S</b> - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



# VACUUM CUPS - UNIVERSAL

- Universal cups can handle flat or slightly curved surfaces.



## Universal

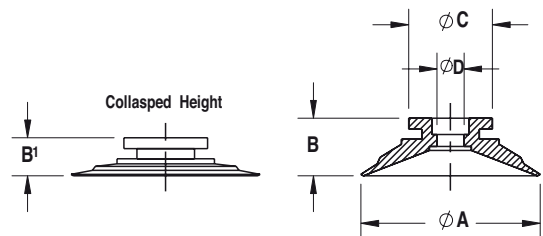
Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B' - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Weight oz (g)	Fitting Group
NVCR-U4P-*		0.20 (5.10)	0.03 (20)	0.27 (6.90)	0.26 (6.60)	0.18 (4.60)	0.07 (1.80)	No	C or S	0 (0.10)	1
NVCR-U6P-*		0.28 (7.10)	0.06 (40)	0.27 (6.90)	0.26 (6.60)	0.20 (5.10)	0.08 (2.00)	No	C or S	0 (0.10)	1
NVCR-U8P-*		0.37 (9.40)	0.11 (69)	0.27 (6.90)	0.24 (6.10)	0.20 (5.10)	0.08 (2.00)	No	C or S	0 (0.10)	1
NVCR-U10P-*		0.44 (11.20)	0.15 (98)	0.43 (10.90)	0.40 (10.20)	0.35 (8.90)	0.15 (3.80)	No	C or S	0.02 (0.70)	3
NVCR-U15P-*		0.65 (16.50)	0.33 (214)	0.45 (11.40)	0.37 (9.40)	0.35 (8.90)	0.15 (3.80)	No	C or S	0.03 (0.80)	3
NVCR-U20P-*		0.85 (21.60)	0.57 (366)	0.33 (8.40)	0.21 (5.30)	0.57 (14.50)	0.21 (5.30)	No	C or S	0.04 (0)	4
NVCR-U30P-*		1.25 (31.80)	1.23 (792)	0.38 (9.70)	0.21 (5.30)	0.57 (14.50)	0.21 (5.30)	No	C or S	0.07 (2)	4
NVCR-U40P-*		1.65 (41.90)	2.14 (1379)	0.53 (13.50)	0.33 (8.40)	0.77 (19.60)	0.25 (6.40)	No	C or S	0.21 (6)	5
NVCR-U50P-*		2.05 (52.10)	3.30 (2129)	0.72 (18.30)	0.45 (11.40)	1.06 (26.90)	0.44 (11.20)	No	C or S	0.39 (11)	6

\* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. NVCR-U4P-S (for Silicone material). See Chart below for material specifications.

**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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.

Material	Color	Temperature Range
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)





# VACUUM CUPS - DUAL DUROMETER

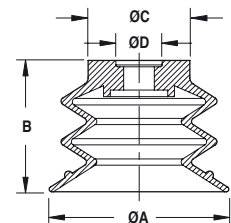
- Dual Durometer Cups are a durable combination of polyurethane with 30 and 60 durometers (stiffness), offering long wear and excellent sealing capability for uneven and porous surfaces. Available in single and double bellows models.



## ● Dual Durometer

Part Number		Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Weight oz (g)	Fitting Group
NVCD-B15P-1		1	0.63 (16.00)	0.31 (201.00)	0.75 (19.00)	0.35 (9.00)	0.15 (3.80)	No	PD	0.041 (1.20)	45
NVCD-B20P		2	0.83 (21.00)	0.54 (346.20)	0.57 (14.50)	0.47 (12.00)	0.20 (5.00)	No	PD	0.06 (1.70)	45
NVCD-B20P-1		1	0.83 (21.00)	0.54 (346.20)	0.71 (18.00)	0.47 (12.00)	0.24 (6.00)	No	PD	0.06 (1.70)	45
NVCD-B30P		2	1.26 (32.00)	1.25 (803.80)	0.67 (17.10)	0.67 (17.10)	0.34 (8.60)	No	PD	0.19 (5.40)	45
NVCD-B30P-1		1	1.18 (30.00)	1.10 (706.50)	0.84 (21.30)	0.65 (16.50)	0.20 (5.00)	No	PD	0.15 (4.30)	45
NVCD-B40P		2	1.57 (40.00)	1.95 (1256.00)	1.12 (28.40)	0.87 (22.00)	0.33 (8.50)	No	PD	0.53 (15.00)	45
NVCD-B40P-1		1	1.70 (42.00)	2.10 (1384.70)	0.90 (22.40)	0.90 (22.40)	0.30 (8.50)	No	PD	0.40 (10.00)	45
NVCD-B50P		2	2.05 (52.00)	3.29 (2122.60)	1.15 (29.20)	1.10 (28.00)	0.49 (12.50)	No	PD	0.88 (24.90)	6
NVCD-B50P-1		1	2.00 (52.00)	3.30 (2122.60)	1.10 (29.20)	1.10 (28.00)	0.50 (12.50)	No	PD	0.80 (22.00)	6
NVCD-BF60P-1-G38F		1	2.44 (62.00)	4.70 (3032.30)	1.60 (40.50)	1.10 (28.00)	G 3/8 F	Yes	PD	2.40 (68.00)	G 3/8 F
NVCD-B70P-38F		2	2.80 (70.00)	6.00 (3846.50)	2.40 (60.00)	1.50 (38.50)	G 3/8 F	No	PD	0.53 (15.00)	3/8 NPSF
NVCD-B70P-38M		2	2.80 (70.00)	6.00 (3846.50)	2.30 (58.50)	1.50 (38.50)	G 3/8 M	No	PD	6.02 (170.60)	3/8 NPSM
NVCD-B70P-1-38F		1	2.90 (73.00)	6.50 (4183.30)	1.80 (46.50)	1.70 (42.00)	G 3/8 F	No	PD	2.40 (68.00)	3/8 NPSF
NVCD-B70P-1-38M		1	2.90 (73.00)	6.50 (4183.30)	1.80 (46.50)	1.70 (42.00)	G 3/8 M	No	PD	2.40 (68.00)	3/8 NPSM
NVCD-BF80P-1-38F		1	3.30 (84.00)	8.60 (5548.40)	1.46 (37.00)	1.40 (35.40)	3/8 NPSF	Yes	PD	2.40 (68.00)	3/8 NPSF
NVCD-BF80P-1-G38F		1	3.30 (84.00)	8.60 (5548.40)	1.46 (37.00)	1.40 (35.40)	G 3/8 F	Yes	PD	2.40 (68.00)	G 3/8 F

**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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.




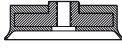
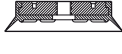




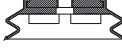


Material	Color	Temperature Range
PD - Polyurethane Dual Durometer	Blue	50°F to 122°F (10°C to 50°C)

# VACUUM CUPS - OVAL

- 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

Part Number	A-1 in. (mm)	A - 2 in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	B' - Collapsed Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	Cleats	Standard Material	Optional Material	Weight oz (g)
<b>NVC-89</b> 	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)
<b>NVC-83</b> 	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)
<b>NVC-183-2X4</b> 	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)
<b>NVC-183-2X6</b> 	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)
<b>NVC-90-2X10</b> 	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)
<b>NVC-90-3X8</b> 	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)
<b>NVC-90-3X10</b> 	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)
<b>NVC-32-3.5X5.0</b> 	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)
<b>NVC-129</b> 	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)
<b>NVC-90-6X10</b> 	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. **NVCR-U4P-S** (for Silicone material). See Chart below for material specifications.

**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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

**V** - Vinyl  
**ORV** - Oil Resistant Vinyl  
**P** - Polyurethane  
**GS** - Silicone

### Color

Blue  
 Black  
 Green  
 Gray

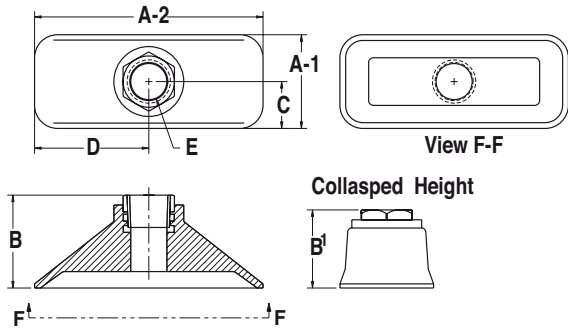
### Temperature Range

+32°F to +125°F (0°C to +52°C)  
 +32°F to +125°F (0°C to +52°C)  
 +32°F to +150°F (0°C to +66°C)  
 -50°F to +392°F (-46°C to +200°C)

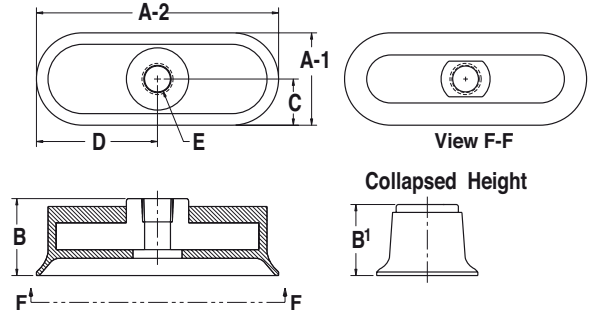
# Vacuum Cups - Oval

## ● Oval

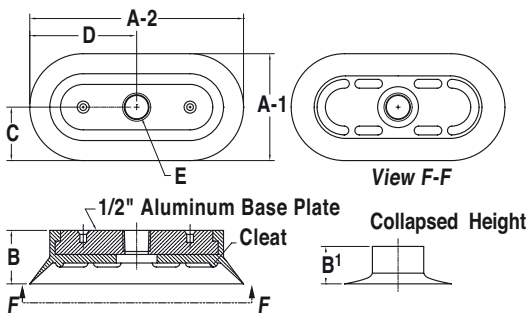
NVC-89



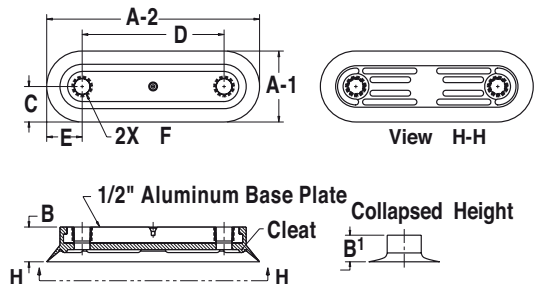
NVC-83



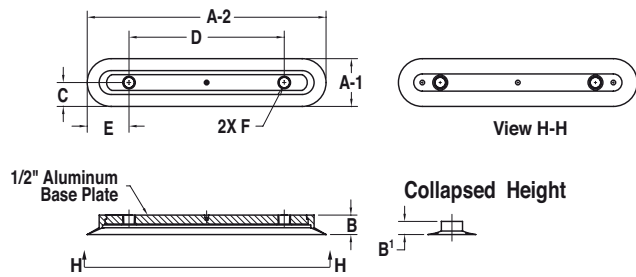
NVC-183-2X4



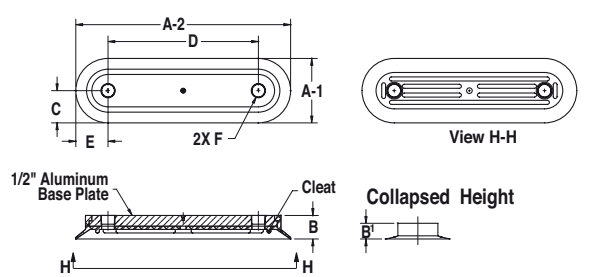
NVC-183-2X6



NVC-90-2X10



NVC-90-3X10

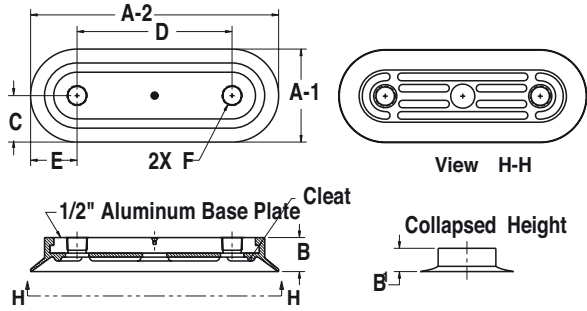


Custom mounting holes available. Consult factory.

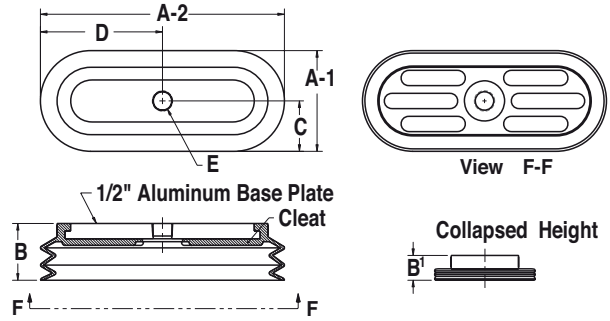
# Vacuum Cups - Oval

● Oval

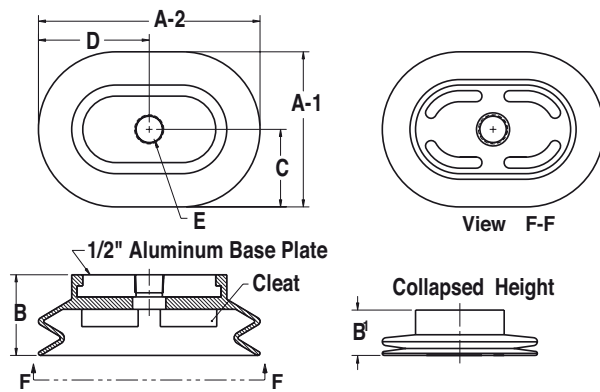
## NVC-90-3X8



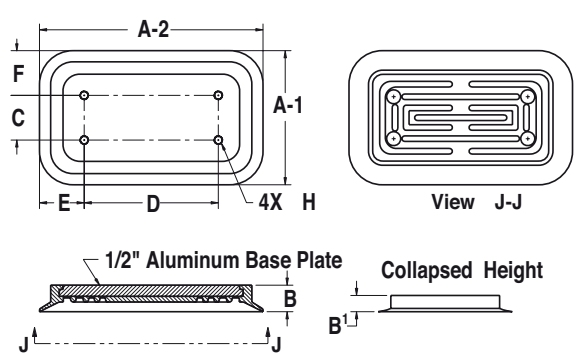
## NVC-129



## NVC-32-3.5X5.0



## NVC-90-6X10





Custom mounting holes available. Consult factory.

# VACUUM CUPS - EGG

- Silicone Egg Cups with bellows safely handle delicate, round objects.

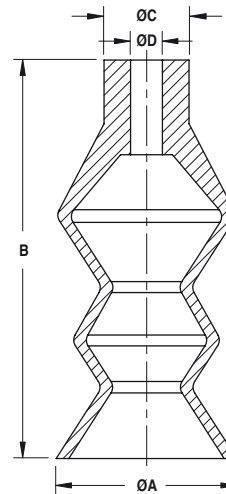


## ● Egg

Part Number	Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Weight oz (g)
NVCC-E-034-S	2.50	1.34 (34.00)	1.41 (907.50)	2.95 (75.00)	0.63 (16.00)	0.24 (6.00)	No	S	0.61 (17.30)
NVCC-E-034-SR	 2.50	1.34 (34.00)	1.41 (907.50)	2.95 (75.00)	0.63 (16.00)	0.24 (6.00)	No	RS	0.61 (17.30)
NVCC-E-037-SR	 5.50	1.46 (37.00)	1.67 (1074.70)	2.73 (69.40)	0.61 (15.50)	0.20 (5.00)	No	RS	0.53 (15.00)

Fittings: NVCC-E style cups are for use with the NVPIA-60H-M11 Atmospheric Release Pump. Fittings are not required.

Material	Color	Temperature Range
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)
RS - Silicone	Red	-94°F to 536°F (-70 °C to 280°C)



# VACUUM CUPS - METAL DETECTABLE

- Metal Detectable Cups contain bits of metal embedded into the cup's silicone material and are used where contamination is a concern, such as in food processing.

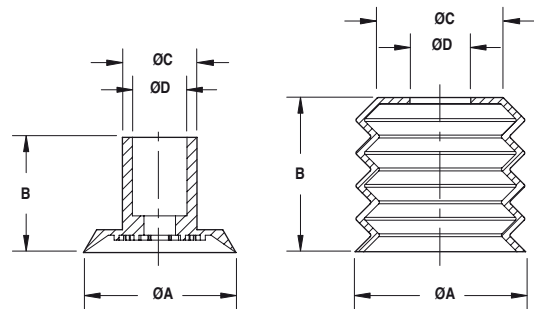


## ● Metal Detectable

Part Number		Convolutions	A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Weight oz (g)	Fitting Group
<b>NVCMD-F30</b>		N/A	1.18 (30.00)	1.10 (706.50)	0.91 (23.20)	0.59 (15.00)	0.43 (11.00)	Yes	NR	0.11 (3.00)	Consult Factory
<b>NVCMD-BC40B-R</b>		4	1.57 (40.00)	1.95 (1256.00)	1.50 (38.00)	1.57 (40.00)	0.59 (15.00)	No	BS or RS	0.50 (14.20)	10
<b>NVCMD-BC40B</b>		4	1.57 (40.00)	1.95 (1256.00)	1.50 (38.00)	1.57 (40.00)	0.59 (15.00)	No	BS or RS	0.50 (14.20)	10
<b>NVCMD-BC42B</b>		4	1.65 (42.00)	2.15 (1384.70)	1.50 (38.00)	1.65 (42.00)	0.59 (15.00)	No	BS or RS	0.50 (14.20)	10

**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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.

Material	Color	Temperature Range
<b>RS</b> - Silicone	Red	-94°F to 536°F (-70 °C to 280°C)
<b>BS</b> - Silicone	Blue	-94°F to 536°F (-70 °C to 280°C)
<b>NR</b> - Natural Rubber	Blue	-40°F to 176°F (-40 to 80°C)



# VACUUM CUPS - NON-MARKING

- Natural rubber Non-Marking vacuum cups don't leave marks.

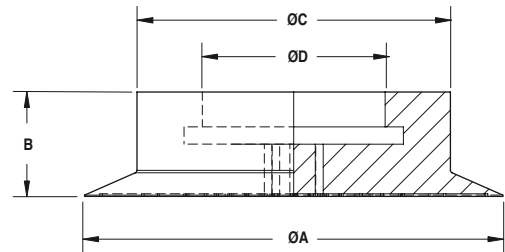


## ● Non-Marking

Part Number		A - O.D. in. (mm)	Approx. Area sq. in. (sq. mm)	B - Height in. (mm)	C in. (mm)	D - Thru Hole in. (mm)	Cleats	Standard Material	Weight oz (g)	Fitting Group
NVCNM-F20-NR		0.79 (20.00)	0.49 (314.00)	0.59 (15.00)	0.47 (12.00)	0.24 (6.00)	No	NR	0.06 (1.80)	NM
NVCNM-F40-NR		1.57 (40.00)	1.95 (1256.00)	0.79 (20.00)	0.79 (20.00)	0.51 (13.00)	No	NR	0.22 (6.40)	NM
NVCNM-F60-NR		2.36 (60.00)	4.38 (2826.00)	0.79 (20.00)	1.97 (50.00)	1.38 (35.00)	No	NR	1.12 (31.80)	NM
NVCNM-F80-NR		3.15 (80.00)	7.79 (5024.00)	0.79 (20.00)	2.36 (60.00)	1.38 (35.00)	No	NR	1.84 (52.20)	NM
NVCNM-F140-NR		5.51 (140.00)	23.85 (15386.00)	0.79 (20.00)	3.15 (80.00)	1.18 (30.00)	No	NR	6.02 (170.60)	G 1/2 F

**Fittings:** To order fittings, please reference the fitting groups section for the appropriate 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.

Material	Color	Temperature Range
NR - Natural Rubber	Orange	-40°F to +176°F (-40°C to +80°C)



# VACUUM CUPS - ULTRA-MINIATURE

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



## ● Ultra-Miniature

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)

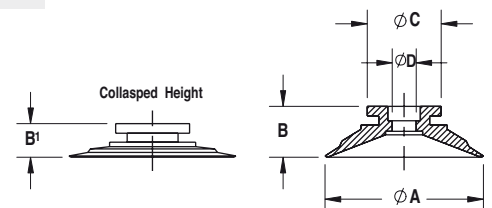
\* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. NVC-VI093-\* (for Buna-N material). See Chart below for material specifications.

### Material

- B** - Buna-N static dissipative (ESD-safe) non-marking
- ESD** - Hi-Temp conductive (ESD-safe) silicone
- S** - Hi-Temp (non-ESD-safe) silicone

### Color Temperature Range

- Black -5°F to +250°F (-15°C to +121°C)
- Black -65°F to +445°F (-55°C to +230°C)
- Clear -65°F to +480°F (-55°C to +250°C)





Available  
in imperial  
and metric  
threads



Holds vacuum  
cups securely

## Vacuum Cup Fittings

Designed with large thru bores, IMI Norgren fittings connect to vacuum cups, vacuum pumps 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  
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# VACUUM CUP FITTINGS

## ● Fitting Groups 1, 2, 3



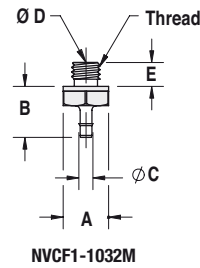
NVCF1-1032M



NVCF2-1032M



NVCF3-1032M



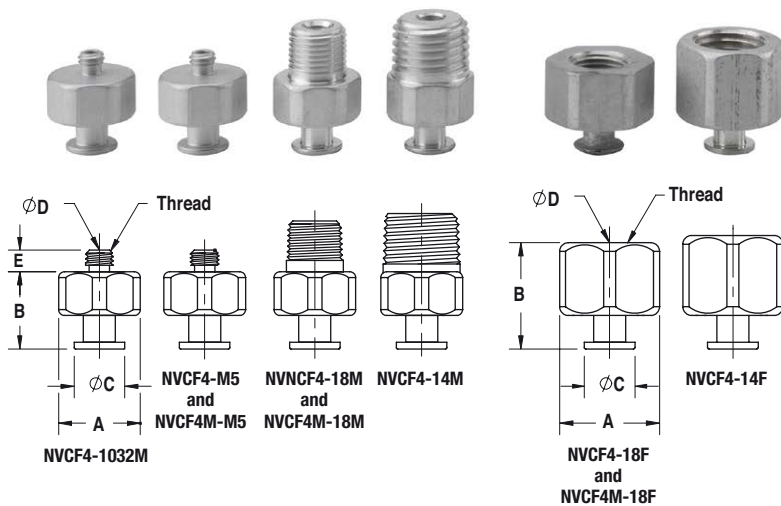
NVCF2-1032M



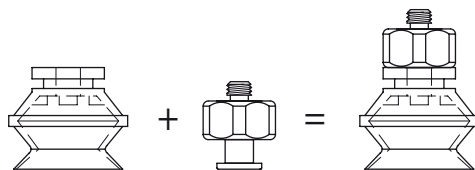
NVCF3-1032M

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

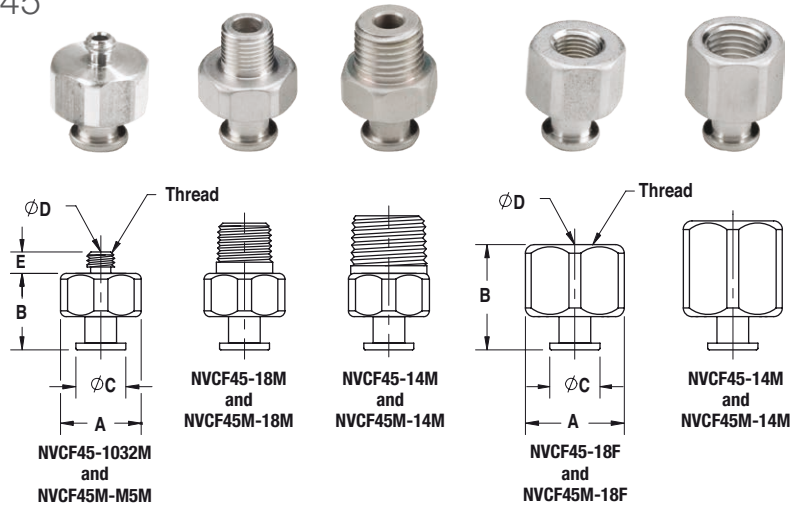


Part Number	Thread Size	Dimensions A - Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
NVCF4-1032M	10-32 Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.09 (2.40)	0.15 (3.80)	0.20 (5.70)	Aluminum
NVCF4-M5	M5 X 0.8 Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.09 (2.40)	0.15 (3.80)	0.20 (5.70)	Aluminum
NVCF4-18M	1/8 NPT Male	0.56 (14.30)	0.53 (13.50)	0.35 (8.80)	0.17 (4.40)	0.35 (8.80)	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

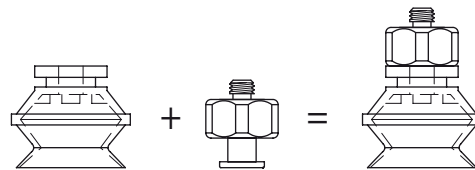


Example: Cup with Fitting

● Fitting Groups 45

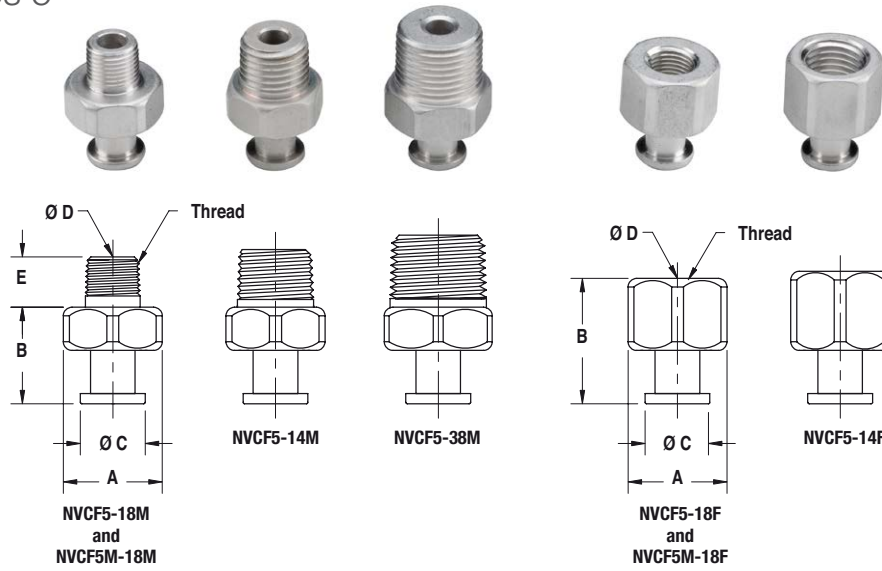


Part Number	Thread Size	Dimensions					Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)		
NVCF45-1032M	10-32 Male	0.75 (19.05)	0.60 (15.11)	0.45 (11.43)	0.09 (2.36)	0.15 (3.81)	(0.30) (8.5)	Aluminum
NVCF45-18F	1/8 NPT Female	0.75 (19.05)	0.80 (20.19)	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

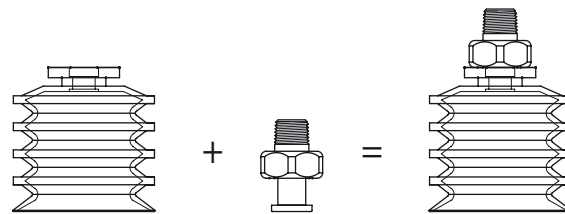


Example: Cup with Fitting

● Fitting Groups 5

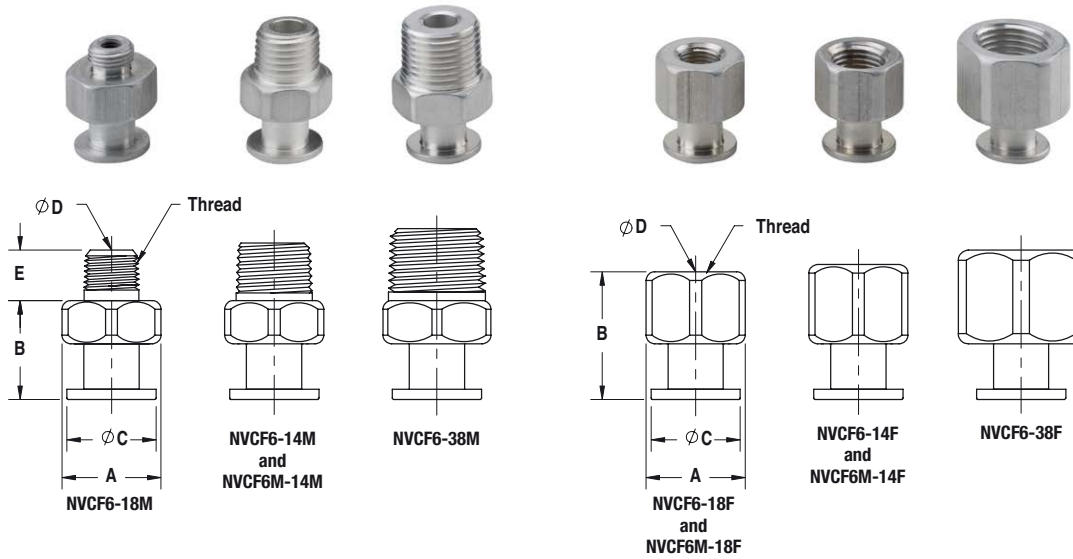


Part Number	Thread Size	Dimensions					Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)		
NVCF5-18M	1/8 NPT Male	0.69 (17.40)	0.67 (17.00)	0.45 (11.40)	0.22 (5.60)	0.35 (8.90)	0.30 (8.50)	Aluminum
NVCF5-14M	1/4 NPT Male	0.69 (17.40)	0.67 (17.00)	0.45 (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

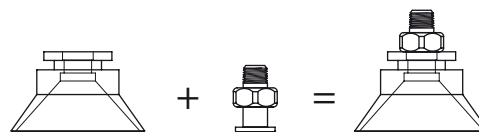


Example: Cup with Fitting

● Fitting Groups 6

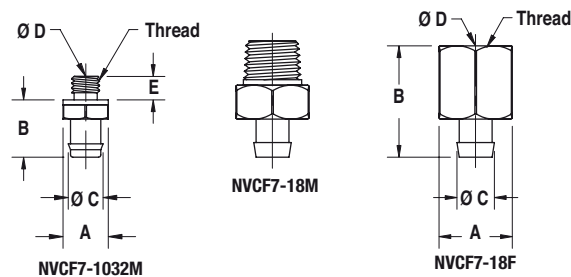


Part Number	Thread Size	Dimensions			D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)				
NVCF6-18M	1/8 NPT Male	0.69 (17.40)	0.69 (17.40)	0.62 (15.70)	0.28 (7.10)	0.35 (8.90)	0.40 (11.00)	Aluminum
NVCF6-14M	1/4 NPT Male	0.69 (17.40)	0.69 (17.40)	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)	0.50z (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)	0.30z (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



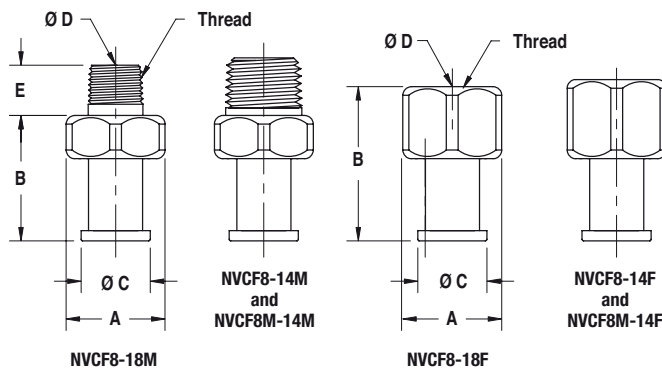
Example: Cup with Fitting

● Fitting Groups 7



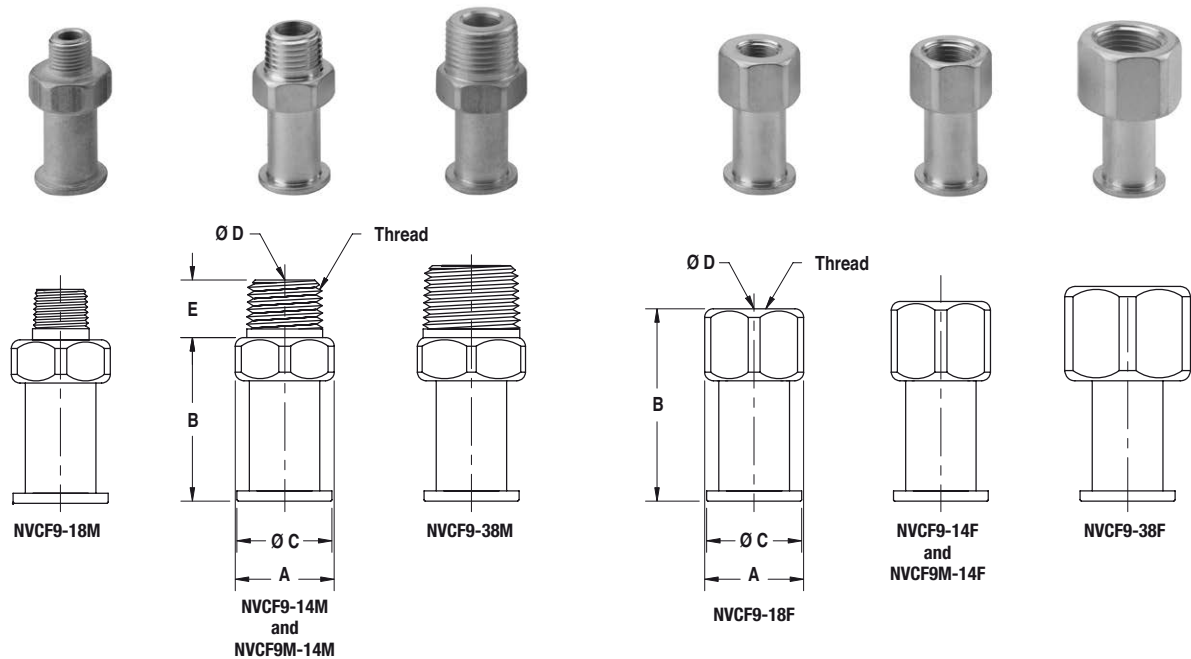
Part Number	Thread Size	Dimensions					Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)		
NVCF7-1032M	10-32 Male	0.31 (7.90)	0.39 (9.90)	0.24 (6.10)	0.09 (2.40)	0.16 (4.10)	0.10 (2.80)	Brass
NVCF7-18M	1/8 NPT Male	0.50 (12.70)	0.49 (12.40)	0.26 (6.50)	0.16 (4.10)	0.30 (7.60)	0.40 (11.00)	Brass
NVCF7-18F	1/8 NPT Female	0.50 (12.70)	0.76 (19.30)	0.26 (6.50)	0.16 (4.10)	N/A N/A	0.40 (11.00)	Brass

● Fitting Groups 8

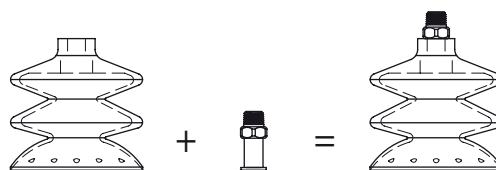


Part Number	Thread Size	Dimensions					Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)	D Thru Hole Diameter in. (mm)	E in. (mm)		
NVCF8-18M	1/8 NPT Male	0.69 (17.40)	0.87 (22.10)	0.48 (12.20)	0.28 (7.10)	0.35 (8.90)	0.30 (8.50)	Aluminum
NVCF8-14M	1/4 NPT Male	0.69 (17.40)	0.87 (22.10)	0.48 (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



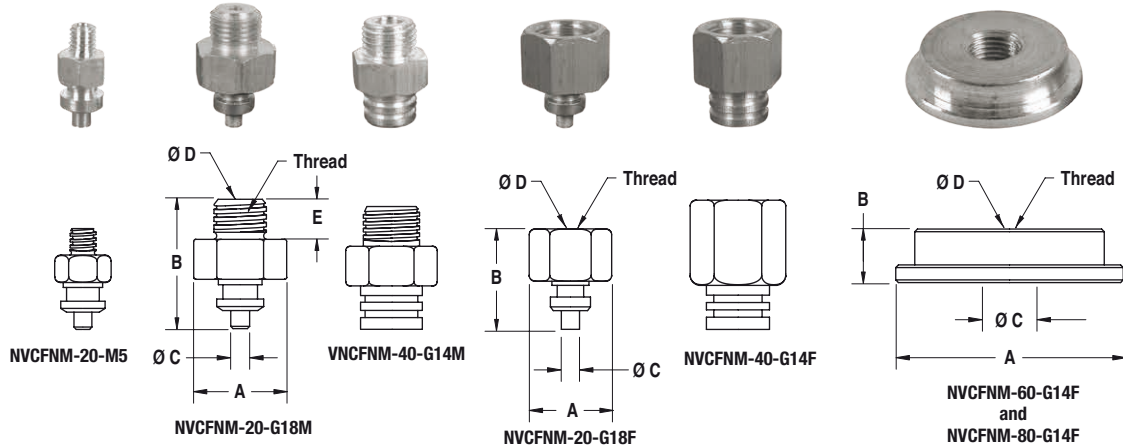
Part Number	Thread Size	Dimensions			D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)				
NVCF9-18M	1/8 NPT Male	0.69 (17.40)	1.14 (28.80)	0.66 (16.80)	0.22 (5.60)	0.35 (8.90)	0.40 (11.00)	Aluminum
NVCF9-14M	1/4 NPT Male	0.69 (17.40)	1.14 (28.80)	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

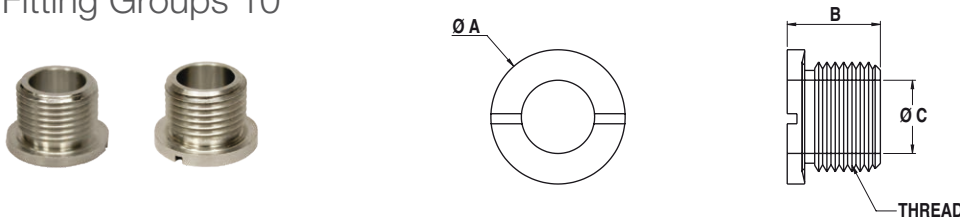


● Fitting Groups NM

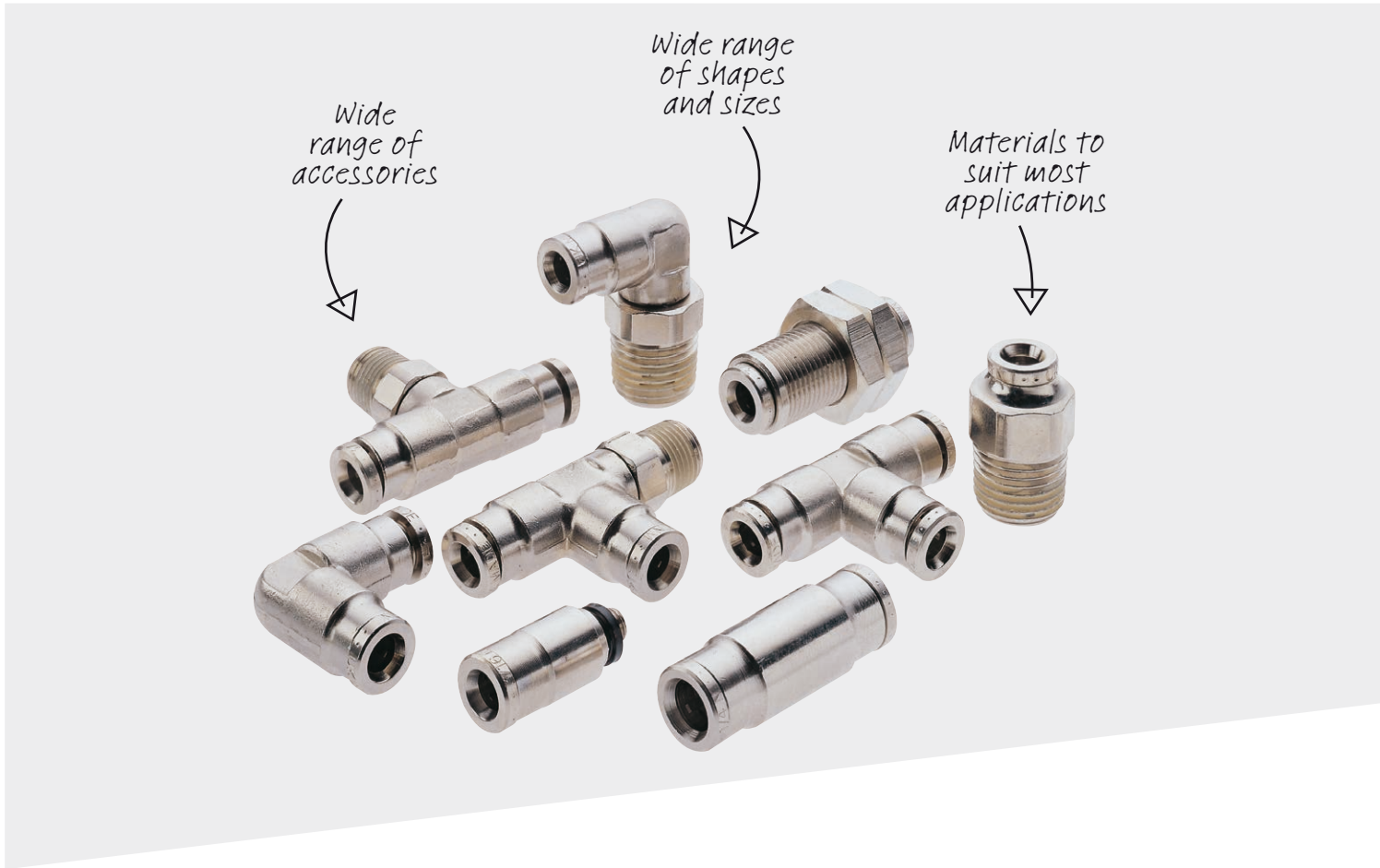


Part Number	Thread Size	Dimensions			D Thru Hole Diameter in. (mm)	E in. (mm)	Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)				
NVCFNM-20-M5	M5 Male	0.32 8.13	0.55 13.97	0.32 8.13	0.10 2.54	0.20 5.08	0.04 oz 1.1 g	Aluminum
NVCFNM-20-G18F	G 1/8 Female	0.55 13.97	0.73 18.54	0.32 8.13	0.10 2.54	N/A	0.2 oz 5.7 g	Aluminum
NVCFNM-20-G18M	G 1/8 Male	0.55 13.97	0.61 15.49	0.32 8.13	0.10 2.54	0.28 7.11	0.2 oz 5.7 g	Aluminum
NVCFNM-40-G14F	G 1/4 Female	0.69 17.40	1.04 26.42	0.51 12.95	0.30 7.62	N/A	0.2 oz 5.7 g	Aluminum
NVCFNM-40-G14M	G 1/4 Male	0.32 8.00	0.67 17.02	0.51 12.95	0.30 7.62	0.31 7.87	0.3 oz 7.7 g	Aluminum
NVCFNM-60-G14F	G 1/4 Female	1.67 42.42	0.39 9.91	1.39 35.31	0.59 15.00	N/A	0.94 oz 26.6 g	Aluminum
NVCFNM-80-G14F	G 1/4 Female	1.67 42.42	0.39 9.91	1.39 35.31	0.59 15.00	N/A	0.94 oz 26.6 g	Aluminum

● Fitting Groups 10



Part Number	Thread Size	Dimensions			Weight oz (g)	Material
		A-Hex in. (mm)	B in. (mm)	C in. (mm)		
NVCF10-38-NPS	3/8 in. NPS Male	0.825 (21.00)	0.573 (14.60)	0.450 (11.40)	0.15 (4.30)	Aluminum
NVCF10M-38	3/8 BSP Male	0.825 (21.00)	0.573 (14.60)	0.450 (11.40)	0.15 (4.30)	Aluminum



# 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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GREAT Solutions



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# 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.

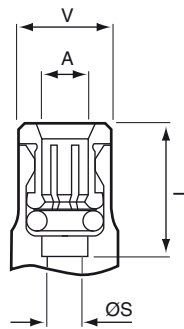
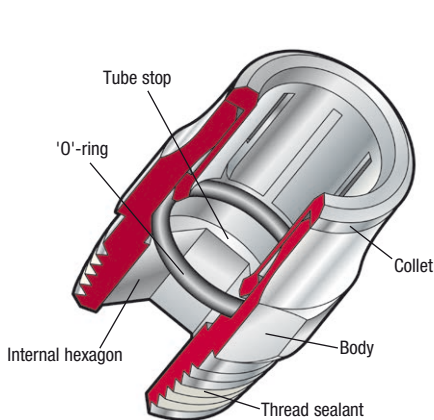


## ● Recommended tightening torques

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)

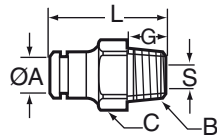
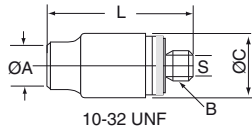


## ● Dimensions inches (mm)

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)

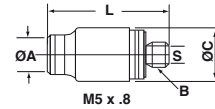
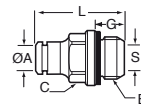
# PNEUFIT® PUSH-IN FITTINGS

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"



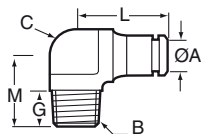
## ● PneuFit® ISO G Male Adapter

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.

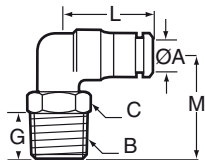


## ● PneuFit® Fixed Male Elbow

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

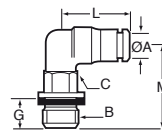
# PNEUFIT® PUSH-IN FITTINGS

Inch Ø 1/8" to 1/2" O/D tube



## ● Pneufit® Swivel Male Elbow

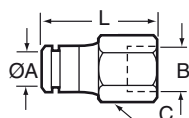
Part Number	A Tube O.D.	B NPT or UNF Thrd	C A/F	G	L	M
124470110	1/8"	10-32 UNF	5/16"	0.20	0.63	0.70
124470118	1/8"	1/8	7/16"	0.37	0.63	0.82
124470128	1/8"	1/4	9/16"	0.37	0.68	1.07
124470210	5/32"	10-32 UNF	5/16"	0.20	0.67	0.70
124470218	5/32"	1/8	7/16"	0.37	0.67	0.86
124470228	5/32"	1/4	9/16"	0.56	0.67	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.

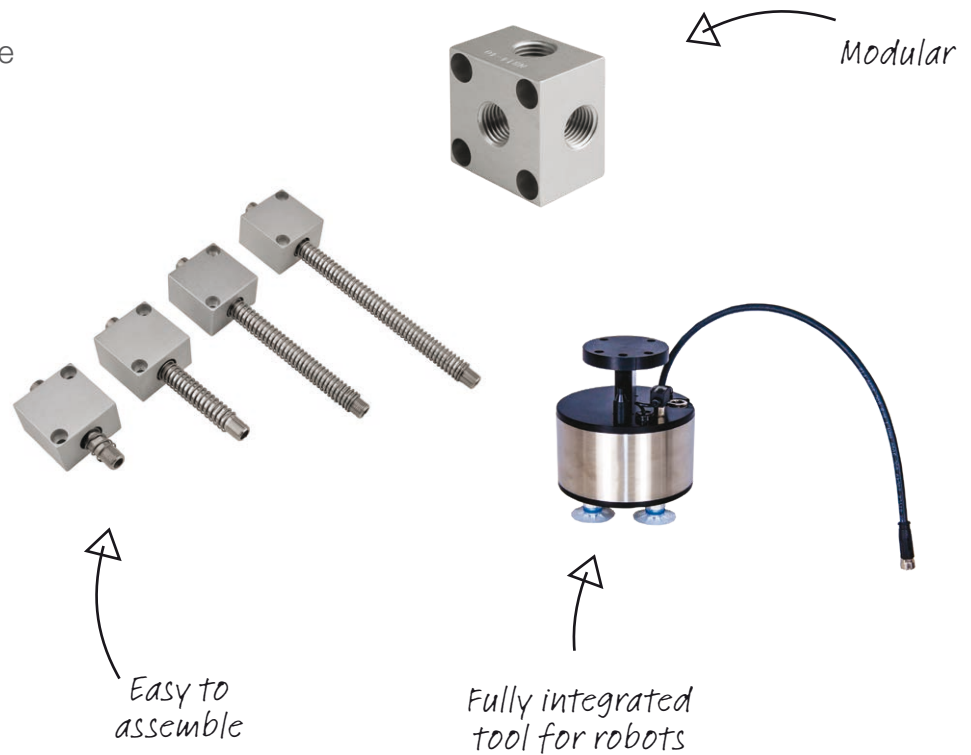


## ● Pneufit® Female Adapter

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

# END-OF-ARM TOOLING





IMI Norgren offers a complete range of easy to assemble, modular end-of-arm tooling components and fully configured solutions.



# Fast Find Guide

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

## ● End-of-Arm Tooling

<p><b>NCRVT</b> Fully integrated vacuum tool designed for collaborative robots</p>  <p>Page 160</p>	<p><b>Spring Levelers</b> Mechanical compensation for uneven surfaces</p>  <p>Page 162</p>	<p><b>Mounting Brackets</b> To connect spring levelers to vacuum pumps</p>  <p>Page 177</p>	<p><b>Manifold Blocks</b> For mounting vacuum cups to extrusions and/or distributing vacuum to multiple locations</p>  <p>Page 182</p>
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# NCRVT

- Plug and play operation: Just simply add air
- Mounting plate is designed for specific robot brand
- Adjustable vacuum switch for part detection
- Pre-installed muffler for quiet operation
- Integrated valve simplifies installation
- Mounting hardware included

## Technical Data

**Stocked configurations:**  
 NCRVTU-150M-P-C\*\* for semi-porous applications  
 NCRVTU-100H-P-C\*\* for non-porous applications  
 Consult factory for assistance choosing the correct vacuum characteristics for your applications

**Standard vacuum ports:**  
 (1) 1/4" NPT female  
 (4) 1/8" NPT female  
 Consult factory for custom options



## Option selector

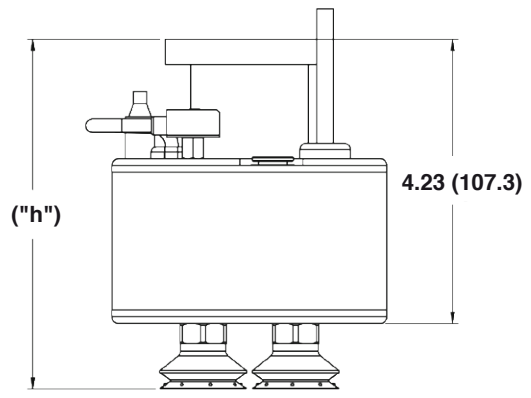
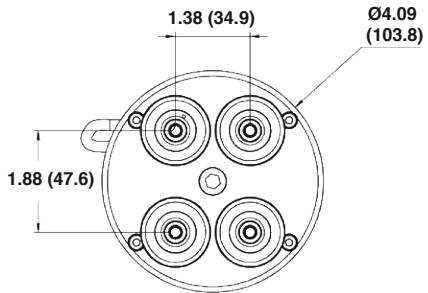
NCRVTU-★ ★ ★ ★ -★ -★ -C ★ ★

Series	Substitute
NCRVT (Norgren Collaborative Robot Vacuum Tool)	
Robot Type	Substitute
Universal Robots	U
Vacuum Flow Level	Substitute
Venturi Cartridge 60	060
Venturi Cartridge 90	090
Venturi Cartridge 100	100
Venturi Cartridge 150	150
Vacuum Level	Substitute
10"Hg @ 80PSI (Standard)	L
20"Hg @ 80PSI (Standard)	M
28"Hg @ 80PSI (Standard)	H
10"Hg @ 60PSI	X
20"Hg @ 60PSI	Y
28"Hg @ 60PSI	Z

Cup Configuration	Substitute
No Cups	C01
Single cup, dual durometer, polyurethane, single bellows, NVCD-B50P-1	C02
Quad cup, dual durometer, polyurethane, single bellows, NVCD-B30P-1	C03
Single cup, silicone, flat, NVCCF-295-S	C04
Quad cup, silicone, flat, NVCRF25P-S	C05
Switch / Sensor	Substitute
Switch (PNP)	P
Sensor (1-5V DC outlet)	S

## Dimensions inches (mm)

Vacuum Port Layout



	Height "h" (mm)	Weight lb (kg)
C01	4.23 (107.30)	1.90 (0.86)
C02	5.67 (144.10)	2.00 (0.91)
C03	5.20 (132.00)	2.10 (0.95)
C04	5.78 (146.80)	2.10 (0.95)
C05	4.92 (125.00)	2.00 (0.91)



## Operating Ranges

Temperature ranges for normal operation of end effector.

Cup	Working temperature
C01	14° F to 140° F (-10° C to 60° C)
C02	50° F to 122° F (10° C to 50° C)
C03	50° F to 122° F (10° C to 50° C)
C04	14° F to 140° F (-10° C to 60° C)
C05	14° F to 140° F (-10° C to 60° C)

## Performance Data

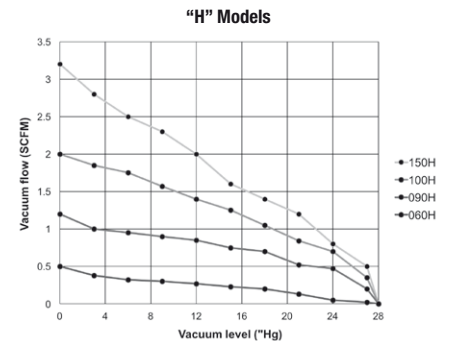
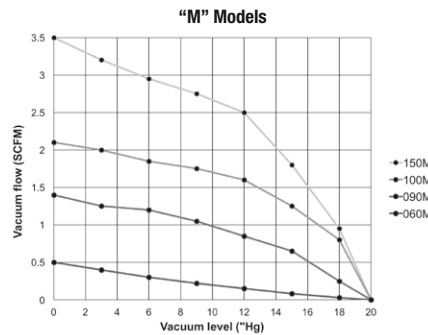
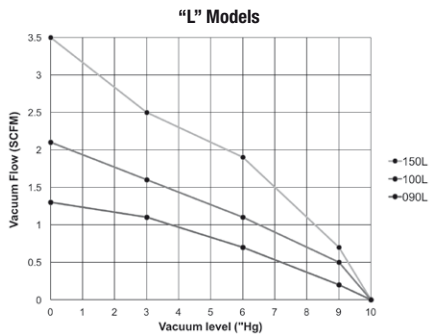
	Air consumption (scfm (slpm))		
	L 10" Hg (339 mbar)	M 20" Hg (677 mbar)	H 28" Hg (948 mbar)
060	N/A	0.50 (14.20)	0.80 (22.60)
090	0.50 (14.20)	1.40 (39.60)	1.80 (51.00)
100	1.40 (39.60)	1.80 (51.00)	2.80 (79.30)
150	1.80 (51.00)	2.80 (79.30)	4.80 (135.90)

	Approximate time to reach full vacuum (seconds) <sup>5</sup>		
	L 10" Hg (339 mbar)	M 20" Hg (677 mbar)	H 28" Hg (948 mbar)
060	N/A	1.2	4.2
090	0.2	0.6	1.5
100	0.1	0.3	1.3
150	0.1	0.3	0.7

	Maximum recommended load (lb [kg]) <sup>1</sup>		
	L 10" Hg (339 mbar)	M 20" Hg (677 mbar)	H 28" Hg (948 mbar)
C02	3.90 (1.80)	7.90 (3.60) <sup>2</sup>	11.00 (5.00) <sup>3</sup>
C03	5.50 (2.50) <sup>2</sup>	10.90 (4.90) <sup>3</sup>	15.30 (6.90) <sup>4</sup>
C04	8.50 (3.90) <sup>2</sup>	17.10 (7.80) <sup>3</sup>	23.90 (10.80) <sup>4</sup>
C05	4.80 (2.20) <sup>2</sup>	9.50 (4.30) <sup>3</sup>	13.30 (6.00) <sup>3</sup>

**NOTES:**

- 1 4X factor of safety applied
- 2 Exceeds load capacity of UR 3
- 3 Exceeds load capacity of UR 5
- 4 Exceeds load capacity of UR 10
- 5 Actual time will vary based on cup selection, leakage and part shape
- 6 Average performance data shown. All data is for reference only. Please contact factory for assistance with your application



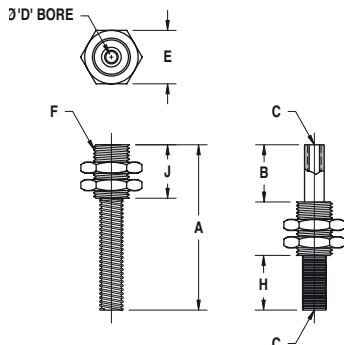
# SPRING LEVELERS

- Spring Levelers allow compliance for end-of-arm tools to ensure that all cups make contact. This is especially important when handling large objects such as sheets of plywood that may be warped and the tool has multiple vacuum cups that must make contact.
- Smooth operation – reduces shock to an object that is being lifted
- Lightweight – reduces stress to robotic end effectors
- High flow – maximize performance and holding force for porous objects
- Flexible mounting options for robotic end effectors / EOAT
- Reduces machine indexing when picking up material from a stack

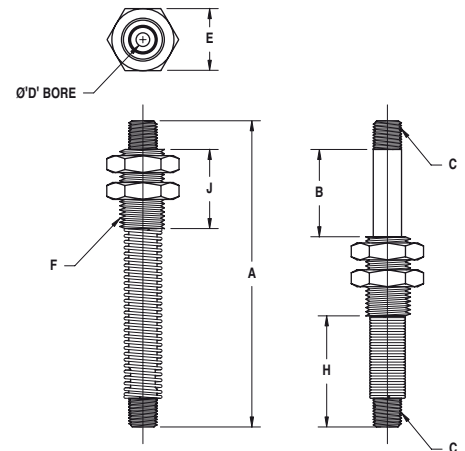


## ● Spring Levelers: Groups 1, 2, & 3 – NVSL1, NVSL2 & NVSL3

Part Number	A in. (mm)	B-Travel in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F-Thread in. (mm)	H in. (mm)	J in. (mm)	Thickness in. (mm)	Weight oz (g)
NVSL1-20	1.14	0.20	10-32 F				0.19			1.70
NVSL1M-20	(29.00)	(5.10)	(M5 F)				(4.80)			(48)
NVSL1-40	1.54	0.40	10-32 F				0.39			1.80
NVSL1M-40	(39.10)	(10.20)	(M5 F)	0.15	0.75	1/2-20 UNF	(9.90)	0.75	0.43	(51)
NVSL1-80	2.32	0.80	10-32 F	(19.00)	(19.00)		0.77	(19.10)	(10.90)	1.90
NVSL1M-80	(58.90)	(20.30)	(M5 F)				(19.60)			(54)
NVSL1-120	3.11	1.20	10-32 F				1.16			2.10
NVSL1M-120	(79.00)	(30.50)	(M5 F)				(29.50)			(60)
NVSL2-40	2.70	0.40	1/8 NPTM				0.80			2.6 oz
NVSL2M-40	(68.60)	(10.10)	(G1/8 M)				(20.30)			(74)
NVSL2-120	4.27	1.20	1/8 NPTM				1.57			3.20
NVSL2M-120	(108.50)	(30.50)	(G1/8 M)	0.24	0.88	5/8-18 UNF	(39.90)	1.10	0.72	(91)
NVSL2-200	5.83	2.00	1/8 NPTM	(28.00)	(22.20)		2.33	(27.90)	(18.30)	4.00
NVSL2M-200	(148.10)	(50.80)	(G1/8 M)				(59.20)			(113)
NVSL2-280	7.41	2.80	1/8 NPTM				3.11			4.60
NVSL2M-280	(188.20)	(71.10)	(G1/8 M)				(79.00)			(130)
NVSL3-120	4.27	1.20					1.17			5.90
	(108.50)	(30.50)					(29.70)			(117)
NVSL3-200	5.83	2.00					1.93			7.3 oz
	(148.10)	(50.80)					(49.00)			(207)
NVSL3-280	7.41	2.80	1/4 NPTM	0.31	1.13	7/8-14 UNF	2.71	1.50	1.02	8.70
	(188.20)	(71.10)		(7.90)	(28.60)		(68.80)	(38.10)	(25.90)	(247)
NVSL3-360	9.00	3.60					3.50			10.10
	(228.60)	(91.40)					(88.90)			(286)



Spring Leveler Group 1



Spring Leveler Groups 2 & 3

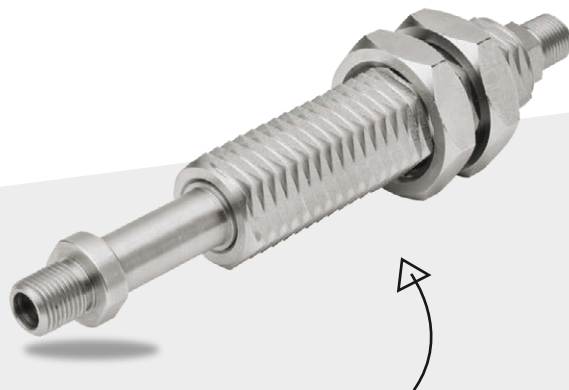
### ● Custom Vacuum Spring Levelers - NVSL Series

Ideal for OEM engineers and designers

- Creative Engineering
- Precision Manufacturing
- Extensive Application Experience

When off the shelf doesn't work, IMI Norgren's engineering expertise and manufacturing capabilities can provide custom solutions to your specifications.

Whether it's as simple as modifying a standard product, or more complex requiring new products with precise tolerances, or special materials, IMI Norgren has the solution.



*Our custom made 303 stainless steel spring leveler, vacuum cup and pump assembly attaches to swivel arm (not shown) for carton erecting application in food industry.*



*NVP1X-100H vacuum pump with pneumatic blow-off with stainless steel spring leveler.*



## ● Light Duty Spring Leveler Mounting Brackets

**NSLBS Series** – Mounting brackets for 1" [25mm] extrusions

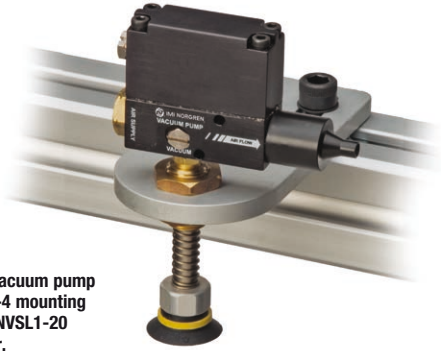
**NSLBF Series** – Mounting brackets for 1.5" [40mm] extrusions

### Ideal applications

- End-of-arm-Tooling
- Robotic assembly
- Electronics
- Pick & place
- Injection Molding – parts removal

### Features and benefits

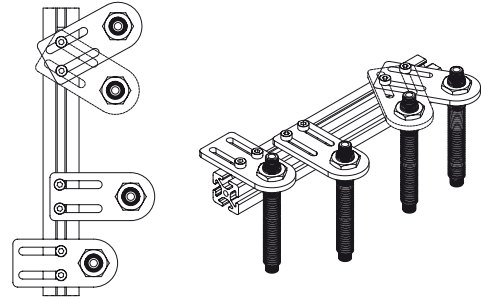
- Simple to assemble, modular
- End-of-Arm Tooling component
- Lightweight – Reduces stress to robotic end effector
- Flexible mounting – Top, sides or bottom of extrusions
- Easily adjusted and repositioned in seconds



**NVPOX-60H vacuum pump with NSLBF1-4 mounting bracket and NVSL1-20 spring leveler.**



**Quick change brackets for flexible mounting positions**



**Flexible mounting positions**

Designed for flexible manufacturing operations, NSLBF and NSLBS Series mounting brackets attach to the top, sides or bottom of 1" [25mm] and 1.5" [40mm] extrusions.

Easily mounted and adjusted, the Light Duty Spring Leveler Brackets readily rotate, slide or pivot for accurate part alignment. If the part size or process should change, you can re-position the brackets in a matter of seconds.

Using your extrusions or ours, NSLBF and NSLBS Series mounting brackets connect to our NVSL Series Spring Levelers (see page 12.7) and a variety of our venturi vacuum pumps to create a simple, off-the-shelf End-of-Arm device.

### Standard Spring Leveler Brackets:

- 3 Series: Fits NVSL1, 2, 3 spring levelers
- 4 Sizes: 2", 3", 4" and 5" lengths
- Anodized aluminum

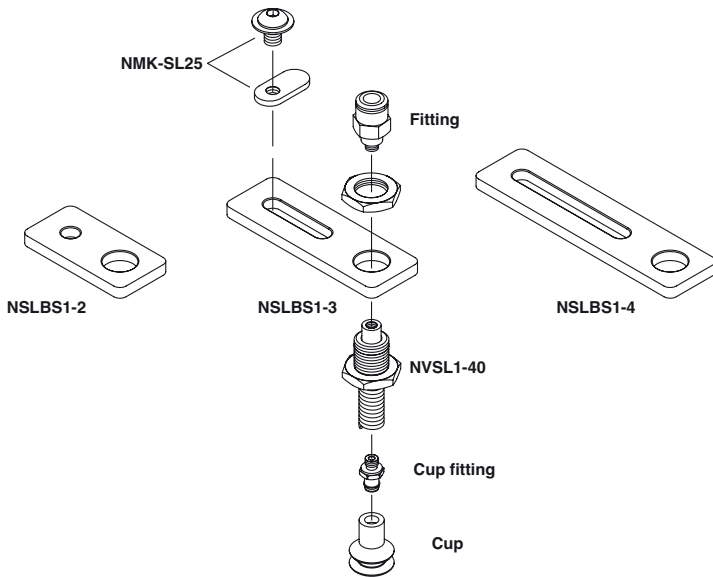
### Spring Leveler Bracket Options:

- Spring levelers, vacuum cups and vacuum fittings
- Swivel attachment – Available for Series 3 only
- Mounting hardware: 1/4" (6.5mm) T-slot compatible or 5/16" (10mm) T-slot compatible

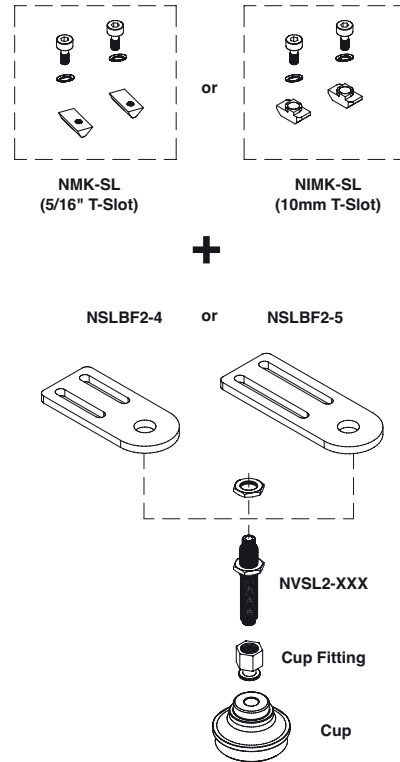
● Light Duty Spring Leveler Mounting Bracket Assemblies:

(IMI Norgren-supplied or customer-supplied extrusions)

**NSLBS Series**  
1" [25mm] extrusion,  
1/4" [6.5mm] T-slot compatible



**NSLBF Series**  
1.5" [40mm] extrusion,  
5/16" [10mm] T-slot compatible



● How to specify

Bracket Model Number	Size in (mm)	For use with IMI Norgren Spring Levelers
NSLBS1-2	2.00 (50.00)	NVSL1/I-NVSL1-(20, 40, 80, 120)
NSLBS1-3	3.00 (76.20)	NVSL1/I-NVSL1-(20, 40, 80, 120)
NSLBS1-4	4.00 (101.60)	NVSL1/I-NVSL1-(20, 40, 80, 120)
NSLBF1-4	4.00 (101.60)	NVSL1/I-NVSL1-(20, 40, 80, 120)
NSLBF1-5	5.00 (127.00)	NVSL1/I-NVSL1-(20, 40, 80, 120)
NSLBS2-2	2.00 (50.80)	NVSL2/I-NVSL2-(40, 120, 200, 280)
NSLBS2-3	3.00 (76.20)	NVSL2 I-NVSL2-(40, 120, 200, 280)
NSLBS2-4	4.00 (101.60)	NVSL2 I-NVSL2-(40, 120, 200, 280)
NSLBF2-4	4.00 (101.60)	NVSL2 I-NVSL2-(40, 120, 200, 280)
NSLBF2-5	5.00 (127.00)	NVSL2 I-NVSL2-(40, 120, 200, 280)
NSLBF3-4	4.00 (101.60)	NVSL3 I-NVSL3-(120, 200, 280, 360)
NSLBF3-5	5.00 (127.00)	NVSL3 I-NVSL3-(120, 200, 280, 360)
NMK-SL25	N/A	Mounting hardware – 1/4" T-slot
NMK-SL	N/A	Mounting hardware – 5/16" T-slot
NIMK-SL	N/A	Mounting hardware – 10mm T-slot

Helpful hints:

1. Choose cup size/style based on part size and weight.
2. Choose spring leveler based on stroke length and bore size.
3. Choose bracket based on reach requirement 2", 3", 4" or 5".
4. Choose cup fitting based on thread size that matches spring leveler thread size (10-32F, 1/8 NPTM, 1/4 NPTM).

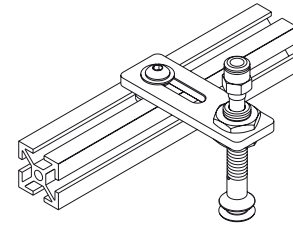
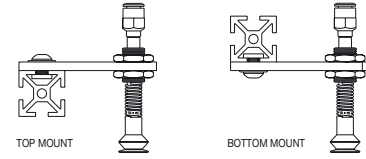
Please order Spring Level Brackets as separate line item(s) based on part number i.e. NSLBF1-4

Please order Spring Levelers as separate line item(s) based on part number i.e. NVSL1-20.

Please order Mounting Hardware as separate line item(s) based on part number i.e. NMK-SL

If you would like parts factory assembled, please specify on order "factory assembled."

● Light Duty Spring Leveler Brackets – Series NSLBS Series



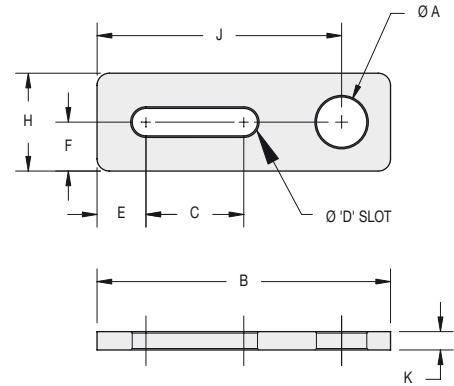
Flexible mounting positions



NSLBS1- (2, 3, 4)  
with hardware



NSLBS2- (2, 3, 4)  
with hardware



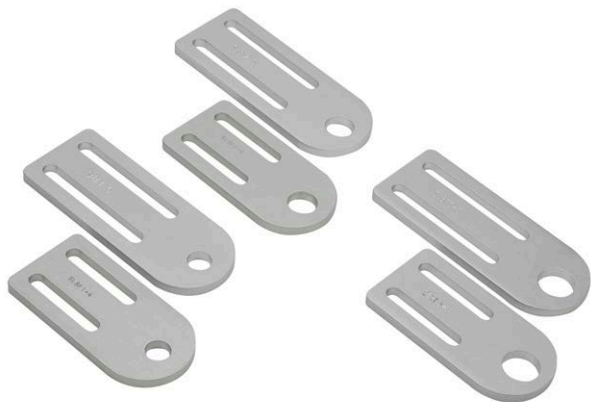
● Dimensions

Part Number	A-Diameter in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	Weight oz (g)
NSLBS1-2		2.00 (50.80)	0.28 (7.10)					1.50 (38.10)		0.50 (14.20)
NSLBS1-3	0.51 (13.00)	3.00 (76.20)	1.00 (25.40)					2.50 (63.50)		0.80 (22.70)
NSLBS1-4		4.00 (101.60)	2.00 (50.80)					3.50 (88.90)		0.90 (25.50)
NSLBS2-2		2.00 (50.80)	0.28 (7.10)	0.28 (7.10)	0.50 (12.70)	0.50 (12.70)	1.00 (25.40)	1.50 (38.10)	0.19 (4.80)	0.50 (14.20)
NSLBS2-3	0.64 (16.30)	3.00 (76.20)	1.00 (25.40)					2.50 (63.50)		0.80 (22.70)
NSLBS2-4		4.00 (101.60)	2.00 (50.80)					3.50 (88.90)		0.90 (25.50)

● Light Duty Spring Leveler Brackets – Series NSLBF Series

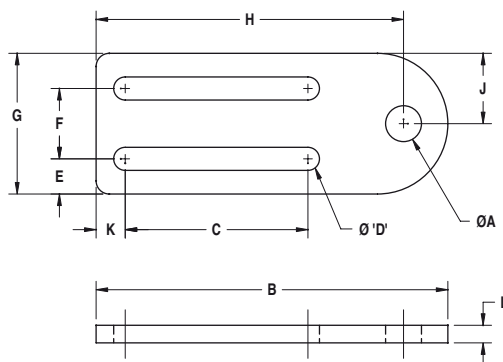


NSLBF2- (4, 5)



NSLBF1- (4, 5)

NSLBF3- (4, 5)



● Dimensions

Part Number	A-Diameter in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	Weight oz (g)
NSLBF1-4	0.51 (13.00)	4.00 (101.60)	1.60 (40.60)					3.37 85.6				2.80 (79.40)
NSLBF1-5	0.51 (13.00)	5.00 (127.00)	2.60 (66.00)					4.37 111.0				2.90 (82.20)
NSLBF2-4	0.64 (16.30)	4.00 (101.60)	1.60 (40.60)					3.37 85.6				2.80 (79.40)
NSLBF2-5	0.64 (16.30)	5.00 (127.00)	2.60 (66.00)	0.33 (8.30)	0.50 (12.70)	1.00 (25.40)	2.00 (50.80)	4.37 111.0	1.00 (25.40)	0.41 (10.40)	0.25 (6.40)	2.80 (79.40)
NSLBF3-4	0.89 (22.60)	4.00 (101.60)	1.60 (40.60)					3.37 85.6				2.30 (65.20)
NSLBF3-5	0.89 (22.60)	5.00 (127.00)	2.60 (66.00)					4.37 (111.00)				2.80 (79.40)

### ● Heavy Duty Spring Levelers/Level Compensators

#### Ideal applications

- End-of-Arm Tooling
- Press load and unload
- automotive automation
- Robotic assembly
- Pick & place
- Sheet feeding
- Stamping press transfer

#### Features and benefits

- Easy to assemble, modular End-of-Arm Tooling components – Minimal design time required
- Durable – Rigid mounting design for heavy, high impact loads
- Smooth operation – Reduces shock to an object that is being lifted
- Lightweight – To maximize robot payload and increase robot speed
- High flow – Maximize performance and holding force for handling porous objects
- Flexible mounting options facilitates
- End-of-Arm Tooling tool design

#### NSLB40 (2, 3)

Mounting brackets compatible with 1.50" (40 mm) extrusions, 5/16" (10 mm) T-slot



**Heavy Duty Spring Levelers lift parts from different horizontal levels or uneven surfaces.**

When handling sensitive objects such as fruit, IMI Norgren Spring Levelers feature a soft touch allowing compliance for end-of-arm tools to ensure that all cups make contact. This is especially important when handling large objects such as sheets of plywood that may be warped and the tool has multiple vacuum cups that must make contact.

IMI Norgren's Spring Leveler design surpasses the competition. We offer large thru-bores that allow higher vacuum flow to overcome leakage and for rapid evacuation to ensure safe handling operations

For design flexibility, IMI Norgren offers a large range of sizes and travel lengths 0.20" (5 mm) to 3.6" (91 mm) to accommodate the necessary over-driving by the lifting mechanism to bring all cups in contact.

Recommended for applications which require lifting heavy loads without deflection, IMI Norgren Heavy Duty Spring Levelers include a rigid mounting bracket for a strong, solid connection to 1.50" (40 mm) extrusions.

#### Standard Spring Levelers:

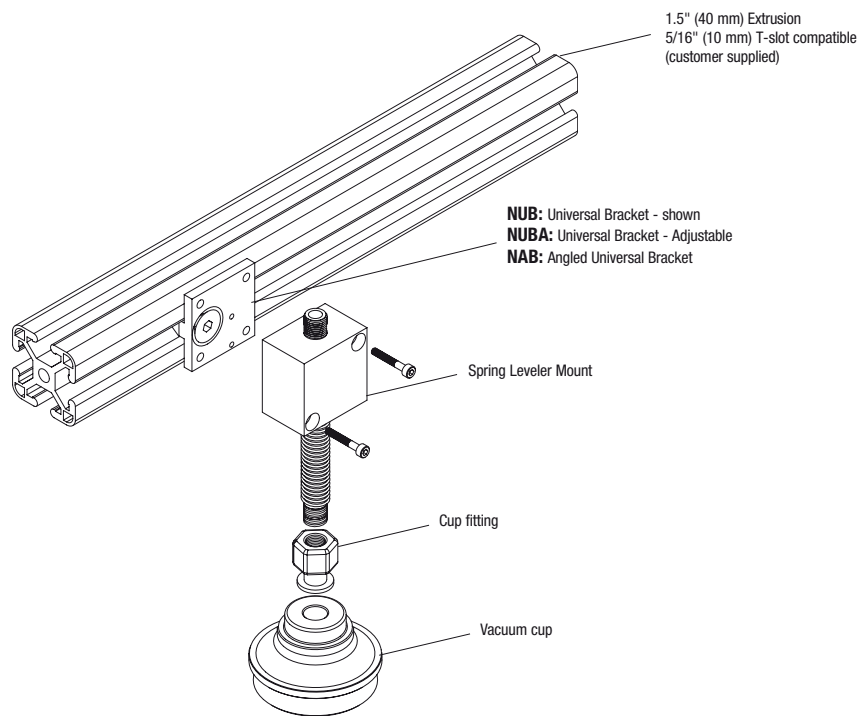
- **2 Series:** 1/8" and 1/4" NPT male thread
- **8 Models:** Travel lengths from 0.40" to 3.60" (10 mm to 91 mm)
- Nickel plated steel shafts, stainless steel springs, high performance bearings and aluminum body

#### Spring Leveler Options:

- Vacuum cups and vacuum fittings
- Swivel attachment – Available for Series 3 only



● Heavy Duty Spring Leveler Mounting Assembly



● How to specify

Part Number	Heavy Duty Spring Leveler Mounting Assembly
<b>Series 2</b>	
NSLB40/NSLB40M-2-40	0.40" (10.16 mm) travel, 1/8 NPT male thread
NSLB40/NSLB40M-2-120	1.20" (30.48 mm) travel, 1/8 NPT male thread
NSLB40/NSLB40M-2-200	2.00" (50.80 mm) travel, 1/8 NPT male thread
NSLB40/NSLB40M-2-280	2.80" (71.12 mm) travel, 1/8 NPT male thread
<b>Series 3</b>	
NSLB40/NSLB40M-3-120	1.20" (10.16 mm) travel, 1/4 NPT male thread
NSLB40/NSLB40M-3-200	2.00" (30.48 mm) travel, 1/4 NPT male thread
NSLB40/NSLB40M-3-280	2.80" (50.80 mm) travel, 1/4 NPT male thread
NSLB40/NSLB40M-3-360	3.60" (71.12 mm) travel, 1/4 NPT male thread

When ordering spring levelers check the "B" dimension for travel range. Please order spring levelers as separate line items based on part number i.e. NSLB40-2-40

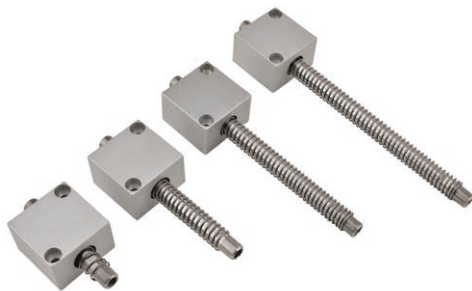
If you would like parts factory assembled, please specify on order "factory assembled."

To attach Heavy Duty Spring Levelers to extrusions, please see Universal Bracket mounting options.

● Heavy Duty Spring Levelers – Series NSLB40-2, NSLB40-3

Part Number	Dimension									Weight oz (g)	
	Series 2	A in. (mm)	B-Travel in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J, L in. (mm)		K, M in. (mm)
NSLB40-2-40 NSLB40M-2-40	2.70 (68.60)	0.40 (10.20)	1/8 NPTM (G1/8 M)					0.40 (10.20)			4.70 (133.20)
NSLB40-2-120 NSLB40M-2-120	4.27 (108.50)	1.20 (30.50)	1/8 NPTM (G1/8 M)	0.24 (6.10)	0.21 (5.20)	1.00 (25.40)		1.17 (29.70)	1.10 (27.90)	1.50 (38.10)	4.70 (133.20)
NSLB40-2-200 NSLB40M-2-200	5.83 (148.10)	2.00 (50.80)	1/8 NPTM (G1/8 M)					1.93 (49.00)			5.30 (150.30)
NSLB40-2-280 NSLB40M-2-280	7.41 (188.20)	2.80 (71.10)	1/8 NPTM (G1/8 M)					2.71 (68.80)			5.9 oz (167.30)

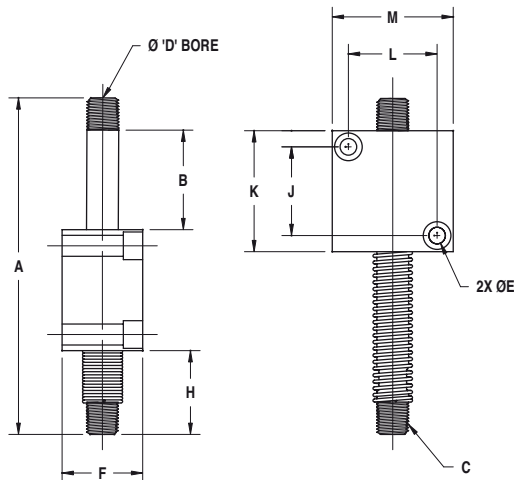
Part Number	Dimension									Weight oz (g)	
	Series 3	A	B-Travel in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J, L in. (mm)		K, M in. (mm)
NSLB40-3-120 NSLB40M-3-120	4.27 (108.50)	1.20 (30.50)	1/4 NPTM (G1/4 M)					1.17 (29.70)			6.90 (195.60)
NSLB40-3-200 NSLB40M-3-200	5.83 (148.10)	2.00 (50.80)	1/4 NPTM (G1/4 M)	0.31 (7.90)	0.21 (5.20)	1.00 (25.40)		1.93 (49.00)	1.10 (27.90)	1.50 (38.10)	7.90 (224.00)
NSLB40-3-280 NSLB40M-3-280	7.41 (188.20)	2.80 (71.10)	1/4 NPTM (G1/4 M)					2.71 (68.80)			9.90 (280.70)
NSLB40-3-360 NSLB40M-3-360	9.00 (228.60)	3.60 (91.40)	1/4 NPTM (G1/4 M)					3.49 (88.60)			11.00 (311.80)



Series 2  
NSLB40-2 (40, 120, 200, 280)



Series 3  
NSLB40-3 (120, 200, 280, 360)



### ● Adjustable, Fixed Extension Shaft & Mounting Brackets

#### Ideal applications

- Injection molding
- Pick & place of irregular shaped parts with large surface height differences

#### Features and benefits

- Easy to assemble, modular End-of-Arm tool components – minimal design time required
- Fixed positioning for consistent indexing and part retention
- Rigid mounting design for heavy, high impact loads
- Smooth operation – reduces shock to an object that is being lifted
- Lightweight – to maximize robot payload and increase robot speed
- High flow – maximize performance and holding force for handling porous objects
- Flexible mounting options facilitates
- End-of-Arm tool design

Adjustable, Fixed Extension Shaft & Bracket is a rigid, non-moving rod that mounts to the top, sides or bottom of 1.5" (40 mm) extrusions. Once the shaft is adjusted to meet a specific height requirement, the bracket is clamped into a fixed position.

Designed for flexible manufacturing operations, the NFEB40 Series is easily repositioned by simply loosening 2 collar screws and sliding the shaft up or down to meet the new height requirements. For added adjustability, add an adjustable universal bracket to slide the NFEB40 left or right.



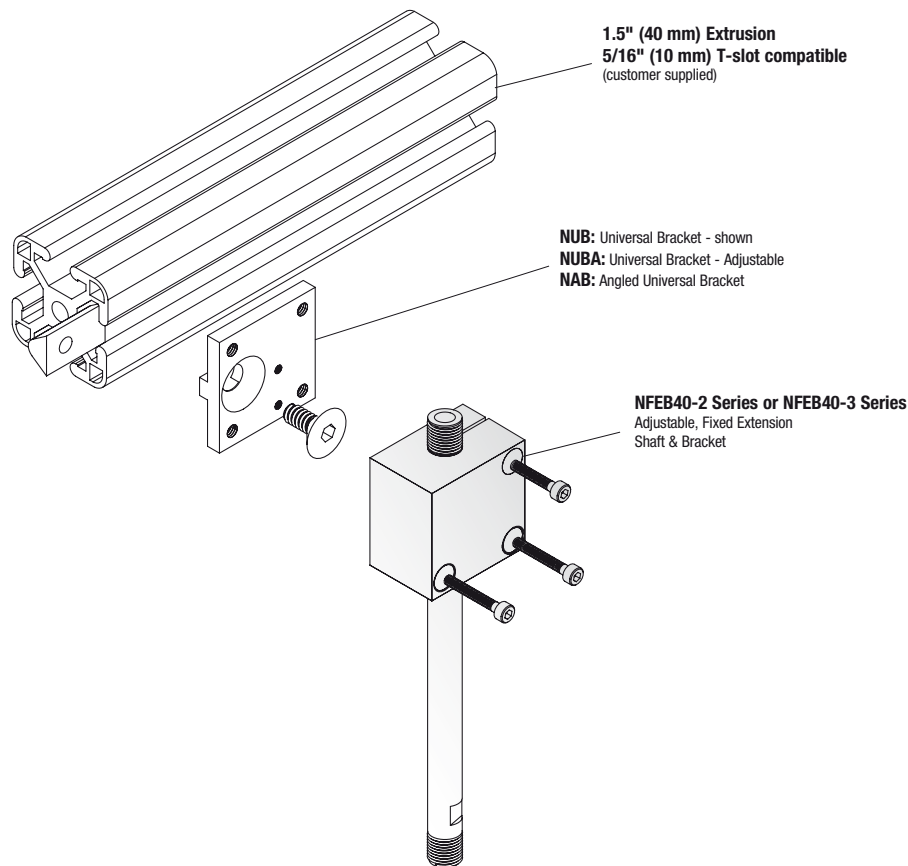
#### Standard Adjustable, Fixed Extension Shaft & Bracket:

- **2 Series:** 1/8 or 1/4 NPT male
- **8 Shaft Lengths:** 0.40" to 6.7" (10 mm to 170 mm)
- **Mounting:** Split collar design
- **Material:** Nickel plated steel shafts and aluminum body

#### Adjustable, Fixed Extension Shaft & Bracket Options:

- Wide variety of vacuum cups and vacuum fittings
- Universal brackets for easy attachments and adjustable positioning
- Vacuum cup Swivel attachment – available for Series 3 only

● Adjustable Fixed Length Extension Brackets:  
NFEB40- (2, 3) – Configurations and Options:



● How to specify

Part Number	Adjustable, Fixed Extension Shaft & Brackets
<b>Series 2</b>	
NFEB40/NFEB40M-2-40	0.40" (10.16 mm) extension length, 1/8 NPT (G1/8) male
NFEB40/NFEB40M-2-120	1.97" (50.04 mm) extension length, 1/8 NPT (G1/8) male
NFEB40/NFEB40M-2-200	3.51" (89.15 mm) extension length, 1/8 NPT (G1/8) male
NFEB40/NFEB40M-2-280	5.11" (129.8 mm) extension length, 1/8 NPT (G1/8) male
<b>Series 3</b>	
NFEB40/NFEB40M-3-120	1.97" (50.04 mm) extension length, 1/4 NPT (G1/4) male
NFEB40/NFEB40M-3-200	3.51" (89.15 mm) extension length, 1/4 NPT (G1/4) male
NFEB40/NFEB40M-3-280	5.11" (129.80 mm) extension length, 1/4 NPT (G1/4) male
NFEB40/NFEB40M-3-360	6.70" (170.20 mm) extension length, 1/4 NPT (G1/4) male

To specify NFEB40, choose part number based on extension length desired, thru bore diameter and thread size on each end of shaft.

Please order NFEB40's as separate line items based on part number. i.e. NFEB40-2-280. To order metric threads place an "I-" in front of the part number. Example: NFEB40M-2-280.

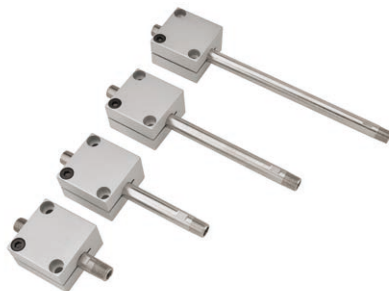
Please order Universal brackets (NUB, NUBA or NAB) as separate line items based on part numbers.

To attach Adjustable, Fixed Extension Shafts & Brackets to extrusions, please see Universal Bracket mounting options.

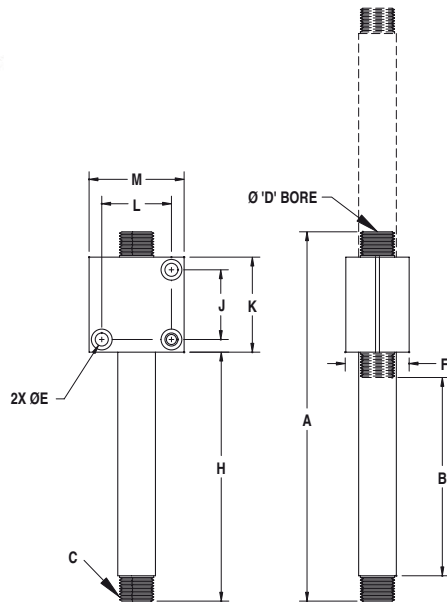
● Adjustable – Fixed Length Extension Shafts & Brackets

Part Number	Dimension		C	D	E	F	H	J, L	K, M	Weight
Series 2	A	B	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	oz (g)
NFEB40-2-40	2.70	0.40	1/8 NPTM				0.80			4.70
NFEB40M-2-40	(68.60)	(10.20)	(G1/8 M)				(20.30)			(133.20)
NFEB40-2-120	4.27	1.97	1/8 NPTM				2.37			4.70
NFEB40M-2-120	(108.50)	(50.00)	(G1/8 M)				(60.20)			(133.20)
NFEB40-2-200	5.83	3.51	1/8 NPTM	0.24	0.21	1.00	3.91	1.10	1.50	5.30
NFEB40M-2-200	(148.10)	(89.20)	(G1/8 M)	(6.10)	(5.20)	(25.40)	(99.30)	(27.90)	(38.10)	(150.30)
NFEB40-2-280	7.41	5.11	1/8 NPTM				5.51			5.90
NFEB40M-2-280	(188.20)	(129.80)	(G1/8 M)				(140.00)			(167.30)

Part Number	Dimension		C	D	E	F	H	J, L	K, M	Weight
Series 3	A	B	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	in. (mm)	oz (g)
NFEB40-3-120	4.27	1.97	1/4 NPTM				2.37			6.90
NFEB40M-3-120	(108.50)	(50.00)	(G1/4 M)				(60.20)			(195.60)
NFEB40-3-200	5.83	3.51	1/4 NPTM				3.91			7.90
NFEB40M-3-200	(148.10)	(89.20)	(G1/4 M)				(99.30)			(224.00)
NFEB40-3-280	7.41	5.11	1/4 NPTM	0.31	0.21	1.00	5.51	1.10	1.50	9.90
NFEB40M-3-280	(188.20)	(129.80)	(G1/4 M)	(7.90)	(5.20)	(25.40)	(140.00)	(27.90)	(38.10)	(280.70)
NFEB40-3-360	9.00	6.70	1/4 NPTM				7.10			11.00
NFEB40M-3-360	(228.60)	(170.20)	(G1/4 M)				(180.30)			(311.80)



Series 2  
NFEB40-2- (40, 120, 200, 280)



Series 3  
NFEB40-3-(120, 200, 280, 360)

## ● Vacuum Cup Locking Angle Joint

### Ideal applications

- Stamping operations (press load and unload)
- Palletizing
- Handling curved and angular objects

### Features and benefits

- Durable – rugged all steel design
- Full 40° angular / conical movement (20° in each direction)
- Smooth and secure operation – follows contour of object being lifted
- High flow – maximize performance and holding force for handling porous objects
- Flexible mounting options facilitates
- End-of-Arm Tooling tool design

**NCSJ3 Series 3 -**  
Mounting brackets compatible with 1.5"  
(40 mm) extrusions, 5/16" (10 mm) T-slot



**NCSJ3-14 Vacuum Cup Locking Angle Joint with NSLB40-3 Heavy Duty Spring Leveler & Bracket and Vacuum Cup.**



**NCSJ3-38**

Handling curved surfaces is easy with IMI Norgren's Vacuum Cup Locking Angle Joint. The NCSJ3 angle joints attach to a spring leveler and vacuum cup providing a 40° angular / conical movement. To control the degree of swivel, simply tighten the collar nut located on top of the angle joint to restrict movement.

Developed in conjunction with IMI Norgren spring levelers, the NCSJ3 angle joint assemblies feature exceptionally large flow paths to safely handle porous objects. Depending on height and tooling requirements, Vacuum Cup Locking Angle Joints are interchangeable with the following Series 3 spring levelers:

**NVSL3** – Standard spring levelers

**NSLB40-3** – Heavy duty spring levelers

**NFEB40-3** – Fixed extension shafts & brackets

**Note:** The retaining nut must be locked into position to seal.

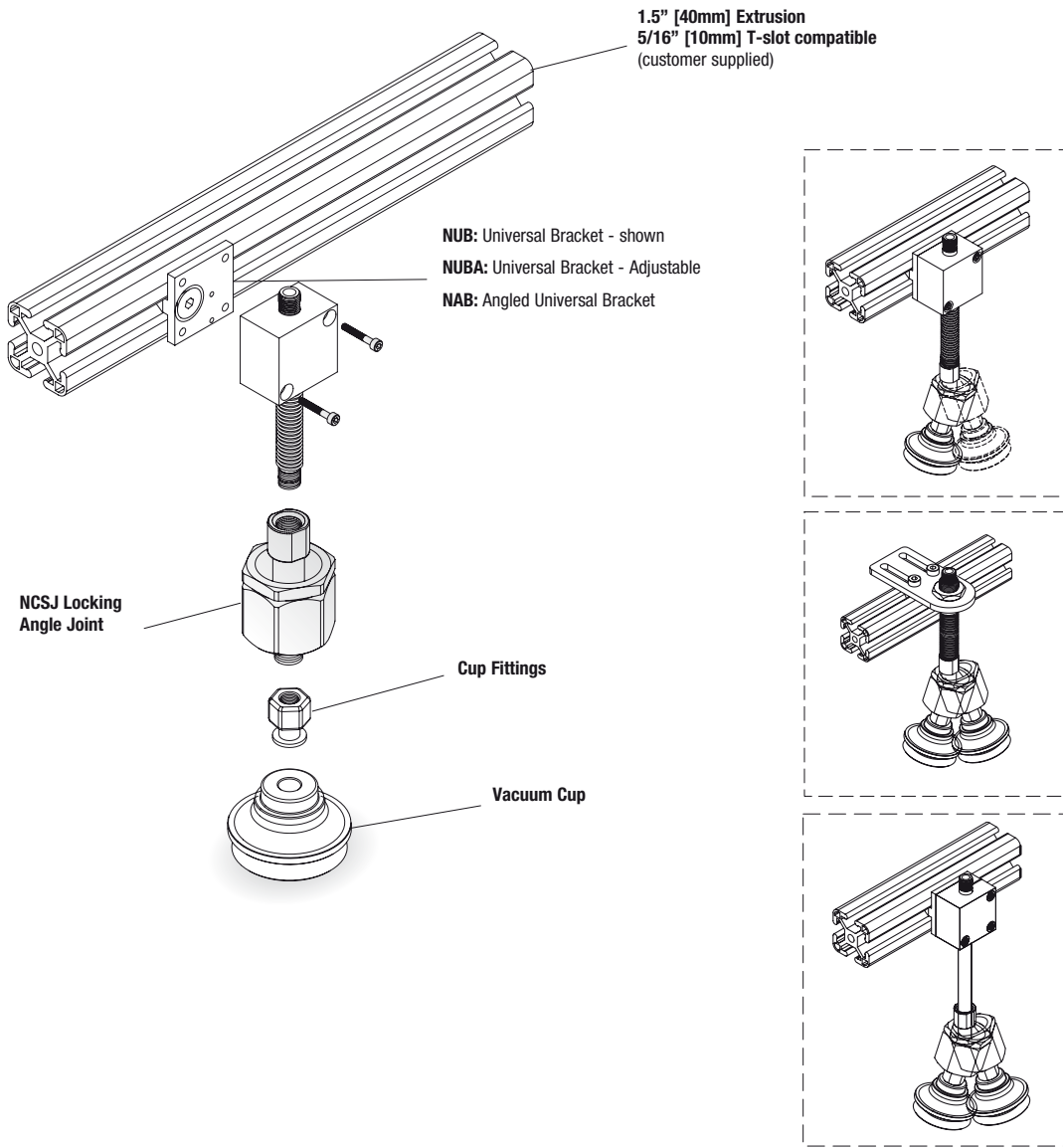
### Standard Vacuum Cup Locking Angle Joint:

- 3 Sizes: 1/4, 3/8, 1/2 NPT male threads – mates to a wide variety of vacuum cup fittings
- 1/4 NPTF top port mates to all the 1/4 NPT Series 3 levelers
- Material: Nickel plated steel, Buna-N O-ring

### Vacuum Cup Locking Angle Joint Options:

- Variety of vacuum cups and vacuum fittings
- Custom designs and stainless steel construction available for food and wash-down applications. Consult factory.

● Vacuum Cup Locking Angle Joint: NCSJ-3 Series:



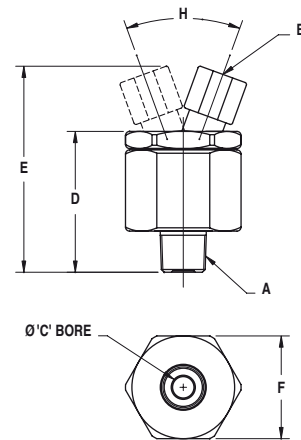
● How to specify

Part Number	Vacuum Cup Locking Angle Joint
NCSJ3-14	1/4 NPT – male thread
NCSJ3-38	3/8 NPT – male thread
NCSJ3-12	1/2 NPT – male thread

Choose the angle joint with the same NPT thread as the vacuum cup fitting.  
Order by part number i.e. NCSJ3-38

● Vacuum Cup Locking Angle Joint: Series 3 – NCSJ-3

Part Number	Dimensions							Weight oz (g)
	A Thread in. (mm)	B Thread in. (mm)	C Thru Bore in. (mm)	D in. (mm)	E in. (mm)	F Hex in. (mm)	H Locking Angle in. (mm)	
NCSJ3-14	1/4 NPT			1.96 (49.80)	2.90 (73.70)			11.70 (331.70)
NCSJ3-38	3/8 NPT	1/4 NPT	0.31 (7.90)	2.06 (52.30)	3.00 (76.20)	1.50 (38.10)	40°	12.70 (360)
NCSJ3-12	1/2 NPT			2.06 (52.30)	3.00 (76.20)			12.70 (360)





# MOUNTING BRACKETS

## ● Universal Mounting Brackets – Standard, Adjustable, Angled

- 3 Styles – standard, adjustable or angled with simple erector-set connectivity
- Anodized aluminum – lightweight – reduces stress, extends performance and life of robot
- Modular components add design flexibility – adaptable for all EOAT configurations
- Keyed profile for tight fit – non-rotating – strong holding force
- Mounting kit includes hardware to attach products to extrusions
- Angled brackets have optional adjustment knob, consult factory

Compatible with 1" (25 mm) and 1.5" (40 mm) extrusions



**Standard Universal Bracket attaches NVP10-100H to extrusion for halogen bulb pick and place operation.**



**Universal Bracket(Adjustable) with Vacuum cup/ Manifold block assembly.**



**Angled Bracket holds NVP10-60M vacuum pump and cup, with exposed fastening screw for quick and easy adjustments.**



**NUB, NUBA, and NAB brackets.**

Universal Mounting Brackets are simple, lightweight connectors that attach IMI Norgren vacuum pumps, vacuum cups, spring levelers and manifold blocks to 1" or 1.5" extrusions.

Available in 3 models, standard, adjustable or angled, our Universal Brackets are keyed to fit securely in 1/4" [6.5mm] or 5/16" [10mm] T-slots, remain square and increase holding force.

Brackets are available with or without mounting hardware.

### **Standard Universal Bracket: (NUB)**

The standard NUB is a fixed position bracket that is tamper resistant. Once the screw is tightened to the extrusion and a product is mounted to the bracket the fastening screw is now covered and inaccessible to adjust.

### **Universal Bracket Adjustable: (NUBA)**

An elongated version of the standard bracket, the NUBA features an exposed fastening screw that enables quick, easy bracket adjustments along the T-slot.

### **Angled Universal Bracket: (NAB)**

For operations that require frequent adjustments, the NAB models are the easiest to re-position. One side of the bracket holds the vacuum pump, the other side of the bracket attaches to the extrusion enabling the bracket assembly to slide along the T-slot for unlimited adjustments. With the pump located on a 90° angle, the fastening screw is easily accessible at all times. Optional adjustment knobs are available for the NAB models.

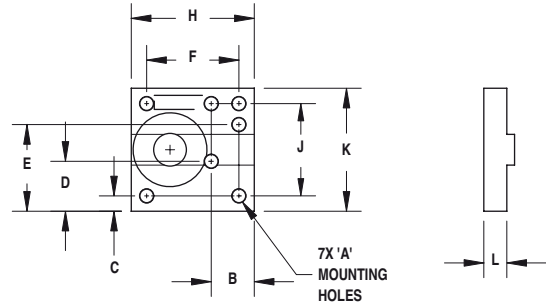
## ● Universal Brackets and Mounting Kits for 1" Extrusions



Bracket only: NUB18-25



Bracket & Mounting Kit: NMK-NUB18-25



Bracket accepts: NVP00, NVPOX, NVP10 & NVP1X Series pumps and NMB18-25 manifold block.

Part Number		Dimensions								Weight oz (g)
		A- Mtg Holes	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F, J in. (mm)	H, K in. (mm)	L in. (mm)	
NUB18-25	Fits 1/4 T-Slot (Fits 6.5 mm T-Slot)	M3 x 0.5	0.35 (8.90)	0.13 (3.20)	0.41 (10.30)	0.70 (17.80)	0.75 (19.10)	1.00 (25.40)	0.19 (4.70)	0.30 (8.50)

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

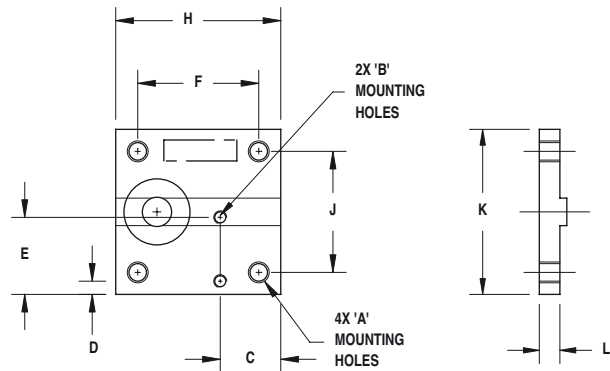
Note 2: Depending on the pump being mounted, it may be necessary to rotate the bracket 180° from diagram shown.



Bracket only: NUB14-25



Bracket & Mounting Kit: NMK-NUB14-25



Bracket accepts all NVP Series pumps except the NVP00/VPOX Series. Fits All NMB14 Series manifold blocks. (Allows larger pumps to be mounted to 1" extrusions).

Part Number		Dimensions								Weight oz (g)
		A- Mtg Holes	B- Mtg Holes	C in. (mm)	D in. (mm)	E in. (mm)	F, J in. (mm)	H, K in. (mm)	L in. (mm)	
NUB14-25	Fits 1/4 T-Slot (Fits 6.5 mm T-Slot)	10-32	M3 x 0.5	0.55 (14.00)	0.12 (3.00)	0.70 (17.80)	1.10 (27.90)	1.50 (38.10)	0.19 (4.70)	0.70 (19.80)

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

## ● How to specify

Bracket only: See Model Numbers: i.e. NUB18-25

Bracket & Mounting Kit: Add "NMK" for mounting kit in front of Model Number i.e. NMKUB18-25

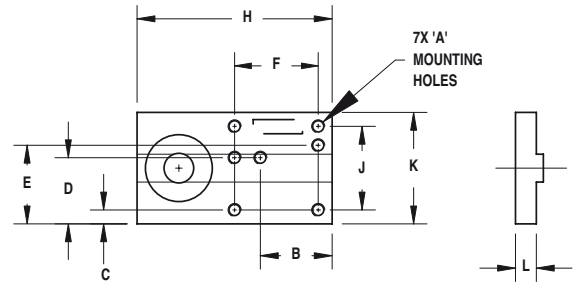
● Universal Brackets (Adjustable) and Mounting Kits for 1" Extrusions



Bracket only: NUBA18-25



Bracket & Mounting Kit: NMK-NUBA18-25



Bracket accepts: NVP00, NVPOX, NVP10 & NVP1X Series pumps and NMB18-25 manifold block.

Part Number		Dimensions									Weight oz (g)
		A- Mtg Holes	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F, J in. (mm)	H in. (mm)	K in. (mm)	L in. (mm)	
NUBA18-25	Fits 1/4 T-Slot (Fits 6.5mm T-Slot)	M3 x 0.5	0.64 (16.40)	0.13 (3.20)	0.60 (15.20)	0.70 (17.8)	0.75 (19.10)	1.75 (44.50)	1.00 (25.40)	0.19 (4.70)	0.50 (14.20)

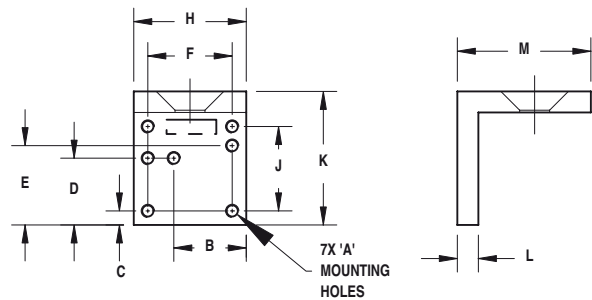
Note 1: Mounting kit includes all hardware to mount pumps and manifold block.



Bracket only: NAB18-25



Bracket & Mounting Kit: NMK-NAB18-25



Bracket accepts: NVP00, NVPOX, NVP10 & NVP1X Series pumps and NMB18-25 manifold block.

Part Number		Dimensions										Weight oz (g)
		A- Mtg Holes	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F, J in. (mm)	H in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	
NAB18-25	Fits 1/4 T-Slot (Fits 6.5 mm T-Slot)	M3 x 0.5	0.64 (16.40)	0.13 (3.20)	0.60 (15.20)	0.70 (17.80)	0.75 (19.10)	1.00 (25.40)	1.19 (30.20)	0.19	1.19	0.6 oz

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

● How to specify

Bracket only: See Model Numbers: i.e. NAB18-25

Bracket & Mounting Kit: Add "NMK" for mounting kit in front of Model Number i.e. NMK-NAB18-25

● Universal Brackets and Mounting Kits for 1.5" Extrusions



Bracket only: NUB14-40 (5/16th T-slot)



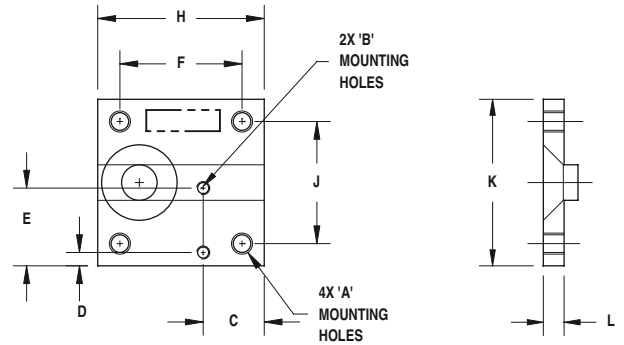
Bracket only: NIUB14-40 (10mm T-slot)



Bracket and Mounting Kit:  
NMK-NUB14-40 (5/16th T-slot)



Bracket and Mounting Kit:  
NIMK-NUB14-40 (10mm T-slot)



Accepts all NVP10 Series pumps and above, and NMB14 manifold blocks.

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

Part Number		A- Mtg Holes	B- Mtg Holes	C in. (mm)	D in. (mm)	E in. (mm)	F, J in. (mm)	H, K in. (mm)	L in. (mm)	Weight oz (g)
NUB14-40	Fits 5/16 T-Slot	10-32	M3 x 0.5	0.55	0.12	0.70	1.10	1.50	0.19	0.70
NIUB14-40	(Fits 10mm T-Slot)			(14.00)	(3.00)	(17.80)	(27.90)	(38.10)	(4.70)	(19.80)

● Universal Brackets (Adjustable) and Mounting Kits for 1.5" Extrusions



Bracket only: NUBA14-40 (5/16th T-slot)



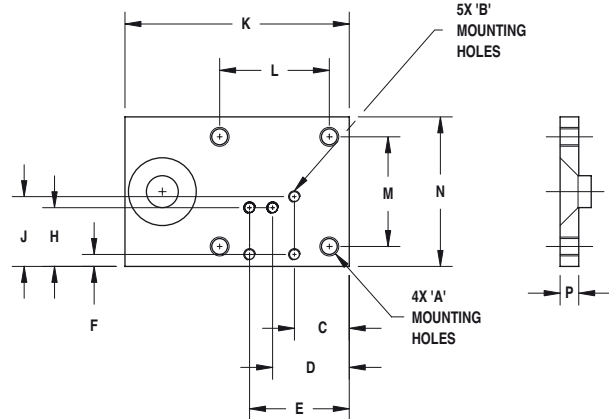
Bracket only: NIUBA14-40 (10mm T-slot)



Bracket and Mounting Kit:  
NMK-NUBA14-40 (5/16th T-slot)



Bracket and Mounting Kit:  
NIMK-NUBA14-40 (10mm T-slot)



Accepts all NVP Series pumps and NMB14 Cup Mounts.

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

Part Number		A- Mtg Holes	B- Mtg Holes	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	Weight oz (g)
NUBA14-40	Fits 5/16 T-Slot	10-32	M3 x 0.5	0.55	0.77	1.00	0.12	0.59	0.70	2.25	1.10	1.10	1.50	0.19	1.00
NIUBA14-40	(Fits 10mm T-Slot)			(14.00)	(19.50)	(25.40)	(3.00)	(15.00)	(17.80)	(57.20)	(27.90)	(27.90)	(38.10)	(4.70)	(28.30)

● How to specify

Bracket only: See Model Numbers: i.e. NUB14-40

Bracket & Mounting Kit: Add "NMK" for mounting kit in front of Model Number i.e. NMK-NUB14-40

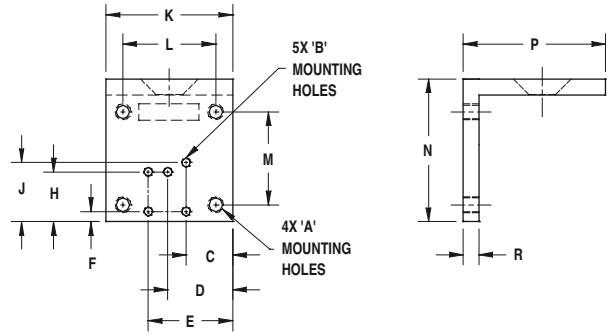
● Angled Brackets and Mounting Kits for 1.5" Extrusions



Bracket only: NAB14-40



Bracket & Mounting Kit: NMK-NAB14-40  
Available with optional adjustment knob.  
See Bracket Construction Sequence below



Accepts all NVP Series pumps and NMB14 Cup Mounts.

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

Part Number		Dimensions		C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	R in. (mm)	Weight oz (g)
		A- Mtg Holes	B- Mtg Holes													
NAB14-40	Fits 5/16 T-Slot			0.55	0.77	1.00	0.12	0.59	0.70	1.50	1.10	1.50	1.69	1.69	0.19	1.00
NIAB14-40	Fits 10mm T-Slot	10-32	M3 x 0.5	(14.00)	(19.50)	(25.4.0)	(3.00)	(15.00)	(17.80)	(38.10)	(27.90)	(38.10)	(42.80)	(42.80)	(4.70)	(28.30)

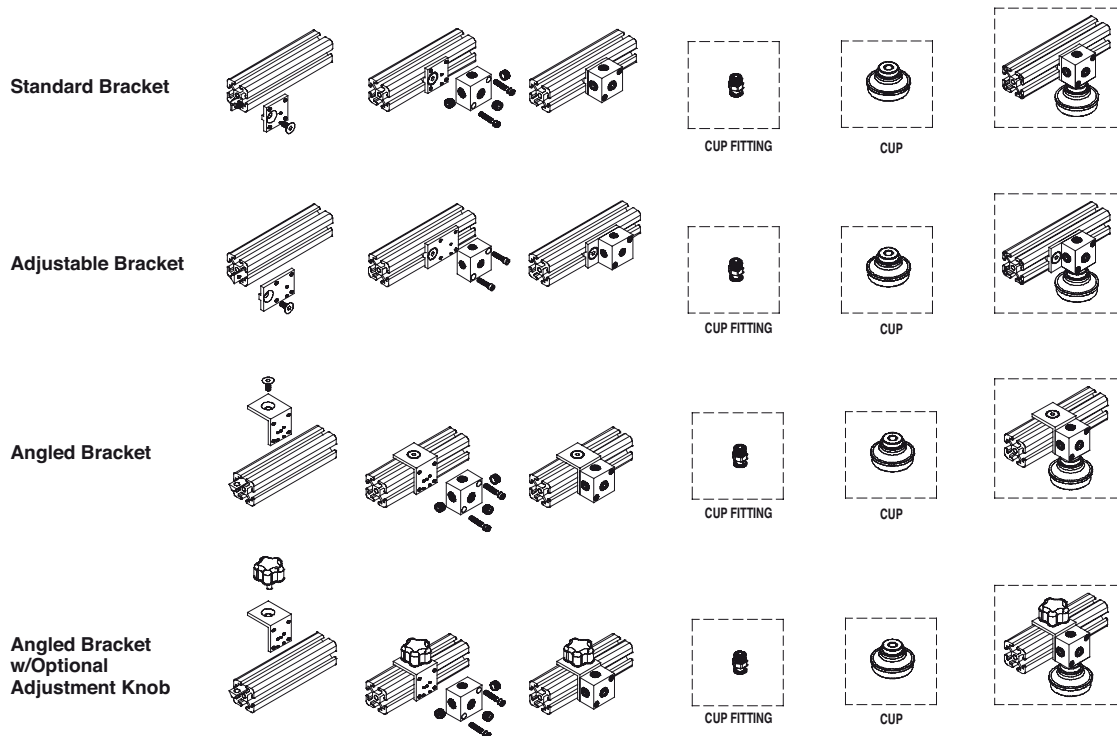
● How to specify

Bracket only: See Model Numbers: i.e. NUB14-40

Bracket & Mounting Kit: Add "NMK" for mounting kit in front of Model Number i.e. NMK-NUB14-40

Bracket & Mounting Kit with Adjustment Knob: NMK-NABK14-40 (angled brackets only)

● Standard, Adjustable & Angled Bracket Construction Sequence:



# MANIFOLD BLOCKS

## ● Vacuum Cup Mount/Manifold Block

Combination Cup Mount and Manifold Block Compatible with 1" (25 mm) and 1.5" (40 mm) extrusions

### Ideal applications

- Robotic End Effectors/End-of-Arm Tooling
- Removing products from molds
- Sheet metal transfer
- Palletizing of work pieces
- Nesting fixtures
- Assembly fixtures
- Pick & place

### Features and benefits

- Direct mount for cups – maintains consistent height for all cups
- High performance – full vacuum flow out performs competition
- Easy to assemble, modular End-of-Arm Tooling components – minimal design time required
- Flexible design – 5 ports for easy plumbing, allows side entry vacuum, adaptable for all End-of-Arm Tooling configurations
- Square shape – easily mounts to any side of the extrusion, products stay square and flush
- Vacuum lines may be connected in series or home run plumbed to streamline the tooling fixture
- Anodized aluminum – lightweight, extends performance and life of robot, allows higher speeds
- Large thread sizes provides high flow rates for safe handling of porous objects



NMB14-40 Vacuum cup Mount/Manifold Block

Simplify your End-of-Arm tooling devices using our dual purpose NMB Series - Vacuum Cup Mount/Manifold Block. Whether you are mounting vacuum cups to extrusions and/or distributing vacuum to multiple locations, the NMB Series streamlines your design with one multi-functional component.

For design and plumbing flexibility, the NMB Series features five vacuum ports and three mounting options that easily connect vacuum pumps and cups to 5/16" (10 mm) or 1/4" (6.50 mm) T-slot extrusions. Extra vacuum ports allow optional accessories to be directly mounted to the manifold block i.e. vacuum gauges or remotely plumbed such as vacuum switches or blow-off capabilities.

High vacuum flow is critical for handling porous objects. IMI Norgren offers up to 3/4" NPT ports to ensure high flow paths.

#### Options:

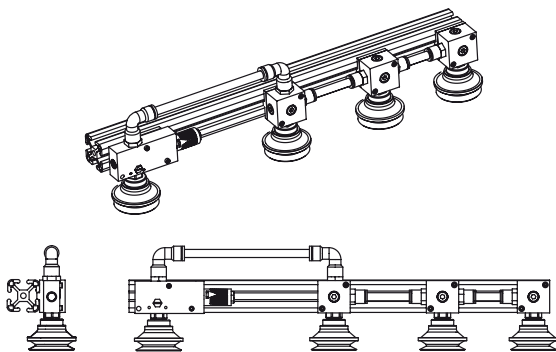
3 Mounting port options: standard, bottom or face mount

9 Models: 1/8 to 3/4 NPT

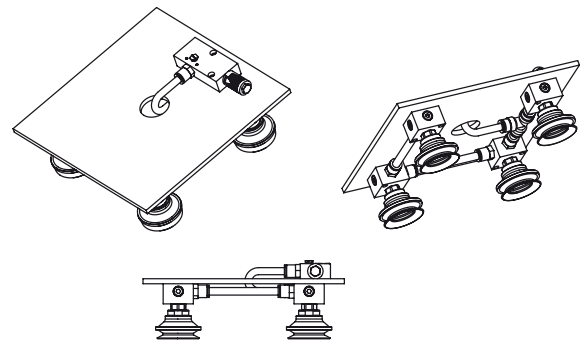
3 Universal brackets: fixed, adjustable or angled



NVP80-200M distributes vacuum to four cup mount/manifold assemblies to pick up corrugated board.

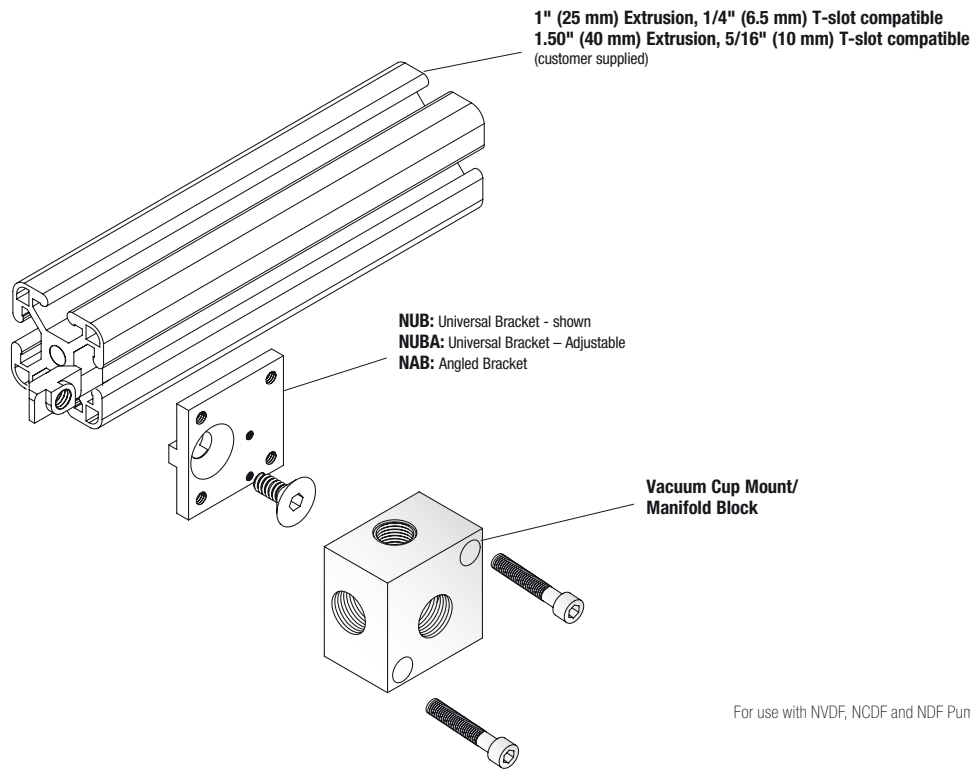


The Vacuum cup mount/manifold easily connects to the T-slot extrusion using a Universal Bracket.



For non T-slot applications, attach the Vacuum cup mount/manifold to the underside of a flat tooling plate head.

● Vacuum Cup Mount/Manifold Configuration & Specifications:



For use with NVDF, NCDF and NDF Pumps

● How to specify

Part Number	Vacuum Cup Mount/Manifold Block
NMB18/NMB18M-25	1/8 NPT [G1/8] – All Female Ports – recommended for 1" (25mm) extrusions
NMB14/NMB14M-40	1/4 NPT [G1/4] – All Female Ports – recommended for 1.5" (40mm) extrusions
NMBB14/NMBB14M-40	1/4 NPT [G1/4] – Bottom Male Port – recommended for 1.5" (40mm) extrusions
NMBB38/NMBB38M-40	3/8 NPT [G3/8] – Bottom Male Port – recommended for 1.5" (40mm) extrusions
NMBB12-40	1/2 NPT [G1/2] – Bottom Male Port – recommended for 1.5" (40mm) extrusions
NMBF14/NMBF14M-40	1/4 NPT [G1/4] – Face Male Port – recommended for 1.5" (40mm) extrusions
NMBF38/NMBF38M-40	3/8 NPT [G3/8] – Face Male Port – recommended for 1.5" (40mm) extrusions
NMBF12/NMBF12M-40	1/2 NPT [G1/2] – Face Male Port – recommended for 1.5" (40mm) extrusions
NMBF34/NMBF34M-40	3/4 NPT [G3/4] – Face Male Port – recommended for 1.5" (40mm) extrusions

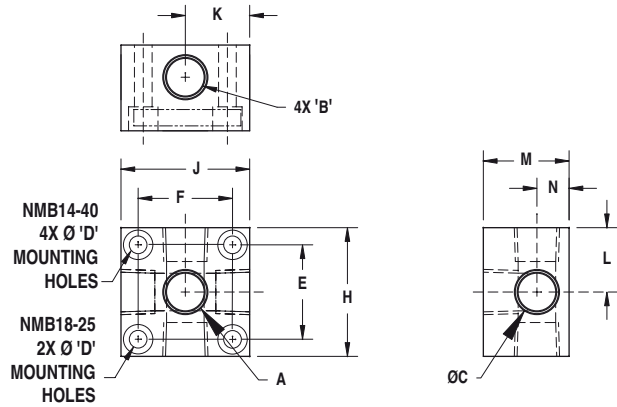
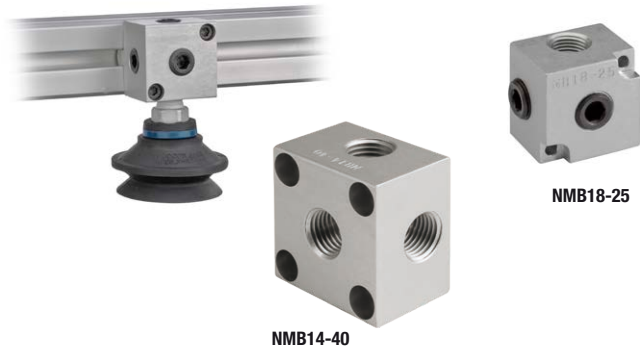
Please note: All vacuum cup mount/manifolds include 3 flush plugs to seal extra ports.

Please order vacuum cup mount/manifolds as separate line items based on part number i.e. NMBB12-40

If you would like parts factory assembled, please specify on order "factory assembled."

To attach Vacuum Cup Mount/Manifold to extrusion, please see Universal Bracket mounting options

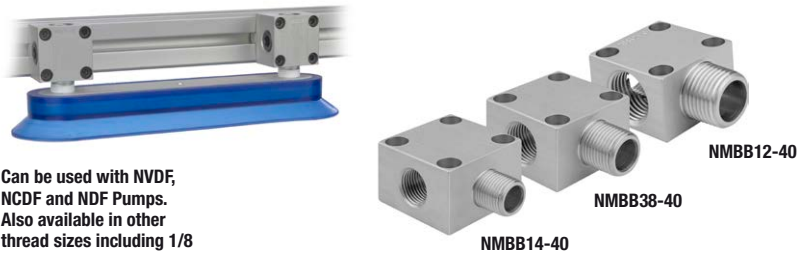
● Vacuum Cup Mount/Manifold – All Female ports: NMB14-40, 18-25



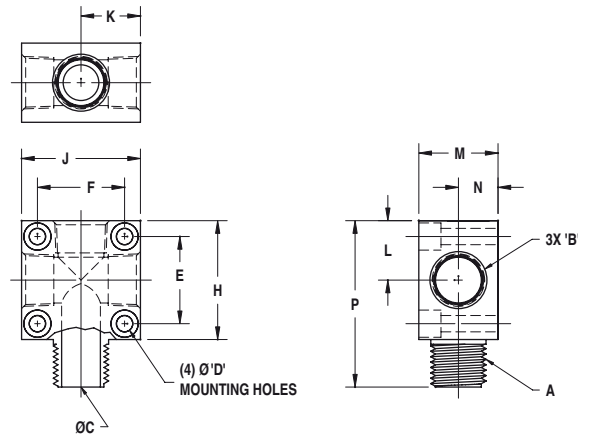
Part Number	Dimensions - Fits 1" (25 mm) Extrusions										Weight oz (g)
	A-Thread	B- Thread	C in. (mm)	D in. (mm)	E, F in. (mm)	H, J in. (mm)	K, L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	
NMB18-25	1/8 NPT	1/8 NPT	0.34	0.10	0.75	1.00	0.50	0.75	0.25	N/A	1.20
NMB18M-25	(G 1/8)	(G 1/8)	(8.60)	(3.30)	(19.10)	(25.40)	(12.70)	(19.00)	(6.40)	(N/A)	(34.00)

Part Number	Dimensions - Fits 1.50" (40 mm) Extrusions										Weight oz (g)
	A-Thread	B- Thread	C in. (mm)	D in. (mm)	E, F in. (mm)	H, J in. (mm)	K, L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	
NMB14-40	1/4 NPT	1/4 NPT	0.44	0.21	1.10	1.50	0.75	1.00	0.38	N/A	2.60
NMB14M-40	(G 1/4)	(G 1/4)	(11.10)	(5.20)	(27.90)	(38.10)	(19.00)	(25.40)	(9.530)	(N/A)	(73.70)

● Vacuum Cup Mount/Manifold – Bottom Male ports: NMBB(14, 38, 12) -40



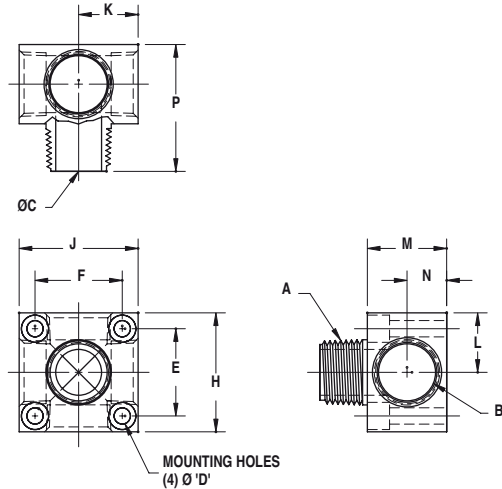
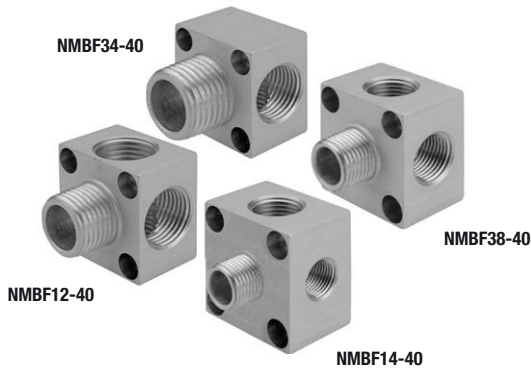
Can be used with NVDF, NCDF and NDF Pumps. Also available in other thread sizes including 1/8 NPT (G 1/8). Consult factory.



Part Number	Dimensions - Fits 1.5" [40mm] Extrusions										Weight oz (g)
	A-Thread	B- Thread	C in. (mm)	D in. (mm)	E, F in. (mm)	H, J in. (mm)	K, L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	
NMBB14-40	1/4 NPT	1/4 NPT	0.34							2.00	2.60
NMBB14M-40	(G 1/4)	(G 1/4)	(8.60)							(50.80)	(73.70)
NMBB38-40	3/8 NPT	3/8 NPT	0.45	0.21	1.10	1.50	0.75	1.00	0.50	2.10	2.90
NMBB38M-40	(G 3/8)	(G 3/8)	(11.40)	(5.20)	(27.90)	(38.10)	(19.00)	(25.40)	(12.70)	(53.30)	(82.20)
NMBB12-40	1/2 NPT	1/2 NPT	0.58							2.10	1.90
NMBB12M-40	(G 1/2)	(G 1/2)	(14.70)							(53.30)	(53.90)



● Vacuum Cup Mount/Manifold – Face Male Port: NMBF(14, 38, 12, 34) -40

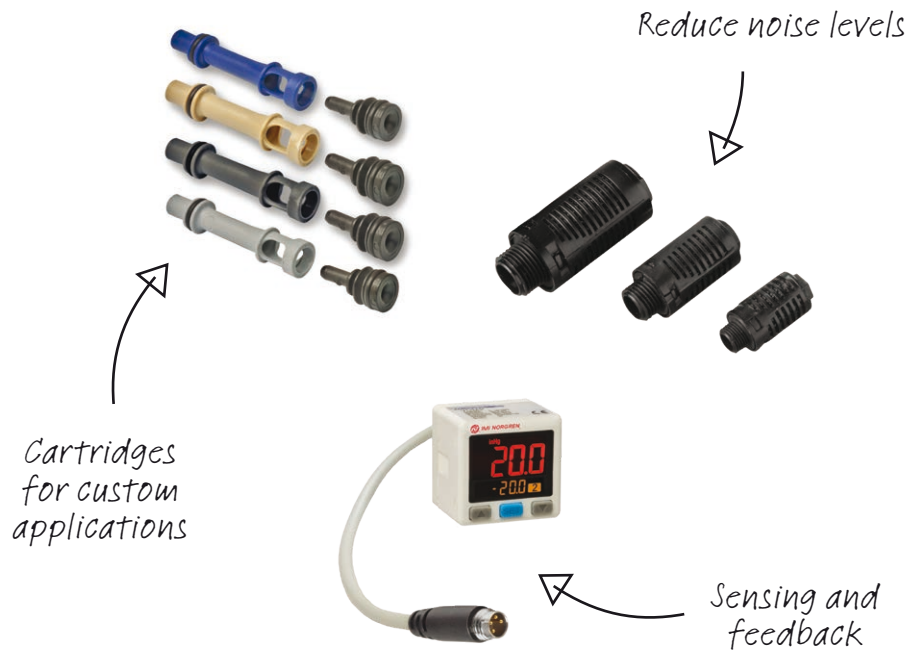


Can be used with NVDF, NCDF and NDF Pumps. Also available in other thread sizes including 1/8 NPT (G 1/8). Consult factory.

Model #	Dimensions - Fits 1.5" (40 mm) Extrusions										Weight oz (g)
	A-Thread	B- Thread	C in. (mm)	D in. (mm)	E, F in. (mm)	H, J in. (mm)	K, L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	
NMBF14-40	1/4 NPT	4 x 1/4 NPT	0.34							1.50	2.60
NMBF14M-40	(G 1/4)	(4 x G 1/4)	(8.60)							(38.10)	(73.70)
NMBF38-40	3/8 NPT	4 x 3/8 NPT	0.45							1.50	2.70
NMBF38M-40	(G 3/8)	(4 x G 3/8)	(11.40)							(38.10)	(76.50)
NMBF12-40	1/2 NPT	4 x 1/2 NPT	0.58	0.21 (5.20)	1.10 (27.90)	1.50 (38.10)	0.75 (19.00)	1.00 (25.40)	0.50 (12.70)	1.60	1.70
NMBF12M-40	(G 1/2)	(4 x G 1/2)	(14.70)							(40.60)	(48.20)
NMBF34-40	3/4 NPT	2 x 3/4 NPT	0.75							1.60	1.80
NMBF34M-40	(G 3/4)	(2 x G 3/4)	(19.10)							(40.60)	(51.00)

# ACCESSORIES







IMI Norgren offers a complete range of vacuum accessories to meet specific application requirements.



# Fast Find Guide

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

## ● Accessories

<p><b>Cartridges</b> For custom vacuum applications</p>  <p>Page 188</p>	<p><b>Silencers</b> To reduce the noise of vacuum pumps</p>  <p>Page 200</p>	<p><b>Switches/Sensors</b> Precision control feedback for system monitoring</p>  <p>Page 217</p>	<p><b>Check Valves</b> Check valves designed specifically for vacuum</p>  <p>Page 232</p>	<p><b>Gauges</b> Accurate monitoring of vacuum levels</p>  <p>Page 234</p>
<p><b>Filters</b> Compact in-line filters to vacuum lines</p>  <p>Page 238</p>				

# CARTRIDGES

- Saves space – eliminates the need for an external pump, install close to vacuum point
- High Productivity – powerful vacuum up to 28"Hg (948mbar), fast response time
- Compact & lightweight – reduces overall equipment weight
- Efficient – minimal air consumption, high performance
- Straight through design – reliable, no moving parts to wear out or get clogged, no maintenance
- Performance Optimization – precise control of flow and vacuum level

## Technical Data

### Fluid

Filtered (50 Micron) unlubricated, non-corrosive dry gases

### Operating Pressure

80 PSI (5.5 bar) or 60 PSI (4.1 bar)

### Operating Temperature

-30° to ~250°F (-34° to ~121°C)

### Materials

Cartridge: Nylon & Buna-N O-rings

### Custom Materials

Cartridge: Brass, Stainless Steel, PVC, Peek, Teflon™, Acetal  
O-rings available in additional materials

### Min Series

#### Supply Line

Min. 5/32" (4mm) tube, 1/4" OD (6mm) tube preferred for lines exceeding 3' (1M)

#### Vacuum Line

1/4" OD (6mm) tube

### Mid / NRTM Series

#### Supply Line/Vacuum Line

1/4" OD (6mm) tube for size 60 and 90  
3/8" OD (10mm) tube for size 100 and 150

### Max Series

Supply Line/Vacuum Line  
3/8" OD (10mm) tube

### Performance Level Designations

"L" 0-10"Hg (0 to 339mbar) for low vacuum/high flow applications

"M" 0-20"Hg (0 to 677mbar) for medium vacuum/high flow applications

"H" 0-28"Hg (0 to 948mbar) for high vacuum/standard flow applications



## Option selector

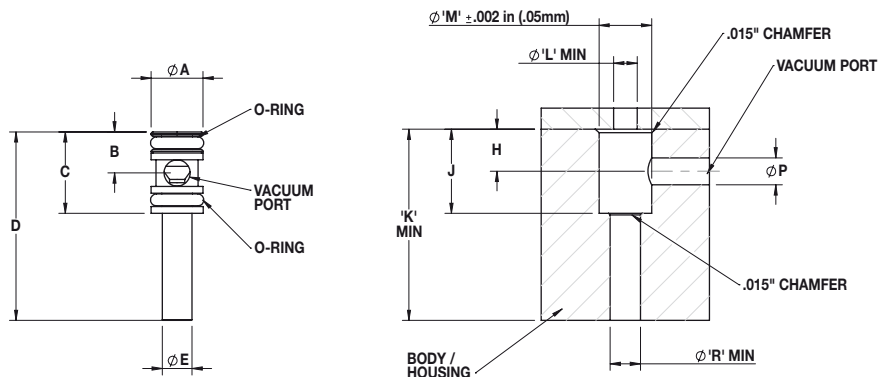
NC★-★★★-★★-M★★

Series	Substitute
Mid / Max Series	
Min Series	<b>M</b>
Vacuum Flow Level	Substitute
Venturi Cartridge 60 (Min / Mid / NRTM Series Only)	<b>60</b>
Venturi Cartridge 90 (Mid / NRTM Series Only)	<b>90</b>
Venturi Cartridge 100 (Mid / NRTM Series Only)	<b>100</b>
Venturi Cartridge 150 (Mid / NRTM Series Only)	<b>150</b>
Venturi Cartridge 200 (Max Series Only)	<b>200</b>
Venturi Cartridge 250 (Max Series Only)	<b>250</b>
Venturi Cartridge 300 (Max Series Only)	<b>300</b>
Venturi Cartridge 350 (Max Series Only)	<b>350</b>
Vacuum Level	Substitute
10"Hg @ 80PSI (Standard)*	<b>L</b>
20"Hg @ 80PSI (Standard)	<b>M</b>
28"Hg @ 80PSI (Standard)	<b>H</b>
10"Hg @ 60PSI	<b>X</b>
20"Hg @ 60PSI	<b>Y</b>
28"Hg @ 60PSI	<b>Z</b>

Standard Materials	Substitute
Anodized aluminum (standard for max series)	<b>M01</b>
Brass	<b>M02</b>
Brass / Aluminum	<b>M03</b>
Nylon* (standard for min / mid / NRTM series)	<b>M04</b>
Custom Materials (Consult Factory)	Substitute
303 stainless steel	<b>M05</b>
304 stainless steel	<b>M06</b>
316 stainless steel	<b>M07</b>
PVC	<b>M09</b>
PTFE (Teflon®)	<b>M12</b>
PEEK	<b>M14</b>
Black Acetal (Delrin®)	<b>M10</b>
White Acetal (Delrin®)	<b>M11</b>
Cartridge Style	Substitute
Push-In	
Threaded	<b>TH</b>
Threaded for NRTM Series	<b>RTM</b>

\*Not available in 60 Series

● Min Dimensions

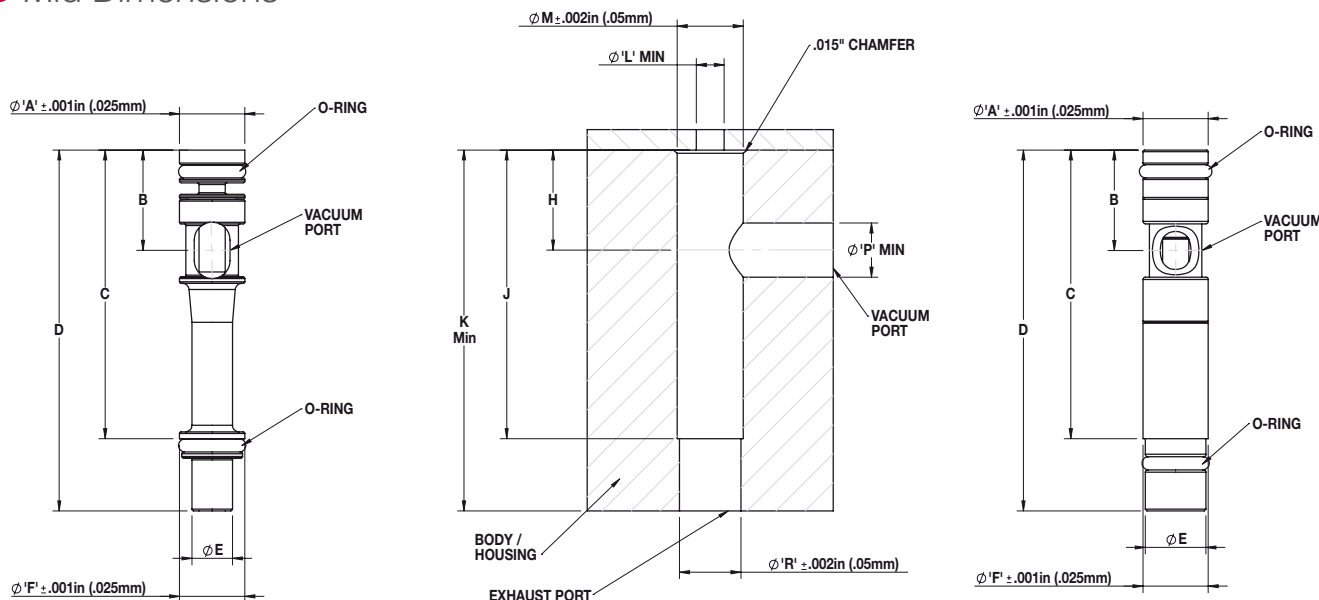


Min Series Cartridge dimensions are the same for nylon and brass

Min Series Cartridge housing

Model	Units	A	B	C	D	E	H	J	K	L	M	P	R
NCM60	Imperial	0.31	0.25	0.49	1.13	0.17							
	(Metric)	(7.92)	(6.20)	(12.30)	(28.60)	(4.30)							
Housing	Imperial						0.25	0.49	1.14	0.16	0.31	0.16	0.18
	(Metric)						(6.40)	(12.70)	(29.00)	(4.10)	(7.90)	(4.10)	(4.60)

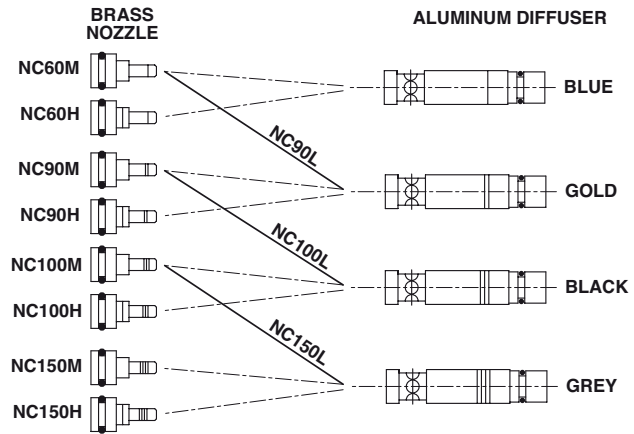
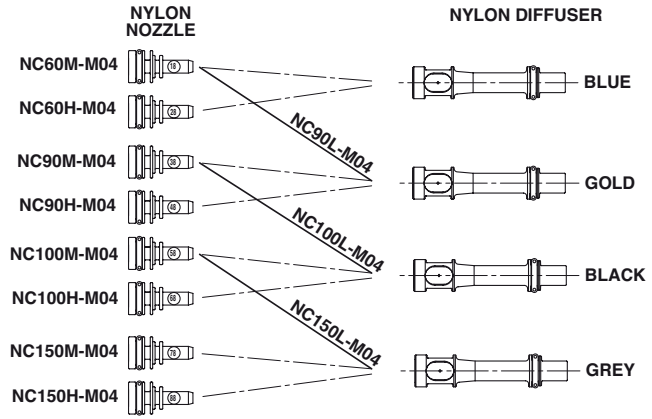
● Mid Dimensions



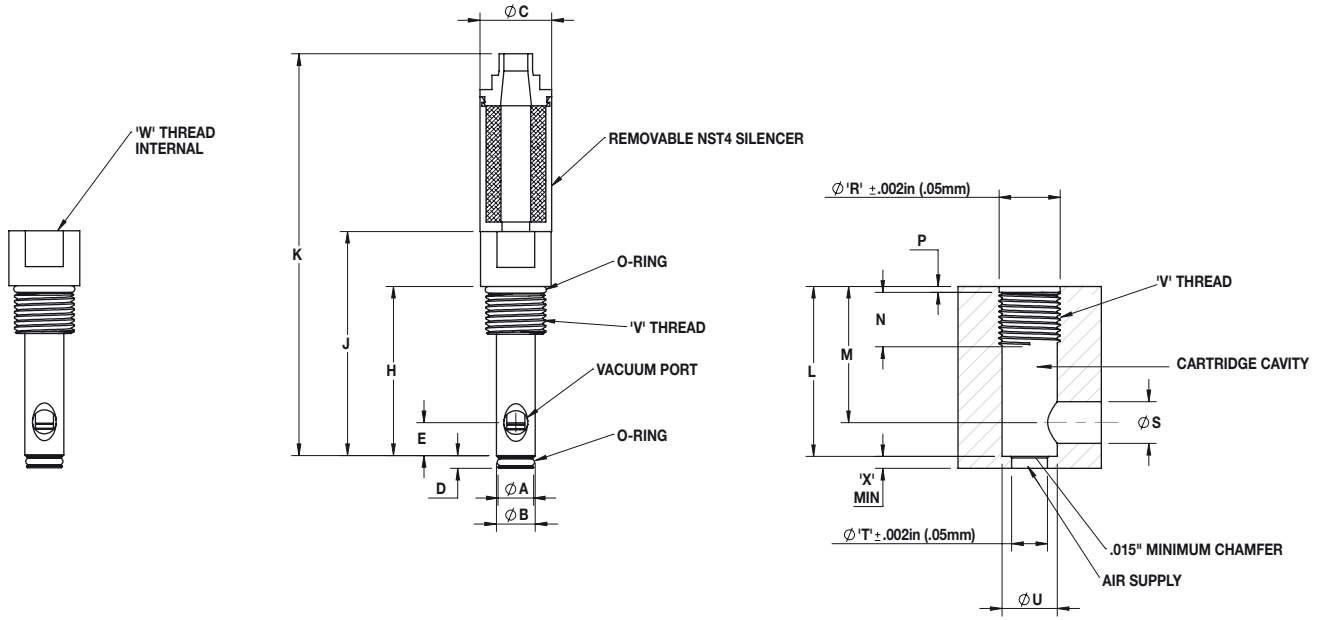
Cartridge housing for both nylon and metal cartridges

Model	Units	A	B	C	D	E	F	H	J	K	L	M	P	R
NC60, 90, 100, 150 (Nylon Cartridges)	Imperial	0.398	0.61	1.76	2.20	0.25	0.398							
	(Metric)	(10.11)	(15.50)	(44.70)	(55.90)	(6.30)	(10.11)							
NC60, 90, 100, 150 (Metal Cartridges)	Imperial	0.398	0.61	1.76	2.20	0.37	0.398							
	(Metric)	(10.11)	(15.50)	(44.70)	(55.90)	(9.40)	(10.11)							
Housing	Imperial							0.61	1.78	2.21	0.14	0.40	0.33	0.38
	(Metric)							(15.50)	(45.10)	(56.10)	(3.60)	(10.21)	(8.30)	(9.65)

● Mid Series Identification Chart

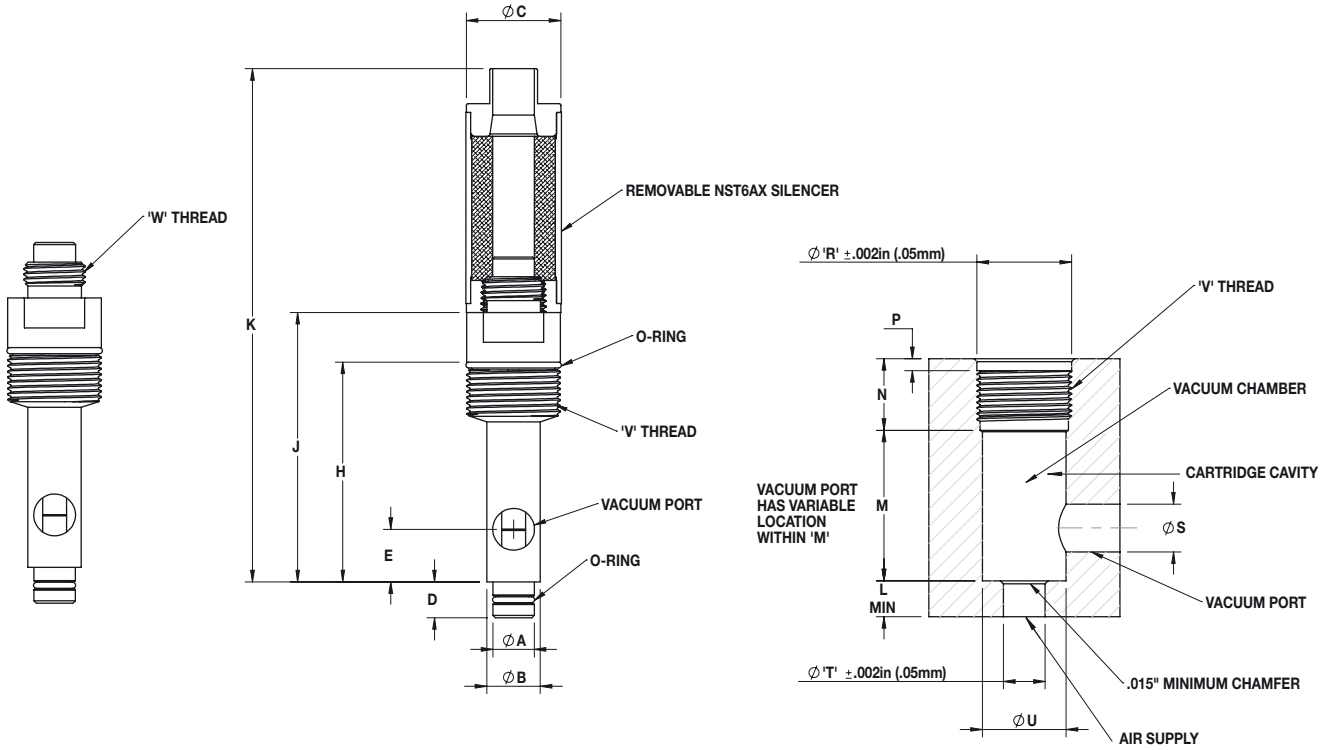


● Mid - Threaded Dimensions



NC60"-150"-TH	Units	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	U	V	W	X
Cartridge	Imperial	0.370	0.41	0.75	0.13	0.36	1.78	2.36	4.22									5/8-18 UNF	1/4-18 NPS	
	(Metric)	(9.40)	(10.36)	(19.05)	(3.18)	(9.14)	(45.21)	(59.94)	(107.06)									(M16x1.5)	(1/4-18 NPS)	
Cavity	Imperial									1.78	1.43	0.63	0.06	0.64	0.44	0.38	0.58	(5/8-18 UNF)	-	0.13
	(Metric)									(45.21)	(36.32)	(16.00)	(1.60)	(16.26)	(11.11)	(9.53)	(14.50)	(M16x1.5)	-	(3.30)

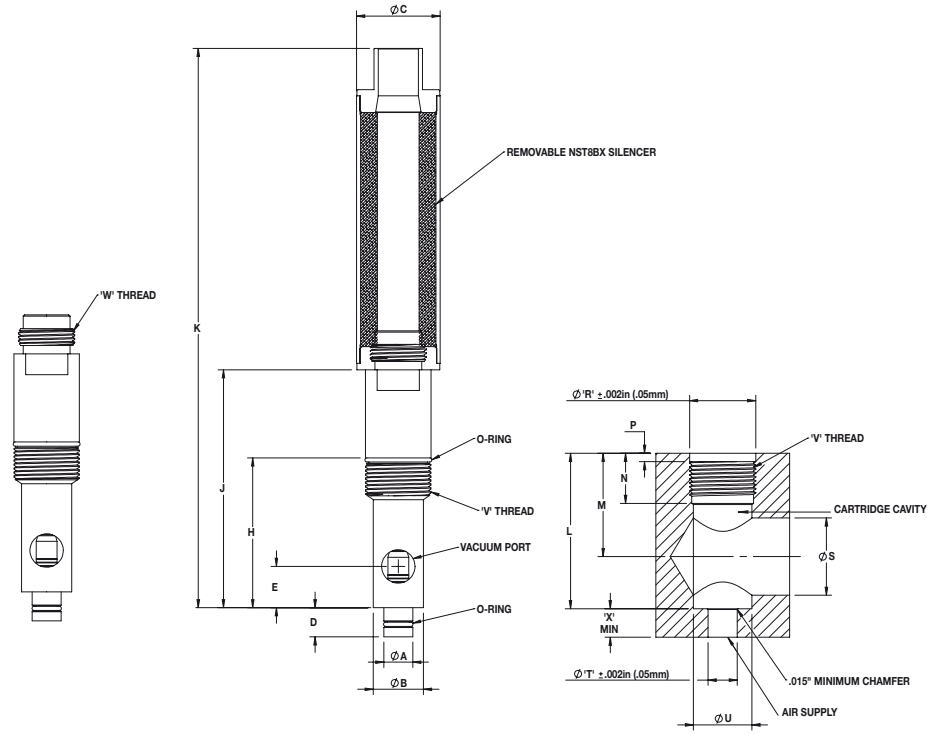
● Max - Threaded Dimensions



NC200*-250*-TH	Units	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	U	V	W
<b>Cartridge</b>	Imperial	0.430	0.56	1.00	0.38	0.55	2.30	2.82	5.37									7/8-20 UNEF	3/8-18 NPS
	(Metric)	(11.00)	(14.22)	(25.40)	(9.65)	(13.97)	(58.42)	(71.63)	(136.42)									(M25x1.5)	(3/8-18 NPS)
<b>Cavity</b>	Imperial									0.38	1.58	0.75	0.13	0.99	0.50	0.44	0.63	7/8-20 UNEF	-
	(Metric)									(9.65)	(40.13)	(19.05)	(3.30)	(25.15)	(12.70)	(11.18)	(16.00)	(M25x1.5)	-

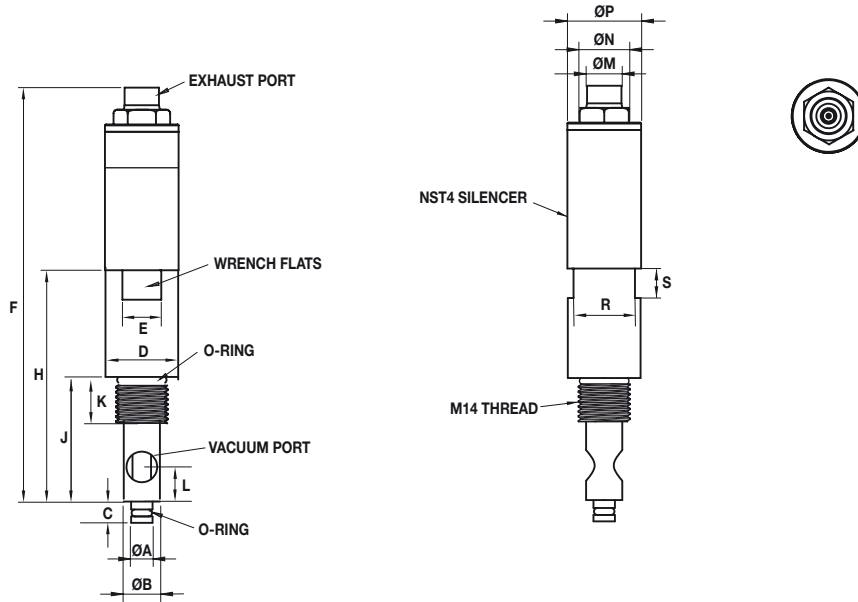


● Max - Threaded Dimensions



NC300*-350*-TH	Units	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	U	V	W	X
Cartridge	Imperial	0.430	0.75	1.25	0.44	0.62	2.24	3.56	8.36									7/8-20 UNEF	1/2-14 NPS	
	(Metric)	(11.00)	(19.05)	(31.75)	(11.18)	(15.70)	(56.90)	(90.35)	(212.39)									(M25x1.5)	(1/2-14 NPS)	
Cavity	Imperial									2.33	1.55	0.75	0.13	0.99	1.16	0.44	0.81	7/8-20 UNEF	-	0.44
	(Metric)									(59.06)	(39.24)	(19.05)	(3.18)	(25.15)	(29.36)	(11.11)	(20.57)	(M25x1.5)	-	(22.00)

● NRTM Cartridge Dimensions

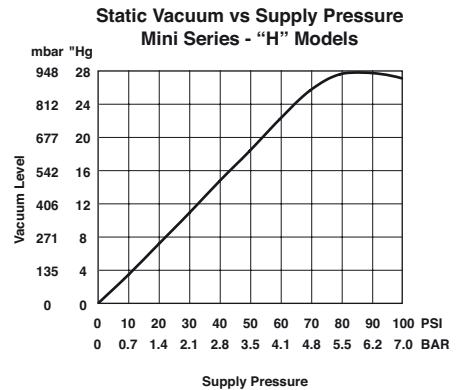
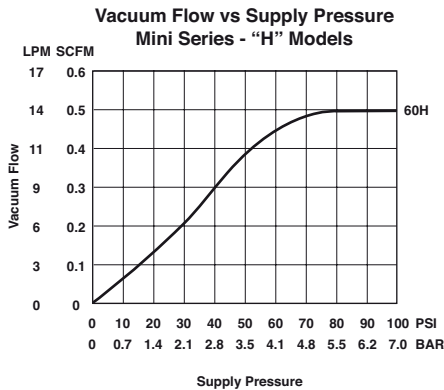
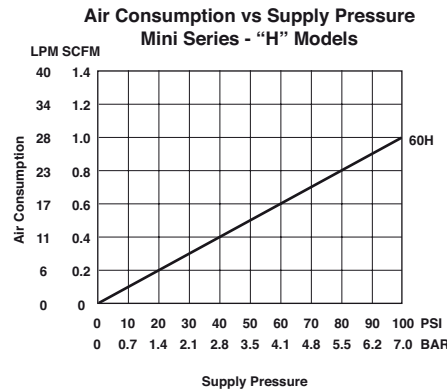
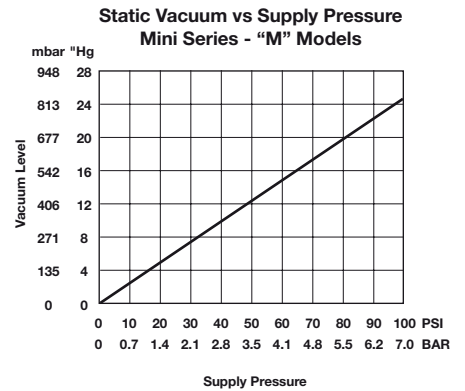
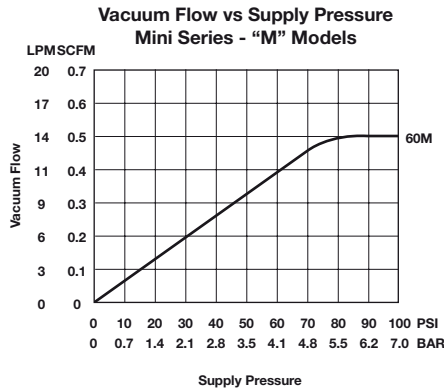
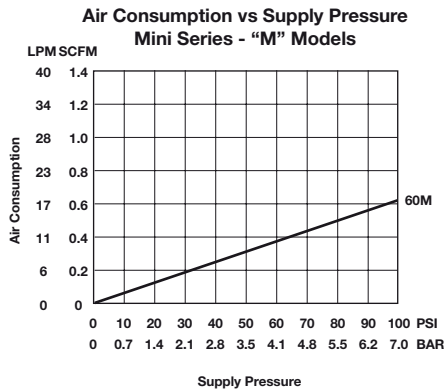


Model	Units	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S
NRTM Cartridge w/ NST4 Silencer	Imperial	0.22	0.37	0.22	0.21	0.75	4.43	2.57	1.46	0.45	0.35	0.35	0.50	0.75	0.63	0.25
	(Metric)	(5.59)	(9.40)	(5.59)	(19.05)	(10.16)	(112.52)	(65.28)	(37.08)	(11.43)	(8.89)	(8.89)	(12.70)	(19.05)	(16.00)	(6.35)

● Performance Data - Min Series

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
60M	0.50 (14.16)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.40 (11.30)	0.30 (8.50)	0.22 (6.20)	0.15 (4.20)	0.08 (2.30)	0.03 (0.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227 (8.00)	- (-)	- (-)	- (-)	- (-)
60H	0.80 (22.70)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.38 (10.80)	0.32 (9.10)	0.30 (8.50)	0.27 (7.60)	0.23 (6.50)	0.20 (5.70)	- (-)	0.13 (3.70)	0.05 (1.40)	0.02 (0.60)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	15.00 (0.50)	29.80 (1.10)	50.60 (1.80)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	- (-)	182.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)



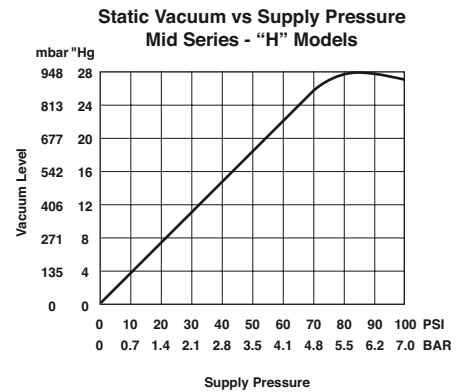
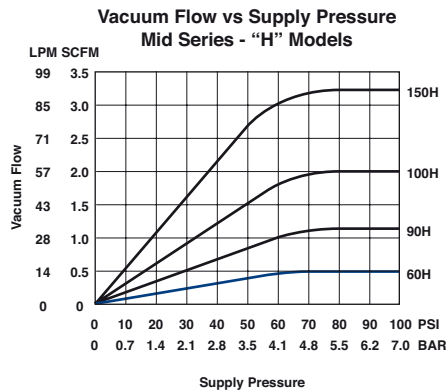
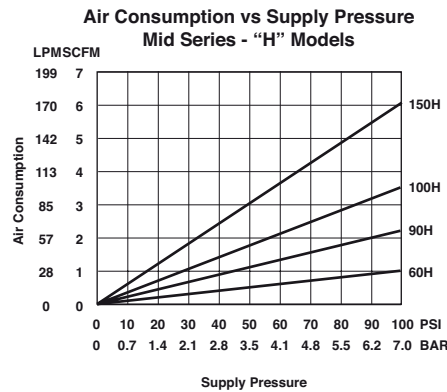
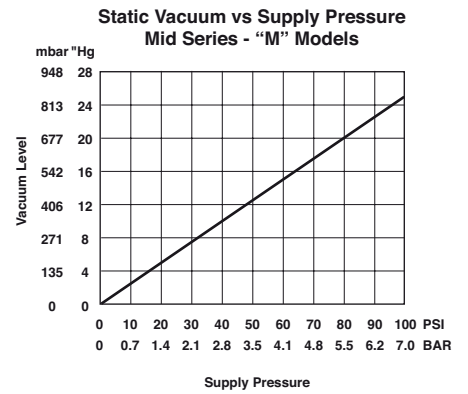
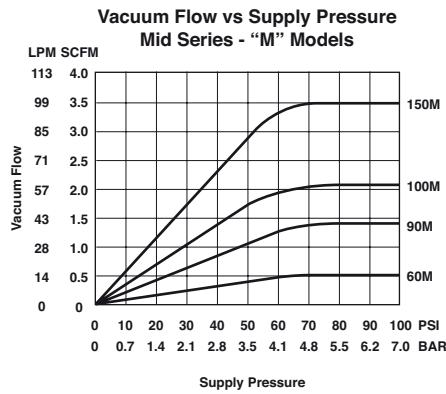
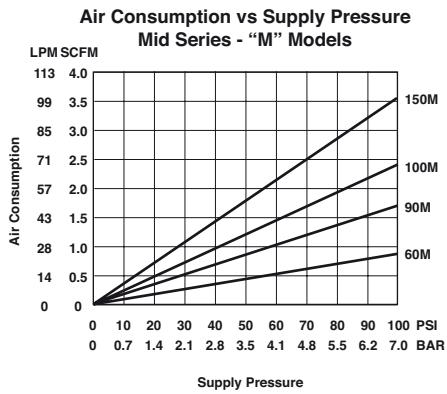
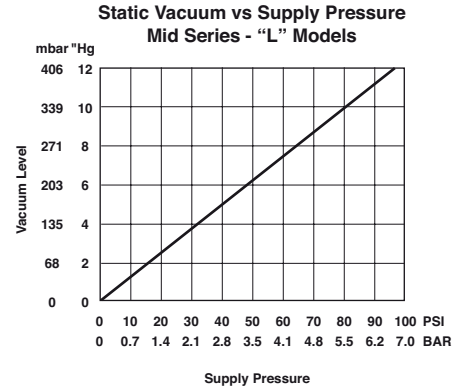
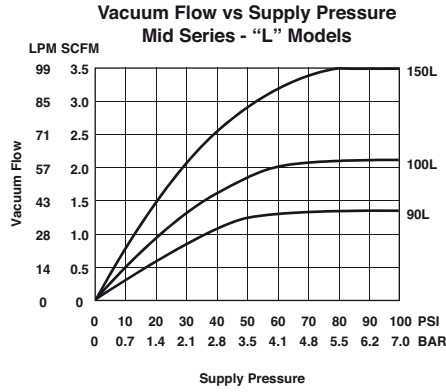
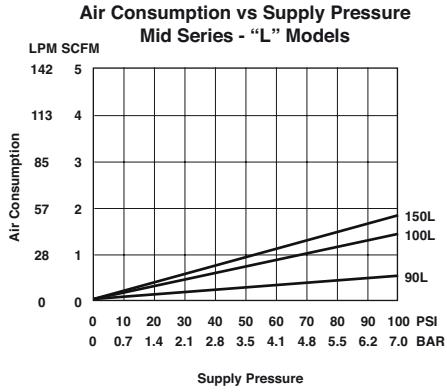
Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

● Performance Data - Mid / NRTM Series

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
90L	0.50 (14.2)	Vacuum Flow SCFM (L/min)	1.30 (36.80)	1.10 (31.10)	0.70 (19.80)	0.20 (5.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.26 (0.10)	7.93 (0.30)	18.65 (0.70)	39.63 (1.40)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
100L	1.40 (39.6)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	1.60 (45.30)	1.10 (31.10)	0.50 (14.20)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.33 (0.10)	4.66 (0.20)	10.88 (0.40)	24.00 (0.90)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
150L	1.80 (51)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	2.50 (70.80)	1.90 (53.80)	0.70 (19.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.54 (0.10)	4.36 (0.20)	10.77 (0.40)	22.83 (0.80)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
60M	0.50 (14.2)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.40 (11.30)	0.30 (8.50)	0.22 (6.20)	- (-)	0.15 (4.20)	0.08 (2.30)	0.03 (0.80)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	12.50 (0.40)	25.10 (0.90)	43.90 (1.60)	- (-)	68.60 (2.40)	99.30 (3.50)	153.70 (5.40)	227.00 (8.00)	- (-)	- (-)	- (-)	- (-)
90M	1.40 (39.6)	Vacuum Flow SCFM (L/min)	1.40 (39.60)	1.25 (35.40)	1.20 (34.00)	1.05 (29.70)	- (-)	0.85 (24.10)	0.65 (18.40)	0.25 (7.10)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	3.75 (0.10)	7.20 (0.30)	12.40 (0.40)	- (-)	19.10 (0.70)	29.90 (1.10)	52.00 (1.80)	104.00 (3.70)	- (-)	- (-)	- (-)	- (-)
100M	1.80 (51)	Vacuum Flow SCFM (L/min)	2.10 (59.50)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	- (-)	1.60 (45.30)	1.25 (35.40)	0.80 (22.70)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	2.65 (0.10)	5.80 (0.20)	9.90 (0.30)	- (-)	16.20 (0.60)	22.90 (0.80)	36.20 (1.30)	56.60 (2.00)	- (-)	- (-)	- (-)	- (-)
150M	2.80 (79.3)	Vacuum Flow SCFM (L/min)	3.50 (99.10)	3.20 (90.60)	2.95 (83.50)	2.75 (77.90)	- (-)	2.50 (70.80)	1.80 (51.00)	0.95 (26.90)	0.00 (0.00)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0.00 (0.00)	1.35 (0.00)	3.20 (0.10)	5.20 (0.20)	- (-)	7.70 (0.30)	11.80 (0.40)	23.40 (0.80)	52.00 (1.80)	- (-)	- (-)	- (-)	- (-)
60H	0.80 (22.7)	Vacuum Flow SCFM (L/min)	0.50 (14.20)	0.38 (10.80)	0.32 (9.10)	0.30 (8.50)	- (-)	0.27 (7.60)	0.23 (6.50)	0.20 (5.70)	- (-)	0.13 (3.70)	0.05 (1.40)	0.02 (0.60)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	15.00 (0.50)	29.80 (1.10)	50.60 (1.80)	- (-)	74.50 (2.60)	102.80 (3.60)	135.90 (4.80)	- (-)	183.20 (6.50)	245.90 (8.70)	410.20 (14.50)	790.80 (27.90)
90H	1.80 (51)	Vacuum Flow SCFM (L/min)	1.20 (34.00)	1.00 (28.30)	0.95 (26.90)	0.90 (25.50)	- (-)	0.85 (24.10)	0.75 (21.20)	0.70 (19.80)	- (-)	0.52 (14.70)	0.47 (13.30)	0.20 (5.70)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	6.50 (0.20)	12.30 (0.40)	18.90 (0.70)	- (-)	32.50 (1.10)	47.00 (1.70)	65.40 (2.30)	- (-)	92.20 (3.30)	130.00 (4.60)	222.20 (7.80)	281.30 (9.90)
100H	2.80 (79.3)	Vacuum Flow SCFM (L/min)	2.00 (56.60)	1.85 (52.40)	1.75 (49.60)	1.57 (44.50)	- (-)	1.40 (39.60)	1.25 (35.40)	1.05 (29.70)	- (-)	0.84 (23.80)	0.70 (19.80)	0.35 (9.90)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.70 (0.10)	6.50 (0.20)	11.20 (0.40)	- (-)	17.50 (0.60)	25.80 (0.90)	38.40 (1.40)	- (-)	55.20 (1.90)	79.20 (2.80)	166.70 (5.90)	251.80 (8.90)
150H	4.80 (135.9)	Vacuum Flow SCFM (L/min)	3.20 (90.60)	2.80 (79.30)	2.50 (70.80)	2.30 (65.10)	- (-)	2.00 (56.60)	1.60 (45.30)	1.40 (39.60)	- (-)	1.20 (34.00)	0.80 (22.70)	0.50 (14.60)	0.00 (0.00)
		Evacuation time (seconds)	0.00 (0.00)	2.30 (0.10)	3.80 (0.10)	6.50 (0.20)	- (-)	10.20 (0.40)	14.20 (0.50)	21.30 (0.80)	- (-)	44.90 (1.60)	55.00 (1.90)	81.00 (2.90)	125.00 (4.40)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)

● Performance Data - Mid / NRTM Series



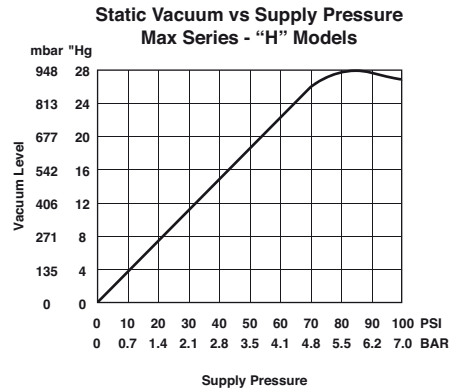
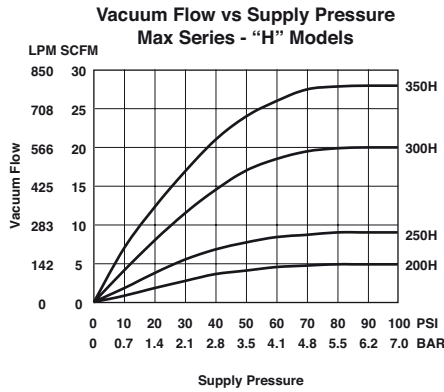
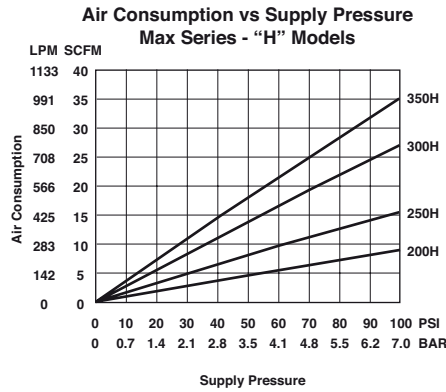
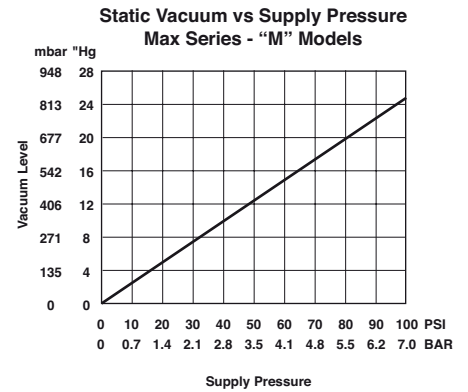
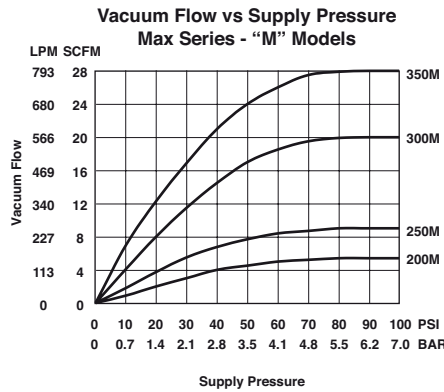
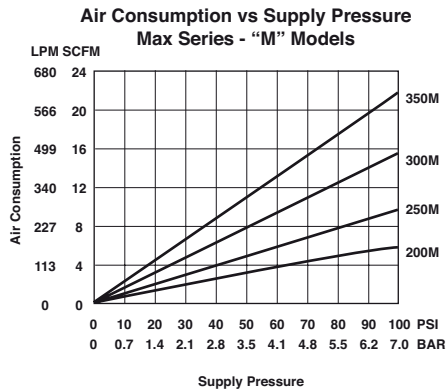
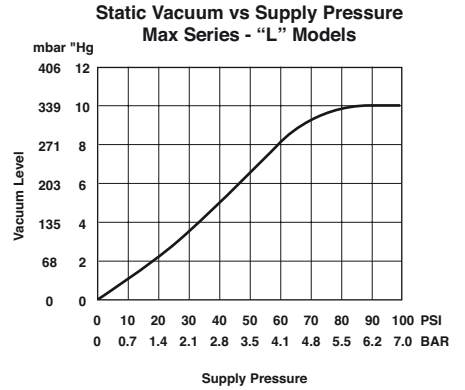
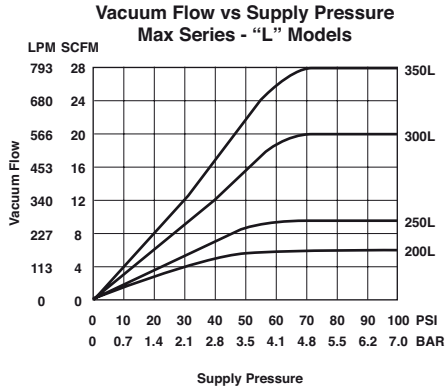
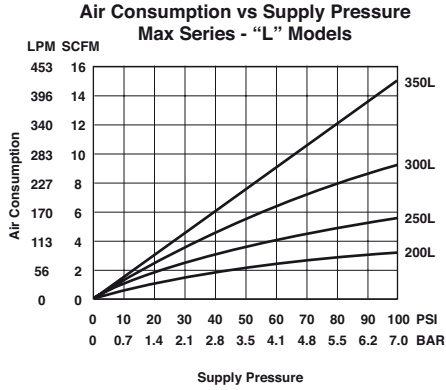
Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

## ● Performance Data - Max Series

Model	Air Consumption SCFM (L/min)	Vacuum Level "Hg (mbar)	0"Hg (0)	3"Hg (102)	6"Hg (203)	9"Hg (305)	10"Hg (339)	12"Hg (406)	15"Hg (508)	18"Hg (609)	20"Hg (677)	21"Hg (711)	24"Hg (813)	27"Hg (914)	28"Hg (948)
200L	2.80 (79.3)	Vacuum Flow SCFM (L/min)	6.00 (169.90)	5.80 (164.20)	4.30 (121.80)	1.70 (48.10)	0 (0)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.77 (0)	2.05 (0.10)	4.62 (0.20)	13.34 (0.50)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
250L	4.80 (135.9)	Vacuum Flow SCFM (L/min)	9.50 (269)	7.90 (223.70)	5.70 (161.40)	2.20 (62.30)	0 (0)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.52 (0)	1.28 (0)	3.08 (0.10)	7.95 (0.30)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
200M	4.80 (135.9)	Vacuum Flow SCFM (L/min)	6.00 (169.90)	5.30 (150.10)	4.90 (138.80)	4.00 (113.30)	- (-)	3.50 (99.10)	2.50 (70.80)	1.10 (31.10)	0 (0)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.75 (0)	1.90 (0.10)	3.20 (0.10)	- (-)	5.30 (0.20)	8.70 (0.30)	17.10 (0.60)	42.60 (1.50)	- (-)	- (-)	- (-)	- (-)
250M	7.80 (220.9)	Vacuum Flow SCFM (L/min)	9.50 (269)	9.20 (260.5)	8.30 (235)	7.00 (198.20)	- (-)	4.70 (133.10)	3.40 (96.30)	2.20 (62.30)	0 (0)	- (-)	- (-)	- (-)	- (-)
		Evacuation time (seconds)	0 (0)	0.45 (0)	1.10 (0)	2.40 (0.10)	- (-)	3.80 (0.10)	6.00 (0.20)	9.70 (0.30)	15.40 (0.50)	- (-)	- (-)	- (-)	- (-)
200H	7.80 (220.9)	Vacuum Flow SCFM (L/min)	5.40 (152.90)	4.70 (133.10)	3.85 (109)	3.30 (93.40)	- (-)	3.00 (85)	2.60 (73.60)	2.10 (59.50)	- (-)	1.60 (45.30)	1.20 (34)	0.60 (17)	0 (0)
		Evacuation time (seconds)	0 (0)	1.20 (0)	2.10 (0.10)	3.40 (0.10)	- (-)	5.20 (0.20)	7.70 (0.30)	11.50 (0.40)	- (-)	20.00 (0.70)	33.50 (1.20)	62.60 (2.20)	98.10 (3.50)
250H	12.50 (354)	Vacuum Flow SCFM (L/min)	9.00 (254.90)	8.50 (240.70)	7.85 (222.30)	7.00 (198.20)	- (-)	6.50 (184.10)	5.30 (150.10)	3.90 (110.40)	- (-)	2.50 (70.80)	1.80 (51)	0.90 (25.50)	0 (0)
		Evacuation time (seconds)	0 (0)	0.75 (0)	1.30 (0)	2.20 (0.10)	- (-)	3.50 (0.10)	5.60 (0.20)	9.10 (0.30)	- (-)	17.40 (0.60)	30.10 (1.10)	56.00 (2)	76.00 (2.70)

Evacuation time in seconds based on 1 cubic foot volume / "Hg (1 Liter Volume / mbar)

● Performance Data - Max Series



Notes: Standard operating pressure for IMI Norgren pumps is 80 PSI [5.5 bar]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4.1 bar] etc. The values shown in the performance chart will remain the same for all operating pressures.

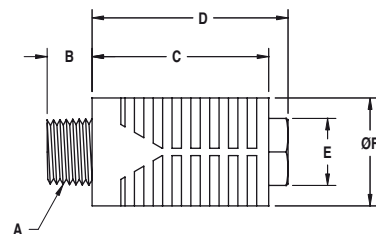
# SILENCERS

## ● NAA Series Silencers

- Compact
- Lightweight
- Durable
- 3 Thread sizes 1/8, 1/4, 3/8
- Closed-end silencer
- Maximize performance – silences pneumatic equipment without back pressure.
- Increase productivity and operator safety – reduces irritating noise, improves working environment
- Closed-end silencer – contaminants can't escape
  - maintains clean environment
  - reduces maintenance costs
  - increases equipment life



NAA Series silencers have excellent noise reducing characteristics with minimal resistance to air flow. NAA Series silencers are one third smaller than comparable products, providing considerable space savings. The large surface of the felt element resists contamination far more than other materials such as sintered bronze, steel mesh or porous polyethylene.



Part Number	Dimensions						Weight oz (g)	Construction				Noise Level
	A* in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)		Body	Baffle	Screen	Element	
NAA2	1/8	0.23 (5.80)	0.97 (24.60)	1.08 (27.40)	0.39 (9.91)	0.61 (15.50)	0.10 (3.00)					58dB
NAA4	1/4	0.32 (8.10)	1.26 (32.00)	1.39 (35.30)	0.47 (11.94)	0.77 (19.60)	0.20 (6.00)	Nylon	Nylon	Nylon	Felt	62dB
NAA6	3/8	0.41 (10.40)	1.74 (44.20)	1.86 (47.20)	0.62 (15.75)	0.96 (24.40)	0.40 (11.00)					70dB

\*Fits NPT, BSPP and BSPT threads.

### NAA Series Silencers Operating Specifications:

**Max. Operating Pressure:** Not to exceed 150 PSI (10 bar)

**Noise level:** Measured 4.5 ft on the diagonal from the silencer while attached to a IMI Norgren pump. Noise levels will vary on IMI Norgren and non-IMI Norgren products.

**Note 1:** IMI Norgren strongly recommends the use of silencers on all vacuum pumps.

**Note 2:** IMI Norgren silencers may be used on all types of pneumatic devices i.e. air-operated vacuum pumps, air motors, valves, cylinders and more.

### How to Specify:

- **For Silencer only:** Order by Model #.
- **IMI Norgren pump/silencer combinations:** IMI Norgren recommends silencers that have been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-IMI Norgren pneumatic devices:** The thread size on the exhaust port of the pneumatic device determines the size of the silencer.
- Equipment and applications may vary. Consult factory for proper silencer selection.



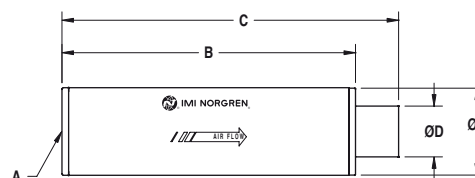
## ● NST Series Silencers

- Straight-through design
- Felt liner provides low frequency sound
- Male and female connections
- 19 models
- Reliable – straight through design – non-clogging
- Maximize performance – silences pneumatic equipment without back pressure
- Increase productivity and operator safety
- Reduces irritating noise, improves working environment
- Increase savings – reduces maintenance costs, increases equipment life



The NST Series Silencers are designed with a straight through flow path that eliminates clogging by allowing the contaminants to pass directly through the silencer. Each silencer is tuned in proportion to its exhaust flow to minimize noise.

As air passes through the silencer, the dense felt element absorbs the noise, thus reducing high pitch exhaust noise to a gentle, low frequency sound. Even in the most adverse conditions, contaminants pass through the silencer making the NST Series ideal for silencing vacuum pumps that are continuously ingesting dirt and debris.



## ● NST Series Silencers: Female Threads

Part Number	Dimensions					Weight oz (g)	Construction Body	Element	Noise Level
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)				
NST4AX	1/4 NPT F	3.19 (81.00)	3.56 (90.40)	0.50 (12.70)	1.00 (25.40)	1.80 (51.00)	Anodized Aluminum	Felt	75dB
NST6AX2	3/8 NPT F	2.17 (55.10)	2.55 (64.70)	0.50 (12.70)	1.00 (25.40)	1.80 (51.00)			75dB
NST6BX	3/8 NPT F	4.19 (106.40)	4.82 (122.40)	0.72 (18.30)	1.25 (38.10)	3.40 (96.00)			77dB
NST8BX	1/2 NPT F	4.19 (106.40)	4.80 (121.90)	0.73 (18.50)	1.25 (31.80)	3.10 (88.00)			76dB
NST16FC	1 NPT F	6.39 (162.30)	7.14 (181.40)	1.25 (31.80)	2.00 (50.80)	7.60 (215.00)			80dB
NST24FC	1 1/2 NPT F	7.10 (180.30)	7.85 (199.40)	1.25 (31.80)	2.00 (50.80)	7.90 (224.00)			82dB

### NST Series Silencers Specifications:

**Max. Operating Pressure:** Not to exceed 150 PSI

**Noise level:** Measured 4.5 ft on the diagonal from the silencer while attached to a IMI Norgren pump. Noise levels will vary on IMI Norgren and non-IMI Norgren products.

**Note 1:** IMI Norgren strongly recommends the use of silencers on all vacuum pumps.

**Note 2:** IMI Norgren silencers may be used on all types of pneumatic devices i.e. air-operated vacuum pumps, air motors, valves, cylinders and more.

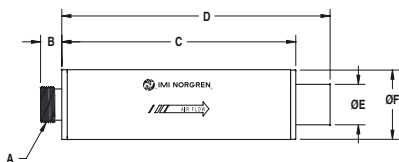
**Note 3:** NST Silencers may be used on all IMI Norgren vacuum pumps.

**Note 4:** For Metric availability, consult factory.

### How to Specify:

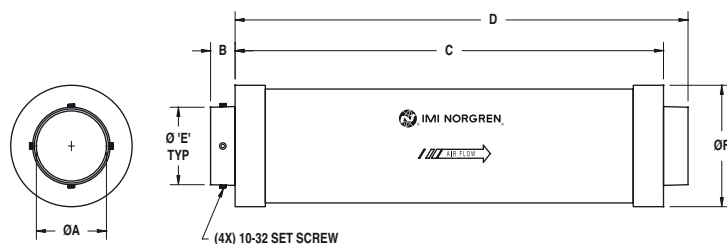
- **For Silencer only:** Order by Model #.
- **IMI Norgren pump/silencer combinations:** IMI Norgren recommends silencers that have been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-IMI Norgren pneumatic devices:** The thread size on the exhaust port of the pneumatic device determines the size of the silencer.
- Equipment and applications may vary. Consult factory for proper silencer selection.

● NST Series Silencers: Male Threads



Part Number	Dimensions						Weight oz (g)	Construction Body	Element	Noise Level
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)				
<b>NST2</b>	1/8 NPS M	0.30 (7.60)	0.63 (16.00)	1.00 (25.40)	0.20 (5.10)	0.44 (11.20)	0.20 (6.00)	Acetal	N/A	68dB
<b>NST4</b>	1/4 NPS M	0.30 (7.60)	1.49 (37.80)	1.86 (47.20)	0.35 (8.90)	0.75 (19.10)	0.60 (17.00)	Acetal	Felt	68dB
<b>NST4A</b>	1/4 NPS M	0.37 (9.40)	3.19 (81.00)	3.56 (90.40)	0.50 (12.70)	1.00 (25.40)	1.80 (51.00)	Anodized Aluminum	Felt	70dB
<b>NST4A2</b>	1/4 NPS M	0.37 (9.40)	2.18 (55.40)	2.56 (65.00)	0.50 (12.70)	1.00 (25.40)	1.40 (40.00)	Anodized Aluminum	Felt	72dB
<b>NST6A</b>	3/8 NPS M	0.38 (9.70)	3.19 (81.00)	3.56 (90.40)	0.50 (12.70)	1.00 (25.40)	1.80 (51.00)	Anodized Aluminum	Felt	72dB
<b>NST6B</b>	3/8 NPS M	0.38 (9.70)	4.19 (106.40)	4.82 (122.40)	0.72 (18.30)	1.25 (31.80)	3.10 (88.00)	Anodized Aluminum	Felt	72dB
<b>NST8A</b>	1/2 NPS M	0.38 (9.70)	3.19 (81.00)	3.56 (90.40)	0.50 (12.70)	1.00 (25.40)	1.80 (51.00)	Anodized Aluminum	Felt	74dB
<b>NST8B</b>	1/2 NPS M	0.38 (9.70)	4.19 (106.40)	4.82 (122.40)	0.72 (18.30)	1.25 (31.80)	3.10 (88.00)	Anodized Aluminum	Felt	76dB
<b>NST12C</b>	3/4 NPS M	0.34 (8.60)	6.18 (157.00)	6.93 (176.00)	1.25 (31.80)	2.00 (50.80)	7.80 (221.00)	Anodized Aluminum	Felt	80dB
<b>NST16C</b>	1 NPS M	0.50 (12.70)	6.18 (157.00)	6.93 (176.00)	1.25 (31.80)	2.00 (50.80)	7.70 (218.00)	Anodized Aluminum	Felt	80dB

Note: All NPS threads fit G Port threads

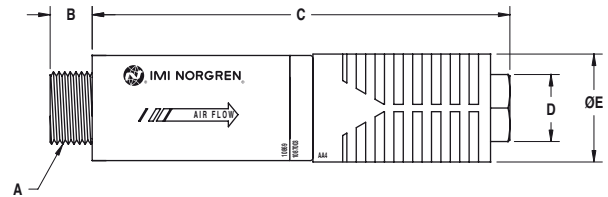


Part Number	Dimensions						Weight oz (g)	Construction Body	Element	Noise Level
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)				
<b>NST2020</b>	Ø 1.99						11.00 (311.00)			
<b>NST2020-5</b>	Ø 1.24	0.70 (17.80)	12.23 (310.60)	12.93 (328.40)	2.21 (56.10)	3.46 (87.90)	13.30 (377.00)	PVC	Foam	82dB
<b>NST2020-7</b>	Ø 1.49						12.70 (360.00)			

## ● NSTAA Series Silencers

- Compact
- Lightweight
- Durable
- Ultra quiet operation
- 2 Thread sizes 1/4, 3/8 NPT
- Maximize performance – silences pneumatic equipment without back pressure
- Increase productivity and operator safety
- Reduces irritating high pitch frequency noise
- Improves working environment
- Maintain clean environment – reduces maintenance costs, increases equipment life

A hybrid silencer that offers increased noise reduction by combining an NST silencer with an NAA silencer. The (closed-end) NAA silencer is attached to the end of a modified NST silencer, thus removing the flow through feature of the standard NST Series silencers.



Model #	Dimensions					Weight oz (g)	Construction				Noise Level
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)		Body	Baffle	Screen	Element	
NSTAA4	1/4 NPS M	0.30 (7.60)	2.96 (75.20)	0.48 (12.20)	0.47 (11.90)	0.70 (20.00)	Acetal/ Nylon	Felt/ Nylon	Nylon	Felt	58dB
NSTAA6	3/8 NPS M	0.38 (9.70)	5.15 (130.80)	0.63 (16.00)	0.62 (15.70)	1.80 (51.00)	Aluminum/ Nylon				64dB

### NSTAA Series Silencers Specifications:

**Max. Operating Pressure:** Not to exceed 150 PSI [10 bar]

**Noise level:** Measured 4.5 ft on the diagonal from the silencer while attached to a IMI Norgren pump. Noise levels will vary on IMI Norgren and non-IMI Norgren products.

**Note 1:** IMI Norgren strongly recommends the use of silencers on all vacuum pumps.

**Note 2:** IMI Norgren silencers may be used on all types of pneumatic devices i.e. air-operated vacuum pumps, air motors, valves, cylinders and more.

**Note 3:** For Metric availability, consult factory.

### How to Specify:

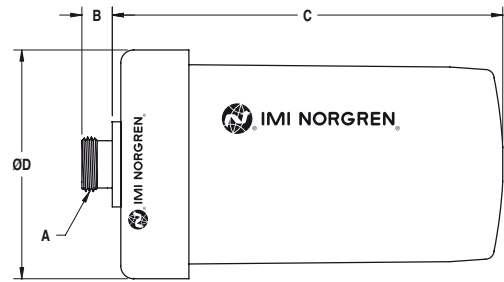
- For Silencer only: Order by Model #.
- **IMI Norgren pump/silencer combinations:** IMI Norgren recommends silencers that have been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-IMI Norgren pneumatic devices:** The thread size on the exhaust port of the pneumatic device determines the size of the silencer.
- Equipment and applications may vary. Consult factory for proper silencer selection.

● NFA-51 Series Silencers

- Closed-end
- 3 Thread sizes 1/4, 3/8, 1/2
- Replacement elements available
- Safe – closed-end high flows won't cause potentially dangerous projectiles
- Quiets large vacuum pumps, valves, cylinders, air motors, and more
- Durable – more area inside to absorb sound and debris
- Economical – lasts longer, lower cost, replacement elements available
- Reliable – no back pressure on high flow applications
- Maintain clean environment – reduces maintenance costs, increases equipment life



The NFA-51 Series silencers offer remarkable noise reduction for high volume exhaust applications without causing back pressure. These silencers are ideal for quieting large air valves that must exhaust quickly to maintain high cycle rates. IMI Norgren uses the FNA-51 silencers on all high flow venturi vacuum pumps where even a small amount of back pressure would decrease performance.



Part Number	Dimensions				Weight oz (g)	Construction Body	Baffle	Screen	Element	Noise Level
	A* in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)						
NFA-51-.250	1/4 NPS M	0.30 (7.60)								
NFA-51-.375	3/8 NPS M	0.38 (9.60)	5.74 (145.80)	3.36 (85.30)	12.70 (357.00)	Steel	Foam	Steel	Paper	72dB
NFA-51-.500	1/2 NPS M	0.38 (9.60)								
NRF-51	N/A	N/A	4.76 (120.90)	3.03 (77.00)	6.20 (176.00)					

**NFA-51 Series Silencers Operating Specifications:**

**Max. Operating Pressure:** Not to exceed 150 PSI [10 bar]

**Noise level:** Measured 4.5 ft on the diagonal from the silencer while attached to a IMI Norgren pump. Noise levels will vary on IMI Norgren and non-IMI Norgren products.

**Note 1:** IMI Norgren strongly recommends the use of silencers on all vacuum pumps.

**Note 2:** IMI Norgren silencers may be used on all types of pneumatic devices i.e. air-operated vacuum pumps, air motors, valves, cylinders and more.

**How to Specify:**

- **For Silencer only:** Order by Model #.
- **IMI Norgren pump/silencer combinations:** IMI Norgren recommends silencers that have been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-IMI Norgren pneumatic devices:** The thread size (1/4, 3/8, 1/2) on the exhaust port of the pneumatic device determines the size of the silencer i.e. NFA-51-.250
- **P/N: NRF-51 - Replacement Element:** Fits all NFA-51 models
- Equipment and applications may vary. Consult factory for proper silencer selection.

# SWITCHES/SENSORS

## ● Electronic Vacuum Sensor

Ultra-miniature, precision control

- Closed-end
- 3 Thread sizes 1/4, 3/8, 1/2
- Replacement elements available
- Compact – placed at point of use for accurate reading and quick response time
- Lightweight – ideal for End-of-Arm Tooling, robotic end effectors
- Low power consumption
- Mountable to both IMI Norgren or non-IMI Norgren
- M5 vacuum port
  - Swivel fitting – operates in any position
  - RoHS compliant and meets EMC standards
- Standard with M8, 3-pin Quick Disconnect on 6" Pigtail



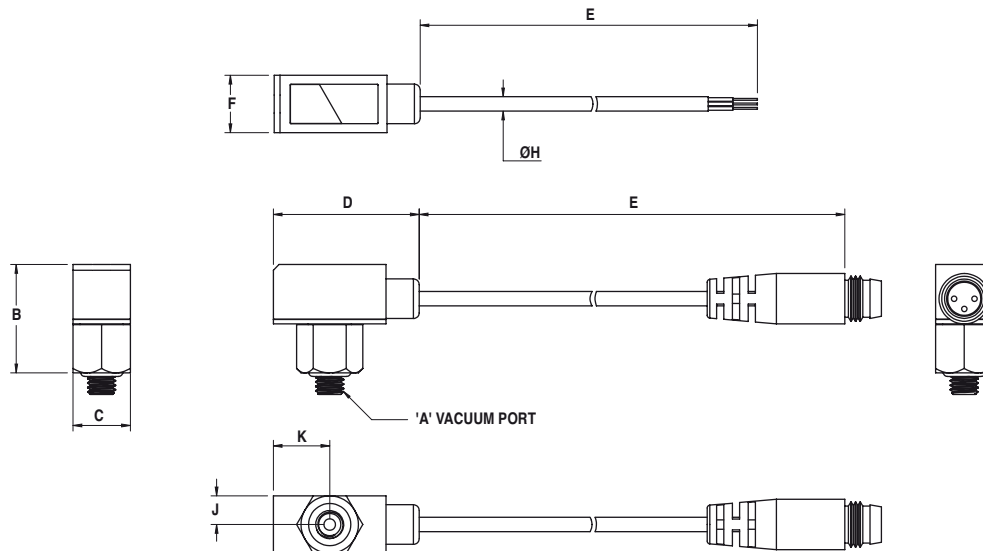
IMI Norgren's ultra-mini electronic vacuum sensors provide continuous voltage output (1-5v) proportional to the system vacuum level. Connected to a feedback interface such as a digital display or PLC, the NVTMV-QD-6 is a cost effective, reliable sensor that maintains application consistency. Sensors can be mounted directly to IMI Norgren's Modular NVP Series pumps.

### How to Specify:

**Sensor: NVTMV-QD-6** - Sensor with 6" pigtail and Quick Disconnect

**Accessory Options: NQDS-8-3F** - Cordset with M8,3-pin female connector with 5M lead wire

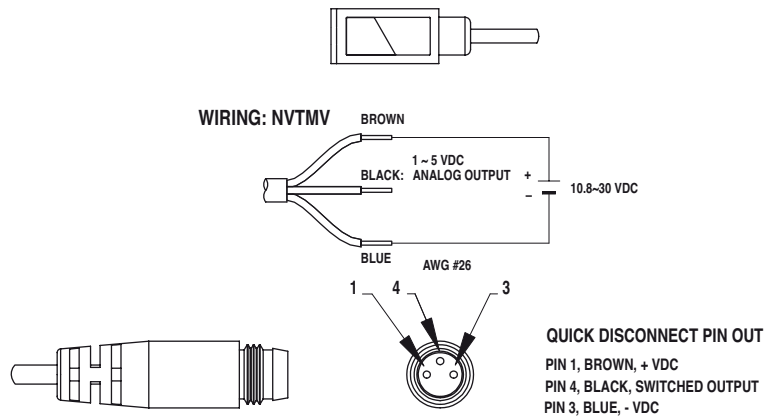
## ● NVTMV-QD-6 Sensor with Quick Disconnect:



Part Number	Imperial Dimensions (in)		C	D	E	F	H	J	K	Weight oz
	A	B								
NVTMV-QD-6	10-32	0.75	.040	1.01	6.00	0.40	0.10	0.20	0.39	1.20

Part Number	Metric Dimensions (mm)		C	D	E	F	H	J	K	Weight
	A	B								
NVTMVM-QD-6	M5	19.05	10.11	25.73	152.40	10.11	2.54	5.05	9.96	34.02g

## ● Wiring Schematic for NVTMV-QD-6



## ● NVTMV-QD-6 Electronic Vacuum Sensor Specifications:

NVTMV-QD-6	
<b>Rated Vacuum Range:</b>	0" to 30" Hg [0 mbar to -1015 mbar]
<b>Burst Pressure:</b>	29 PSI (2 bar)
<b>Media:</b>	Non-Corrosive, Dry Gases
<b>Supply Voltage:</b>	10.8 to 30VDC
<b>Current Consumption:</b>	20 mA Max.
<b>Sensing/Switching Material:</b>	Single Crystal Silicon
<b>Output:</b>	1 to 5VDC
<b>Electrical Connection:</b>	3 Wire - 26 AWG - 6" (152.40 mm) with 3 pin, M8 Quick Disconnect
<b>Response Time:</b>	Approximately 1 ms
<b>Circuit Protection:</b>	None
<b>Linearity:</b>	+/- 0.5% Full Scale
<b>Thermal Error:</b>	+/- 2% Full Scale/121°F (50°C)
<b>Thermal Compensation:</b>	32°F to 121°F (0°C to 50°C)
<b>Display:</b>	None
<b>IP Protection:</b>	IP00
<b>Operating Temperature:</b>	15°F to 140°F (-10°C to 60°C)
<b>Operating Humidity:</b>	35 to 85% RH (No Condensation)
<b>Construction:</b>	Glass filed ABS/Aluminum/Buna
<b>Fitting/Connection:</b>	M5x.8 - 360° swivel male fitting
<b>Weight:</b>	1.20 oz (34.02g)
<b>Safety and Environmental Compliance:</b>	CE, RoHS

## ● Electronic Vacuum Switches

Ultra-miniature, precision control

- Part present detection
- End-of-Arm Tooling/ Robotic assembly
- Material handling
- Pick & place
- Manifold mount
- Compact – placed at point of use for accurate reading and quick response time
- Lightweight – ideal for End-of-Arm Tooling, robotic end effectors
- Precision Control – offers field-adjustable set-point for the full vacuum range
- Reliable LED for visual confirmation – easy set-up
- Standard with M8, 3-pin Quick Disconnect on 6" Pigtail
- Swivel fitting – operates in any position
- Mountable to both IMI Norgren or any non-IMI Norgren M5 vacuum port
- Low power consumption
- RoHS compliant and meets EMC standards



IMI Norgren's miniature electronic vacuum switches provide a switched output for part present detection and can be easily mounted to IMI Norgren's Modular VP Series pumps.

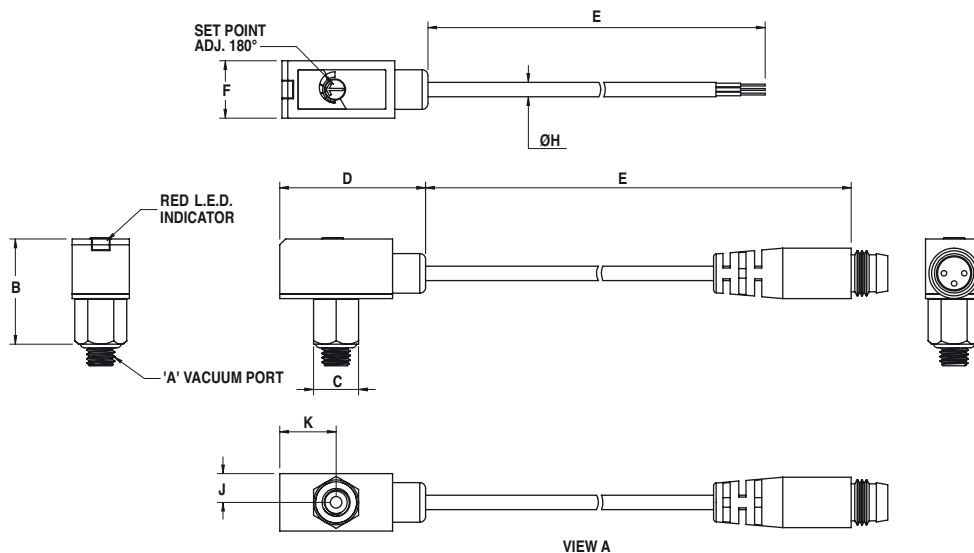
### 2 Models Available:

- NVSMN-QD-6 - NPN, 6" Pigtail
- NVSMP-QD-6 - PNP, 6" Pigtail

### Accessory Options:

- NQDS-8-3F - Cordset with M8,3-pin female connector with 5M lead wire

## ● NVSM(N or P) Series Switch with Quick Disconnect:

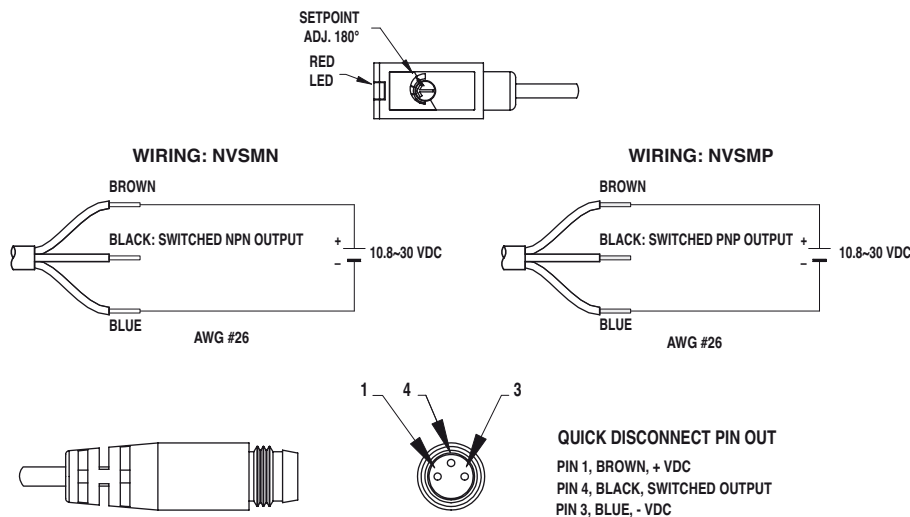


Part Number	Imperial Dimensions (in)									Weight
	A	B	C	D	E	F	H	J	K	
NVSM(N)(P)-QD-6	10-32	0.73	0.31	1.01	6.00	0.40	0.10	0.20	0.39	1.20

Part Number	Metric Dimensions (mm)									Weight
	A	B	C	D	E	F	H	J	K	
NVSM(N)(P)M-QD-6	M5	18.57	7.95	25.73	152.40	10.11	2.54	5.05	9.96	34.02g

## ● Wiring Schematic for NVSM (N or P)-QD-6



## ● NVSM (N or P)-QD-6 Electronic Vacuum Switch Specifications:

NVSMN-QD-6 / NVSMP-QD-6	
<b>Rated Vacuum Range:</b>	0" to 30" Hg (-0 to -1015 mbar)
<b>Burst Pressure:</b>	29 PSI (2 bar)
<b>Media:</b>	Non-Corrosive, Dry Gases
<b>Supply Voltage:</b>	10.8 to 30VDC
<b>Current Consumption:</b>	20 mA Max.
<b>Sensing/Switching Material:</b>	Single Crystal Silicon
<b>Switched Output:</b>	NPN / PNP
<b>Electrical Connection:</b>	3 Wire - 26 AWG - 6" (152.40 mm) w/ 3 pin, M8 Quick Disconnect
<b>Hysteresis:</b>	2% Full Scale Max
<b>Repeatability:</b>	+/- 0.3% Full Scale
<b>Response Time:</b>	1 ms Max.
<b>Circuit Protection:</b>	NONE
<b>Max. Switch Voltage Load:</b>	30VDC
<b>Max. Switched Current Load:</b>	80mA
<b>Linearity:</b>	+/- 0.5% Full Scale
<b>Thermal Error:</b>	+/- 2% Full Scale/121°F (50°C)
<b>Thermal Compensation:</b>	32°F to 121°F (0°C to 50°C)
<b>Display:</b>	Single Red LED
<b>Switch Indication:</b>	Red LED ON (Switched Output ON)
<b>IP Protection:</b>	IP00
<b>Operating Temperature:</b>	15°F to 140°F (-10°C to 60°C)
<b>Operating Humidity:</b>	35 to 85% RH (No Condensation)
<b>Construction:</b>	Glass filed ABS/Aluminum/Buna
<b>Fitting/Connection:</b>	M5x.8 - 360° swivel male fitting
<b>Weight:</b>	1.2 oz (34.02g)
<b>Safety and Environmental Compliance:</b>	CE, RoHS



## ● Electronic Vacuum Switch

Miniature, adjustable set-point and hysteresis,  
M8, 3-pin Quick Disconnect

- Part present detection
- Pick & place
- End of arm tooling
- Material handling
- Process control
- Robotic assembly
- Manifold mount
- 1 switched output
- Reliable LED visual confirmation – operator convenience
- Field-adjustable set-point for the full vacuum range
- Independent hysteresis adjustment – to meet application requirements
- Vacuum port – Available with 1/8" NPT w/ 10-32 female, or G 1/8M w/ M5 female fitting
- Standard with M8, 3-pin Quick Disconnect on 6" Pigtail
- Compact – placed at point of use for accurate reading and quick response time
- Lightweight - ideal for end of arm tooling, robotic end effectors and manifold systems
- Mountable to both IMI Norgren and non-IMI Norgren vacuum pumps
- RoHS compliant



IMI Norgren's miniature electronic vacuum switches monitor vacuum levels in systems and provide a switched output. The NVXX Series has both adjustable set-point and hysteresis and an LED indicator and can be mounted directly onto a wide variety of IMI Norgren pumps. Complete with M8, 3-pin connector.

### 2 Models Available:

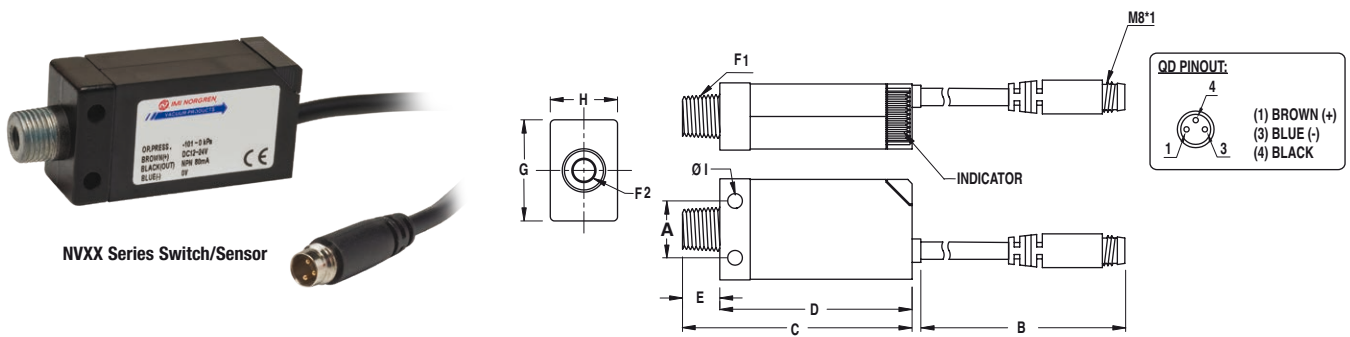
NVXXN-QD-6 (NPN)

NVXXP-QD-6 (PNP)

### Accessory Options:

NQDS-8-3F - Cordset with M8,3-pin female connector with 5M lead wire

● NVXX(N, P)-QD-6 Series Switch with QD-6 Quick Disconnect



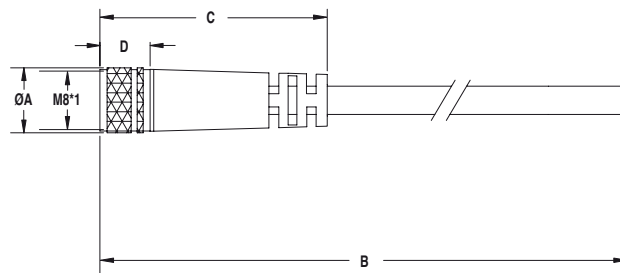
NVXX Series Switch/Sensor

Part Number	Dimension		C in. (mm)	D in. (mm)	E in. (mm)	F1	F2	G in. (mm)	H in. (mm)	I in. (mm)	Weight (with male connection) oz (g)
	A in. (mm)	B in. (mm)									
NVXX(N) (P)-QD-6	0.52	6.00	2.09	1.75	0.33	1/8 NPT	10-32	0.93	0.61	0.13	1.02 oz.
NVXX(N)(P)M-QD-6	(13.10)	(152.40)	(53.00)	(44.50)	(8.50)	G1/8	M5	(23.50)	(15.50)	(3.40)	31.75 g

● Cordset with M8, 3-Pin Female Connector with 5M Lead Wire

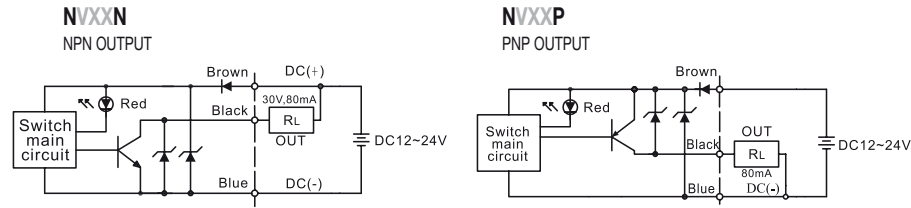


Cordset



Part Number	Dimension		C in. (mm)	D in. (mm)	Weight oz (g)
	A in. (mm)	B ft. (M)			
NQDS-8-3F	0.35 (9.00)	16.40 (5)	1.26 (32.00)	0.28 (7.00)	4.90 (140.00)

## ● Wiring Schematic for NVXX Series



## ● NVXX(N, P)-QD-6 Series Specifications:

NVXXN-QD-6 / NVXXP-QD-6		
<b>Setting Pressure Range:</b>	-101 ~ 0 kPa (-29.9" ~ 0"Hg)	
<b>Withstand Pressure:</b>	300 kPa (43.5 PSI)	
<b>Fluid:</b>	Air, Non-Corrosive /Non-flammable Gas	
<b>Power Supply Voltage:</b>	12 to 24VDC $\pm$ 10%, Ripple (P-P) 10% or less	
<b>Output Method:</b>	NPN Open Collection 30V 80mA / PNP Open Collection 80mA	
<b>Hysteresis:</b>	1~10% of Setting Presssure (Adjustable)	
<b>Setting Point:</b>	1 Point	
<b>Operation Indicating Lamp:</b>	Light at ON (Red)	
<b>Current Consumption:</b>	1 output: NPN & PNP: 21mA max.	
<b>Repeatability (Switch Output):</b>	$\leq \pm 1\%$ F.S.	
<b>Response Time:</b>	5ms or less	
<b>Environment</b>	<b>Enclosure</b>	IP 40
	<b>Amb. temp range</b>	Operation: 0~50°C, Storage: -20 ~ 60°C (no condensation or freezing)
	<b>Amb. humidity range</b>	Operation/Storage: 35 ~ 85% RH (no condensation)
	<b>Withstand Voltage</b>	1000VAC in 1-min (between case and lead wire)
	<b>Insulation resistance</b>	50Mohm min. (at 500VDC between case and lead wire)
	<b>Vibration</b>	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z
	<b>Shock</b>	980m/s <sup>2</sup> (100G), 3 times each in direction of X, Y, and Z
<b>Temperature Characteristic:</b>	$\pm 3\%$ F.S. (standard: 25°C)	
<b>Port Size:</b>	1/8" NPT, G 1/8, 10-32, M5	
<b>Weight:</b>	Approx. *32g (with male connector)	

## ● Electronic Vacuum Switch with Digital Display

NVDX(N or P)-QD-6 Series – 2 Switched Outputs

- Robotic control
- Pick & place
- Part present detection
- Material handling
- Monitoring vacuum
- Leak testing
- Fully Programmable – simple push button calibration – no tools required
- 2 switched outputs
- Convenient – standard with M8, 4-pin Quick Disconnect with 6" Pigtail
- Vacuum port – Available with 1/8" NPT w/ 10-32 female or G 1/8M w/ M5 female fitting
- Full 3 digit display – red LED
- Globally accepted display scales: "Hg, mmHg, PSI, bar, mbar, gf/cm sq, kgf/cm sq, kPa
- Dust and drip proof enclosure to IP65 IEC standards
- RoHS compliant



NVDXN-QD-6

The NVDX Series compact all-in-one output device and digital gauge reduces the number of components in your system. With 2 switched outputs it's possible to monitor the high and low limits for vacuum control. In pick & place and robotic material handling applications, use the first switch for part present so that the robot or tooling can move, and the second switch to signal that the working vacuum level has been achieved. The NVDX Series can be directly mounted to a wide variety of IMI Norgren pumps. Complete with M8, 4-pin connector.

### 2 Models Available:

NVDXN-QD-6 (NPN)  
NVDXP-QD-6 (PNP)

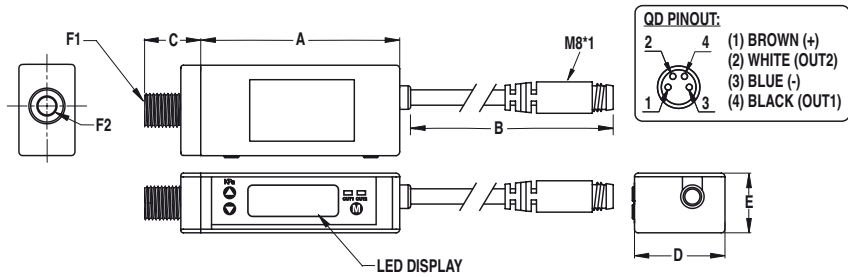
### Accessory Options:

NQDS-8-4F - Cordset with M8, 4-pin female connector with 5M lead wire

● NVDX(N, P)-QD-6 Series Switch/Sensor



NVDX Series Switch/Sensor

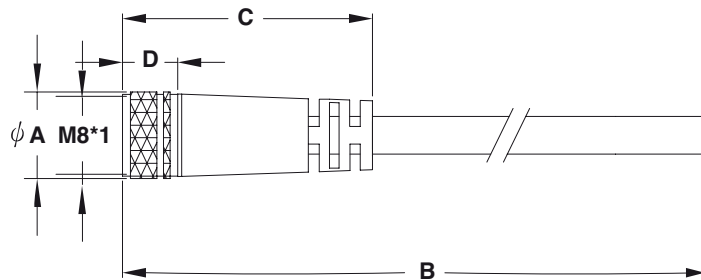


Part Number	Dimensions					F1	F2	Weight (with male connection) oz (g)
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)			
NVDX(N) (P)-QD-6	2.17	6.00	0.49	0.98	0.65	1/8 NPT	10-32	1.20
NVDX(N)(P)M-QD-6	(55.00)	(152.40)	(12.50)	(25.00)	(16.50)	G 1/8	M5	(34.02)

● Cordset with M8, 4-Pin Female Connector with 5M Lead Wire

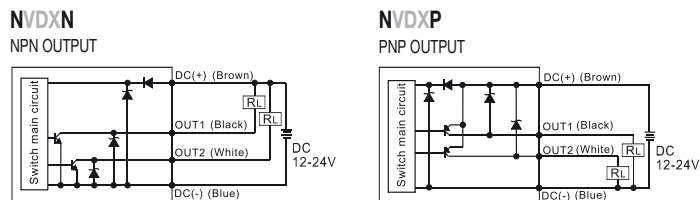


Cordset



Part Number	Dimension				Weight oz (g)
	A in. (mm)	B ft. (M)	C in. (mm)	D in. (mm)	
NQDS-8-4F	0.35 (9.00)	16.40 (5M)	1.26 (32.00)	0.28 (7.000)	4.90 (140.00)

## ● Wiring Schematic for NVDX-Series



## ● NVDX(N)(P)-QD-6 Series Specifications:

	NVDXN-QD-6	NVDXP-QD-6
<b>Rated Pressure Range:</b>	-101.3 ~ 0.0 kPa (-29.9 ~ 0" Hg)	
<b>Setting Pressure Range:</b>	-101.3 ~ 10.0 kPa (-29.9" Hg ~ 1.45 PSI)	
<b>Withstand Pressure:</b>	300 kPa (43.5 PSI)	
<b>Fluid:</b>	Air, Non-Corrosive Gases, Incombustible Gases	
<b>Set Pressure Resolution</b>	<b>kPa</b>	0.1
	<b>MPa</b>	-
	<b>kgf/cm<sup>2</sup></b>	0.001
	<b>bar</b>	0.001
	<b>PSI</b>	0.01
	<b>InHg</b>	0.1
	<b>mmHg</b>	1
	<b>mmH2O</b>	0.1
<b>Power Supply Voltage:</b>	12 to 24VDC ± 10%, Ripple (P-P) 10% or less	
<b>Current Consumption:</b>	≤ 55mA	
<b>Switch Output:</b>	2 NPN open collector Max. load current: 80mA Max. supply voltage: 30VDC Residual voltage: ≤1V (load current 80mA)	2 PNP open collector Max. load current: 80mA Max. supply voltage: 24VDC Residual voltage: ≤1V (load current 80mA)
<b>Repeatability (Switch Output):</b>	≤±0.2% F.S. ±1 digit	
<b>Hysteresis:</b>	Adjustable	
<b>Hysteresis Mode</b>	Fixed (3 digits)	
<b>Window Comparator Mode</b>	Fixed (3 digits)	
<b>Response Time:</b>	≤2.5ms (chattering-proof function: 24ms, 192ms, and 768ms selections)	
<b>Output Short Circuit Protection:</b>	Yes	
<b>7 Segment LCD Display:</b>	3 digit LED 7 segment display (Sampling rate: 5 times/1 sec.)	
<b>Indicator Accuracy:</b>	≤±2% F.S. ±1 digit (ambient temperature: 25 ± 3°C)	
<b>Switch On Indicator:</b>	Green LED (OUT 1) Red LED (OUT 2)	
<b>Environment</b>	<b>Enclosure</b>	IP 40
	<b>Amb. temp range</b>	Operation: 0~50°C, Storage: -20 ~ 60°C (no condensation or freezing)
	<b>Amb. humidity range</b>	Operation/Storage: 35 ~ 85% RH (no condensation)
	<b>Withstand Voltage</b>	1000VAC in 1-min (between case and lead wire)
	<b>Insulation resistance</b>	50Mohm min. (at 500VDC between case and lead wire)
	<b>Vibration</b>	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z
<b>Shock</b>	980m/s <sup>2</sup> (100g), 3 times each in direction of X, Y, and Z	
<b>Temperature Characteristic:</b>	≤±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C	
<b>Port Size:</b>	1/8" NPT, G 1/8, 10-32, M5	
<b>Lead Wire:</b>	Oil Resistance cable (0.15M)	
<b>Weight:</b>	Approx. *34g (with male connector)	

## ● Electronic Vacuum Switch and Sensor with 3 Color, 3 Section Display

NVDM(N or P)-QD-6 Series – 2 Switched Outputs  
Multi-color display that changes color when set-point is reached.

- Robotic control
- Pick & place
- Part present detection
- Material handling
- Monitoring vacuum
- Leak testing
- 2 switched outputs
- 3 color, 3 section display
- Set-point displayed in sub-section – color changes when reached
- Fully Programmable – simple push button calibration – no tools required
- Vacuum port – Available with 1/8" NPT w/ 10-32 female or G 1/8M w/ M5 female fitting
- Standard with M8, 4-pin Quick Disconnect on 6" Pigtail
- Key lock indicator
- Operating range includes both vacuum and pressure
- Full 3 digit display – LED
- Globally accepted display scales: "Hg, mmHg,
- PSI, bar, mbar, gf/cm sq, kgf/cm sq, kPa
- Dust and drip proof enclosure to IP 40 IEC standards
- RoHS compliant



NVDMP-QD-6

The NVDM Series compact all-in-one output device and digital gauge reduces the number of components in your system. Because the NVDM Series offers a choice of 2 switched outputs, NPN or PNP, it's possible to monitor the high and low limits for vacuum control and system conditions. In pick & place and robotic material handling applications use the first switch for part present so that the robot or tooling can move, and the second switch to signal that the working vacuum level has been achieved. The NVDM Series offers a multi-colored, multi-section display that provides a visual indication of system vacuum as well as the set-points. The set-point display changes color from red to green when set-point #1 is reached. If two set-points are used, each can be displayed by toggling back and forth using a single push button. The display also indicates when either set-point is reached and an output is activated. Complete with M8, 4-pin Quick Disconnect on 6" pigtail.

### 2 Models Available:

NVDMN-QD-6 (2 NPN)

NVDMP-QD-6 (2 PNP)

### Accessory Options:

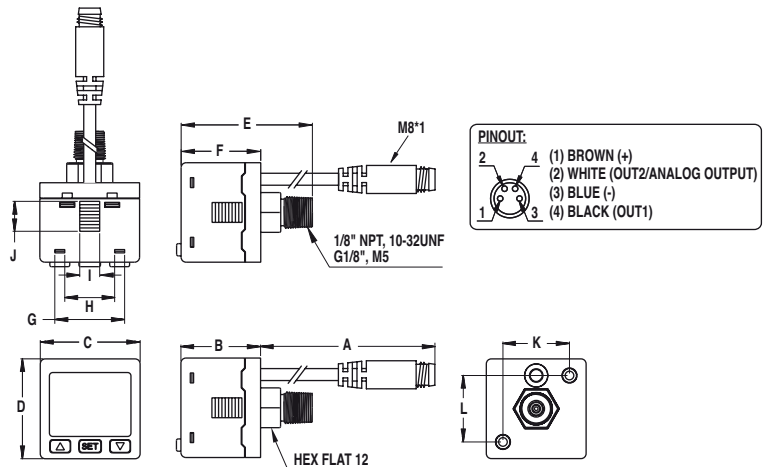
NMB-VDM & NPMC-VDM - Mounting Bracket Kits – Rear and bottom mount kit, Panel Mount Kit

NQDS-8-4F - Cordset with M8, 4-pin female connector with 5M lead wire

● NVDM(N, P)-QD-6 Series Switch/



NVDM Series Switch/Sensor

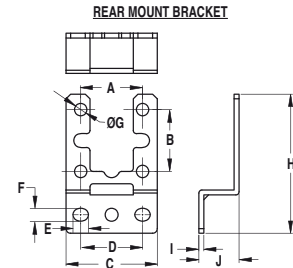
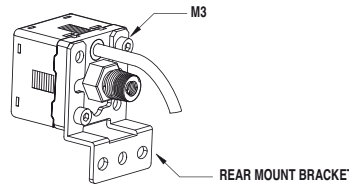


Part Number	Dimensions												Weight oz (g)
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	I in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	
NVDM (N) (P)-QD-6	6.00	0.94	1.18	1.18	1.55	0.94	0.83	0.59	0.24	0.35	0.79	0.79	1.24
NVDM(N)(P)M-QD-6	(152.40)	(23.90)	(30.00)	(30.00)	(39.40)	(12.90)	(21.00)	(15.00)	(6.00)	(9.00)	(20.00)	(20.00)	(38.56)

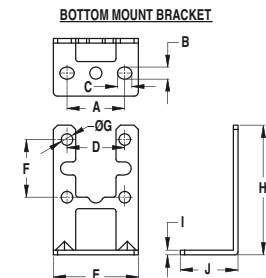
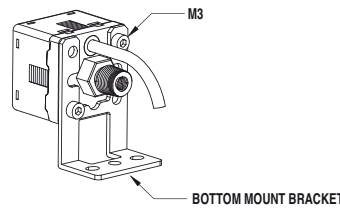
● Optional Mounting Brackets: Rear & Bottom Mount Brackets – NMB-VDM



NVDM Series Rear Mount Bracket



NVDM Series Bottom Mount Bracket



Part Number	Dimensions									
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	I in. (mm)	J in. (mm)
NMB-VDM Rear Mount Bracket	0.79 (20.00)	0.79 (20.00)	1.16 (29.50)	0.79 (20.00)	0.20 (5.00)	0.16 (4.20)	0.16 (4.00)	1.77 (45.00)	0.06 (1.60)	0.51 (13.00)

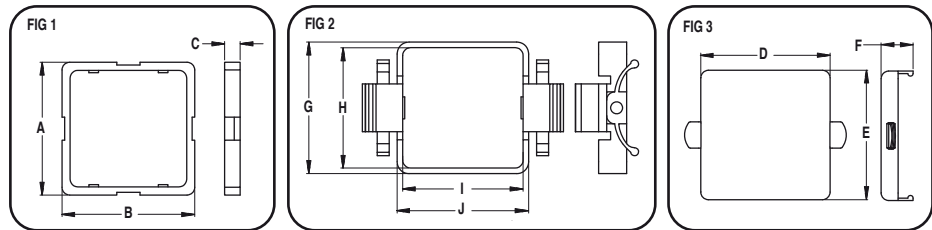
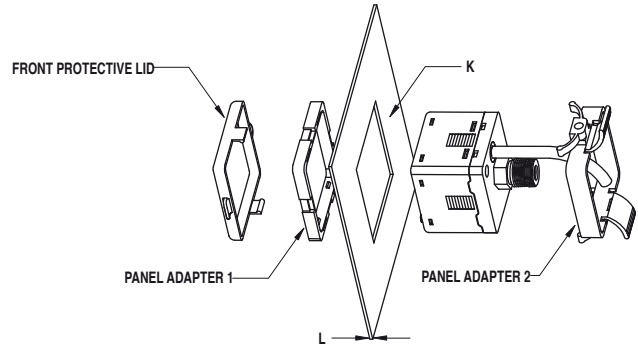
Part Number	Dimension									
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	I in. (mm)	J in. (mm)
NMB-VDM Bottom Mount Bracket	0.79 (20.00)	0.16 (4.20)	0.20 (5.00)	0.79 (20.00)	1.16 (29.50)	0.79 (20.00)	0.16 (4.00)	1.77 (45.00)	0.06 (1.60)	0.79 (20.00)



● Optional Mounting Brackets: Panel Mount Bracket – NPMC-VDM



NVDM Series Panel Mount Bracket

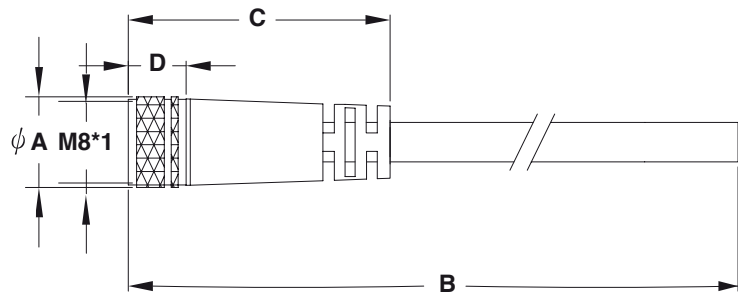


Part Number	Dimensions											
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	I in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)
NPMC-VDM Panel Mount w/Cover	1.35 (34.40)	1.35 (34.40)	0.16 (4.00)	1.35 (34.40)	1.35 (34.40)	0.33 (8.50)	1.30 (33.00)	1.19 (30.20)	1.19 (30.20)	1.30 (33.00)	1.22 X 1.2 ± 0.02 (31 X 31 ± 0.4)	t ≤ 0.18 (t ≤ 4.5)

● Cordset with M8 Female Connector with 5M Lead Wire



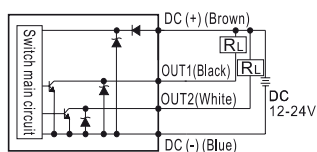
Cordset



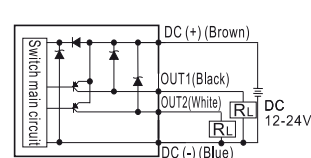
Part Number	Dimensions			
	A in. (mm)	B ft. (M)	C in. (mm)	D in. (mm)
NQDS-8-4F	0.35 (9.00)	16.40 (5.00)	1.26 (32.00)	0.28 (7.00)

## ● Wiring Schematic for NVDM Series

**NVDMN**  
NPN OUTPUT



**NVDMP**  
PNP OUTPUT



## ● NVDM Series Specifications:

	NVDMN-QD-6	NVDMP-QD-6
<b>Rated Pressure Range:</b>	-101.3 ~ 0.0 kPa (-29.9 ~ 0" Hg)	
<b>Setting Pressure Range:</b>	-101.3 ~ 10.0 kPa (-29.9" Hg ~ 1.45 PSI)	
<b>Withstand Pressure:</b>	300 kPa (43.5 PSI)	
<b>Fluid:</b>	Air, Non-Corrosive Gases, Incombustible Gases	
<b>Set Pressure Resolution</b>	<b>kPa</b>	0.1
	<b>MPa</b>	-
	<b>kgf/cm<sup>2</sup></b>	0.001
	<b>bar</b>	0.001
	<b>PSI</b>	0.01
	<b>InHg</b>	0.1
	<b>mmHg</b>	1
<b>mmH2O</b>	12 to 24VDC ± 10%, Ripple (P-P) 10% or less	
<b>Power Supply Voltage:</b>	12 to 24VDC ± 10%, Ripple (P-P) 10% or less	
<b>Current Consumption:</b>	≤ 40mA (With no load)	
<b>Switch Output:</b>	2 NPN open collector Max. load current: 125mA Max. supply voltage: 30VDC Residual voltage: ≤ 1.5v (load current 125mA)	2 PNP open collector Max. load current: 125mA Max. supply voltage: 24VDC Residual voltage: ≤ 1.5v (load current 125mA)
<b>Repeatability (Switch Output):</b>	≤ 2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms, and 1500ms selectable)	
<b>Hysteresis:</b>	Adjustable	
<b>Hysteresis Mode</b>		
<b>Window Comparator Mode</b>		
<b>Response Time:</b>	≤ 2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms, and 1500ms selectable)	
<b>Output Short Circuit Protection:</b>	Yes	
<b>7 Segment LCD Display:</b>	Two Color (Red/Green) main & unit display, Orange sub-display (Sampling rate: 5 times/1sec.)	
<b>Indicator Accuracy</b>	≤ ±2% F.S. ±1 digit (ambient temperature: 25 ± 3°C)	
<b>Switch On Indicator:</b>	Orange 1 & 2 Indicator	
<b>Environment</b>	<b>Enclosure</b>	IP 40
	<b>Amb. temp range</b>	Operation: 0~50°C, Storage: -10 ~ 60°C (no condensation or freezing)
	<b>Amb. humidity range</b>	Operation/Storage: 35 ~ 85% RH (no condensation)
	<b>Withstand Voltage</b>	1000VAC in 1-min (between case and lead wire)
	<b>Insulation resistance</b>	50Mohm min. (at 500VDC between case and lead wire)
	<b>Vibration</b>	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z
<b>Shock</b>	100m/s <sup>2</sup> (10g), 3 times each in direction of X, Y, and Z	
<b>Temperature Characteristic:</b>	≤ ±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C	
<b>Port Size:</b>	1/8" NPT, G 1/8, 10-32, M5	
<b>Lead Wire:</b>	Oil Resistance cable (0.15M)	
<b>Weight:</b>	Approx. *39g (with male connector)	

## ● Electronic Vacuum Switch and Sensor Electronic Vacuum Switch and Sensor with Digital Display

NVDS(N or P)-QD-6 Series –  
2 Switched Outputs and 1 Analog Output

- Robotic control
- Pick & place
- Part present detection
- Material handling
- Monitoring vacuum
- Leak testing
- 2 switched outputs and 1 1-5 VDC Analog output
- Full 3 digit display – red LED
- Fully Programmable – simple push button calibration – no tools required
- 2 ports – back and bottom for easy plumbing and design flexibility, 1/8" NPT or G 1/8M
- Choice of switched output types – PNP or NPN
- Globally accepted display scales: "Hg, mmHg, PSI, bar, mbar, gf/cm sq, kgf/cm sq, kPa
- Dust and drip proof enclosure to IP65 IEC standards
- Standard with M12, 5-pin Quick Disconnect with 6" Pigtail
- RoHS compliant



NVDSN-QD-6

The NVDS Series compact all-in-one output device and digital gauge reduces the number of components in your system. With 2 switched outputs and one analog output it's possible to monitor the high and low limits for vacuum control and system conditions. In pick & place and robotic material handling applications, use the first switch for part present so that the robot or tooling can move, and the second switch to signal that the working vacuum level has been achieved.

The analog output allows software control over the entire vacuum and pressure range with the ability to track system vacuum/pressure changes in real time. The switches are highly flexible due to selectable output functions such as switching point hysteresis and window comparator. Complete with M12, 5-pin connector.

### 2 Models Available:

NVDSN-QD-6 (2 NPN and 1 Analog)

NVDSN-QD-6 (2 PNP and 1 Analog)

### Accessory Options:

NMB & NPMC - Mounting Bracket Kits

– Rear and bottom mount kit,

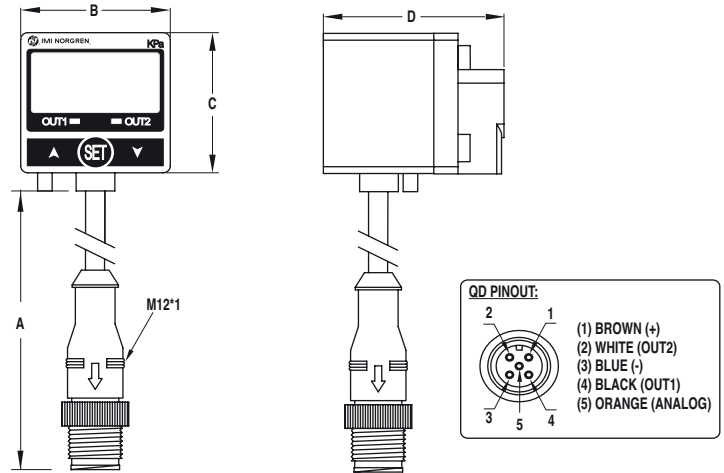
### Panel Mount Kit

NQDS-12-5F - Cordset with M12, 5-pin female connector with 5M lead wire

● NVDS(N, P)-QD-6 Series Switch/Sensor



NVDS Series Switch/Sensor

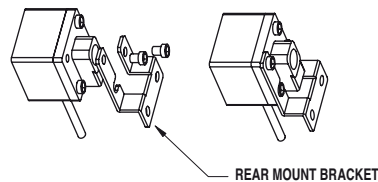


Part Number	Dimensions				Weight oz (g)
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	
NVDS (N) (P)-QD-6	6.00	1.22	1.22	1.44	2.48
NVDS(N)(P)M-QD-6	(152.40)	(31.00)	(31.00)	(36.50)	(70.31)

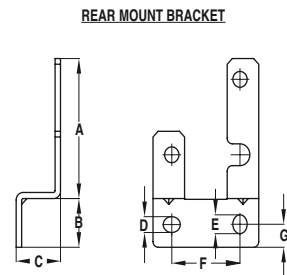
● Optional Mounting Brackets: Rear & Bottom Mount Brackets – NMB



NVDS Series Rear Mount Bracket



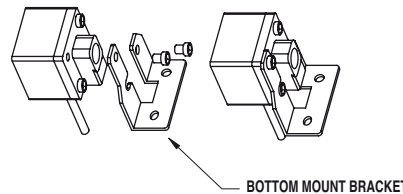
REAR MOUNT BRACKET



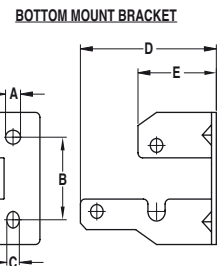
REAR MOUNT BRACKET



NVDS Series Bottom Mount Bracket



BOTTOM MOUNT BRACKET



BOTTOM MOUNT BRACKET

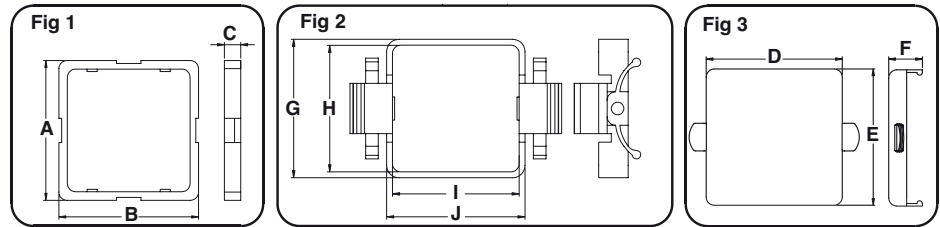
Part Number	Dimensions						
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)
NMB Rear Mount Bracket	1.46 (37.10)	0.51 (12.9)	0.51 (13.00)	0.17 (4.20)	0.20 (5.10)	0.78 (20.00)	0.24 (6.10)

Part Number	Dimensions				
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)
NMB Bottom Mount Bracket	0.20 (5.00)	0.98 (25.00)	0.17 (4.20)	1.79 (45.50)	1.03 (26.20)

● Optional Mounting Brackets: Panel Mount Bracket – NPMC



NVDS Series Panel Mount Bracket

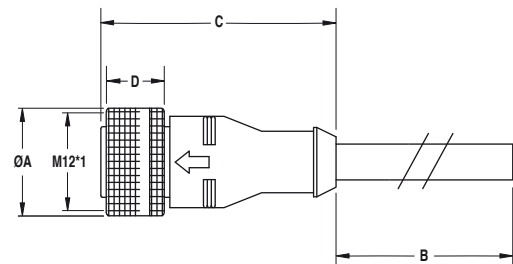
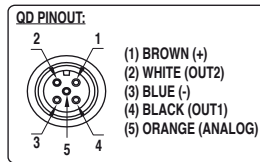


Part Number	Dimensions									
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	G in. (mm)	H in. (mm)	I in. (mm)	J in. (mm)
NPMC Panel Mount w/Cover	1.58 (40.00)	1.58 (40.00)	0.18 (4.50)	1.40 (35.50)	1.67 (42.40)	1.67 (42.40)	0.28 (7.00)	1.87 (47.40)	1.42 X 1.42 ± 0.01 (36 X 36 ± .03)	t ≤ 0.18 (t ≤ 4.5)

● Cordset with M12, 5-Pin Female Connector with 5M Lead Wire



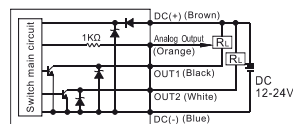
Cordset/Connector/Lead Wire



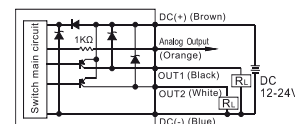
Part Number	Dimensions			
	A in. (mm)	B ft. (M)	C in. (mm)	D in. (mm)
NQDS-12-5F	0.35	16.40 (5M)	1.26 (32.00)	0.28 (7.00)

## ● Wiring Schematic for NVDS-Series

**NVDSN**  
NPN OUTPUT



**NVDSP**  
PNP OUTPUT



## ● NVDS Series Specifications:

	NVDSN-QD-6	NVDSP-QD-6
<b>Rated Pressure Range:</b>	-101.3 ~ 0.0 kPa (-29.9 ~ 0"Hg)	
<b>Setting Pressure Range:</b>	-101.3 ~ 10.0 kPa (-29.9"Hg ~ 1.45 PSI)	
<b>Withstand Pressure:</b>	300 kPa (43.5 PSI)	
<b>Fluid:</b>	Air, Non-Corrosive Gases, Incombustible Gases	
<b>Set Pressure Resolution</b>	<b>kPa</b>	0.1
	<b>MPa</b>	-
	<b>kgf/cm<sup>2</sup></b>	0.001
	<b>bar</b>	0.001
	<b>PSI</b>	0.01
	<b>InHg</b>	0.1
	<b>mmHg</b>	1
<b>mmH2O</b>	0.1	
<b>Power Supply Voltage:</b>	12 to 24VDC ± 10%, Ripple (P-P) 10% or less	
<b>Current Consumption:</b>	55mA	
<b>Switch Output:</b>	2 NPN open collector Max. load current: 80mA Max. supply voltage: 30VDC Residual voltage: 1v (load current 80mA)	2 PNP open collector Max. load current: 80mA Max. supply voltage: 30VDC Residual voltage: 1.5v (load current 80mA)
<b>Repeatability (Switch Output):</b>	±0.2% F.S. ±1 digit	
<b>Hysteresis:</b>	Adjustable	
<b>Hysteresis Mode</b>	Fixed (3 digits)	
<b>Window Comparator Mode</b>	Fixed (3 digits)	
<b>Response Time:</b>	2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms, and 1500ms selectable)	
<b>Output Short Circuit Protection:</b>	Yes	
<b>7 Segment LCD Display:</b>	3 1/2 digit LED display (Sampling rate: 5 times/1 sec.)	
<b>Indicator Accuracy:</b>	±2% F.S. ±1 digit (ambient temperature: 25 ± 3°C)	
<b>Switch On Indicator:</b>	Green LED (OUT 1) Red LED (OUT 2)	
<b>Analog Output (Voltage Output):</b>	Output Voltage: 1 to 5v ± 2.5% F.S. (within pressure range) Linearity: ± 1% F.S.	
<b>Environment</b>	<b>Enclosure</b>	IP 65
	<b>Amb. temp range</b>	Operation: 0~50°C, Storage: -20 ~ 60°C (no condensation or freezing)
	<b>Amb. humidity range</b>	Operation/Storage: 35 ~ 85% RH (no condensation)
	<b>Withstand Voltage</b>	1000VAC in 1-min (between case and lead wire)
	<b>Insulation resistance</b>	50Mohm min. (at 500VDC between case and lead wire)
	<b>Vibration</b>	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z
<b>Shock</b>	980m/s <sup>2</sup> (100G), 3 times each in direction of X, Y, and Z	
<b>Temperature Characteristic:</b>	±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C	
<b>Port Size:</b>	1/8" NPT, G1/8"	
<b>Lead Wire:</b>	Oil Resistance cable (0.15M)	
<b>Weight:</b>	Approx. *70g (with male connector)	

## ● Pneumatic Vacuum Switch

Converts a vacuum signal into a pneumatic signal  
NVSP Series

- Clamping and vacuum chucking
- Pick & place of heavy loads
- Hold vacuum while molds cool
- Vessel evacuation
- Lifting systems
- Handling applications
- Vacuum forming
- Normally closed
- Lightweight 2.6 oz (74g)
- Intrinsically safe – no electricity required
- Adjustable operating range from 0 to 25"Hg (0 to 847 mbar)
- Rugged and durable – all aluminum construction
- 3 Sensing ports for design flexibility – operates in any position
- Economical – saves energy – minimizes compressed air consumption
- Reliable and repeatable – diaphragm operated – long life
- Easily installed and plumbed
- Options:  
Adjustment knob or slotted screw adjustment
- 2 Mounting options:  
panel or flat mount



NVSP-NC

IMI Norgren's Pneumatic Vacuum Switch provides a repeatable pneumatic output signal when reaching the user-defined vacuum set-point level and is appropriate for use in all vacuum systems.

The output signal is a voluminous 2.5 SCFM at 100 PSI, with a response time of 64 ms at 90 PSI. This high flow and fast response makes the switch ideal for high-speed pneumatic circuits with lengthy plumbing lines and for continuously monitored vacuum applications such as vacuum clamping (chucking), vacuum forming, vessel evacuation, and pick and place.

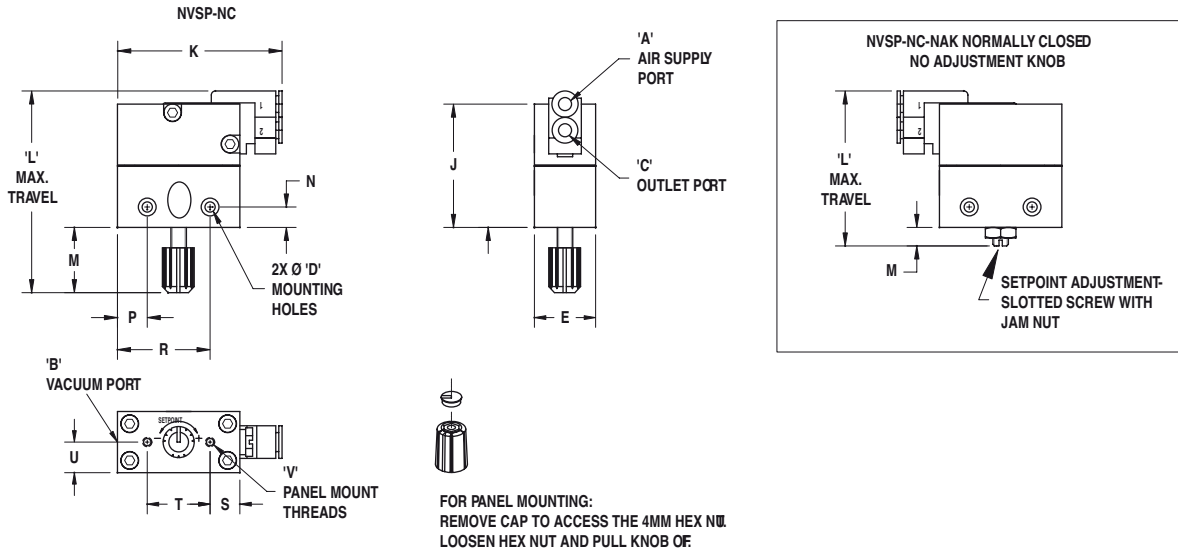
As an integral component of the Air Saver Pumps, this switch supplies the pneumatic pilot signal that closes the main valve when the preset vacuum level is reached, minimizing compressed air consumption.

The pneumatic vacuum switch is constructed of an all-aluminum body ensuring sturdy installation and durable plumbing connections that last after repeated use.

Instant push-to-connect fittings connect the air supply quickly and easily, saving assembly time and eliminating the need for additional fittings. Three 10-32 vacuum ports allow for design and plumbing flexibility, while ensuring safe, neat, and space-saving fixtures.

The adjustment knob is smooth turning for fine adjustment. If you prefer a slotted adjustment mechanism, simply remove the knob to expose the slot.

● Pneumatic Vacuum Switch



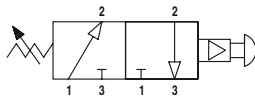
Part Number	Dimensions																Weight oz (g)
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	R in. (mm)	S in. (mm)	T in. (mm)	U in. (mm)	V in. (mm)	
<b>NVSP-NC</b>	5/32-PTC	10-32	5/32-PTC	0.12 (3.00)	0.75 (19.10)	1.51 (38.40)	2.01 (51.00)	2.47 (62.70)	0.78 (19.80)	0.25 (6.40)	0.36 (9.10)	1.13 (28.70)	0.36 (9.10)	0.77 (19.60)	0.40 (9.50)	4-40 (N/A)	2.60 (74.00)
<b>NVSP-NC-NAK</b>	5/32-PTC	10-32	5/32-PTC	0.12 (3.00)	0.75 (19.10)	1.51 (38.40)	2.01 (51.00)	1.68 (42.70)	0.22 (5.60)	0.25 (6.40)	0.36 (9.10)	1.13 (28.70)	0.36 (9.10)	0.77 (19.60)	0.40 (9.50)	4-40 (N/A)	2.60 (74.00)

\*PTC—Push-to-Connect—accepts 5/32 (4 mm) tubing

**Switch Operation:**

The pneumatic switch is a diaphragm-actuated air valve. At vacuum levels below the switch set point, the diaphragm depresses the valve plunger, closing the valve. When the vacuum level reaches the set point, the diaphragm releases the plunger, opening the valve, and allowing air to flow from port 1 to port 2. To change the set point, turn either the adjustment knob or slotted screw.

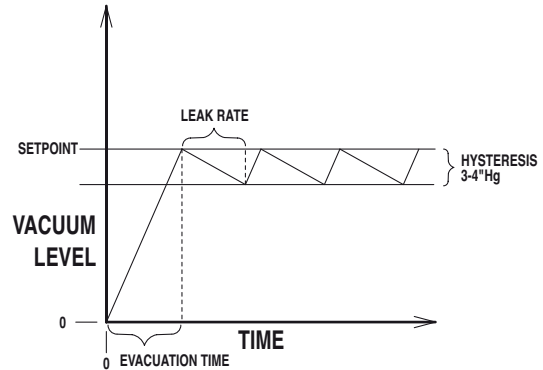
**ANSI Symbol:**



**How to Specify:**

Normally Closed: P/N: **NVSP-NC**

To order with slotted screw adjustment use P/N: **NVSP-NC-NAK**



● Pneumatic Vacuum Switch Specifications:

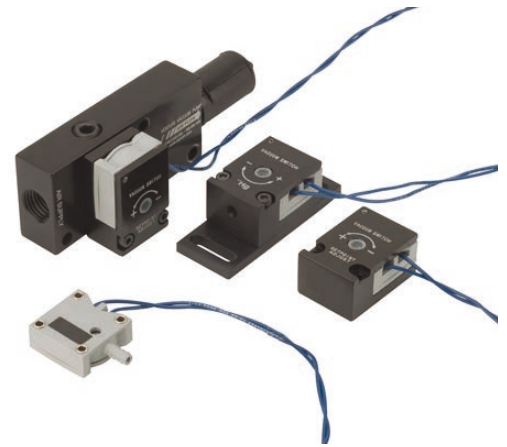
<b>Rated Vacuum Range:</b>	0" to 25" Hg (0 to 847 mbar)
<b>Hysteresis:</b>	3" to 4" Hg (102 mbar to -135 mbar)
<b>Port Sizes:</b>	Vacuum – 10-32 Female
<b>Valve Type:</b>	Plunger operated – air assisted servo controlled element
<b>Operating Pressure:</b>	20-115 PSI
<b>Flow Rate:</b>	2.5 SCFM @ 100 PSI
<b>Cv Rating:</b>	0.06
<b>Response Time:</b>	64 ms
<b>Ambient Temp:</b>	14°F to 140°F [-10C to 60C]
<b>Mechanical Life:</b>	10 million operations



## ● Adjustable Mechanical Vacuum Switch

NVS-5 Series, NSX-5 Series, and NSX-5SB Series

- Robotic applications
- Assembly applications
- Control applications
- Monitoring applications
- Accurate and reliable repeatability – utilizes low stress deflecting contacts
- Compact and lightweight – operates in any position
- Economical – diaphragm operated – long life
- Easy to install – 12" flying leads, 24 AWG
- Vacuum Level Range – VS-5, SX-5, SX-5SB - 0.4"-29.7"Hg (251mbar - 1 bar)



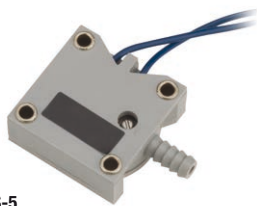
### Vacuum Switches:

IMI Norgren vacuum switches are ideal in automated systems to generate a low-current electrical signal for input to a PLC or other logic controllers. The adjustable switches are normally open, diaphragm operated, and contain low-stress deflecting contacts instead of sliding or pivoting parts for high reliability and long life.

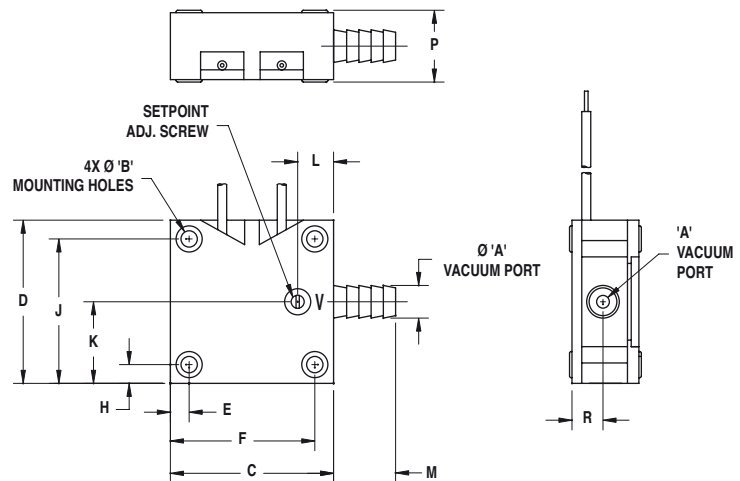
### Switch Options:

- Housings for ease of mounting on vacuum pumps
- Sub base for ease of installation on non-IMI Norgren vacuum pumps

## ● Adjustable Mechanical Vacuum Switch: NVS-5

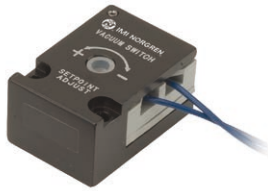


NVS-5

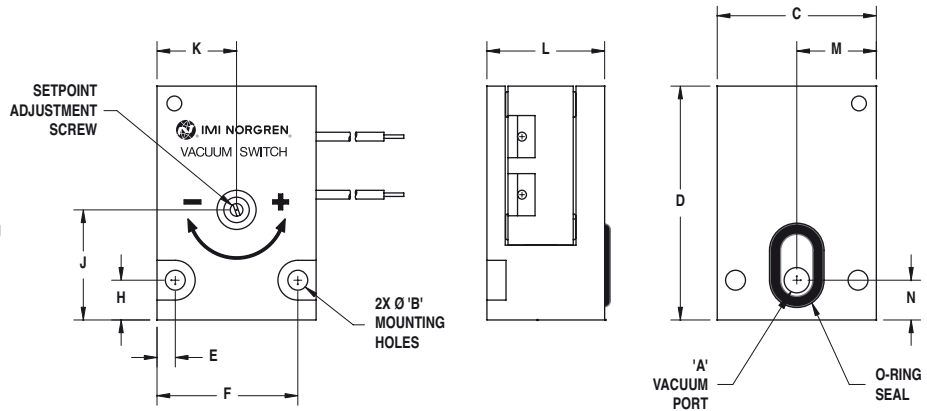


Part Number	Dimensions															Weight oz (g)	Lead Length
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	K in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)	R in. (mm)	S in. (mm)		
NVS-5	0.22 (0.22)	0.10 (2.50)	1.00 (25.40)	1.00 (25.40)	0.12 (3.00)	0.77 (19.60)	0.12 (3.00)	0.77 (19.60)	0.50 (12.70)	0.22 (5.60)	0.38 (9.70)	N/A (N/A)	0.44 (11.20)	0.20 (5.10)	0.50 (12.70)	0.50 (14.00)	12 (305)

● Adjustable Mechanical Vacuum Switch: NSX-5 (Switch with housing)



NSX-5 Switch with housing

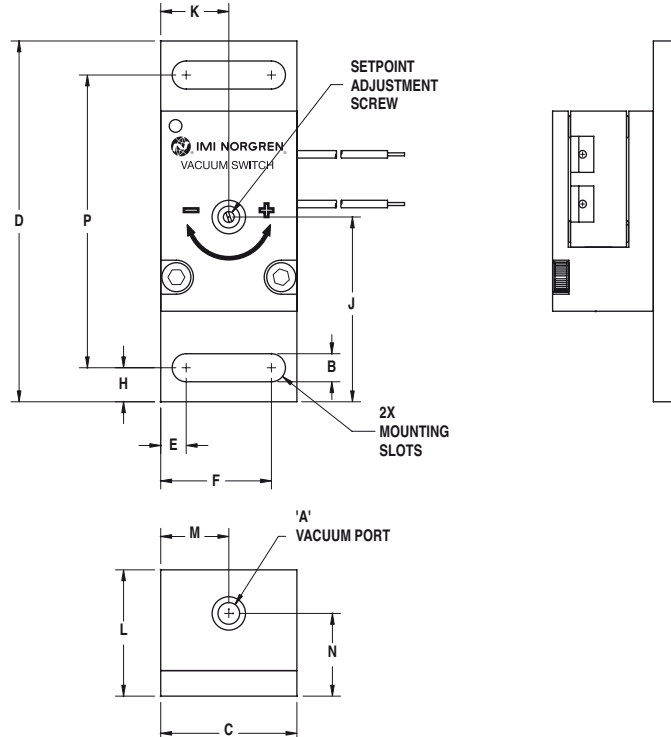


Part Number	Dimensions												Weight oz (g)	Lead Length
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)		
NSX-5	10-32 F (10-32 F)	0.13 (3.30)	1.00 (25.40)	1.47 (37.30)	0.12 (3.00)	0.89 (22.60)	0.25 (6.40)	0.69 (17.50)	0.50 (12.70)	0.74 (18.80)	0.50 (12.70)	0.25 (6.40)	1.50 (43.00)	12 (305)

● Adjustable Mechanical Vacuum Switch: NSX-5SB (Switch with housing and sub base)

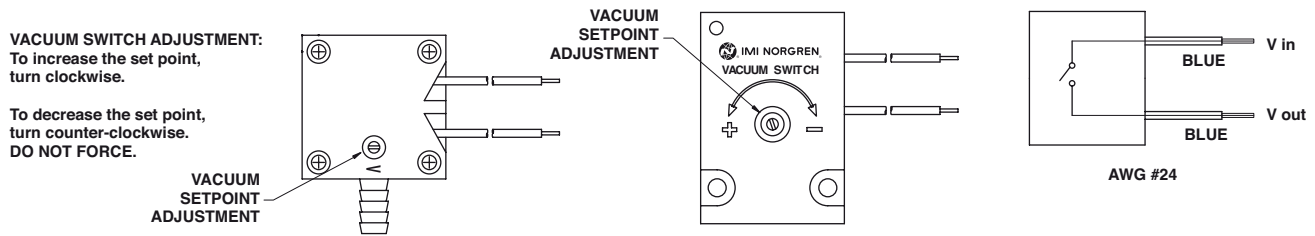


NSX-5SB Switch with housing and sub base



Part Number	Dimensions													Weight oz (g)	Lead Length
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J in. (mm)	K in. (mm)	L in. (mm)	M in. (mm)	N in. (mm)	P in. (mm)		
NSX5-SB	10-32 F 10-32 F	0.21 (5.30)	1.00 (25.40)	2.65 (67.30)	0.19 (4.80)	0.81 (20.60)	0.25 (6.40)	1.36 (34.50)	0.50 (12.70)	0.93 (23.60)	0.50 (12.70)	0.61 (15.50)	2.15 (54.60)	2.10 (60.00)	12 (305)

## ● Wiring Schematic for NVS-5, NSX-5, NSX-5SB



### Important Notice For All NVS-5, NSX-5, NSX-5SB

1. The electrical current flows from one terminal through the rivet to the contact blade and from the other terminal through the rivet to the adjustment blade.
2. The adjustment screw is in contact with the diaphragm and is part of the electrical circuit.
3. To avoid potential shock, use an insulated screwdriver when making adjustments.

## ● NVS-5, NSX-5, NSX-5SB Specifications:

	NVS-5	NSX-5, NSX-5SB
<b>Rated Vacuum Range:</b>	7.4" to 30" Hg (-250 to -1015 mbar)	7.4" to 30" Hg (-250 to -1015 mbar)
<b>Proof Pressure:</b>	N/A	
<b>Burst Pressure:</b>	25 PSI [1.7 bar]	
<b>Media:</b>	Non-Corrosive, Dry Gases	
<b>Switch Type:</b>	Differential Pressure, Mechanical Diaphragm	
<b>Sensing/Switching Material:</b>	Gold Plated, Phosphor Bronze	
<b>Output:</b>	SPST - NO	
<b>Electrical Connection:</b>	2 Wire - 24 AWG 1' [0.3M]	
<b>Hysteresis:</b>	0.5% Full Scale	
<b>Max. Switch Voltage Load:</b>	24VDC/500VAC	
<b>Max. Switched Current Load:</b>	20mA	
<b>Display:</b>	NONE	
<b>Switch Indication:</b>	NONE	
<b>IP Protection:</b>	NONE	
<b>Operating Temperature:</b>	-40°F to 250°F [-40°C to 120°C]	
<b>Operating Humidity:</b>	35 to 85% RH (No Condensation)	
<b>Mechanical Life:</b>	100,000,000 Cycles	
<b>Construction:</b>	GF Polyester/Polyurethane	GF Polyester/Polyurethane/Anodized Aluminum
<b>Fitting/Connection:</b>	3/16" barb	10-32 Female, Face Seal mount
<b>Weight:</b>	0.50 oz (14g)	NSX-4 & 5 - 1.50 oz (43g), NSX-4 & 5SB - 2 oz (57g)
<b>Safety and Environmental Compliance:</b>	RoHS	

How to Specify:

For switch only: Order by model number, i.e. NSX-5

## ● Adjustable Mechanical Vacuum Switch

Compact, sealed vacuum switch for automation and process control applications  
NVSW5A Series

- Hazardous applications
- Wash down applications
- Dust-laden air environment
- High amperage line voltage 120vAC
- Vacuum range 5" to 30"Hg (-170 to 1015mbar)
- Durable – Nema 6 Enclosure (IP65) protection for extremely dirty environments
- Flexible – field adjustable between vacuum ranges
- Easy to install – common electrical connection DIN 43650A
- Safe – UL and CSA Approved
- Versatile – can be wired for normally open or normally closed

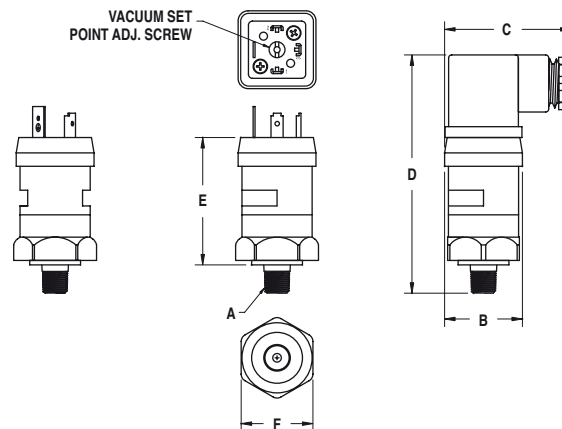


**NVSW5A – High amperage  
line voltage 120vAC**

### Vacuum Switches:

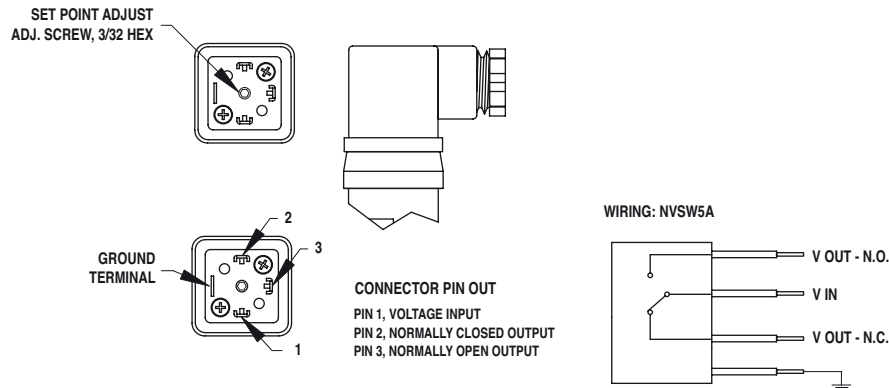
IMI Norgren's NVSW5A is a high-current capacity switch capable of switching line voltage loads from 5 Amps to 125vAC. The sealed vacuum switch is field adjustable from 5 to 28"Hg (169 to 948 mbar). The vacuum level adjustment screw is easily accessed below the DIN connector. Wiring can be either normally open or normally closed.

## ● Adjustable Mechanical Vacuum Switch: NVSW5A



Part Number	Dimensions						Weight oz (g)
	A	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	
NVSW5A	1/8 NPT M 1/8 NPT M	1.22 (31.00)	1.98 (50.30)	3.74 (95.00)	2.00 (50.80)	1.13 (28.70)	4.10 (116.00)

## ● Wiring Schematic for NVSW5A: Set Point Adjustment



1. Remove center screw and DIN adaptor.
2. Place a 3/32" allen wrench into center hole.
3. Adjust counter-clockwise to increase set point, clockwise to decrease set point.
4. When desired setting is met, remove allen wrench and replace DIN adaptor and tighten screw.

## ● VSW5A Specifications:

<b>Rated Vacuum Range:</b>	5" to 30" Hg (-170 to -1015 mbar)
<b>Proof Pressure:</b>	45 PSI (3.1 bar)
<b>Burst Pressure:</b>	350 PSI (24 bar)
<b>Media:</b>	Non-Corrosive, Dry Gases
<b>Switch Type:</b>	Nitrile Diaphragm
<b>Sensing/Switching Material:</b>	N/A
<b>Output:</b>	SPDT
<b>Electrical Connection:</b>	DIN 43650A
<b>Hysteresis:</b>	3" to 4" Hg (-102 mbar to -135 mbar)
<b>Repeatability:</b>	+/- 2% Full Scale
<b>Max. Switched Voltage Load:</b>	12/24VDC, 125/250VAC
<b>Max. Switched Current Load:</b>	5A for 12/24VDC and 125VAC, 3A - for 250VAC
<b>Display:</b>	NONE
<b>Switch Indication:</b>	NONE
<b>IP Protection:</b>	IP65
<b>Operating Temperature:</b>	-20°F to 180°F (-28°C to 82°C)
<b>Operating Humidity:</b>	35 to 85% RH (No Condensation)
<b>Mechanical Life:</b>	100,000,000 Cycles
<b>Construction:</b>	Brass Housing, Nitrate Diaphragm
<b>Fitting/Connection:</b>	1/8" NPT Male
<b>Weight:</b>	4.0 oz. (113g)
<b>Safety and Environmental Compliance:</b>	UL, CSA, VDE and UR

How to Specify:

Order by part number: NVSW5A

## ● Cordsets

For Electronic Vacuum Switches & Sensors  
NQDS Series

- Robotic devices
- Automated assembly devices
- Heavy-duty industrial environments
- IP 67
- Factory installed or field-attachable
- Threaded couplings for harsh environments
- Quick replacement & easy field conversion
- Easy disconnect for system maintenance
- RoHS compliant



Female cordset

Depending on your wiring needs, IMI Norgren offers 5 meter female cordsets for complete wiring systems for quick, easy and safe connection to system controllers, PLC's, and other electronic extension connectors.

### Quick Disconnect Options:

3-Pin, 4-Pin, or 5-Pin Cordsets  
M8 and M12 Threads

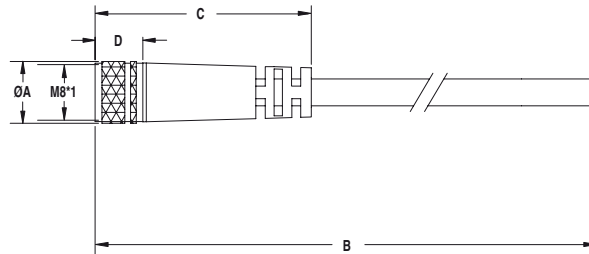
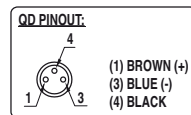
Molded Single End Cordsets				
Model #	Pin Connection	Thread Size	IP Rating	IMI Norgren Sensor/Switch
NQDS-8-3F	3-Pin Female	M8	IP 67	NVTMV-QD-6, NVSMN-QD-6, NVSMP-QD-6, NVXXN-QD-6, NVXXP-QD-6
NQDS-8-4F	4-Pin Female	M8	IP 67	NVDXN-QD-6, NVDXP-QD-6, NVDMN-QD-6, NVDMV-QD-6, NVDMC-QD-6, NVDMV-QD-6
NQDS-12-5F	5-Pin Female	M12	IP 67	NVDSN-QD-6, NVDSP-QD-6

Note: Standard cordset length is 5 meters. Other lengths available. Consult factory.

## ● M8 Single-Ended Cordset – 3-Pin Female



NQDS-8-3F



Part Number	Dimensions				Weight oz (g)
	A in. (mm)	B ft. (M)	C in. (mm)	D in. (mm)	
NQDS-8-3F	0.35 (9.00)	16.40 (5M)	1.26 (32.00)	0.28 (7.00)	4.90 (140.00)

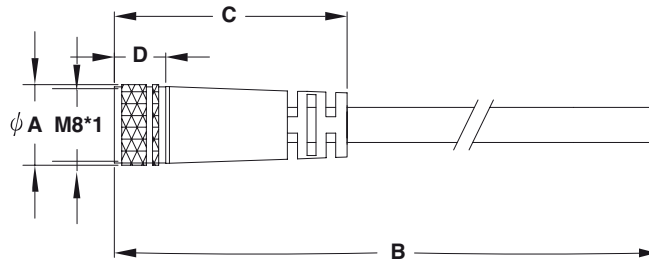
## ● Specifications:

<b>Cable:</b>	Grey, PVC cable jacket
<b>Conductors:</b>	3x #24 AWG [3 x 0.22 mm]
<b>Outside Diameter:</b>	0.177" [4.5mm]
<b>Electrical:</b>	60 VAC/VDC
<b>Amperage:</b>	3A
<b>Environmental:</b>	IP 67
<b>Ambient Operating Temp:</b>	-48° to 176°F [-20° to 80°C]
<b>Cord Length:</b>	5 meters – Consult factory for other lengths

## ● M8 Single-Ended Cordset – 4-Pin Female



NQDS-8-4F



Part Number	Dimensions		C in. (mm)	D in. (mm)	Weight oz (g)
	A in. (mm)	B ft. (M)			
NQDS-8-4F	0.35 (9.00)	16.40 (5M)	1.26 (32.00)	0.28 (7.00)	4.90 (140.00)

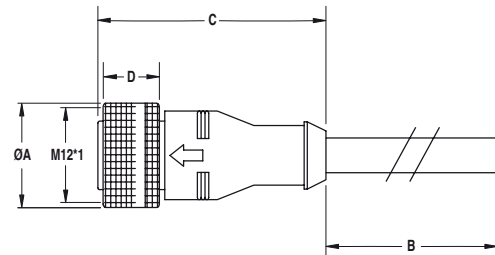
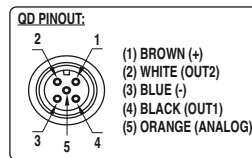
## ● Specifications:

<b>Cable:</b>	Grey, PVC cable jacket
<b>Conductors:</b>	4x #24 AWG (4 x 0.22 mm)
<b>Outside Diameter:</b>	0.177" (4.50 mm)
<b>Electrical:</b>	60 VAC/VDC
<b>Amperage:</b>	3A
<b>Environmental:</b>	IP 67
<b>Ambient Operating Temp:</b>	-48° to 176°F (-20° to 80°C)
<b>Cord Length:</b>	5 meters – Consult factory for other lengths

## ● M12 Single-Ended Cordset – 5-Pin Female



NQDS-12-5F



Part Number	Dimensions		C in. (mm)	D in. (mm)	Weight oz (g)
	A in. (mm)	B ft. (M)			
NQDS-12-5F	0.35 (9.00)	16.40 (5M)	1.26 (32.00)	0.28 (7.00)	4.20 (119.00)

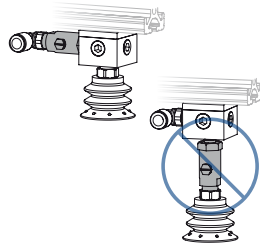
## ● Specifications:

<b>Cable:</b>	Grey, PVC cable jacket
<b>Conductors:</b>	5 x #25 AWG (5 x 0.34 mm)
<b>Outside Diameter:</b>	0.197" (5 mm)
<b>Electrical:</b>	60 VAC/VDC
<b>Amperage:</b>	4A
<b>Environmental:</b>	IP 67
<b>Ambient Operating Temp:</b>	-48° to 167°F (-20° to 80°C)
<b>Cord Length:</b>	5 meters – Consult factory for other lengths

# CHECK VALVES

## ● NVCV Series

- Clamping and vacuum chucking
- Pick & place of heavy loads
- Hold vacuum while molds cool
- Vessel evacuation
- Material handling applications
- Productive – high flow capacity for rapid evacuation
- Safe – minimum flow restriction ensures holding force
- Energy efficient – extremely low cracking pressure <1" Hg (34mbar) reaches vacuum level quickly
- Compact & lightweight – easily mounts to IMI Norgren or non-IMI Norgren vacuum products



Vacuum check valves are not designed to directly support load bearing forces of any kind.

IMI Norgren vacuum check valves seal and hold vacuum for safe, energy efficient operations for clamping, pick & place and vessel evacuation applications. IMI Norgren vacuum check valves are designed specifically for vacuum applications. They offer high flow capacity with minimal flow restriction and feature extremely low cracking pressures of less than 0.5" Hg (16.93mbar). The large unrestricted flow path ensures high flow at low vacuum levels. The low cracking pressure allows the vacuum system to reach its maximum vacuum level before the check valve seals off the system.

With their high flow capacity and low cracking pressure, IMI Norgren vacuum check valves offer rapid evacuation which increases process or production speed and reduces cycle times for more efficient operations.

- Options:  
Optional sensor/switch for positive pressure release
- 3 Body sizes
- 4 Thread sizes – 1/8" to 1/2" NPT



In contrast, most spring-loaded check valves marketed today are designed for high pressure systems and have high cracking pressures. When used in vacuum applications, spring-loaded check valves severely restrict vacuum flow, hindering the performance of the vacuum pump by slowing down evacuation speed and wasting energy.

IMI Norgren vacuum check valves are made of durable anodized aluminum with an internal flexible valve sealing mechanism.

IMI Norgren Vacuum Check Valves may be used with non-IMI Norgren vacuum products.

Part Number	Cracking Pressure	Maximum Vacuum Flow w/ Zero Flow Restriction	Body Material	Valve Material	Operating Temperature	Proper Check Valve/Pump Combination (matched by flow and port size)
<b>NVCV-75-18</b>	4.30" H <sub>2</sub> O (10.70 mbar)	4.0 SCFM (113 lpm)	Anodized Aluminum	EPDM	-20°F to +220°F (-29°C to +105°C)	NHVP-100 NJ Series pumps 60 through 150 NVP Series pumps 60 through 150
<b>NVCV-75-14</b>	4.30" H <sub>2</sub> O (10.70 mbar)	4.0 SCFM (113 lpm)	Anodized Aluminum	EPDM	-20°F to +220°F (-29°C to +105°C)	NHVP-200 VDF 100 and 150 NVP Series pumps 60 through 150
<b>NVCV-100-14</b>	1.60" H <sub>2</sub> O (4.00 mbar)	20.00 SCFM (566 lpm)	Anodized Aluminum	Silicone	-50°F to +392°F (-46°C to +200°C)	NHVP-300 NVDF 20 and 25
<b>NVCV-100-38</b>						NJ Series - 200 and 250 NVP80 Series - 200 and 250
<b>NVCV-100-12</b>						For use with non-IMI Norgren products
<b>NVCV-125-38</b>	2.70" H <sub>2</sub> O (6.70 mbar)	30.0 SCFM (849 lpm)	Anodized Aluminum	EPDM	-20°F to +220°F (-29°C to +105°C)	NJ Series - 200 and 250 NVP80 Series - 200 and 250
<b>NVCV-125-12</b>						NVDF-37 NJ Series 300 and 350 NVP Series 300 and 350



● NVCV Series



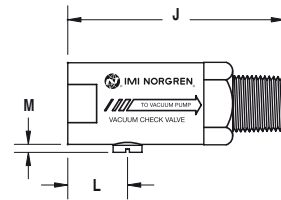
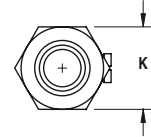
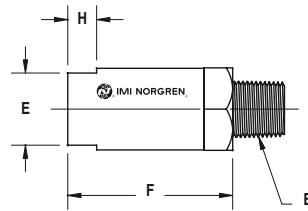
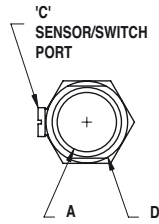
NVCV-75 Series



NVCV-100 Series



NVCV-125 Series



Part Number	Imperial Dimensions (in.)											Weight oz
	A	B	C	D	E	F	H	J	K	L	M	
NVCV-75-18	1/4 NPT F	1/8 NPT M	10-32	0.74	0.63	1.50	0.25	1.90	0.75	0.59	0.25	0.70
NVCV-75-14	1/4 NPT F	1/4 NPT M						1.90				0.80
NVCV-100-14	1/2 NPT F	1/4 NPT M	10-32	0.99	0.88	2.00	0.35	2.50	1.00	0.73	0.25	1.50
NVCV-100-38	1/2 NPT F	3/8 NPT M						2.44				1.40
NVCV-100-12	1/2 NPT F	1/2 NPT M						2.60				1.50
NVCV-125-38	3/4 NPT F	3/8 NPT M	10-32	1.24	1.13	2.00	0.35	2.60	1.25	0.73	0.25	2.50
NVCV-125-12	3/4 NPT F	1/2 NPT M						2.60				2.10

Part Number	Metric Dimensions (mm)											Weight g
	A	B	C	D	E	F	H	J	K	L	M	
NVCVM-75-18	G 1/4	G 1/8	10-32	18.80	15.90	38.10	6.40	48.30	19.10	14.90	6.40	20.00
NVCVM-75-14	G 1/4	G 1/4						48.30				23.00
NVCVM-100-14	G 1/2	G 1/4	10-32	25.10	22.20	50.80	8.90	63.50	25.40	18.40	6.40	43.00
NVCVM-100-38	G 1/2	G 3/8						62.00				40.00
NVCVM-100-12	G 1/2	G 1/2						66.00				43.00
NVCVM-125-38	G 3/4	G 3/8	10-32	31.50	28.60	50.80	8.90	66.00	31.80	18.40	6.40	71.00
NVCVM-125-12	G 3/4	G 1/2						66.00				60.00

How to Specify:

Order check valve by part number i.e. NVCV-125-12.

For metric availability, please consult factory.

# VACUUM GAUGES

Center, Bottom and Panel Mount Styles

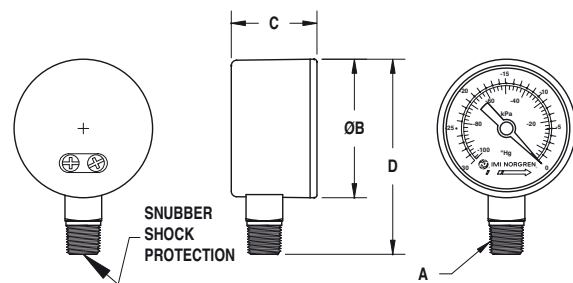
- Accurate monitoring – easy visual confirmation for operator, ensures consistent performance
- Effective diagnostic tool – debug and troubleshoot systems
- Economical – low cost, long life
- Dry or glycerin filled
- 3 mounting positions: bottom mount, center back mount or panel mount
- 2 dial sizes
- Materials available: Black ABS or Steel



IMI Norgren vacuum gauges are used in almost every area of automation including applications in pneumatics, process control, packaging, printing, medical, food and pharmaceutical.

Glycerin filled gauges extend gauge life and increase readability by dampening pulsing and vibration. All glycerin filled gauges feature a stainless steel case and bezel.

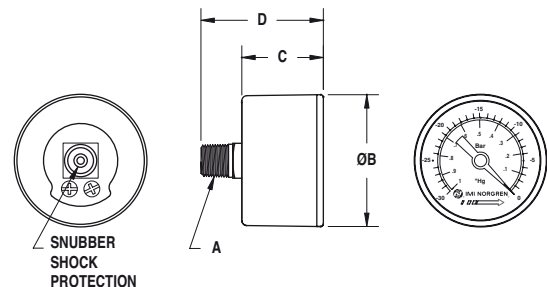
All gauges are protected with a limiting orifice to limit pressure shock. Standard dial faces have a dual scale in "Hg and bar.



## ● Vacuum Gauge: Bottom Mount

Part Number	Type	A Port Connection	B - Face Diameter in. (mm)	C in. (mm)	D in. (mm)	Weight oz (g)
<b>NVG-150</b>	Dry	1/8 NPT	1.62 (41.10)	1.00 (25.40)	2.28 (57.90)	1.50 (43.00)
<b>NVG-150-GF</b>	Glycerin filled	1/8 NPT	1.85 (47.00)	1.10 (27.90)	2.42 (61.50)	2.70 (77.00)
<b>NVG-200-SS</b>	Dry	1/4 NPT	2.28 (57.90)	1.10 (27.90)	3.10 (78.70)	3.10 (88.00)

## ● Vacuum Gauge: Center Back Mount



Part Number	Type	A Port Connection	B - Face Diameter in. (mm)	C in. (mm)	D in. (mm)	Weight oz (g)
<b>NVG-150-CBM</b>	Dry	1/8 NPT	1.62 (41.10)	1.00 (25.40)	1.50 (38.10)	1.60 (45.00)

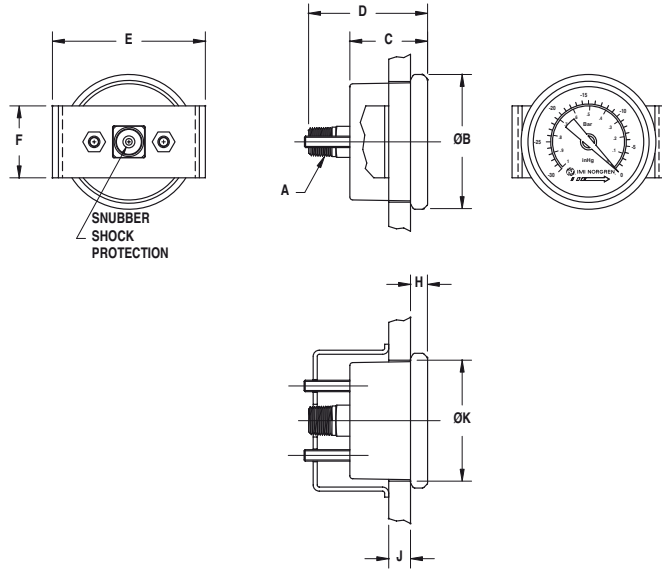
● Vacuum Gauge: Panel Mount



NVG-150-PM/NVG-200-PM



NVG-150-PMG



Part Number	Type	A Port Connection	B - Face Diameter in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)	F in. (mm)	H in. (mm)	J - Max. Panel Thickness in. (mm)	K - Panel Cutout +/- .03 in. (mm)	Weight oz (g)
NVG-150-PM	Dry	1/8 NPT	1.85 (47.00)	1.07 (27.20)	1.64 (41.70)	2.11 (53.60)	0.99 (25.10)	0.24 (6.10)	0.30 (7.60)	1.67 (42.30)	3.30 (94.00)
NVG-150-PMG	Glycerin filled	1/8 NPT	1.85 (47.00)	1.07 (27.20)	1.90 (48.30)	2.38 (60.50)	1.02 (25.90)	0.24 (6.10)	0.80 (20.30)	1.67 (42.30)	3.60 (102.00)

Part Number	Type	Dial Size	Dual Scale Dial Range	Case	Bezel	Crystal	Bourdon Tube	Movement and Connection	Shock Protection	Accuracy
<b>Lower Mount</b>										
NVG-150	Dry	1.50"	0 to 30"Hg (0 to -1 bar)	Black ABS	None	Snap-on polycarbonate	Phosphor Bronze	Brass	0.5mm restrictor orifice	ASME B 40.1 Grade B (±3% of span)
NVG-150-GF	Glycerin filled			Stainless Steel	Stainless Steel	Polycarbonate				
NVG-200-SS	Dry	2.00"								
<b>Center Back Mount</b>										
NVG-150-CBM	Dry	1.50"	0 to 30"Hg (0 to -1 bar)	Black ABS	None	Snap-on polycarbonate				
<b>Panel Mount</b>										
NVG-150-PM	Dry	1.50"	0 to 30"Hg (0 to -1 bar)	Stainless Steel	Stainless Steel	Polycarbonate				
NVG-150-PMG	Glycerin filled									

Please note: Gauges should be ordered by model number as a separate line item as they are individually packaged for protection during shipping. For material availability, please consult factory.

# IN-LINE VACUUM FILTERS

- High flow – no restrictions, maximum operating efficiency
- 10 Micron filtration – protects pumps and equipment from dirt and dust
- 10 Models and sizes – fit most manufacture's vacuum pumps and models
- Easy to install and service – without removing from production line
- Economical – pleated element's large surface area provides longer filter life. Low-cost replacement elements available.
- Reliable, durable and worry-free operation – protects pumps, valves, and equipment from dirty, dusty environments
  - Long Life
  - Longer service time
  - Less maintenance
  - Low operating costs



## In-Line Vacuum Filters

Add IMI Norgren's compact in-line vacuum filters to vacuum lines or air-supply lines to trap dirt and debris from entering the process, or to the exhaust port to capture airborne contaminants.

IMI Norgren's pleated-element design offers a filter with significantly longer life and much higher flow capacity than non-pleated, porous plastic designs. The large surface area increases filter life while reducing maintenance costs.

Ideal for use in dirty, dusty applications:

- Material handling equipment
- Printing
- Paper and pulp
- Wood chips
- Powder and plastic dust

The durable injection molded nylon and polycarbonate construction of the NVF models and the metal construction of the NVFC-1500F handle the most challenging environments. The 10-micron paper filters are rated for full vacuum to 150 PSI (10 bar) pressure.

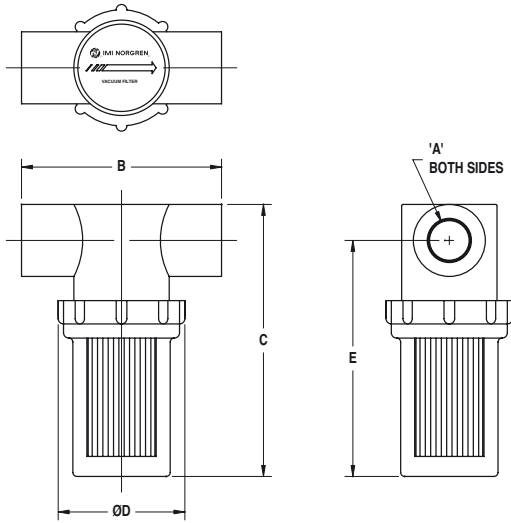
You can use IMI Norgren inline-filters in conjunction with any manufacturer's vacuum pumps.

**Please Note:** Under normal conditions, IMI Norgren's unique single-stage pumps do not require vacuum filters for maximum operating efficiency.

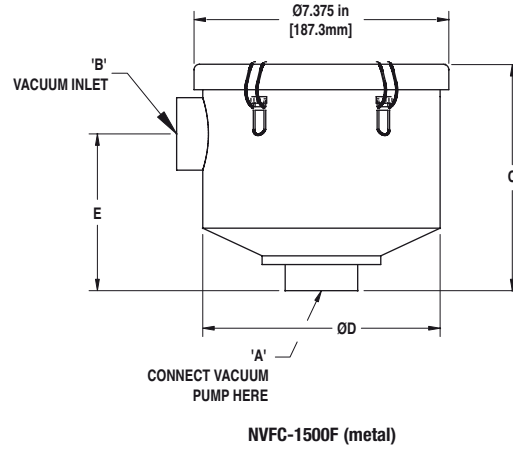
### Filter Options:

- Low (short) and tall (long) profiles
- Male and female NPT connections
- Plastic or metal filters

● Dimensions



NVF models (nylon/clear polycarbonate)



Model #	Dimensions					Weight oz (g)	Housing	Replacement Elements oz (g)
	A in. (mm)	B in. (mm)	C in. (mm)	D in. (mm)	E in. (mm)			
NVF125LPF	1/8 NPT F	3.00 (76.20)	2.40 (61.00)	1.90 (48.30)	1.97 (50.00)	1.90 (54.00)	Nylon & Clear Polycarbonate	RE1 - 3 Pack 0.80 (24.90)
NVF125LPM	1/8 NPT M	3.04 (77.20)	2.40 (61.00)	1.90 (48.30)	1.97 (50.00)	1.90 (54.00)		
NVF250LPM	1/4 NPT M	3.04 (77.20)	2.40 (61.00)	1.90 (48.30)	1.97 (50.00)	2.00 (57.00)		
NVF250LPF	1/4 NPT F	3.00 (76.20)	2.40 (61.00)	1.90 (48.30)	1.97 (50.00)	2.00 (57.00)		
NVF375LPM	3/8 NPT M	3.04 (77.20)	2.40 (61.00)	1.90 (48.30)	1.97 (50.00)	2.00 (57.00)		
NVF250F	1/4 NPT F	3.00 (76.20)	3.77 (95.80)	1.90 (48.30)	3.38 (85.90)	2.00 (57.00)		
NVF375F	3/8 NPT F	3.00 (76.20)	3.79 (96.30)	1.90 (48.30)	3.20 (81.30)	2.00 (57.00)		
NVF500F	1/2 NPT F	3.58 (90.90)	5.06 (128.50)	2.93 (74.40)	4.46 (113.30)	5.60 (159.00)	RE2 - 3 Pack 3.70 (115.10)	
NVF750F	3/4 NPT F	3.58 (90.90)	5.06 (128.50)	2.93 (74.40)	4.46 (113.30)	5.60 (159.00)		
NVF1000F	1 NPT F	4.94 (125.50)	6.50 (165.10)	4.10 (104.10)	5.59 (142.00)	7.80 (221.00)	RE3 - 3 Pack 7.00 (217.70)	
NVF1500F	1 1/2 NPT F	5.08 (129.00)	8.06 (204.70)	4.10 (104.10)	6.94 (176.30)	7.80 (221.00)	RE4 - 3 Pack 7.20 (223.90)	
NVFC-1500F	1 1/2 NPT F	1 1/2 NPT F	7.31 (185.70)	6.81 (173.00)	6.50 (165.10)	4lb 5oz (2.0kg)	Metal	RE-848 - 1 Pack 14.60 (454.10)

How to Specify:

When ordering specify model number: NVF1500F.

Consider size of tubing, fittings and pump. Consult factory for assistance.

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## Warning

These products are intended for use in industrial systems only. Do not use these products where pressures and temperatures can exceed those listed under Specifications.

Before using these products with fluids other than those specified, for nonindustrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure modes.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided. System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products, or posted on the Norgren website under "Downloads." System designers should also provide for all OSHA requirements including Title 29 CFR 1910.147 Lockout/Tagout.

It should be recognized that warnings are valid for any product, regardless of manufacturer, and are not restricted to products manufactured by Norgren. Norgren's reputation for product quality and performance is well established. We feel we have the additional obligation to provide information or warnings to customers to assist them in applying our products in a reasonable and safe manner.

**Proposition 65:** These products may contain chemicals known to the state of California to cause cancer, or birth defects, or other reproductive harm.

## Warranty

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- 2** CYLINDRICAL VENTURI VACUUM PUMPS 
- 3** VARIABLE VACUUM PUMPS 
- 4** HIGH FLOW VACUUM / BLOWER PUMPS 
- 5** MATERIAL TRANSFER VACUUM PUMPS 
- 6** VACUUM CUPS & FITTINGS 
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