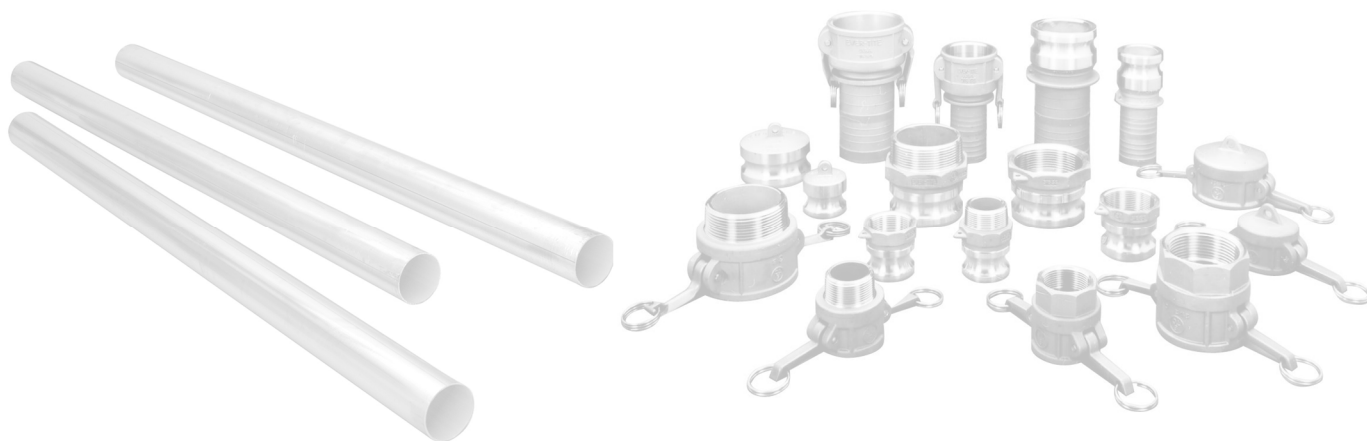


COMPONENTS CATALOG



NATIONAL BULK EQUIPMENT, INC.

12838 Stainless Drive • Holland, MI 49424

Phone: (616) 738-7234 • Fax: (616) 399-7365

E-mail: sales@nbe-inc.com

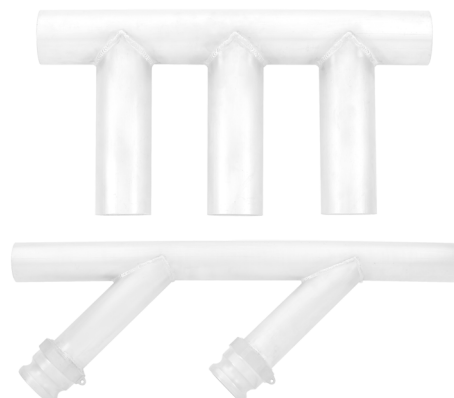


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Tubing & Pipe Straights



Most sizes in stock everyday.

Most of our straights come in 20' sections. Cutting is available to your specification.

Tubing is measured by the outside diameter (OD) and the wall thickness by gauge (GA). Our common tubing sizes range from 1.50" to 8.00" in 11, 14 and 16 gauges. Other sizes are also available upon request.

Pipe is measured by the inside diameter (ID). Standard pipe straights are available in schedule 5, 10 and 40 wall thicknesses.

Available in

Aluminum Carbon Steel Stainless Steel

TUBE GAUGE	WALL THICKNESS
16 GA	.065"
14 GA	.083"
11 GA	.120"

Aluminum is 6063-T1 extruded. Carbon Steel ASTM A53 for pipe and A513 for tubing. Stainless Steel T304 ASTM A312 for pipe and T304 ASTM A249 for tubing.

Special Options Available

- Ceramic Lining
- Directional Shot Peening
- Spiral Grooving
- Polishing

Instalok Dust Caps

Utilizes the same unique clamping design as the Instalok coupler. Great for covering unused handling lines. They are non-permanent and reusable.



Caps

Made of flexible PVC and can be used on multiple kinds of materials. Aluminum caps are also available.



Plugs

Made of rubber and are an effective method for plugging open ended tube. Also works as a tube dust cover.



Elbows

Common Elbow Sizes

Other sizes are available. Contact us for a quote.

TUBE SIZE (OD)	CENTER LINE RADIUS (CLR)	STD TANGENT (ST)
1.50"	6,12,18,24,30,36	4"
1.75"	6,8,9,10,12,15,24 30,36	4"
2.00"	6,8,9,10,12,18,24 30,36,48	4"
2.25"	8,9,10,12,15,18,24 30,36,48	4"
2.50"	9,12,15,18,24,30,36	5"
3.00"	9,12,18,24,30,36,48	6"
3.50"	12,15,18,24,30,36,48	7"
4.00"	12,18,24,30,36,48	8"
4.50"	12,18,24,30,36,48	8"
5.00"	30,36,48,60,72	10"
6.00"	30,36,48,60,72	12"
8.00"	30,36,48,60,72	16"

Degrees Available: 90, 60, 45, 30

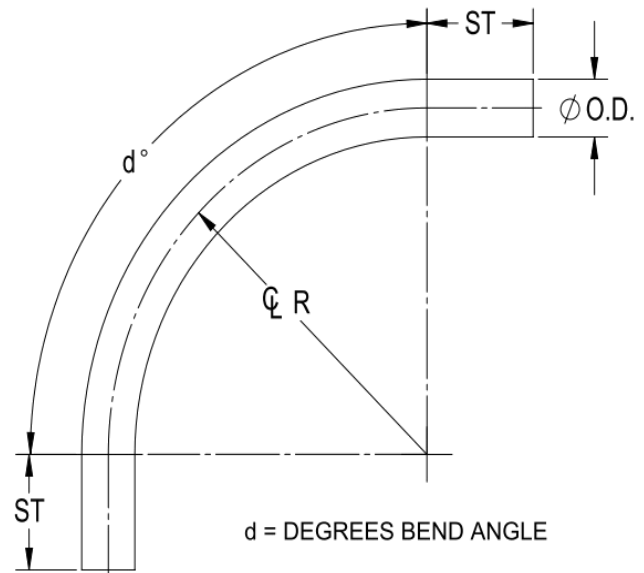
Pipe elbows are also available.

We have a large range of short to long radius elbows available. Many sizes are stock. Specify the following when ordering:

- Material: Aluminum, Carbon Steel, or Stainless Steel
- Size of tube or pipe (OD or ID)
- Degree of bend
- Center-Line Radius
- Wall thickness by gauge or schedule



TUBE	WALL
16 GA	.065"
14 GA	.083"
11 GA	.120"



Note: For conveying material we recommend 12" Φ radius for every 1" line size O.D.

Example: 1" O.D. = 12" Φ radius
 2" O.D. = 24" Φ radius
 2.5" O.D. = 30" Φ radius

Compression Couplers

Common Coupler Sizes

Other sizes are available, including pipe sizes.

Our compression couplers are made of rust and corrosion resistant, heavy gauge, zinc-plated carbon steel.

Easy to install compression couplers for joining threaded and unthreaded pipe, tubing, conduit and PVC pipe.



How to Order Specify the following:

- Tube or Pipe Size
- Specify gasket material:
 - Black Neoprene (standard)
 - White Neoprene
 - Red Silicone
- Coupler Length: 4", 6", or 8"
- Gasket Protector: yes or no

TUBE SIZE LINE (OD)	NUMBER OF BOLTS	COUPLER LENGTH	GASKET
1.50"	2	4"	STANDARD: Black neoprene gasket with stainless steel static strip. This gasket is rated for a continuous heat exposure of 185°.
1.75"	3	6"	
2.00"	2	4"	
2.25"	3	6"	
	4	8"	
2.50"	2	4"	
	3	6"	
	4	8"	
3.00"	2	4"	
	3	6"	
	4	8"	
3.50"	2	4"	
	3	6"	
	4	8"	
4.00"	3	6"	OTHER OPTIONS: <ul style="list-style-type: none"> • White neoprene gasket (food grade) • Red silicone high temp. gasket (500° F) • Stainless steel gasket protector (recommended with abrasive bulk material) • Other gasket materials are available, contact us for a quote.
	4	8"	
4.50"	3	6"	
	4	8"	
5.00"	3	6"	
	4	8"	
6.00"	3	6"	
	4	8"	

ALSO AVAILABLE:

- Stainless steel couplers
- Replacement gaskets
Specify gasket type, tube size (OD) and coupler length when ordering.



Side-Band Couplers

Effective when line vibration is a problem, and on plastic tube.

Improved axial-force holding power to connect or repair threaded or unthreaded pipe and tubing.

Conversion kits are available to convert your standard couplers.

Instalok™ Couplers

Instalok couplers provide the benefit of easy installation due to the two O ring and bolt design.

Specify tube size (OD) and length when ordering.



Gripper™ Couplers

A fast, easy way to connect tubing or pipe. Simply place over tubing sections utilizing the wrap around design and tighten the handy wing nut. Gripper™ couplings are available in a wide range of sizes and also with dual grippers.

All stainless steel construction.

Gum rubber or silicone gaskets available.



Sight Glasses

These connections give you a convenient way to visibly inspect and verify the flow in your tubing at various points.

Available in a full range of sizes and lengths.

Made of aluminum or stainless steel tubing and cast acrylic resin.



Flex Hose



Style A

Clear Flexible Material Handling Hose

Made of clear PVC material for pneumatic dry material transfer systems. Ideal for use in conveying powders, pellets, granules and most food grade materials. Complies with FDA and USDA requirements.

- Standard Lengths: 50' & 100'
- Temps:
-4°F to 150°F (static cond.)
14°F to 104°F (constant cond.)



Style B

Clear Flexible Material Handling Hose with Static Wire

A smooth bore, clear PVC, dry material handling hose for use in pneumatic conveying systems. Features an embedded static wire for grounding. Complies with applicable FDA requirements.

- Standard Lengths: 50' & 100'
- Temps:
-4°F to 150°F (static cond.)
14°F to 104°F (constant cond.)



Style U2

Polyurethane-Lined Abrasion-Resistant PVC Material Handling Hose

Made with heavy duty polyurethane lining that provides excellent abrasion-resistance. Blue HMW PVC convoluted cover formulated with static-dissipative compound, which also provides sub-zero flexibility.

- Standard Lengths: 50' & 100'
- Temp: -40°F to 150°F

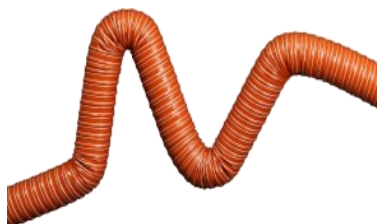


Style 2001

Clear Flexible Material Handling Hose with Polyurethane Lining

Heavy duty clear polyurethane lined food grade material handling hose with embedded static wire for grounding. Used for pneumatic dry food transfer systems.

- Standard Length: 60'
- Temps:
-4°F to 150°F (static cond.)
14°F to 104°F (constant cond.)



Style SIL2

Silicone High Temp. Hose

Two-ply silicone coated fiberglass hose with a helically-wound spring steel wire imbedded between the two piles. Resists extreme temperature. Standard duct for high temperature air flow and fume removal. ID ranges from 1" to 12".

- Standard Length: 12'
- Temps: -75°F to 500°F (intermittent to 600°F)

Hose Clamps



Spiral, double bolt clamp recommended for use with most ribbed style hose. Both left spiral and right spiral clamps available.



All purpose worm drive power clamps are designed for use with all hoses and many other clamping applications. Specify size range when ordering.

Other hose types are available.

Cam-Locking Couplers

A— MALE ADAPTER

Male adapter with female thread.



B— FEMALE COUPLER

Female coupler with male thread.



C1— RIBBED SHANK FEMALE COUPLER

For use with flex hose.



E1— RIBBED SHANK MALE ADAPTER

For use with flex hose.



D— FEMALE COUPLER

Female coupler with female thread.



F— MALE ADAPTER

Male adapter with male thread.



V— DUST CAP

For use with male coupler



W— DUST PLUG

For use with female couplers



Security Chains

8CMCHAIN 6" (standard)

8CMCHAIN-L 12"



The following sizes are in stock in aluminum for the above items: 1.50", 2.00", 2.50", 3.00", 4.00" & 5.00"

Other sizes are available.

Stainless steel and brass are also available.

Specify tube size (OD) and camlock style when ordering.

C2 — STRAIGHT SHANK FEMALE COUPLER*

Use when connecting to rigid line
with the use of a compression coupler.



E2— STRAIGHT SHANK MALE ADAPTER*

Use when connecting to rigid line
with the use of a compression coupler.



FC— MALE COUPLER**

Affix to end of rigid tube.



BC— FEMALE ADAPTER**

Affix to end of rigid tube.



Replacement camlock gaskets are also available.

* Custom tube stubs available. For example, we can fabricate a 2.50" camlock with a 2.00" stub.

**Self-Compression adapter and coupler complete with nut and washer. Styles FC and BC are only available in aluminum sizes: 1.00", 1.50", 2.00", 2.50", 3.00"

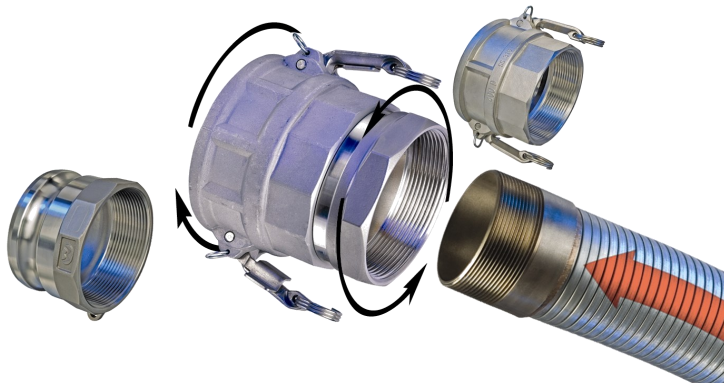
Metal Hose

Smooth or Rough Bore Hose

Smooth bore (lined) hose is packed with cotton cord to control residual air leakage while maintaining flexibility.

The smooth inner lining produces less friction, uses less energy, and provides greater flexibility.

Rough bore (unlined) is a dry bulk material handling hose that provides higher flow rates than rubber hose without product contamination.



Galvanized material is rated to a max temp of 750°F.

Stainless steel material is rated to a max temp of 1,500°F.

How to Order

Specify the following:

- Stainless Steel or Galvanized
- Inside diameter (ID) of the hose
- Light Duty, Medium Duty, or Heavy Duty
- Smooth or Rough Bore
- Specify if you need end fittings and what type needed. Our most common options are tube stubs and/or camlocks.

Packed and Unpacked Hose

We offer both packed and unpacked hoses. Our packed hoses are more commonly recommended for powder products. Please ask one of our specialists for more details.

Specifications

Light Duty:

For lightweight transfer of dry bulk materials. Commonly used on 2.00", 2.50", or 3.00" ID lines. Not recommended for use with lines above 6.50". Minimum bend radius = hose ID x 7.5.

Medium Duty:

Use with dry bulk materials. Medium duty hose is recommended for moderate handling. Commonly used on line sizes of 3.00" or larger ID. Minimum bend radius = hose ID x 9.

Heavy Duty:

Made stronger for services involving moderate to heavy material handling. Minimum bend radius = hose ID x 9.

Adapters

How To Order

Specify the following:

- Adapter type as seen below
- Outside diameter (OD)
- Type of material
- Degree (if applicable)
- Wall thickness
- When ordering line size adapters, specify line size OD of both dimensions
- When ordering a parallel lateral please specify the Center-to-Center distance

Specifications

Common sizes:

1.50", 2.00", 2.50", 3.00", 3.50", 4.00", 5.00", 6.00", 8.00"

Materials:

Aluminum, Carbon Steel, or Stainless Steel

Degrees:

30°, 45°, 60° for lateral adapter, parallel adapter, and WYE adapter.

Wall thickness:

Gauge: 16, 14, 11

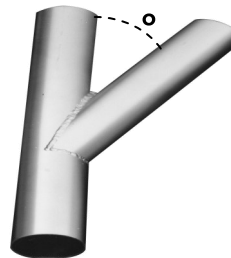
Schedule: 5, 10, 40



Cross Tee



Drop Tee



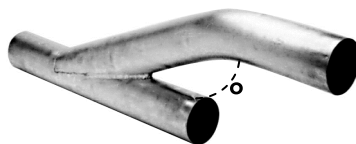
Lateral Adapter



Line Size Adapter



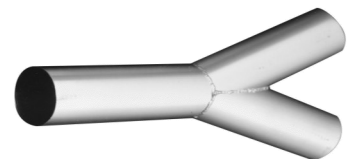
Mitered 90° Adapter



Parallel Adapter



TEE Adapter



WYE Adapter

Abrasion Resistant Elbows

Ceramic-Lined Elbow

Ceramic-lined elbows have a uniform coating of a specially formulated ceramic material that is added to the inside diameter of the bend to give it a very hard, slippery, glass-like surface.

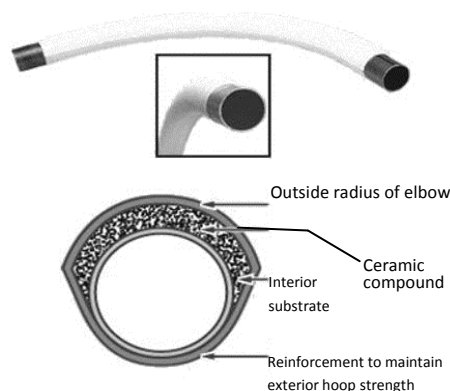


The hardness of the ceramic coating is between 5 and 6 on the Mohs Scale—as hard as glass and just as smooth. These lined elbows are used in pneumatic systems for conveying highly abrasive materials helping to reduce material loss, wear, and maintenance labor.

Ceram-Back Elbow

The “Ceram-Back” elbow has a jacket across the back of the core elbow which is approximately 1/2” of ceramic compound.

This compound has a hardness of 9+ on the Mohs Scale. Once the outer core elbow has worn through, the abrasion is then transferred to the ceramic outer jacket.



Glass Elbow

We offer glass bends for applications requiring extended wear life beyond that experienced with standard stainless steel bends. Ideal for transmitting highly abrasive plastic pellets and similar abrasive materials. Ask a sales associate about the available sizes and specs.



Heavy Duty Smart Elbow

The Heavy Duty Smart Elbow has been specially designed for abrasive conveying.

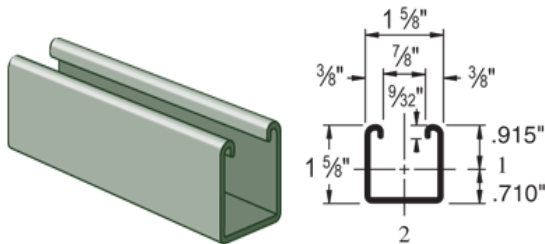
By creating a deflection zone, the Smart Elbow virtually eliminates elbow wear. Its unique design saves space, time, and unnecessary costs.



Unistrut

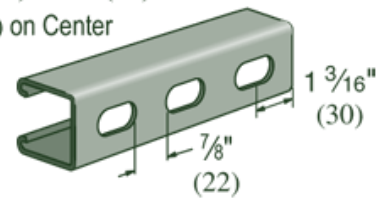
NBE offers Unistrut metal framing components for mechanical support of pneumatic dry bulk material conveying. We offer a full line of Unistrut components for your bulk conveying applications. Our components include steel channel, spring-loaded nuts, threaded rod, beam clamps, and pipe and tube clamps.

1-5/8" Channel (Rigid) *Channels are roll formed from 12 gauge strip steel. Available in 10 and 20' lengths.



Rigid Channel

Slots are
1 1/8" (29) x 9/16" (14)
2" (51) on Center

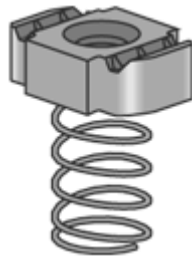


Slotted Channel

3/8" Spring Loaded Nuts

Unistrut nuts are manufactured from mild steel bars and case hardened.

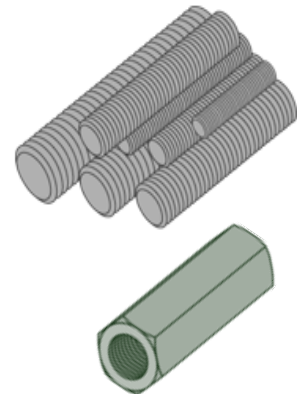
Hardening assures positive biting action into the in-turned edge of the Unistrut channel.



3/8" Threaded Rod

Available in standard 6' or 12' lengths.

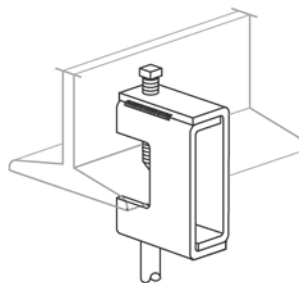
Coupler nuts available to provide for longer rod lengths.



Beam Clamps

Punch press formed from hot rolled P&O plate steel.

Designed for light duty rod suspension up to 250 pounds. For use with beams having less than 5/8" flange.

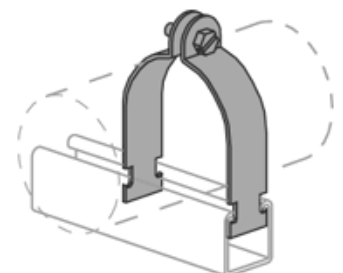


Pipe and Tube Clamps

These pipe clamps are punch press formed from hot rolled P&O strip steel.

Available for use with tube OD sizes from 1/4" to 8-5/8".

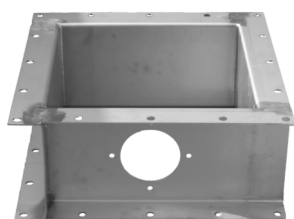
Specify O.D. of pipe or tube when ordering.



Air Boxes, Probes, & Wands

Air Boxes

Weather resistant aluminum Vacuum Line Distribution Boxes are easy to install on any bin, silo, or hopper with the flexibility to expand to accommodate future needs. Each air box comes with hardware, gaskets and a cover. We also offer stainless steel.



OUTLETS	OVERALL HEIGHT	OPENING O.D.	FLANGE O.D.
13 Hole	20"	12" Sq.	16.25" Sq.
9 Hole	16"		
4 Hole	13"		
3 Hole	9.5"		
2 Hole	6.5"		
1 Hole	6.5"		

Horizontal Vacuum Line Hook-Up Probes



Our probes are supplied with an adjustable air intake control collar with screened parts to protect from material loss and contamination.

Heavy gauge aluminum and stainless steel are available.

Available in standard sizes for material discharge from air boxes: 1.50", 2.00", 2.50", 3.00", 4.00", 5.00", or 6.00".

Vertical Wands

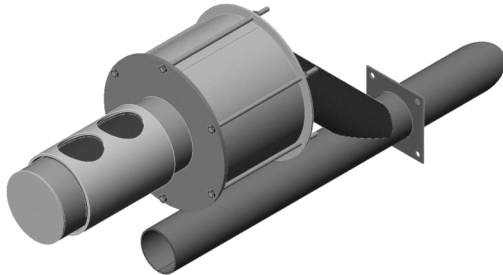
For vacuum evacuation of material from drums, boxes, and containers. Vertical wands are fitted with air inlets for regulating material flow. Heavy gauge aluminum is standard. Stainless steel also available.

We have several sizes available in stock.



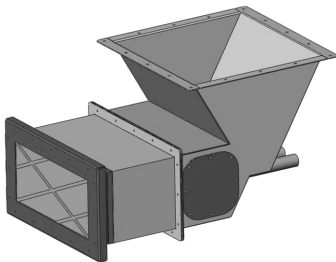
In-Line Air Adjustments

The adjustable air intake control are screened to protect from material loss and contamination. Replacements are available upon request.



Powder Air Probe

The Powder Air Probe is a probe with a check valve that prevents blow-back of fine powders from the probe's adjustable air intake control collar into the process area. It is designed for use in a single or multiple hole air box and may be required for vacuum applications where dusty, fluidized materials are conveyed.



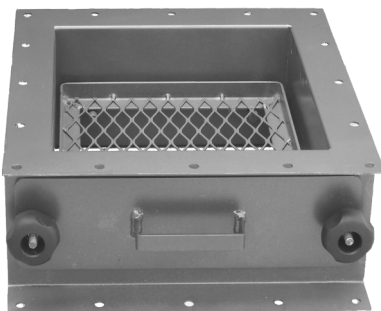
Hepa Filter Air Box

This vacuum line distribution box design pulls filtered air through your intake to keep conveying line air free of contaminants. The Hepa Filter removes 99.97% of all particles greater than 0.3 micrometer from the air intake.



Pass Through Probe Box

This design uses probes that pass completely through the air box. The air intake pulls air from the back of the line creating more force.



Discharge Trap

Angel Hair Trap

If you have a problem with angel hair (stringers or plastic fragments) in your process, an angel air trap can contain them.

The angel hair trap's 12" opening and 16.25" flange makes it easy to add inline to your process. The tray is removable for easy cleaning.

The In-Line Trap has a clear view cover for easy view and clean out. They connect to lines using a standard compression coupler.



Inline Trap

Slide Gates

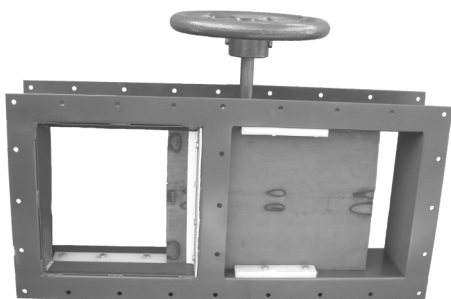
Manual Slide Gates

Rack & Pinion and Manual Slide Gates are provided for use with silos, bins, and hoppers.

Square flanged design allows for easy bolt on installation.

Transitions are available for square-to-round applications. We can customized to your needs.

Housings are constructed of welded mild steel, sand blasted and coated with a durable enamel finish. Stainless steel is also available.



Rack & Pinion Slide Gate



Manual Slide Gate

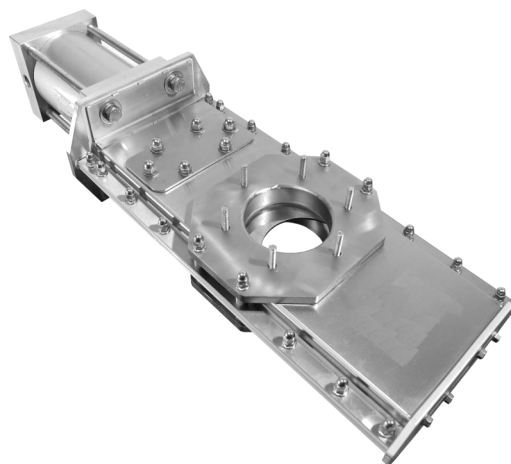
Pneumatic Slide Gates

The pneumatic actuated Slide Gate is for vacuum or low pressure conveying systems. It comes with a 150lb pipe-flange pattern with tapped holes for mounting between flanges.

Housings are constructed of welded mild steel, sand blasted and coated with a durable enamel finish. Stainless steel or aluminum are also available.

Formed from galvanized steel on smooth nylon runners insuring long life and smooth operation.

Sizes available: 2", 3", 4", 6", 8", 10", 12", 14", or 16".



Diversers

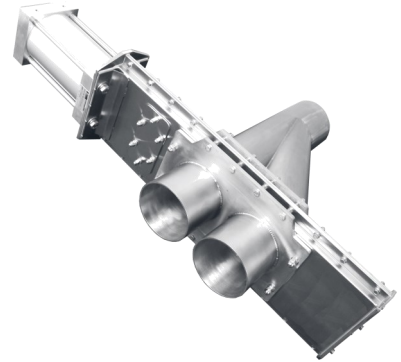
Two-Way Wye Line Diverter

The Wye Line Diverter is a unique valve design concept for pneumatic conveyor systems handling dry bulk materials. Straight line diverters are also available.



Each offers a leak tight design, low installation weight, automatic operation, totally enclosed actuating mechanisms and is economical in cost.

Positive sealing is available. There are additional options for specific customizations.



Gravity Flow Diverter Valves

AD Diverter is designed for gravity flow applications of dry aggregate materials.

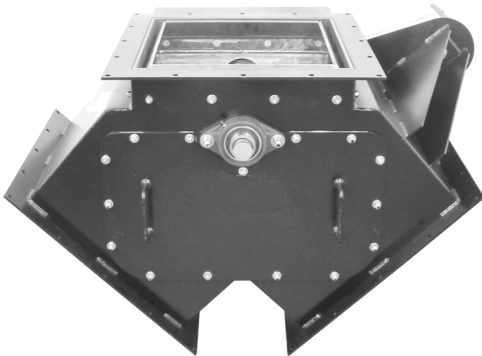
Sizes from 6" to 24".

Heavy duty carbon steel construction .

Standard magnetic piston cushioned air cylinder.

"Y" or straight configuration · 45 degree leg standard.

Access door for maintenance and inspection of valve .



Manifolds & Transitions

Manifolds

We have a wide array of pneumatic conveying manifolds at NBE, all customizable and all able to fit into the application that you are looking for. We can help decide whether you need a stock or custom pneumatic manifold.

Materials Available:

- Aluminum
- Carbon steel
- Stainless steel



Transitions



Our specialization background has given us a unique ability to design and fabricate custom transition sections to gently transfer fragile products from one component of a conveyor system to another.

Chutes, transfers, diverters, hoppers, bins and elevated mezzanines are just some of the structures that we design and build regularly.

Our expertise allows us to work effectively in stainless steel, carbon steel, or aluminum.

Railcar Components

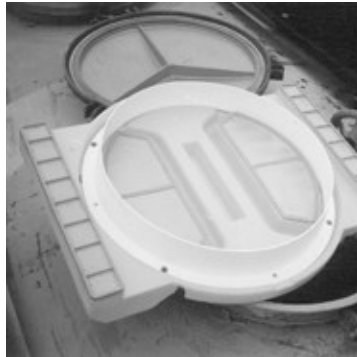
Build, Replace, or Repair your Railcar Unloading System

Railcar Manifold

NBE can provide components for assembling a complete pneumatic railcar unloading manifold.

Price estimates are developed by working closely with the customer.

Supplied prints and dimensional information allows us to provide a system that fits even the most demanding specifications.



Railcar Hatch Vent

20" vented railcar hatch cover allows filtered air to enter the railcar during the unloading process.

Products product during unloading in adverse weather conditions.

P/N: 8RCHATCHVENT

Railcar Unloader

The Railcar Unloader mounts on the railcar discharge tube. The assembly features all aluminum construction (stainless steel is also available) with adjustable air flow control and includes a camlock fitting for hose connection. Standard is a 4.00"OD, 5.00"OD or 6.00"OD Aluminum Male Camlock, but other custom adapters are available.



Farside Railcar Filter

Install on the opposite side of the unloader to introduce filtered air to enter the railcar during the unloading process.

Aluminum construction and replaceable mesh filter.

P/N: 8RCFLT1530644

Material Level Indicators

Indicator Panel

A high or low level indication inside a tank will activate a corresponding light on the panel to inform the operator when the tank is full or near empty.

The horn accessory can help to prevent overfilling of the tank plus warn when additional material may be needed from your supplier.

The globe with cast guard may be mounted on the side of the tank or at a remote location also to warn of low or high material levels.

* Available in one to ten bin configurations.



Point Level Indicators

Point Level control eliminates bin overflow, empty bins, clogged conveyors, choked elevators, and resultant damage and waste.

Normal operation centers around the low torque slow speed synchronous motor. The motor either turns the paddle in the absence of bulk material, or turns itself when paddle rotation is stopped by the bulk material.

Used for chemical, food, mining, plastics, ceramics, and other industries.

Continuous Level Indicators

Unlike Point Level Indicators, the Continuous Level Indicator provides a digital readout providing the user with direct feet-to-product answers from bins, tanks, or silos.

A weight is dropped to the bottom until it reaches the material, stops, and then proceeds back up until it reaches the top, thus measuring the amount of "empty space" in feet from bottom to top. This process can be repeated as many times as necessary.

SiloTrack Option: The SiloTrack software provides remote users access to the inventory monitoring system and can be installed on PC's that can interface with the SiloTrack Server PC.



Gaylord & Drum Covers

Gaylord Covers

Gaylord Covers come in two different air flow variations.

The positive air flow cover helps with containing the mess associated with filling the Gaylord with material.

The negative air flow cover provides a vacuum system wand access for withdrawing material.



Positive Air

Negative Air



Negative Air

Positive Air

Drum Covers

Drum Filter Covers improve the quality of molded parts by preventing contamination of in process material.

They provide easy access and the ability to make quick visual level checks.

Filter Covers reduce mess and housekeeping labor associated with transferring of material from central loaders and grinders.

How To Order

Specify the following:

- Drum size or Gaylord dimensions
- Positive or negative air flow
- Number and size of ports
- Location of port(s) (corner or center)

**Special shapes, sizes, and zipper openings available.*

Gaylord Filter Covers improve the quality of molded parts by preventing contamination of in process material. They provide easy access and the ability to make quick visual level checks.

Filter Covers reduce mess and housekeeping labor associated with transferring of material from central loaders and grinders. Please ask about our available options.

Magnets

Our tramp metal separation devices protect critical areas of plastic injection, blow molding, extrusion, and regrind equipment from stray ferrous metal found in resins.

Removal of stray ferrous metal significantly reduces costly damage to nozzles, screws, check valves, molds, regrind blades, and other equipment.

We offer both ceramic and rare earth magnets. Ceramic magnets come at a lower cost than rare earth magnets, have a high coercive force, and a high resistance to corrosion. Rare earth metals come at a higher cost but are higher energy products and have a higher temperature stability than ceramic magnets.



Hopper (Grate) Magnets

Round, square, and rectangular magnetic grates are used to remove ferrous tramp metal in hoppers, bins and chutes.

Grate magnets use round 1" diameter seam welded stainless steel magnetic tubes placed on 2" centers. Tubes are welded into a heavy duty stainless steel frame.

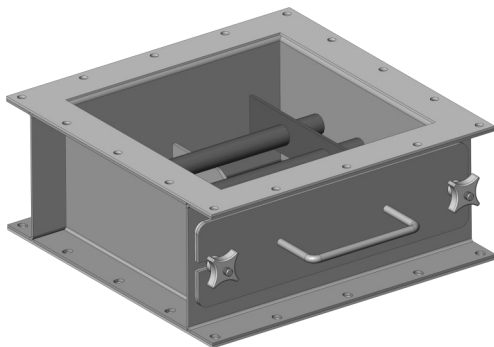
Resin size, shape, and rate of flow may require the use of a diverter to direct material flow over magnetic tubes.

Torpedo In-line Magnet

Our Torpedo In-Line Magnets (TIM) provide permanent magnetic protection for vacuum systems.

They clamp directly into flexible hoses to capture ferrous contaminants.

The compact TIM is an ideal option for use between Gaylords and Vacuum Loaders wherever overhead space is limited.



Drawer Magnet

Drawer magnets consist of rows of round magnetic tubes that are assembled into drawers.

Each magnet's tubes are aligned on alternating centers from the row directly above or below it.

As the product flows through, it is forced to cascade in a zig-zag pattern, ensuring maximum tramp metal capture.

Material Transfer Venturi

VEA-Series

The principle operation of the Venturi is similar to a jet pump. Compressed air is fed into an outside annular ring that has a number of orifices leading into the main tube of the transducer.

As the compressed air exits from the orifices, its velocity increases to supersonic speed.

The air meeting in the center of the tube rotates with a twisting motion similar to a worm screw. This cyclonic flow creates a powerful vacuum, capable of drawing particles into and through the transducer.



MODEL NUMBER	I.D. HOSE SIZE	VACUUM LEVEL (Hg)
8VEA1-3	0.75"	8.0"
8VEA2-3	0.75"	8.0"
8VEA2-6	0.75"	1.5"
8VEA3-6	0.75"	8.0"
8VEA5-3	1.0"	3.0"
8VEA5-6	1.0"	10.0"
8VEA7-3	1.25"	4.3"
8VEA7-6	1.25"	8.0"
8VEA10-3	1.5"	3.0"
8VEA10-6	1.5"	8.0"
8VEA15-3	2.0"	1.3"
8VEA15-6	2.0"	2.5"
8VEA20-3	2.5"	0.8"
8VEA20-6	2.5"	1.5"

Features

Low Cost:

Low initial and operating cost.

Small Size:

Install close to work area.

Efficient Design:

Provides high performance.

Instant Response:

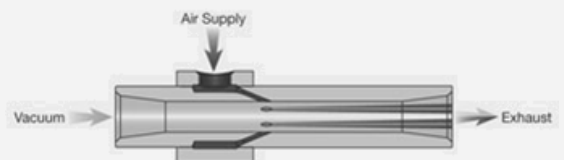
Improved productivity.

To Determine the correct VEA-model, consider the following factors:

1. Inside Diameter
2. Velocity of Flow
3. Vacuum Flow
4. Vacuum Force
5. Air Consumption

Method of Installation

1. Attach a flexible hose to both ends of the product and secure with hose clamps.
2. For hard piping installation, VEA-models can be modified to have internal NPT threaded vacuum and exhaust ports.



Silo Fill & Vent Kits

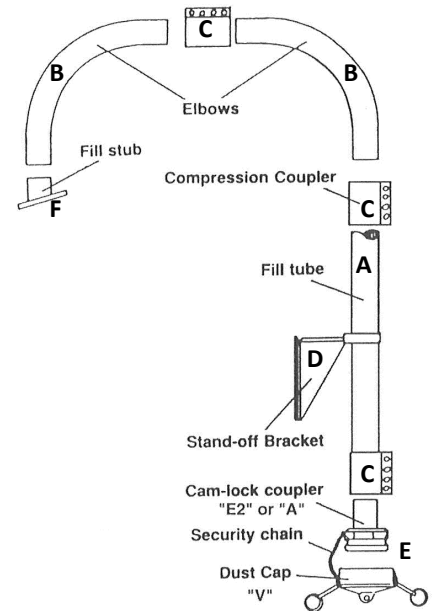
Fill Kit

The Fill Kit is a complete package that can be customized to fit any silo or storage container. This kit includes a mounting stub with flange, compression couplers, elbows, mounting brackets, tubing and quick disconnect & cap. Available in various diameter lines, aluminum or stainless steel construction.

In situations where particularly abrasive material is a problem, we can provide tubing and bends in stainless steel, or, if necessary, bends with ceramic lining

Pneumatic Fill Accessories

A	4" Fill Tube
B	Elbows
C	Couplers
D	Mounting Brackets
E	Cam-lock Couplers
F	4" Fill stub (10 degree) or 4' low profile fill stub



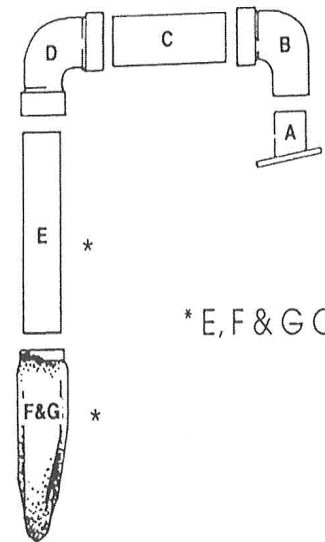
Vent Kit

For an economical solution to venting your silo, choose the vent kit. Like our fill kits, it is a complete package that can be customized to fit particular containers. Included are mounting stub with flange, PVC elbows, PVC tubing, & bird screen.

Where a more protected venting system is called for, ask about our aluminum vent kit (not pictured). Designed specifically for skirted silos, this system routes the vent tube to the enclosed area beneath your silo where it connects to a vent box with removable, aluminum mesh filters.

Each Vent Kit Includes:

A	6" Vent Stub
B	6" Elbow
C	6" Straight
D	6" Elbow
E	6" Tube
F&G	Filter Sock—specify indoor or outdoor use



* E, F & G OPTIONAL

Venting Components

Mushroom Roof Vent

The round mushroom-style vent provides 180 square inches of opening. This type of roof vent provides air circulation no matter which way the wind is blowing.



PVR Valve



The safety pressure-vacuum relief valve is installed on top of silos, bins, hoppers, and containers to avoid serious damage caused by overpressure and vacuum.

All contact parts are made in mild steel, and on request, stainless steel. The rain cover is made of polymer.

Silo Venting Filter

This cylindrically shaped dust collector is for venting of pneumatically filled silos. The stainless steel body contains vertically mounted, filter elements. The air jet cleaning system is integrated in the hinged weather protection cover.

Dust separated from the air flow by special filter elements drops back into the silo after an integrated automatic reverse air jet cleaning system inside the weather protection cover has removed it from the filter elements.

The Silo Venting Filter can be used with any dust generating material as long as it is dry and does not pack under pressure.



TERMS AND CONDITIONS OF SALE

1. Acceptance. Buyer may accept this product offering ("Offering") by a written acceptance, acknowledgement or purchase order delivered to National Bulk Equipment ("NBE" or Seller") within a reasonable time or by delivery of the goods or services ordered. Acceptance of this Offering constitutes acceptance of all of the Terms and Conditions contained herein to the exclusion of any and all other potentially conflicting terms and conditions. Each Purchase Order shall become binding upon Seller only after it has been accepted by an authorized representative at NBE's headquarters located in Holland, Michigan. Any provisions of Buyer's Acknowledgment forms, Purchase Orders or similar documents which are inconsistent with the provisions of this Offering are specifically rejected by Seller and shall be of no force and effect. Buyer's receipt of good or any other acts of acceptance shall be construed as a waiver of any additional, different or inconsistent terms proposed by the Buyer.

2. Changes to Order. This Offering constitutes the entire contract between Buyer and Seller with respect to the work, product and material specified and expressly incorporate any and all previous communications (both oral and written) between Buyer and Seller. Subsequent oral or verbal instructions or agreements relating to or altering this Offering in any way will not alter Seller's obligations under this Offering. Any amendments to this Offering shall be binding upon Seller only if in writing and acknowledged by both Buyer and Seller. Further, any changes which result in an increase in Seller's costs or which alter the specifications of the goods or services sold must be agreed to in writing and acknowledged by both Buyer and Seller. In no event shall Seller have any liability for loss of anticipatory profits claimed by either Buyer or Buyer's suppliers.

3. Manufacturing Changes. The Buyer shall give Seller advance written notice in writing of all specification, design, part number, and other identification changes, as well as major changes to the Buyer's process procedure which may affect the design and/or manufacture of the goods covered by this Offering. Further, Buyer shall give Seller written notice of any changes in location of the manufacturing plant applying to goods covered by this Offering. The warranties detailed in Paragraph 6 of these Terms and Conditions shall be rendered null and void if the Buyer fails to provide Seller with written notice of the changes identified in this Paragraph.

4. Terms. Prices quoted are valid for thirty (30) days from the date of the Offering. After thirty (30) days, all prices are subject to change based upon the costs and conditions existing at the time which the Offering is being accepted and Seller has the right to revise all quotations before acceptance by the Buyer. Unless otherwise stated in this Offering, terms are, upon credit approval, 30% of order amount with the Order and the balance net thirty (30) days. Buyer agrees to pay finance charges/time price differential computed at a periodic rate of 1½% per month or 18% per annum for all amounts which are past due thirty (30) days. This amount will be applied to the balance after deductions, current payments and/or credits appearing on the invoice. Payments, credits or charges received after the last closing statement day of each month will appear on the Buyer's next statement. Orders are invoiced when completed and ready for shipment and/or testing.

5. Retention of Security Interest and Right to Possession. Buyer agrees that the Seller shall retain a security interest in the goods manufactured by Seller until such time as Seller is paid in full. At the request of Seller, Buyer agrees to execute such documents as are necessary to perfect Seller's security interest in the items, including but not limited to, one or more financing statements in a form satisfactory to the Seller. To the extent permitted by law, Buyer hereby grants Seller authority on its behalf to execute, file or record any document necessary to perfect the Seller's security interest in the goods, including but not limited to a financing statement.

6. WARRANTY. THE SELLER WARRANTS THAT THE PRODUCTS MANUFACTURED AND SUPPLIED PURSUANT TO THIS OFFERING ARE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF SHIPMENT SO LONG AS THE BUYER HAS SUBJECTED THE PRODUCTS TO NORMAL USE AND FOLLOWED NECESSARY AND PROPER MAINTENANCE.

THE SELLER SHALL POSSESS THE EXCLUSIVE DISCRETION TO DETERMINE WHETHER A DEFECT IN MATERIALS OR WORKMANSHIP AROSE DURING THE WARRANTY PERIOD. IF SELLER CONCLUDES THAT A WARRANTABLE CONDITION EXISTS, THE SELLER POSSESSES THE DISCRETION TO EITHER REPAIR OR REPLACE THE SPECIFIC DEFECT. IF THE DEFECT IN MATERIALS OR WORKMANSHIP OCCURS WITHIN A PERIOD OF NINETY (90) DAYS FROM THE DATE OF SHIPMENT, SELLER SHALL BE RESPONSIBLE FOR LABOR CHARGES IN CONNECTION WITH REPAIR OR REPLACEMENT OF THE DEFECT – AS LONG AS THE PRODUCT OR EQUIPMENT IS LOCATED WITHIN THE CONTINENTAL UNITED STATES AND CANADA. ALL OTHER LABOR CHARGES SHALL BE BUYER'S RESPONSIBILITY AND SHALL BE BILLED TO BUYER AT SELLER'S THEN PREVAILING RATES, INCLUDING TRAVEL AND LODGING EXPENSES.

SELLER'S OBLIGATIONS AND BUYER'S EXCLUSIVE REMEDY HEREUNDER SHALL BE LIMITED TO SUCH REPAIR AND REPLACEMENT AND SHALL BE CONDITIONED UPON SELLER RECEIVING WRITTEN NOTICE OF ANY ALLEGED DEFECT NO LATER THAN TEN (10) DAYS AFTER ITS DISCOVERY WITHIN THE WARRANTY PERIOD. AT SELLER'S SOLE OPTION AND DISCRETION, SELLER MAY REQUIRE RETURN OF SUCH PRODUCTS TO SELLER WHEN SUCH RETURN IS FEASIBLE. SELLER RESERVES THE RIGHT TO SATISFY ALL OF ITS WARRANTY OBLIGATIONS BY REIMBURSING BUYER FOR ALL AMOUNTS BUYER HAS PAID TO SELLER FOR SUCH PRODUCT UPON WHICH BUYER SHALL IMMEDIATELY RETURN THE PRODUCT(S) TO SELLER. THE FOREGOING WARRANTY IS NOT APPLICABLE TO: (I) ACCESSORIES AND COMPONENTS NOT MANUFACTURED BY SELLER, WHICH ARE WARRANTED ONLY TO EXTENT, IF ANY, OF THE MANUFACTURER'S WARRANTY FOR SUCH ACCESSORIES AND COMPONENTS (BUT THE WARRANTY TERM FOR ANY SUCH WARRANTY SHALL BE THE EXPIRATION DATE OF SUCH WARRANTY, OR ONE YEAR FROM DATE OF SHIPMENT, WHICHEVER IS THE FIRST TO OCCUR), OR (II) DAMAGES CAUSED BY SHIPPING. SELLER SHALL BE RESPONSIBLE FOR FREIGHT CHARGES FOR REPLACEMENT PARTS ONLY IF SHIPPED WITHIN THE CONTINENTAL UNITED STATES OR CANADA.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES (EXCEPT OF TITLE) INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, PERFORMANCE, OR OTHERWISE. ALL OTHER WARRANTIES ARE EXPRESSLY DISCLAIMED.

7. LIMITATION OF LIABILITY. THE REMEDIES OF BUYER SET FORTH HEREIN ARE EXCLUSIVE AND THE AGGREGATE LIABILITY OF SELLER FOR ANY CLAIM OF ANY KIND FOR ANY LOSS OR DAMAGE RESULTING FROM, ARISING OUT OF OR CONNECTED WITH THIS OFFERING OR FROM THE PERFORMANCE OR BREACH THEREOF OR FROM THE SALE, DELIVERY, RESALE, REPAIR OR USE OF ANY PRODUCT WHETHER BASED ON CONTRACT, TORT (INCLUDING ANY PRODUCT LIABILITY THEORY SUCH AS NEGLIGENCE, PRODUCT RECALL OR

PRODUCT RETROFIT), FAULT, INDEMNITY OR OTHERWISE, SHALL IN NO EVENT EXCEED THE PRICE ALLOCABLE TO THE PRODUCT GIVING RISE TO THE CLAIM. IN NO EVENT SHALL THE SELLER BE LIABLE FOR SPECIAL, LIMITED OR CONSEQUENTIAL DAMAGES OF ANY NATURE, INCLUDING BUT NOT LIMITED TO LOSS OF PROFITS OR REVENUE OR BUSINESS OPPORTUNITY, LOSS BY REASON OF SHUTDOWN OF FACILITIES OR INABILITY TO OPERATE ANY FACILITY AT FULL CAPACITY, OR COST OF REPLACEMENT POWER. THE LIMITATIONS CONTAINED IN THIS PARAGRAPH SHALL SUPERSEDE ANY INCONSISTENT PROVISIONS IN ANY INSTRUMENT FORMING PART OF THIS AGREEMENT.

8. Breach and Cancellation. In the event Buyer breaches any of the terms and conditions of the Offering, Seller shall have all the rights and remedies provided to Seller by the Uniform Commercial Code, as adopted by the State of Michigan, including the right to recover any incidental, consequential, special or indirect damages resulting from said breach(es). If Buyer cancels an order, the Buyer will be subject to a cancellation charge. If the order is cancelled within the first thirty (30) days from the order acknowledgment date, the Buyer agrees to pay a cancellation charge and shall be charged 20% of the Order amount. If the cancellation is after that date, Buyer agrees the charge shall be 50% of the order amount. Seller also reserves the right to cancel this Order or any part thereof in the event of insolvency or bankruptcy of Buyer.

9. Data/Drawings. Information, including drawings and data, submitted at any time by Buyer to Seller relating to the goods or services covered by this Offering are not submitted in confidence and may be used by Seller in any way in the conduct of its business. Seller's quotations will be prepared on the basis of technical data available on your product and application at time of inquiry. Changes in product condition or application after receipt of order may void any and all warranties.

10. Force Majeure. The shipping dates given by Seller are approximate and Seller will use its best efforts to meet such dates. All orders are accepted with the understanding that shipping dates are approximate and subject to change because of Buyer delays (including, but not limited to, late approval drawings, acknowledgments or other delays), acts of God, factory conditions, fire, labor disputes, materials shortages, civil or military authority, and/or other causes beyond Seller's knowledge or control.

11. Construction of Contract and Seller's Rights. This Offering and the terms and conditions herein shall be construed according to the laws of the State of Michigan, without giving effect to choice of law principles. Buyer consents and agrees to the exclusive jurisdiction of the State courts in Ottawa County, Michigan or the United States District Court in Grand Rapids, Michigan. Buyer further consents that Seller shall have the right to transfer any legal action to either the State courts in Ottawa County, Michigan or the United States District Court in Grand Rapids, Michigan and Buyer waives any objection to such a transfer. All rights and remedies of Seller as herein specified shall be cumulative and in addition to any other or further remedies provided in law or equity. Failure of Seller to enforce any of the provisions of this Offering, to exercise any option herein provided or to require performance by Buyer of any of the provisions hereof, shall not in any way be construed to be a waiver of any provisions nor in any way affect the validity of this Offering or any part thereof, or the right of Seller thereafter to enforce each and every such provision.

12. INSURANCE AND INDEMNIFICATION. BUYER SHALL, UPON DEMAND, FULLY INDEMNIFY AND HOLD SELLER HARMLESS FROM ANY AND ALL LOSSES, COSTS, DAMAGES, EXPENSES, PENALTIES, FINES, SETTLEMENT AND/OR COMPROMISE PAYMENTS, INCLUDING, BUT NOT LIMITED TO, SELLER'S REASONABLE ATTORNEYS' FEES (THROUGH ALL APPELLATE, ENFORCEMENT, OR COLLECTION PROCEEDINGS), OCCASIONED BY OR RESULTING FROM THE BREACH OR NONPERFORMANCE OF ANY OF THE BUYER'S OBLIGATIONS CONTAINED IN THIS AGREEMENT. THIS INDEMNIFICATION INCLUDES, BUT IS NOT LIMITED TO, CLAIMS ASSERTED AGAINST SELLER BY EMPLOYEES, AGENTS AND SUBCONTRACTORS OF BUYER OR SUBSEQUENT BUYERS OR USERS OF THE SERVICES PERFORMED OR PRODUCTS SOLD UNDER THIS OFFERING/ORDER WHICH ARE CAUSED BY BUYER'S FAILURE TO MEET ITS OBLIGATIONS UNDER THIS AGREEMENT OR TO SITUATIONS IN WHICH THE ACCIDENT OR INJURY COULD HAVE BEEN PREVENTED HAD THE BUYER ENFORCED WORKPLACE RULES OR FOLLOWED OSHA REGULATIONS.

13. Use of Seller's Designs and Data. Buyer shall not use or disclose other than to authorize subcontractors, any data, designs or technical information belonging to or supplied by Seller except in the performance of this Offering/Order. Upon completion of this Offering/Order, the data, designs or technical information shall be returned to Seller upon Seller's request. The same obligation of return to Seller shall extend to any subcontractors of Buyer engaged in the performance of this Offering/Order.

14. Patents. Buyer agrees to defend, protect and hold Seller, its successors, customers and users of its products harmless against every action or claim for alleged infringement of patent by reason of the sale or use of goods ordered hereby and to pay all costs, damages and profits recoverable from such action or claim. Buyer agrees to disclose and on request to assign to Seller or to such other party as Seller may direct, any invention, improvement or discovery conceived or reduced to practice, arising from designs, tools, patterns, drawings, or any other information supplied by Seller pertaining to goods developed especially for the Buyer and covered by this Offering.

15. Severability. The invalidity or unenforceability of any of the clauses, terms or provisions of this Offering/Order shall not affect the validity or enforceability of any other clause, term, or provision hereof.

16. Sales and Use Tax. Prices quoted are net unless otherwise stated. Prices quoted do not include federal, state, municipal or governmental excise, sales, use, occupational or other like taxes now enforced or to be enacted. Should such taxes be assessed upon this transaction, Seller hereby reserves the right to invoice Buyer and Buyer agrees to pay the same.

17. COLLECTION AND REMEDIES. BUYER AGREES THAT SELLER MAY TAKE ANY ACTION IT DEEMS NECESSARY TO COLLECT ACCOUNTS/INVOICES NOT PAID WITHIN TERMS AND THAT SELLER SHALL BE ENTITLED TO COLLECT THE COST OF EACH PRODUCT PURCHASED ALONG WITH ALL ACCRUED FINANCE CHARGES, COSTS AND EXPENSES INCURRED. BUYER AGREES TO PAY ALL COSTS AND EXPENSES, INCLUDING BUT NOT LIMITED TO, ACTUAL ATTORNEY FEES INCURRED BY SELLER TO ENFORCE THE TERMS AND CONDITIONS OF THIS AGREEMENT AND/OR INCURRED AS A RESULT OF ANY BREACH OF THIS AGREEMENT BY BUYER.

Last reviewed by counsel May 2013

