# MATERIAL TRANSFER VACUUM GENERATORS

The NDF Series of high flow material conveying vacuum generators provide a simple, reliable, and cost effective method of in-line transfer of bulk materials, complex shapes, individual objects, selvedge. The NDF generator'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 generator at high speeds without interference or clogging.





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through

design



# 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 Generators







# NDF

MATERIAL TRANS

FER

GENERATORS

- 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 generator
   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 Generator Body: Anodized Aluminum



# Standard Models

Part Number	Inline Fitting	Swivel Elbow Fitting	Recommended Air Supply Line	Recommended Transfer Hose		
	H					
NDF13-VSES-M01	124250418	124470418	1/4"	1/2" ID		
NDF23-VSES-M01	124250418	124470418	1/4"	3/4" ID 3/4" ID		
NDF36-VSES-M01	124250618	124470618	3/8"			
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

<ul> <li>Option selector</li> </ul>		<u>NDF★-★★-★★★-M★</u>
Series	Substitute 🚽	
NDF (Imperial Thread)		
NDFM (Metric Thread)	М	
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 ◄	<u>t</u>
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
04 stainless steel	M06
316 stainless steel	M07
316L stainless steel	M08
VC	M09
lack Acetal (Delrin®)	M10
Vhite Acetal (Delrin®)	M11
PTFE (Teflon®)	M12
PEEK	M14

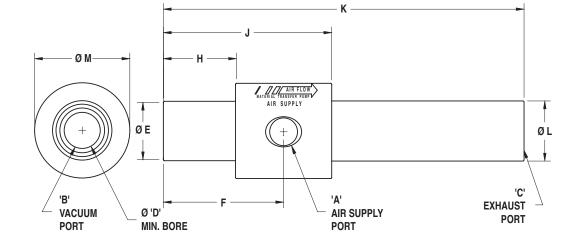
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'303 stainless steel only available for NDF-13,23, and 36 generators







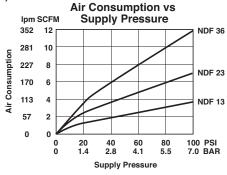


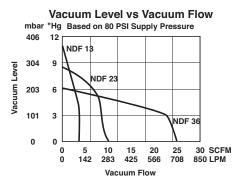
Model	A	B Optional Male Vacuum Thread	C Optional Male Exhaust Thread	B Optional Female Vacuum Thread	C Optional Female Vacuum Thread	D Minimum Bore	E	F	н	J	K	L	Μ	Weight lb / oz (kg)
NDF13	1/8 NPTF	1/8 NPT	1/8 NPT	1/8 NPT	1/8 NPT	0.15	0.48	1.00	0.50	1.50	3.00	0.49	0.99	1.5oz
(NDFM13)	(G1/8)	(G1/8)	(G1/8)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

\*Note: Consult factory

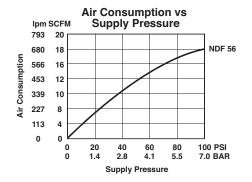


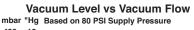
#### NDF13, NDF23, NDF36

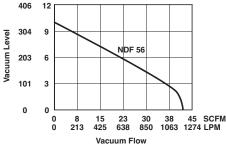


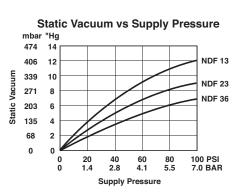


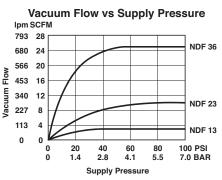


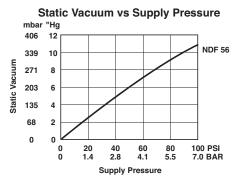


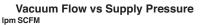


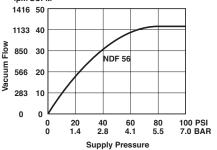












Operating Note: Above 40 PSI [2.7 bar], the increased energy consumed through rising air consumption is converted into increased vacuum level while vacuum flow stays constant. It is the vacuum flow that provides the motive force for the materials to be transferred. Higher vacuum levels are useful when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

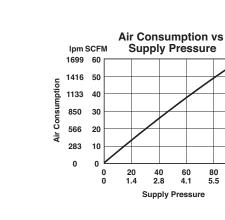
Note: Performance Charts represent average performance data. For reference only.

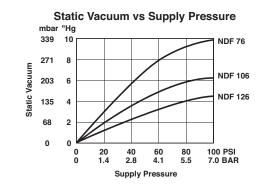


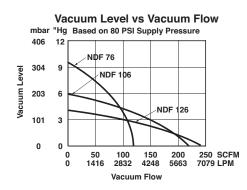
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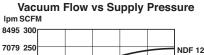


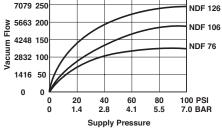
#### NDF76, NDF106, NDF126











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NDF 126 NDF 106 NDF 76

100 PSI 7.0 BAR

80

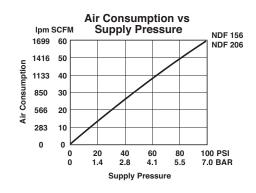
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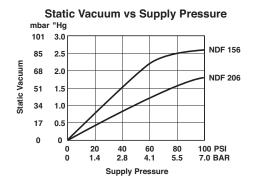
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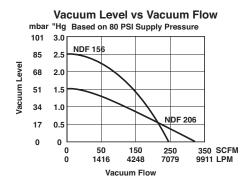




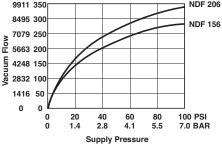
#### NDF156, NDF206







Vacuum Flow vs Supply Pressure Ipm SCFM 9911 350 NDF 206



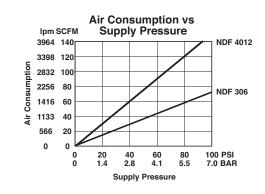
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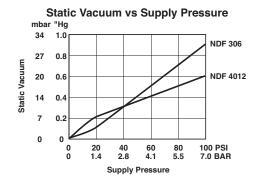
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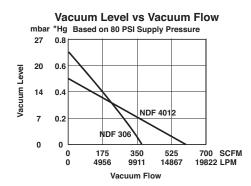


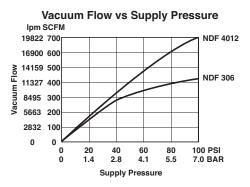


#### NDF306, NDF4012









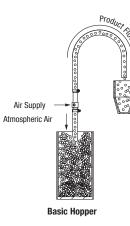




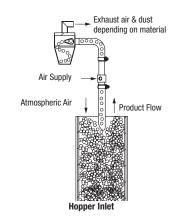
# General Application Information

Sizing the correct NDF material transfer generator 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.

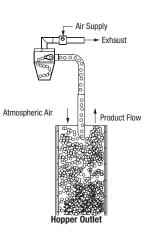
#### **Transfering Bulk Materials:**



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



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.



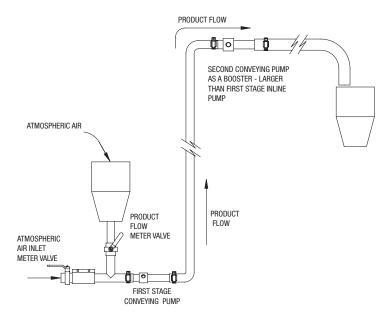
The NDF generator creates a vacuum in the collection hopper causing the material to flow up

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 generator exhaust.



Hopper to Hopper Butterfly Extended Distance

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

#### Caution

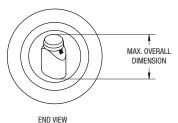
When conveying materials through plastic transfer lines, you must ground the transfer line to dissipate the static charge that develops from the friction of the air and material flowing over the transfer line surface.



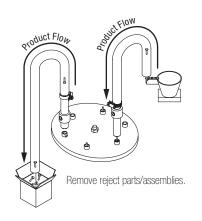




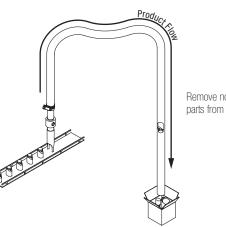
#### **Transfering Bulk Materials:**



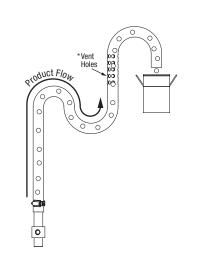
To size a NDF generator for transferring individual items, choose the generator with an inside diameter just slightly larger than the largest dimension of the object.



Load parts for assembly from a vibratory bowl feeder.



Remove non-conforming parts from conveyor line.



**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.

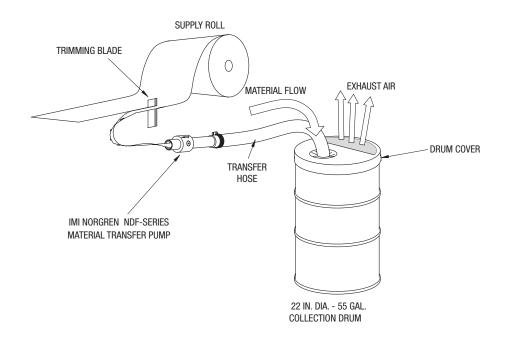
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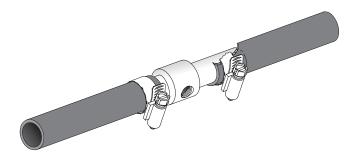


#### Trim, Selvedge and Fiber Collection:



#### **Installation Options**

For simple applications, place the NDF generator in the transfer line, slip the transfer hose over the outside diameter of the generator 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.



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