THOMPSON-HILL

THOMPSON-HILL EXPRESS PARTS SERVICE

THOMPSON-HILL

MISSION STATEMENT

Thompson-Hill exists to serve our customers, providing them with the best equipment and engineering solutions for their process needs. We strive to be the industry leader for the companies we represent and the products we provide. Our entire staff is here to serve our customer with their best interests in mind.

LETTER FROM THE PRESIDENT

Welcome to the world of Thompson-Hill. We are forever expanding and adjusting our operations to better serve you, our valued customer. In the latest effort to improve our company for both our principals and customers, we have expanded our scope of supply to include a component parts line.

I firmly believe this component parts line will work for you, by providing a cost-effective, hassle-free solution to your equipment requirements. I feel strongly that you will find the Thompson-Hill staff to be extremely helpful accommodating in providing you with the best possible solutions for your equipment needs and engineering requirements.

We look forward to working with you in our latest endeavor. We promise to continue to redefine our scope of services always with you, our customer, in mind.

Sincerely,

Kevin P. Hill

Kevin P. Hill
President
Thompson-Hill

THOMPSON-HILL

COMPANY PROFILE & INFORMATION

Thompson-Hill (formerly J.W. Thompson Company) was founded in 1926, in St. Louis, Missouri, and specialized in air handling equipment and systems for industrial applications. In 1975, Thompson-Hill opened its Kansas City office and expanded its product line to include pneumatic conveying, material handling and processing equipment. Servicing a wide range of industrial applications, the company currently offers onsite technical support and performance review for our customers' current or future operational requirements. In addition to our growing equipment line, Thompson-Hill continues to offer systems engineering and turnkey installations. Outside sales representatives are available to meet with customers to discuss how Thompson-Hill can assist with current and future material handling needs. Our inside sales group specializes in parts and component sales as well as project management functions. We welcome the opportunity to serve your operational needs and invite you to put our experience and resources to work for you!

LONG TERM CUSTOMER LIST

A.D.M.
American Italian Pasta Company
Bama Foods
Black & Veatch
Boeing Company
Bridgestone/Firestone
Burns & McDonnell
Campbell Soup
Casa De Oro
Cereal Foods
Conagra
Continental Baking
Danisco
Farmland Industries
FMC Corporation
Friskies
Frito Lay
Goodyear
Heinz
Hershey Pasta
International Multifoods
Interstate Brands
Iowa Limestone
KCPL
Lever Brothers
Midwest Grain Products
Midwest Conveyer
Mission Foods
Nofsinger Corporation
Philips Lighting
Pillsbury Company
Pritchard Corporation
Quaker Oats
3M
Titan Tire
Tony's Pizza
Tyson Foods, Inc.
Williams Foods

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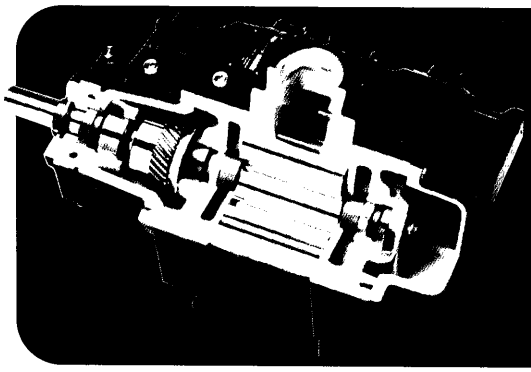
Thompson-Hill offers a full line of blower packages and components to service a wide range of pressure vacuum and aeration systems. Product applications include:

- Pneumatic Conveying
- Vacuum Boosters
- Chemical Processing
- Gases
- Food Processing
- Paper Pulp
- Cement
- Waste Aeration and more

Typical Product Features



Two or Three Lobe Rotors
Multiple Seals
Five Bearings
Heavy Duty Housing
Two Oil Pumps
Flush Ground Bearings
Helical Timing Gears

TUTHILL
Pneumatics Group

Options

Special Materials

Your PD PLUS® blower is also available in a variety of special materials, depending on your specific application.

Water Cooled End Plates

M-D's optional Water Cooled End Plates isolate the heat of compression from the mechanical components of the blower itself, eliminating the need for cooling coils on most units.

Low oil temperatures can be maintained using from 0.1 to 1 GPM combined water or coolant flow rate through both end plates. Other advantages include:

- Extended oil life
- Longer bearing, gear and seal life
- Extended oil change intervals
- Allows higher continuous duty operating temperatures
- Much simpler designs
- Lower mechanical noise
- Lower discharge temperatures

Other Options

Additional available optional features include special coatings, special seals, and certified testing.

Design Features:

- Five bearings including one outboard on the shaft for durability
- Helical timing gears are quieter, stronger and easier to time; mounted on drive end to reduce torsional load on rotors
- Oil pumps on both ends for better lubrication and reliability
- Extra heavy castings for durability and heat absorption, higher pressure
- Every unit production tested before shipment

Quality Design and Construction Features:

Heavy Duty, Cast Iron Housing

Rugged housing has deep rib section for rigidity and heat dissipation. Large capacity oil reservoirs (one each end) ensure proper gear and bearing lubrication.

Heavy Duty Bearings

A five-bearing design includes two roller bearings on the drive shaft to lend additional support for radial loading from V-belt applications.

Effective Lubrication and Sealing

Most models utilize an oil splash system with pumps at both ends. Others are designed to employ an external lube system. Labyrinth-lip seals are used internally with a single lip seal on the drive shaft. Gastight models utilize labyrinth-mechanical seals internally and either a single lip seal or mechanical seal(s) on the driveshaft, depending on the model.

Helical Timing Gears

Helical timing gears are quieter, stronger, and easier to time. Gears are mounted at the drive end of the blower to ensure positive power transmission, which reduces torsional loading of rotors by one half.

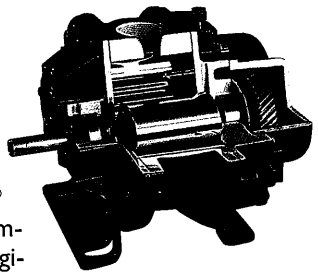
Lobe Type Rotors

Blowers utilize two or three-lobe ductile iron rotors which are dynamically balanced for vibration-free, bi-directional rotation. The rotors and shafts are integrally cast ductile iron for much greater strength and rigidity.

Air Flow Connections

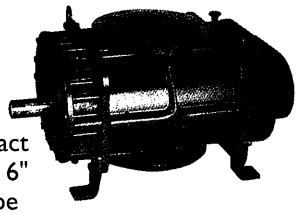
Standard NPT or flanged connections are provided. Metric connections and drive shafts are also available. All models are available in horizontal or vertical flow configuration for maximum flexibility.

Competitor® Plus™



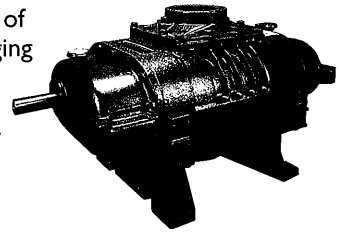
Competitor Plus blowers include special features usually found only on premium blowers—and at competitive prices. They are interchangeable with Roots Universal RAI® and many Sutorbilt® California Legend™ models, and compatible with most existing OEM engineering dimensions. Competitor Plus blowers are rated up to 15 PSIG discharge pressure or 16" Hg dry vacuum.

Equalizer®



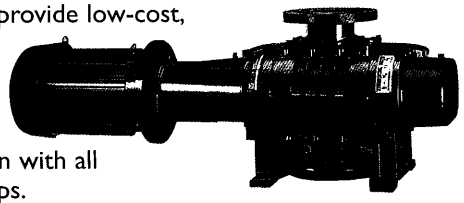
Equalizers also include special features usually found only on premium blowers at competitive prices. They are medium duty, compact blowers available in popular 4.5" and 6" gear diameters and are designed to be interchangeable with competitive brands such as Roots RCS® and certain DuroFlow® models.

PD Plus®



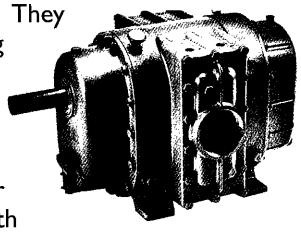
PD Plus is a long established line of premium heavy duty models ranging from 3.25" to 12" gear diameter and 2.5" to 48" rotor length. These blowers are renowned for their quality, dependability and outstanding performance record.

Vacuum Boosters



VB Vacuum Boosters provide low-cost, high-capacity gas volume at high vacuums (50 torr to one micron), and may be used in conjunction with all types of vacuum pumps. All units are dynamically balanced and leak checked.

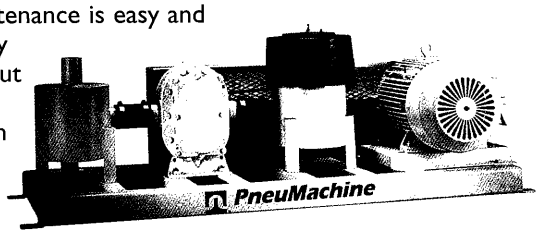
AcousticAir™



Low-noise AcousticAir blowers are designed for pressure or vacuum applications. They are engineered with built-in silencing chambers to reduce overall noise energy up to 20 dBA, or over 90%. They are available in flows to 1900 CFM with pressures to 15 PSIG and dry vacuums to 15" Hg. AcousticAir blowers are also interchangeable with certain Roots RCS-J sizes and PD Plus models.

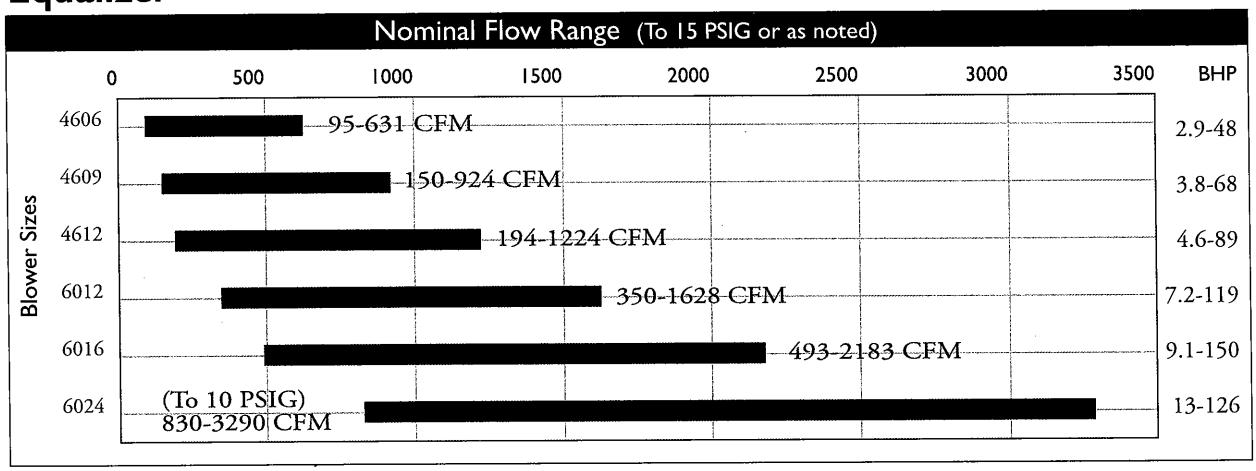
PneuMachine™

PneuMachine progressive packages boast a low profile design with rigid structural steel bases and innovative, compact silencers. Maintenance is easy and they are readily available without long waits associated with conventional packages.

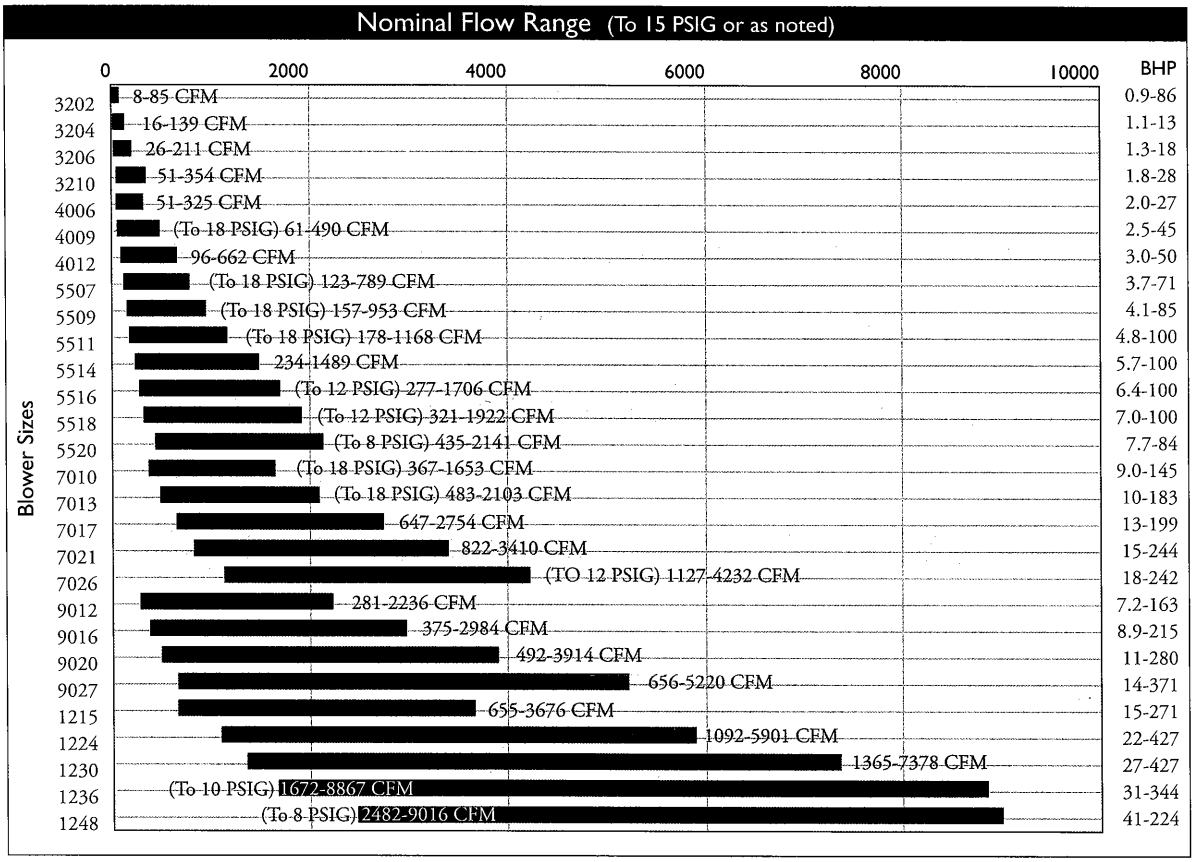


M-D Blower Flow Ranges

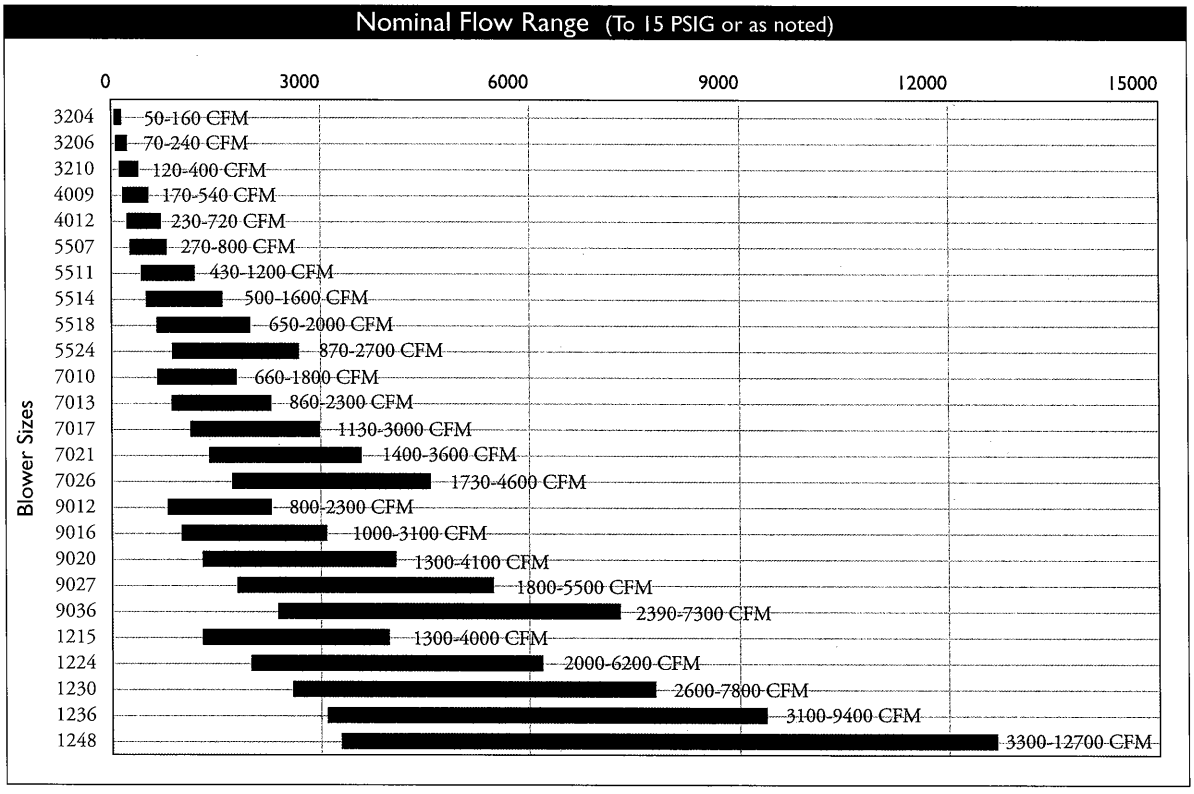
Equalizer®



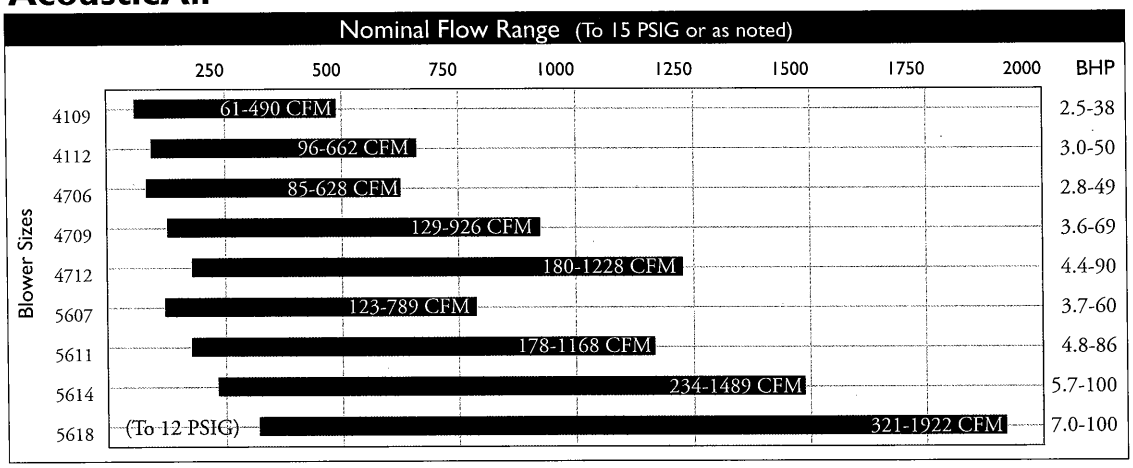
PD Plus™



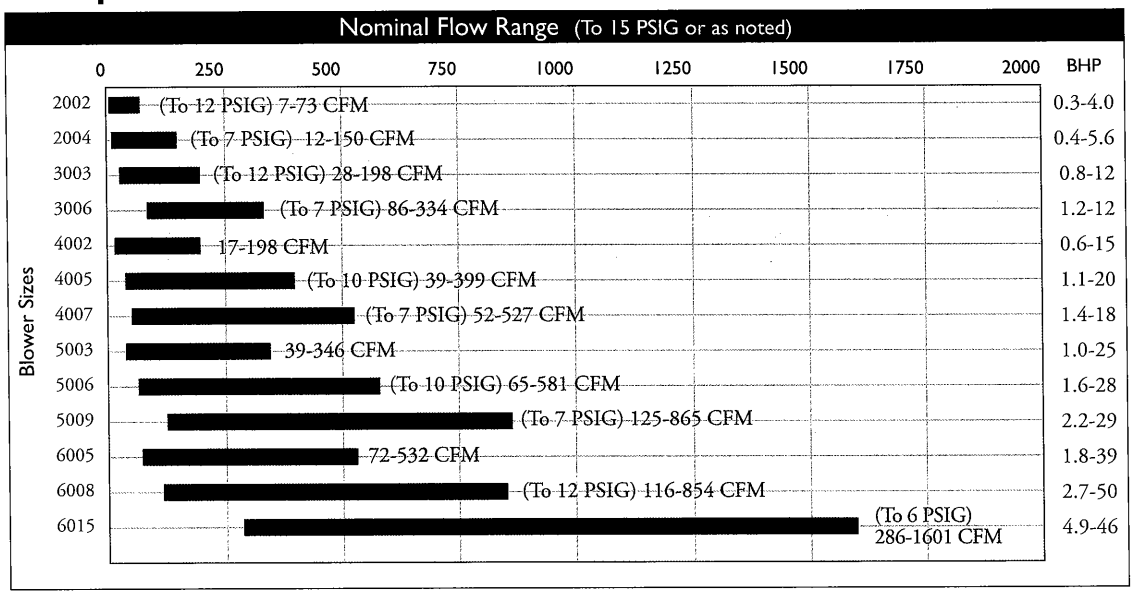
VB Vacuum Booster™



AcousticAir™



Competitor® Plus™



M-D Special Options Available

Configurations

- Complete or partial packages with base, silencers, filters, motor, belt drive or couplings, valves, and controls
- Multi-stage units • Engine mounted blowers • Motor adapters for direct mounting of NEMA C-face or IEC D-flange motors • Gearhead drives
- Truck PTO mounting kits

Lubrication and Cooling

- External lube systems
- Water cooled end plates
- Coolant recirculation systems
- Water injection kits

Seals

- Teflon® • Mechanical seals
- Double seals • Special O-rings such as Kalrez®

Blower Features

- Two or three lobe rotors
- Plugged rotors
- Cast iron or aluminum end covers
- Metric drive shaft and port fittings
- Venting

Materials

- Cast steel • Stainless steel
- Hastelloy® • Bronze
- Aluminum • Ductile iron

Coatings

Nickel • Zinc • Armoloy®
BI-PROTEC (combination Nickel and Armoloy®)

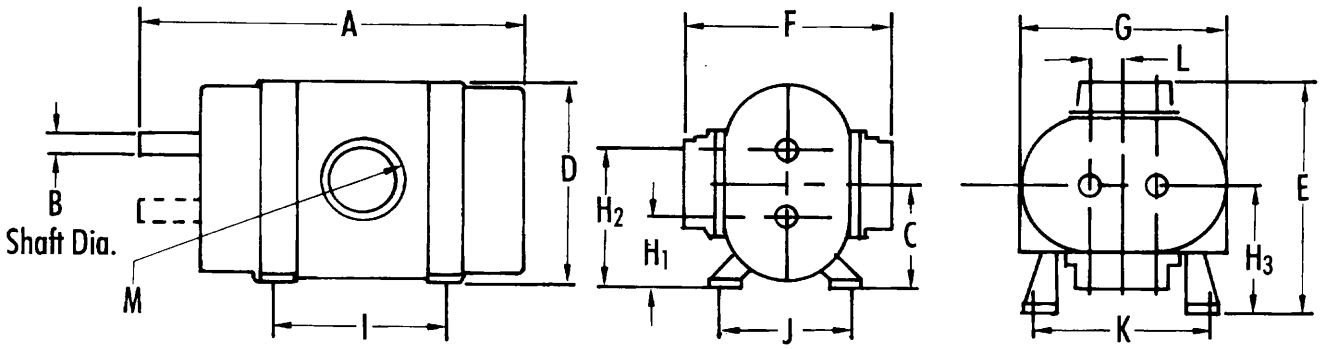
Extra Tests

- Leak detection
- Noise • Vibration
- Hydrostatic pressure
- PTC-9 flow • X-rays

Other

- Certifications
- Acoustic enclosures
- Long-term storage preparation
- Extended warranty
- Cleaning for oxygen service

How PD Plus® Blowers Measure Up



MODEL	A	B	C	D	E	F	G	DRIVE SHAFT LOC. H1	H2	H3	I	J	K	L	M	WT. (LBS.)
PD Plus®																
3202	17.63	0.938	5.13	10.16	9.50	8.00	10.75	3.50	6.75	5.50	4.00	6.00	7.50	1.63	1½" NPT	120
3204	19.13	0.938	5.13	10.06	10.50	10.00	10.75	3.50	6.75	5.50	5.50	6.00	7.50	1.63	2" NPT	145
3206	21.13	0.938	5.13	10.06	10.50	10.00	10.75	3.50	6.75	5.50	7.50	6.00	7.50	1.63	2½" NPT	155
3210	25.13	0.938	5.13	10.06	11.00	11.00	10.75	3.50	6.75	5.50	11.50	6.00	7.50	1.63	3" NPT	215
4006	22.63	1.125	6.25	12.75	14.25	12.50	12.50	1.25	8.28	8.00	9.00	8.00	10.50	2.00	3" NPT	160
4009	25.63	1.125	6.25	12.75	14.25	12.50	12.50	1.25	8.25	8.00	12.00	8.00	10.50	2.00	3" NPT	180
4012	28.63	1.125	6.25	12.75	14.25	12.50	12.50	1.25	8.25	8.00	15.00	8.00	10.50	2.00	4" NPT	210
5507	28.94	1.750	8.38	16.38	19.00	17.00	17.00	5.63	11.13	10.50	10.75	11.00	14.50	2.75	4" NPT	380
5509	30.44	1.750	8.38	16.38	19.00	17.00	17.00	5.63	11.13	10.50	12.25	11.00	14.50	2.75	5" NPT	425
5511	32.44	1.750	8.38	16.38	19.00	17.00	17.00	5.63	11.13	10.50	14.25	11.00	14.50	2.75	5" NPT	480
5514	35.44	1.750	8.38	16.38	20.50	20.00	17.00	5.63	11.13	10.50	17.25	11.00	14.50	2.75	6" FLG	575
5516	37.44	1.750	8.38	16.38	20.50	20.00	17.00	5.63	11.13	10.50	19.25	11.00	14.50	2.75	8" FLG	615
5518	39.44	1.750	8.38	16.38	20.50	20.00	17.00	5.63	11.13	10.50	21.25	11.00	14.50	2.75	8" FLG	650
5520	41.44	1.750	8.38	16.38	20.50	20.00	17.00	5.63	11.13	10.50	23.25	11.00	14.50	2.75	8" FLG	700
7010	44.94	2.375	13.63	25.75	25.63	24.00	21.25	10.13	17.13	13.63	14.75	14.50	14.50	3.50	6" FLG	1050
7013	47.69	2.375	13.63	25.75	25.63	24.00	21.25	10.13	17.13	13.63	17.50	14.50	14.50	3.50	8" FLG	1150
7017	51.69	2.375	13.63	25.75	25.63	24.00	21.25	10.13	17.13	13.63	21.50	14.50	14.50	3.50	10" FLG	1275
7021	55.69	2.375	13.63	25.75	25.63	24.00	21.25	10.13	17.13	13.63	25.50	14.50	14.50	3.50	12" FLG	1450
7026	60.69	2.375	13.63	25.75	25.63	24.00	21.25	10.13	17.13	13.63	30.50	14.50	14.50	3.50	12" FLG	1600
9012	45.73	3.125	17.41	32.69	30.75	30.69	26.38	12.88	21.94	12.88	23.63	9.06	18.13	4.53	10" FLG	1590
9016	49.69	3.125	17.41	32.69	30.75	30.69	26.38	12.88	21.94	12.88	27.56	9.06	18.13	4.53	12" FLG	1710
9020	54.59	3.125	17.41	32.69	30.75	30.69	26.38	12.88	21.94	12.88	32.50	9.06	18.13	4.53	12" FLG	1950
9027	61.50	3.125	17.41	32.69	30.75	30.69	26.38	12.88	21.94	12.88	39.38	9.06	18.13	4.53	14" FLG	2190
1215	65.75	3.500	22.00	39.13	28.31	26.00	34.25	16.00	28.00	15.31	24.50	14.38	27.75	6.00	12" FLG	4220
1224	74.75	3.500	22.00	39.13	28.31	26.00	34.25	16.00	28.00	15.31	33.50	14.38	27.75	6.00	14" FLG	4930
1230	80.75	3.500	22.00	39.13	28.31	26.00	34.25	16.00	28.00	15.31	39.50	14.38	27.75	6.00	14" FLG	5400
1236	86.75	3.500	22.00	39.13	28.31	26.00	34.25	16.00	28.00	15.31	45.50	14.38	27.75	6.00	18" FLG	5900
1248	98.75	3.500	22.00	39.13	28.31	26.00	34.25	16.00	28.00	15.31	57.50	14.38	27.75	6.00	20" FLG	6850

All values are approximate and should not be used for construction. Certified drawings are available through your local Tuthill Pneumatics representative.

M-D Blower Packages

Standard Packages

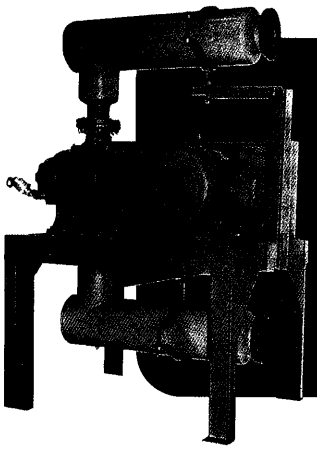
You may also choose from a complete line of other Standard Blower Packages, utilizing PD Plus,® Equalizer,® or AcousticAir™ blowers ready for delivery in as little as two weeks. Standardized designs allow numerous combinations. Certified engineering drawings are immediately available for customer layout and piping design work.

- Models to 200 HP
- Flows to 4,000 CFM (for larger sizes, custom packages are usually required)
- Vertical or horizontal flow configurations
- Heavy duty compact base
- Meet OSHA requirements, proper V-belt guards
- Quick delivery

Custom Packages

If you have a special application requiring a custom package, we'll be happy to design and manufacture one specifically to meet your needs.

Blower design, materials of construction, seals, and all auxiliary components can be selected to ensure performance and compatibility with the type of product and operating conditions of your application.



Engineered with rigid, heavy duty bases, optional mounted silencers, adjustable supports and drive motor. Ready to put in place and run.

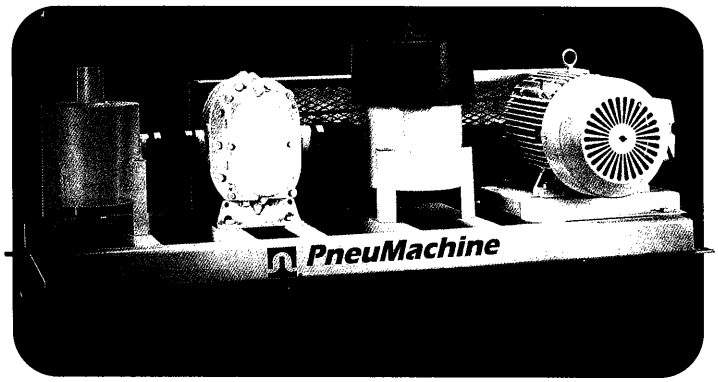
Tuthill Pneumatics can supply custom packages with two-stage blowers, high vacuum boosters, special lubrication systems or liquid injection systems, plus much more.

- Flows from 200 to 9,000 CFM
- Pressures to 100 PSIG
- Vacuums to one micron (10^{-3} Torr)
- Approval drawings provided

Single Source Factory Warranty

Because we design, engineer and build our own blower packages, we warrant the entire package, including its components.

Something PNEU In Blower Package Design



PneuMachine®

Here are standard blower packages designed to better fit your needs and budgets. The PneuMachine® is a dependable and economical low pressure (up to 15 PSIG or 16 Hg vacuum) air source for many industrial and municipal applications including pneumatic conveying, fluidization/agitation of bulk powders, waste water aeration, and vacuum exhausting and cleaning systems.

In addition to dependability and economy, PneuMachine compact rotary blower packages offer many distinct advantages:

- Fast delivery through automated ordering and manufacturing procedures
- Compact size provides equal or superior performance to the larger packages offered by other manufacturers, in as little as one-third the space
- Compact silencers specially designed to exceed noise reduction performance and reduce overall package volume for noise performance superior to competing packages
- Solid quality bases are fabricated from structural steel and are suitable for sanitary applications; others offer bent sheet metal that can add noise and provide collection spots for dirt or shelter for pests
- Designed for easy access to the inlet filter element, grease fittings and oil reservoir; competitors' designs often require overhead work when changing filter elements
- Factory designed and built under the Tuthill Pneumatics Group ISO 9001 registered quality assurance system
- Factory warranty of 18 months after installation

Recommended Spare Parts Kit

The following list of parts, headed by M-D Blower Model Number are what we refer to as "Repair Kits". These are our recommended spare parts for a normal overhaul. Note, we've included all bearings, seals, and miscellaneous locks and screws which are not normally reusable after disassembly. They may be ordered as a "kit" by Repair Kit Number or by individual part number. Timing gears are not included in the repair kit and must be ordered separately.

Important Note for 5500 Models (Formerly H17/H46-5500) only: Repair Kit for older 5500 series (example 17-5514) that does not have an "H" preceding the number and the input shaft is 1 1/2 inches in diameter use kit number 27314. Substitute (1) 5890 & (1) 11400 for (1) 9903 & (1) 11394 in the list below.

Models 5500 PD PLUS® & 5600 AcousticAir™ (17/46 SERIES) Kit No. 27315

Quantity	Part Number	Description
2	10999	Bearing
2	29252	Bearing
1	9903	Bearing
4	11392	Seal
1	11394	Seal
4	23495	Lab Seal
2	11135	Gasket
6	11057	Lock
2	5879	Lock
2	10925	Lock
1	90295-100	Screw
1	90295-175	Screw
1	55357	Gear Timing Shim
2	11200	Key
6	92241-050	Screw
2	55325	Gear Lock

Timing Gears Set - Part Number 60193 (not included)

Port Gaskets (5500 Models only)

5507 (2) 8281	5514 (2) 8979	5520 (2) 8946
5509 (2) 8286	5516 (2) 8995	5525 (2) 8946
5511 (2) 7862	5518 (2) 8946	

Models 5500-90E Water Cooled End Plate Units Kit No. 55086

Quantity	Part Number	Description
2	10999-D	Bearing
2	29252	Bearing
1	21964	Bearing
5	11449	Seal
4	55026-1	Lab Seal
4	55025	Lockplate
2	5879	Lock
2	10925	Lock
1	90295-100	Screw
1	90295-175	Screw
1	29361-028	O-Ring
1	29361-037	O-Ring
1	29361-129	O-Ring
1	29361-338	O-Ring
1	55357	Gear Timing Shim
2	11200	Key
2	55352	Gear Lock

Timing Gears Set - Part Number 29605 (not included)

M-D Vacuum Booster Repair Kit List

3200 Models

29206	90/91 (90C/91C) - current series
29208	92/93 (92B/93B/92C/93C) - current series
32017	96 series
32070	90E series - water cooled end plates
29204	90/91 - 3200 old style

4000 Models

29209	90/91 series
29210	92/93 series
40011	96 series - water cooled end plates
40036	90E series - water cooled end plates

5500 Models

29211	90/91 series
29212	92/93/94 series
55001	96 series - water cooled end plates
55086	90E series - water cooled end plates

7000 Models

77052	90/91 series
77101	31/33 series
77112	lube pump drive repair kit (for 31/33 series only)

9000 Models

30396	90/91 series
30397	92/93 series
70625	31/33 series
70626	35/37 series
70646	lube pump drive repair kit (for 31/33 and 35/37 series only)

1200 Models

14532	31/33 series
14533	35/37 series
14532WC*	31/33 series - pre-November, 1992
14533WC*	35/37 series - pre-November, 1992

M-D Rotary Blower Repair Kit List

M-D Kit No.

3200 PD Plus® Models

28328 16/47 - current series
29238 17/46 (17C/46C) - current series
29239 57/81 (57C/81C) - current series
29240 64/67 (S57C/S81C) - current series
32067 46E - water cooled end plates
32068 81E - water cooled end plates
32069 67E - water cooled end plates
28329 17/46 - 3200 old style
28330 57/81 - 3200 old style
28327 57A/81A - 3200 old style
27304 S57/S81 - 3200 old style
28326 S57B/S81B - 3200 old style

4000 PD Plus® Models
4100 AcousticAir™ Models

27305 16/47 series
27306 17/46 series
27307 57/81 series
27308 64/67 (S57/S81) series
40033 46E series - water cooled end plates
40034 81E series - water cooled end plates
40035 67E series - water cooled end plates
29765 16G series
29202 H51 series - obsolete series

5500 PD Plus® Models
5600 AcousticAir™ Models

27313 16/47 (H16/H47) - current series
27315 17/46 (H17/H46) - current series
27317 57/81 (H57/H81) - current series
27318 64/67 (S57/S81) - current series
55083 46E series - water cooled end plates
55084 81E series - water cooled end plates
55085 67E series - water cooled end plates
27314 17/46 - 5500 old style
29203 H51 series - obsolete series
27316 57/81 - 5500 old style

7000 PD Plus® Models

77051 17/46 series
77110 19/86 series
77069 57/81 series
77111 55/82 series
77052 64/67 series
77101 66/69 series
77112 lube pump drive repair kit (for 19/86, 55/82 and 66/69 series only)

9000 PD Plus® Models

29218 17/19/46/86 series
29241 55/57/81/82 series
29220 64/66/67/69 series

1200 PD Plus® Models

29219 19/86 series
29216 55/82 series
29217 66/69 series
29217WC* 66/69 (S57/S81) - pre-November 1992

Equalizer® Models
4700 AcousticAir™ Models

46044 4600/4700 models
60035 6000 models

Competitor® Models

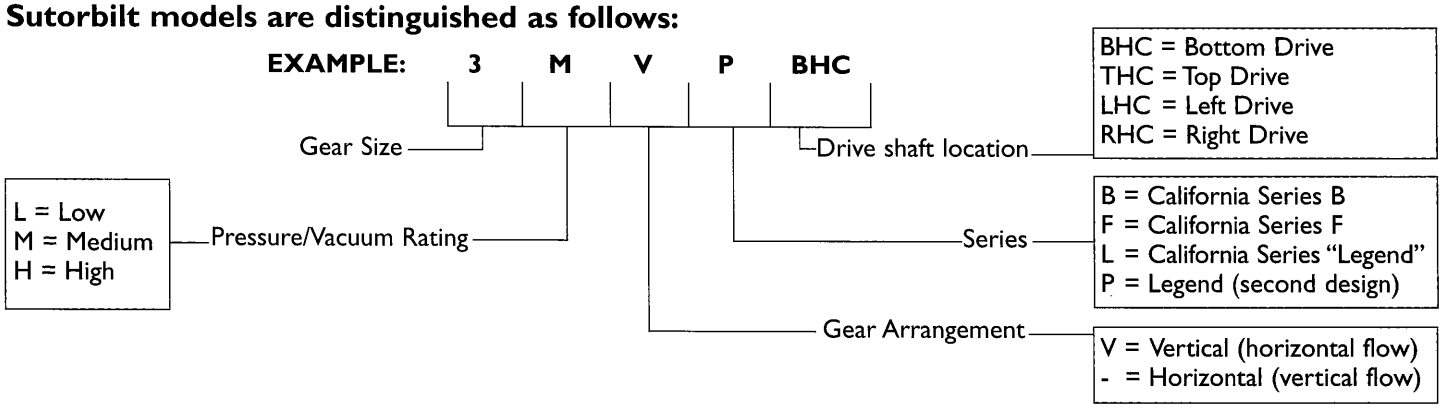
2200638 2002, 2004
3300638 3003, 3006
4500638 4002, 4005, 4007
5600638 5003, 5006, 5009
6800638 6005, 6008, 6015
600638 7006, 7011, 7018

Competitor Plus™ Models

2200638B 2002, 2004
3300638B 3003, 3006
4500638B 4002, 4005, 4007
5600638B 5003, 5006, 5009
6800638B 6005, 6008, 6015

Quick Cross Reference

Sutorbilt models are distinguished as follows:



Examples of cross reference from equivalent Sutorbilt or Roots to M-D COMPETITOR PLUS™ models are as follows:

Sotorbilt	Roots	M-D COMPETITOR PLUS
6M-P LHC	68 U-RAI	6008-21L2
4LVF BHC	47 U-RAI	4007-21B2
3M-L RHC	33 U-RAI	3003-21R2
5HVP THC	53 U-RAI	5003-21T2

M-D Pneumatics Blower Cross Reference List

Competitor Plus Series Blowers

MODEL SIZE	REPLACEMENT FOR ROOTS	REPLACEMENT FOR SUTORBILT®
2002	22 URAI	2M(V)B, F, L, P
2004	24 URAI	2L(V)B, F, L, P
3003	33 URAI	3M(V)B, F, L, P
3006	36 URAI	3L(V)B, F, L, P
4002	42 URAI	4H(V)B, F, L, P
4005	45 URAI	4M(V)B, F, L, P
4007	47 URAI	4L(V)B, F, L, P
5003	53 URAI	5H(V)B, F, L, P
5006	56 URAI	5M(V)B, F, L, P
5009	59 URAI	5L(V)B, F, L, P
6005	65 URAI	6H(V)B, F, L, P
6008	68 URAI	6M(V)B, F, L, P
6015	615 URAI	6L(V)B, F, L, P

Equalizer Series Blowers

MODEL SIZE	REPLACEMENT FOR
4606	ROOTS 406 RCS/RAM
4609	ROOTS 409 RCS/RAM
4612	ROOTS 412 RCS/RAM
4606D	DUROFLOW 4506 - 4"NPT
4609D	DUROFLOW 4509 - 4"NPT
4612D	DUROFLOW 4512 - 4'NPT
6012	SUTORBILT 612-4500
6016	ROOTS 616 RCS/RAM
6024	ROOTS 624 RCS/RAM

Models with "D" suffix supersede former models 4607, 4610 and 4613.

When ordering, specify location of drive shaft (left or right for vertical flow units, top for horizontal flow).

Horizontal flow EQUALIZER models are available with top drive shaft only. Bottom drive shaft not available.

Flow direction of EQUALIZER models is field convertible without disassembly, but requires installation of different mounting feet. Consult factory.

EQUALIZER models are available with metric ports and drive shafts. Specify "M" between model and series numbers.

EQUALIZER models that replace DuroFlow units include port fittings to match short length NPT fittings. Check dimensions on M-D drawings for compatibility before ordering.

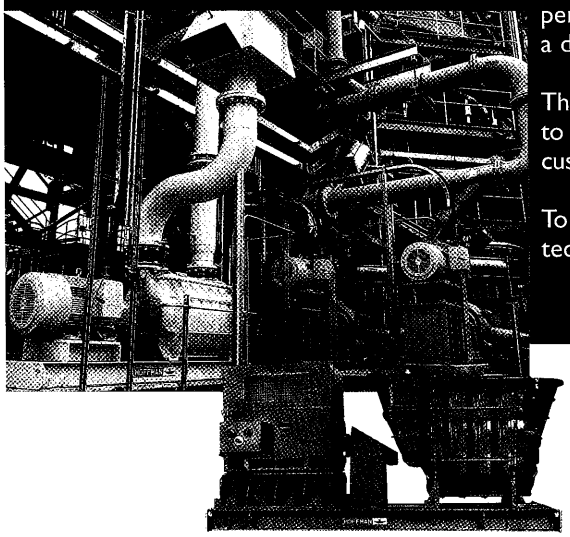
Drive shaft diameter on "D" suffix models is 1 1/2". When replacing equivalent DuroFlow models, drive shaft diameter of 1 1/2" requires larger bore on blower sheave bushing or coupling half from smaller 1 7/16" drive shaft of equivalent DuroFlow model replaced.

Model 4606D face-to-face dimension is 12". Minor piping changes may be required for replacement of equivalent DuroFlow model.

Hoffman Centrifugals

A history of performance, the assurance of dependability

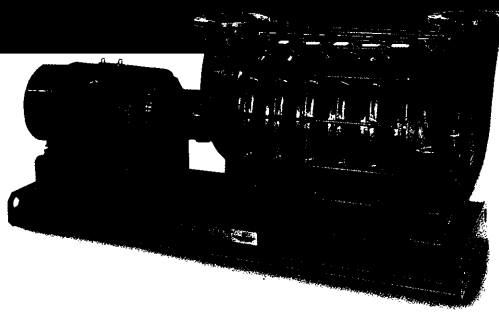
Since 1908 Hoffman Multistage Centrifugal Blowers and Exhausters have satisfied the demands for air and gas handling in commercial, industrial, municipal and environmental applications. This unsurpassed record of dependable and efficient performance makes Hoffman the right choice for continuous service — 24 hours a day, year after year.



The Hoffman family of centrifugals spans a complete range of capacities, from 100 to 45,000 inlet CFM, pressures up to 25 PSIG and vacuums to 18" Hg. Each unit is custom-engineered for your specific operating parameters.

To ensure the right equipment for each application, Hoffman offers skilled technical support personnel throughout the United States and around the world.

HOFFMAN®
AIR & FILTERATION SYSTEMS



Design & Construction

The superior performance of Hoffman Blowers and Exhausters is attributed to the design and quality features manufactured into each unit:

1. Casing

The centrifugal unit's casing consists of a series of vertically split sections positioned between cast iron inlet and outlet heads. These components are held securely by steel tie rods. The head positions, normally furnished with vertical orientation, are also available in other configurations. The head connections are flanged and drilled to conform to 125 lb. ASA pattern. Hoffman casings offer a substantial differential pressure rating of 25 PSIG.

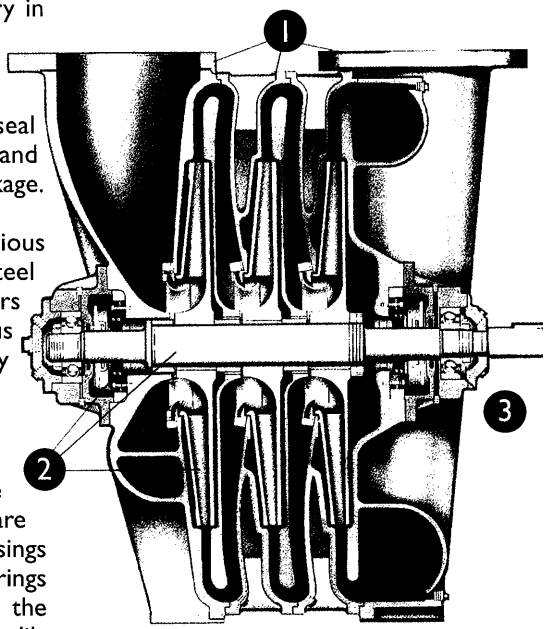
2. Internal Features

Centrifugal compressors have virtually no wearing parts. The rotating assembly consists of cast or fabricated (composite) high strength aluminum alloy impellers keyed and positioned on a polished carbon steel shaft. Each impeller is statically balanced independently, and the entire rotating assembly is dynamically balanced to assure smooth, vibration-free operation (not to exceed 0.28"/sec velocity when measured on the bearing housing at design speed).

Both cast and fabricated impellers are available in a variety of vane shape configurations, from full radial blade to full backward-curved blade types, and vary in type and number to provide the desired performance.

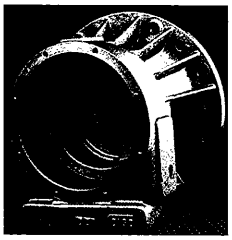
Segmented carbon ring shaft seal assemblies are standard on inlet and outlet ends of the unit to prevent leakage.

Depending on the application, various options exist, such as stainless steel shaft,steel or stainless steel impellers (composite design only), and various coatings of rotating and stationary elements for corrosion resistance.

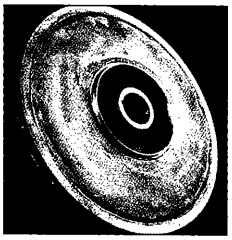


3. Bearings & Lubrication

Antifriction ball bearings support the rotating assembly at each end and are mounted "outboard" in bearing housings bolted to the head castings. The bearings are isolated from the air stream by the carbon ring seal package and are readily accessible without disassembly of the machine or piping system. Lubrication is easily accomplished through a simple oil or grease system.

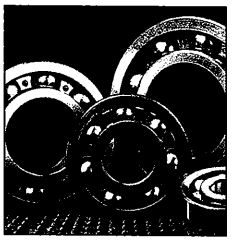


Bearing Housing

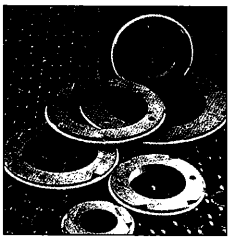


Fabricated Impeller

Cast Impeller



Bearings



Carbon Rings

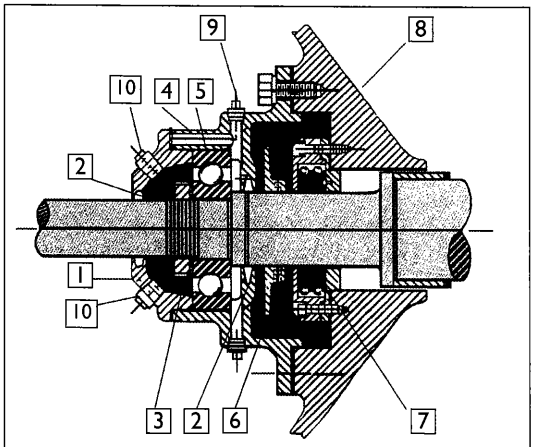
Lubrication

Hoffman compressors utilize either an atmospheric splash-oil or grease system for bearing lubrication. Generally those in the lower volume range (approximately 5000 CFM and below) are equipped with grease lubrication which affords a wide range of operation in temperatures of -20°F to 300°F. All units in this range can also be equipped with optional oil lubrication systems.

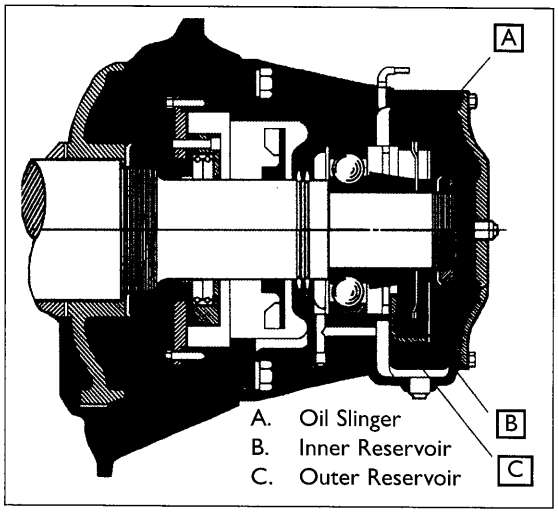
For compressors in the higher volume range, oil lubrication is the standard system. Whether supplied with grease or oil lubrication, Hoffman compressors are designed for an AFBMA-B10 life of 10 years or greater.

The 691 and 791 Series compressors, with air volume capacities from 1,000 to 38,000 CFM, are equipped with a special oil lubrication system which includes an oil slinger (A) to circulate oil from the inner reservoir (B) through the bearing and return the oil to the outer reservoir (C). A constant oil level is maintained automatically at the bearing from optimum lubrication and maximum cooling. Oil foaming is negligible due to the dual reservoir design. An external constant level oiler is provided for additional oil capacity and to provide a visual indication of oil usage. All oil lubricated units include a sight glass for determining actual bearing housing oil levels.

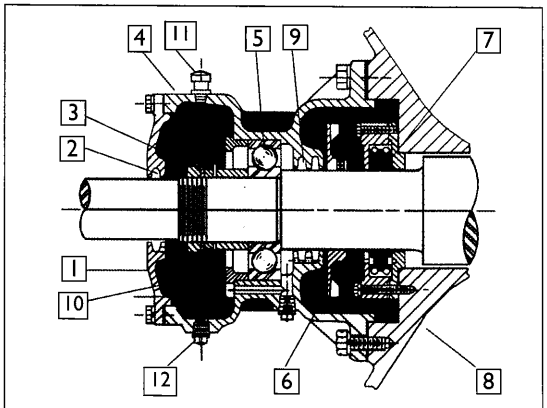
Another attribute of the Hoffman unit's oil system is its ability to be interfaced with spray mist lubrication systems which are required by many end-users. Each oil unit is run-in at the factory and drained of oil before shipment. The proper oil lubricant, supplied by Hoffman, must be added prior to start-up.



1. Bearing Cap
2. Labyrinth Seals
3. Bearing Lock Nut & Washer
4. Bearing Housing
5. Bearing
6. Cooling Fan
7. Carbon Rings
8. Inlet Head
9. Grease Injection Port
10. Grease Relief Ports



A. Oil Slinger
B. Inner Reservoir
C. Outer Reservoir



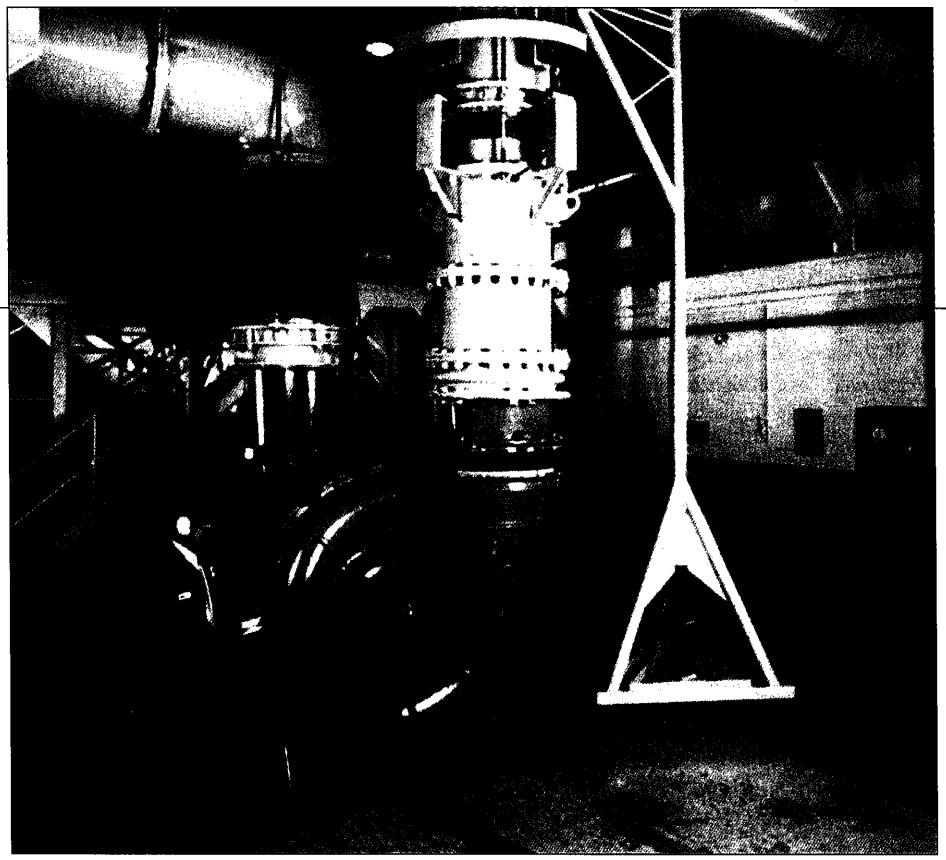
1. Bearing Cap
2. Labyrinth Seals
3. Bearing Lock Nut & Washer
4. Bearing Housing
5. Bearing
6. Cooling Fan
7. Carbon Rings
8. Inlet Head
9. Inner Labyrinth Seal
10. Oil Slinger
11. Atmospheric Vent
12. Magnetic Drain Plug

Performance Capabilities

Standard Hoffman Centrifugal Blowers and Exhausters range in capacities up to 45,000 CFM, with gauge pressures to 25 PSI or 18" Hg vacuum. Normally designed for operation with direct drive motors operating at 3600 RPM, these units are readily adaptable for use with steam turbines, gas engine/gear drives or V-belt arrangements.

To meet the requirements of various applications, these units may be piped in parallel for increased volume, or in series for increased pressure or vacuum. Air volume through the entire range of the centrifugal can be regulated by simple inlet valve throttling, or speed control when using a variable speed driver.

Modular construction, utilizing various impeller combinations, results in a compressor which is custom-designed to meet the performance requirements of each application.



Regenerative Blowers - Vacuum Pumps

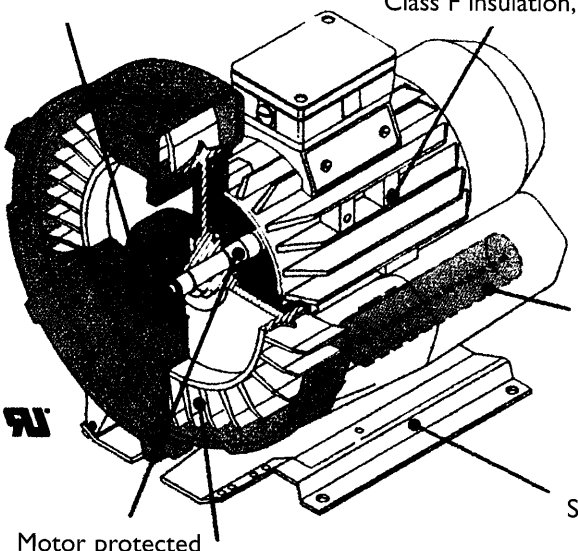
Single Stage & Two Stage

Capacities

- Ratings to 400 CFM
- Pressure and Vacuum to 600 mbar 250 "H20 18" Hg 9 psi

Cool-running long-life external bearings

Industrial duty squirrel cage induction AC motor, TEFC IP 54 enclosure Class F insulation, 1.15 SF



Built-in silencer

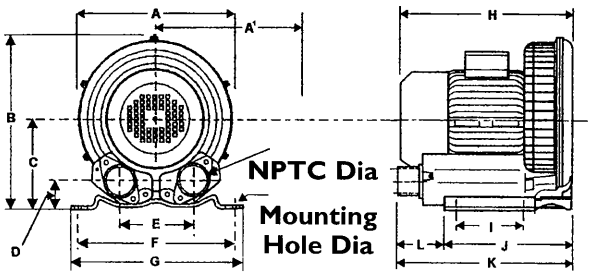
Shock-absorbing mounting base

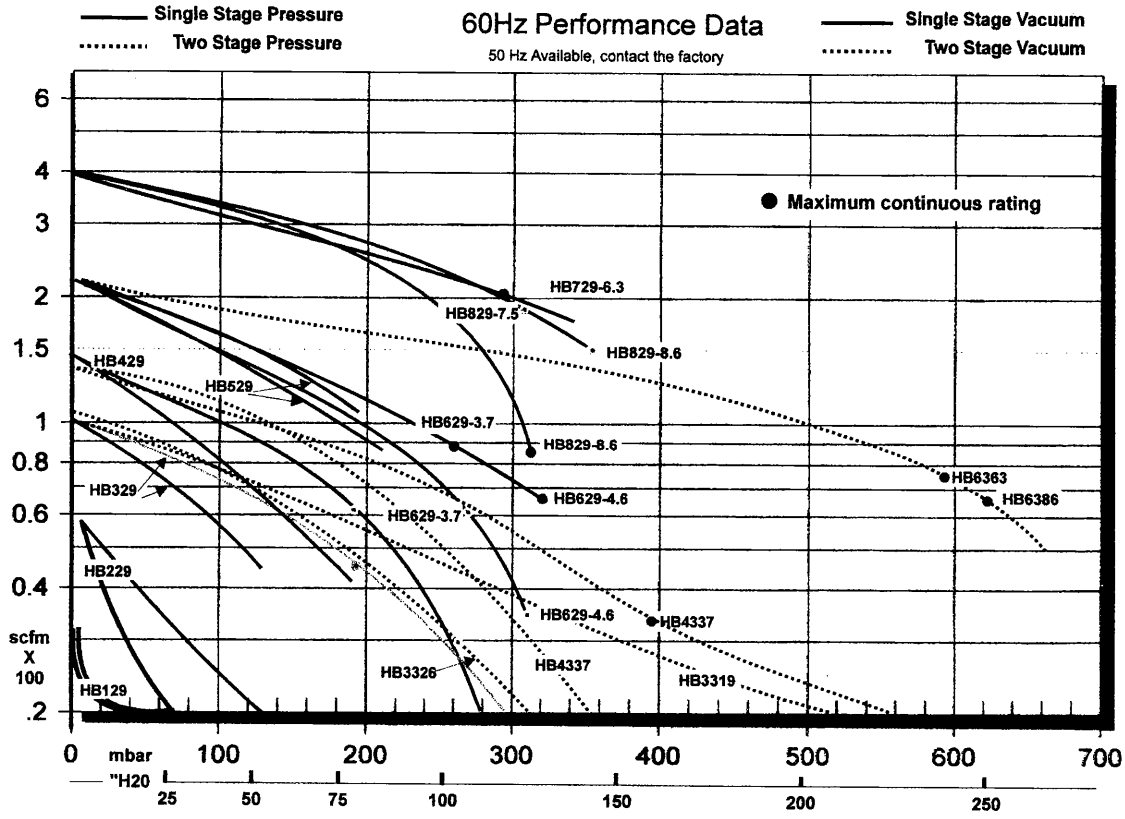
Motor protected by shaft seal

High-efficient, dynamically balanced die-cast impeller

Dimensions

Single Stage Model Shown





Single Stage

Model No.	A	B	C	D	E	F	G	H	I	J	K	L	Hole mm	Dia NPTC
HB-129	200	214	108	38	70	165	185	210	(1)100	100	202	70	12	1"
	7.87	8.46	4.25	1.49	2.79	6.55	8.26	8.26	3.94	3.94	8.07	2.79		
HB-229	238	249	130	40	92	205	227	248	83	108	247	87	10	1.25"
HB-229L	9.37	9.8	5.18	1.57	3.62	6.07	8.93	9.76	3.26	4.25	9.73	3.42		
HB-329	284	300	152	42.5	115	225	253	263	95	130	235	51	12	1.5"
HB-329L	11.18	11.8	5.98	1.67	4.52	8.85	9.96	10.35	3.74	6.12	9.25	2.0		
HB-429	324	338	176	44	122	260	296	312	115	155	323	108	14	2"
HB-429L	12.75	13.31	6.93	1.73	4.80	10.23	11.65	12.28	4.28	6.10	4.63	4.25		
HB-529	366	414	198	53	125	290	330	3.69	140	180	350	94	15	2"
HB-529L	14.14	16.30	7.79	2.08	4.92	11.41	12.99	14.52	5.51	7.08	13.78	3.70		
HB-629	366	414	198	53	125	290	330	369	140	180	350	94	15	2"
HB-629L	14.14	16.30	7.79	2.08	4.92	11.41	12.99	14.52	5.51	7.08	13.78	3.70		
HB-729	466	564	278	95	148	365	422	451	280	316	481	165	16	2.5"
	18.34	22.20	10.94	3.74	5.82	14.37	16.61	17.75	11.02	12.44	18.94	6.49		
HB-829	466	564	278	95	148	365	422	451	280	316	481	165	16	2.5"
	18.34	22.20	10.94	3.74	5.82	14.37	16.61	17.75	11.02	12.44	18.94	6.49		

(1) Single mounting hole centered in base

Two Stage

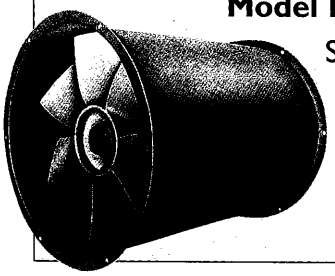
Model No.	A	A[1]	B	C	D	E	F	G	H	I	J	K	L	Hole mm	Dia NPTC
HB-3319	306	315.5[b]	308	154	42.5	115	225	253	390	95	130	811	130	12	1.5"
HB-3326	12.12	12.42	12.12	6.06	1.67	4.56	8.86	9.96	15.35	3.74	5.12	12.24	5.12		
HB-4337	364	224	368	173	50	119	260	296	452	115	155	452	151	14	2"
*HB-4301	14.33	8.82	14.49	6.81	1.97	4.68[a]	10.23	11.65	17.79	4.52	6.10	17.79	5.94		
															2"
HB-6355															
HB-6363	370	455	415	198	105	151[a]	290	330	565	140	180	590	240	15	2"
HB-6375	14.56	17.91	16.34	7.80	4.13	5.71	11.42	12.99	22.24	5.51	7.08	23.23	9.45		
HB-6386															
HB-6455	400	–	415	198	105	151[a]	290	330	565	140	180	590	240	15	2"
HB-6475	15.78	–	16.34	7.80	4.13	5.71	11.42	12.99	22.24	5.51	7.08	23.23	9.45		

*HB-4301 is motorless version of HB-4337 K=404, H=314, A[1]=224, a = 1/2E b = HB-3319 =0

Axial Fans

Bayley

Direct Drive Tubeaxial

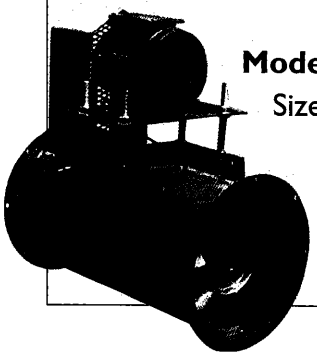


Model DTM
Sizes 15" - 36" 215T Max.

Model DTL
Sizes 15" - 36" 215T Max.

5-Day Availability	*10-Day Availability*
TEFC Motor Standard Access Door Spiral Guards Companion Flange Nema 1 Junction Box	Air-Dry Heresite Air-Dry Epoxy Nema 4 Junction Box

Belt Drive Tubeaxial

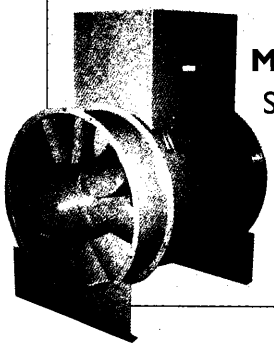


Model BTM
Sizes 12" - 36" 215T Max.

Model BTL
Sizes 18" - 36" 215T Max.

5-Day Availability	*10-Day Availability*
Std Motor & Drive Standard Access Door Spiral Guards Companion Flange Weather Cover Belt Guard	Air-Dry Heresite Air-Dry Epoxy Mounting Feet Isolators Disconnect Switch (Unmounted)

Belt Drive Vaneaxial

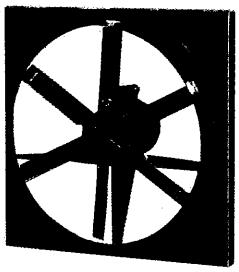


Model BVL
Sizes 12" - 36" 215T Max.

AMCA Certified Performance

5-Day Availability	*10-Day Availability*
Std Motor & Drive Standard Access Door Spiral Guards Companion Flange Weather Cover Belt Guard	Air-Dry Heresite Air-Dry Epoxy Mounting Feet Isolators Disconnect Switch (Unmounted)

Direct Drive Panel Fans

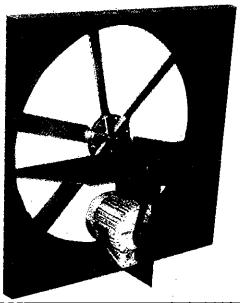


Model DPL
Sizes 18" - 27" 145T Max.
Sizes 30" - 48" 215T Max.

5-Day Availability	*10-Day Availability*
TEFC Motor #2 Front Guard Automatic Shutter	Air-Dry Heresite Air-Dry Epoxy #4 Rear Guard Disconnect Switch (Unmounted)

Axial Fans *(continued)*

Belt Drive Panel Fan

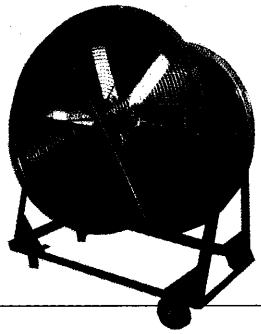


Model BPL
Sizes 18" - 27" 145T Max.
Sizes 30" - 48" 215T Max.

Model MBP
Sizes 18" - 27" 145T Max.
Sizes 30" - 48" 215T Max.

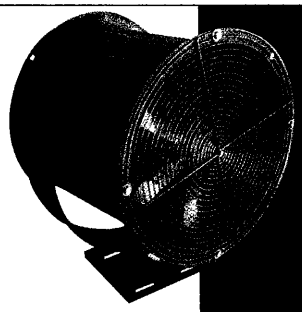
5-Day Availability	*10-Day Availability*
Std Motor & Drive #2 Front Guards Automatic Shutter	Air-Dry Heresite Air-Dry Epoxy #4 Rear Guard Disconnect Switch (Unmounted)

Mancoolers



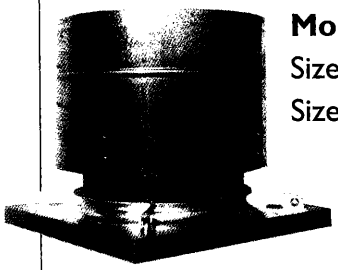
Model MCL

Model MBL
Sizes 15" - 36"
184T Max.



5-Day Availability
TEFC Motor Wheels

Low Silhouette Upblast PRV

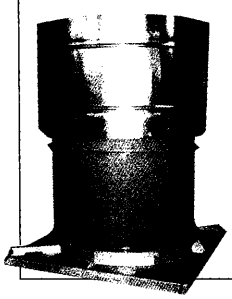


Model SLD Direct Drive
Sizes 18" - 30" 184T Max.
Sizes 32" - 36" 215T Max.

Model SLB Belt Drive
Sizes 18" - 48" 215T Max.

10-Day Availability
Std Motor & Drive Nema 3R Disconnect (Mtd/Wired)

Belt Drive Upblast PRV



Model STB Arr. 9
Sizes 18" - 48"

3 Propellers Options
091 Aluminum
097 Steel Slow Speed
098 Cast Aluminum

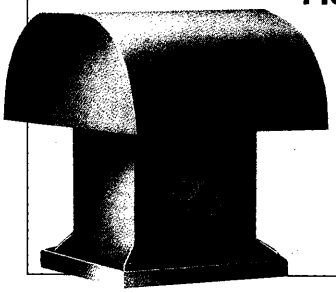
5-Day Availability	*10-Day Availability*
TEFC Motor & Drive Standard Access Door Spiral Guards Companion Flange	Nema 3R Switch (Mtd/Wired) Aluminum Dampers

Axial Fans *(continued)*

Belt Drive Hooded PRV

Model HVB Arr. 10

Sizes 24" - 36"



2 Propellers Options	*10-Day Availability*
091 Aluminum 097 Steel Slow Speed	Standard Motor & Drive Birdscreen
Supply or Exhaust Configurations	Nema 3R Switch (Mtd/Wired)

Industrial Exhausters

Model EX-GP

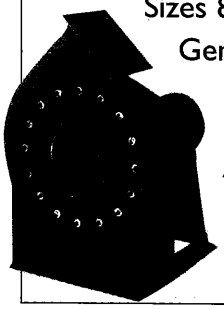
Sizes 87 - 261

General Purpose Wheel

15,000 FPM Tip Speed

Arr. 1, 9R or 10

CW or CCW



10-Day Availability	
Std Motor & Drive	Inlet Flange
Weather Cover	Std Access Door
(Arr. 10 only)	Drain
Belt Guard	Air-Dry Heresite
Outlet Flange	Air-Dry Epoxy

Centrifugals

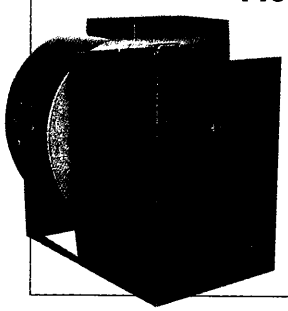
Belt Drive Vent Set

Model BI

Backward Inclined Wheel

CW or CCW

AMCA Certified Air Performance

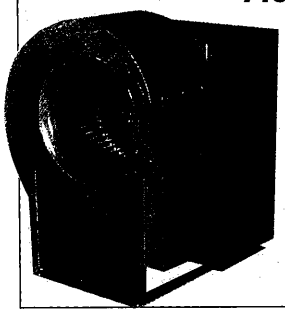


5-Day Availability	*10-Day Availability*
Sizes 90-270 Std Motor & Drive Weather Cover Belt Guard Outlet Flange Cooling Wheel Backdraft Damper Isolation Kit Std Access Door Drain	Sizes 300-365 Teflon Shaft Seal Inlet Flange Inlet Screen Outlet Screen AMCA "B" (90-245 Only)

Centrifugals

Belt Drive Utility Set

Model FCV

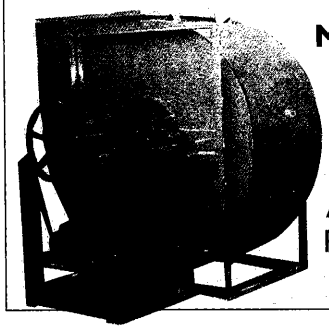


Forward Curved Wheel
CW or CCW

AMCA Certified Air Performance

5-Day Availability	*10-Day Availability*
Sizes 90-150	Sizes 182-245
Std Motor & Drive	Teflon Shaft Seal
Weather Cover	Inlet Flange
Belt Guard	Inlet Screen
Outlet Flange	Outlet Screen
Isolation Kit	
Backdraft Damper	AMCA "C"
Std Access Door	
Drain	

Free Standing Centrifugals

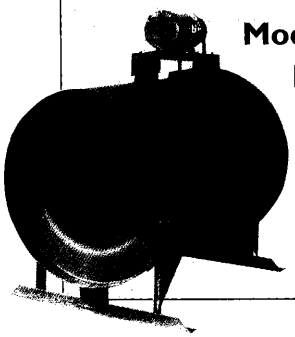


Model BIC
Sizes 122-365
Backward Inclined Wheel

AMCA Certified Air Performance

	10-Day Availability
Class I Construction Arr. 1, 9 or 10	Std Motor & Drive
	Weather Cover (Arr. 10 only)
CW or CCW	Belt Guard
	Outlet Flange
AMCA "B" (90-245 Only)	Inlet Flange
	Std Access Door
	Drain
	Air-Dry Heresite
	Air-Dry Epoxy

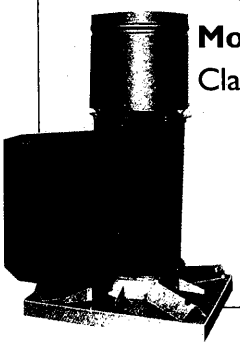
Tubular Centrifugal



Model SL
Backward Inclined Wheel
Sizes 90-245
Class I Construction

	10-Day Availability
AMCA Certified Air Performance	Std Motor & Drive
	Weather Cover
AMCA "B" (90-245 Only)	Belt Guard
	Outlet Flange
	Inlet Flange
	Std Access Door
	Drain
	Air-Dry Heresite
	Air-Dry Epoxy

Roof Mounted Fume Exhaust



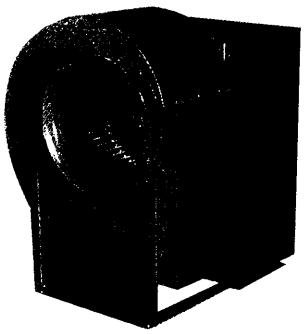
Model FH/FHL
Class I Construction

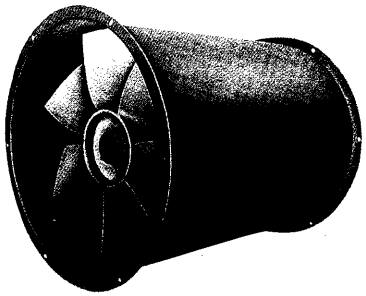
	10-Day Availability
Available in 4 Popular Sizes	Std Motor & Drive
	Std Access Door
105-60	Drain
122-70	Air-Dry Heresite
	Air-Dry Epoxy
150-13	AMCA "B"
182-19	

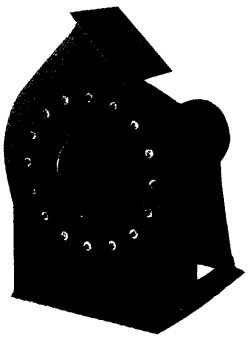
List of the Howden Fan Groups

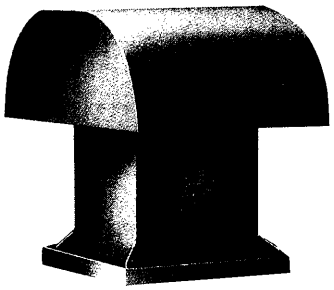
We service and supply replacement fans and parts originally manufactured by:

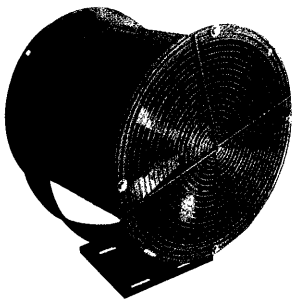
- American Blower
- American Davidson
- American Standard
- Buffalo Forge
- Canadian Blower & Forge
- Green
- Howden Brown Boveri
- Howden Canada
- Howden Parsons
- James Howden
- Joy
- KKK
- Novenco
- Novenco Canada
- SMC
- Sheldon
- Sirocco
- Stork
- Sturtevant
- Taurus
- Uranus
- VSH
- Variax
- Westinghouse











Supporting Products

- Gyrol Fluid Drives
- Sturtevant Bearings
- Air Heaters
- HVAC Products
- American Standard Compressors
- Precipitron Parts
- CB&F Pumps

We repair and provide replacement parts for utility fans, industrial fans and commercial fans originally manufactured by 25 different companies.

To support these efforts we also offer performance testing, vibration analysis, turnkey options, field supervision, maintenance contracts and system analysis.

Call Thompson Hill for authentic replacement parts and original specifications. Plus we offer the technical expertise and responsive approach you depend on to put your system back in operation as quickly and affordably as possible.

Call us for your fan replacement parts for:

• Shafts • Bearings • Housings

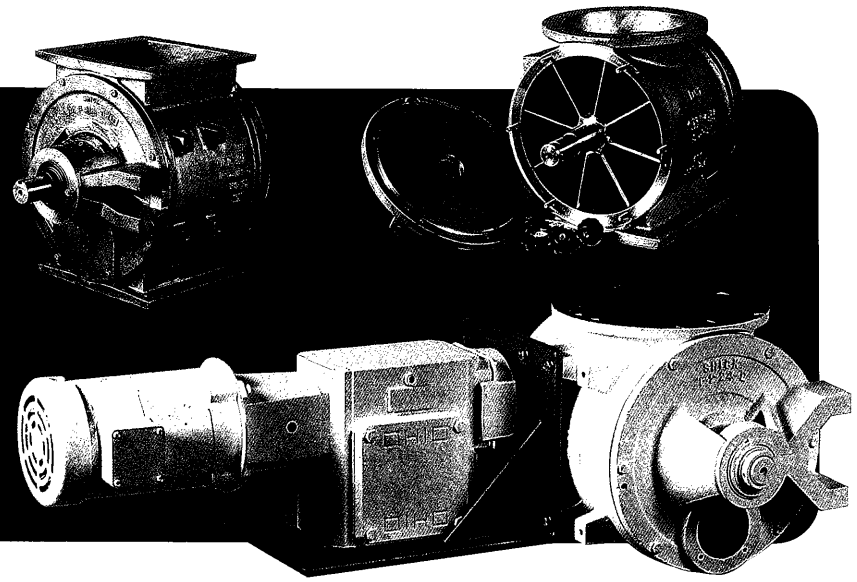
Bayley

Valves

Thompson-Hill provides an assortment of valves for a wide variety of material handling applications, including the most challenging conditions for many of the foremost names in the process industry. In addition to our rotary valves, our valve line includes a diversified combination of butterfly, pinch, slide gate and diverter valves to meet any of your material handling requirements or demands.

Rotary Valves

Designed for use in gravity vacuum and pressure conveying systems, Rotary Valves are suitable for metering a wide range of solids, granular, pelleted and powdered materials from the outlets of silos, hoppers, cyclones, mixers and weighers. We offer a choice between heavy duty parallel rotor feeders and a tapered rotor series suitable for lower differential pressures.



DIMENSIONS-AIRLOCK/FEEDER

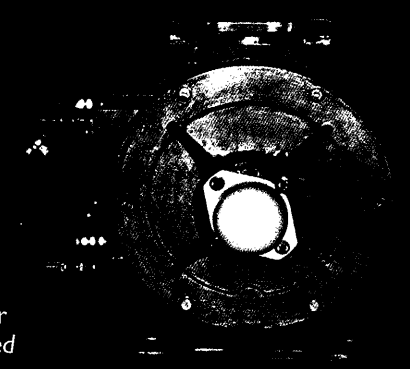
Housing Style	020	075	700	1250	175	420	2000	420F	2000F	700F	685F	1250F
Cu. Ft. per Rev.	.020	.075	.745	1.23	.163	.432	1.75	.420	1.75	.745	.657	1.25
Vanes	6	8	8	8	8	8	8	8	8	8	8	8
Air Leakage PSI	1.8	2.6	5.53	6.32	3.33	4.57	7.56	4.57	7.56	5.53	5.21	6.32
Shaft Diam. In/mm	.75/19	1.1875/30	1.5/38	2/51	1.1875/30	1.25/32	2/51	1.25/32	2/51	1.5/38	1.25/32	1.5/38
Weight** CI/304 S/S	50/70	75/95	280/300	490/510	90/110	160/180	530/550	160/180	530/550	280/300	210/230	490/510
A In/mm	8.5/216	16.375/416	26/660	29.5/749	18.25/464	22.5/572	34.5/876	21/533	34.5/876	24/610	30.4375/773	35/889
B In/mm	4.75/121	8.1875/208	13/330	14.75/375	9.125/232	11.25/288	17.25/438	11.625/295	17.25/438	13/330	15.2188/387	17.5/445
C In/mm	5.875/149	10/254	15.25/387	20/508	10/254	13.125/333	18.25/463	12.375/314	18.25/464	14.625/371	10.75/273	14.25/362
D In/mm	25.1875/640	27/686	33.5/851	35/889	27.125/689	29.625/752	35.75/908	29.625/752	35.75/908	33.5/851	28.625/727	32/813
E In/mm	27.9375/710	31.5/800	40.75/1035	44/1118	31.625/803	35.75/908	44.5/1130	35.75/908	44.5/1130	40.75/1035	36.125/918	39/991
F In/mm	-	-	-	-	-	-	-	3.75/95	6/152	4.25/108	3.375/86	4.25/108
Flange Style	A/A	B/B	C/C	C/C	A/B	A/B	A/C	A	A	C	D***	D
# of Mount Holes	4/4	8/8	12/12	12/12	6/8	6/8	6/12	6	6	12	18	14
Size of Holes/Tap	5/16 - 18	5/16 - 18	1/2 - 13	1/2 - 13	5/16 - 18	3/8 - 16	1/2 - 13	3/8 - 16	1/2 - 13	1/2 - 13	3/8 - 16	1/2 - 13
G (OD Round)	5.5/140	-	-	-	9/229	11/279	17/432	11/279	17/432	-	-	-
H (ID Round)	3.5/89	-	-	-	6/152	8/202	13/330	8/203	13/330	-	-	-
I Bolt Circle	4.75/121	-	-	-	8/203	9.75/248	15.5/394	9.75/248	15.5/394	-	-	-
J In/mm	-	8/203	14.5/368	14.5/368	8.125/206	10.75/273	16/406	-	-	14.5/368	15/381	14/356
K In/mm	-	5/127	10.5/267	10.5/267	5.125/130	7.75/197	12/305	-	-	10.5/267	9/229	9/229
L In/mm	-	7/178	14.5/368	13.5/343	9/229	11.125/283	16/406	-	-	14.5/368	17/432	21/533
M In/mm	-	4/102	10.5/267	10.5/267	6/225	8.125/206	12/305	-	-	10.5/267	12/305	16/406
N In/mm	-	3/76	4.125/105	4.125/105	4/102	5.1875/132	4.875/124	-	-	4.125/105	2.5/64	4.75/121
O In/mm	-	3.5/89	4.125/105	4.125/105	3.5/89	4.875/124	4.875/124	-	-	4.125/105	3/76	3/76

ROTARY VALVES/FEEDERS

An important key to Rotary Valve Performance, including (maximum) optimum operation life, is proper valve selection based on your specific process requirements. We have the right valve for your application, precision machined to close tolerances for pressure or vacuum systems, gravity feeding, metering material into pneumatic conveying lines or for simple dust collector discharge applications. Most valves are available in cast iron, stainless steel, aluminum, monel, hastellox and NI hard bodies with a variety of metallic or polymer coatings.

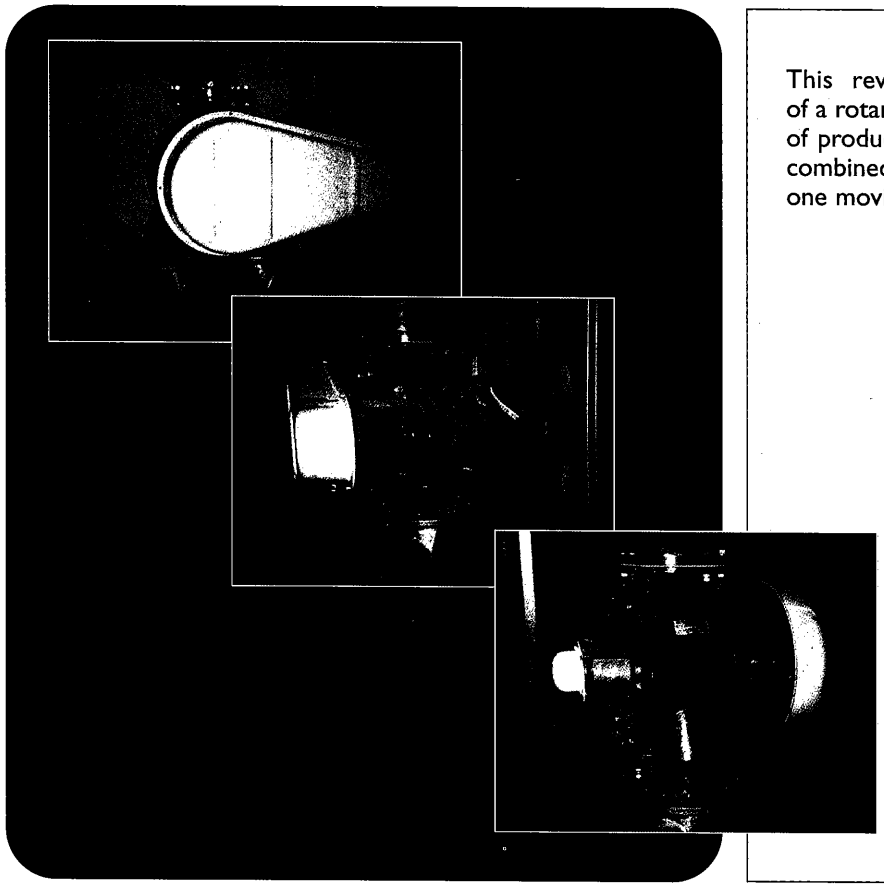
New!

Twin-Outlet Diverting Rotary Valve



(patents pending) A never before offered combination of ***Feeder/Airlock and Diverter in one simple mechanism***. Ideal for all gravity or pneumatic applications. The *Tapered Rotor* design provides for easy rotor gap adjustments. Five Sizes, Capacities to 2,500 ft³/hr.

The *Award Winning* Twin Outlet Rotary Valve



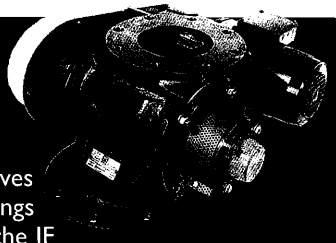
This revolutionary valve combines the functionality of a rotary valve/feeder with the ability to divert the flow of product. The advantages are clear over a rotary valve combined with a diverter valve: less head room and only one moving part.

Design Features:

- externally adjustable rotor clearance
- controllable flow rate
- available in cast iron, stainless & Hastelloy
- easy-clean rotor assembly
- wear resistant coatings
- purged shaft seals

BUSH & WILTON, INC.

Offset Flange Rotary Valve (OF Series)

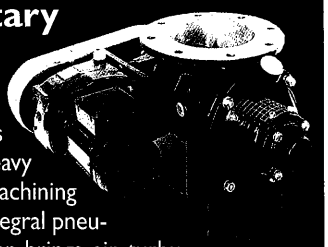


The OF Series Rotary Valves share all the heavy duty castings and precision machining of the IF Series, with the exception of the offset flanges. Because the inlet flange is offset relative to the rotor, flooding and overfill of the rotor pockets is limited which greatly reduces product shearing. This design is recommended for granular and pelletized products such as plastic chips. Heavy cast bodies, end covers, oversized shafts, adjustable packing gland seals and sealed outboard roller bearings provide reliable service and long operating life.

Design Features:

Materials of Construction	cast iron, cast stainless, cast aluminum, Hastelloy, Ni-resist, bronze and Monel
Sizes	4" 6" 8" 10" 12" 14" 16" 18" with round flanges
Seal Type	multi-ring adjustable packing gland (air purge option available)
Seal Materials	PTFE, graphite impregnated PTFE or Kevlar
Rotor Bearings	permanently sealed outboard roller bearings
Pressure Rating(standard)	20 psig (high pressure designs available)
Operating Temperature	392°F
Design Options	purged seals, body vent, bolt-on rotor tips, closed-end rotor, reduced capacity rotor, metallic and polymer coating, torque limiter, rotation detection, variable speed drive, metering baffles

Blow-Through Rotary Valve (BS Series)

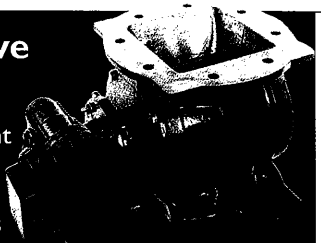


This valve is identical to the original IF Series Rotary Valves and shares all of the same heavy duty castings and precision machining but the BS Series valve has an integral pneumatic line loader. The line loader brings air turbulence close enough to dislodge solids from the rotor, but because air does not pass directly through the vanes wear is reduced and valve life greatly increased. This design also allows the rotor to be removed for inspection without disturbing the pneumatic connections. The "V" neck inlet reduces product shearing and the oversized rotor shaft and drive are designed to compensate for high torque loads due to high material loading and differential pressures. Heavy duty cast bodies, precision machining, adjustable packing gland seals and sealed outboard bearings provide reliable operation and long operating life.

Design Features:

Materials of Construction	cast aluminum, cast iron, cast stainless also available in Hastelloy, Ni-resist, bronze and Monel
Sizes	6" 8" 10" 12" 14" with round flanges
Pneumatic Connections	threaded pipe or ANSI 150# flanges
Seal Type	multi-ring adjustable packing gland(air purge option available)
Seal Materials	PTFE, graphite impregnated PTFE or Kevlar
Rotor Bearings	permanently sealed outboard roller bearings
Pressure Rating (standard)	20 psig (pressures to 325 psig available)
Operating Temperature	392°F
Design Options	purged seals, body venting, closed-end rotors, bolt-on rotor tips, metallic and polymer coatings, torque limiter, rotation detection, metering baffles

Dust Collector Valve (SRD Series)

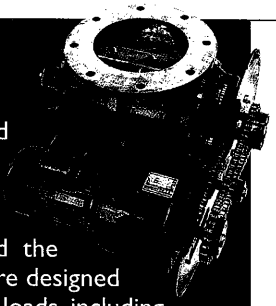


This valve is designed for light duty or intermittent applications including under dust collectors. The "V" neck inlet reduces product shearing and loading. The compact right angle drive is low maintenance for those out of the way locations. Economically designed with ring seals and oilite bearing, this rotary valve is built with the same heavy duty castings and precision machining that goes into all B&W valves. SRD Valves feature replaceable blade tips of steel or polyurethane.

Design Features:

Materials of Construction	cast iron or cast stainless
Sizes	6" 8" 10" 12" combination round/square flanges
Shaft Seal	Nitrile O-rings
Rotor Support	oilite bushing
Pressure Rating (standard)	1 psig
Operating Temperature	158°F
Design Options	bolt-on rotor tips, reduced capacity rotors, closed-end rotors

Heavy-Duty (IF Series)



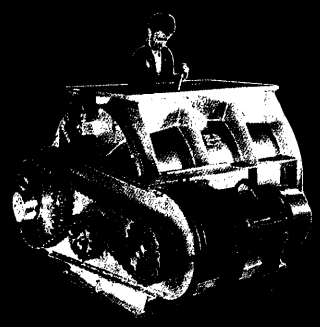
This heavy duty valve is designed for feeding and metering a wide variety of solids in gravity, pressure or vacuum applications. The "V" neck inlet reduces shearing and the oversized rotor shaft and drive are designed to compensate for high torque loads including those due to high material loading or differential pressure. Cast bodies and end covers, heavy duty rotors, adjustable packing glands and sealed outboard bearings ensure reliability and long operating life.

Design Features:

Materials of Construction	cast aluminum, cast iron, cast stainless, Hastelloy, Ni-resist, bronze and Monel
Sizes	4" 6" 8" 10" 12" 14" 16" 18" 24" with round flanges
Seal Type	multi-ring adjustable packing gland (air purging option available)
Seal Materials	PTFE, graphite impregnated PTFE or Kevlar
Rotor Bearings	permanently sealed outboard roller bearings
Pressure Rating	20 psig (designs to 325 psig available)
Operating Temp.	392°F
Design Options	purged seals, body venting, closed-end rotors, bolt-on rotor tips, reduced capacity rotors, metallic and polymer coatings, torque limiter, rotation detection and metering baffles

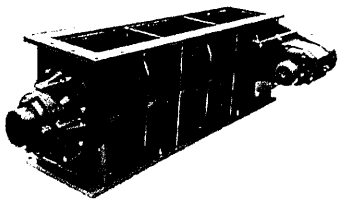
Extended Length and Oversized Valves are commonplace at B&W.

There is virtually no limit to what we can do for you.



Design Features:

- Up to 46" x 46" square valve
- Up to 7' long rotary valve
- Special custom applications
- Coating and plating service
- Abrasion & wear resistance

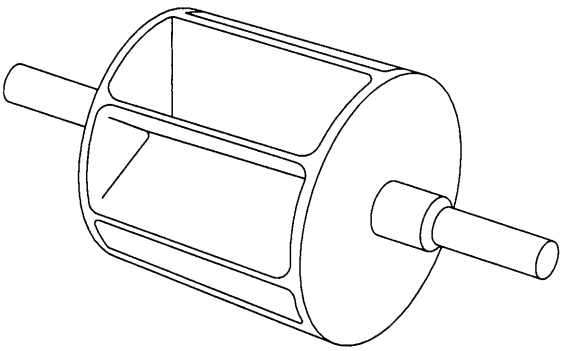


Tapered Rotor vs. Bolt-On Tips

There are three main reasons why you might want to use **bolt-on rotor tips** in your rotary valve design: **(1)** to adjust rotor clearance (to compensate for air leakage, temperature or product characteristics); **(2)** as replaceable wear parts; **(3)** as a scraping blade for sticky material. Our exclusive ***Tapered Rotor*** avoids many of the reasons bolt-on rotor tips might have been used. In most cases the ***Tapered Rotor*** eliminates two of the three reasons for using bolt-on tips including rotor clearance adjustment and for wear. Another benefit of the ***Tapered Rotor*** is that, unlike straight rotors, our rotor can be replaced without being machined for a specific valve body. The ***Tapered Rotor*** is simply installed and the desired rotor clearance set. The reduction in down time and cost is substantial.

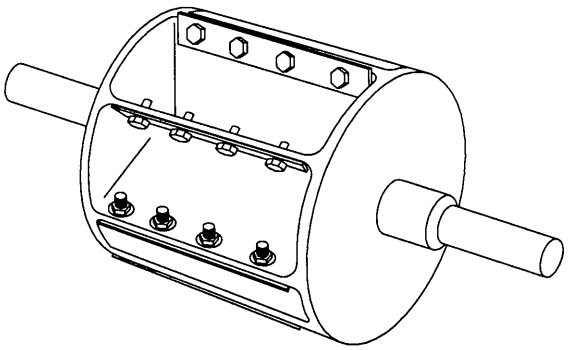
Tramp Metal

The last thing you need to risk is tramp metal going downstream to your sifter, packer or final product. The Tapered Rotor can help you avoid this problem.

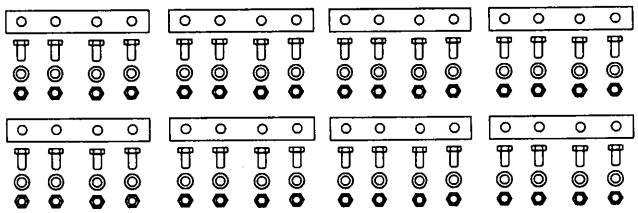


Tapered Rotor = no loose parts

(We do offer bolt-on hardened steel, phosphor-bronze, polyurethane and PTFE tips for applications not fulfilled by the Tapered Rotor alone. Contact our engineering department for recommendations.)



Bolt-On Tips = 104 to 152 loose parts

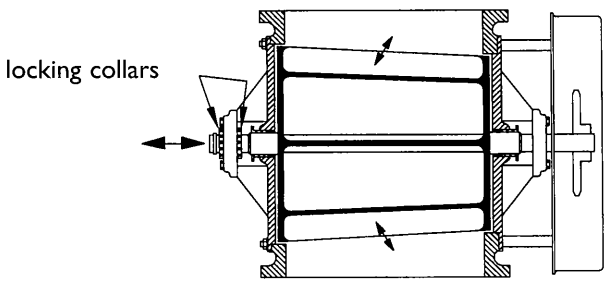


Rotor Clearance Adjustment

Proper rotor clearance is important for optimum rotary valve performance. The easier it is to adjust rotor clearance the more likely it will be maintained.

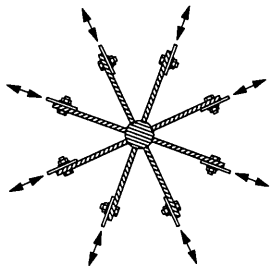
Tapered Rotor

No disassembly required. External adjustment simply by loosening two external locking collars and set screws.



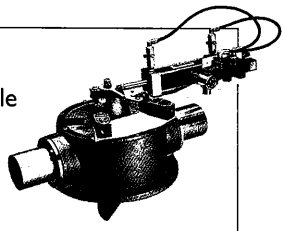
Bolt-On Tips

The rotor must be removed from the valve and set on a jig in order to set each blade tip independently via the 4 to 6 retaining bolts or machined to the desired diameter.



Bottom Diverter Valves

are designed to direct product into a vessel from a pneumatic conveying line. Compressed air is used to actuate the valve into either the divert or through position. In the **divert** position, conveying air and product are directed into the receiver, where product is separated from the air stream as the air leaves through the exit port. In the **through** position, product and conveying air by-pass the receiver.



Notes:

Electrical Supply — Standard solenoids and limit switches require 110V/single phase/60Hz control power (other voltages available upon request.)

Weather Resistant — Valves are sealed to resist moisture and can be machined to withstand a wide range of temperatures. Weather shields are available for outdoor applications.

Clean-In-Place Applications (CIP) — Available coupling/ferrule arrangement, allows quick disassembly and cleaning.

Exit Port Block — To avoid cross-contamination, the optional port block confines conveying air to the receiving vessel.

Actuation — Air cylinder actuation. Multiple sizes available for particular applications.

Limit Switches — Standard mechanical limit switch. Proximity switches are optional.

Maximum Line Pressure — 20 P.S.I.

Air Supply — 80-100 P.S.I. clean dry air. No lubrication.

Gasket — FDA approved, white natural sponge rubber standard. Others available upon request.

Weights *

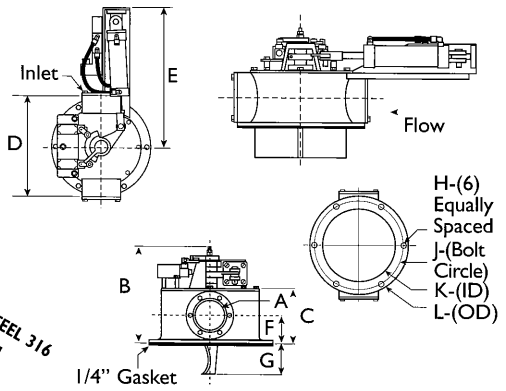
3"/76.2m TUBE	95 lbs.
3"/76.2m PIPE	95 lbs.
4"/101.6m TUBE	140 lbs.
4"/101.6m PIPE	140 lbs.
5"/127m TUBE	150 lbs.
5"/127m PIPE	210 lbs.
6"/152m TUBE	210 lbs.

• Weights shown include cylinders.

Materials Of Construction

	CAST IRON	ELECTROLESS NICKEL PLATED	STAINLESS STEEL 304	STAINLESS STEEL 316
3"/76.2m TUBE	■	■	■	■
3"/76.2m PIPE	■	■	■	■
4"/101.6m TUBE	■	■	■	■
4"/101.6m PIPE	■	■	■	■
5"/127m TUBE	■	■	■	■
5"/127m PIPE	■	■	■	■
6"/152m TUBE	■	■	■	■

Schematics



Dimensions - Unit

Inches

A	B	C	D	E	F	G	H	J	K*	L
3" TUBE	10 1/4	6 1/4	11 5/8	19	3 1/4	3	1/2	10 1/4	8	11 3/4
3" PIPE	10 1/4	6 1/4	11 5/8	19	3 1/4	3	1/2	10 1/4	8	11 3/4
4" TUBE	12 1/4	6 3/4	15 1/2	21	3 1/2	3 1/2	5/8	13 3/4	11	15 1/4
4" PIPE	12 1/4	6 3/4	15 1/2	21	3 1/2	3 1/2	5/8	13 3/4	11	15 1/4
5" TUBE	12 1/2	7 3/4	15 1/2	21	3 5/8	3	5/8	13 3/4	11	15 1/4
5" PIPE	14 3/4	9	18 1/2	22	4 1/4	4	5/8	16 1/2	13 1/2	18
6"TUBE	14 3/4	9	18 1/2	22	4 1/4	4	5/8	16 1/2	13 1/2	18

NOTE: All dimensions are nominal.. *Add 1" for vessel opening.

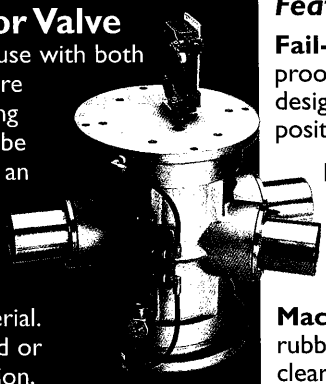
Millimeters

A	B	C	D	E	F	G	H	J	K*	L
76.2m TUBE	260	159	295	483	83	76	13	260	203	298
76.2m PIPE	260	159	295	483	83	76	13	260	203	298
101.6m TUBE	311	171	394	533	89	89	16	349	279	387
101.6m PIPE	311	171	394	533	89	89	16	349	279	387
127m TUBE	318	197	394	533	92	76	16	349	279	387
127m PIPE	375	229	470	559	108	102	16	419	343	457
152m TUBE	375	229	470	559	108	102	16	419	343	457

NOTE: All dimensions are nominal. *Add 25.4mm for vessel opening.

Tube Selector Valve

is constructed for use with both vacuum and pressure pneumatic conveying applications. The Tube Selector Valve uses an exclusive diverting piston design for effective convergence or divergence of material. The piston is raised or lowered into position, without rotation, by selectively injecting compressed air into each end of the cylinder. This movement allows the horizontal borings, located on two separate planes within the piston, to align with the housing ports to achieve a straight-through or divert position.



Features:

Fail-Safe Valve Position Indication — Dual-limit switch design confirms proof-positive valve position, eliminating the possibility of flow direction error. This design assures the Tube Selector Valve will be in either the straight-through or divert position, not somewhere in between.

Innovative Piston Operation — Shick's Tube Selector Valve uses a unique piston constructed of solid stock with the ports bored to precise specifications virtually eliminating the possibility of cross-contamination of conveyed material.

Nema — 4 and 9 standard, 4X and 7 available.

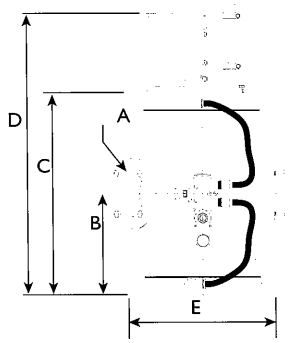
Machined Close Tolerances — Unlike other valves incorporating easily degradable rubber and plastic seats, Shick's valves are machined to precision metal-to-metal clearances eliminating frequent replacement of wearing parts.

Positive Line Connection — Removable port flange and O-ring seals provide secure pipe/tube to valve connection for quick installation without leakage.

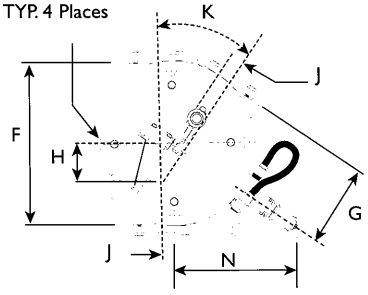
Abrasion Resistant Design — Valve design allows for smooth transition in the divert position, reducing pressure loss, friction and abrasive wear.

Easy Installation — Schick's Tube Selector Valve can be mounted in either the vertical or horizontal position. Mounting holes are also supplied in endplates for floor-mounting or when the valve is to be suspended from a structure.

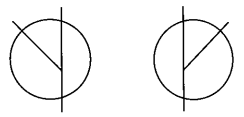
Schematics



L-(Hole Diameter)
M-(Bolt Circle)
TYP. 4 Places



Operating direction (viewed from top)



Left Hand Right Hand

Dimensions

Inches A	B	C	D	E	F	G	H	J	K	L	M	N
3" TUBE	6 1/2	13	18 1/4	9 5/8	9 1/4	4 5/8	2 3/8	3/4	35°	9/16	8 3/8	7 5/8
4" TUBE	9 1/4	18 1/2	24 5/8	13 1/2	14 5/8	7 5/16	3 23/32	1	30°	9/16	12 1/2	9 1/2
5" TUBE	10 5/8	21 1/4	29	15 1/4	17 1/2	8 3/4	4 7/16	1 3/16	30°	9/16	14	11
6" PIPE	14	28	37	21	23	11 1/2	6	1 9/16	30°	13/16	19	11

Millimeters A	B	C	D	E	F	G	H	J	K	L	M	N
76.2m TUBE	165	330	464	244	235	117	60	19	35°	14	213	194
101.6m TUBE	235	470	625	343	371	186	94	25	30°	14	318	241
127m TUBE	270	540	737	387	445	445	113	30	30°	14	356	279
152.4m PIPE	356	711	940	533	584	292	152	40	30°	21	483	279

NOTES: All dimensions are nominal.
Mounting holes for 6" TSV are on 45° instead of 90° as shown.
Valves are not designed to be actuated while product is in conveying stream.

Electrical Supply: Standard solenoids and limit switches require 110V/single phase /60Hz control power standard (other voltages available upon request.)

Weather Resistant: Valves are sealed to resist moisture and machined to withstand a wide range of temperatures. Weather shields are available for outdoor applications.

Clean-In-Place Applications (CIP): Available coupling/ferrule arrangement, allows quick disassembly and cleaning.

Limit Switches: Standard mechanical limit switch. Proximity switches are optional.

Maximum Line Pressure: 20 P.S.I.

Air Supply: 80 - 100 P.S.I. clean dry air. No lubrication.

Port Seals: All valves supplied with Buna-N O-rings standard. Other materials available upon request.

Piston Seals: All valves supplied with Buna-N O-rings standard.

Diverting Direction: Left hand or right hand available upon request.

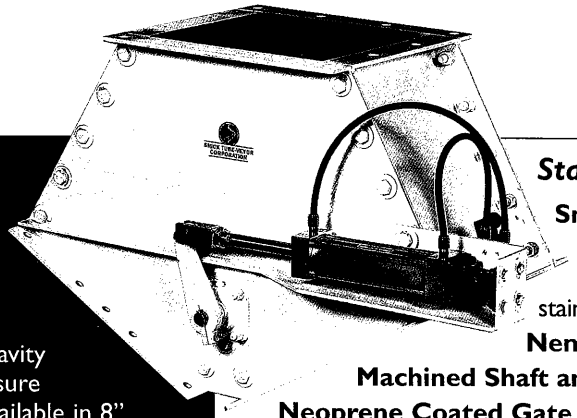
Tube Selector Valve *(continued)*

Weights

3"/76.2m TUBE	120 lbs.
3"/76.2m PIPE	120 lbs.
4"/101.6m TUBE	155 lbs.
4"/101.6m PIPE	155 lbs.
5"/127m TUBE	195 lbs.
5"/127m PIPE	195 lbs.
6"/152.4m TUBE	505 lbs.

Materials Of Construction

	CAST IRON	ALUMINUM	ELECTROLESS NICKEL PLATED	STAINLESS STEEL 304**	STAINLESS STEEL 316**
3"/76.2 HOUSING	■		■	■	■
3"/76.2 PISTON	■		■	■	■
4"/101.6 HOUSING		■		■	■
4"/101.6 PISTON		■	■	■	■
5"/127m HOUSING		■		■	■
5"/127m PISTON		■	■	■	■
6"/152.4 HOUSING		■		■	■
6"/152.4 PISTON		■	■	■	■



Two-Way Gravity Diverter Valve

Designed for gravity drop, non-pressure applications. Available in 8", 10" and 12" square inlet.

Standard Features:

Smooth Flow — 30° divert angle ensures consistent flow of material.

Rugged Construction — Fabricated carbon steel or stainless steel housing.

Nema — 4 & 9, 4x and 7 available.

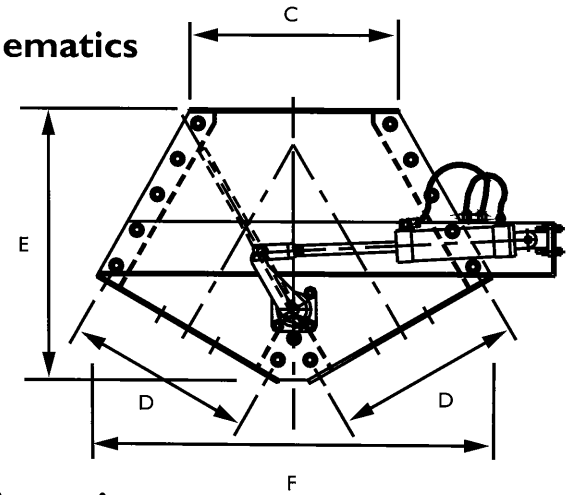
Machined Shaft and End Bearing — For long-lasting actuation of valve.

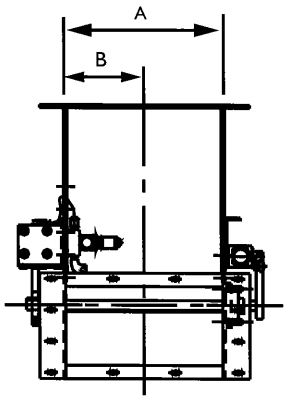
Neoprene Coated Gate — Provides a dust-tight seal.

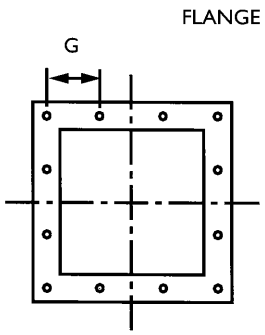
Proof-Positive Valve Position — Dual limit switch configuration provides assurance of complete actuation of air cylinder.

Air Cylinder Operated — And solenoid actuated for automated discharging of material.

Schematics







Dimensions

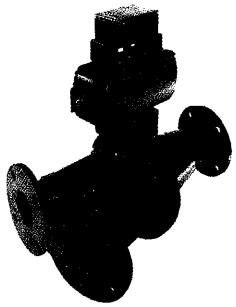
GDV	Weights KG/Lbs.	A In/mm	B In/mm	C In/mm	D In/mm	E In/mm	F In/mm	G In/mm
8"	23/50	8/203	4/102	11.375/288	11.375/208	14.5/36	30/762	4.875/124
10"	43/95	10/254	5/127	14/356	12.375/314	18.25/464	32/813	4.125/105
12"	59/131	12/305	6/152	16/406	16/406	21/533	35.5/902	4.75/121

Diverter Valves

Our Diverter Valve range comprises a wide variety of construction options, actuation and applications. Utilizing sealed flap, rotary plug, slidegate or pinch valve methods in cast and fabricated bodies, a diversity of powdered and granular products can be handled in gravity, pressure and vacuum driven environments. The Box Slider design is of particular interest where a minimum of product degradation and component wear is critical.

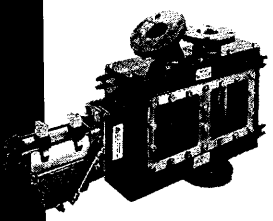
DM Conveying Diverters

for gravity feed, dilute or dense phase pneumatic conveyors. Available with flanged or tube connections. For abrasive applications, polyurethane liners and hardened steel flaps are available. Sizes from 2" to 12" in cast iron, cast aluminum or cast stainless steel.



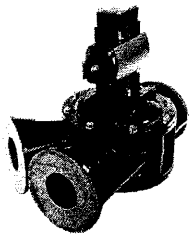
DBS Slide Box Diverters

are unique and have proven themselves in applications requiring dust tight operation. Friable products such as tobacco are perfect for this valve because there is no place for product to hang up. A smooth bore is all the product sees when being conveyed through this diverter. On-the-fly diverting is possible under many conditions. Available in sizes from 2" to 6" in cast iron, cast aluminum, cast stainless steel and, for abrasive applications, Ni-hard.



DP Plug Diverters

are used on all types of pneumatic systems because of their simplicity and reliability. The machined plug with a bored "Y" through the center rotates in the machined body to divert flow. On-the-fly diverting is possible under many conditions. Available in sizes from 3" to 12" in cast iron, cast aluminum or cast stainless steel.

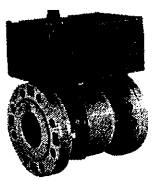


DS Double Slide Gate Diverters

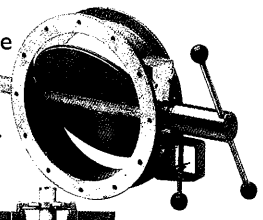
are used where the two legs must operate independently. This is the only diverter (other than the pinch valve) that can close both legs at the same time. Available in sizes 6" to 12" in aluminum, mild or stainless steel.

AKO Pinch Valve Diverters

are used in abrasive applications such as cement. The simplicity of two (or more) pinch valves allows independent operation of the diverter legs. Simple operation and a smooth bore makes these diverters ideal for dense or dilute phase pneumatic systems. Available in sizes 1.5" to 8".



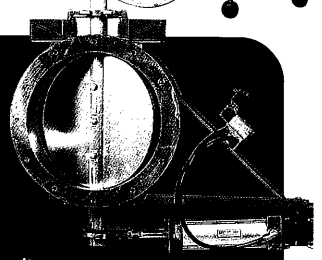
Shick Tube-Veyor Corporation's Butterfly Valves are available in two different models. For non-abrasive applications, Shick provides an O-ring damper which effectively seals the flow of dry powdered materials. A machined, beveled damper is available to seal the flow of granular materials and some semi-abrasive materials. Shick's Butterfly Valves are typically used during filling and scaling operations or to seal off the flow of air or material.



BUTTERFLY VALVES

The Butterfly Valve has been developed to answer demands from the process industry for a performance valve that's capable of giving a high degree of shut-off while still achieving a minimal amount of damage to the product that is being handled. The Butterfly Valve handles a wide and varied range of products, including powders, granules and liquids. An extensive choice of valve sizes are available in either manual or pneumatic actuation.

Butterfly Valves are available in two different models. For non-abrasive applications, we provide an O-ring damper which effectively seals the flow of dry powdered materials. A machined, beveled damper is available to seal the flow of granular materials and some semi-abrasive materials. Butterfly Valves are typically used during filling and scaling operations or to seal off the flow of air or material.



Features:

Positive Seal - Machined inner face and resilient O-ring guarantee a positive seal for material insuring years of dependable operation.

Quick Acting - Quick-acting cylinder actuates internal damper quickly and effectively for accurate scaling.

Construction - Cast aluminum housing is designed for long life.

Stainless Steel Lining - Optional stainless lining for appropriate sanitary or abrasive applications.

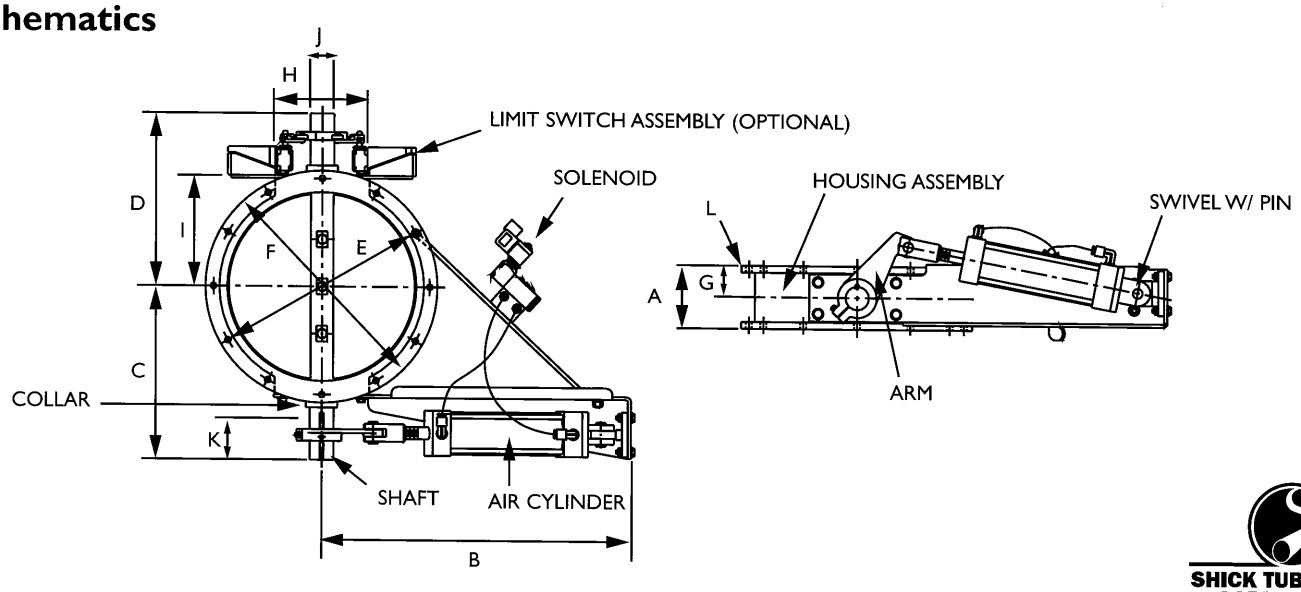
NEMA - 4 & 9 standard, 4X and 7 available.

Proof-Positive Valve Position - Dual limit switch configuration provides assurance of complete actuation of cylinder.

Free Flow Design - Completely opened or closed.

Flange Locating Holes - Provide quick and proper alignment of valve during installation.

Schematics



SHICK TUBE-VEYOR CORPORATION

Dimensions

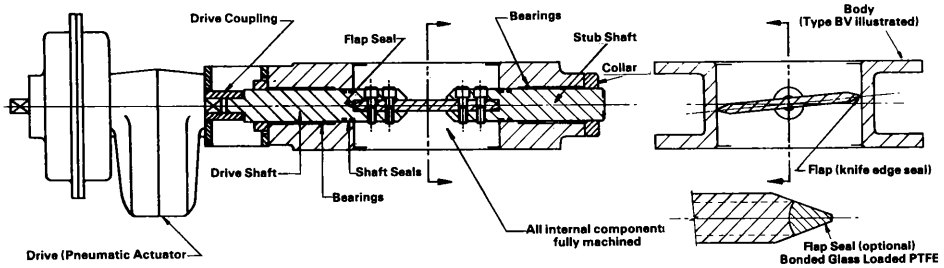
Size	Weight* Lbs.	# of Holes	A inch/mm	B inch/mm	C inch/mm	D inch/mm	E inch/mm	F inch/mm	G inch/mm	H inch/mm	I inch/mm	J inch/mm	K inch/mm	L inch/mm
8"	36	8	4.5/114	15.25/387	9/229	9/229	9.75/248	11/279	2.25/57	6/152	5/127	1.5/38	3/76	.75/19
12"	55	12	4.5/114	15.25/387	11/279	11/279	13.75/349	15/381	2.25/57	8/203	6.5/165	1.5/38	3/76	.75/19
16"	74	12	4.5/114	15.25/387	13/330	13/330	17.75/451	18.75/476	2.25/57	8/203	9/229	1.5/38	3/76	.75/19
20"	96	12	4.5/114	20.4/508	16/406	16/406	21.75/552	2.3/584	2.25/57	8/203	11.5/292	1.5/38	3/76	.75/19

* Complete units.

Butterfly Valves *(continued)*

BUSH & WILTON, INC.

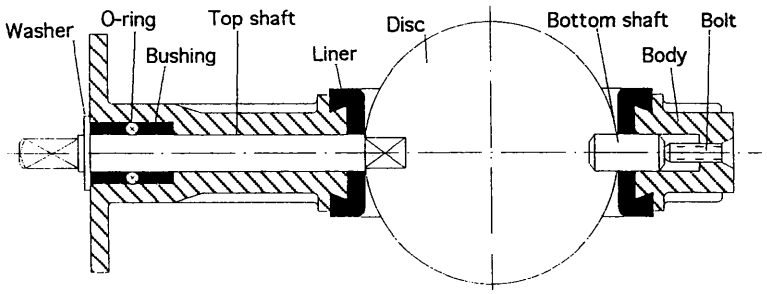
Design Details BW/BV



BW & BV Series

Methods of Actuation	Hand lever, Handwheel and Reduction gearbox, Pneumatic actuator
Size range	75mm - 400mm diameter ASA 150
Materials of Construction	Cast Iron/Mild Steel, Stainless Steel, Aluminum or combinations
Internal Seals	Shaft seals - Silicon or Nitrile (square section) 'O' rings Flap Seal - Metal to metal precision machined Flap/Shaft seal Prescollan rubber
Operating Temperatures	-10°C to +175°C, Specials -40°C to +400°C Bonded glass loaded PTFE and Silicon rubber flap seals max 200°C
Optional Equipment	Bonded glass loaded PTFE or Silicon rubber flap sealing rings (PTFE seals max. 400mm diameter) Limit switches, fail safe operation
Typical leakage rates	Metal to metal (knife edge seal) 28-85 ltrs/min dependent on size PTFE flap seal 14-43 ltrs/min dependent on size

Design Details FL



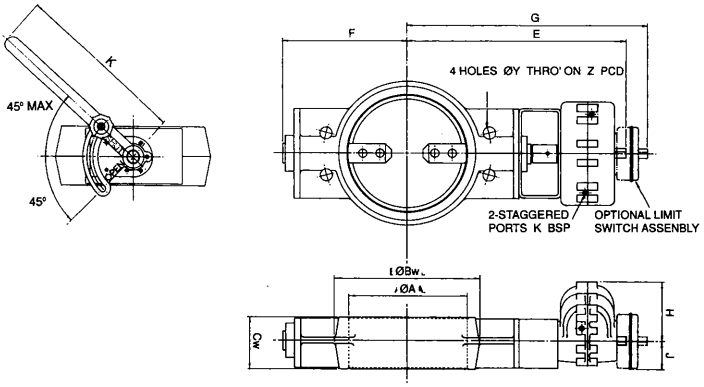
FL Series

Size range	40mm - 350mm Wafer pattern suitable for mounting between PN 10/16 or ASA 150 flanges, with replaceable liners
Materials of Construction	Cast Iron epoxy coated or Stainless Steel
Internal Seals	'O' Rings
Liner	Replaceable. Standard Ethylene Propylene EPDM. Other liners on request
Operating Temperatures FL Series	-4°C to +110°C (for EPDM liner)
Max Operating Pressures FL Series	DN40 - 350 10 Bar

BW & BV Series *(continued)*

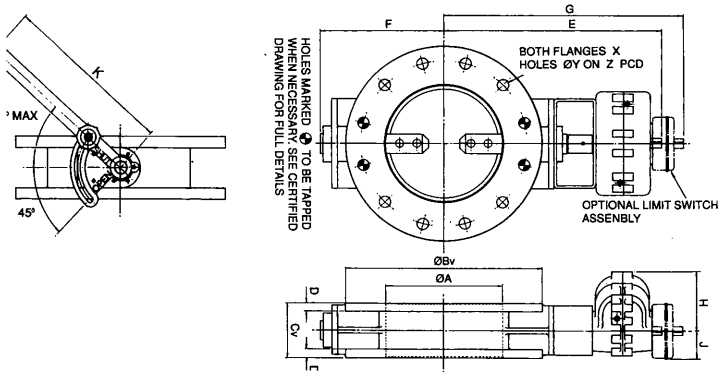
BWP/M Pneumatic/Manual

Operation & Control | **Pneumatic** - actuator with single solenoid valve 4 way, 5 port and limit switches.
Manual - lever with locking quadrant.



BVP/M Pneumatic/Manual

Operation & Control | **Pneumatic** - actuator with single solenoid valve 4 way, 5 port and limit switches.
Manual - lever with locking quadrant.

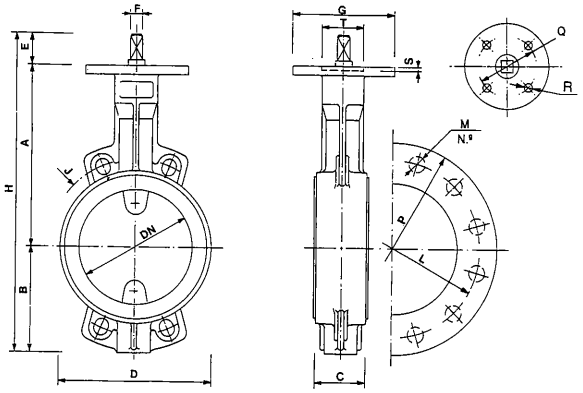


Valve Size	A	Bv	Bw	Cv	Cw	D	E	F	G	H	J	K	X	ASA 150 Y	Z	Weight KG
BV/BW 08	76	191	127	89	64	13	289	124	333	104	43	184	4	19	152	8
BV/BW 10	**102**	**229**	**152**	**89**	**64**	**13**	**308**	**143**	**352**	**104**	**43**	**184**	**8**	**19**	**191**	**10**
BV/BW 12	127	254	178	89	70	13	322	159	367	114	41	260	8	22	216	13
BV/BW 15	**152**	**279**	**203**	**89**	**76**	**13**	**354**	**191**	**399**	**114**	**41**	**260**	**8**	**22**	**241**	**16**
BV/BW 20	203	343	260	114	89	13	430	223	468	132	54	260	8	22	299	23
BV/BW 25	**254**	**406**	**318**	**114**	**114**	**19**	**474**	**267**	**512**	**132**	**54**	**330**	**12**	**25**	**362**	**40**
BV/BW 30	305	483	375	114	114	19	499	292	537	132	54	406	12	25	432	55
BV/BW 35	**356**	**533**	**429**	**114**	**127**	**19**	**543**	**296**	**592**	**171**	**64**	**406**	**12**	**29**	**476**	**72**
BV/BW 40	406	599	480	127	140	25	597	349	646	171	64	457	16	29	540	90

FL Series

FLP/M Pneumatic/Manual

Operation & Control | **Pneumatic** - actuator with single solenoid valve 4 way, 5 port and limit switches.
Manual - lever with locking quadrant.



Valve Size	A	B	C	D	E	F	G	H	J	L	P	M	N°	ASA 150 L	P	M	N	S	T	Q	R	Weight KG
40mm	132	61	33	76	45	12	100	238	110	110	150	18	4	99	127	16	4	3	55	70	9	2.2
50mm	**140**	**80**	**43**	**98**	**45**	**12**	**100**	**265**	**125**	**125**	**165**	**18**	**4**	**121**	**153**	**19**	**4**	**3**	**55**	**70**	**9**	**2.8**
65mm	154	91	46	113	45	12	100	290	145	145	185	18	4	140	178	19	4	3	55	70	9	3.5
80mm	**160**	**100**	**46**	**128**	**45**	**12**	**100**	**305**	**160**	**160**	**200**	**18**	**4/8**	**153**	**191**	**19**	**4**	**3**	**55**	**70**	**9**	**3.8**
100mm	180	114	52	154	45	12	100	339	180	180	220	18	8	191	229	19	8	3	55	70	9	4.9
125mm	**197**	**130**	**56**	**182**	**45**	**16**	**100**	**372**	**210**	**210**	**250**	**18**	**8**	**216**	**254**	**23**	**8**	**3**	**55**	**70**	**9**	**6.5**
150mm	210	145	56	208	45	16	100	400	240	240	285	22	8	241	279	23	8	3	55	70	9	8
200mm	**240**	**175**	**60**	**260**	**45**	**16**	**100**	**475**	**295**	**295**	**340**	**22**	**8**	**298**	**343**	**23**	**8**	**3**	**55**	**70**	**9**	**11.5**
250mm	280	210	68	328	45	24	160	535	362	362	395	22	12	362	406	25	12	3	70	102	11	20

Overview Of B&W Slide Gate Valves

These versatile valves are designed for a wide range of gravity flow applications. All share the same one piece cast bodies and heavy duty components that ensure reliable low maintenance operation for many years. Slides are sealed internally by a replaceable polyurethane or steel wiper ring. The end of the slide plate is sealed with a full-length adjustable packing gland. Both the inlet and outlet flanges are drilled and tapped with identical patterns to simplify installation.

SLIDE GATE VALVE WITH PNEUMATIC ACTUATOR - MODEL SB-P

These versatile valves are designed for a wide range of gravity flow applications. The one piece cast housing and heavy duty components ensure reliable operation for many years. The combination slide seal and deflector is a replaceable polyurethane, PTFE or steel ring. The slide is sealed externally by an adjustable packing gland. Both the inlet and outlet flanges are drilled and tapped with identical patterns to facilitate installation. The SB series slide gate valves are available with various manual, pneumatic and electric actuators.

Design Features:

Materials of Construction (body) — one piece cast aluminum, cast iron, cast stainless steel

Slide Materials — mild steel or stainless steel

Flange Sizes — 6" 8" 10" 12"

Slide Support — adjustable eccentric guides (Nylon, PTFE, phosphor bronze)

Slide Face Seal/Deflector — Ulon (cast polyurethane), PTFE, cast iron, stainless steel

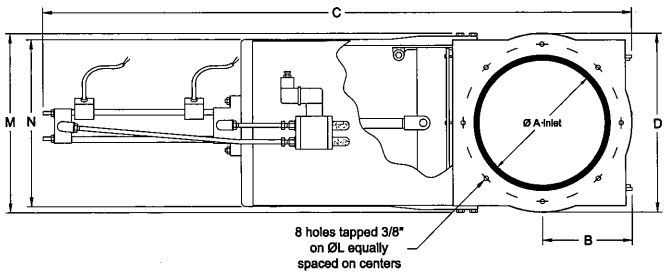
Slide Scraper — scraper blade on top of slide (Nylon, PTFE, brass)

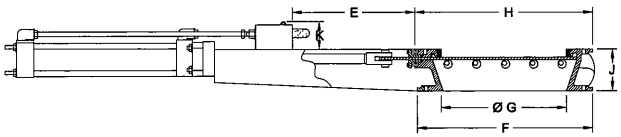
Slide End Seal — adjustable packing gland (PTFE, graphite impregnated PTFE)

Actuation — single pneumatic piston with optional solenoid valve and magnetic position indicating switches

Operating Temperature — 194°F with polyurethane seal/deflector & Nylon guides, 536°F with phosphor bronze guides and steel or iron deflector

Schematics



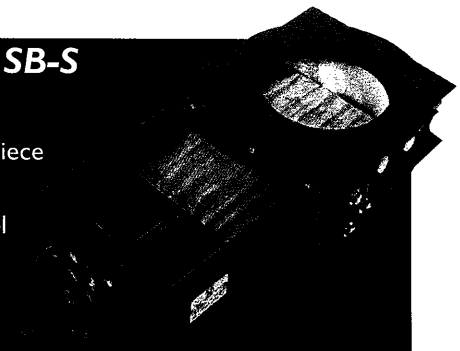


Dimensions are approximate and subject to change without notice.

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	Weight
SB15P	6	5-5/16	33-1/4	10-5/8	4-1/2	10-5/8	6	10-5/8	3-1/2	2-1/4	9	11-5/8	9-3/8	35
SB20P	8	6-5/16	39-1/4	12-5/8	6-1/2	12-5/8	8	12-5/8	3-1/2	2-1/4	11	13-5/8	11-1/4	40
SB25P	10	7-5/16	45	14-5/8	8-1/2	14-5/8	10	14-5/8	3-1/2	2-1/4	13	15-1/2	13-1/4	49
SB30P	12	8-5/15	51	16-5/8	10-1/2	16-5/8	12	16-5/8	3-1/2	2-1/4	15	17-1/2	15-1/4	44

Weights are for aluminum - iron & stainless are 2X the weights shown

SLIDE GATE VALVE WITH MANUAL LEAD SCREW - MODEL SB-S



These versatile valves are designed for a wide range of gravity flow applications. The one piece cast bodies and heavy duty components ensure reliable operation for many years. The manual lead screw assures reliable opening and closing of the slide even with heavy loading. The combination slide seal and deflector is a replaceable polyurethane, PTFE or steel ring. The slide is sealed externally by an adjustable packing gland. Both the inlet and outlet flanges are drilled and tapped with identical patterns to facilitate installation. The SB series of slide gate valves are available with various manual, pneumatic and electric actuators.

Design Features:

Materials of Construction (body) — one piece cast aluminum, cast iron, cast stainless steel

Slide Materials — mild steel or stainless steel

Flange Sizes — 6" 8" 10" 12"

Slide Support — adjustable eccentric guides (Nylon, PTFE, Phosphor Bronze)

Slide Face Seal/Deflector — Ulon (cast polyurethane), PTFE, cast iron, stainless steel

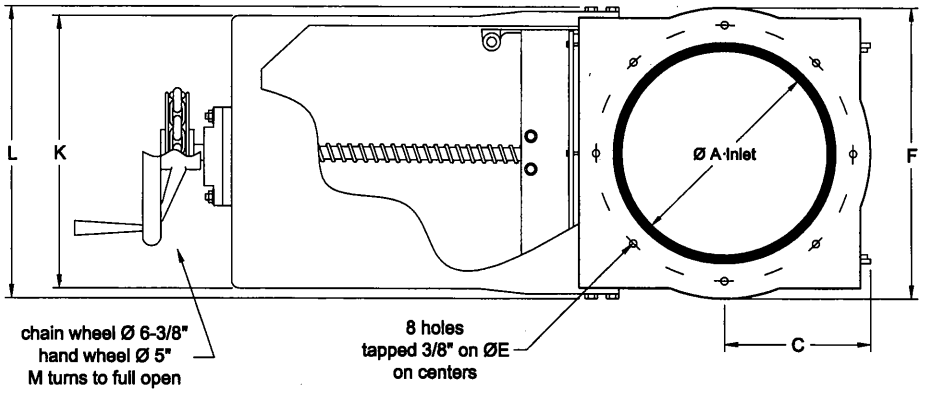
Slide Scraper — scraper blade on top of slide (Nylon, PTFE, Brass)

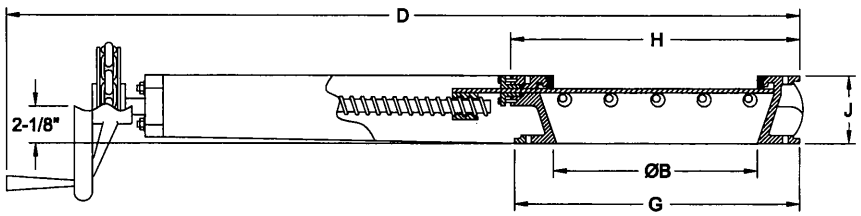
Slide End Seal — adjustable packing gland (PTFE, graphite impregnated PTFE)

Actuation — lead screw with hand wheel or chain wheel

Operating Temperature — 194°F with polyurethane seal/deflector & Nylon guides, 536°F with phosphor bronze guides and steel or iron inlet deflector

Schematics





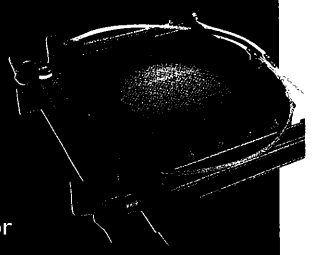
Dimensions are approximate and subject to change without notice.

Model	A	B	C	D	E	F	G	H	J	K	L	M	Weight
SB15S	6	6	5-5/16	26	9	10-5/8	10-5/8	10-5/8	3-1/2	9-3/8	11-5/8	36	26
SB20S	8	8	6-5/16	30	11	12-5/8	12-5/8	12-5/8	3-1/2	11-3/8	13-5/8	48	29
SB25S	10	10	7-5/16	34	13	14-5/8	14-5/8	14-5/8	3-1/2	13-3/8	15-1/2	58	44
SB30S	12	12	8-5/16	38	15	16-1/2	16-1/2	16-1/2	3-1/2	15-1/4	17-1/2	69	44

Weights are for aluminum - iron & stainless are 2X the weight shown

COMPACT SLIDE GATE VALVE WITH TWIN PISTON ACTUATION - MODEL SB-T

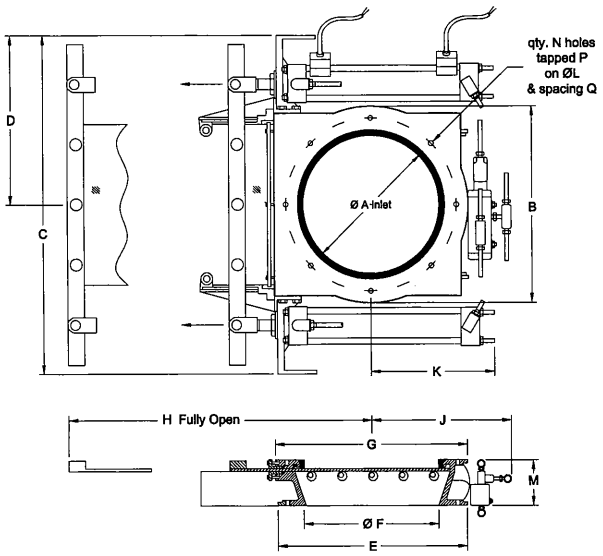
These versatile valves are designed for a wide range of gravity flow applications. The one piece cast bodies and heavy duty components ensure reliable operation for many years. The twin piston design decreases overall length and assures reliable actuation of the slide even with heavy loading. The combination slide seal/inlet deflector is replaceable polyurethane, PTFE or stainless steel or iron ring. The slide plate is sealed externally with a full-length adjustable packing gland. The inlet and outlet flanges are drilled and tapped with identical patterns to facilitate installation. The SB series of slide gate valves are available with various manual, pneumatic and electric actuators.



Design Features:

Materials of Construction (body) — one piece cast aluminum, cast iron, cast stainless steel
Slide Materials — mild steel or stainless steel
Flange Sizes — 6" 8" 10" 12" 14" 16"
Slide Supports — adjustable eccentric guides (Nylon, PTFE, or phosphor bronze)
Slide Seal/Inlet Deflector — Ulon (polyurethane), PTFE, cast iron, stainless steel
Slide Scraper — single scraper blade on top of slide (Nylon, PTFE or brass)
Slide End Seal — full length adjustable packing gland (PTFE or graphite impregnated PTFE)
Slide Extension Area Guard — ABS impact resistant plastic guard (optional)
Actuation — twin pneumatic pistons optional solenoid valve & magnetic reed position indicating switches
Bulk/Dribble Feed — optional system for both full and part open control
Operating Temperature — 194°F with polyurethane seal/deflector & Nylon guides, 536°F with phosphor bronze guides and steel or iron ring deflector

Schematics



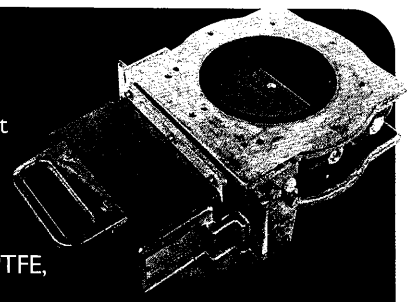
Dimensions are approximate and subject to change without notice.

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	Weight
SB15T	6	10-5/8	20-3/4	10-3/8	10-5/8	6	10-5/8	15	8-3/4	6-7/8	9	3-1/2	8	3/8	45° on centers	42
SB20T	8	12-5/8	22-5/8	11-3/8	12-5/8	8	12-5/8	18	9-3/4	7-7/8	11	3-1/2	8	3/8	45° on centers	44
SB25T	10	15-5/8	24-5/8	12-3/8	14-5/8	10	14-5/8	21	10-3/4	8-7/8	13	3-1/2	8	3/8	45° on centers	57
SB30T	12	15-1/2	26-5/8	13-3/8	16-1/2	12	16-1/2	24	11-5/8	9-7/8	15	3-1/2	8	3/8	45° on centers	57
SB35T	14	21	29-3/8	14-5/8	21	14	21	30-1/2	12-3/4	8-7/8	18-3/4	4	12	1/2	30° off centers	66
SB40T	16	23-1/2	35-1/2	17-3/4	23-1/2	16	23-1/2	35-5/8	14	8-7/8	21-1/4	4	16	1/2	22.5° off centers	75

Weights are for aluminum - iron & stainless are 2X the weight shown

MANUAL SLIDE GATE VALVE - MODEL SB-M

These versatile valves are designed for a wide range of gravity flow applications. The one piece cast housing and heavy duty components ensure reliable operation for many years. The combination inlet slide seal and deflector is replaceable polyurethane, PTFE or steel ring. The slide is sealed externally by an adjustable packing gland. Both the inlet and outlet flanges are drilled and tapped with identical patterns to facilitate installation. The SB series of slide gate valves are available with various pneumatic and electric actuators.



Design Features:

Materials of Construction (body) — one piece cast aluminum, cast iron, cast stainless steel

Slide Materials — mild steel or stainless steel

Flange Sizes — 6" 8" 10" 12" 14" 16"

Slide Supports — adjustable eccentric guides (Nylon, PTFE, phosphor bronze)

Slide Face Seal/Inlet Deflector — Ulon (cast polyurethane), PTFE, cast iron, stainless steel

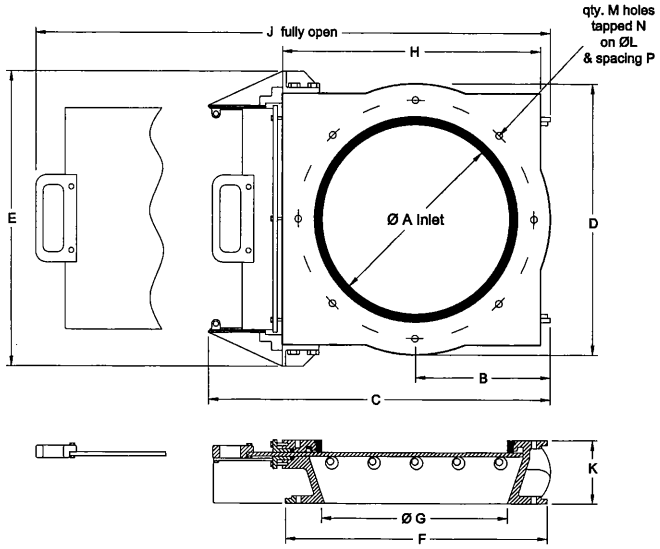
Slide Scraper — scraper blade on top of slide (Nylon, PTFE, brass)

Slide End Seal — adjustable packing gland (PTFE or graphite impregnated PTFE)

Actuation — manual

Operating Temperature — 194°F with polyurethane seal/deflector & Nylon guides, 536°F with phosphor bronze guides and steel or iron ring deflector

Schematics

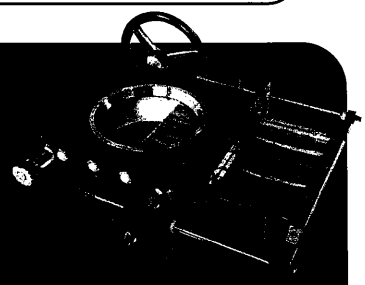


Dimensions are approximate and subject to change without notice.

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Weight
SB15M	6	5-3/16	15-1/2	14-5/8	11-7/8	10-5/8	6	10-5/8	17	3-1/2	9	8	3/8"	45° on centers	20
SB20M	8	6-3/8	17-1/2	12-5/8	13-7/8	12-5/8	8	12-5/8	20	3-1/2	11	8	3/8"	45° on centers	22
SB25M	10	7-3/8	19-1/2	14-5/8	15-7/8	14-5/8	10	14-5/8	23	3-1/2	13	8	3/8"	45° on centers	34
SB30M	12	8-3/8	21-3/8	16-1/2	17-7/8	16-1/2	12	16-1/2	26	3-1/2	15	8	3/8"	45° on centers	35
SB35M	14	10-1/2	26-3/4	21	20-1/4	21	14	21	32	4	18-3/4	12	1/2"	30° off centers	64
SB40M	16	11-13/16	31-1/2	23-1/2	23-5/8	23-1/2	16	23-1/2	36	4	21-1/4	16	1/2"	22.5° off centers	90

Weights are for aluminum - iron & stainless are 2X the weight shown

FAST ACTION MANUAL SLIDE GATE VALVE - MODEL SB-C



These versatile valves are designed for a wide range of gravity flow applications. The one piece cast bodies and heavy duty components ensure reliable operation for many years. The fast action (<2.5 turns) parallel chain crank decreases overall length and assures reliable actuation even with heavy loading. The combination slide seal and deflector is a replaceable polyurethane, PTFE or steel ring. The slide plate is sealed externally with an adjustable packing gland. Between the two seals is a wiper blade that increases seal life. Both the inlet and outlet flanges are drilled and tapped with identical patterns to facilitate installation. The SB series of slide gate valves are available with various manual, pneumatic and electric actuators.

Design Features:

Materials of Construction (body) — one piece cast aluminum, cast iron, cast stainless steel

Slide Materials — mild steel or stainless steel

Flange Sizes — 6" 8" 10" 12" 14" 16"

Slide Supports — adjustable eccentric guides (Nylon, PTFE, phosphor bronze)

Slide Face Seal/Inlet Deflector — Ulon (cast polyurethane), PTFE, cast iron, stainless steel

Slide Scraper — scraper blade on top of slide (Nylon, PTFE brass)

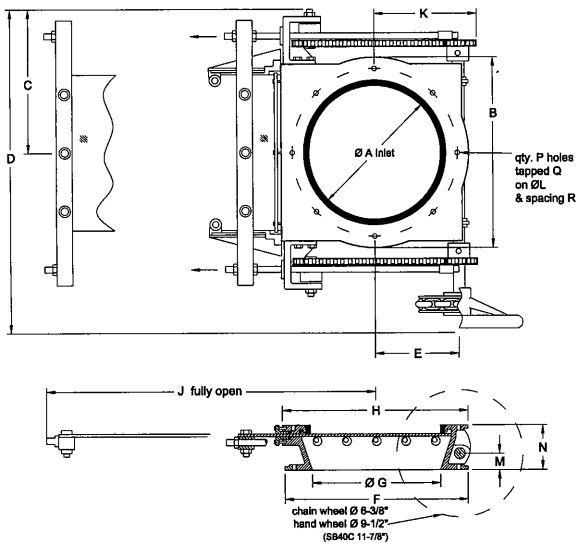
Slide End Seal — adjustable packing gland (PTFE or graphite impregnated PTFE)

Actuation — manual crank with parallel chain drive (2-2.5 turns to fully open)

Guards — ABS guards over chain/sprocket area - optional over slide extension area

Operating Temperature — 194°F with polyurethane seal/deflector & Nylon guides, 536°F with phosphor bronze guides and steel or iron deflector

Schematics



Dimensions are approximate and subject to change without notice.

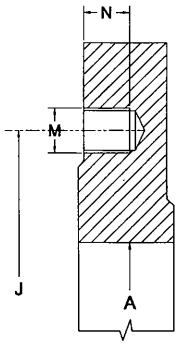
Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	Weight
SB15C	6	10-5/8	8-7/8	20-1/4	4-1/8	10-5/8	6	10-5/8	14-1/4	5-7/8	9	1-5/16	3-1/2	8	3/8"	45° on center	35
SB20C	8	12-5/8	9-7/8	22-1/4	5-3/16	12-5/8	8	12-5/8	17-1/4	6-7/8	11	1-5/16	3-1/2	8	3/8"	45° on center	40
SB25C	10	14-5/8	10-7/8	24-1/4	6-1/8	14-5/8	10	14-5/8	20	7-7/8	13	1-5/16	3-1/2	8	3/8"	45° on center	53
SB30C	12	16-1/2	11-7/8	26-1/8	7-1/8	16-1/2	12	16-1/2	23	8-7/8	15	1-5/16	3-1/2	8	3/8"	45° on center	73
SB35C	14	21	13	28-5/8	9	21	14	21	30	10-1/4	18-3/4	1-1/2	4	12	1/2"	30° off center	99
SB40C	16	23-1/2	15-3/16	32	9-7/8	23-1/2	16	23-1/2	34	11-7/8	21-1/4	1-1/2	4	16	1/2"	22.5° off center	132

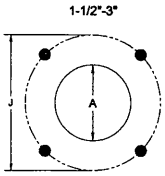
Weights are for aluminum - iron & stainless are 2X the weights shown

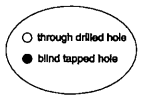
"CL" Series Knife Gate Valves

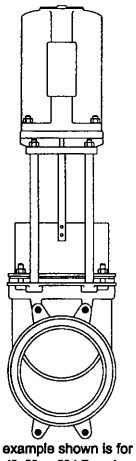
CL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	pressure	weight
40	1.5"	2	4	5	4	5	8	5	5	3-7/8"	21	1/4"	4	1/2"	150	24
50	2"	2	4	5	4	5	8	5	6	4-3/4"	21	1/4"	4	5/8"	150	24
65	2.5"	2	4	5	5	6	8	5	7	5-1/2"	23	1/4"	4	5/8"	150	26
80	3"	2	4	6	5	6	8	5	8	6"	24	1/4"	4	5/8"	150	31
100	4"	2	4	6	5	7	8	5	9	7-1/2"	26	1/4"	4	5/8"	150	33
125	5"	2	4	7	6	8	15	7	10	8-1/2"	34	1/4"	4	3/4"	150	58
150	6"	2	4	8	7	9	15	7	11	9-1/2"	36	1/4"	4	3/4"	100	64
200	8"	2	5	11	8	12	15	7	14	11-3/4"	41	1/4"	4	3/4"	95	88
250	10"	2	5	13	10	15	18	10	16	14-1/4"	50	1/4"	6	7/8"	65	150
300	12"	3	5	15	12	17	20	10	19	17"	58	1/4"	6	7/8"	65	187
350	14"	3	6	18	12	18	21	10	21	18-3/4"	62	1/4"	8	1"	50	242
400	16"	3	6	20	14	20	23	10	24	21-1/4"	69	1/4"	10	1"	45	308
450	18"	3	6	23	17	24	27	11	25	22-3/4"	80	1/2"	8	1-1/8"	45	485
500	20"	4	6	2	19	26	29	11	28	25"	88	1/2"	12	1-1/8"	30	618
600	24"	4	7	29	23	31	34	13	32	29-1/2"	104	3/4"	12	1-1/4"	30	915

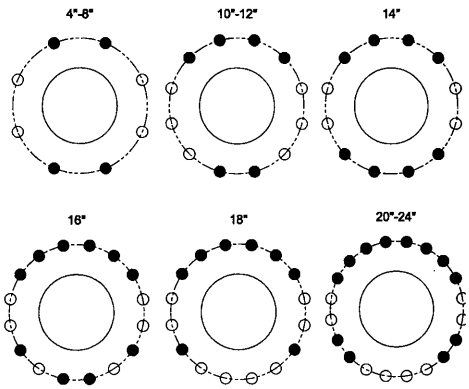
"CL" Series Knife Gate Valves - Flange Bolt Patterns

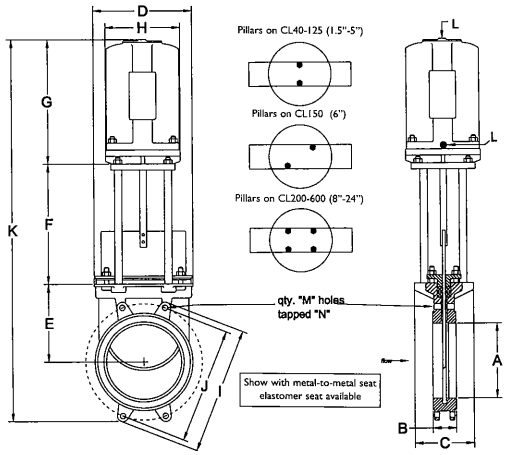






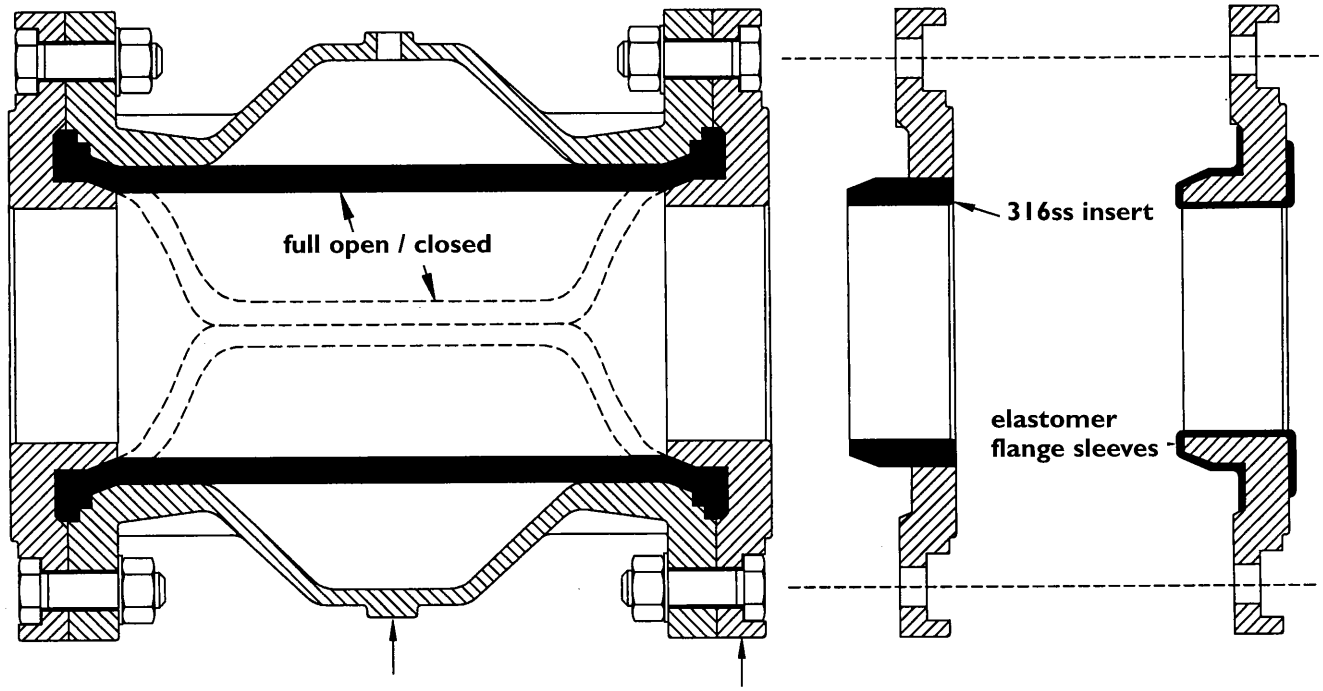






	I.D.	Bolt Circle Dia.	Tapped	Depth	Quantity of Holes	
Model "CL"	A	J	M	N	Tapped	Thru
40	1.5"	3-7/8"	1/2"	3/8"	4	0
50	2"	4-3/4"	5/8'	3/8"	4	0
65	2.5"	5-1/2"	5/8"	3/8"	4	0
80	3"	6"	5/8"	3/8"	4	0
100	4"	4-1/2"	5/8"	3/8"	4	4
125	5"	8-1/2"	3/4"	1/2"	4	4
150	6"	9-1/2"	3/4"	1/2"	4	4
200	8"	11-3/4"	3/4"	9/16"	4	4
250	10"	14-1/4"	7/8"	9/16"	6	6
300	12"	17"	7/8"	9/16"	6	6
350	14"	18-3/4"	1"	23/32"	8	4
400	16"	21-1/4"	1"	25/32"	10	6
450	18"	22-3/4"	1-1/8"	25/32"	8	8
500	20"	25"	1-1/8"	15/16"	12	8
600	24"	29-1/2"	1-1/4"	1"	12	8

AK Series 1.5"-10" Pinch Valve Materials of Construction



Standard Design: aluminum body with cast iron end flanges. (AK25 is all mind steel)

Body & Flange Materials

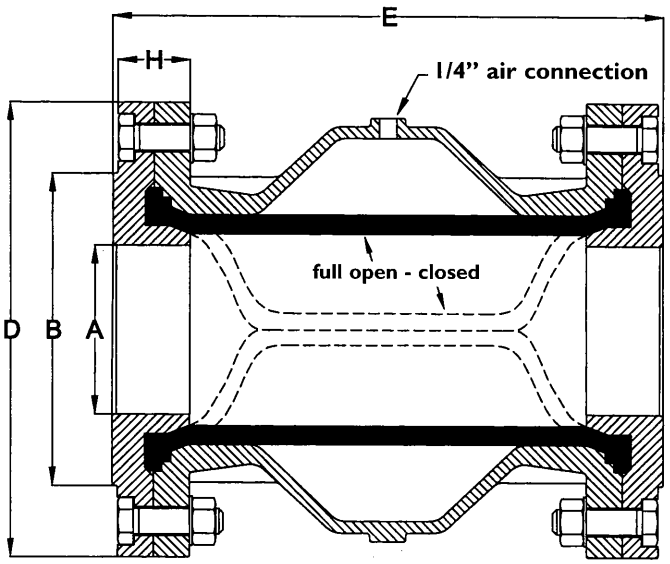
Body & Flange Materials	cast aluminum body & cast iron flange ends (aluminum flange ends optional) *(AK25 is all mild steel)*
Flange Options	316 stainless steel inserts or elastomer flange sleeves (sleeves are available in the same range of materials as liners)

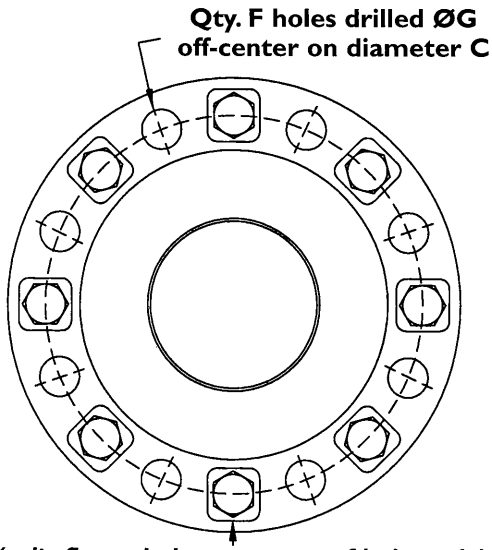
Liner & Flange Sleeve Materials

Elastomers	Max. Temp.	Applications (these are general properties - not recommendations)
White Natural Rubber (food grade)	176°F	suitable for foods, wine, potable water, alcohol
Neoprene	194°F	resistant to dilute solvents, oils, acids, lubricants
Natural Gum Rubber (standard)	212°F	high abrasion resistant to sand, mineral slurries, waste water - *not oil resistant*
EPDM	266°F	resistant to hot water, steam, acids, alkalis - suitable for foods
Hypalon	266°F	resistant to hot water, steam, oxidants, acids, bases
Viton	302°F	resistant to solvents, oils, petrochemicals, aromatic hydrocarbons - avoid abrasives
Butyl	302°F	resistant to inorganic acids, bases, hot water, steam, aliphatic hydrocarbons
Nitrile	302°F	resistant to petrochemicals, inorganic acids & alkalis
Silicone	320°F	resistant to abrasives, solvents, steam. petrochemicals, H_2SO_4 and HCL

Air Operated Pinch Valves

Shown with ANSI 150# Bolt Pattern (also available with PN10-BS4504 bolt pattern)





(split-flange bolts - not part of bolt circle)

Model	psig[1]	Nominal I.D.	A	B	C	D	E	F	G	H	air vol. (cu. ft.)	weight
AK04	87	1.5	1-5/16	3-1/2	3-7/8	5-29/32	6-3/32	4	5/8	1-3/16	0.01	7
AK05[2]	87	2.5	2-3/8	4	4-3/4	6-1/2	7-7/32	4	3/4	1-3/16	0.02	9
AK06[3]	87	2.5	2-3/8	4-13/16	5-1/2	7-9/32	7-7/32	4	3/4	1-3/16	0.03	11
AK08	87	3	3	5-5/16	6	7-7/8	8-21/32	8	3/4	1-3/16	0.05	13
AK10	87	4	3-3/4	6-7/32	7-1/2	8-21/32	11	8	3/4	1-5/16	0.11	18
AK12[3]	87	5	4-23/32	7-1/4	8-1/4	9-27/32	13-23/32	8	3/4	1-1/2	0.21	24
AK15	87	6	5-23/32	8-11/32	9-1/2	11-7/32	16-7/16	8	7/8	1-5/8	0.26	39
AK20	58	8	7-1/2	10-9/16	11-3/4	13-3/8	21-27/32	8	7/8	2-5/16	0.49	78
AK25	36	10	9-29/32	11-13/16	14-1/4	15-3/8	24	12	7/8	2-9/16	1.06	154[4]

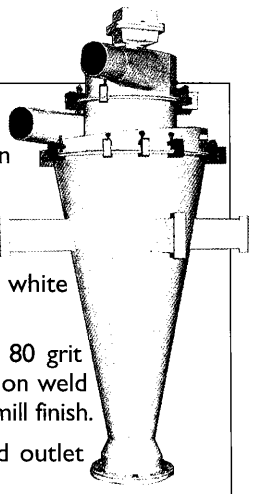
Dimensions are approximate and subject to change without notice.

[1] Air pressure must be 20-30 psig higher than product line pressure for optimal valve closure.
[2] AK05 approximates 2" ANSI - actual I.D. is 2.5" with 2" ANSI bolt pattern.
[3] AK06 (2.5") & AK12 (5") have no true ANSI equivalents.
[4] AK25 body & flange ends are mild steel.

Liner Materials	natural gum rubber, white rubber, EPDM, Viton, Neoprene, Nitrile, Silicone, Butyl
Body & Flange Materials	cast aluminum body & cast iron flange ends *(Ak25 is all mild steel)*
Flange Options	all aluminum, 316 stainless steel flange inserts or elastomer flange sleeves

Cyclone Separator

There are four different sizes of cyclone separator. These cyclones provide an efficient and costs effective means of separating particulates (material) from air in a pressure or vacuum pneumatic conveying airstream. Cyclones operate by generating a vortex of particulate laden air. Centrifugal force pushes the particulates toward the outer cyclone wall where they lose velocity and spiral downward to the discharge. The relatively particulate-free air is then exhausted through the clean air discharge port which is attached to the top of the cyclone. Efficiency of this process depends on the material being conveyed, material/air flow rates, and cyclone design. Typical applications for cyclones are at material processing points, such as sifter stations, pulverizers, and liquid mixers.



Features

Material of construction - 12 GA, ASTM 569 carbon steel or ASTM A240 304 stainless steel sheet metal.

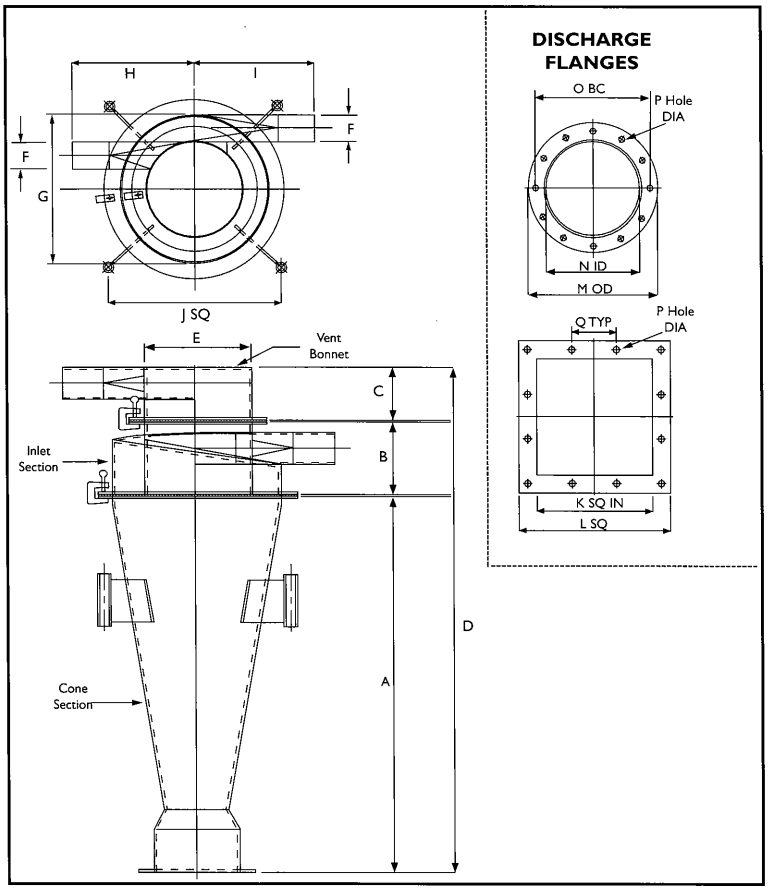
Carbon Finishes - Internal welds are ground to a 36 grit finish on weld seams only. Internal finish is clear phenolic or epoxy. External paint is primed with white enamel finish coat.

Stainless Finishes - Interior welds are ground to an 80 grit finish with no cracks, pits or crevices, hard wheel finish on weld seams only. Exterior welds to be cleaned. Sheet is a 2B mill finish.

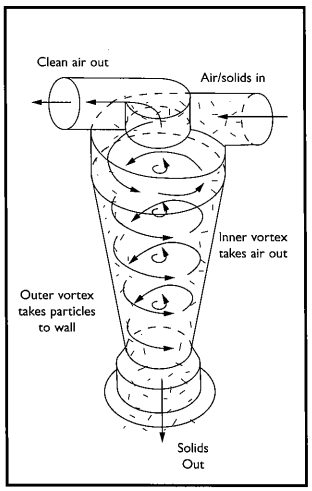
Adjustable Inlet & Outlet - Positioning of inlet and outlet over the entire 360° range.

Easy Installation - With (4) mounting lugs to accept 1/2" diameter hanger rods.

Schematics



Operation



Notes

1. Round discharge flange for 16"
2. Square discharge flange for 20", 24", or 30"
3. Flanges are built to mate to an airlock.

Options For

Level Indicator: Vent Bonnet is available as shown or can be fitted with rotary or probe-type level indicator to indicate product accumulation.

Finish: Stainless: 4B finish sheet with interior welds ground to a 150 grit finish.

Dimensions - Unit

Dia-meter	A In/mm	B In/mm	C In/mm	D In/mm	E ID In/mm	F ID In/mm	G ID In/mm	H In/mm	I In/mm	J SQ In/mm	K SQ In/mm	L SQ In/mm	M OD In/mm	N ID In/mm	O BC In/mm	P DIA In/mm	Q TYP In/mm	Wt. Lbs.
16	36/914	7/176	5/127	48.25/1226	10/254	3/76	16/406	13/330	13/330				11/279	8/203	9.75/248	.5/13		75
20	43/1092	8/203	6/152	57.25/1454	12/305	4/102	20/508	13/330	13/330	22.625/575	10.5/267	14.5/371				.625/16	4.125/105	95
24	51.375/1305	9/229	8/203	68.625/1743	14/356	5/127	24/610	13/330	13/330	26.125/664	10.5/267	14.5/371				.625/16	4.125/105	115
30	68/1727	10/254	8/203	86.25/2191	18/457	6/152	30/762	22/559	22/559	32.5/826	10.5/267	14.5/371				.625/16	4.125/105	135

Tubing & Pipe

Specifications

Tube	Pipe
• 1-1/2" through 10" DD • Wall thickness: 16, 14, 12, 11 Gauge • Materials: Carbon, Stainless, Aluminum • Zinc-Coated (Galvanized) tubing is also available. • Alloys - Carbon - 1006/1010 ERW - Stainless - 304 - Aluminum - 6061/6063 Extruded • Our standard stock is in 20 ft. lengths, but we will cut to your specifications. **Special services we provide include:** - Shot Peening - Spiral Groove - Inside & Outside Diameter Polishing - Ceramic Lining - Ceramic Coating - Part Variations	• 2" through 8" NPS • Wall thickness: Schedule 5, 10, 40, 80 • Materials: Carbon, Stainless, Aluminum • Zinc-Coated (Galvanized) tubing is also available. • Alloys - Carbon - 1006/1010 ERW - Stainless - 304 - Aluminum - 6061/6063 Extruded • Our standard stock is in 20 ft. lengths, but we will cut to your specifications. **Special services we provide include:** - Shot Peening - Spiral Groove - Ceramic Lining - Ceramic Coating - Part Variations

Tube Bends

Tube Bending Capabilities

OD (Inches)	Center Line Radius (Inches)	Gauge	Wall Thickness Inches
1-1/2	1-3/4, 2-1/2, 3, 3-1/4, 4, 6, 7-1/2, 9, 12, 15, 18, 24, 30, 36	11, 14, 16, 18	.120, .083, .065, .049
1-5/8	2-1/8	16	.065
1-3/4	2-1/2, 8, 9, 12, 15, 18, 24, 30, 36	11, 14, 16	.120, .083, .065
2	2, 2-1/2, 3, 4, 5, 6, 8, 9, 10, 12, 15, 18, 24, 30, 36, 48	11, 14, 16, 18, 20	.120, .083, .065, .049, .035
2-1/8	2-7/8, 3-1/2, 4-1/4, 5, 18, 20, 24, 36	11, 16	.120, .065
2-1/4	2-1/2, 3, 4, 5-1/2, 8, 9, 12, 15, 18, 24, 30, 36, 42	11, 13, 14, 16, 18, 20	.120, .095, .083, .065, .049, .035
2-3/8	2-3/8, 6, 8	16, 18	.065, .049
2-1/2	2-1/2, 3-1/4, 3-3/4, 4, 5, 6, 9, 12, 15, 18, 24, 30, 36, 48	11, 13, 14, 16	.120, .095, .083, .065, .049
2-3/4	2-3/4, 3-7/8, 9, 15, 24, 30	11, 14, 16, 18	.120, .083, .065, .049
2-7/8	10, 10-1/2, 60	15, 16	.072, .065
3	3, 4-1/2, 6, 7-1/2, 9, 12, 15, 18, 24, 30, 36, 38, 48	11, 12, 13, 14, 16, 18	.120, .109, .095, .083, .065, .049
3-1/8	6	16	.065
3-1/2	4.5, 8, 8-3/4, 9, 12, 13, 15, 18, 24, 30, 36, 48, 60	11, 14, 15, 16, 18	.120, .083, .072, .065, .049
4	4, 6, 8, 9, 10, 12, 18, 24, 30, 32, 36, 48, 60	10, 11, 14, 16, 18	.134, .120, .083, .065, .049
4-1/4	60	11, 13, 14	.120, .095, .083
4-1/2	9, 12, 16, 18, 20, 24, 30, 32, 36, 48, 60	11, 14, 16	.120, .083, .065
5	7-1/2, 12, 12-1/2, 18, 24, 30, 36, 48, 60, 72	10, 11, 14, 16	.134, .120, .083, .065
6	9, 15, 24, 30, 36, 48, 60, 72	10, 11, 14, 16	.134, .120, .083, .065
8	12, 20, 32, 48, 60, 72	11, 14	.120, .083
10	32, 48, 60, 72	11, 12	.120, .109

Pipe Bends

Pipe Bending Capabilities

NPS (Inches)	Outside Diameter (Inches)	Center Line Radius (Inches)	Schedule (Inches) 5	10	40	80	Other
1-1/4	1.660	5, 12, 18	-	-	.140	-	-
1-1/2	1.900	6, 9, 12, 18, 36	-	-	.145	-	.200
2	2.375	6, 8, 12, 18, 24, 30, 36, 48	.065	.109	.154	.218	.218
2-1/2	2.875	9, 10, 10-1/2, 12, 24, 30, 36, 48	.083	.120	.203	.276	-
3	3.500	5, 8, 8-3/4, 9, 12, 13, 15, 18, 24, 30, 36, 48, 60	.083	.120	.216	.300	.188
3-1/2	4.000	6, 8, 9, 10, 12, 18, 24, 30, 36, 48, 60	.083	.120	-	.300	-
4	4.500	9, 12, 16, 18, 20, 24, 30, 36, 48, 60	.083	.120	.237	.337	.188, .337
5	5.563	24, 30, 36, 48, 60, 72	-	.134	.258	.375	-
6	6.625	24, 30, 36, 48, 60, 72	-	.134	.280	.432	.188, .250
8	8.625	32, 48, 60, 72	-	.148	.322	-	.188, .250

Tube & Pipe Bends

Specifications

Tube

- 1-1/2" through 10"OD
- Inventories include a wide range of parts:
  - Short Radius (1-1/2 times OD)
  - Standard Radius (2-1/2 times OD)
  - Long Radius Bends (up through 72" center line)
- Nominal standard tangents are 2 times OD with a 6" minimum for easy connection
- Wall thickness: 16, 14, 12, 11 Gauge
- Materials: Carbon, Stainless, Aluminum
- Zinc-Coated (Galvanized) tubing is also available
- Center Line Radius from 1-3/4" through 72"

Special services we provide include:

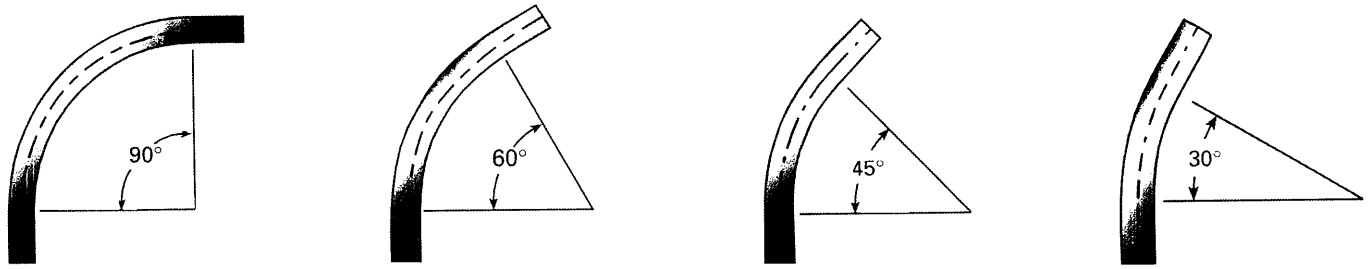
- Shot Peening
- Spiral Groove
- Inside & Outside Diameter Polishing
- Ceramic Lining
- Ceramic Coating
- Part Variations

Pipe

- 2" through 8" NPS
- Inventories include a wide range of parts:
  - Short Radius (1-1/2 times NPS)
  - Standard Radius (2-1/2 times NPS)
  - Long Radius Bends (up through 72" CLR)
- Nominal standard tangents are 2 times NPS with a 6" minimum for easy connection
- Wall thickness: Schedule 5, 10, 40, (SCH 80 available)
- Materials: Carbon, Stainless, Aluminum
- Zinc-Coated (Galvanized) tubing is also available
- Degree of Bends: 90, 60, 45, 30
- Center Line Radius: 5" through 72"

Special services we provide include:

- Ceramic Coating
- Shot Peening
- Spiral Grooving
- Ceramic Lining
- Part Variations



Tube & Pipe Fittings

Laterals, Wyes, and Tees Specifications

Laterals & Wyes (Tube)

- 1-1/2" through 8" OD
- Wall thickness: 16, 14, 11 Gauge
- Degrees: 30, 45, 60
- Materials: Carbon, Stainless, Aluminum
- Zinc-Coated (Galvanized) parts are also available.

Special services we provide include:

- Shot Peening
- Spiral Groove
- Inside & Outside Diameter Polishing
- Ceramic Lining
- Ceramic Coating
- Part Variations

Laterals & Wyes (Pipe)

- 2" through 8" NPS
- Wall thickness: 5, 10, 40, (SCH 80 available)
- Degrees: 30, 45, 60
- Materials: Carbon, Stainless, Aluminum
- Zinc-Coated (Galvanized) parts are also available.

Special services we provide include:

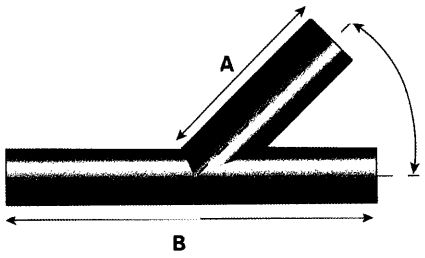
- Ceramic Coating
- Shot Peening
- Spiral Grooving
- Ceramic Lining
- Part Variations

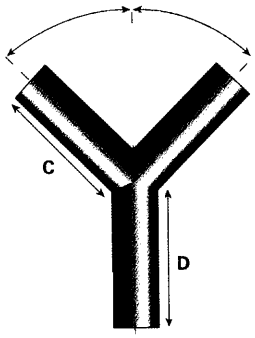
Tees (Tube)

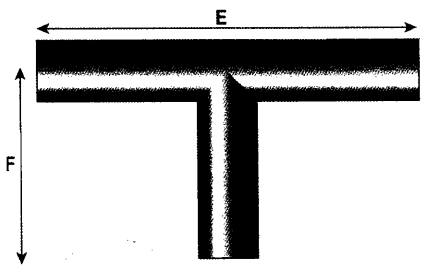
- 1 1/2" through 8"OD
- Wall thickness: 16, 14, 11 Gauge
- Materials: Carbon, Stainless, Aluminum
- Zinc-Coated (Galvanized) parts are also available.

Special services we provide include:

- Shot Peening
- Spiral Groove
- Inside & Outside Diameter Polishing
- Ceramic Lining
- Ceramic Coating
- Part Variations







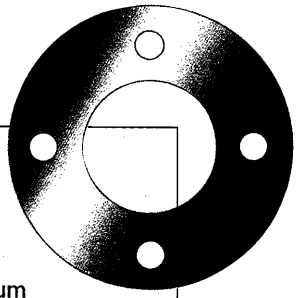
Laterals OD/NPS	30 Degree A	30 Degree B	45 Degree A	45 Degree B	60 Degree A	60 Degree B
1-1/2" – 2-1/2"	8"	16"	8"	16"	8"	16"
3" – 3-1/2"	10"	20"	8"	16"	8"	16"
4"	12"	24"	10"	20"	10"	20"
4-1/2"	12"	24"	10"	20"	10"	20"
5"	15"	30"	12"	24"	12"	24"
6"	18"	36"	15"	30"	15"	30"
8"	22"	40"	18"	36"	18"	36"

Wyes OD/NPS	30 Degree C	30 Degree D	45 Degree C	45 Degree D	60 Degree C	60 Degree D
1-1/2" – 4"	8"	8"	8"	8"	8"	8"
4-1/2"	10"	10"	10"	10"	10"	10"
5"	11"	11"	11"	11"	11"	11"
6"	12"	12"	12"	12"	12"	12"
8"	14"	14"	14"	14"	14"	14"

Tees OD/NPS	E	F
1-1/2" – 4"	16"	8"
4-1/2"	18"	9"
5"	18"	9"
6"	20"	10"
8"	24"	12"

Tube & Pipe Fitting *(continued)*

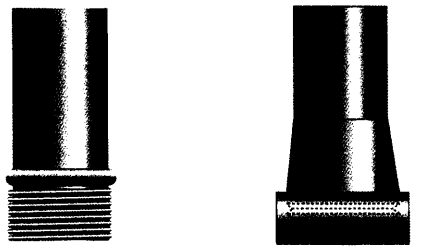
Plate Flanges Specifications



Tube	Pipe
• For 2" through 12"OD • Slip-on, flat face style • 1/2" thick, 150 lb. drilling • Materials: Carbon, Stainless, Aluminum • Zinc-Coated (Galvanized) tubing is also available • Ask about other sizes and styles	• For 2" through 12" NPS • Slip-on, flat face style • 1/2" thick, 150 lb. drilling • Materials: Carbon, Stainless, Aluminum • Zinc-Coated (Galvanized) tubing is also available • Ask about other sizes and styles • Forged Flanges are also available for pipe

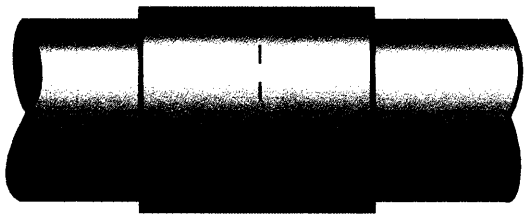
Male & Female Adapters

- For 1-1/2" through 10" sizes
- Wall thickness: 16, 14, 12, 11 Gauge
- Materials: Carbon, Stainless, Aluminum
- Zinc-Coated (Galvanized) parts are also available
- Part variations are available for your unique requirements



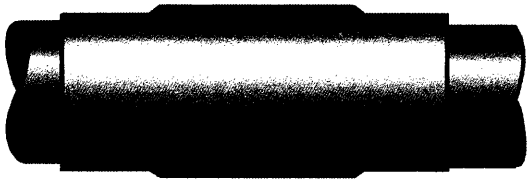
Slip Couplings (Tube)

- A method of joining that can be used for joining any two straight ends of tubing or fittings.
- The slip coupling is a solid sleeve that fits the OD of the joint which can then be glued, brazed, welded or covered by a shrink sleeve.
- 1-1/2" through 10" OD
- Wall thickness: 16, 14, 12, 11 Gauge
- Materials: Carbon, Stainless, Aluminum
- Zinc-Coated (Galvanized) parts are also available
- Part variations are available for your unique requirements



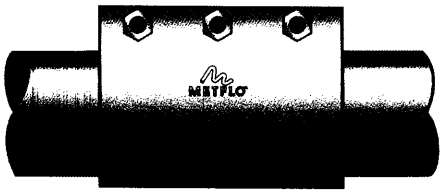
Shrink Sleeves (Tube)

- A heat shrinkable polyolefin band that literally shrinks and encircles the connection giving it mechanical strength and a positive seal. It can be used in conjunction with a slip coupling or when using expanded fittings. Gluing, brazing and welding operations are eliminated.
- 1-1/2" through 10" OD
- For use in systems under 15 PSIG



MetFlo™ Compression Couplings (Tube & Pipe)

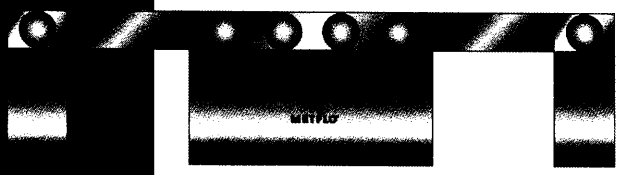
- 1-1/2" through 14" OD for tube
- 1-1/4" through 12" NPS for pipe
- The MetFlo Compression Coupling offers superior strength
- Zinc plated, steel reinforcement bars provide additional strength and stability
- Grade 5 stress relieved bolts ensure a trouble-free installation
- G90 galvanized exterior coating provides superior corrosion resistance
- Heavy 16 gauge outer shell on all couplings over 3-1/4" in diameter provides added strength and dimensional stability
- Industry compatible, precision diecut gasket ensures a tight seal
- Stainless steel strip guards against static electricity build-up
- Our standard material is Zinc-Coated (Galvanized) with Stainless and Aluminum as options
- The standard gasket is Black Neoprene
- Optional Gaskets include:
  - White Nitrile
  - Red Rubber
  - Silicone
  - EPDM
  - Viton
- Stainless Steel gasket protectors are also available
- We can furnish you with Replacement Nuts, Bolts, Gaskets and Static Strips



Eliminators (Tube & Pipe)

The Eliminator, with its extra holding power, is ideal for higher pressure systems. Bands at either end of the Eliminator provide metal to metal "gripping" to eliminate end pull. There is even an Elbow Eliminator that offers extra holding power at problem turns in the system. The Elbow Eliminator allows for minimum tangents and can be used for either side.

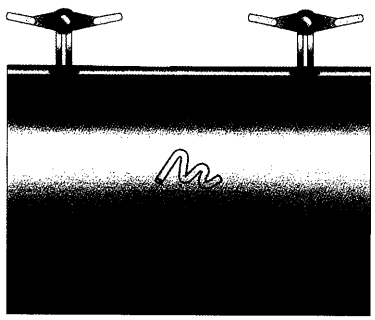
- **Eliminator Kits** are available to convert existing couplings into Eliminators
- 2" to 12" NPS for Pipe
- Available in 3 and 4 Bolt
- Standard gasket is Black Neoprene
- Other gaskets are available:
  - White Nitrile
  - Red Rubber
  - Silicone
  - EPDM
  - Viton



Super Grips (Tube & Pipe)

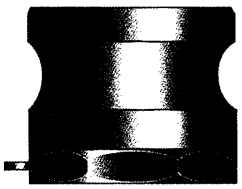
The Super Grip was devised as a quick coupler for dry bulk transport tank tubing. This unique coupling slides onto the tubing or wraps around it and is tightened by hand in seconds, and it provides better support than rubber hose and band clamps. Our exclusive fail-safe clamping action keeps its hold despite expansion, contraction and vibration. The Super Grip positive sealing, interlocking gum rubber gasket allows for tube and pipe variations. And because it's made of 100% Stainless steel, it will not corrode due to harsh weather or road conditions.

- Fast action, positive locking
- Fail-Safe Clamp
- Interlocking Gum Rubber Gasket
- 100% Stainless Steel
- No Tools Required
- Quick Disconnect
- F.D.A. approved gaskets are also available
- 1-1/2" through 12" OD for tube
- 1-1/4" through 12" NPS for pipe
- Stainless Steel grounding strip is standard
- Ask about our other gasket options

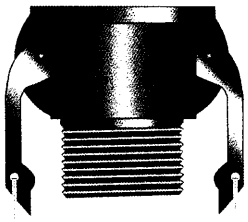


Cam & Groove Couplings

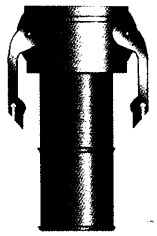
- Parts A, B, C, D, E, F, V, W
- 1-1/2" through 8"
- Standard and Premium styles
- Materials: Aluminum and Stainless
- Replacement Gaskets and Arms, plus Security Chains are available
- Other sizes and materials are also available



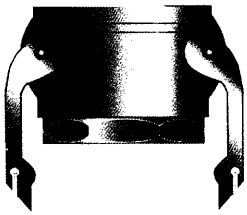
Part A
Adapter X
Female NPT Thread



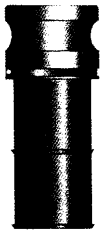
Part B
Coupler X
Male NPT Thread



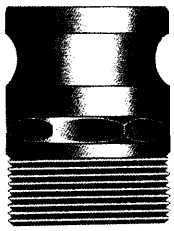
Part C
Coupler X
Hose Shank



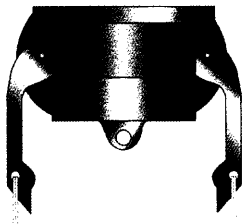
Part D
Coupler X
Female NPT Thread



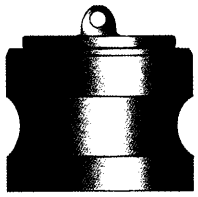
Part E
Adapter X
Hose Shank



Part F
Adapter X
Male NPT Thread



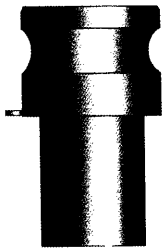
Part V
Coupler Dust Cap



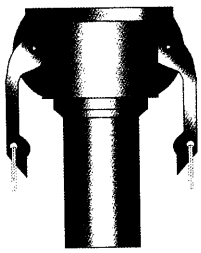
Part W
Adapter Dust Plug

Quick Adapters & Couplers

- Our Quick Adapter (AW) or Coupler (DW) is welded to a short length of tube or pipe for easy installation or dismantling.
- 2" through 6" OD, 16, 15, 11 Gauge Stubs
- 2" through 6" NPS, Schedule 10, 40 Stubs (SCH 5 available)
- Available in Aluminum and Stainless
- Replacement Gaskets and Arms, plus Security Chains are available



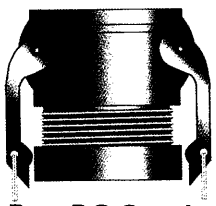
Part AW
Adapter



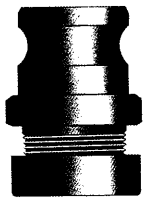
Part DW
Coupler

Compression Quick Adapters & Couplers

- 1-1/2" to 3"
- Replacement nuts and gaskets are available
- Standard material is Aluminum with a Buna Gasket
- Designed for quick assembly, with a compression nut, to 16 Gauge .065") tubing



Part BC Couple



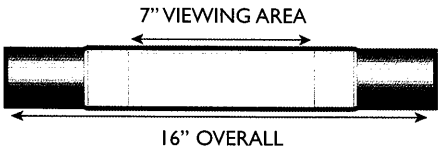
Part FC Adapter

Accessories

Sight Glasses (Tube & Pipe)

The Acrylic Sight Glass (ASG) allows you to see at a glance the material flowing through your conveying system. It's precision made by aligning the acrylic with the tube or pipe to insure smooth material flow with no turbulence. A stainless steel ground strip is included to eliminate static build up. The ASG is easy to install in new or existing lines by using two MetFlo™ compression Couplings.

- Tube or pipe ends are made of carbon steel, stainless or aluminum
- Zinc-coated (Galvanized) is also available
- Special sight glasses are available upon request
- Wall Thickness: Tube - 16, 14, 12, 11 Gauge Pipe - Schedule 5, 10, 40, 80
- Overall Length is 16" with 7" Viewing Area



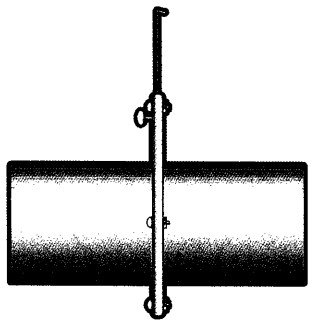
Fabricated Blast Gate Assemblies (Tube & Pipe)

These parts are made to order for your tube or pipe needs.

- Materials: Carbon, Zinc-Coated (Galvanized), Stainless Steel, Aluminum
- Standard slide is Zinc-Coated (Galvanized) Steel

Standard Stub Lengths:

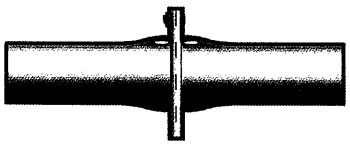
Tube or Pipe Size	Stub Length, Each Side
1.5" through 4.5"	6"
5" through 6"	7"
Over 6" - 14"	8"



Blast Gate Assemblies (For Tube)

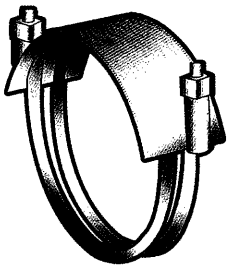
Blast Gate consists of an aluminum, full gate, casting with a Zinc-Coated (Galvanized) slice and aluminum stubs (straight ends).

- Available in 2" - 8" Tube OD Sizes
- For other materials and sizes, inquire about our Fabricated Blast Gates.



Clamps Available For Use On PVC Hose

- 1-1/2" through 8" ID
- Zinc-coated (Galvanized) is also available
- Two clamps are recommended, for each end, on 5" ID hose and larger
- For use on counter clockwise spiral, PVC Hose



Accessories *(continued)*

Metal Flexible Hose

- 1-1/2" through 14" ID sizes are made from Stainless or Galvanized Steel
- Variety of material thicknesses are available
- Unlined (rough bore) or lined (smooth bore)
- Packing options include cotton, stainless steel wire, apyrous, elastomeric (gas tight) and silicone
- We offer a wide selection of end fittings, including Cam & Groove, Flanges, Tube Stubs and Nipples
- All hoses are made to customer specifications

Standard Duty PVC - Food Grade Hose - Clear

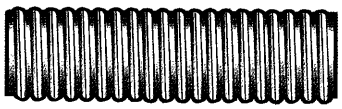
- 1-1/2" through 4" ID
- Static Wire is available
- Service Temperature Range: -4° F to 150° F
- Counter Clockwise Spiral

Heavy Duty PVC - Food Grade Hose - Clear

- 1-1/2" through 8" ID
- Service Temperature Range: -4° F to 150° F
- Counter Clockwise Spiral

Heavy Duty PVC - Food Grade Hose - With Static Wire - Clear

- 1-1/2" through 6" ID
- Service Temperature Range: -4° F to 150° F
- Counter Clockwise Spiral



Standard Duty Polyurethane Abrasion Resistant PVC Hose - Black: Formulated with Anti-Static Compound

- 1-1/2" through 8" ID
- Service Temperature Range: -4° F to 150° F
- Counter Clockwise Spiral

Heavy Duty Polyurethane Abrasion Resistant PVC Hose - Blue: Formulated with Anti-Static Compound

- 1-1/2" through 8" ID
- Service Temperature Range: -4° F to 150° F
- Counter Clockwise Spiral

Innovative System Solutions

NOL-TEC SYSTEMS

Pneumatic Blending

Quick, Clean, Efficient Blending

Pneumatic (air) blending is one of the quickest, cleanest, and most efficient methods of achieving homogeneous batches of powdered, granular, and/or abrasive materials. Unlike conventional blenders, a pneumatic blender puts the user in control, providing the ability to customize a blending cycle that will best fit the application.

Simplified, Low- Maintenance Design

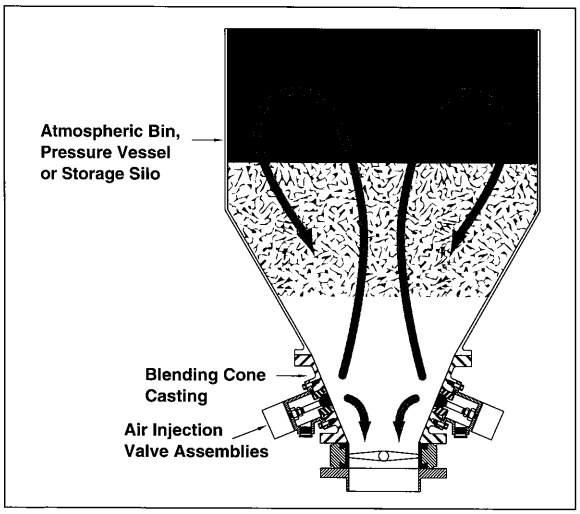
NOL-TEC has further refined the concept of air blending with the design of a reliable, low-maintenance pneumatic blender. This simplified blender is comprised of a casting and six removable air injection valve assemblies which are mounted in a circular pattern on the casting. Because there are virtually no moving parts, maintenance is minimal. All six valve assemblies are externally accessible and can be quickly and easily replaced or repaired on-site.

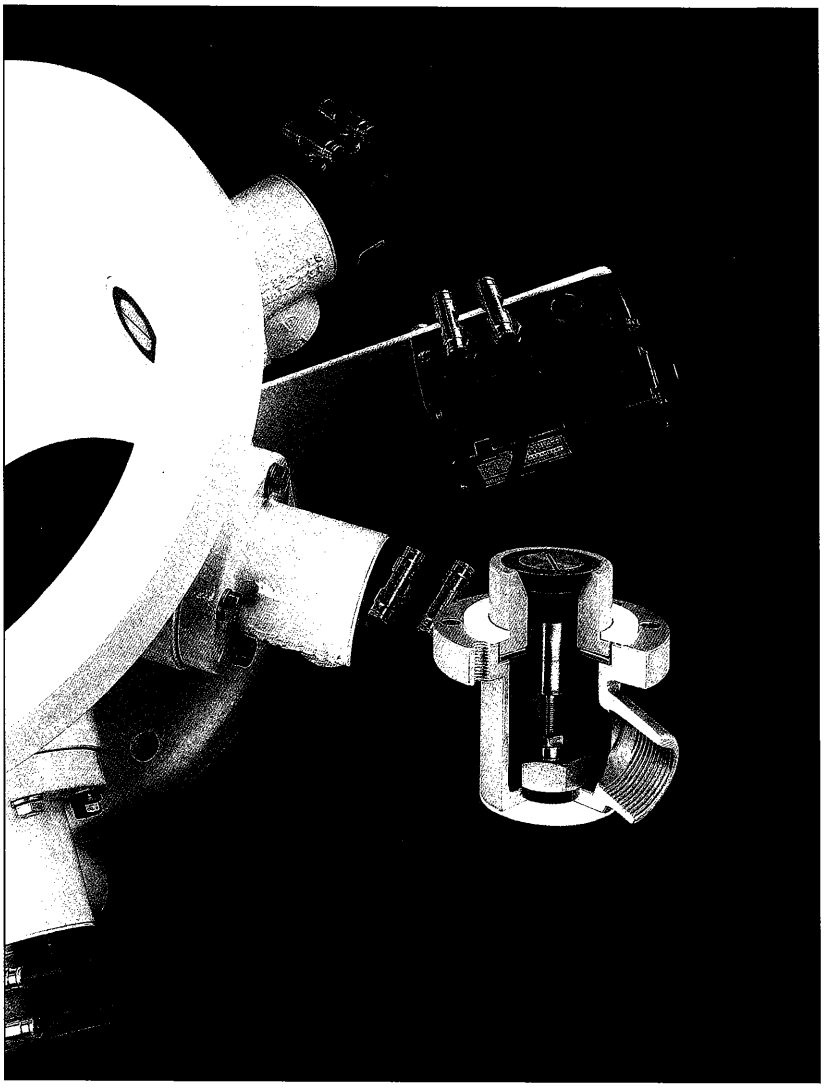
Gentle Pulses of Air With Easy Adjustment

When the valve assemblies are "pulsed," a piston is forced up, injecting a gentle blast of compressed air into the center of the material at various angles. The material is lifted upward and outward in a continuous circular motion. Blending action is optimized by adjusting the pressure, the "on" and "off" duration, and the frequency of the air pulses.

Silo Blender Available

NOL-TEC also offers a 32" diameter silo blender. This unit features twelve removable air injection valve assemblies and is ideal for the homogeneous blending of large batches of powdered, granular, and/or abrasive materials in storage silos.





Call today! We are equipped to offer complete testing of your pneumatic blending application.

Key Benefits:

- Quick, gentle blending
- Ultimate control of blend cycle
- Clean operation
- Low maintenance
- Uses standard plant compressed air
- Stainless steel construction
- Explosion proof electrical

Optional Features:

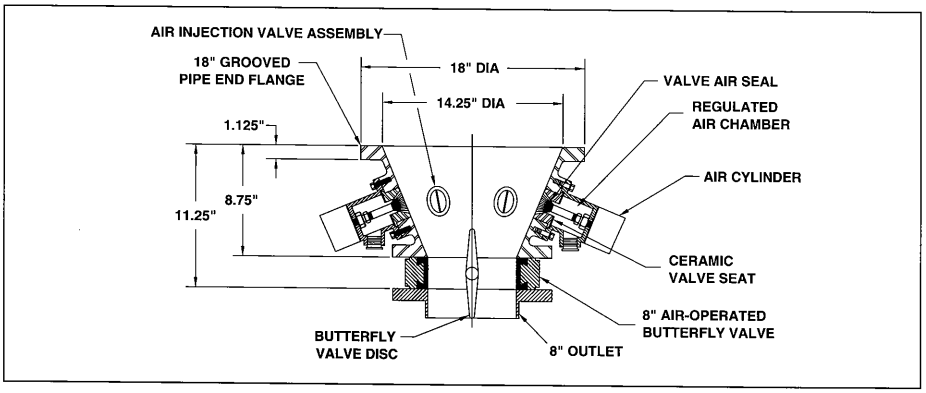
- Custom mounting flanges
- Sanitary or high temperature design
- Interior coatings

Standard Specifications:

- Clean and dry air at min. 80 PSIG/max. 100 PSIG and correct pressure dew point
- 110–120V, 50/60HZ power required
- 200°F maximum material temperature

Pneumatic Blending *(continued)*

NOL-TEC SYSTEMS



Air Mizer™ — Air Consumption Data

System ran for 1.0 minute with no product in the system
With Standard Air Assist — 72 SCFM • With Air Mizer — 2 SCFM

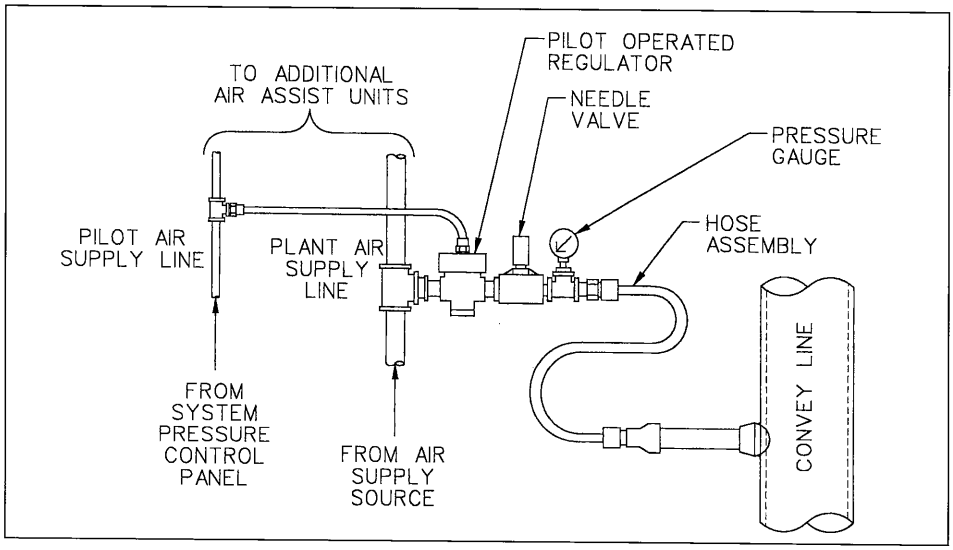
Then ran several 5,238 pound batches through a 4" Convey line

With Std. Air Assist

Average Convey Time:	8.5 Minutes	8.71 Minutes
Average Air Consumed:	673 Ft.^{3}	462 Ft.^{3}
Average SCFM:	79	53

Savings on Air Consumption with Air Mizer:
211 Cubic Feet of air for 5,238 pound batch equals 80 cubic feet of air per ton of batch delivered.

Air Assist



The Importance of Using "Air Assists/Boosters"

Before discussing the technical characteristics and differences between "air assist/booster" high and low pressure supply manifold technologies, let's take a look at why "air assists/boosters" are so very critical to the overall success of a dense phase pneumatic conveying system.

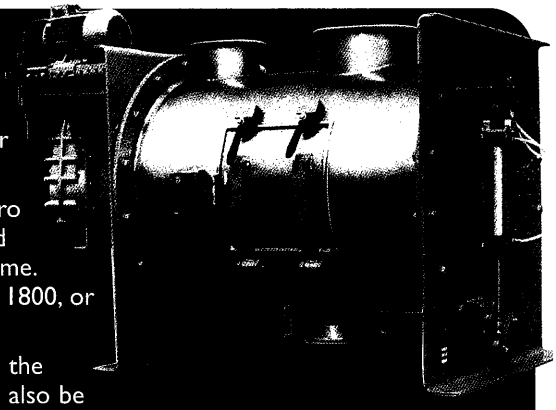
In a dense phase system without any type of "air assist/booster" technology, all of the air required to move the material down the convey line is introduced at the beginning of the system via the "transporter/pressure" vessel. This causes the conveying line to fill with one large slug of material which extends the entire length of the system. The amount of pressure required to overcome the resistance of that large slug of material is high. In a longer system, should the resistance exceed the available pressure the system will plug.

Injecting air into the conveying line via "air assists/boosters" at strategic points causes the material being conveyed to form shorter "slugs". This essentially breaks the system down into several "mini-systems" thereby reducing the overall resistance and lowering air supply pressure required to move the material through the convey line. This results in the ability to reliably convey longer distances at lower velocities with minimal component wear and reduced product degradation and/or segregation. "Air assists/boosters" are especially critical in "non-purging/full line" systems where conveying is stopped with material in the conveying line. The "air assists/boosters" provide the means to readily resume conveying due to the shorter "slugs" of material.

Blenders

Batch Plow Blender

Thorough and Fast



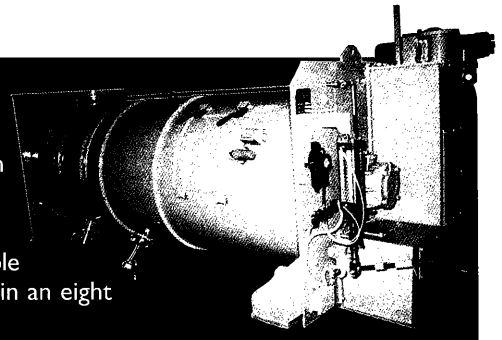
These vigorous blenders mechanically fluidize solid particles using multiple, triangular shaped blending elements. As these precisely designed plows rotate, tri-axial forces cause the material to move to the left and right while also imparting an angular momentum creating a flurry of "colliding whirlpools" inside the shell.

Running at faster speeds than most solids mixers, plows can quickly blend micro ingredients (1% or less) as well as materials with widely varying bulk densities and particle sizes. Homogeneous blends are achieved in the shortest possible time. Additional shear can be added with high intensity choppers running at 900, 1200, 1800, or 3500 rpm.

Each NBE Blender is application specific, being configured especially to provide the results you need. Available in mild steel, 304 and 316 Stainless, plow blenders can also be equipped with liquid injectors, pressurized shaft seals, #2, #4 and #7 finishes, variable speed drives, heating/cooling jackets and a wide variety of inlet and discharge valves, including 30 and 60 degree total discharge doors.

Continuous Blender

Maximum Throughput



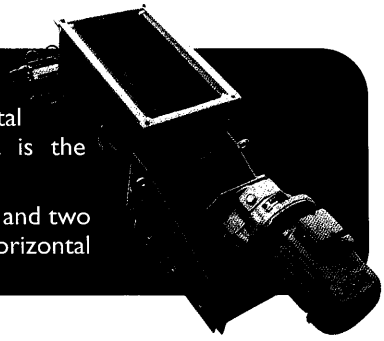
Similar in mixing action to the Batch Plow Blender, this continuous version with its specially skewed plows, takes in multiple materials at one end and discharges a uniform stream of blended product from the opposite end.

Because short residence time results in high throughput a small mixer can produce the same product per day as other larger mixers. In fact, NBE's standard size mixers are capable of blending from a few hundred pounds to more than five million pounds of material in an eight hour shift.

Fill level and residence can be manually set, controlled with valve actuators or automatically controlled. Eleven different drive designs in horsepowers from .33 to 200 cover every processing challenge in today's industrial environment.

Horizontal Ribbon Blender

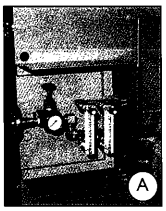
Reliable Solids Mixing

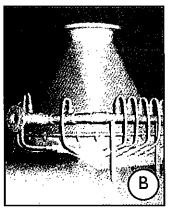


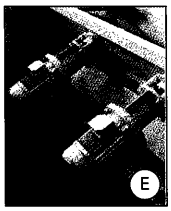
The workhorse of solids blending throughout the history of the processing industries, the Horizontal Ribbon Blender is now available with the heavy duty design and equipment quality that is the NBE standard.

Our double helix is actually four mixing ribbon elements on one shaft. Two opposing inner helixes and two counter-opposing outer ribbons provide a thorough but more gentle mixing action than plows. Horizontal ribbons are available with a variety of drive options and in carbon steel or stainless steel.

Accessories







A Gas pressurized seals provide maximum protection of the equipment, the environment and your product.

B Liquid injection ports, pneumatic samplers and temperature sensors offer added convenience.

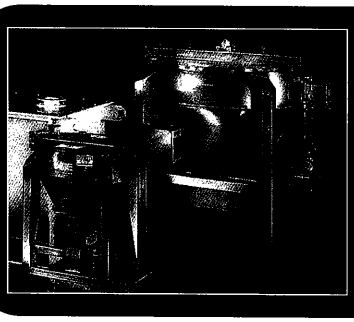
C Standard flap door valves eliminate dead spots around discharge.

D Pneumatic outlet controls regulate residence time and throughput.

E High intensity choppers are specifically configured for your application.

Vertical Ribbon Blender

Specifically Designed and Built For Fast Mixing and Cleaning



Few mixers on the market today can compare to the speed, efficiency and reliability of NBE's newest design in dry material mixers.

The unique construction of its one piece, conically shaped spiral blending paddle makes the Vertical Ribbon Blender one of the most versatile mixing units available.

Carefully designed, solidly built, the Vertical Ribbon Blender will handle most any material mixing need with day to day reliability. Mixing times will vary according to material characteristics. In most cases however, a full batch can be thoroughly mixed in 10 minutes or less.

Easy Cleaning

One of the most unique features of NBE's Vertical Ribbon Blender is this easy no tools required cleanability.

Each Mixer is equipped with lifting lugs on the top cover beam. Simply lift the one piece top cover and mixing paddle assembly out of the Mixer body in one easy step. After cleaning, lower the cover and paddle assembly back into place. No tools required!

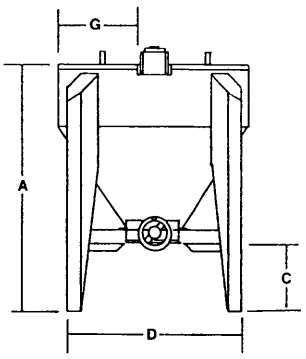
Specifications

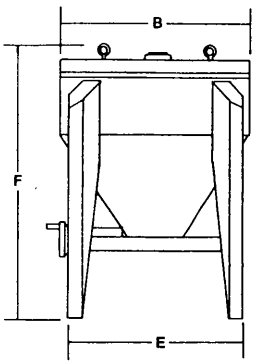
Operational Specifications

Model No.	Batch Capacity Cu. Ft.	Discharge Opening	Electrical
45-550	20	4" x 8"	7.5HP, 3 Phase 230-460V
45-750	30	4" x 8"	10HP, 3 Phase 230-460V
45-1000	40	4" x 8"	15HP, 3 Phase 230-460V
45-1500	60	4" x 8"	20HP, 3 Phase 230-460V

Dimensional Specifications

Model	A	B	C	D	E	F	G
45-550	57"	52.5"	20"	44"	44"	65"	21"
45-750	67"	52.5"	20"	44"	44"	74"	21"
45-1000	76"	52.5"	20"	44"	44"	84"	21"
45-1500	95"	52.5"	20"	44"	44"	103"	21"





Features

Body Construction 14 ga. mild steel or stainless steel body; steep sloped hopper.

Mixing Paddle Conically shaped spiral; mild steel or stainless steel construction.

Drive Bottom drive; TEFC motor and reducer. Direct shaft drive.

Loading Top load. Two piece cover, each hinged to top center beam.

Discharge Bottom, off center gravity discharge. Complete material cleanout air operated slide gate closure.

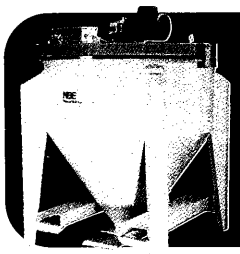
Controls Manual push button on/off control with digital batch timer; emergency stop.

Portable Heavy duty fork lift channels provided.

Finish Exterior surfaces painted light gray.

Quik Mix

Fast, Portable, Versatile Material Mixing



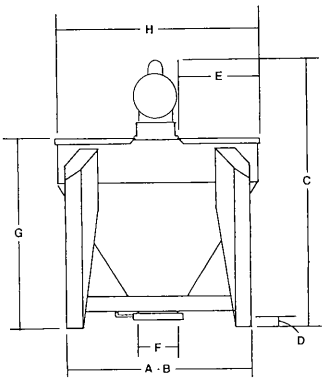
The NBE Quik Mix is a proven performer for dry material mixing and color blending. The direct drive vertical auger creates a unique blending action to ensure a complete, uniform mix every time. In most cases, pelletized and granular material batches can be mixed in five minutes or less.

Available in several different sizes from 350 lbs. to 3400 lbs. The NBE Quik Mix will handle most dry material mixing needs with day to day reliability.

Specifications

Operational Specifications

Model No.	Batch Capacity		Electrical	Auger RPM
	Lbs.	Cu. Ft.		
26-051	350	10.0	1HP/115V/Single ph.	226
26-101	850	24.3		
26-201	1100	31.5		
26-301	1540	44.0		
26-401	2835	81.0	2HP/115V/Single ph.	230
26-501	3423	97.8		



Dimensional Specifications (inches)

Model	A	B	C	D	E	F	G
26-051	44	44	52	1.5	20.6	8	48
26-101	44	44	64	1.5	20.6	8	48
26-201	44	44	71	1.5	20.6	8	48
26-301	44	44	82	1.5	20.6	8	48
26-401	54	54	100	2	24.3	10	60
26-501	54	54	110	2	24.3	10	60

Quik Mix Options

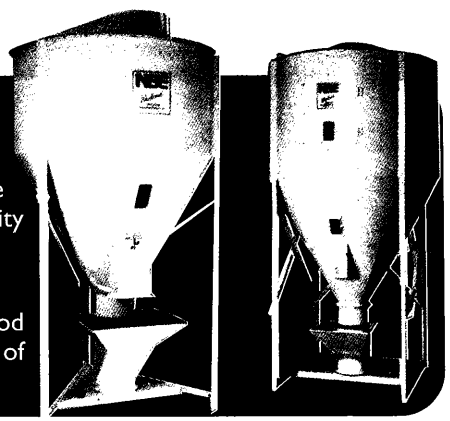
- Vacuum Takeaway Boxes
- Vacuum Probes
- Quik Mix Stands
- Personnel Platform
- Material Platform
- Auger Discharge Stand
- Vacuum Discharge Stand
- Bag Opening Grate
- Stainless Steel Construction

Whirlwind Mixers

Unequalled Production Reliability For Over 50 Years

The Whirlwind Mixer set the standard over 50 years ago when it was introduced as a reliable dry material Mixer. Today, the Whirlwind vertical mixer continues to be one of the most reliable quick Mixers available to the industrial market. Whether mixing at full capacity or partial batches you are assured of a complete, thorough mix in just minutes thanks to the unique "whirlwind" mixing system.

Whirlwind Mixers are widely used with pelleted and powdered plastics, chemicals and food ingredient materials where their rugged construction enables them to meet the demands of continuous production line operation.

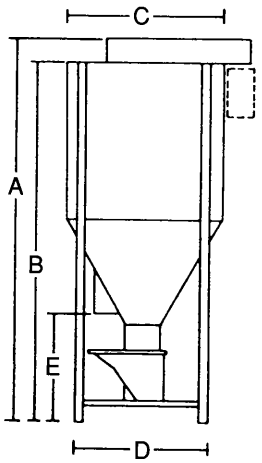


Whirlwind Mixers *(continued)*

Specifications

Available in several sizes with or without motor and controls for a wide range of applications . . .

		Model Numbers				
	Description	100 1700V	200 1234V	300 2934V	400 3834V	500 4934V
	Mixer Capacity (cu. ft.)	30.2	51.6	70.8	108.8	132.0
A	Overall Height	96.5"	95.0"	108.7"	131.7"	132.5"
B	Height, Floor to Drum Top	90.5"	87.0"	100.7	124.5"	124.5"
C	Drum Diameter	40.0"	52.5"	61.0	61.0"	68.7"
D	Floor Space Required	36.0" Tri	46.0" Tri.	44" Sq.	44.0" Sq.	51.0" Sq.
E	Discharge Height	31"	31"	31/41"	31/41"	81/41"
	Auger Diameter	7"	10"	12"	12"	12"
	Auger Length	87.0"	83.5"	96.0"	119.5"	119.5"
	Shipping Weight (lbs.)	482	658	1017	1294	1549
	Finish	Sandblasted and painted desert sand beige				



Options/Accessories

Model No.	Description
40-550	Access Door (for Models 1700V & 1234V)
40-2000	Extra unloading spouts (specify location)
40-2500	Extra View Window, 3" x 6"
40-3000	Leg Extensions: 6" to 12" 15" to 24"
40-9000	Enlarged Infeed Hopper for box or drum loading.

With Motors and Controls	Without Motors:
Models: 40-100	**Models:** 40-1700V
40-200	40-1234V
40-300	40-2934V
40-400	40-3834V
40-500	40-4934V

Replacement Parts

- Paddles
- Seals
- Injection Parts
- Valves

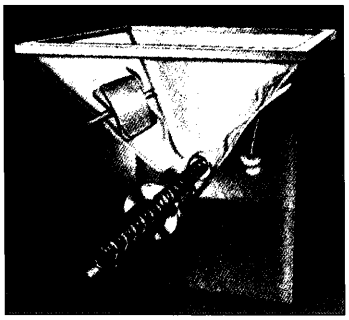
Call today for information on Mixing and Blending parts.

Tecweigh Volumetric Feeders: The Inside Story

The continuous motion of the external agitation system eliminates degrading, ratholing, bridging, and compacting in even the most difficult-to-handle material. The result: a precise measure of your product moves evenly and efficiently with each flight of the auger to allow accuracy formerly only available gravimetrically.

Tecweigh Feeders are flexible enough to accommodate a wide variety of dry materials from fine powders to large pellets. Three different sizes can move from .003 cu. ft./hour to more than 900 cu. ft./hour. And each is built to give you years of consistent performance with a lot less downtime.

Best of all, Tecweigh Feeders fit easily into your existing weighing system.



We want you to be completely satisfied throughout the planning, installation and operation of your Volumetric Feeder system.

Our representatives have a professional background in dry materials handling. We take a close look at your entire system upstream and downstream before helping you select the most efficient Tecweigh Feeder for your application. Then, if required, we'll send samples of your product to our central facility for extensive testing to make sure our feeder will do the best possible job for you.

Tecweigh Weighing Systems offer special options such as custom controls, extension hoppers, special augers, side discharge nozzles, spreader attachments, batching systems and loss-in-weight units to customize your system and meet your specific needs.

Tecweigh Features

Flex-Feed™ Hopper

- Polyurethane is stronger, more resilient and more abrasion resistant than vinyl
- Available in chem-resist, antistatic, food and dairy grades
- No cracks or ledgers to collect material
- Interlocks with cabinet for an airtight seal
- Unique feed tube seal allows for quick release

Sealed Drive Train and Cabinet

- Protects inner workings from water, dust, and dry materials
- Keeps parts clean and in working order
- Can be "hosed down" without risk

Flexible Roller Chain Drive

- Automatic chain tensioner means you never have to adjust new chains as they stretch

State-Of-The-Art Controls

- DC motor with SCR control gives you easy speed adjustment
- 40:1 turndown allows greater speed range
- Durable digital speed potentiometer
- High-quality NEMA 4 or 4X enclosure

Stainless Steel Paddles

- Adjustable amplitude accommodates various materials and minimizes hopper wear
- Sealed roller bearings on paddle shafts minimize power required for continuous motion

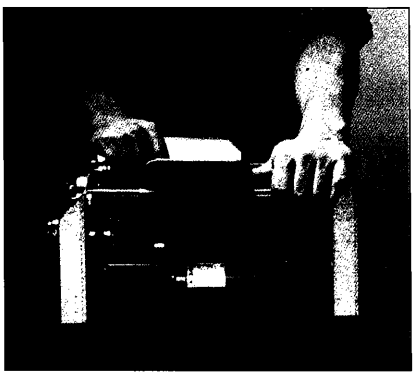
Patented Design

- Patented "bayonet mount" (#5, 110, 015) allows quick auger changes
- Patented dairy bearing flange (#5, 263, 572)
- Patent pending on "cartridge style" bearing flange, allows quick replacement of drive bearings and seals

TECWEIGH®
Tecnetics Industries, Inc.

Removable Drive Chassis

Lifts out completely for easy inspection and repair. In fact, the entire feeder unit can be disassembled without tools in just 15 seconds.



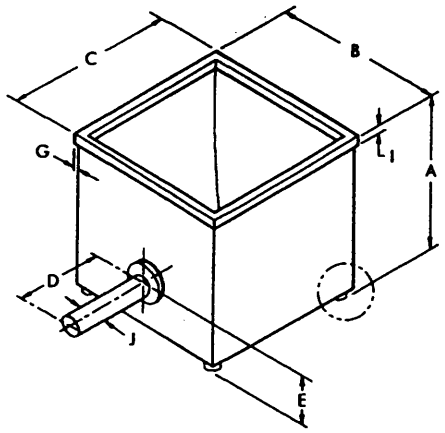
Tecweigh Features *(continued)*

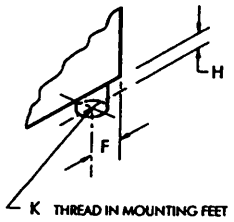
Controls

Standard: Variable speed control with 0-90 VDC motor; SCR; Digital speed potentiometer; On/off switch with run light in detached NEMA 4 enclosure.

Options Available: Remote speed signal source (4-20 Ma or 0-10 volt); Independent paddle speed control; Two-speed arrangement for batching; Remote on/off; Batch timer; Tach feedback; 4-20 Ma speed output signal; Loss-in-weight control; Auto batching.

Every Tecweigh® Volumetric Feeder is covered by a full 1-year warranty on all mechanical parts. The Flex-Feed Hopper carries a 5-year wear guarantee.





Dimensional Data (Inches)

Model	A	B	C	D	E	F	G	H	I	J (MAX)	K
5	12.38	14.5	14.5	6	4.44	1.00	.25	.38	.50	1.50	3/8-16
12	18.00	23.0	23.0	8	4.94	1.19	.31	.62	.88	3.50	1/2-13
28	25.00	30.0	30.0	8	7.81	1.00	.50	.62	1.00	6.62	1/2-13

Technical Data

Model	Standard Motor H.P.+	Maximum Rate Capacity (Cu. ft. Per. Hr.)	Unit Weight* (Lbs.)	Helix Sizes Available
5	1/8	7.0	50	1/4" - 1 1/4"
12	1/4	100.0	150	1 1/2" - 3"
28	3/4	900.0	350	4" - 6"

+Larger H.P. motors available per application.
*Weight given for single drive and standard motor.
Dual drive and special motor will increase weight.

Materials of Construction

Component	"E" Series	"CR"Series	"S" Series*
Cabinet	Mild steel Coated With Oven Baked TGIC Polyester	304 S.S. #4 Finish	304 S.S. #4 Finish
Chassis	Galvanized M.S.	Galvanized M.S.	304 S.S. #4 Finish
Helix	304 S.S. Wire Brushed	304 S.S. Wire Brushed	316 S.S. #4 Finish
Tube	304 S.S. Wire Brushed	304 S.S. Wire Brushed	316 S.S. #4 Finish

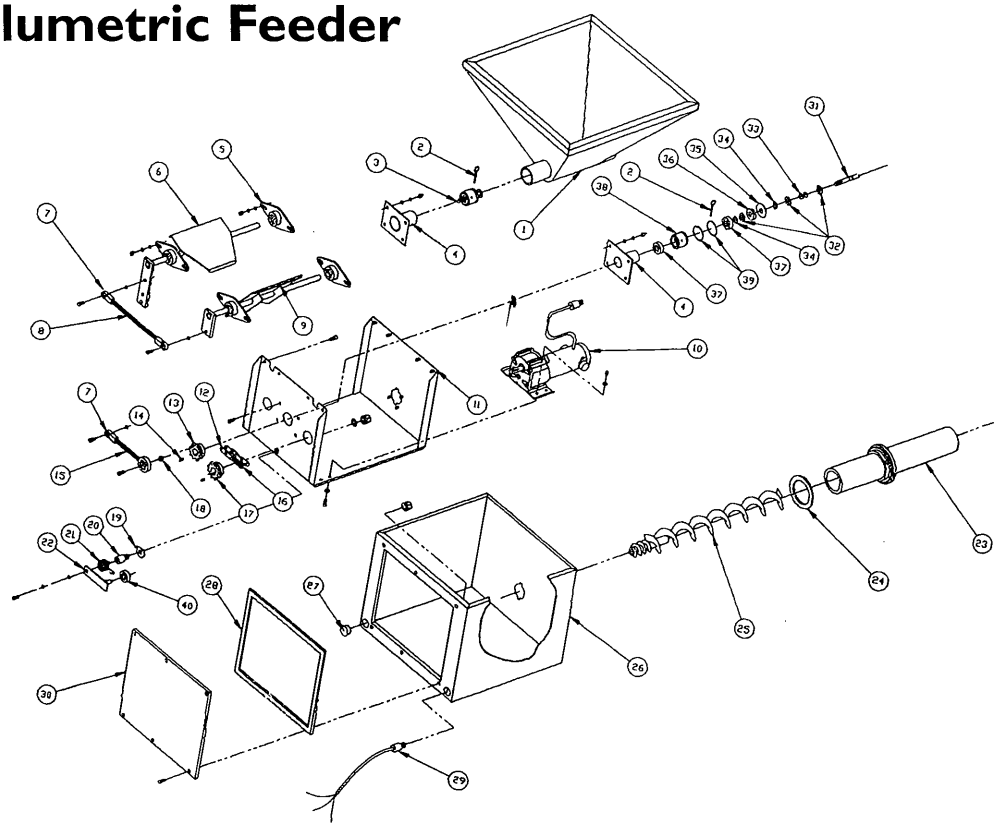
*Unit available with USDA Dairy Rating

Exploded View Assemblies & Parts Lists

1	Flexible Hopper, Food Grade	102482	1	24	Feed Tube Gasket	002574	1
1	Flexible Hopper, Industrial Grade	102483	1	25	Auger	Varies	1
1	Flexible Hopper, Chemical Resistant	102373	1	26	E5 Painted Cabinet	20187601	1
2	Pin, Quick Release	104517	1	26	E5 Painted Cabinet With Latch Package	20187601	1
3	Bearing Flange Drive Assembly	20505200	1	26	E5 Painted Cabinet With Bolt Package	20195801	1
4	Bearing Flange Weldment	00258700	1	26	CR5 Cabinet	20194400	1
5	Paddle Bearing, Pillow Block	002557	2	26	CR5 Cabinet With Latch Package	20194400	1
6	Left Paddle Assembly	20250000	1	26	CR5 Cabinet With Bolt Package	20280903	1
7	Rod End Bearing	002582	3	26	S5 Cabinet	20194500	1
8	Upper Drive Rod	00275701	1	26	S5 Cabinet With Latch Package	20194500	1
9	Right Paddle Assembly	20249900	1	26	S5 Cabinet With Bolt Package	20280903	1
10	Motor/Varies With Job	Varies	1	27	Hole Plug, 3/4"	104192	1
11	Chassis E/CR5 Single Drive	20186800	1	28	Rubber Door Gasket	200219	3.5ft
11	Chassis S5 Single Drive	20186900	1	29	Liquid Tight Cord Connector	101179	1
12	#40 Roller Chain	002308	16 in	30	E5 Painted Gear Train Door	20195801	1
13	Auger Sprocket	20214000	1	30	S/CR5 Gear Tain Door	20196000	1
14	3/16 x 3/16 x 7/8 SQ Key	002088	2	31	Bearing Flange Shaft	20282101	1
15	Heavy Duty Rod End Bearing	20438900	1	32	Spring Protector Spacer	20269501	3
16	Master Connecting Link	002309	1	33	Spring, Compression, .720D.063WI	103393	1
17	Motor Sprocket	002301	1	34	E-Retaining Ring	103014	2
18	Crank Bearing Spacer	20104200	1	35	Drive Shaft Seal	20235500	1
19	Chain Tensioner Plate	20022800	1	36	Oil Seal	002057	1
20	Spring Post	00249500	1	37	Ball Bearing	104070	2
21	Torsional Spring	002571	1	38	Cartridge Style Bearing Flange Housing	20197701	1
22	Chain Tensioner Bar	00276800	1	39	O-Ring	104083	2
23	Feed Tube	Varies	1	40	Ball Bearing	104070	1

5 Series Volumetric Feeder

Single Drive



Tecweigh Loss-In-Weight Feeders: A Perfect Fit

Most Loss-In-Weight feeders are made up of similar components: the refill bin, the extension hopper, the volumetric feeder, a sensitive scale and an automatic rate controller.

But the secret to a really good Loss-In-Weight system is in the engineering. That's were Tecweigh stands alone.

We begin with excellence in the individual components–the proven design of the Tecweigh Volumetric Feeder, the pinpoint accuracy of a high-quality scale and the unique technology of a fully automatic rate controller that ignores ambient vibration.

But the secret to your success is how we put these components together – and how they integrate into your system to best accomplish your objectives.

Our materials handling professionals work closely with you from planning through installation to ensure the right components for your application. Every Tecweigh Loss-in-Weight Feeder is custom–engineered–then tested and documented for optimum performance. Then, after it's up and running, your system can be fine-tuned and calibrated until it's operating at peak efficiency.

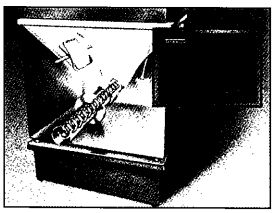
The partnership-style customer service that stands behind every Tecweigh feeder system guarantees a perfect fit–you simply won't find a better Loss-In-Weight system.

The Accuracy You Need - The Economy You Want

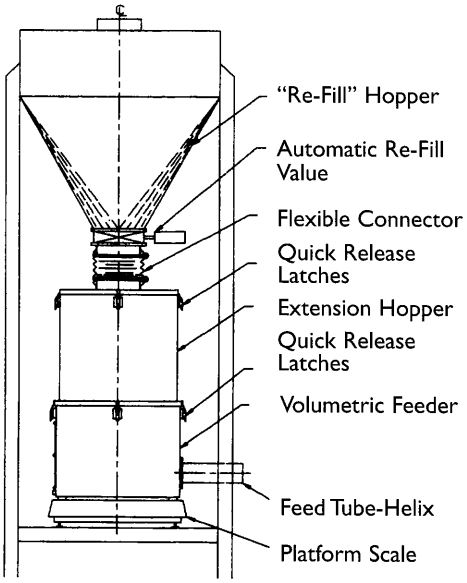
Tecweigh puts together the very best Loss-In-Weight components available – then prices them competitively.

The flexible-walled, soft-sided Volumetric Feeder provides even, consistent flow for your product. The super sensitive, microprocessor controller offers carefully metered feed rates in any of the three modes (Gravimetric, Volumetric or Batching) – plus multiple levels of security, an easy-to-read backlit LCD display and complete freedom from mechanical vibration dampening devices, no matter what the level of ambient noise.

The Tecweigh Loss-In-Weight Feeder system also lets you select automatic or manual refill, lets you set the rate with automatic PID adjustment and lets you choose whether or not to download processing data into your own computer system.



A Typical Tecweigh Loss-In-Weight Feeder System



Tecweigh Rate Controller

- Easy-to-read, 80-character backlit LCD display shows rate, current weight, batch weight, and totalized data
- Allows you to select automatic or manual refill
- Automatically determines the correct PID values or you can enter your desired PID values manually
- Unique, new vibration-quelling technology eliminates the need for external dampening devices
- 1,000,000 counts of resolution allows the system to "see" and adjust to even the most minute weight changes
- Secure memory module prevents accidental loss of operating data
- Multiple levels of security let you select functions and parameters accessed by personnel
- Lets you choose from a wide selection of alarms for rate, batch and shut down
- Bi-directional RS-232 part allows you to download data into your own computer system

Tecweigh Volumetric Feeder

- Stainless steel paddles continuously massage the flexible polyurethane hopper to prevent degrading, ratholing, bridging and compaction in even the most challenging dry materials
- Three sizes can easily move from .0003 cu. ft./hr. to more than 900 cu. ft./hr.
- Sealed drive train and cabinet protects inner workings and can be hosed down without risk
- Flexible roller chain drive auto adjusts to compensate for new chain stretch
- Removable drive chassis makes it easy for you to do inspections and repairs

Tecweigh Platform Scale

- Rugged, industrial construction
- Precision weighing, even with uneven load distribution
- Weigh-Bar load cells are sealed against dirt and water
- Overload stops prevent load cell damage
- Your choice of materials and finishes

Tecweigh® WF-18 Weigh Belt Feeder

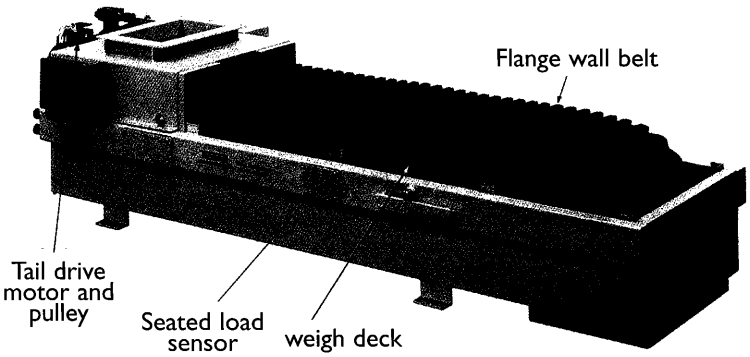
We've taken the time to design a simpler system - eliminating opportunities for breakdown and inefficiency. Smooth slider rods on the conveyor bed allow the belt to pass easily, cutting friction and scale disturbance. Food-grade belts help you maintain sanitary conditions and product integrity.

Material build-up areas have been virtually eliminated. The sides and back of the frame are skirted to prevent spillage, and allow for concentrated loading. But access is quick and easy, and that makes washdowns easy too.

For low capacity applications (under 100 lbs/hr up to 1500 lbs/hr) TECWEIGH® has designed the new WF-18LC. This low-capacity model features the same rugged construction as the standard model, with load cells that provide more precision for low capacity measurement.

Whichever model you choose, you can count on the best measurement technology for your application - backed by our five year warranty. What's more, you can count on TECWEIGH® to provide all the technical help you need.

Weigh the advantages for yourself. You can see why more and more people are choosing TECWEIGH® as their way.



Model WF	10/11	14/15	16/17
Weigh Idlers	single/dual	single/dual	single/dual
Belt Width	18" - 36"	18" - 42"	24" - 48"
Capacity	5-30TPH	20-100TPH	80-500TPH
Belt Length	6' - 20'	8' - 24'	8' - 30'

Vibratory Feeders For Bulk Materials

Rugged, Reliable, Efficient Feeding For Bulk Materials

With over three decades of solid development work behind them, ParaMount II feeders by General Kinematics offer an unequaled record of dependability anti-performance in the controlled feeding of bulk materials.

Designed to operate at subresonant natural frequency, our feeders are ideally suited for a wide range of bulk material handling applications in mining, power generation and process industries. Installed units are handling ores, coal, aggregate, sand, powders, grain and difficult to handle materials such as lignite coal.

Sub-resonant, two mass drive system

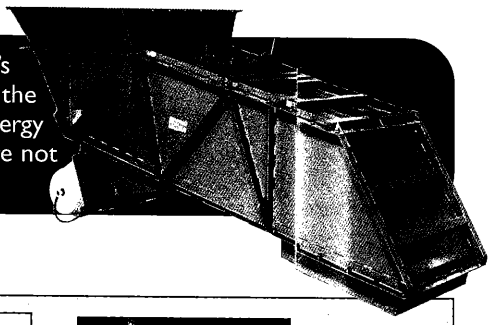
Para-Mount II feeders in either fixed or Variable Force configurations utilize the principle of sub-resonant magnification of a small exciting force acting upon a two-mass natural II frequency coil spring system. The first mass, consisting of the motor and exciter frame, is separated by precision engineered steel coil springs from the second mass, the material carrying deck assembly.

The small force needed to excite the system is efficiently produced by counterweighted wheels mounted on a totally enclosed vibration design motor with double extended shafts. Centrifugal force produces the desired motion which is amplified by the coil springs and transmitted directly to the deck assembly, resulting in highly efficient straight-line feed of material.

Vibratory Feeders For Bulk Materials *(continued)*

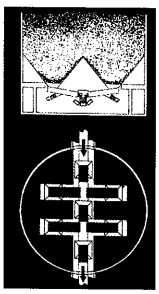
Inherently Energy-Saving and Cost-Efficient

Economical power requirements and low operating costs are achieved by Para-Mount II's natural frequency, two-mass drive system which is tuned to maintain drive frequency of the spring and deck mass. Only small amounts of energy are needed to maintain the natural energy stored and released by the spring system. Equally important, General Kinematics feeders are not subject to the high stress and wear forces associated with brute force designs.



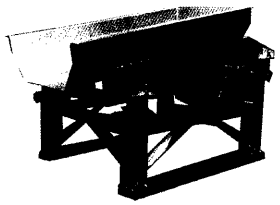
Smooth Operation Under Varying Headloads

Feed rate is varied by adjusting counter-weight effect, rather than motor operating frequency. Subresonant design provides an automatic increase of the exciter force which compensates for increasing material weight or flow resistance. This ParaMount II antidamping characteristic results in accurate control of volumetric feed rate regardless of material load variations. Additionally, ParaMount II saves headroom, and permits the use of large feed openings to prevent bridging, eliminating the need for bin vibrators and other auxiliary flow devices.

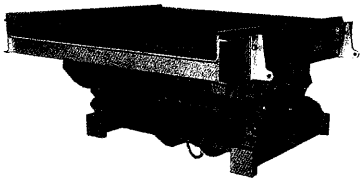


Section View of Typical Windrow Install

Typical 70" diameter silo with 7-point draw-off.

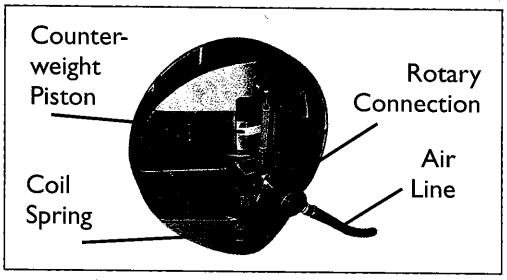


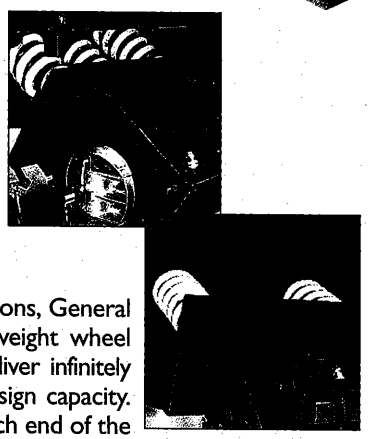
This base mounted feeder in a process application has a large volume replaceable deck to contain batch loads of material and meter it at a uniform rate.



Heavily reinforced 96" wide x 15'-0" long feeder uses VF Variable Force control to maximize coal crusher performance by adjusting feed rate in accordance with feed back signal from computer monitoring crusher.

Variable Force (VF) Wheel





Proven in thousands of demanding feeding applications, General Kinematics' exclusive Variable Force (VF) counterweight wheel design enables ParaMount II feeders to smoothly deliver infinitely variable feed rates - from minimum to 100% of design capacity. Today's enhanced VF wheel design is mounted on each end of the extended motor shaft. It incorporates a spring loaded counterweight piston which moves within a rugged chrome plated cylinder. Acting on the face of the piston, variable pneumatic or hydraulic pressure instantaneously positions the counterweights in relation to the center of rotation, varying centrifugal force, and altering vibratory amplitude and feed rate. Because the motor operates at full RPM and constant feed rate is easily adjusted from minimum to maximum. Finite adjustments can be remotely controlled via computer, load cell, belt scale or other automated or manual process signals. The VF wheel can also be mounted to provide maximum or minimum feed if control pressure is deactivated.

Wide Range Of Applications

Proven performance and maintenance free operation make Para-Mount II the first choice in feeders for the most demanding applications including public utilities, mining, metals production, food processing, cement and other industries. Here's what makes Para-Mount II perform.

- Two-mass, sub-resonant natural frequency self-compensating design automatically adjusts to material head load and weight changes, maintaining constant feed rate regardless of load.
- Exclusive Variable Force (VF) control allows infinitely variable feed with precise proportional feed adjustment. With VF control feeders, can be declined as much as 15° and still provide stable flow control.
- The ability to operate under lane head loads allows full size hopper openings. This eliminates material bridging and plugging, and the need for separate vibrating hoppers or other flow enhancing equipment.
- Fully enclosed motors (explosion proof available) and other drive components are fully accessible for easy service.
- Low frequency and longer stroke, in combination with specially designed low stress steel coil springs, uniformly distribute forces and keep power requirements to a minimum.
- "UVF" control provides smooth stop-and-resume feed, even at minimum rates. Responds accurately to feed-back signals from scales, load cells or computers.

Selection & Specifications

Typical arrangement consists of a hopper with a feeder suspended below to feed a conveyor, scale or processing unit (Fig. A).

Vertical hopper opening as well as hopper bin slopes are dictated by material characteristics and size. In determining the hopper opening, consider the largest particle size as well as the bridging characteristics of the material. The projected vertical opening should be 2 or 3 times the largest material size. Materials with high bridging characteristics require adequate openings to assure flowability.

Horizontal opening is determined by particle size and capacity requirements (Fig. B). The minimum opening should be approximately 1-1/2 times the largest lump size.

The maximum size opening is determined by the volumetric capacity, consistent with feeder length. It is desirable to include a slide plate or gate to permit field adjustments.

Capacity requirements determine the feeder pan dimensions and slope (Fig. C). Feeder volumetric capacity may be determined by the formula.

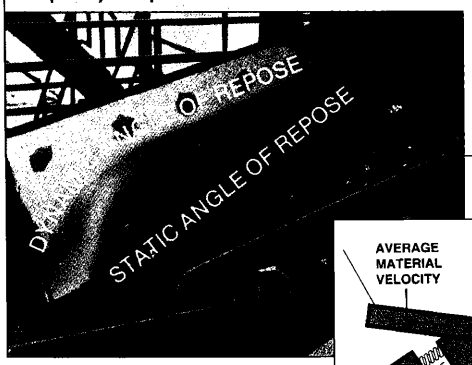
AxV=Q

Q = cu. fpm
A = projected horizontal area
V = average velocity of material flow through opening

The projected horizontal area is a function of the projected horizontal opening and feeder pan width. The average material velocity will vary with material flow characteristics, coefficient of friction feeder pan slope, length and vibration intensity. Material velocities will range from 50 to 80 fpm with pan slopes from 0 to 15°.

Feeder pan trough length is determined by material angle of repose and pan slope. The feeder pan must be of sufficient length to assure 100% material shut off when the feeder is at rest. A line drawn from the maximum opening at the material angle of repose should intersect the trough, with sufficient length to allow for variations in material characteristics.

The Feeder Capacity Chart shown is a guide for determining the recommended trough width based on known bulk density and desired capacity. Draw a line from the proper value on each side of the graph. Their point of intersection will indicate the suggested width. Remember this in only a guide, since feed rates vary with material characteristics such as particle size distribution, moisture content, bulk density and angle or repose.



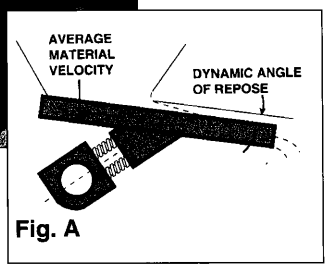


Fig. A

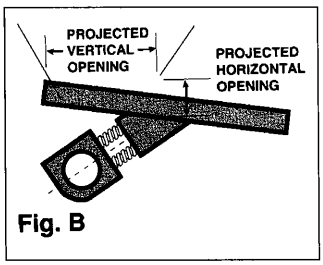


Fig. B

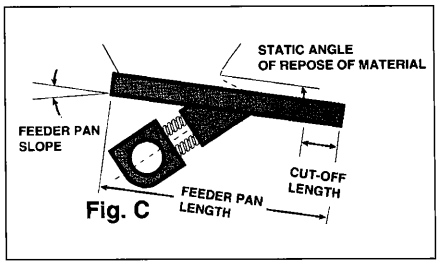
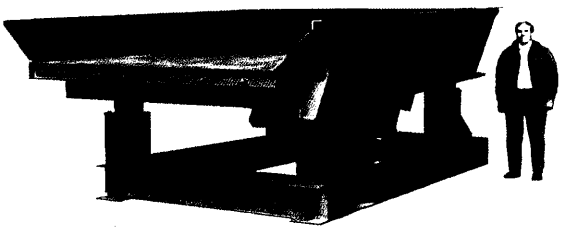


Fig. C

Wide Range Of Applications

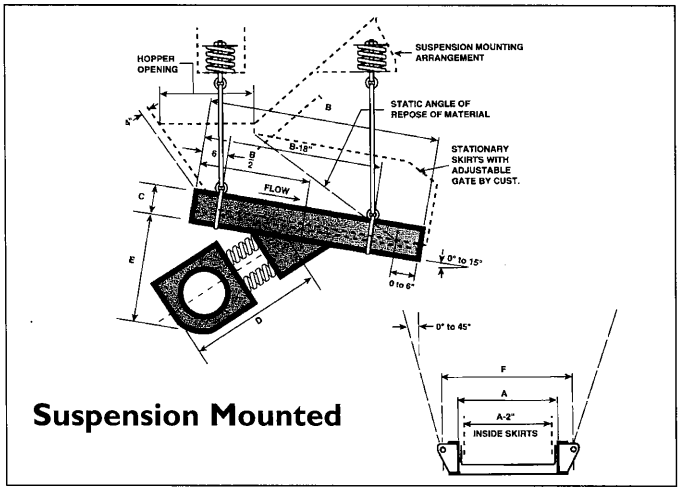
The deck of this 36" wide x 8' - 0" long Para-Mount II Weeder is lined with high-density ceramic to resist abrasion while handling coke in a steel mill application.



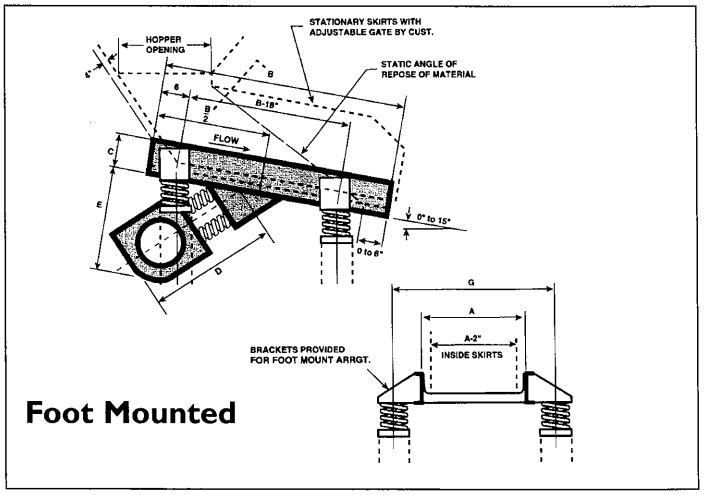
This 96' flared to 120" wide x 15' 0" long base mounted feeder handles municipal solid waste at a mass bum incinerator. Deck has replaceable wearliners.

Series of enclosed feeders during testing and final inspection prior to shipment.

Selection & Specifications *(continued)*



Suspension Mounted

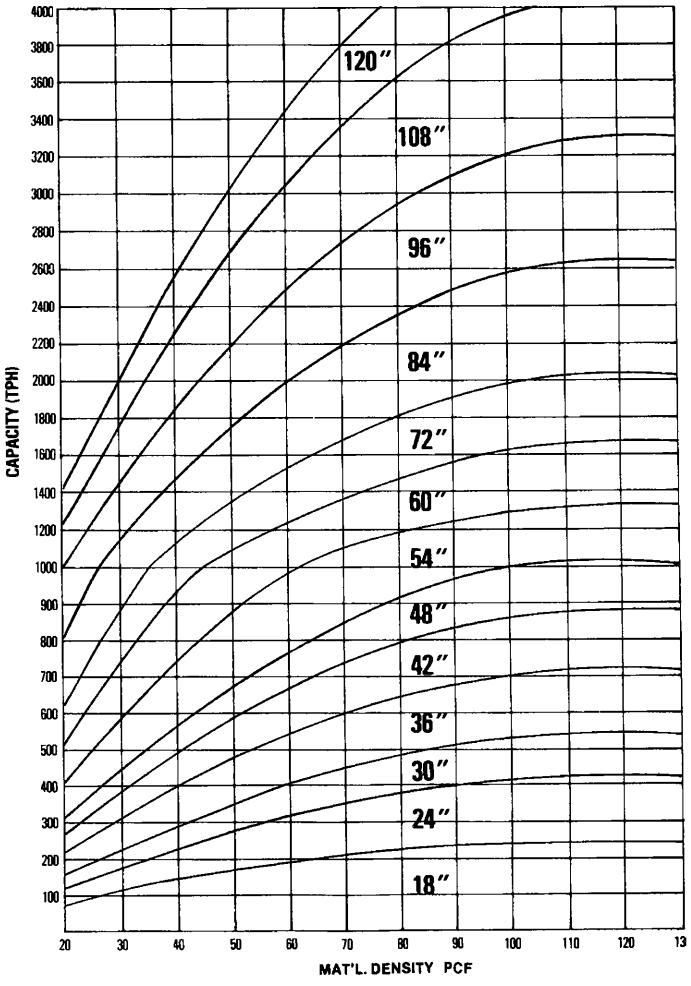


Foot Mounted

FEEDER MODEL NUMBER FRC & ARC** MODEL A'-B'	HP	WEIGHT POUNDS	DIMENSIONS, INCHES* A	B	C	D	E	F
18-5	¾	900	18	60	9	32	24	45
18-6	¾	950	18	72	9	32	24	45
18-7	¾	1000	18	84	9	32	24	45
18-8	¾	1050	18	96	9	32	24	45
24-5	1	1400	24	60	9	33	30	42
24-6	1	1400	24	72	9	33	30	42
24-7	1	1450	24	84	9	33	30	42
24-8	1	1500	24	96	9	33	30	42
30-5	1	1450	30	60	9	33	36	48
30-6	1	1450	30	72	9	33	36	48
30-7	2	1700	30	84	9	33	36	48
30-8	2	1750	30	96	9	33	36	48
36-5	2	1850	36	60	10	33	42	54
36-6	2	1900	36	72	10	33	42	54
36-7	2	1950	36	84	10	33	42	54
36-8	2	2000	36	96	10	33	42	54
42-6	2	1950	42	72	10	33	48	60
42-7	2	2000	42	84	10	33	48	60
42-8	3	2500	42	96	10	36	48	60
48-6	3	2500	48	72	12	35	55	68
48-7	3	2600	48	84	12	35	55	68
48-8	3	2700	48	96	12	35	55	68
48-9	3	2800	48	108	12	35	55	68
60-7	5	4100	60	84	15	34	68	80
60-8	5	4200	60	96	15	34	68	80
60-9	5	5300	60	108	15	34	68	80
60-10	5	5400	60	120	15	34	68	80
72-8	5	5400	72	96	15	34	80	90
72-9	5	5500	72	108	15	34	80	90
72-10	5	5600	72	120	15	34	80	90
84-10	10	6800	84	120	15	34	92	104
84-11	10	7000	84	132	15	34	92	104
84-12	10	7200	84	144	15	34	92	104
96-10	10	7200	96	120	15	34	104	116
96-12	10	7600	96	144	15	34	104	116
96-14	10	8000	96	168	15	34	104	116

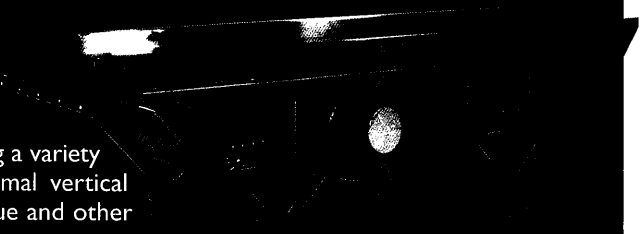
*For installation purpose, request certified dimensions.
**FRC = Fixed Rate ARC = Adjustable Rate

FEEDER CAPACITY (Based upon 10-12° decline)



Two-Way Conveyors

A new innovative vibrating equipment design from General Kinematics conveys in either direction with a quiet, smooth, horizontal motion without dusting or damage to friable materials.

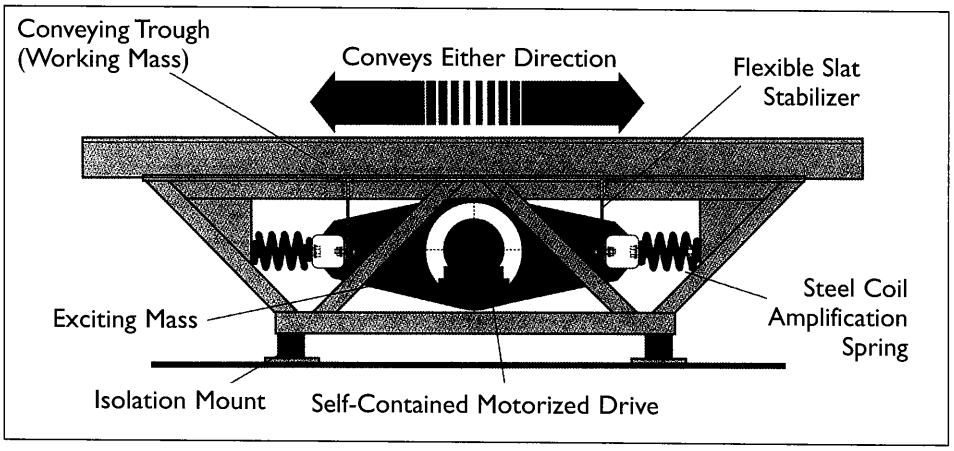


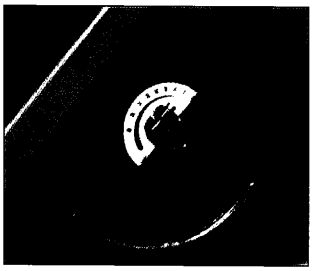
Direction of material flow is easily and immediately reversible at the touch of a button controlling the rotational direction of a single, low horsepower, self-contained drive.

Smooth, horizontal material flow makes a TWO-WAY unit ideal for moving a variety of bulk materials including powders, chemicals or food products. Minimal vertical acceleration force also permits the noise-free movement of castings, sprue and other metallic parts with reduced trough wear.

Conveying motion is essentially horizontal, with minimum vertical acceleration, resulting in a gentle, noise-free "shuffling" material movement without bouncing. Vertical forces, less than gravity make the unit ideal for handling fine materials which would tend to aerate and be difficult to handle in a conventional vibrating conveyor.

Advanced Design Horizontal Conveying Motion





Unit is a two-mass, sub-resonant natural frequency design, applying a small exciting force to a coil spring amplification system. This force is developed by a single low horsepower, vibratory service, motor with counterweights on each of its double extended shafts.

The new TWO-WAY Conveyor uses a simple, dependable design with a self-contained motorized drive, a coil spring amplification system and strategically positioned flexible slat stabilizer legs. Noisy gears, drive belts, and other maintenance prone machinery is eliminated. Unit is inherently self-balancing and fully isolated to minimize vibration transferred to supporting structures.

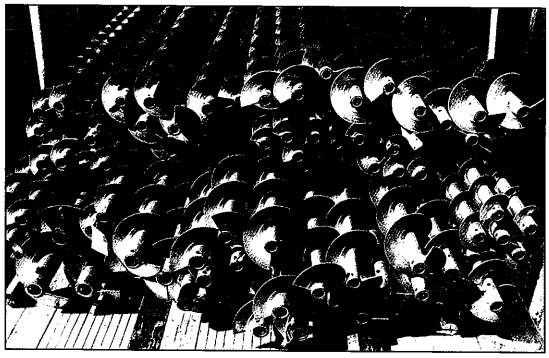
Conveyors can be provided to operate at various frequencies and trough amplitudes to suit specific application requirements.

Troughs can be constructed of a variety of materials and configurations including dust-right sanitary construction.

From original concept through design and manufacturing, General Kinematics is uniquely positioned to fully coordinate every phase of equipment production. Years of engineering and field experience, combined with dedicated in-house engineering teams, working with advanced computerized CAD stations, enable General Kinematics to consistently develop highly efficient, innovative solutions for your specific material handling and processing needs.

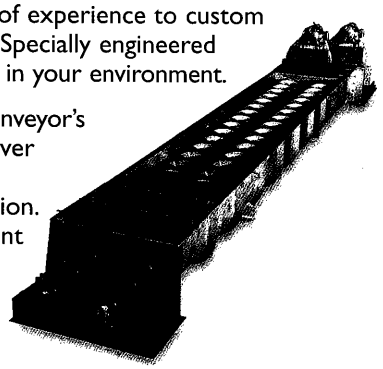
It's not just a vibrating machine we put in your plant, but our reputation as well.

Screw Conveyors



Thomas Conveyor puts to work our decades of experience to custom design systems to meet your individual needs. Specially engineered features increase the reliability of our machines in your environment.

No other company comes close to Thomas Conveyor's engineering and design capabilities. We can deliver equipment that has been custom designed if necessary, to fit perfectly your specific application. Through our computer-aided design department and real-life experience, we utilize the latest technology and practical design sense to find effective solutions for your plant.

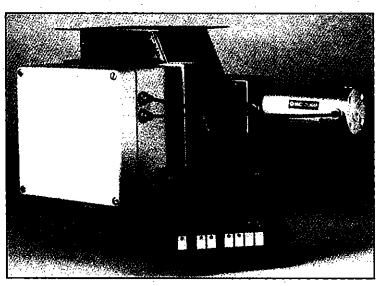


Flo-Commander - Flow Control Feeder With Doppler Radar Technology

An Accurate Flow Controller and Flow Monitor In One Easy-To-Use Package

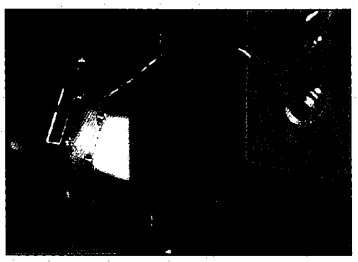
Bindicator's New Flo-Commander is a simple and unique product for controlling and monitoring the discharge of bulk powders and granulars up to 1/2" (12mm) in size. It regulates a precise flow from any size storage container.

The Flo-Commander discharges a constant amount of product equal to the flow rate set-point and provides a feedback of the actual flow. And with DSP Digital Signal Processing that "learns" about your particular flow requirements during the initial calibration, the Flo-Commander won't require constant adjustment or attention like the feeders you've used in the past.



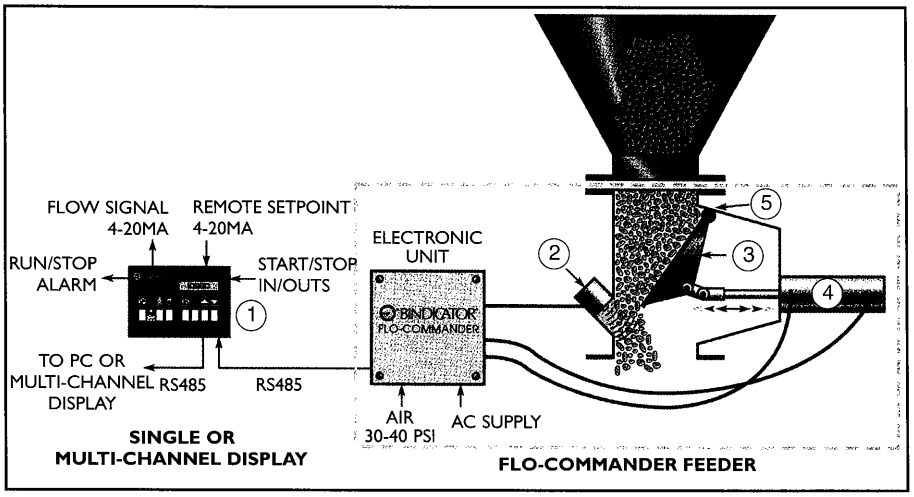
Try the Flo-Commander on a demanding flow application, or replace that old flow control system that is slowly eating up your precious time and resources. We are confident that you will be 100% satisfied with your decision.

Measures velocity, has no moving parts to wear or fail. Non-contact, non-intrusive technique accurately measures flow rate by looking through an unbreakable "window". The straight-thru design allows maximum flow rate and eliminates the troublesome constrictions found in other designs.



Why It Works Better

1. **Flo-Commander Display** - Set desired flow rate, perform calibration, and get maximum control of your process.
2. **Doppler Radar** technology accurately measures flow and provides feedback to Flo-Commander Display.
3. **Flo-Gate** opens to allow material movement and oscillates for consistent material flow.
4. **Air Cylinder** - rugged, fast-acting actuator controls feed volume.
5. **Position Encoder** gives precise gate position information for the ultimate in control technology.



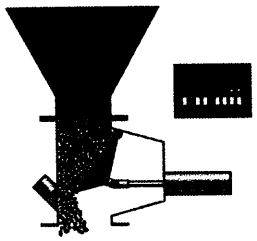
Simple Installation . . . Fast, Easy Start-Up

Replace outdated and troublesome . . .

• Mechanical Feeders • Rotary Valve Systems • Weigh Belts • Flow Balancers • Loss in Weight Feeders • Impact Feeders or add up-to-date flow monitoring and control capability to your new or upgraded process.

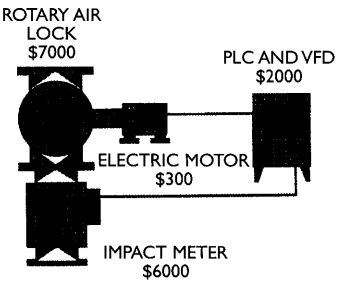
YES . . .

- Simple low cost design
- Mounts in tight spaces
- Gravity moves material . . . low power consumption



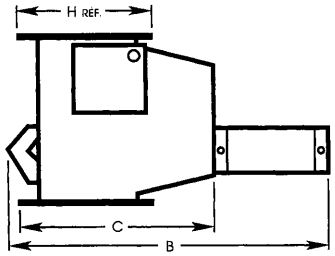
NO . . .

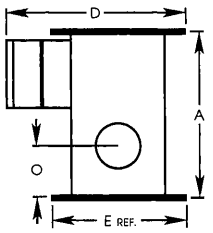
- Complicated and expensive
- Hours of upkeep and adjustments
- High power consumption

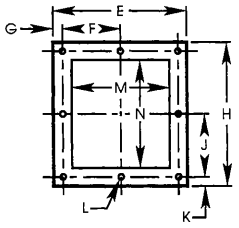


Dimensional Drawings

Flo-Commander Feeder





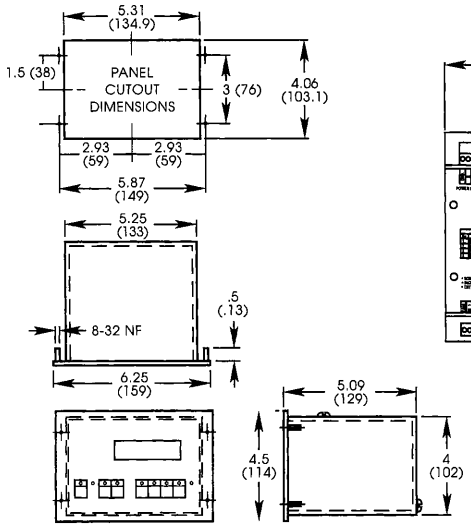


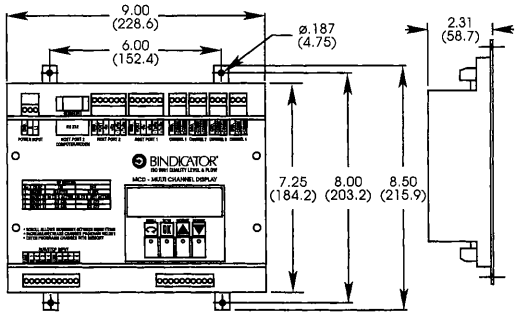
P=Number of holes per flange

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
2X2.5	12.00 305	16.90	8.75	13.20	6.00	4.00	1.00	6.50	2.50	1.00 25.4	.437	2.00	2.50	8.06	4
4X6	12.00 305	25.81 656	12.50 318	13.12 333	8.00 203	3.00 76	1.00 25	10.00 254	4.00 102	1.00 25	.437 11	4.00 102	6.00 152	4.50 114	4
6X6	12.00 305	25.81 656	12.50 318	15.12 384	10.00 254	3.00 76	1.00 25	10.00 254	4.00 102	1.00 25	.437 11	6.00 152	6.00 152	4.50 114	4
8x10	17.50 445	35.69 906	18.12 460	17.12 435	12.00 305	5.00 127	1.00 25	14.00 356	6.00 152	1.00 25	.562 14	8.00 203	10.00 254	5.25 133	8
10x14	17.50 445	35.69 906	18.12 460	22.00 559	18.00 457	8.00 203	1.00 25	14.00 356	6.00 152	1.00 25	.562 14	14.00 356	10.00 254	5.25 133	8

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. LOWER NUMBERS ARE MILLIMETERS.

Multi-Channel Display (MCD)





Note: Bracketed dimensions in millimeters

Designed With Features You Asked For

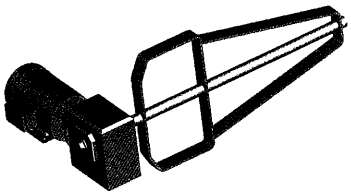
- Volumetric flow measurement and control
- 200,000 lbs./hour (90,720 kgs./hr.) capacity
- Few moving parts
- Large access and clean-out port
- Straight "flow thru" design
- Local and remote intelligent displays
- PC Compatibility/Networking
- Powder and Granular control
- Set and Forget - No tweaking required
- Most compact feeder available - little or no facility modification
- No delicate load cells or impact plates
- Changing bulk density is no problem
- Field repairable
- Non-contact flow measurement
- Flow alarming
- Can be mounted at an angle

Successful Feeder Applications

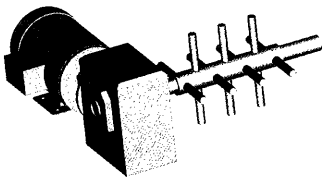
- Wheat
- Oats
- Corn
- Peas
- Soy Beans
- Rice
- Barley
- Malt
- Canola
- Mustard Seed
- Sun Flower Seed
- Beans
- Brewers Grain
- Buckwheat
- Coffee Beans
- Flax Seed
- Bird Seed
- Pepper
- Plastic Resin - (All kinds & shapes)
- Cement
- Limestone, Powder
- Limestone, Crushed
- Sand
- Gravel - (Medium & Fine)
- Flour
- Salt
- Starch
- Semolina - (Durum & Wheat)
- Sugar

Material Flow Promotion and De-Agglomeration Devices

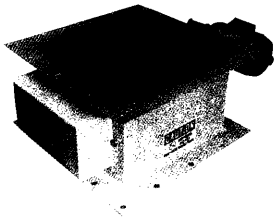
NBE custom material flow divides ensure continuous discharge of your semi- or non-freeflowing materials.



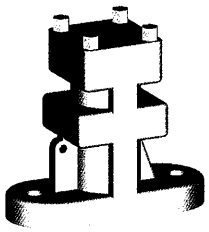
Robust hopper cone agitator eliminates bridging and ratholing within hoppers and bins for semi- and non-freeflowing material.



Rotary tine agitator eliminates material bridging at hopper and bin discharges.



The Crumbler material delumper bolts to the discharge of hoppers and bins to improve the material flowability through your conveying systems.



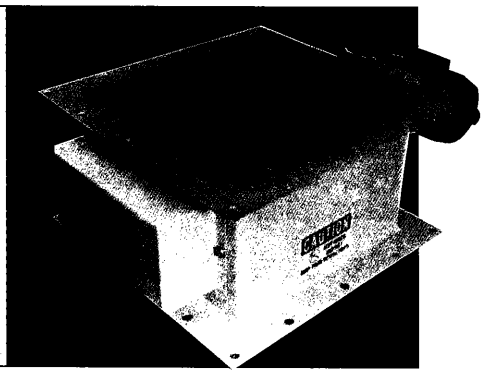
Electric and pneumatic vibrators mount to the exterior of hopper and bin cones to maintain the flow of materials from the discharge outlet.

The "Crumbler"

Break Down Agglomerated Material to Improve its Flowability Through Your Material Conveying System.

The NBE Crumbler maintains a uniform flow of material from a storage bin or hopper to downstream processing equipment.

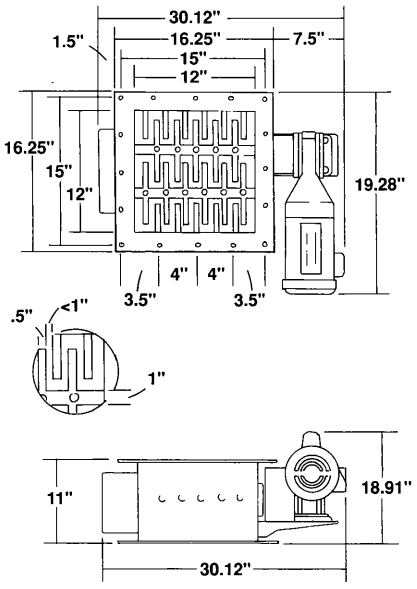
When stored material becomes lightly packed or clumped, the Crumbler, with its dual rotary agitator shafts, works to break down those material agglomerations helping to prevent interruption in material flow to downstream equipment. The economic design of NBE's Crumbler makes it easy to install to most existing equipment, and will provide years of reliable use.



Features

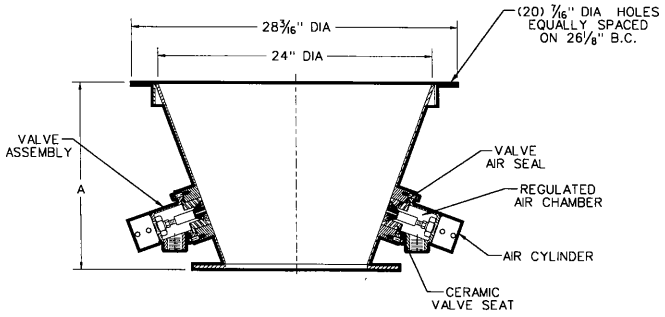
Construction	Welded mild steel box construction, flanged top and bottom. Rubber gasket mounting seals provided.
Drive	1/2HP; TEFC; 115/230V; 60Hz right angle motor, gear drive, reversible. Shaft bearings mounted outside box away from material flow. 30 RPM 680 lbs. full load torque
Operation	Designed for continuous duty.
Finish	Sandblasted and painted outside only desert sand beige. Motor size may vary per application according to material characteristics and bin size.
Rotor Arms	1/2" steel rod "fingers" mounted to two 1" steel shafts. Opposing shaft rotation. <1" "finger" clearances.

Specifications



Fluidizing Bin Bottom (Model 328)

The NOL-TEC Fluidizing Bin Bottom promotes the free flow of powder and granular materials in storage vessels.



Model	Piston Qty	Discharge Size	A
328-6-3	3	6"	24"
328-8-3	3	8"	21.25
328-10-3	3	10"	18.25
328-12-3	3	12"	15.50"

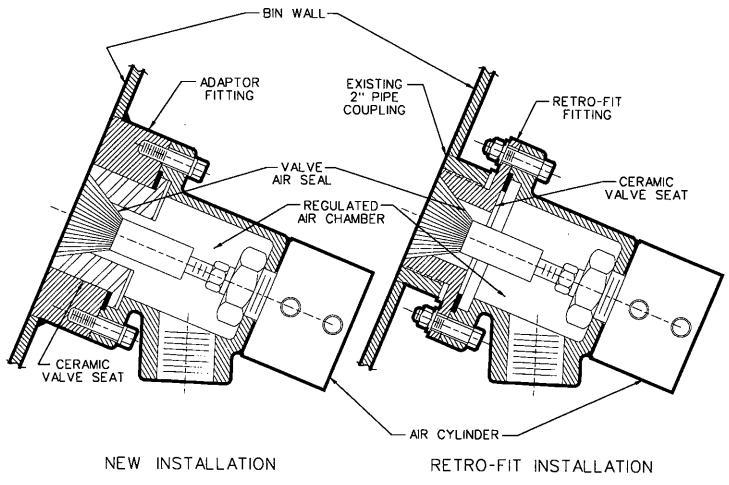
Standard Features:
- Three air injection valve assemblies controlled by a single solenoid valve for aeration sequencing
- Ceramic valve seat directs air into the material at various angles
- Abrasion resistant, urethane valve
- Wear parts are replaceable from outside of container

Optional Features:
- Interior coatings
- Each aerator with individual solenoid valve for aerator sequencing
- Special mounting flanges
- Stainless steel construction
- Explosion proof electrical
- Sanitary design
- High temperature design

Specifications:
- Weight - 115 lbs.
- Air:
  - Clean and dry at correct pressure dew point
  - 80 PSIG minimum
- Electrical - 110-120V, 50/60HZ
- Temperature - 200°F

Aerator (Model 276)

The NOL-TEC Aerator is an effective device for aerating or dislodging materials in silos, bins and chutes.



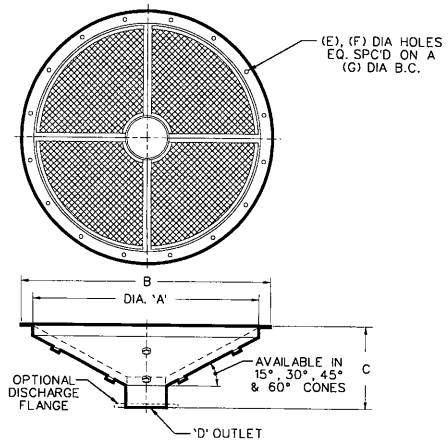
Standard Features:
- Ceramic valve seat directs air into the material at various angles
- Abrasion resistant, urethane valve
- Wear parts are replaceable from outside of container

Optional Features:
- Mounting to existing 2" pipe couplings
- Each aerator with individual solenoid valve for aerator sequencing
- Stainless steel construction
- Explosion proof electrical
- Sanitary design
- High temperature design

Specifications:
- Weight - 4 lbs.
- Air:
  - Clean and dry at correct pressure dew point
  - 80 PSIG minimum
- Electrical 110-12-V, 50/60hz
- Temperature - 200°F

Bin Discharger (Model 255)

The NOL-TEC Bin Discharger is designed to assist in discharging difficult to handle dry powders from silos or hoppers using aeration.



Standard Features:
- Four separate aeration zones
- Individual volume controls
- Full aeration media across discharger
- Low profile saves headroom
- Maintenance free aeration media
- Operates using plant air or positive displacement blower
- Continuous aeration or pulsing sequences

Optional Features:
- Stainless steel construction in material contact area
- Various fabric aeration media
- Stainless steel aeration media
- Discharge flange
- Multiple outlets
- Custom designs to fit specific applications

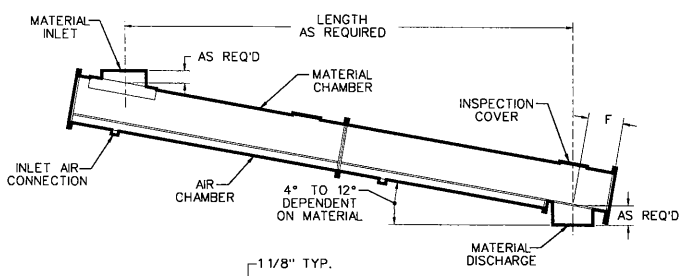
Specifications:
- Air - Plant compressor supply
  - Positive displacement blower
  - Clean and dry at correct pressure dew point
- Temperature - 350°F

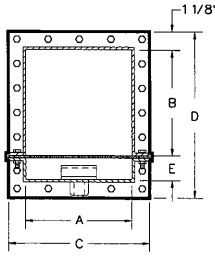
A	B	C				D	E	F	G
		15°	30°	45°	60°				
2'-0"	2'-4"	8.00"	11.00"	15.00"	21.00"	6"	16	5/8"	2'-2 1/2"
3'-0"	3'-4"	9.00"	14.00"	21.00"	32.00"	6"	24	5/8"	3'-2 1/2"
4'-0"	4'-6"	12.00"	18.00"	28.00"	42.00"	8"	32	5/8"	4'-3 1/2"
5'-0"	5'-6"	15.00"	24.00"	34.00"	53.00"	10"	36	3/4"	5'-4"
6'-0"	6'-6"	17.00"	28.00"	40.00"	63.00"	12"	40	3/4"	6'-4"
8'-0"	8'-8"	21.00"	35.00"	40.00"	74.00"	16"	52	3/4"	8'-5"

A	FABRIC AREA IN SQ. FT			
	15°	30°	45°	60°
2'-0"	3.0	3.4	4.2	6.0
3'-0"	7.1	7.9	9.7	13.9
4'-0"	12.6	14.1	17.3	24.9
5'-0"	19.8	22.0	27.0	39.0
6'-0"	28.5	31.7	38.9	56.2
8'-0"	51.5	58.5	71.5	100.0

Air Slide (Model 208)

The NOL-TEC Air Slide is designed to convey dry granular or powder materials in a fully enclosed dust tight housing using either high or low pressure air.





Size	A	B	C	D	E	F
4	3.75"	4"	6.00"	8.44"	2.19"	4.00"
6	5.75"	6"	8.00"	10.44"	2.19"	6.00"
8	7.75"	8"	10.00"	12.44"	2.19"	6.00"
10	9.75"	10"	12.00"	14.44"	2.19"	8.00"
12	11.75"	12"	14.00"	16.44"	2.19"	8.00"
14	13.75"	12"	16.00"	16.44"	2.19"	10.00"
16	15.75"	12"	18.00"	16.44"	2.19"	10.00"
18	17.75"	12"	20.00"	16.44"	2.19"	12.00"

Standard Features:
- 10 Ga. construction throughout
- Polyester aeration media
- Adjustable inlet location
- Air inlet in each section
- Inspection opening in each section
- Pressure relief valve

Optional Features:
- Stainless steel construction
- Stainless steel aeration media
- Flanged inlet and outlet
- High temperature design
- Multiple inlets and outlets

Specifications::
- Air - Plant compressor supply
  - Positive displacement blower
  - Clean and dry at correct pressure dew point
- Temperature - 350°F Membrane

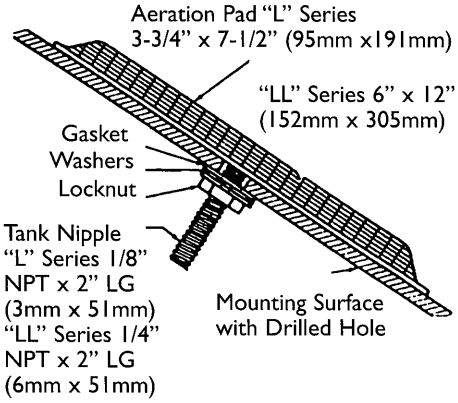
BIN-FLO®

Aeration Kits

These kits are offered for the purpose of assisting the discharge of finely ground dry materials from bins or hoppers. The assembly allows the introduction of low pressure air (3 P.S.I.G. for uncovered aerators.) Into the material through aerators spaced for efficient fluidization on 4 symmetrical inclined rows of 60 degree pyramidal or conical outlet hoppers. (Blower and piping to kit not included.

Diameter of Tank
6" Hopper Aeration Kit
4 rows of 4 "L" series aerators on 12" centers
4 rows of 3 "L" series aerators on 15" centers
4 rows of 3 "LL" series aerators on 20" centers
4 rows of 2 "LL" series aerators on 24" centers
8" Hopper Aeration Kit
4 rows of 6 "L" series aerators on 12" centers
4 rows of 5 "L" series aerators on 15" centers
4 rows of 4 "LL" series aerators on 20" centers
4 rows of 3 "LL" series aerators on 24" centers
10" Hopper Aeration Kit
4 rows of 8 "L" series aerators on 12" centers
4 rows of 7 "L" series aerators on 15" centers
4 rows of 6 "LL" series aerators on 20" centers
4 rows of 5 "LL" series aerators on 24" centers
12" Hopper Aeration Kit
4 rows of 9 "L" series aerators on 12" centers
4 rows of 8 "L" series aerators on 15" centers
4 rows of 7 "LL" series aerators on 20" centers
4 rows of 6 "LL" series aerators on 24" centers

Air Pressure PSI	Air Consumption per Bin-Flo Aerators - In cubic Feet per Minute	
	"L" Series	"LL" Series
1/2	2.7	6.0
1	4.2	7.5
1-1/2	5.0	9.1
2	5.7	10.4
2-1/2	6.1	11.7
3	6.5	12.7
3-1/2	6.9	13.8
4	7.1	14.7
4-1/2	7.4	15.6
5	7.6	16.4
5-1/2	8.0	17.2
6	8.2	18.3
6-1/2	8.4	19.2
7	8.7	20.2
7-1/2	8.9	21.1
8	9.1	22.0
8-1/2	9.3	23.0
9	9.6	23.8
9-1/2	9.8	24.7
10	10.0	25.6
10-1/2	10.2	26.5
11	10.4	27.4
11-1/2	10.7	28.4
12	10.9	29.2
12-1/2	11.1	30.1
13	11.3	30.9
13-1/2	11.6	31.9
14	11.8	32.9
14-1/2	12.0	33.8
15	12.2	35.1



Air Supply Piping

Piping of adequate size to carry the required volume of low pressure air must be provided to assure reliable operation of the BIN-FLO® aerators. As a general guide the following minimum pipe sizes should be used for the manifolds to which the aerators are attached. In all cases the number of pipe fittings should be held to a minimum.

"L" Series Installation

Drill 7/16" hole through the bin wall or mounting surface at the center of each BIN-FLO® aerator location. Insert the tank nipple (short tapered thread end) in the aerator and place the unit inside the bin, inserting the tank nipple through the drilled hole in the bin wall.

Place the gasket on the nipple next to the outside of the bin wall together with sufficient space washers and lock securely in place with the locknut.

Install piping to the BIN-FLO® aerators and complete connection to the air supply.

"LL" Series Installation

Drill 9/16" hole through the bin wall at the center of each BIN-FLO® aerator location and proceed as above.

"L" Series		"LL" Series	
Pipe Size	Number of BIN-FLO Aerators	Pipe Size	Number of BIN-FLO Aerators
3/4"(19mm)	1-5	1" (25.4mm)	1-5
1" (25.4mm)	6-9	1-1/4" (32mm)	6-8
1-1/4" (32mm)	10-12	1-1/2" (38mm)	9-11

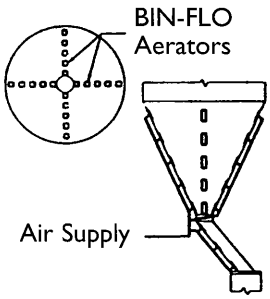
How Many BIN-FLOs Per Row?

To determine the number of BIN-FLO® aerators required for each row:

Measure the length of the sloping side of the hopper on which the aerators are to be installed. Refer to the table below, select the model to be used ("L" Series or "LL" Series) and the spacing of the units. Read down the column until the approximate length of slope is reached. The number of aerators required is shown at the left. Example: The 6'11" slope will require 6 model "L" aerators mounted on 15" centers.

No. of Aeration Pads per Row	"L" Series Mounted On		"LL" Series Mounted On	
	12" Centers	15" Centers	20" Centers	24" Centers
2	1'-8" 50.8cm	1'-11" 58cm	2'-8" 81cm	3'-0" 91cm
3	2'-8" 81cm	3'-2" 97cm	4'-4" 132cm	5'-0" 152cm
4	3'-8" 112cm	4'-5" 135cm	6'-0" 183cm	7'-0" 213cm
5	4'-8" 142cm	5'-8" 173cm	7'-8" 234cm	9'-0" 274cm
6	5'-8" 173cm	6'-11" 211cm	9'-4" 284cm	11'-0" 335cm
7	6'-8" 203cm	8'-2" 249cm	11'-0" 335cm	13'-0" 396cm
8	7'-8" 234cm	9'-5" 287cm	12'-8" 386cm	15'-0" 457cm
9	8'-8" 264cm	10'-8" 323cm	14'-4" 437cm	17'-0" 518cm
10	9'-8" 295cm	11'-11" 363cm	16'-0" 488	19'-0" 579cm

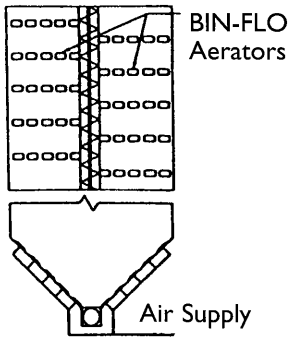
Aeration Disc - Bulk Flour Bin Activator



Conical Hopper

In a conical hopper four rows of BIN-FLO® aerators, located as shown, are normally required. The "L" series should be used in small cones as the smaller aerator adapts better to the curved surface.

To prevent clogging of material in discharge pipe or chute, install one row of aerators on the under side of the slope, as shown.



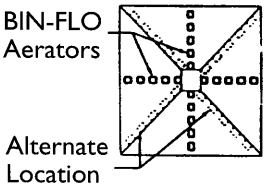
Pyramidal Hopper

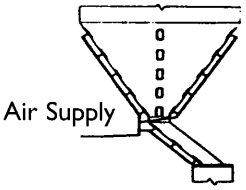
In a pyramidal hopper four rows of BIN-FLO® aerators centered on the sloping sides usually assures full and uniform flow. For minimum retention of material in the corners, an alternate location in the valleys is suggested.

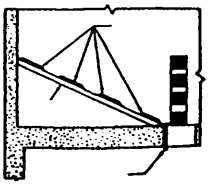
To prevent clogging of material in discharge pipe or chute install one row of aerators on the under side of the slope, as shown.

V-Bottom Bin

This layout may be used in bins emptied by screw conveyor, belt conveyor or other means where the discharge opening runs the entire length of the bin, it provides full and uniform flow to the discharge opening without bridging over the outlet. Number of rows of BIN-FLO® aerator required and spacing will depend upon the size of the bin as well as the material being handled.







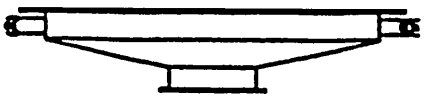
Pipe manifold of adequate size

Aeration Disc - Bulk Flour Bin Activator

Aeration Discs are constructed for discharging aeratable products from bulk storage. Each unit consist of a carbon steel air reservoir covered with 4 ply polyester dacron fluidization fabric. Standard Paint: primed interior with white enamel exterior. Price includes 2" ASCO Solenoid (NEMA 4) activation valve & pipe elbow at Disc Air Inlet.

Application: Air Discs are used to promote discharge of fluidizable materials (flour, starch) from bulk storage through the use of sequenced low pressure air charges.

Disc Outside Diameter	Outlet Inside Diameter	Outlet Outside Diameter
3 Foot	8" I.D. 12" I.D.	11" O.D. 15" O.D.
4 Foot	8" I.D. 12" I.D.	11" O.D. 15" O.D.
5 Foot	8" I.D. 12" I.D. 16" I.D.	11" O.D. 15" O.D. 19" O.D.
6 Foot	8" I.D. 12" I.D. 16" I.D. 20" I.D.	11" O.D. 15" O.D. 19" O.D. 23" O.D.
7 Foot	8" I.D. 12" I.D. 16" I.D. 20" I.D.	11" O.D. 15" O.D. 19" O.D. 23" O.D.
8 Foot	8" I.D. 12" I.D. 16" I.D. 20" I.D.	11" O.D. 15" O.D. 19" O.D. 23" O.D.

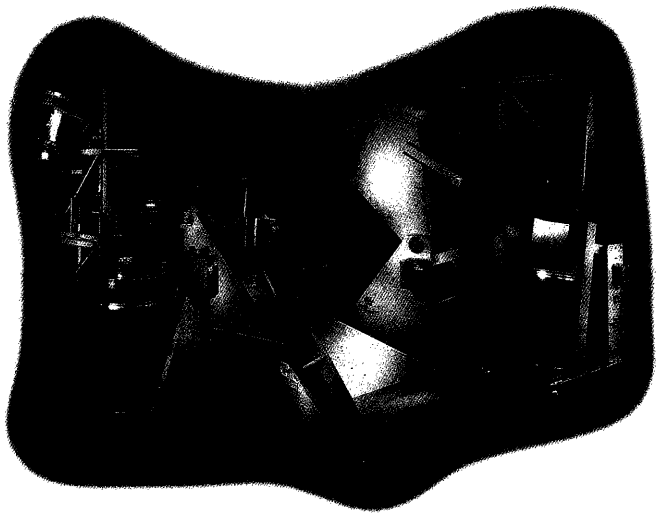


- Dual discharge aeration disc should not be used when one discharge is for future use. A single disc should be used initially and the system designed for future adaptation to a dual configuration.
- Air valve sequencing is required on dual aeration disc. Both sides of the aeration disc must be used in a sequencing method for most effective discharge of material.
- Select discharge diameter to conform to the system capacity requirements. (Outlet diameter must coincide with mating equipment selection sizing to conform with system capacity requirements.)

National Bulk Equipment

Designer and manufacturer of innovative equipment for material handling and dry solids processing. NBE mechanical, chemical, electrical, and professional engineers utilize the latest equipment and software to develop solutions for the most challenging material handling and dry solids processing requirements.

Container Dumping & Tilt Tables



NBE container dumpers and tilt tables allow for the controlled flow of materials from hard-to-handle loads while reducing manual labor and eliminating the need for operators to bend and lift heavy containers.

Sealed & Enclosed Container Dumpers

meet the most stringent dust control requirements. Sealed dumpers eliminate the potential for foreign material contamination from pallets or containers.

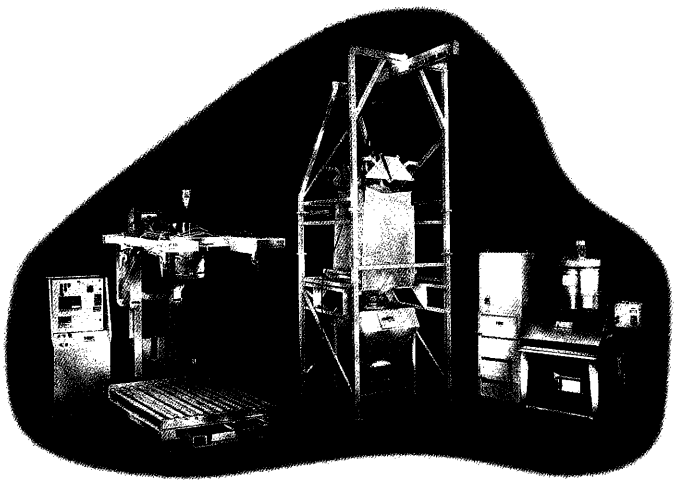
Tilt Tables

automatically tilt containers up to 2,500 lbs. Floor level tilters - an NBE original - can accommodate pallet jack, hand truck, and forklift loading of bulk containers.

Open Bucket Bulk Material Dumpers

provide economical solutions to handling non-dust-generating materials from any type of container. All NBE dumpers and tilt tables can be built to handle virtually any container, and designed to fit any plant layout or equipment configuration.

Bag Handling

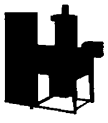


NBE offers bag unloading, filling, breaking, and compacting equipment for bulk bags as well as small, 50 lb. bags. Minimized operator involvement and increased safety result from implementation of an NBE bag handling system which can be designed to fit virtually any space constraints.

Bulk Bag Fillers & Unloaders

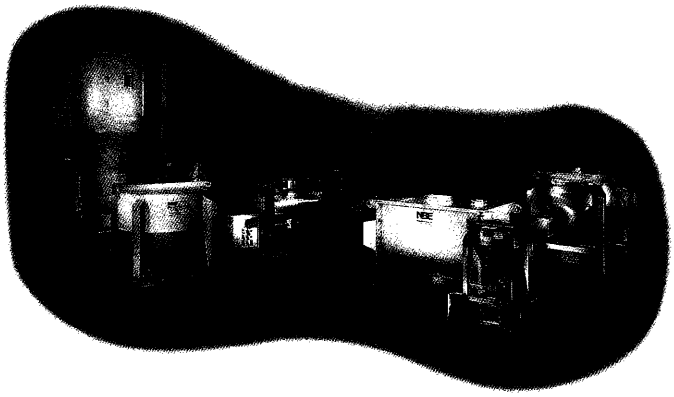
enable manufacturers to take advantage of cost savings inherent in purchasing and packaging materials in bulk. Safe, efficient, and dust-free handling methods are essential to gain maximum benefit from the use of bulk bags, and NBE offers a full range of equipment designed for specific processing needs.

Bag Break Stations



allow operators to empty small bags or drums directly into all types of conveying, size reduction, or process equipment, thereby promoting a clean, dust-free work environment. The station incorporates an intelligently engineered dust collection system that draws dust away from the operator and allows for recovery of valuable product normally lost when using remote dust collection equipment. The addition of an NBE bag compactor allows for empty bag disposal in a dust-controlled environment.

Mixing & Blending



From pilot-scale batch mixers to full-scale continuous blenders, NBE's comprehensive line meets the unique requirements of processors in a variety of industries. Provided with samples of materials and specifications for the final mix, NBE engineers will recommend a standard unit or custom engineer, test, and verify a unit guaranteed to achieve desired results.

Vertical Screw Mixers

include the Quik Mix and Whirlwind. With capacities of up to 25,000 lbs., these mixers thoroughly mix a batch in 15 minutes or less, with consistent operating accuracy.

Vertical Ribbon Blenders

are ideal for premixing batches of minor ingredients with similar or widely varying bulk densities and particle sizes. Their easy-to-clean, portable design; thorough mixing and complete discharge capabilities; and durable construction allow for years of consistent batch-to-batch production without breakdowns or frequent maintenance.

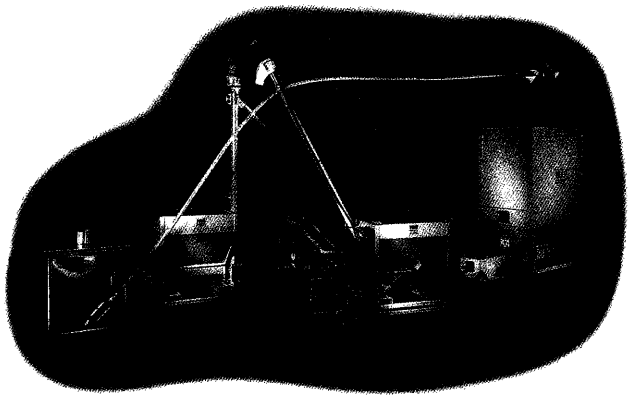
Plow Mixers

produce homogeneous blends in the shortest possible time. These vigorous mixers handle dissimilar materials and accommodate blend ratios as wide as 1% to 99%. Available in batch or continuous operation, plow mixers can blend from a few hundred pounds to more than 5 million lbs. in an eight-hour shift.

Horizontal Ribbon Blenders

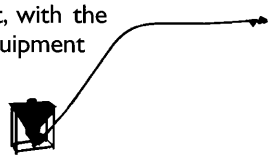
feature capacities of up to 325 cu. ft., utilizing a double helix mixing ribbon to provide a thorough but gentle mixing action.

Conveying & Feeding



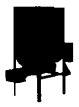
Mechanical screw conveying is among the least expensive, safest ways to move material within a plant. From basic carbon steel, helical auger conveyors to advanced sanitary, stainless steel feeders, NBE has a quiet, dust-free solution to most any material transfer challenge.

Flexible Augers



such as the Cobra and Helicon move material from storage areas to processing points throughout the plant, with the flexibility to go over and around existing equipment or obstructions.

Agitator Hoppers



are designed to consistently convey large volumes of non-free-flowing materials. V-or U-shaped hoppers, slowly rotating agitators, and variable pitched live bottom bin dischargers help eliminate bridging and ratholing.

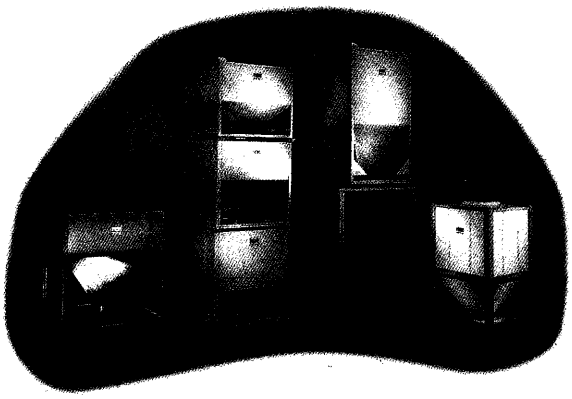
Vertical Screw Conveyors

feature a space-saving design to accommodate space constraints and process retrofits while effectively transferring a wide variety of materials to elevated process equipment.

U-Trough & Tube-Type Solid-Core Augers

efficiently convey material up inclines to 60°, or horizontally over long distances. Sanitary U-trough designs are ideal for applications where cleanability is a priority.

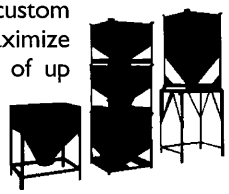
Storage



NBE's custom storage units and more than 250 standard models provide durable solutions for an array of intermediate and bulk storage requirements. A complete line of components and accessories is available to increase plant efficiency by transferring material from bulk silos to points of need with minimal operator involvement.

Hoppers & Surge Bins

available in a variety of standard and custom shapes and sizes, are designed to maximize available space while providing capacities of up to 290 cu. ft. Stainless steel hoppers and surge bins are especially suited for abrasive materials or sanitary requirements.



Round & Square Poly Bins

are economical intermediate storage units for dry chemicals, pharmaceuticals, and more. Their smooth inner surface, steep sides, and translucent bodies ensure complete discharge of materials while allowing for visual indication of material levels.

Mobile Stor Hoppers

Portable, Stackable, Space Saving Heavy Duty Material Storage Containers

NBE Mobile Stor Hoppers offer the convenience of small volume temporary storage and the added benefit of rugged material transport between work sites within your facility. Mobile Stor Hoppers save valuable floor space with their square space saving stackable design.

Specifications

- Vacuum material through a vacuum wand inserted in the discharge ports in the lower hopper.
- Place Hopper over receiving bin for gradual filling as required.
- Stack neatly out of the way until needed. Stackable up to 4 bins high.
- Offered with or without 4" vacuum ports in lower Hopper to allow material discharge through a vacuum wand. Each port with an anti-contamination lid.
- Angled stack pads allow fast, safe stacking of Mobile Hoppers.
- Fork lift channels.
- Locking, zinc plated steel slide gate on Tyvar guides assures smooth operation.

Options:

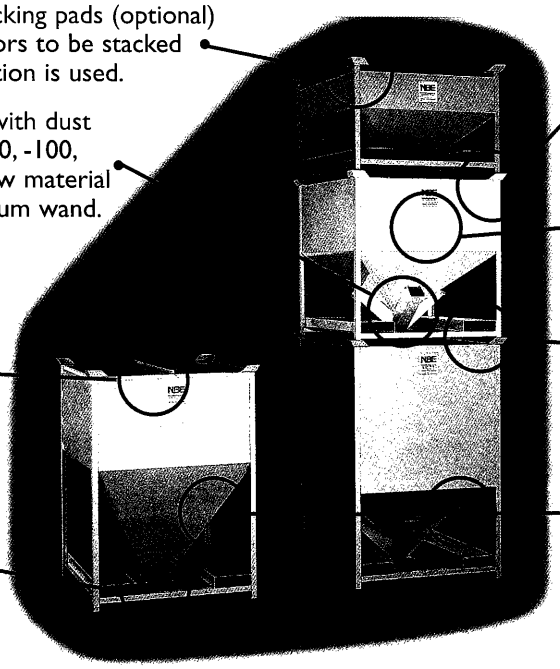
- Casters
- One and two piece covers
- Four way fork channels
- Bag opening grate and blade
- Magnet grate
- Material discharge stand
- Stainless steel construction

MODEL NO.	*CAPACITY		A	B	C	D	E
	CU. FT.	LBS.					
With four vacuum discharge ports							
22-050	20	700	38"	36"	2"	44"	44"
22-100	30	1050	48"	46"	2"	44"	44"
22-110	40	1400	58"	56"	2"	44"	44"
22-120	50	1750	68"	66"	2"	44"	44"
22-130	60	2100	78"	76"	2"	44"	44"
With vacuum discharge ports							
22-250	20	700	32"	30"	2"	44"	44"
22-200	30	1050	42"	40"	2"	44"	44"
22-210	40	1400	52"	50"	2"	44"	44"
22-220	50	1750	62"	60"	2"	44"	44"
22-230	60	2100	72"	70"	2"	44"	44"

*Based on material with a bulk density of 35 lbs. per cubic foot.

Mobile Stor Hoppers *(continued)*

NBE Mobile Stor Hoppers provide rugged material transport between internal work sites and the convenience of small-volume temporary storage. NBE Mobile Stor Hoppers are designed to save valuable floor space with their square, stackable design and provide capacities of up to 60 cubic feet. Mobile Stor Hoppers may be stacked up to four bins high.



Caster-style stacking pads (optional) allow Mobile Stors to be stacked when caster option is used.

Four-way vacuum ports with dust covers (on models 22-050, -100, -110, -120, and -130) allow material discharge through a vacuum wand.

Two-piece hinged cover (optional) opens from the center to the outside.

Four-inch locking slide gate constructed of 304 stainless steel travels on UHMW runners, assuring smooth operation.

Seven-gauge formed, stacking pads allow fast, safe stacking of Mobile Stor Hoppers (up to four bins high).

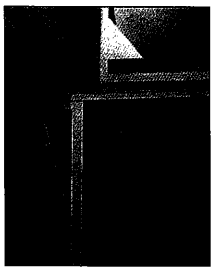
14-gauge carbon steel construction, sandblasted and painted NBE light grey.

Two-way 10-gauge fork pockets allow ease of transport throughout the plant.

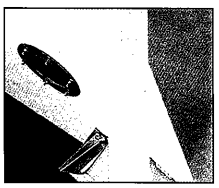
45- or 60-degree hopper slope accommodates various material flow characteristics.

Model (Slope*)	Max. Capacity (cu. ft.)	Useable Capacity ** (@ 35 lbs/cu.ft.)	Base Dimension	Overall Height
Mobile Stors with 4" slide gate and 4 vacuum ports				
22-050 (45°)	20	700	44" x 44"	38.00"
22-050 (60°)	20	700	44" x 44"	52.00"
22-100 (45°)	30	1,050	44" x 44"	48.00"
22-100 (60°)	30	1,050	44" x 44"	62.00"
22-110 (45°)	40	1,400	44" x 44"	58.00"
22-110 (60°)	40	1,400	44" x 44"	72.00"
22-120 (45°)	50	1,750	44" x 44"	68.00"
22-120 (60°)	50	1,750	44" x 44"	82.00"
22-130 (45°)	60	2,100	44" x 44"	78.00"
22-130 (60°)	60	2,100	44" x 44"	92.00"
Mobile Stors with 4" slide gate only				
22-250 (45°)	20	700	44" x 44"	32.00"
22-250 (60°)	20	700	44" x 44"	46.00"
22-200 (45°)	30	1,050	44" x 44"	42.00"
22-200 (60°)	30	1,050	44" x 44"	56.00"
22-210 (45°)	40	1,400	44" x 44"	52.00"
22-210 (60°)	40	1,400	44" x 44"	66.00"
22-220 (45°)	50	1,750	44" x 44"	62.00"
22-220 (60°)	50	1,750	44" x 44"	76.00"
22-230 (45°)	60	2,100	44" x 44"	72.00"
22-230 (60°)	60	2,100	44" x 44"	86.00"

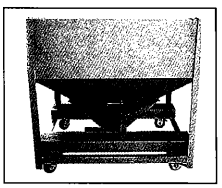
** Please specify slope when ordering.*
***45° slope is based on a 30° angle of repose; 60° slope is based on a 45° angle of repose.*



52" discharge stand (optional) is open on one side for accessibility.



Four-inch diameter view window (optional) allows for visual inspection of material level within the bin.



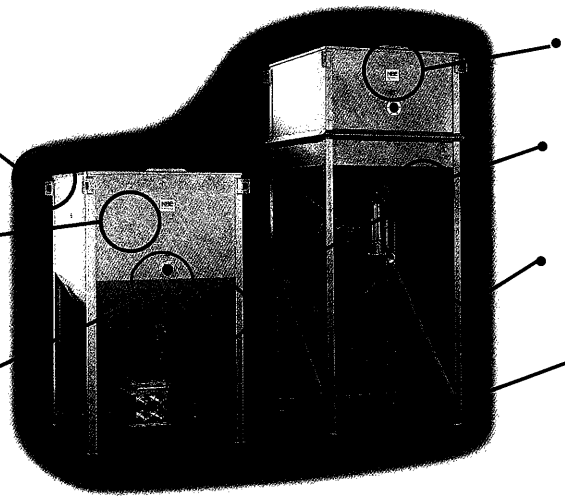
Two 4" swivel casters and two 4" locking casters (optional) allow for portability without the use of fork truck or pallet jack.

NBE Mobile Stor Hopper — Options

- 304 stainless steel construction
- Four-way fork pockets
- One-piece cover or two-piece, hinged cover
- Material agitation devices located above discharge to promote flow from the bin for semi-and non-freeflowing materials
- Bag break grate
- Grate magnets
- Material discharge stand
- Various sizes of discharge openings
- Inside hopper surface painted or finished in white, hardened epoxy
- Custom paint colors

Surge Bins

NBE surge bins provide intermediate, in-plant storage of blended or virgin material. NBE surge bins are available in a range of sizes with capacities from 30 to 290 cu. ft., and either a 45° or 60° hopper slope, depending on the flow characteristics of the material being stored.



Lifting lugs allow for easy placement of bins in the plant.

Welded carbon steel construction, sandblasted and painted NBE light grey.

High- and low-level view windows allows for visual inspection of material level within the bin.

1-1/4" half couplings with plugs allow for the future addition of high- and low-level indicators.

45° and 60° hopper slopes accommodate various material flow characteristics.

Log extensions (optional) enable discharging directly into gaylords, drums or other types of containers.

Bolt-down footpads securely anchor bins to the floor.

Model	Max. Capacity (cu. ft.)	Useable Capacity * (@ 35 lbs/cu.ft.)	Base Dimension	Overall Height
32-145	36	700	54" x 54"	55.50"
32-160	36	535	54" x 54"	64.25"
32-245	58	1,400	54" x 54"	68.50"
32-260	58	1,040	54" x 54"	77.25"
32-345	86	2,200	60" x 60"	77.50"
32-360	86	1,615	60" x 60"	87.75"
32-445	114	3,200	60" x 60"	91.50"
32-460	114	2,600	60" x 60"	101.75"
32-545	145	4,270	60" x 60"	106.50"
32-560	145	3,665	60" x 60"	116.75"
32-645	171	4,600	72" x 72"	97.50"
32-660	172	3,540	72" x 72"	110.75"
32-745	201	5,630	72" x 72"	107.50"
32-760	201	4,575	72" x 72"	120.75"
32-845	227	6,560	72" x 72"	116.50"
32-860	228	5,500	72" x 72"	129.75"
32-945	257	7,590	72" x 72"	126.50"
32-960	257	6,530	72" x 72"	139.75"
32-1045	286	8,625	72" x 72"	136.50"
32-1060	286	7,560	72" x 72"	149.75"
32-1245	343	10,890	84" x 84"	129.00"
32-1260	343	10,060	84" x 84"	145.00"
32-1445	400	12,880	84" x 84"	143.25"
32-1460	400	12,055	84" x 84"	159.25"
32-1645	457	14,905	84" x 84"	157.75"
32-1660	457	14,045	84" x 84"	173.50"
32-1845	514	16,900	84" x 84"	172.00"
32-1860	514	16,070	84" x 84"	188.00"
32-2045	572	18,925	84" x 84"	186.50"
32-2060	572	18,060	84" x 84"	202.25"

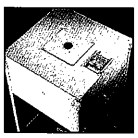
**45° slope is based on a 30° angle of repose; 60° slope is based on a 45° angle of repose.*

Vacuum probes: 1-1/2", 2", 2-1/2", 3", and 4" sizes provide for connection to the specific conveying line for your applications.

Aluminum airboxes with 1, 2, 4, or 9 holes (opt) for vacuum unloading of bins to single or multiple locations.

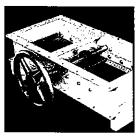
Drain tube with 4" butterfly valve or slide gate (opt) enables discharging directly into gaylords, drums or other types of containers.

12" sq. discharge accommodates optional slide gates, air boxes, screw conveyors, rotary airlocks, etc.



12-1/2" x 9" inspection hatch in cover, shown with optional air filter.

Bolt-on-top cover with mounting plate for vacuum loader or cyclone is drilled to match customer's specifications.



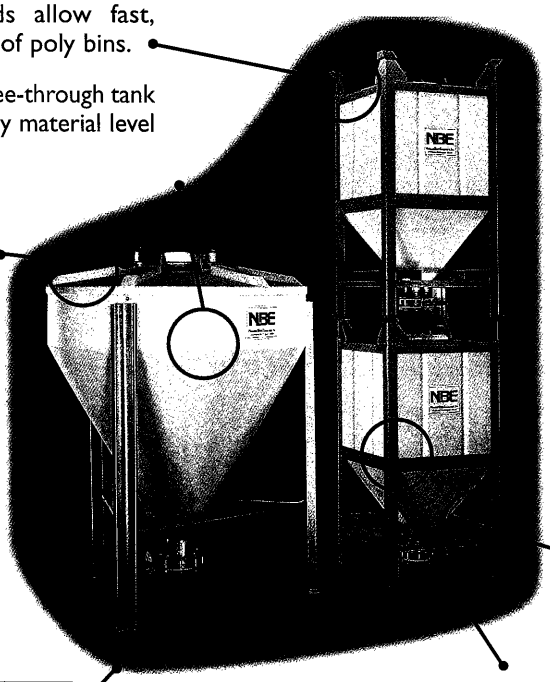
Manual, pneumatic, or rack-and-pinion slide gates (opt) are located at the bin discharge to control flow of product from the bin.

NBE Surge Bins — Options

- 304 stainless steel construction
- High- and low-level indicators
- Platform with ladder
- Mounting plate strengthening support for vacuum loaders or cyclones exceeding 1,000 lbs.
- Auger or air take-away discharge options.
- Material delumpers
- Square-to-round discharge adaptor
- Drawer-style grate magnets
- Agitator located above the discharge (choose from a variety of styles)
- Inside hopper surface can be painted or finished in white, hardened epoxy.
- Custom paint colors available

Poly Bins

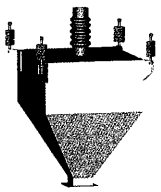
NBE round and square poly bins are the perfect, economical solution for intermediate material storage needs. NBE poly bins hold a variety of dry materials, including chemicals, pharmaceuticals, sawdust, plastic pellets, powders, regrind, and more. The inner surface of NBE poly bins is smooth, without seams or crevices. Steep 60° sloping sides assure complete material flow and clean-out.



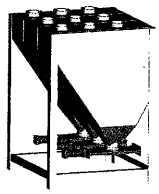
NBE Poly Bins — Options

- Stainless steel lid and discharge unit
- Variable-height legs
- 4" casters
- Portable or stationary design
- Adaptable to accept a variety of discharge valves
- Indoor or outdoor use
- Easily steam-cleaned
- Stores most corrosive materials

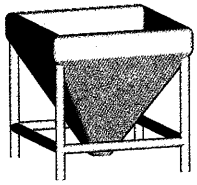
Custom Bin Solutions



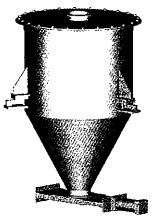
Square Weigh Bins



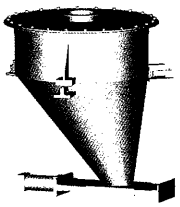
Common Wall Bins



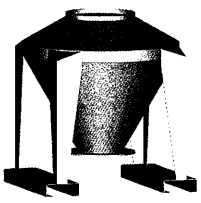
Sanitary Bins



Conical Weigh Bins



Eccentric Cone and Offset Discharge Bins



Application-Specific Bin Designs

NBE provides custom equipment for even the most challenging applications. Our engineers analyze your specific materials and requirements to design equipment that best meets your unique needs.

NBE provides custom bins in any size or shape. Choose from stainless, carbon, or galvanized steel construction.

NBE custom material flow devices ensure continuous discharge of your semi- or non-freeflowing materials.

Round & Square Poly Bins

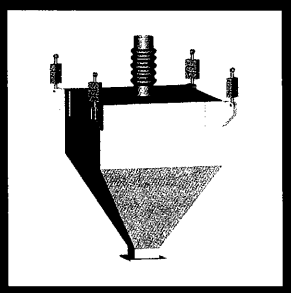
The Perfect Solution for Low Cost, Low Capacity Material Storage Needs

Available in either round, or space saving square design these molded polyethylene bins will hold a variety of materials including dry chemicals and pharmaceuticals, sawdust, plastic pellets, powders, regrinds, and more.

The inner surfaces of the Poly Bin are smooth (no seams or crevices) with steep 60° sloping sides to assure complete materials flow and clean out.

Poly Bin tanks are supported by a sturdy wrap around welded steel frame. Heavy duty 2- or 4-way fork lift channels allow for quick, safe transport of the entire unit from fill site to work station.

NBE provides a range of optional equipment for the Poly Bins to allow for easy installation into your existing material handling system.



Portable or Stationary Indoor Bulk Storage

Features

- Portable or stationary design
- Bins are adaptable to accept a variety of discharge boots (see options)
- Indoor or outdoor use
- Translucent see through tank for easy material level checks
- Easily steam cleaned
- Store most corrosive materials
- Wrap around steel frame for added stability

Specifications

	Capacity	Model No.	Hopper Slope	Hopper Opening	Fill Hole	Overall Height
Round	67 cu. ft.	28-600	60	16"	22"	96"
Square	22 cu. ft.	28-300	60	7"	16"	56"
	35 cu. ft.	28-320	60	7"	16"	70"

Options

- Slide gate shut-off
- Air or auger discharge box
- Stainless steel lid and discharge unit
- Variable height legs
- Ladder (round only)
- 4" casters

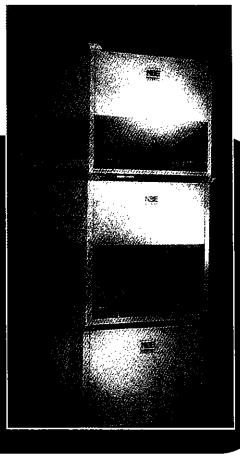
Mobile Power Hopper

The Portable Material Hopper with a Screw Conveyor Discharge

NBE's Mobile Power Hopper offers both speed and convenience in the transfer of materials into storage vessels or for direct machine hopper loading. The design features and available options of the Power Hopper make it the one unit that can be used to convey a wide variety of materials including powders, fines granulars and regrinds.

At NBE our staff of experienced Engineers will take the time to carefully review and even pretest your material to determine the best screw size (solid core or coreless) drive size and design needed to meet your individual needs.

Increase material handling efficiency with this uniquely designed portable Power Hopper.



The Mobile Power Hopper can be transported to different points of use throughout your plant or permanently installed for use as a dedicated material conveyor.

The Power Hopper is available in a variety of sizes with convenient operator access to the top of the hopper. Each features a 12" x 12" square bottom opening to the critical inlet point of the screw conveyor. This large inlet helps reduce the risk of material bridging or packing above the screw flighting offering positive flow of a wider variety of materials.

The unique base driven screw conveyor design makes it easier to move the Power Hopper between points of use while offering easy access for routine maintenance. The drive size will vary based on particular material characteristics.

The screw conveyor assembly is built to last. The steel screw flighting turns inside a rigid steel tube to a vertical gravity discharge outlet. The screw assembly can be easily unbolted from the hopper body for easy maintenance or cleaning.

When used with a coreless screw conveyor discharge, the Power Hopper can deliver material around corners or be used to feed multiple bins or machine hoppers.

Mobile Power Hopper *(continued)*

Specifications

Construction: Heavy gauge welded hopper with formed angle legs and bracing. Durable 2-way fork lift channels are standard. Heavy gauge stacking pads.

Dimensions: 44" x 44" square base. 46" high (9 standard 20 cu. ft. model).

Capacity: 20 cu. ft. (standard). Capacities can be varied to meet specific needs.

Conveyor Screw: Either solid core (up to 6" dia.) or coreless (up to 3.8" dia.). Steel conveyor tube. Auger incline can be provided up to 60°.

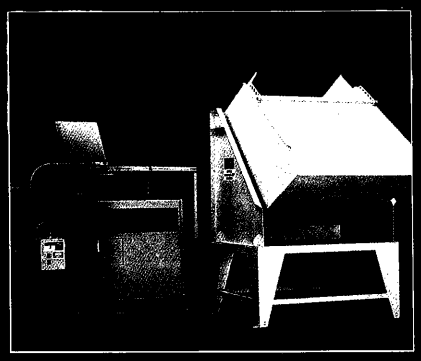
Drive: Base drive. Provided to meet each application requirement based on material characteristics and delivery rate requested.

Options

- Bag Break Grate
- Vibrator, Air or Electric
- 2-Piece Hopper Cover
- 1-Piece Hopper Cover
- Aerator Package
- Material Level Indicator
- Stainless Steel Construction

PowerMaxx Hydraulic Dumpers

The NBE PowerMaxx hydraulic dumper reduces manual labor requirements and increases productivity. Floor-level loading of boxes and other containers is provided in an automated, durable, economical package.



NBE PowerMaxx dumpers provide greater operator safety than manually dumping containers. The dumper's hydraulic velocity fuse automatically locks the bucket in place in case of hydraulic failure. The operator must press and hold the control push-button to activate the dumper. An optional safety cage enclosure is available.

Choose from a variety of motor options. Because the 1.5 hp motor is independent of the hydraulic pump, a variety of options can be accommodated, including explosion proof, single or three-phase, and wash-down.

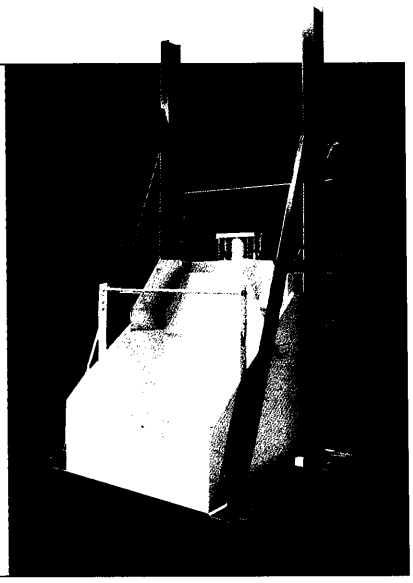
NBE provides comprehensive systems for duping and tilting, bag handling, mixing, blending, conveying, feeding, and storage, to meet all your dry bulk solids handling needs.

Vertical Lift Tipper

NBE's Vertical Lift Tipper Saves Time, Manpower and Material

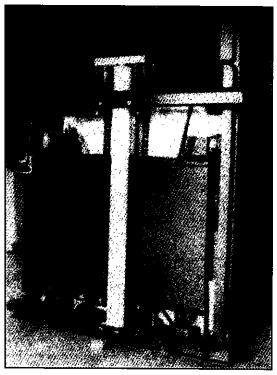
NBE's Vertical Lift Tipper rises to the challenge of providing safe dumping of boxed material into larger storage vessels or processing equipment.

- Sturdy welded construction with a solidly built bucket and framework for years of dependable use.
- The electric/hydraulic power system drives the large lifting cylinder and dump action cylinders. The Vertical Lift Tipper provides a smooth and safe method of raising and dumping large boxes or drums of material.
- Lifting capacities start at 1500 lbs..
- Discharge materials to heights of 8-15 feet above the floor.
- Load boxes conveniently at floor level with fork or hand truck.



Vertical Lift Tipper *(continued)*

Features



As with other NBE Box Dumpers, the *Vertical Lift Tipper* allows for safe dumping of boxes, barrels, and small hoppers providing operator safety while virtually eliminating material loss.

The bucket of the Tipper is mounted to a heavy gauge steel lifting carriage. The single hydraulic mast cylinder raises the carriage and bucket along two heavy I-Beam stations. The motor and pump drive pack are completely self contained and set apart from the Tipper main frame for easy maintenance.

When the specified dump height is reached, two smaller hydraulic cylinders rotate the bucket a full 135 degrees (standard) for complete emptying of material. In cases where a greater dump angle is needed to discharge material, NBE can provide up to a full 180 degree bucket rotation to completely invert the box container.

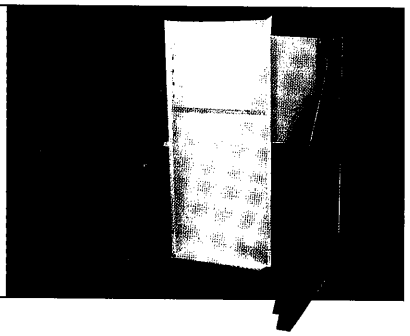
Safety overload stops, limit switches and other devices are standard equipment on these NBE Vertical Lift Tippers to assure plant and operator safety at all times.

Drum Dumper

Drums and/or Barrels Take A Turn For The Better

Barrel and drum containers are awkward, heavy, often difficult to maneuver and impossible to lift and dump by hand. NBE solves these problems and more with this versatile design Drum Dumper.

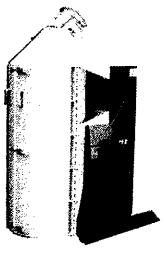
Built to handle most any size steel, polyethylene, or fiber type drum container. Extensive research history and quality materials have gone into this machine to assure ease of use and operator safety. The Drum Dumper is constructed of heavy gauge welded steel throughout and offered with a wide range of optional special features.



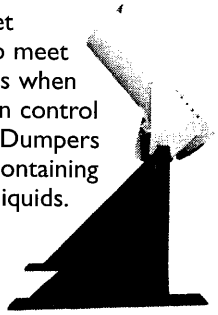
Features

The unique design of our Drum Dumper finds the base of the tilt bucket flat on the floor, which allows easy loading and unloading with a hand truck. A push button control is conveniently located at shoulder level right on the side post.

During operation the bucket lifts the drum to a full 45 degrees for complete emptying. The bucket will stop and lock at any position up to a full rotation allowing more control over the rate of material discharge.

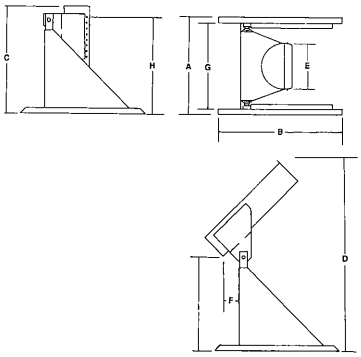


Special enclosed bucket designs are available to meet customer specifications when dust and contamination control is necessary. Enclosed Dumpers provide added safety containing splash when dumping liquids.



Specifications

Capacity:	750 pounds
Base frame:	Welded heavy gauge carbon steel
Tilter actuator:	Single hydraulic cylinder
Electrical:	Fractional HP/115V/ single phase motor
Finish:	Sandblasted and painted with 2-part epoxy



Options

- Enclosed bucket
- Customer specified dump height
- Casters
- Stainless steel material contact surfaces
- Custom designs to meet specific applications

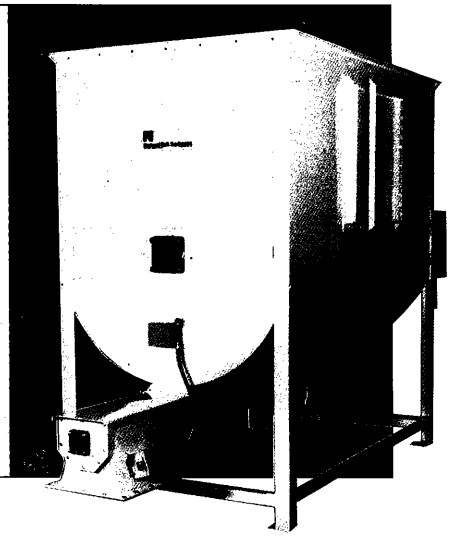
Dimensions (Inches)

A	B	C	D	E	F	G	H	I
52	66.4	56.5	103	24	7	46	51	50

Agitator Discharge Hopper

Designed Specifically for Trouble-Free Dispensing of Non Free-Flowing Materials

The NBE Agitator Discharge Hopper is engineered and constructed to assure consistent flow of hard-to-handle materials without bridging or ratholing. That includes most any non free-flowing materials such as regrinds, strapping, latex, styrofoam, film, fluff, etc. The handling and discharge of these different materials are made possible by the proper combinations of features from NBE. The steep angle of the hopper sides and continuous welds on inside seams prevents material from catching or accumulating. The agitator sweep arms are angled and strategically placed to keep material moving into the discharge trough. They're also adjustable in length to compensate for different material consistency. The discharge trough covers the entire hopper base, further eliminating bridging and hang-ups. And the discharge trough can be specified to accommodate a 4, 6 or 8" auger. The NBE Agitator Discharge Hopper is not only effective at simplifying a difficult job, it is versatile. You can specify several capacities or various take-away systems.



Other Options

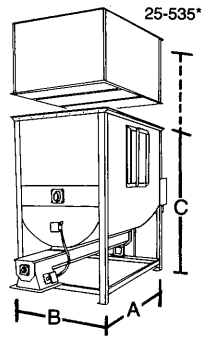
Model No.	Description
25-175	Hinged cover (standard models)
25-176	Hinged cover (25-500, 535
25-177	Material level indicator switch
25-131	Access door in side of hopper

Discharge Options

Model No.	Description
25-285	4" Auger/10' discharge height
25-290	4" Auger/20' discharge height
25-315	6" Auger/10' discharge height
25-320	6" Auger/20' discharge height
36-100	4-hole vacuum takeaway box w/out probes

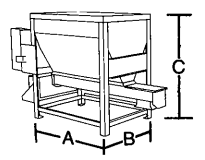
Model No.	Description
36-112	2-hole vacuum takeaway box w/out probes
36-113	1-hole vacuum takeaway box w/out probes
36-116	Probe-1 1/2"
36-117	Probe-2"
36-118	Probe 2 1/2"
36-119	Probe-3"

Standard "U" Shaped Hopper



Model No.	Capacity Cu. Ft.	Capacity Lbs.	A	B	C	Trough Auger
25-100	30	1050	54"	36"	51"	4"
25-190						6"
25-400						8"
25-200	50	1750	54"	36"	69"	4"
25-205						6"
25-250						8"
25-300	70	2450	54"	36"	87"	4"
25-215						6"
25-260						8"
High Capacity						
25-500	110	3850	82"	52"	80"	9"
25-535	200	7000	82"	52"	122"	9"

"V" Shaped Hopper 60° Slope



Model No.	Capacity Cu. Ft.	Capacity Lbs.	A	B	C	Trough Auger
25-325	30	1050	54"	36"	58"	Avail.
25-340	50	1750	54"	36"	76"	4-8"
25-355	70	2450	54"	36"	94"	as
25-370	80	2800	82"	52"	103"	required

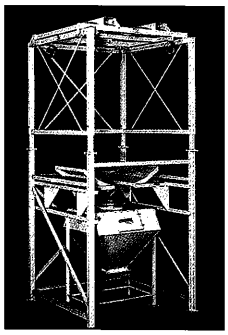
Features

- Heavy 14 gauge steel construction
- Separate industrial/electric motor coupled with gear reducer to provide powerful, low rpm agitator shaft drive.
- Separate industrial/electric motor for auger discharge.
- Motors are available in single or three phase. H.P. varies depending on auger size specified.
- Heavy duty, ball bearing assemblies for agitator shaft and shaft drive system.
- Supports for bearing assemblies are 1/4" steel channel.
- Drive train is completely guarded for safe operating
- On/off switches for both motors.
- Solid core auger (4, 6, or 8") in 12 gauge steel trough.
- Entire unit is sand blasted and epoxy painted (desert sand beige standard).
- Removable inspection plate in dispensing end of discharge auger.
- 4 different take-away systems available; auger, vacuum, blower and bucket elevator.

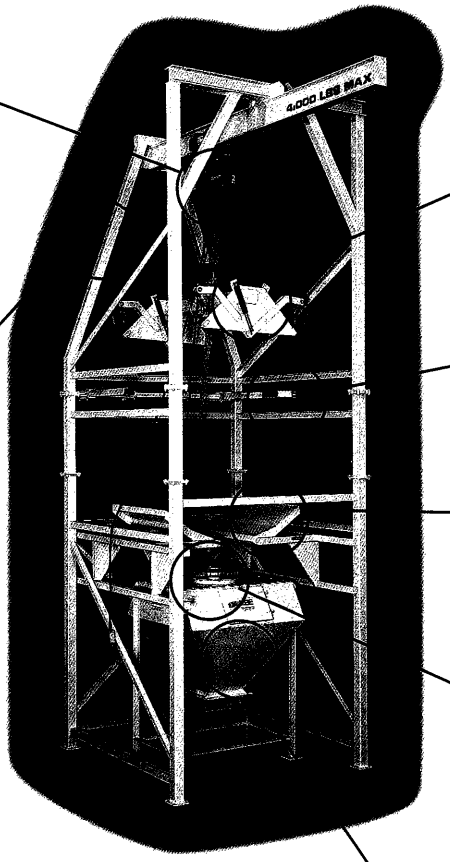
Bulk Bag Unloaders

Two-ton electric hoist with hand-held control allows for floor-level loading of bags; optional power trolley allows for easy positioning of the bag over the receiving hopper. Also available in forklift spreader has attachment for manual loading.

Unique A-frame design, developed using the latest FEA software, provides the most structurally sound frame available.



Manual bulk bag unloading frame for forklift loading of bulk bags into frame.



NBE's patent pending Forceflo™ options guarantee optimum bag discharge.

Funnel flow mechanical bag loop lifters and linear tensioners ensure total product discharge

Hammer arm pneumatic mid-bag agitators eliminate the potential for material ratholing.

Bridgebuster pneumatic lower bag agitators continuously induce material flow through the discharge spout.

Iris valve bag closure is used for dust and product flow control when untying and retying the bag discharge spout. It can be manually or pneumatically operated. NBE also offers a glove-host bag spout access design.

Receiving hopper can be designed to accommodate a complete range of material handling transfer options.

Bulk Bag Unloaders enable manufacturers to take advantage of the cost savings inherent in purchasing and packaging dry solids in bulk bags. Safe, efficient and dust free handling methods are essential to gain maximum benefit from the use of bulk bags, and NBE offers a full range of equipment that are unmatched in these areas.

- **Expendability** - Standard modular options provide expendability and flexibility as your bulk bag handling needs change and/or grow. By simply adding one or more of our standard bolt-on modules you can easily accommodate changes in bag designs, material flow characteristics, production demands or a multitude of other possibilities.

- **Complete and Dust Free Product Discharge** - NBE has designed a comprehensive line of material flow aids, flow control valves, inflatable seals and other available options to promote material discharge from the bag without additional operator involvement. Discharging the material in a controlled and safe manner that effectively eliminates dusting and other related industrial hygiene issues is an added benefit. Standard range of options designed to accommodate all types of bag sizes and styles.

- **Safety** - NBE's unique bulk bag unloader framework was developed using the latest Finite Element Analysis techniques to assure unsurpassed safety and reliability.

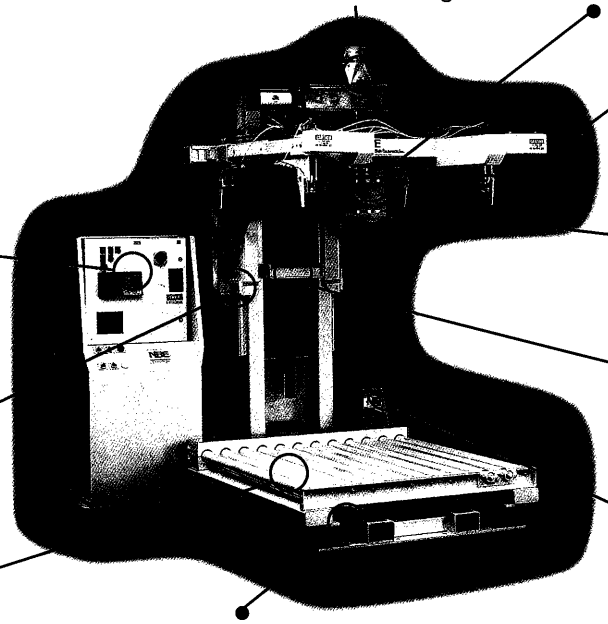
- **Value** - Purchasing a NBE Unloader offers you the security of knowing that you will receive a competitively priced, safe, effective, and efficient piece of equipment that has a dedicated and knowledgeable support staff to stand behind your decision every step of the way.

Bulk Bag Fillers

Bag/liner pre-inflation pneumatic venturi package pre-sizes the bag for more precise filling.

Flow control valve consists of a three-position pneumatically operated 8" knife gate for bulk and dribble settings.

Concentric fill spout with pneumatic inflatable dust seal features USDA/FDA-approved rubber bladder, proving positive gripping of bag spout, which eliminates dusting during filling cycle.



Adjustable bag loop hangers securely hold bags of various sizes (patent pending).

The Freestanding control panel includes all pneumatic and electric controls, pre-plumbed and pre-wired for easy installation.

Powered rear loop hangers automatically slide from back to front, enabling the operator to attach the bag easily without the need to lean into the equipment (patent pending).

Power screw height adjustment with soft start/stop reduces stress on the framework when raising and lowering the fill head.

Roller wear guards increase longevity of frame.

4,000 lbs. capacity framework was designed using the latest FEA software for outstanding safety and reliability.

Indexing conveyor allows for automatic staging and indexing of bags into or out of the filling station

Mettler-Toledo weigh system (optional) has dual display advanced digital indicator with multiple set-points; NEMA 4 enclosure; and flex-mount load cell system. Platform scales or hanging tension load cells are also available.

Drum/gaylord/tote fill adaptors allow for dust-free filling of any customer-specified container.

Densification platform allows for densifying of material to increase productivity while maximizing the volume of product in the bag.

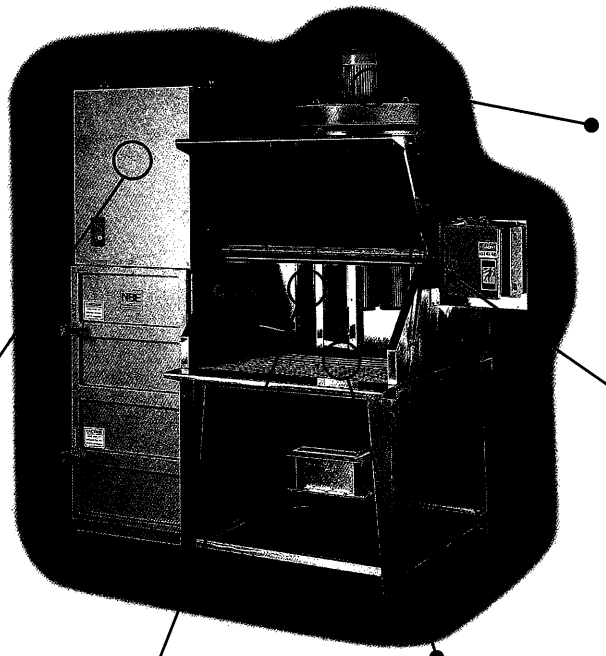
Bulk Filling Station

- Ergonomic, space-saving design allows for the most advanced, yet operator friendly design on the market. Cantilevered frame design allows for convenient operator access to the filled container. There are no front posts to interfere with the operator or fork lift truck.
- Powered height adjustment option, and optional hook package allow the machine to quickly and easily accommodate a wide range of bulk bag sizes.
- Wide variety of modular options allows NBE to tailor a custom designed filling station to meet a customer's needs while maintaining a standard product delivery time.
- Modular adapter pieces can be included for filling boxes, drums and custom sized containers.
- Award winning Mettler-Toledo Flexmount load cell scale package and Lynx programmable digital indicator, along with name brand components are easily serviced and supported world wide. The scale system provides a range of programmable set points that can be used to provide bulk/dribble settings and automated densification cycles.
- The scale system can be tied into existing PLC systems for automated system control and management. Optional label printers can provide printed records of the filled batch.
- Extensive custom design capabilities allow NBE to provide specialized designs to meet specific applications. These include hazardous areas, special materials of construction and portable designs.
- Fill station can be operated efficiently using one operator. The container is filled, weighed and densified on the pallet, so the finished product can be easily removed once the container is filled. A variety of other options, such as pallet dispensers, automated conveyor systems and accumulating conveyor systems allow a completely automated process, eliminating the need for a fork lift truck to remove filled containers from the station.

Bag Break Stations

NBE bag break stations with integral pulse-jet dust collectors allow operators to empty small bags and drums directly into all types of conveying, size reduction, or process equipment in a dust-free environment. The unified construction of the dust hood and seven cu. ft. hopper minimizes crevices and cracks where material can accumulate, while ensuring easy cleaning and maintenance. The dust and inconvenience of handling empty bags is controlled through use of NBE's optional bag compactor.

Circuit board controls frequency and duration of compressed air blasts to inflate the filter material, dislodging dust particles which then fall to the bottom.



Dust collector offers extended life filters available in polyester or Gortex filter media, 99.9% filter efficiency, pressure blower fan, low air-to-cloth ratio; and 304 stainless steel body and product contact parts.

Hydraulic bag compactor (optional) reduces refuse volume and eliminates the industrial hygiene and housekeeping concerns related to handling empty bags with traces of product left on them.

Removable baffle directs air flow under bag grate and into dust collector cartridges.

Bag break grate is removable for easy cleaning.

Hinged access door has spring loaded gas cylinders that allow for easy opening and closing of door and hold the door open during operation.

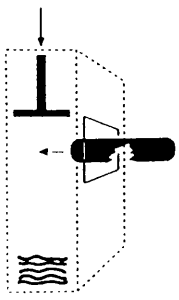
Sequence of Operation

Blower Activation - Opening the door automatically activates the pressure blow fan, which quietly draws ambient air across the door opening, through the loading grate, and into multiple cartridge filters.

Bag Break - the operator places the bag on the grating and splits open the bag to dump the material through the grate into the discharge hopper.

Dust Collection & Exhaust - As the product drops into the hopper, dust particles collected on the exterior of the filter bags are automatically removed by pulses of compressed air introduced into the cartridge, which causes the dust to drop back into the hopper for complete product recovery. The clean, filtered air is exhausted to the atmosphere or plumbed to a remote location through the flanged exhaust port at the top of the station.

Bag Compaction - When dumping is completed, the bag is placed in the bag compactor through a side opening in the station. The compaction cycle is activated by closing the station access door and activating a push-button located on the bag break station. For the increased safety, the compactor is interlocked with the access door of the bag break station to prevent compaction when the door is open.



Gauge Hatches

Enardo hatches are utilized as an important means of controlling vapor losses and a convenient access to storage tanks. We offer both dead weight and spring-loaded gauge hatches. Dead weight units are generally used in very low pressure applications with 1, 2, 3, or 4 ounce pressure settings and a 4/10 ounce vacuum relief. Spring-loaded models are generally utilized in low pressure applications and are available with 2, 4, 6, 8, 12, 16, 24, 32 ounce pressure settings and 4/10 oz., 1 oz., and 3.5 ounce vacuum settings. Enardo product features include; the use of a patented envelope pressure gasket on all spring-loaded units; models with bleeder attachments; and combination gauge hatch/by-pass pipeaway models.

Series 1000 Lock Down Hatch

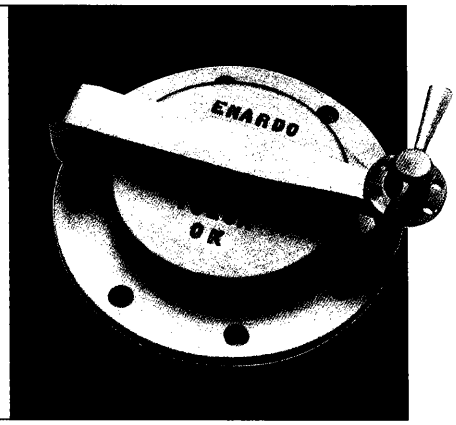
The Series 1000 hatch provides access into storage tanks. When closed, it assures a vapor tight seal that prevents leakage and evaporation loss. It is designed for easy installation, inspection, and maintainence providing trouble-free operation.

Construction: Aluminum base, arm, and lid.

Bolting Pattern: ANSI-(8) 7/8" holes on an 11-3/4" circle. API-(16) 11/16" holes on a 10-3/8" circle.

Approximate Shipping Weights: 20 lbs. each

Design Specifications
- Series Number 1008
- Bolt Pattern: ANSI or API
- Gasket Material: Neoprene, Viton or Special Compounds
- Options



Model 660B Spring-Loaded Gauge Hatch

The 660B has an 8" round base with standard settings of 4 oz. pressure and 4/10 oz. vacuum relief. This model also incorporates a bleeder attachment which pre-releases tank pressure to prevent spray when hatch cover is lifted. (Also available without bleeder in Model 660.)

Construction: Iron and aluminum castings

Bolting Pattern: (16) 5/8" holes on an 10-3/8" Circle API for normal 8" tank opening.

Options:
Plastic Trim (PT) for Corrosive Service
Pressure Setting - 2, 4, 6, 8, 12, 16, 24, & 32 oz.
Vacuum Setting - 4/10, 1, or 3.5 oz.
Bolt and Gasket Set
Base Gasket only
Non-Corrosive Coating

Design Specifications
- Series Number 660 or 660B
- Pressure and Vacuum Setting
- Options

Model 660LB Spring-Loaded Gauge Hatch

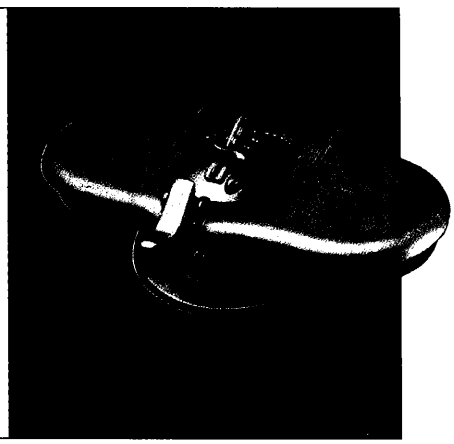
The 660LB utilizes a long basin on a round base which acts as a shelf and leveling basin. This model incorporates a bleeder attachment which pre-releases tank pressure to prevent spray when hatch cover is lifted. Standard settings are 4 oz.

Construction: Iron and aluminum castings

Bolting Pattern: (16) 5/8" holes on an 10-3/8" Circle API for normal 8" tank opening.

Options:
Plastic Trim (PT) for Corrosive Service
Pressure Setting - 2, 4, 6, 8, 12, 16, 24, & 32 oz.
Vacuum Setting - 4/10, 1, or 3.5 oz.
Bolt and Gasket Set
Base Gasket only
Non-Corrosive Coating

Design Specifications
- Series Number 660L or 660LB
- Pressure and Vacuum Setting
- Options



Gauge Hatches *(continued)*

Model 570LB Spring-Loaded Gauge Hatch

The 570LB incorporates a pipeaway by-pass with automatic check valve on a long basin with automatic check valve on a long basin with a bleeder attachment. This design equalizes the vapor pressure in a multiple tank vapor control hookup while isolating the individual tank when it is opened. Standard settings are 4 oz. pressure and 4/10 oz. vacuum relief.

Construction: Cast iron base and by-pass with cast aluminum cover

Bolting Pattern: (16) 5/8" holes on an 10-3/8" Circle API for normal 8" tank opening

Options:
Plastic Trim (PT) for Corrosive Service
Pressure Setting - 2, 4, 6, 8, 12, 16, 24, & 32 oz.
Vacuum Setting - 4/10, 1, or 3.5 oz.
Bolt and Gasket Set
Base Gasket only
Non-Corrosive Coating

Design Specifications
- Series Number 570LB or 570LB-PT
- Pressure and Vacuum Setting
- Options

Model A Hatch

The model A is deadweight pressure-vacuum relief gauge and thief hatch with a round base. This hatch was specifically designed to meet the demand for an inexpensive valve yet to maintain the Enardo quality standards. It is designed for use on steel or fiberglass storage tanks.

Construction: Iron and aluminum castings

Bolting Pattern: (10) 3/8" Circle API, for normal 8" tank

Options:
Base Gasket
Weld Neck Base
Galvanized Coating
Epoxy Coating
Viton Gaskets
Personalized Name

Design Specifications
- Model Information
- Pressure Setting
- Options

Model 200 Thief Hatch

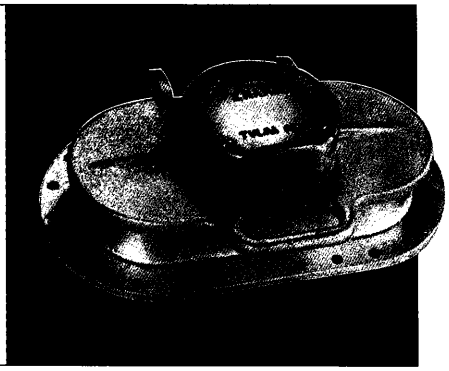
The series 200 is a deadweight gauge and thief hatch with an oblong base. It is designed for use with low pressure, steel and fiberglass tanks.

Construction: Cast iron base and by-pass with cast aluminum cover

Bolting Pattern: (16) 5/8" holes on an 10-3/8" Circle API for normal 8" tank opening.

Options:
Bolt and Gasket Set
Base Gasket only
Non-Corrosive Coating

Design Specifications
- Model Information
- Pressure Setting
- Options



Level Controls

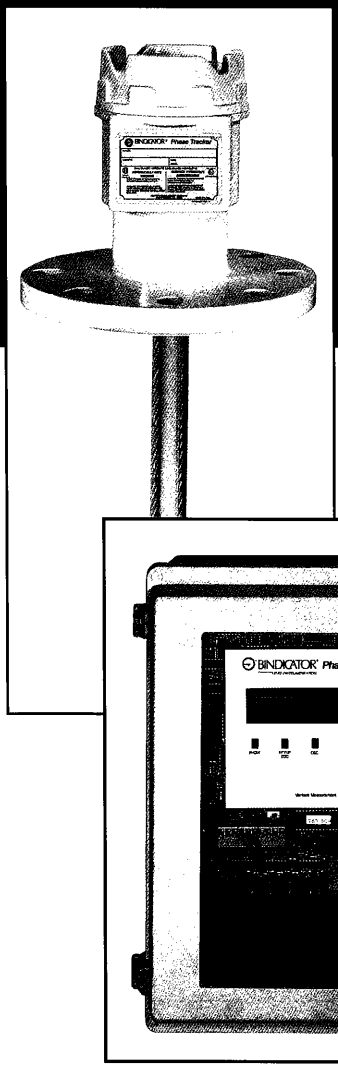
Point Level	Continuous Level
• Tuning Fork	• Phase Tracking
• Paddle Wheel	• Ultrasonic
• Diaphragm	• Hydrostatic
• Radio Frequency	• Capacitance
• Pressure	• Yo-Yo
• Ultrasonic	• Guided Wave Radar

Product Selection Chart

This chart is for reference only. Refer to our product literature for complete specifications or call us for assistance.

	Point Level									Continuous Level							Dry Flow	
	RF-4000/8000	RF-9100/9200	RF-17000/18000 (Remote)	RF-11000/12000 (Remote)	Pulse Point™ LP-100	Pulse Point™ LP-200T (Remote)	Roto-Bin-Dicator®	Bin-Dicator®	Liquid Level®	Level Data	Radar Tracker®	MS-2000™	Yo-Yo® (Mark III & GP)	Mach One™	Cap-Level® II/IIA	Flo-Guard™	Flo-Commander™
Material																	
Powder	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓
Granular	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓
Slurry	✓	✓	✓	✓						✓	✓	✓		✓			
Liquid	✓	✓	✓	✓					✓	✓	✓	✓		✓	✓		
Material Density																	
Low		✓		✓	✓	✓						✓	✓			✓	✓
High	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓
Material Moisture																	
Low		✓		✓	✓	✓	✓	✓				✓	✓		✓	✓	
High	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓
Temperature																	
High			✓	✓		✓		✓					✓		✓	✓	✓
Pressure																	
Atmospheric	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Low	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓	✓
Medium	✓	✓	✓	✓	✓	✓					✓						
Vibration																	
Low			✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
High			✓	✓		✓						✓			✓	✓	✓
Material Coating																	
Minimal	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heavy Build Up	✓	✓	✓	✓							✓	✓		✓			
Corrosive																	
Low	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
High		✓		✓	✓	✓						✓		✓	✓		
Installation																	
Vert. (top mount)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	na
Horiz.(side mount)	✓	✓	✓	✓	✓	✓	✓	✓								✓	na
Non-Contact												✓		✓			
Atmosphere																	
Dust	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓
Steamy					✓	✓					✓	✓	✓	✓	✓		
Non-Air Vapor	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓

Phase Tracker Continuous Level Control



Bindicator's patented Phase Tracker technology is designed to solve the most challenging continuous level applications. Phase Tracker is ideal for the measurement of level of solids, liquids and slurries. Phase Tracker can accurately and reliably measure the level of bulk solids and powders during the fill cycle, regardless of dust or material variations in density or moisture. It is effective in foam, non-air vapor, fumes, abrasives and corrosives, as well as corrugated bins and tall, narrow silos.

Phase Tracker sensing technology is independent of two of the most common problems that affect continuous level instrumentation: variation in the environment and changes in the product being measured. Phase Tracker can be applied throughout the processing, manufacturing, and material handling industries to solve tough measurement applications.

BINDICATOR®
LEVEL INSTRUMENTATION

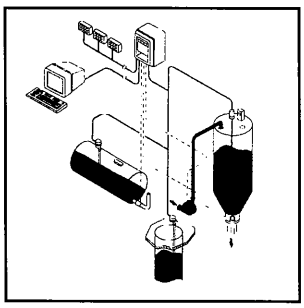
- No compensation needed for pressure or temperature
- Setup without emptying tank
- Measures product as light as 10 lbs. per cubic foot

How It Works

While it is often compared to Ultrasonic and Micro Impulse Radar (MIR) technologies, Phase Tracker differs dramatically because it uses a unique principle of measurement that cannot be duplicated by other technologies.

A two conductor flexible or rigid sensor is suspended vertically in the vessel, extending its full length. A high frequency electrical signal is transmitted downward into the sensor, towards the surface of the product. A portion of the signal's energy is echoed at the material surface due to the abrupt impedance change at that point. Detector circuitry at the top of the tank measures the phase difference between the transmitted and echoed signals. The phase difference is a function of the distance traveled by the signal and is used to determine the level in the tank.

Phase Tracker benefits, as does radar, from the fixed velocity of electromagnetic signals which are not effected by the environment in the vessel. Phase Tracker, however, employs a unique, patented method of extracting the time of flight rather than measuring the actual time delay. This method has proven highly effective in level control. Unlike radar, Phase Tracker avoids the complexity of resolving the extremely short sub-nanosecond time intervals required to generate useful level information with a signal traveling at the speed of light. A steady state low energy signal, at a frequency considerably lower than radar, is transmitted into the sensor. By slowly varying the signal frequency and simply observing the voltage variations at the input to the sensor caused by the simultaneous presence of the input and echoed signals, it is possible to get a very informative view into the vessel.



Applications

The LM7000 can be used in the most hazardous environments and measures levels accurately and continuously in dry powders, granular materials and liquids.

- Plastics
- Pharmaceutical
- Food & Grain
- Cement
- Chemical
- Petrochemical

LM7000 Phase Tracking Technology

Benefits

- Continuous on-line level tracking during filling and emptying.
- Dry powders and liquids can be controlled simultaneously from the same system.
- Readings independent of moisture content, density and particle size of the product being measured.
- Operation not dependent on tank temperature pressure.
- Unaffected by high dust concentration.
- Sees through light foam and vapors.
- Immunity to build-up on sensor inherent to Phase Tracking technique.
- No field calibration.
- Low cost easy installation.
- LAN configuration
- Remote relay and 4/20 output capability via RS485 for minimal cable and conduit costs.
- Sensors can be supplied with floor flush mounting.
- Software allows easy interface to existing systems and to control equipment.
- Integrated system—tank instrumentation, data collection and software—simplifies implementation.

Non-Contacting Ultrasonic Continuous Level Measurement — MS-2000 Series

Benefits

1. **Technology**
   - Non-contact ultrasonic
   - Model 2001, 1 or 2 channel
   - Model 2010, 10 channel
2. **For use with:** Various bulk materials, liquids, and slurries
3. **Features**
   - Patented DSP (Digital Signal Processing)
   - "Quick Cal"
   - Measurement to 100 ft. (30m)
   - Echo averaging
   - Sensor auto select
   - Engineering units in English or Metric
4. **Process Connections**
   1" NPT or optional flange mounting
5. **Enclosure**
   NEMA 4X polycarbonate display
6. **Sensing Material**
   PVC or PVC/Teflon®
7. **Output**
   - Up to 10, 4-20 mA
   - Up to 40, SPDT relays
8. **Temperature**
   Electronics:
   -40°F to +170°F (-40°C to +75°C)
   Sensors:
   -40°F to +185°F (-40°C to +85°C)
9. **Pressure** 50 psi (3.5 kg/cm2)

Bindicator has elevated ultrasonic measurement accuracy, reliability, and repeatability to a NEW LEVEL

The Bindicator MS-2001 and 2010 offers a significantly new and better way to measure inventory in "tall" tanks and silos without contacting the material.

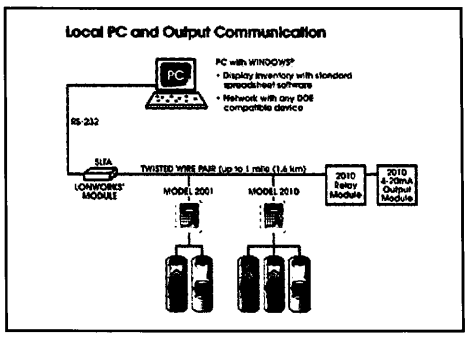
Unsurpassed accuracy and reliability
The MS-2000 Series display employs a Motorola® 16-bit microprocessor in combination with Bindicator's patented Digital Signal Processing (DSP) to provide the most advanced and dependable ultra-sonic level measurement system on the market.

The MS-2000 Series now has a LOWORKS® Bus.

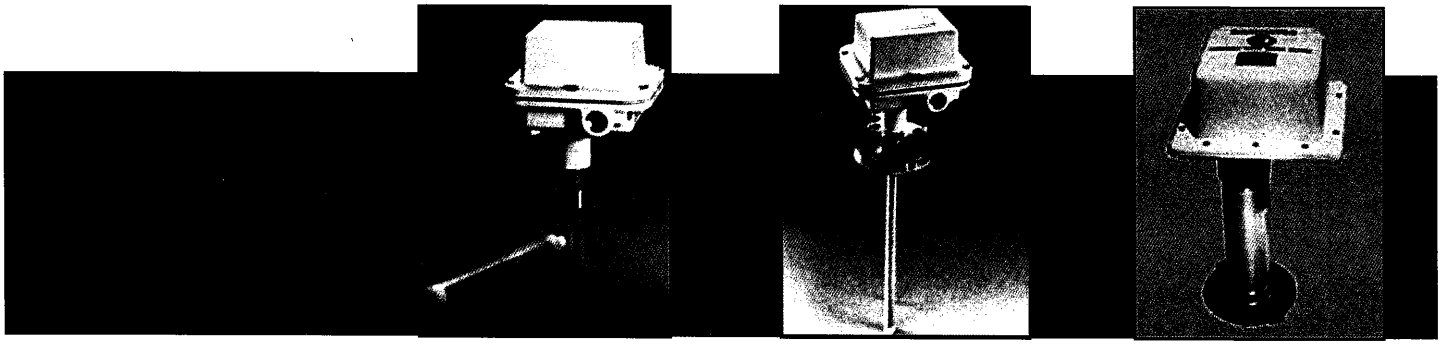
One twisted pair of wires controls relays and analog outputs in remote locations up to 1 mile (1.6km) away.

Model 2001 provides 1 or 2 channel operation

Model 2010 displays and controls up to 10 tanks or silos

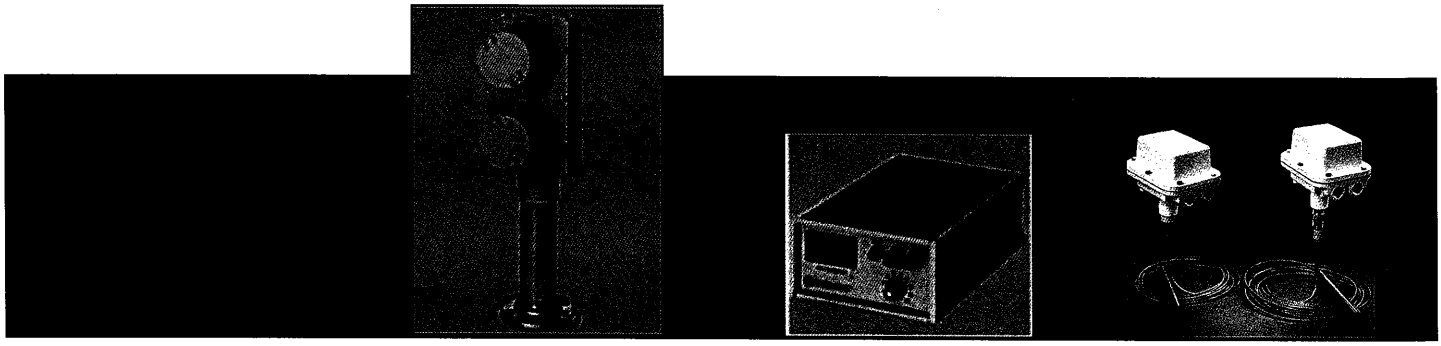


Continuous Level Controls



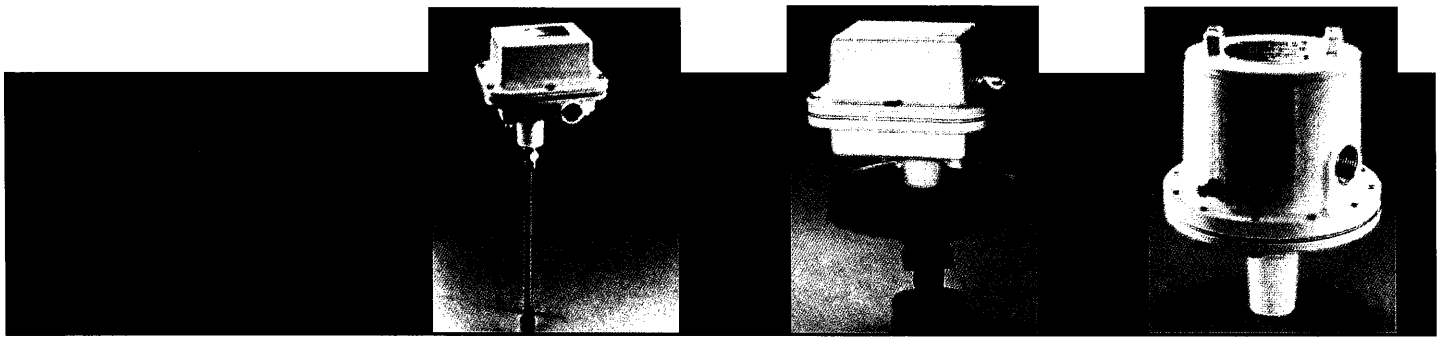
	Cap-Level® II	Cap-Level® II A	GP Yo-Yo® and GP II Yo-Yo®
1. Technology	Radio Frequency sensing technique producing 4-20mA output	Two-wire continuous radio frequency level transmitter	Raising/lowering of sensing weight provides cable measurement
2. For use with:	Conductive & non-conductive solids/liquids	Conductive & non-conductive solids/liquids	Dry or liquid materials
3. Features	• High reliability • 4-20mA output • Hi/Lo alarm relays w/adjustable hysteresis (depending on model) • Rigid or cable probes	• High reliability • 4-20mA output • Optional remote electronics • Flanges are available • Rigid or cable probes • Intrinsically safe when used with approved barriers	• PLC/computer tie-in • Solid state CMOS • Pulse output • Depths up to 75 ft. • 4-20mA or 20-4mA • Easy to install
4. Process Connections	Vertical: 3/4" NPT, 1 1/4" NPT, or 1" sanitary	Vertical: 3/4" NPT, 1 1/4" NPT, 1" sanitary, or flange	Sensor: top-of-vessel information transmitted to remote display/readout/ computer or PLC
5. Enclosure	NEMA 4X, NEMA 7/9 polyester coated aluminum	NEMA 4X, FM approved	NEMA 4/5, CSA listed molded minlon/polyethylene
6. Sensing Material	316 stainless steel and/or jacketed with Teflon®	316 stainless steel and/or jacketed with Teflon®	Digestible polyethylene, stainless steel, or ABS
7. Output	4-20mA into 400 Ω Max.	4-20mA	Pulses to Bindicator readout/computer/PLC
8. Temperature	Electronics: -40°F to +160°F (-40°C to +71°C) Probe: -40°F to +250°F (-40°C to +120°C)	Electronics: -40°F to +160°F (-40°C to +71°C) Probe: -40°F to +250°F (-40°C to +120°C)	-30°F to +140°F (-34°C to +60°C) with heater
9. Pressure	Consult factory	Consult factory	Atmospheric

Continuous Level Controls *(continued)*



	Mark III Yo-Yo®	Yo-Yo® Readout	Radar Tracker®
1. Technology	Raising/lowering of sensing weight provides cable measurement	Displays readings from Yo-Yo inventory systems	Utilizes the recently developed MIR (micro impulse radar) technology
2. For use with:	Dry or liquid materials	All Yo-Yo sensors	Connects to all popular display devices
3. Features	• Local start-up switch • PLC/computer tie-in • Pulse output • 4-20mA or 20-4mA • Easy to install • Depths up to 150 ft. (special)	• Digital display • Up to 10 vessels • "Ft. 50" or "Ft. Of" • Computer tie-In • 1 mile from Yo-Yos	• Unaffected by minor coatings, vapors, changes in density or conductivity • Operates independently of liquid dielectric • Accurate, low cost • Application "independent"
4. Process Connections	Sensor: top-of-vessel information transmitted to remote display/ readout/computer or PLC	NEMA 1 — control room environments NEMA 4 — optional	3/4" NPT SS or 1-1/4" NPT Aluminum
5. Enclosure	NEMA 4/5 NEMA 7,9 polyester coated aluminum, FM listed	NEMA 1 — control room environments NEMA 4 — optional	NEMA 4, 4X, 5 aluminum w/ polyester powder coating NEMA 4X 304 SS optional
6. Sensing Material	Digestible polyethylene, stainless steel, or ABS	Not applicable	Stainless steel
7. Output	Pulses to Bindicator readout/computer/PLC	Analog, LED display	4-20mA into 700 ohms
8. Temperature	-32°F to +140°F (-34°C to +60°C) with heater	-30°F to +120°F (-34°C to +49°C)	-40°F to +165°F Consult factory >140°F
9. Pressure	Atmospheric	Atmospheric	1000 psi @ 250°F maximum

Liquid Level Controls



	Leveldata	Mach One™	Liquid Level Bin-Dicator®
1. Technology	Hydrostatic two-wire level transmitter	Non-contact ultrasonic	Pressure-sensitive diaphragm actuates switch
2. For use with:	Compatible with most liquids and slurries	Liquids and slurries	All non-coating liquids
3. Features	• The Bubbleless Bubbler • Automatic compensation for pressurized vessels • Install without emptying tank • Sensing range to 30 feet (9.23 m) • Non-fouling sensor design • FM approved (intrinsic safety); UL approved (general purpose)	• Non-contact level measurement to 30 ft. (9.23m) • EDS – echo discrimination software • Menu driven programming • Automatic temperature compensation • Non-volatile memory • Multiple unit networking — Sensorlink • CSA certified	• Low cost • Compact design • Few moving parts • Corrosion resistant • Long life, reliability
4. Process Connections	3/4" NPT, 316 stainless steel (top-of-vessel mounting only)	3 or 4 inch, ANSI 150 lb. flange; sanitary	Top-of-vessel mounting
5. Enclosure	NEMA 4X with corrosion-resistant polyester coating	NEMA 4X/7/9	NEMA 4/5, NEMA 7,9 UL listed. Polyester coated interior/exterior aluminum
6. Sensing Material	Rigid impulse tube; 1/8" schedule 80, 316 l stainless steel	PVC/Buna-N®, CPVC, 316 stainless steel, Teflon®	Neoprene coated with Teflon®
7. Output	4-20mA into 600 Ω maximum at 24 VDC	4-20mA or RS 485	SP/DT, 20 Amp
8. Temperature	-40°F to 200°F (-40°C to 94°C)	-40°F to 185°F (-40°C to 85 °C)	30°F to +160°F (-34°C to +71°C)
9. Pressure	2 psi normal (.14 kg/cm2)	100 psi (7 kg/cm²)	Atmospheric

Electro-Mechanical Point Level Controls

New! Heavy-Duty Motor Available

Important Application Information

1. **Technology** — Rotating paddle torque actuates switch(es) or DP/DT relay.

2. **For use with** dry bulk materials of varying densities or liquid/solid interface.

3. **Process connections** – Units can be top-of-bin or side-of-bimounted by 1-1/4" NPT or optional mounting plate. Exception: Mini-Roto mounts on 3/4" NPT or with a mounting plate.

4. **Enclosures** — Polyester coated aluminum, UL listed as NEMA 4X, 7, 9. Exception: Mini-Roto has a 4X injection molded enclosure.

5. **Sensing material** — Paddles and shafts are stainless steel. Optional shaft couplings include Neoprene or silicon. Shaft length can be extend for top-of-bin mounted units. Exception: Mini-Roto uses nylon, Ryton® or polysulfone paddles.

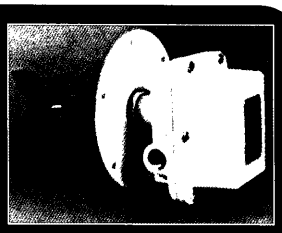
6. **Output** — Varies according to Roto type; SP/DT switch(es) or DP/DT relay.

7. **Temperature** — -30° F to 200° F (-34° C to 93° C) Exception: MBA-5 and MBA-7; maximum temperature, 480° F (250° C).

8. **Pressure** — 30 psi (2.1kg/cm) Optional 90 psi (6 bar) seal available on some models. Exception: MBA-5 and MBA-7; maximum pressure, 145 psi (10 bar).

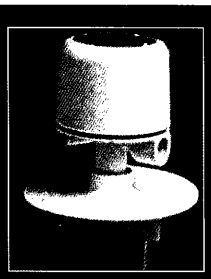
Roto-Bin-Dicator®

- Input 120 VAC or 240 VAC
- Available outputs of one or two SP/DT switches
- UL, CSA and BASEEFA listed for NEMA 4, 7, 9
- Available with stainless steel enclosure



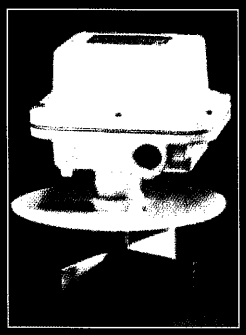
Mini-Roto™

- Low cost
- Will detect materials from 5 lbs/cu ft to 65 lbs/cu ft (816 Kg/m³ – 1041 Kg/m³)
- Install in small hoppers or bins where there is limited mounting space
- External alarm LED
- Input 120 VAC or 240 VAC
- SP/DT 10 amp switch output



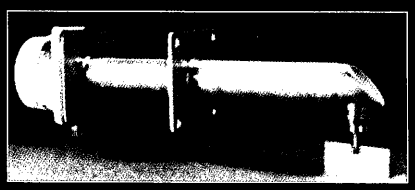
Super-Safe Plus Roto-Bin-Dicator®

- External function test with fob card
- Adjustable time delay
- Fail-safe selection (high or low level)
- Optical pulse sensing
- External power and alarm LEDs
- 1-1/4" NPT or mounting plate
- Input available: 120 VAC, 240 VAC or 24 VDC
- Relay output
- UL and CSA listed for NEMA 4X



MBA-7

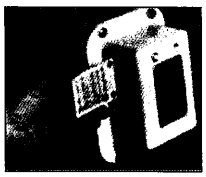
- Heavy-duty design
- Use in high-temperature applications 480° F (250° C)
- Use in high-pressure applications 145 psi (10 bar)
- Units are shipped with mounting flange
- MBA-7 units mount on side of bin only
- MBA-5 units mount of top of bin only
- Input 120 VAC or 240 VAC
- Output: Two SP/DT switches
- Units are CSA certified



Radio Frequency RF Point Level Controls

Important Application Information

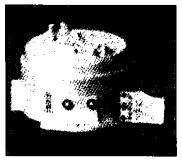
1. **Technology** — Radio Frequency sensing technique which actuates relay. (Exception-RF-6000, 4 or 20mA).
2. **For use with** liquid, solid and slurry materials.
3. **Process connections** — 1 1/4" NPT, 3/4" NPT, flange or sanitary. Remote systems available.
4. **Enclosures** — Polyester coated aluminum or stainless steel.
5. **Agency Approvals** — Include General Purpose NEMA 4X; NEMA 7, 9 with UL/C-UL listings, or BASEEFA.
6. **Sensing material** — 316 SS with Ryton®, polysulfone, Kynar®, or Teflon®. Ceramic probe available.
7. **Output** — DP/DT 5 Amp @ 120 VAC. RF-6000 Series: 6-10mA with material present, 17-20mA when no material is present (field reversible logic).
8. **Temperature:**
   - Electronics — -40°F to +160°F (-40°C to +71°C)
   - Probe — 450°F (232°C); RF Remote Series ceramic probe is rated to 1000°F (537°C).
9. **Pressure** — Consult factory for applications in vapors or applications over 60 psi (4 bar).



Bindicator RF level sensors with integral or remote electronics are used in all industries where liquids, slurries or solids are stored, processed or packaged. These sensors will detect high or low levels, as well as detect plugged chutes. Matched with Bindicator's sixty plus years of experience in level control engineering and manufacturing, you are assured of receiving the best level control system available.

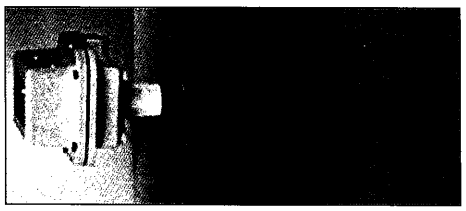
Test-In-Place

This patented feature allows you to test the RF level sensor without removing the cover while it is installed in the vessel. **These controls are the only Radio Frequency units on the market that can be safely tested in place, in a hazardous environment, without removing the cover.** Test-In-Place can be accomplished by pushing a button, turning a key, using a magnetic fob or even through your computer. This feature could save you thousands of dollars in the cost of a material spill and EPA fines for emitting fugitive emissions.



EZ-CAL® Calibration

Eliminate the tedious task of calibrating your level control. The patented EZ-CAL® feature allows you to calibrate your sensor without moving the material in and out of the vessel. It can be accomplished in less than 30 seconds by one of the many calibration options available. This digital calibration may also be accomplished through your computer.

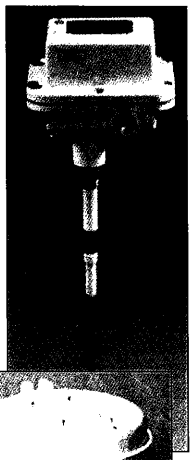


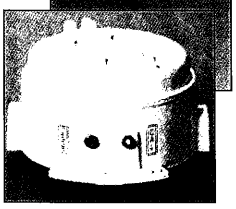
Pro-Guard

The PRO-GUARD section of the probe cancels out the effects of material coating on the probe, preventing false indications. The PRO-GUARD disregards the effects of probe coating due to sticky, dusty or clinging materials. The RF control will alarm only when the actual bulk of material (either dry or liquid) comes in contact with the probe.

Calibration and Alarm Lights

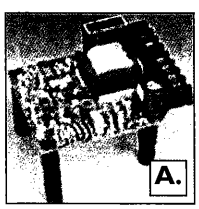
Bindicator's unique cover design allows you to determine the alarm or functional status of the level sensor without removing the cover. An illuminated green LED tells you that the unit is properly calibrated and is ready to sense the level of material. The red LED, when illuminated, indicates that the unit is alarmed. A blinking green LED signals a calibration change. A "no-light" condition is evidence that power has been lost or the unit needs calibration.

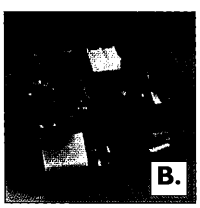


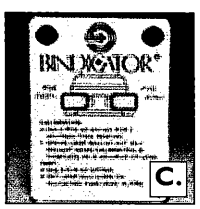


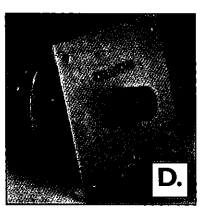
Calibration Options:

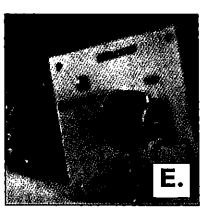
A. Two-Step Manual
B. One-Step Pushbutton
C. Fob and/or Magnet
D. One-Step Remote, Pushbutton
E. One-Step By Remote Keyswitch











More Radio Frequency Features

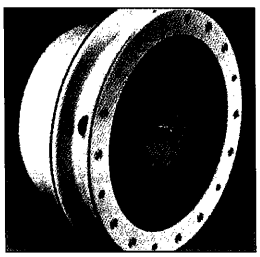
RF Series	Remote or Integral Unit	Mode of Calibration	External Cal. and Alarm Lights	Remote Cal. and Test Feature	Test-In-Place	Type of Output
RF-4000	Integral	Manual	NO	NO	NO	SP/DT relay
RF-6000	Integral	Manual	YES*	NO	YES/Fob	4 or 20mA
RF-8000	Integral	Manual	NO	NO	NO	DP/DT relay
RF-8200	Integral	Manual	YES**	NO	YES/Fob	DP/DT relay
RF-9000	Integral	Push-button	NO	YES	YES/ Push-button	DP/DT relay
RF-9100	Integral	Spring Magnet	YES	NO	YES/Spring	DP/DT relay
RF-9200	Integral	Fob Magnet	YES	NO	YES/Fob	DP/DT relay
RF-10000	Remote	Push-button	NO	YES	YES/ Push-button	DP/DT relay
RF-11000	Remote	Spring Magnet	YES	NO	YES/Spring	DP/DT relay
RF-12000	Remote	Fob Magnet	YES	NO	YES/Fob	DP/DT relay
RF-17000	Remote	Manual	NO	NO	NO	DP/DT relay
RF-18000	Remote	Manual	YES	NO	YES/Fob	DP/DT relay

NOTE: *Green LED on RF-6000 is a loop power indicator
**Does not include external calibration

Bin-Dicator® Diaphragm Point Level Controls

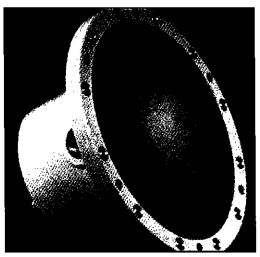
Important Application Information

1. **Technology** — Diaphragm senses material pressure and actuates switches.
2. **For use with** dry bulk materials.
3. **Features** —
   - Compact design
   - Many diaphragms
   - Suitable for many applications
   - Low cost
4. **Process Connections** — External on side-of-bin or on underslopes. Plug chutes.
5. **Enclosures** — NEMA 4/5.
6. **Output** — SP/DT 15 amp — DP/DT (Model "A" only).
7. **Pressure** — Atmospheric.



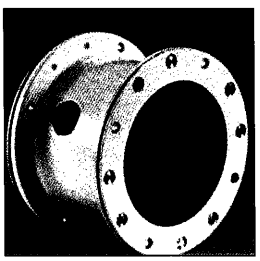
Model "A" Bin-Dicator®

- Available diaphragm materials: Neoprene®, Teflon®, silicon, canvas, fiberglass
- Optional high temperature, snap-action, general-purpose and explosion-proof switches
- Temperature: -40°F to 800°F (-40°C to 425°C)



Auto-Bin-Dicator®

- Available diaphragm materials: Neoprene® or 302 stainless steel
- Optional high-temperature, snap-action switches
- Temperature: -40°F to 800°F (-40°C to 425°C)
- CSA certified and UL listed



Bantam Bin-Dicator®

- Available diaphragm materials: Neoprene® or Neoprene coated with Teflon®
- Temperature: 40°F to 185°F (-40°C to 85°C)

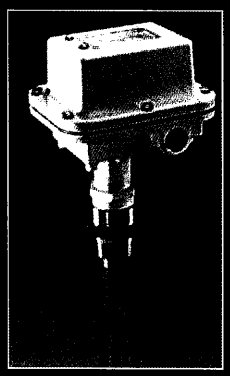
Tuning Fork Level Controls

Important Application Information

1. **Technology** — Oscillating tuning fork.
2. **For use with** dry granular solids, powders from 2lbs./cu. ft. (32kg/m³)
3. **Process Connections** — 1 1/2" NPT, mounting plate or flange mount.
4. **Enclosures** — NEMA 4X cast aluminum or stainless steel. NEMA 7/9 FM & CSA approved.
5. **Sensing Material** — 316 stainless steel, coated with Rilsan® or Teflon®.
6. **Output** — DP/DT 5 amp @ 125VAC or 28VDC
7. **Temperature** —
   - Electronics -40°F to +175°F (-40°C to +80°C)
   - Tuning Fork — 55°F to +212°F (-48°C to +100°C)
8. **Pressure**—150 psi (10.5 kg/cm²) ambient temperature

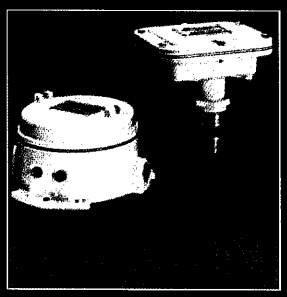
Pulse Point™ 100 Series

- Light materials - 2 lbs./cu. ft. (32kg/m³)
- No calibration required
- Integral electronics
- Selectable failsafe
- Pipe extended units



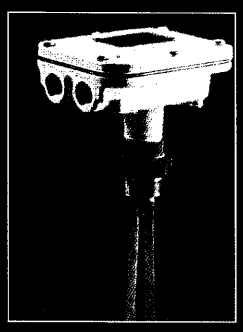
Pulse Point™ 200 Series

- Remote electronics
- For high vibration applications
- No calibration required
- Light materials - 2 lbs./cu. ft.(32kg/m³)
- Selectable failsafe
- Pipe extended units



Pulse Point™ LP-30

- Bindicator reliability at a very affordable price
- No calibration required
- Senses densities as low as 2 lbs/ft³ (32kg/m³)
- Selectable Failsafe and Time Delay
- Euro-Style Dual Conduit Entry
- Consult factory for approvals
- SP/DT relay
- Tuning Fork rated to 248°F (120°C)

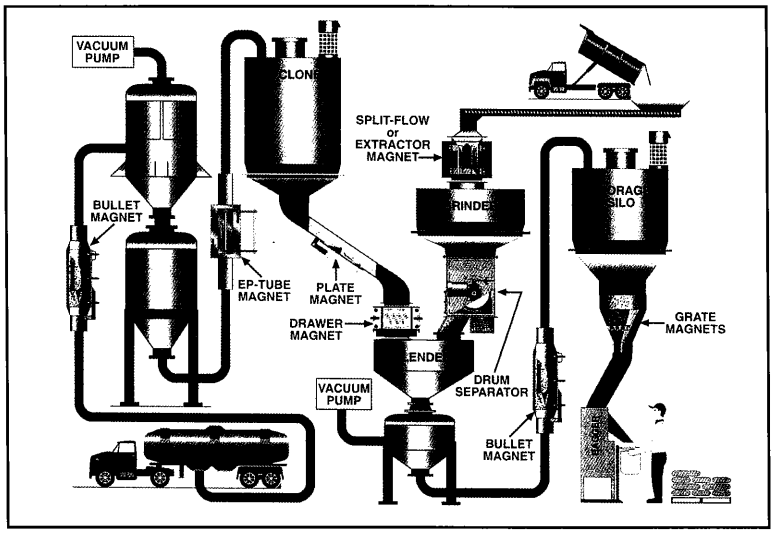


Magnets for Magnetic Purification and Equipment Protection

Magnetic Material

- **Ceramic:** Used for small to larger ferrous particle separation such as: nails, bolts, washers, etc.
- **Alnico:** High heat applications up to 1100°F. Particle size and separation the same as ceramic.
- **Neodymium-Iron-Boren (Rare Earth):** Extremely powerful magnet is used for "fine particle" separation such as; metal filings, shavings, metal wear residue, work hardened stainless steel, etc.
- **Electromagnets:** Control on/off ability with an electromagnetic version.

Magnetic Separator Location and Selection Guide



Things to Consider When Choosing a Magnetic Separator

MAXIMUM LUMP SIZE: Is the material that you are processing consistent or variable in size?

BURDEN DEPTH (Depth of Material): What is the depth of the product flow as it travels through a chute or conveying process? This information is critical for designing a magnet that will effectively reach through the product flow & capture metal.

VOLUMETRIC FLOW RATE: What is the volumetric rate of your product flow as it travels through your processing system? This information will aid in correctly sizing a magnet that will offer your product maximum magnetic exposure.

ANGLE OF REPOSE: What is the minimum angle you can have to maintain product flow?

BRIDGING TENDENCIES: What is the moisture content of your product? Does it have a tendency to cake, clump, or stick together? This characteristic often causes the product to have difficulty flowing through a standard grate magnet. Alternate tube spacing or magnet design may be required.

TRAMP METAL CAPTURE: Is your main concern equipment protection: capturing large ferrous metal items like nuts, bolts, screws, paper clips, etc? Or do you need to purify your product from all fine particles of ferrous metal? Your objective will influence the type of magnetic material that is used.

SPACE CONSTRAINTS: (The shape and design of the magnet) What are the space constraints you need to work within in order to accommodate the magnetic equipment? Depending on your available space, you may require a magnet custom designed for your application.

WEIGHT OF MAGNET: What effect will the weight of the magnet have on your existing processing system? Is there a weight limitation, or will additional framework be needed to support the magnet?

CLEANING/ACCESSIBILITY TO MAGNET: How is the tramp metal to be removed? In case of manual clean, will your employees have easy access to the magnet, and will it be easy enough for them to clean regularly? Keep in mind that rare-earth magnets are very difficult to clean manually.

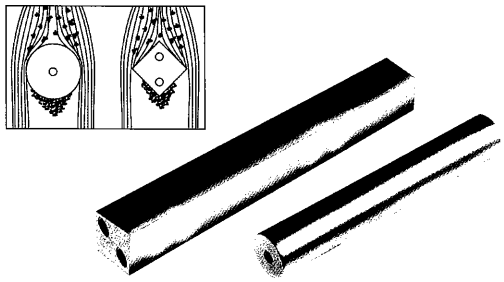
Magnetic Grate Tubes and Magnetic Grates

Round and Square Grate Tubes

Ceramic • Alnico • Rare Earth (Neodymium)

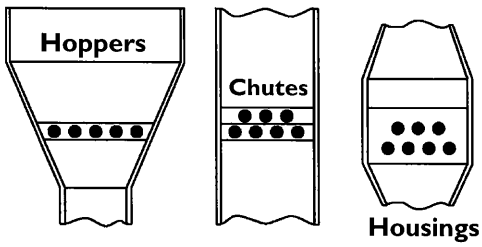
Individual magnetic tubes in either round or square styles are available for customers desiring to fabricate their own systems for special applications requiring non-standard spacing or tube arrangement.

Ruggedly constructed from 304 stainless steel, both styles have tapped mounting holes at each end for easy installation. The one inch (1") diameter round tubes have 1/4"-20 mounting holes and the one and one half (1-1/2") inch ceramic square tubes have 3/8"-16 mounting holes. Standard tube lengths range from 4" to 48" long. *For more information see IMI Tech Sheet TRAMP MTL 2A.*



Magnetic Grate Selection Factors

Product consistency, density and moisture content, which influence flow characteristics, are important factors in grate magnet applications. In order to choose the correct magnetic grate to ensure positive flow, it is important to recognize materials that have tendencies to bridge between the magnetic tubes. While diverter systems are helpful in directing the material flow to the magnets, be aware they tend to increase bridging and reduce uniform product flow. *For more information see IMI Tech Sheets TRAMP MTL 2B, 2C and 2D.*



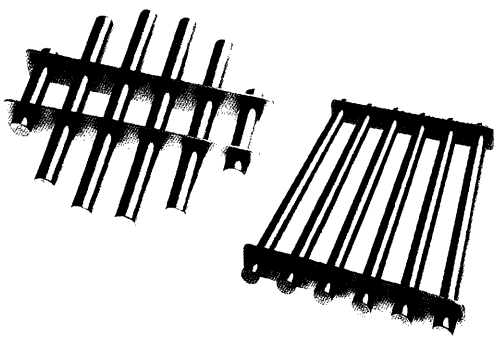
Round Tube Magnetic Grates

Ceramic • Alnico • Rare Earth (Neodymium)

Magnetic grates deliver ferrous tramp metal separation in bins, chutes, drawers, hoppers and circular enclosures.

IMI grates are constructed with one inch diameter magnetic tubes placed on two inch (2") centers in heavy duty 1/8" thick x 2" wide 304 stainless steel framing. The round magnetic grates are available in 30 standard diameters ranging from 4" to 36". Special sizes are also available.

Each round grate can be equipped with diverters. See tech sheet for diverter styles. *For more information see IMI Tech Sheets TRAMP MTL 2B and 2C.*



Square Tube Magnetic Grates

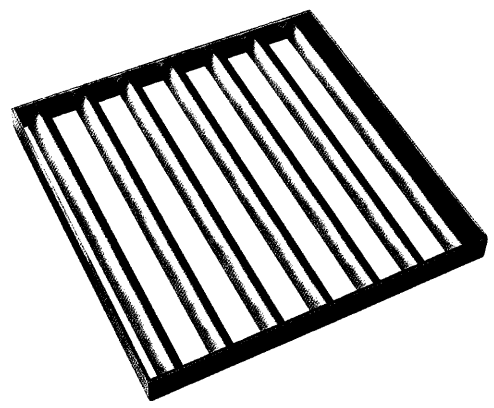
Ceramic • Alnico • Rare Earth (Neodymium)

Square tube magnetic grates are ideal for heavy duty applications where high product volume is involved.

Having strong magnetic fields, the square tubes are installed with the leading edge toward the material flow. This positioning helps eliminate material bridging and provides a protected collecting area along the bottom of the magnet where ferrous tramp metal remains out of the material flow.

Constructed from 304 stainless steel, and mounted in a 1/4" thick x 2-1/2" high stainless steel bar framing, IMI square tube magnet grates deliver heavy duty performance and long service life.

Available in 66 standard square or rectangular sizes, these square tube grates are the optimum tramp metal separation device for point-of-entry receiving areas. *For more information see IMI Tech Sheet TRAMP MTL 2D.*



Ceramic and Rare Earth Plate and Spare Magnets

Selecting the appropriate plate magnet for a particular application involves a number of key factors.

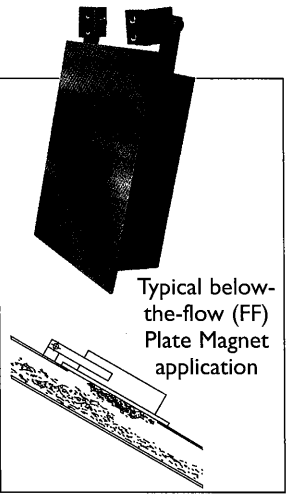
- Product moisture content
- Velocity
- Angle of flow
- Magnet positioning above or below the flow
- Bulk density
- Burden depth
- Magnet location

If you'd like assistance in selecting the most effective magnet for your application, contact us at 1-800-326-7253.

All IMI plate magnets feature performance engineering, rugged welded stainless and steel construction, and use the finest magnet material available. IMI magnets have an approximate magnetic loss of 1/2 of 1% per 100 years.

Flush Face (FF)

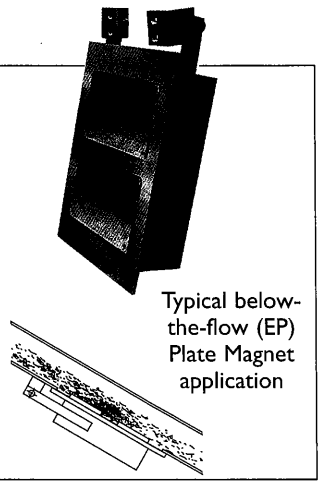
plate magnets deliver optimum tramp metal separation performance when used in above-the-flow chute or belt applications. When installed over the material flow, the powerful Flush Face plate magnets deliver continuous magnetic protection for down stream processing equipment by lifting ferrous tramp out of the product flow stream. *For more information see Tech Sheets TRAMP MTL IA-IC.*



Typical below-the-flow (FF) Plate Magnet application

Exposed Pole (EP)

plate magnets are engineered to deliver high performance tramp metal separation in low volume applications. These applications are for below-the-flow installations where the product flows over the magnet face. *For more information see Tech Sheets TRAMP MTL IA-IC.*

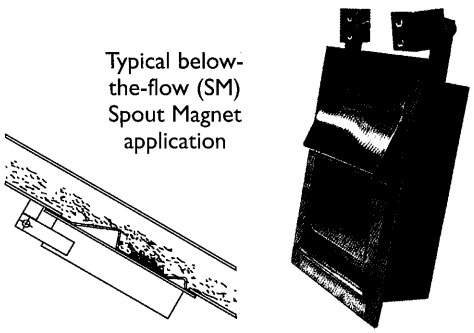


Typical below-the-flow (EP) Plate Magnet application

Ceramic & Rare Earth Spout Magnets (SM)

provide maximum ferrous tramp metal separation in high volume chute applications where wash-off can be a problem. Spout magnets employ a primary diverter to prevent tramp metal "wash-off". A secondary diverter reduces product degradation by ramping the product over the downstream chute edge. *For more information see Tech Sheets TRAMP MTL IA-IC.*

- Use for High Volume Chute Applications
- 8 Ceramic Strengths and 2 Rare Earth Strengths available to meet the needs of your application!



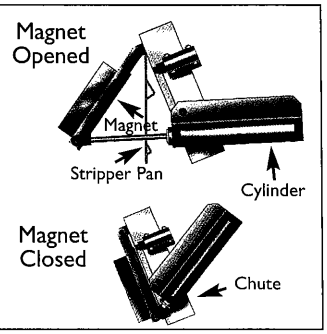
Typical below-the-flow (SM) Spout Magnet application

EZ-Clean and Self-Cleaning Spout Magnets

have a stripper pan cleaning mechanism that allows the collected tramp metal to be easily released.

The EZ-Clean Spout magnet is operated by unclamping the magnet from the chute and pulling the magnet opened by hand. As the magnet is pulled open the stripper pan separates from the magnet, allowing the metal to fall off of the pan's face.

The Self-Cleaning Spout Magnet utilizes air cylinders to swing the magnet and the stripper pan away from the chute allowing for remote cleaning of the spout magnet.



Unimpeded Vertical Flow Magnets

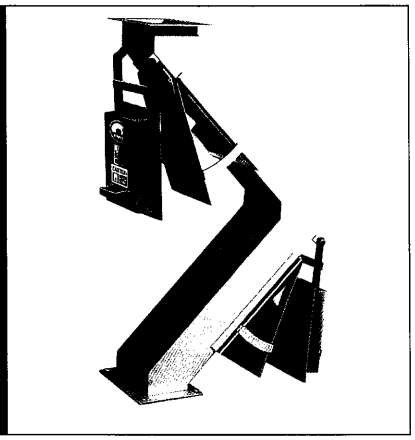
Hump Magnets

Ceramic • Rare Earth

Ideal for ferrous tramp metal separation in gravity systems, IMI Hump Magnet separators are adaptable to either round pipe or rectangular chute transfer lines.

The Hump magnet employs two heavy duty diverter-equipped Spout Magnets, which are positioned so that the offset flow of product flowing through the hump is forced into the magnetic fields. The hinged magnets are gasketed and clamped tightly to the hump housing for maximum product and dust containment during processing operations. They also swing open for easy removal of captured tramp metal.

Ruggedly constructed from stainless steel with a welded flange mounting system to fit either chute or pipe applications. IMI Hump separators are available in nine standard sizes with Custom sizes available upon request. *For more information see Tech Sheet TRAMP MTL 9A.*



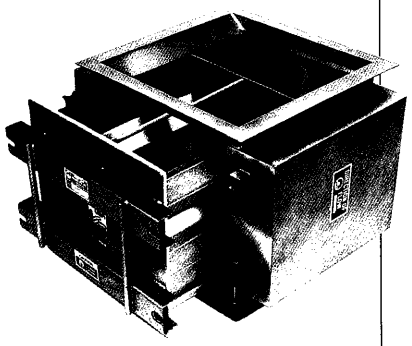
Extractor Magnets

Ceramic • Rare Earth

IMI's Extractors are designed for ferrous metal separation in high volume dry processing applications. The continuous operation, high performance Extractors feature powerful parallel permanent magnets to capture ferrous tramp metal from direct material flow.

As material enters through the Extractor's inlet, it passes over a diverter which angles the product flow towards the magnets. Ferrous metal that is mixed in with the product flow is then captured and held by the powerful magnetic field.

Standard models are equipped with a EZ-clean stripper drawer to easily remove collected metal from the housing. Also available is an air-actuated self cleaning unit for automated or remote cleaning. *For more information see Tech Sheet TRAMP MTL 8A.*



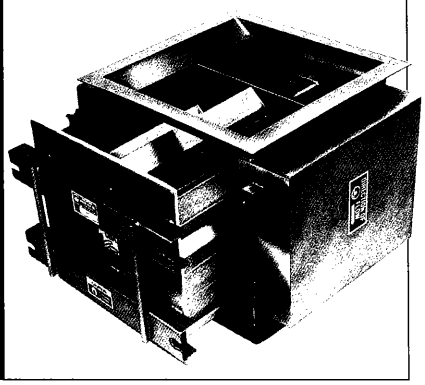
Split Flow Magnets

Ceramic • Rare Earth

The Split Flow magnet provides excellent separation for free-falling or choke flows in vertical chute applications.

As a product enters the Split Flow magnetic housing, a center wedge magnet splits the flow and diverts the streams towards two extra high intensity parallel magnets. These three magnetic contact points offer excellent attraction and holding power.

The housing is constructed of all welded stainless steel for a long, non-corrosive life and is available in both EZ-Clean and Self-Cleaning models. *For more information see Tech Sheet TRAMP MTL 8B.*



Magnetic Drawer-In-Housings

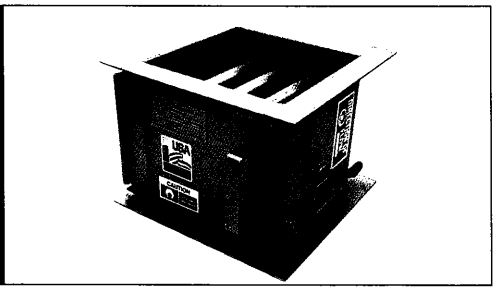
IMI's Drawer-In-Housings are designed for ferrous metal separation in a wide variety of dry processing applications. The main body of the housing consists of a row, or most commonly rows, of round magnetic tubes that are assembled into drawers. Each drawer's magnetic tubes are aligned on alternating centers from the drawer directly above or below it.

As product flows into the top of the housing, it is forced to cascade in a zig-zag pattern from row to row over the magnetic tubes. This cascading effect ensures maximum tramp metal capture since the product comes in direct and repeated contact with a magnet as it travels through the housing.

As ferrous metal passes through the magnetic field, it is held to the tubes and separated from the product. The metal must now be cleaned from the tubes on a regular basis to prevent buildup and subsequent wash-off back into the product flow.

Manual Clean Drawer-In-Housing

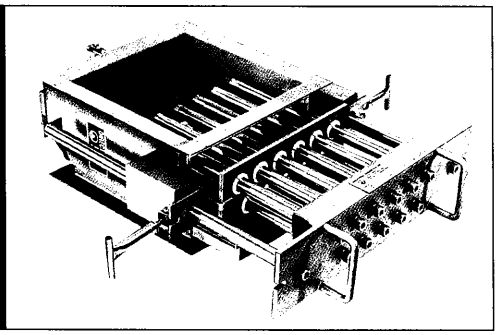
Manual Clean Drawer-In Housings are ideal for applications with low levels of tramp metal contamination. The housing consists of two or more banks of magnetic tubes on alternating centers. To clean collected tramp metal from the tubes you simply open the door, pull each bank of tubes out, and wipe the metal off the tubes with a shop rag or gloved hand. *For more information see IMI Tech Sheets TRAMP MTL 3A.*



EZ-Clean Drawer-In-Housings

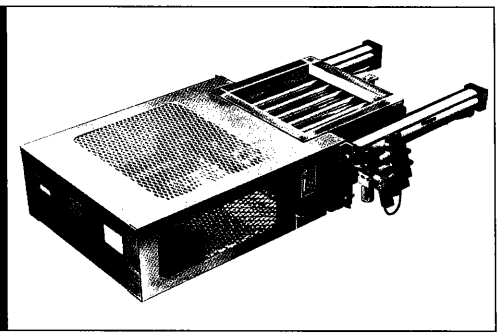
The EZ-Clean Drawer-In Housing is designed to simplify the cleaning process to encourage frequent and quick removal of collected tramp metal.

To initiate cleaning, the operator pulls two handles on the front of the housing which removes the magnetic drawer from the product flow. As the drawer is pulled out, each magnetic tube passes through a seal which wipes the accumulated metal from the tubes. A catch pan is located under the tubes on the front of the housing to collect the metal for proper disposal. *For more information see IMI Tech Sheets TRAMP MTL 3B.*

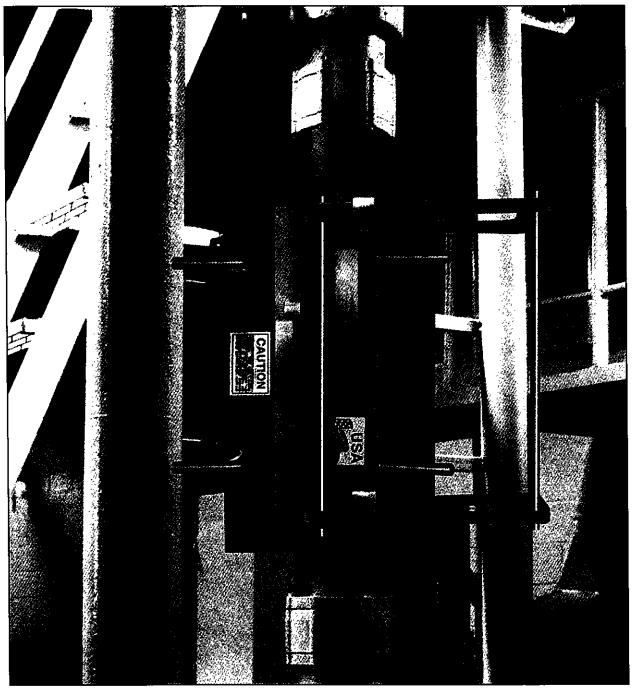


Self-Cleaning Drawer-In-Housings

IMI'S Self-Cleaning Magnetic Drawer-In-Housing is ideal for hard to reach locations, removal of fine tramp metal, or an automated processing plant. A toggle switch allows the operator to actuate the cleaning action from a remote location. In seconds, the air-actuated stripper device discharges collected tramp metal outside the housing. Standard sizes range from 6"x6" to 24"x24" inlets and outlets in even increments. Custom sizes are available upon request, as well as transitions to match existing equipment. *For more information see IMI Tech Sheets TRAMP MTL 3C.*



Pneumatic System Magnetic Separators



In-line magnetic tramp metal separation devices, employed in pneumatic systems, function in three simultaneous roles. First, they enhance product purity. Secondly, they provide continuous protection of the processing machinery and third, through their unique designs, provide for uninterrupted or unimpeded product flow while performing continuous tramp metal removal.

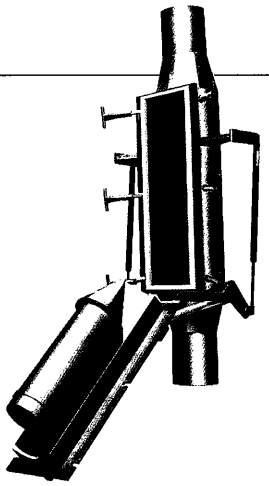
IMI magnet tramp metal separators are available to fit most pneumatic systems. The selection of the most effective in-line magnetic separator for the application will be based on the consistency of the material being processed.

Bullet™ Magnet

Aerodynamically shaped with a solid stainless steel nose cone diverter, the flow-thru design of the Bullet Magnet maintains uniform velocity in line flow, allowing it to be used anywhere in the pneumatic system. It is commonly used ahead of processing equipment and bulk load out to assure product purity and protect machinery from tramp metal damage.

Ideal for dilute phase systems, typical Bullet Magnet applications include: movement of powder and granular, flour, chemical, plastic, food stuff, pharmaceutical and mineral materials.

The IMI Bullet Magnet is easily installed with compression type couplings and is available in sizes ranging from 3" to 6" diameters. Rare Earth versions provide an exceptionally powerful magnet field to capture fine particles previously unattainable. *For more information request Tech Sheets 5A and 5B.*

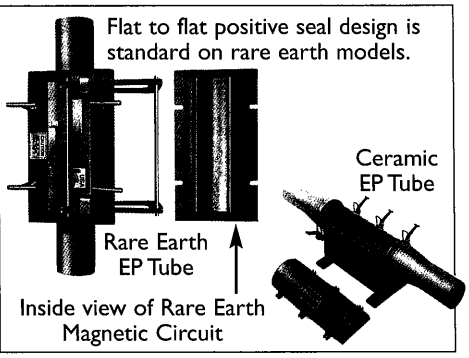


Exposed Pole Tube Magnet (EP Tube)

IMI's Exposed Pole Tube magnet (EP Tube), is designed for use in pneumatic line systems.

It can be used ahead of processing equipment and bulk load out to assure product purity and protect machinery from tramp metal damage.

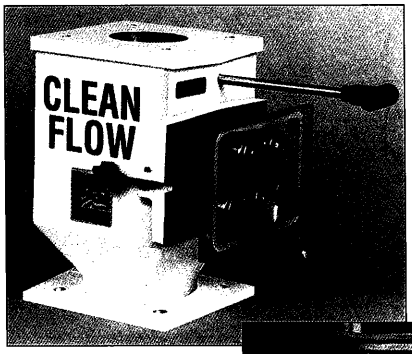
Ideal for use in dense phase systems, typical Exposed Pole Tube magnet applications include the processing of pelletized foods, feed or grain where degradation is a concern, fibrous products, or products that have a higher moisture content with a tendency to clog or congeal. *For more information request Tech Sheet Tramp MTL 5C.*



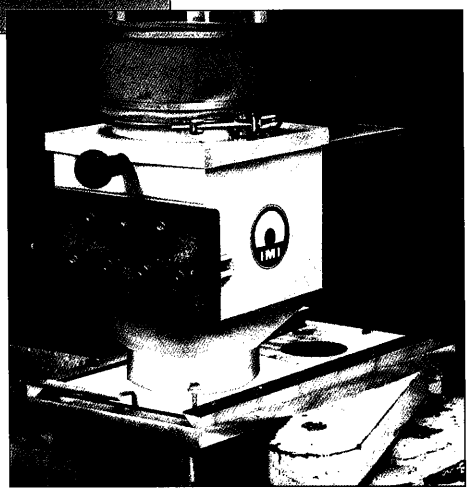
Magnetic Separators for Plastic Processing

Clean Flows™

Built specifically for the plastics industry, IMI's Clean-Flow Drawer-in-Housing improves product purity and protects Injection Molding and Extrusion machines from ferrous tramp metal damage.

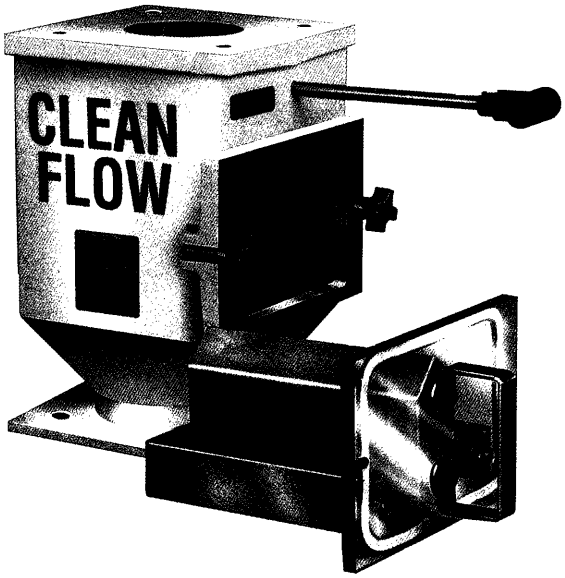


The magnetic drawer can be constructed with either Ceramic, Alnico or Rare Earth material, and uses 1" diameter magnetic tubes on 2" centers to achieve maximum metal separation while maintaining positive product flow. The gasketed drawer has a see through polycarbonate door, and is easily removed from the housing for cleaning captured tramp metal.



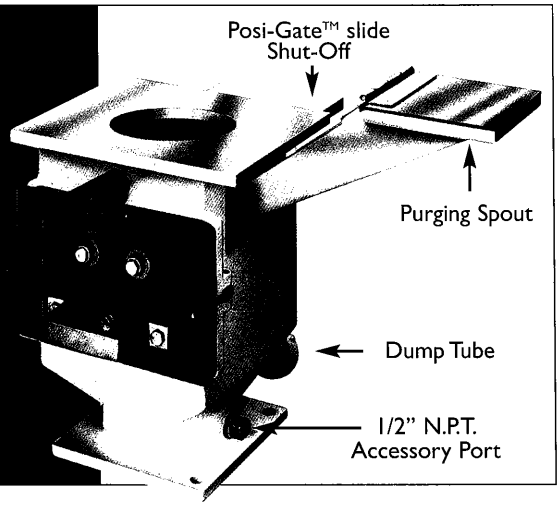
The fully cast ductile iron housings are mounted on the throat opening of your machine and are capable of supporting extremely heavy loads or offset loads from hoppers, dryers, mixers and color feeders. The ductile housing has been tested to withstand over 100,000 pounds of compression pressure and its elasticity absorbs the constant vibration and shaking created by processing machinery.

The Clean-Flow is also available as a fabricated housing with either stainless or mild steel construction, and in EZ Clean or Self-Cleaning models. *For more information, request Tech Sheets 13A through 13C.*



Clean Flow Options:

- Resin Drain Slide: Provides a fast and easy method for material change over. The RDS mounts to the machine throat opening and provides a track for auxiliary equipment to slide on.
- Posi-Gate Slide Shut-off: Stops material flow through housing for quick drawer removal and cleaning.
- Slide Gate Dump Tube: Drains material from the housing.
- Purging Spout: Bypassing hopper for direct feeding of purging compound.
- Top & Bottom Extensions: Accommodates large or irregular mounting plate.
- Accessory Port: Threaded port for adding liquid colorant, thermometer, dew point probe or lubricant.



Liquid Line Magnets

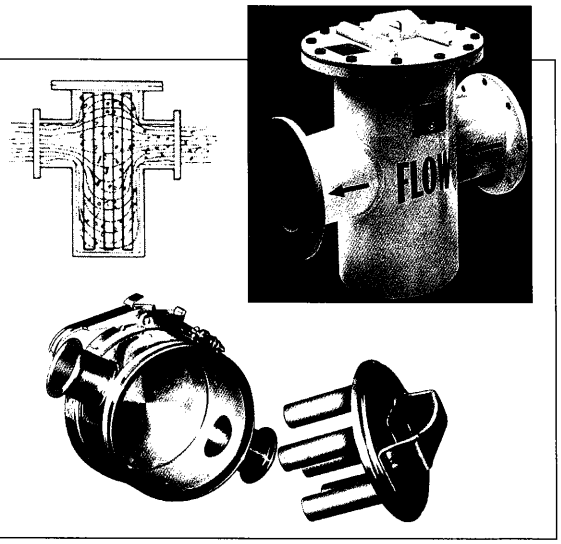
Cage Style "T" Traps

Industrial Magnetics' T-Trap Magnetic separators are designed for heavy duty, large volume liquid and semi-liquid line flow systems.

The T-Trap employs a slip-in cage of stainless steel permanent magnetic tubes, which capture ferrous tramp metal particles and improve the purity of the product. As the particles collect, they migrate to the rear of the tubes where they remain protected from wash-off until the tubes are cleaned.

With its' top access bolt-on steel plate and seal, the T-Trap is easy to clean. Simply remove the top, lift out the magnet cage, wipe clean and reinstall.

Available in 7 standard line sizes from 2" to 18" inches in diameter, IMI T-Trap's can also be produced to meet special applications. *For more information, request Tech Sheets 10A and 10B.*

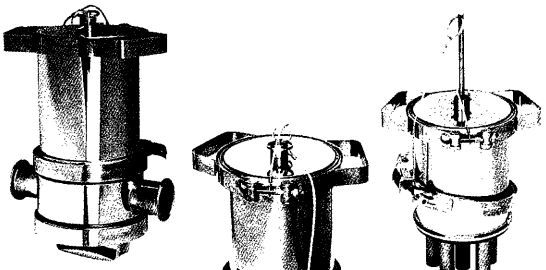


EZ-Clean Cage Style "T" Traps

EZ-Clean T-Trap Magnetic separators make disposing of captured tramp metal a quick & easy process! The EZ-Clean units can be hand operated, or pneumatic actuation can be added to clean the units in automated systems.

Designed with a powerful Rare Earth circuit design, the magnetic tubes capture and securely hold undesirable ferrous metal in 2" to 4" diameter line sizes. To clean, simply unclamp the housing from its base and remove it from the processing line. A quick pull of the housing's cleaning mechanism releases collected metal for disposal.

- Available with air actuated cleaning for certain applications.
- EZ-Clean upgrade packages are available for some styles of manual clean, cage style T-Traps.



Operating Position

Rod Down, magnet in operating position

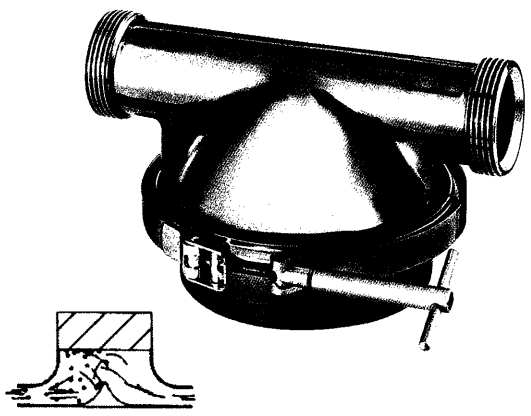
Rod up, magnet in cleaning position

Plate Style "T" Traps

When tramp metal protection is required for liquid lines carrying viscous to fibrous products, the plate style T-Trap is ideal. This magnet allows the product to flow through the housing without causing product bridging. An interior baffle is used to direct the entire product flow towards the powerful plate magnet, ensuring that tramp metal is forced into the magnetic field.

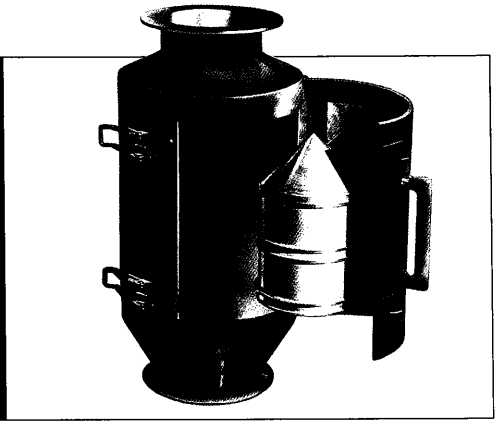
Installation of the plate style magnet can be in any position. Vertical position eliminates the sump area, and in horizontal lines, cleaning is made easier when the magnet element is installed on top.

Available in standard line sizes of 2" and 3" diameters. IMI can also manufacture magnets for special applications or line sizes. *For more information, request Tech Sheets 10A and 10B.*



In Stream Magnetic Separators

Pipe Magnets



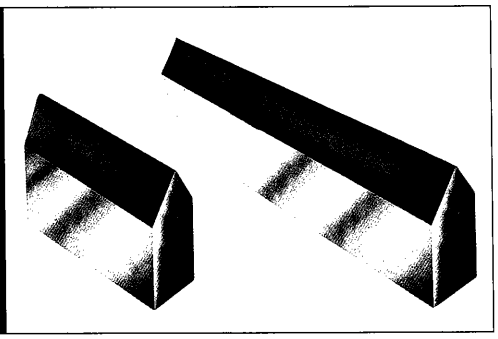
Available in Ceramic, Rare Earth, Alnico and Electromagnetic Designs!

Permanent Pipe Magnets capture ferrous metal contaminates in vertical flow systems. The pipe magnet's design incorporates a cylindrical door mounted magnet that swings open and out of the product flow for safe and easy cleaning.

Constructed of all welded stainless steel, the housing is available in standard sizes to fit 4" to 20" diameter pipes. Typical applications include flour, feed and grain, food processing, powder and bulk, and chemical resin.

Self-cleaning electromagnetic pipe magnets are also available. *For more information see Tech Sheet TRAMP MTL 7A.*

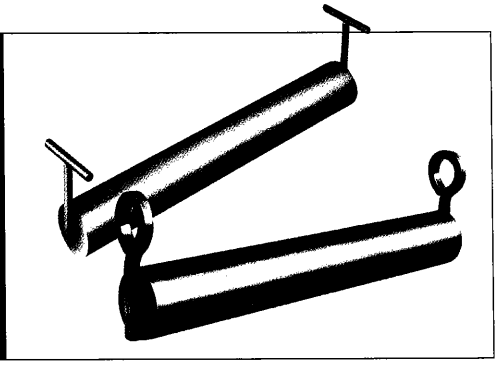
Wedge Magnets



"The Wedge" can be invaluable in any narrow chute application in which tramp metal may be washing off or bypassing other magnets in a system. In many cases the wedge is installed as a "last chance" to catch tramp metal at a final and easily accessible point in the system.

Constructed with a 30° wedge-shaped diverter head to avoid product build up or bridging, the magnet measures 6" high, 2-1/2" thick, with length as ordered. Weight is approximately 2 pounds per inch on length. Available in either Ceramic or Rare Earth with an all-welded stainless steel assembly.

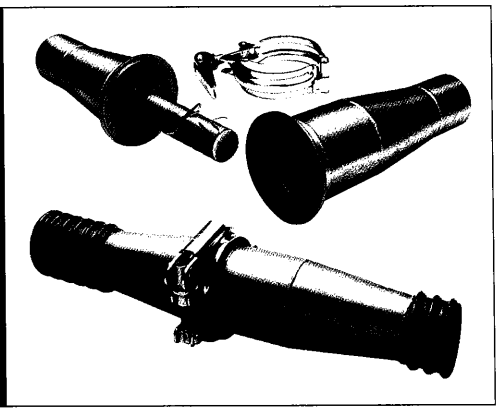
Mud/Ditch Magnets



Protect your pumps, valve seats, rods and liners. The Mud Magnet or Ditch Magnet is designed to capture ferrous metal particles which could cause damage and delays. Install one or more of these magnets in the trough between the shale shaker and the No. 1 mud pit to capture and remove from the mud flow ferrous particles produced by milling, fishing, or routine drilling.

The powerful permanent "Mud Magnet" is housed in a stainless steel cylinder three inches in diameter and 22-3/4" in length. It weighs only 23 pounds. It is easily installed and is easy to remove for cleaning: choose eye bolt-type handles or "T" handles, welded at each end.

Vacuum 4JIT Line Magnet

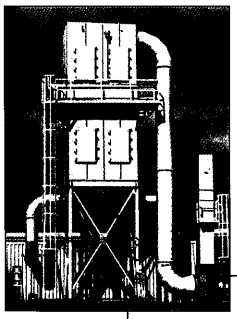


In vacuum systems, located between the gaylord and the vacuum loader, the Vacuum 4JIT magnet captures ferrous tramp contaminates. The powerful Rare Earth Vacuum 4JIT line magnet provides equipment protection and improved product purity without restricting resin flow.

Quickly clean captured tramp metal by removing the disconnect clamp to separate the two halves. Once separated, the powerful rare earth tube is exposed. With a gloved hand or shop rag, simply wipe the collected metal from the magnet and re-connect the halves. Vacuum 4JIT line magnets are available from 1-1/2" to 2-1/2" line sizes. *For more information see IMI Tech Sheet TRAMP MTL 14A.*

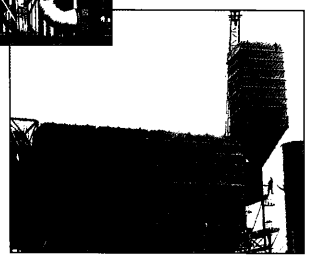
Complete Dust Collection Systems

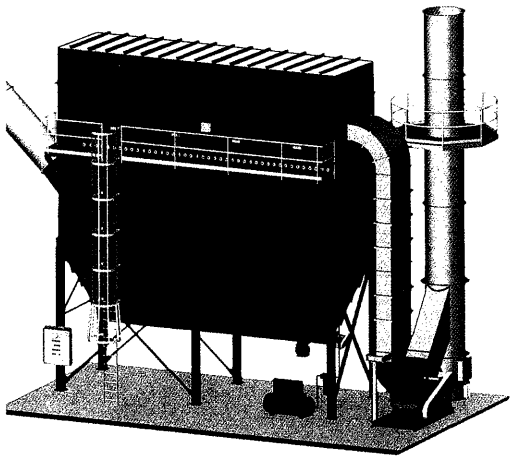
Dust Collection Solutions For A Cleaner Environment



Dust Collection Applications

- Pneumatic Conveying
- Bulk Transport
- Product Loadout Systems
- Bin Vent Systems
- Down Draft Work Benches
- Air Filtration





Dust Collection Markets

• Grain Milling	• Utilities
• Food Processing	• Pharmaceuticals
• Steel Foundries	• Paint
• Chemical Processing	• Mining
• Cement	• Textiles
• Rubber	• Petrochemicals
• Plastics	• Wood

AIRTROL, INC.

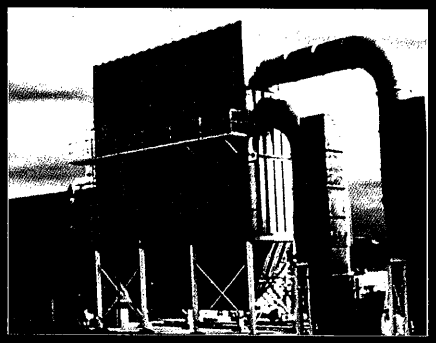
Whatever The Application, Airtrol Delivers

Power (Electric Utilities)

Application: Coal and Limestone
Size of Contract: Five (5) Systems/150,000 CFM Total

Scope Of Supply

• Dust Collector	Yes	• Electrical Design	Yes
• Accessories: Fan, Airlock, Screw Conveyor	Yes	• Electrical Supply	Yes
• Foundation Loadings	Yes	• Compressed Air Design	Yes
• Ductwork Design	Yes	• Compressed Air Supply	Yes
• Ductwork Supply	Yes	• HVAC	Yes
		• Installation	Yes

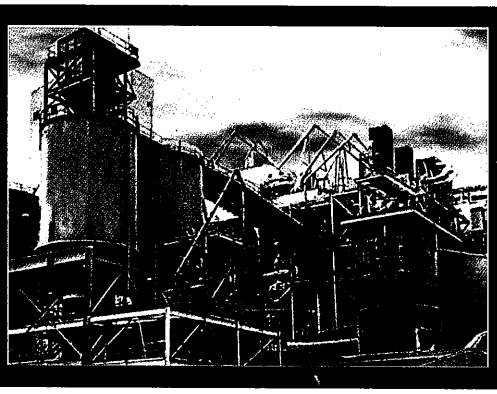


Minerals (Cement)

Application: Cement and Lime
Size of Contract: Eighteen (18) Systems/146,000 CFM Total

Scope Of Supply

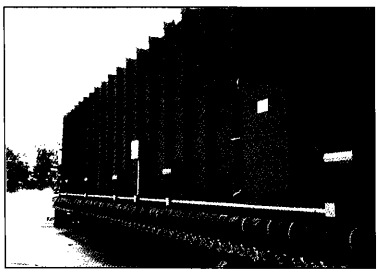
• Dust Collector	Yes	• Electrical Design	Yes
• Accessories: Fan, Airlock, Screw Conveyor	Yes	• Electrical Supply	Yes
• Foundation Loadings	Yes	• Compressed Air Design	Yes
• Ductwork Design	Yes	• Compressed Air Supply	Yes
• Ductwork Supply	Yes	• HVAC	No
		• Installation	Yes



Airtrol Advantages

Factory Assembly

Airtrol pre-pipes and pre-wires the diaphragm valves, solenoid valves, and timer box.



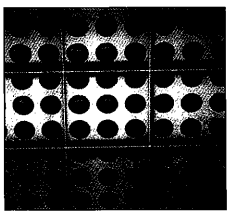
Benefit: Your installation time is reduced, the installation is correct, and the cleaning system operates properly as soon as the dust collector is commissioned.

Weatherproof Construction

Collector utilizes an all welded construction. All vertical stiffeners are stitch welded and caulked (standard white RTV Silicone caulk) prior to painting.

Superior Quality Tubesheet Design

Minimum 3/16" thick tubesheet is reinforced with 1/2" x 4" flatbar between every third bag hole to eliminate deflection. Bag holes are precision laser cut to +.008" tolerance to assure proper bag fit.



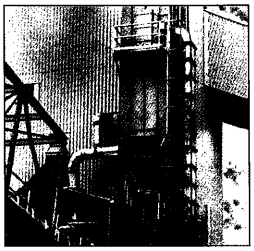
Heavy Stiffening

Airtrol's structural design is the heaviest in the industry with 3" minimum vertical stiffeners on 24" maximum centers, horizontal girth channel as required by the application, and heavy structural legs.

Benefit: Your dust collector will withstand any applicable loads (wind, seismic, etc.) and the reinforced housing will not flex during operation.

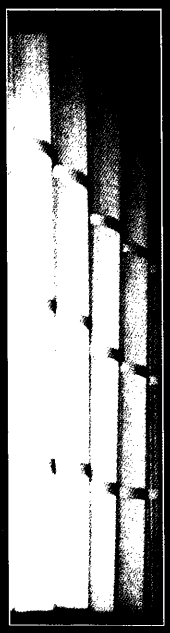
Customized Structural Steel

Airtrol will design and supply structural steel to provide the clearance as required by the customer's application. Necessary access and service platforms can also be provided.



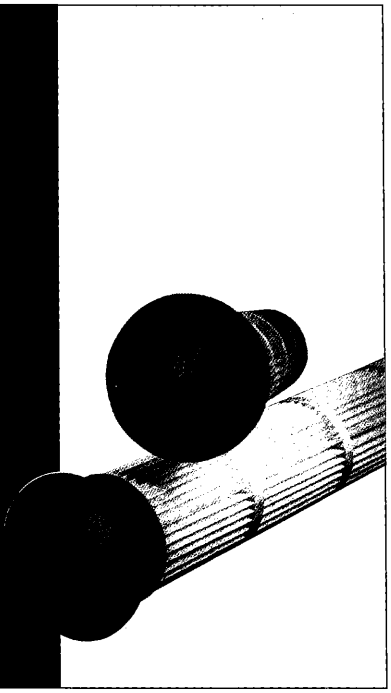
Dust Collector Types

Air Pleat© - Pulse Jet Pleated Element Dust Collectors



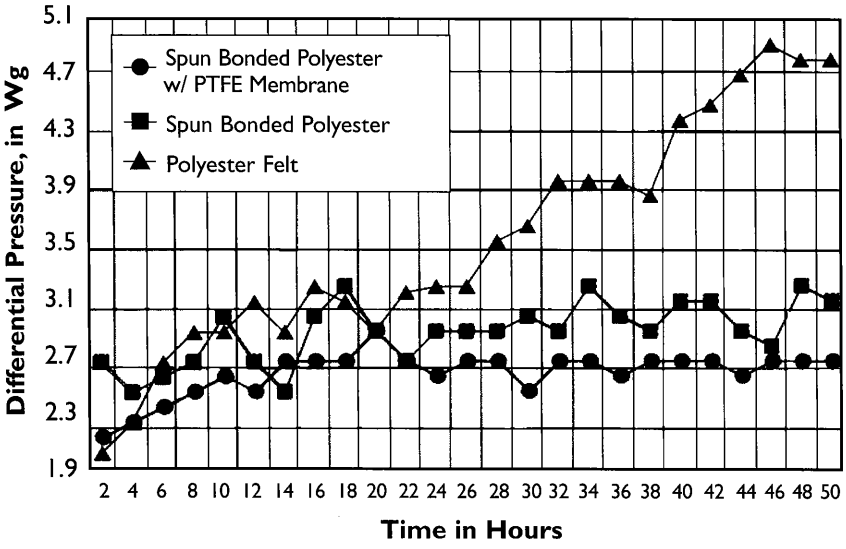
Features and Benefits

- 100% spun bonded polyester media with 99.99+% filtering efficiency and less than half the emissions rate of standard felt media.
- One-piece design eliminates bags and cages and reduces installation time substantially.
- Spun bonded filter element has a filtration surface area 3-4 times more than a similar sized traditional filter bag.
- The standard resilient urethane top ensures a superior fit for a dusttight seal, compared to traditional snap band top and bottom load bag collectors.
- Specialty finishes available including PTFE membrane.
- Surface filtration reduces operating pressure differential. Typical operating ΔP is 2-4" wg.
- Requires lower compressed air pressure to clean. Typical operating pressure is 50-70 psig.
- Shorter length keeps the bottom of the element higher above the inlet gas stream, therefore reducing the potential for abrasion problems.

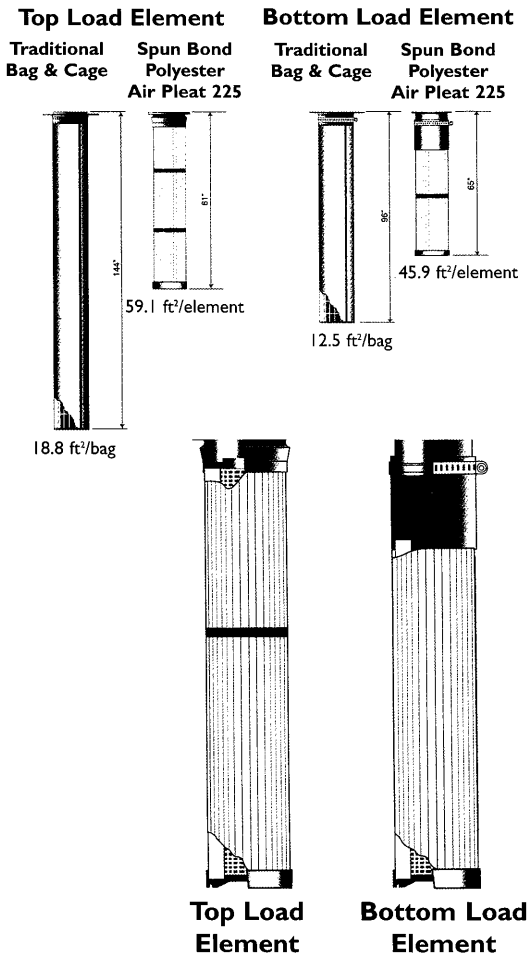


Air Pleat© Technical Data

Differential Pressure



Typical Size Comparison



Standard Construction Features

- Nominal 6 1/4" diameter with other diameters available
- 100% spun bonded polyester media used for Air Pleat 180, 225, 265 elements
- Molded urethane top and bottom construction on Air Pleat 180 and 225 elements
- High temperature media used for Air Pleat 375 elements
- Wide open pleat spacing and shallow pleat depth
- High filtration efficiency
- Polypropylene or perforated metal inner core
- Metal top and bottom on Air Pleat 265 and 375 elements

Available Media

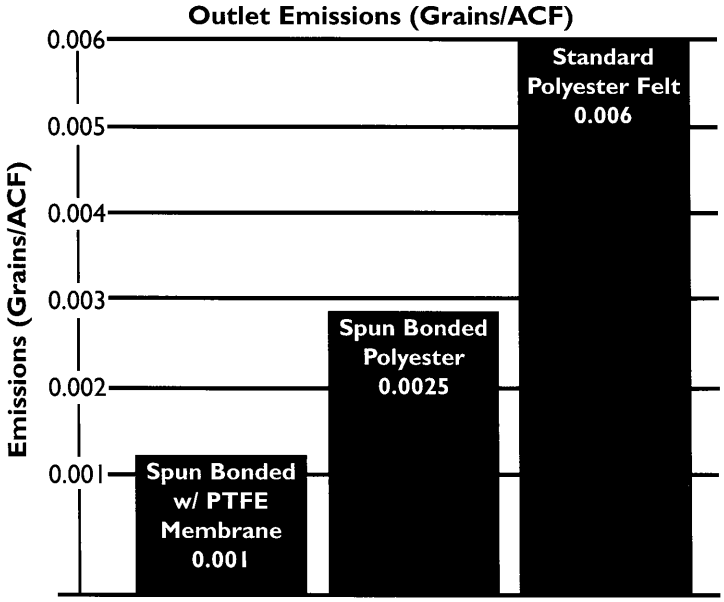
- PE806 White polyester (standard)
- PE807 Metalized finish (static dissipation)
- PE806TR Oil/water repellent finish
- QP840 PTFE membrane bonded to white polyester (PE806)
- PE810 Polyester with conductive impregnation
- QP810 PTFE membrane on polyester with conductive impregnation

Construction Options

- Higher temperature components
- Various lengths from 18" to 81" long
- Special pleat counts

Temperature Options

- Air Pleat® 180 - maximum 180° F (83°C)
- Air Pleat® 225 - maximum 225° F (107° C)
- Air Pleat® 265 - maximum 265° F (130° C)
- Air Pleat® 375 - maximum 375° F (190° C)



Airtrol Model Number Designations

X X X X # # # (I.e. 144BSWS120)

Length of filters (bags, pleated elements, cartridges), inches

S – Hopper Inlet
H – High Side Plenum Inlet
T – Tangential Inlet w/Cyclonic Ring
F – Bin Vent
I – Insertable

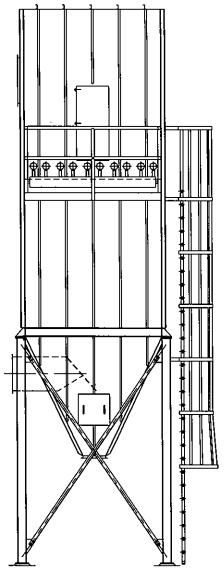
S – Side Access through Dirty Air Plenum
R – Top Access through Roof Doors
W – Top Access through Walk-In Clean Air Plenum

S – Square or Rectangular
R – Round
D – ASME Code Bag and Cage
X – Special

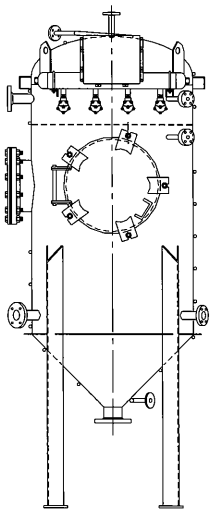
B – Bag and Cage Filters
P – Pleated Element Filters
C – Cartridge Filters

Quantity of filtration media (bags, pleated elements, cartridges)

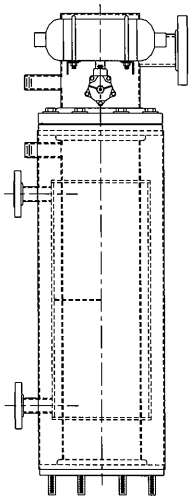
Style of Dust Collector



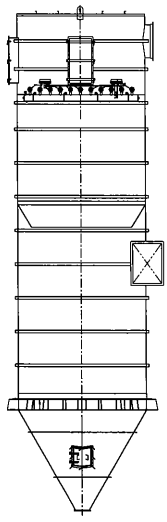
S - Square or Rectangular



D - ASME



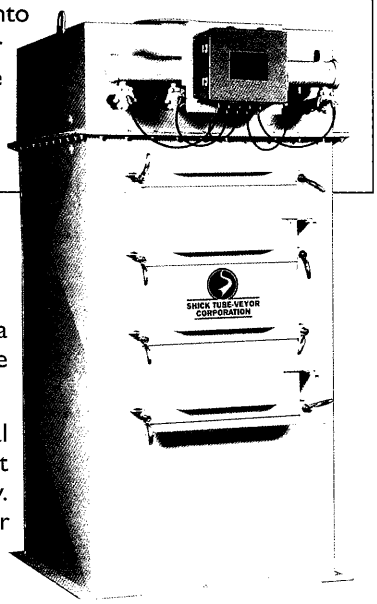
X - Special



R - Round

Auto-Jet Dust Collectors

Shick Tube-Veyor Corporation's full line of Auto-Jet Dust Collectors are designed to effectively separate pneumatic conveyed products from a pressure air stream. Dust infused air enters the unit and passes through a filter bag housing to the clean air plenum and then is expelled near the top of the unit. An electric timer sequentially activates valves which direct a concise burst of compressed air into the bags causing accumulated dust to be released from the bags and fall into the vessel. In addition to reducing facility maintenance requirements, Shick's Auto-Jet Dust Collector will help companies meet stringent air quality regulation and employee safety requirements. These Auto-Jet units are available in a wide range of bag lengths and filtering materials depending on material characteristics. Auto-Jet units can be mounted on a variety of storage vessels.



Features

Clean Air Plenum - Includes mounting flange at tube sheet, lifting lugs, compressed air header with 1" pipe coupling for pressure gauge. 1" pipe coupling for plant air and 1/4" pipe coupling for drain, and diaphragm valves.

Timer Box - Includes pre-wired timer board with adjustable timer for 120 VAC, single phase, 60 hertz and includes solenoid valves. (Other voltages available upon request.)

Bag Housing - Equipped with mating flange at top and bottom, safety grate, and access door.

Nema - 4 and 9 standard, 4X and 7 available.

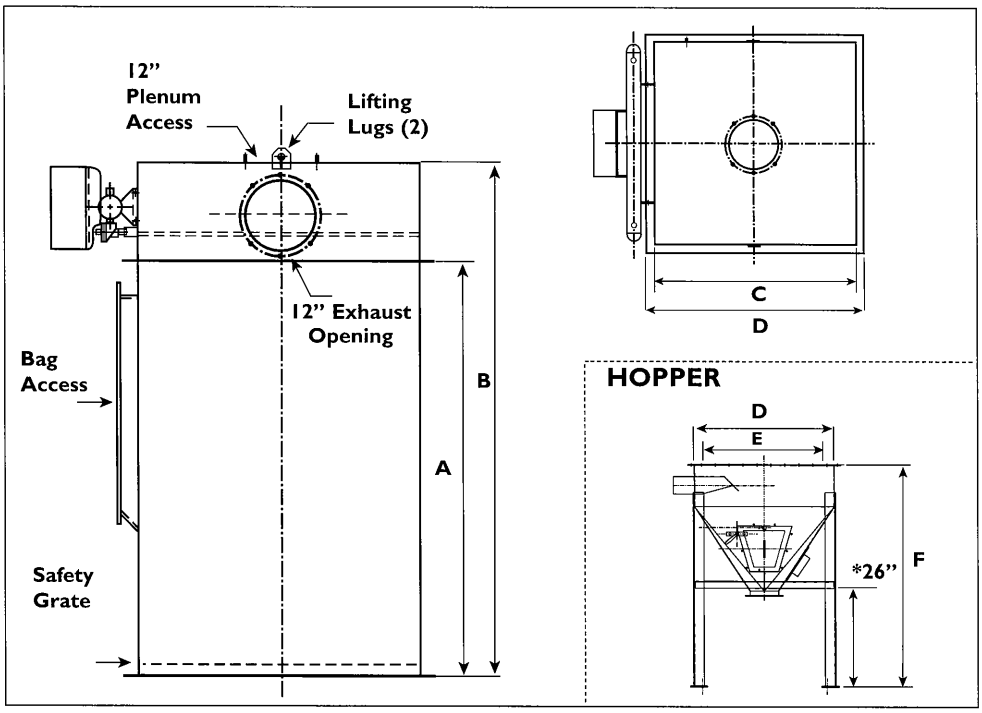
Material of Construction - 12 GA, ASTM 569 carbon steel or ASTM A240 304 stainless steel sheet metal (in material contact or all stainless options.)

Gauges - Supplied with a 0-200 p.s.i.g. gauge and pressure differential gauge (standard).

Carbon Finishes - Internal welds are ground to a 36 grit finish on weld seams only. Internal finish is clear phenolic or epoxy. External paint is primed with white enamel finish coat.

Stainless Steel Finishes - Interior welds ground to a 80 grit finish with no cracks, pits or crevices, hard wheel finish on weld seams only. Exterior welds to be cleaned. Sheet is a 2B mill finish.

Schematics



Auto-Jet Dust Collectors *(continued)*

Options For

Bags:

16 oz. polyester (standard)

16 oz. polyester with ground wire

22 oz. polyester

BHA Tex™ PTFE membrane

Finish:

Stainless: 4B finish sheet with interior welds ground to a 150 grit finish.

Attachments

Consider the following attachments:

1. Hopper with legs
2. Air exhaust screen for outdoor/indoor applications
3. Flanged stub transition
4. Fan with bracket
5. Pressure differential switch

Dimensions - Hopper

Model No.	C	D	F
AJ-9	24/610	28/711	49/1245
AJ-16	32/812	36/914	56/1422
AJ-25	40/1016	44/1117	63/1600
AJ-36	48/1219	52/1321	76/1930
AJ-49	56/1422	60/1524	83/2108
AJ-64	64/1626	68/1727	90/2286

* 26" height is based on 8" discharge and will vary with the size of the discharge.

Dimensions - Unit

Model No.	Cloth Area Sq. Ft.	No. of bags	Comp. Air Req'd (SCFM)	A inch/mm	B inch/mm	C inch/mm	D inch/mm	E inch/mm	Wt.** Lb./Kg.
18AJ-2	4.5	2	3.0	29/737	43/1092	8/203	12/305	18/457	220/100
36AJ-2	9.0	2	3.5	47/1194	63/1600	8/203	12/305	18/457	260/118
36AJ-9	41	9	4.2	47/1194	63/1600	24/610	28/711	24/610	350/159
58AJ-9	66	9	4.5	69/1753	84/2134	24/610	28/711	24/610	450/204
84AJ-9	95	9	5.0	96/2438	112/2845	24/610	28/711	24/610	525/238
36AJ-16	72	16	5.5	47/1194	63/1600	32/813	36/914	32/813	500/227
58AJ-16	116	16	5.8	69/1753	85/2159	32/813	36/914	32/813	625/283
84AJ-16	168	16	6.2	96/2438	112/2845	32/813	36/914	32/813	750/340
36AJ-25	112	25	6.5	47/1194	63/1600	40/1016	44/1118	40/1016	650/295
58AJ-25	182	25	6.7	69/1753	85/2159	40/1016	44/1118	40/1016	800/363
84AJ-25	263	25	7.0	96/2438	112/2845	40/1016	44/1118	40/1016	875/442
36AJ-36	163	36	7.5	47/1194	63/1600	48/1219	52/1321	48/1219	850/386
58AJ-36	262	36	8.0	69/1753	85/2159	48/1219	52/1321	48/1219	925/420
84AJ-36	379	36	8.5	96/2438	112/2845	48/1219	52/1321	48/1219	1000/454
36AJ-49	221	49	8.5	47/1194	63/1600	56/1422	60/1524	56/1422	980/444
58AJ-49	356	49	9.0	69/1753	85/2159	56/1422	60/1524	56/1422	1075/488
84AJ-49	516	49	9.5	96/2438	112/2845	56/1422	60/1524	56/1422	1150/522
36AJ-64	289	64	10.0	47/1194	63/1600	64/1626	68/1727	64/1626	1120/508
58AJ-64	465	64	11.0	69/1753	85/2159	64/1626	68/1727	64/1626	1280/580
84AJ-64	674	64	11.5	96/2438	112/2845	64/1626	68/1727	64/1626	1400/635

** All weights are for carbon steel units and are nominal.

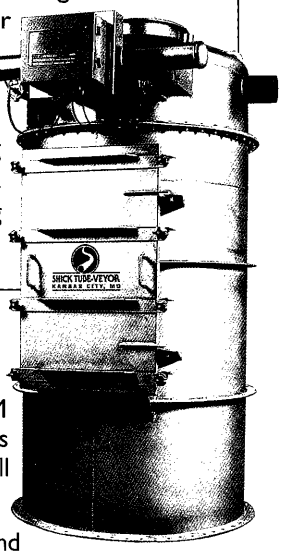
Information on this page is subject to change without notice. Please call for additional information on this and other Shick Tube-Veyor products and services.

Notes

1. Dimension includes tubesheet thickness.
2. NEMA 9 units are shipped with polyester bags with stainless steel ground wire and metal bag cups.
3. Two bags units are not supplied with safety grate.
4. Bags, cages and clamps shipped separately for field installation.
5. Hopper is 60°.
6. AJ-36 Units and above are provided with double bag housing access doors.

Hi-Vac Dust Collectors

Shick Tube-Veyor Corporation's full line of High-Vac Dust Collectors are designed to effectively separate pneumatic conveyed products from a vacuum air stream. Dust infused air enters the unit and passes through a filter bag housing to the clean air plenum and then the clean air is expelled near the top of the unit. An electric timer sequentially activates valves which direct a concise burst of compressed air into the bags causing accumulated dust to be released from the bags and fall into the vessel. In addition to reducing facility maintenance requirements, Shick's High-Vac Dust Collector will help companies meet air quality regulation and employee safety requirements, These High-Vac units are available in a wide range of bag lengths and filtering materials depending on material characteristics. High-Vac units can be mounted on a variety of storage vessels and the cylindrical, reinforced design is suitable for vacuum conveying applications up to 17" Hg.



Features

Clean Air Plenum - Includes mounting flange at tube sheet, lifting lugs, compressed air header with 1" pipe coupling for pressure gauge. 1" pipe coupling for plant air and 1/4" pipe coupling for drain, and diaphragm valves.

Timer Box - Includes pre-wired timer board with adjustable timer for 120 VAC, single phase, 60 hertz and includes solenoid valves. (Other voltages available upon request.)

Bag Housing - Equipped with mating flange at top and bottom, safety grate, and access door.

Nema - 4 and 9 standard, 4X and 7 available.

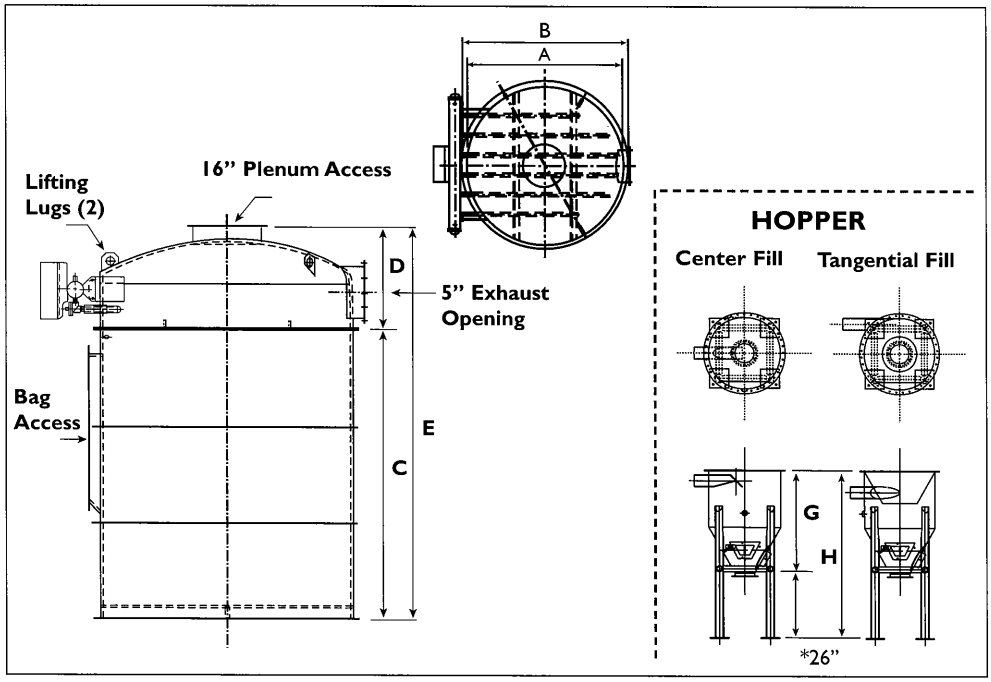
Material of Construction - 12 GA, ASTM 569 carbon steel or ASTM A240 304 stainless steel sheet metal (in material contact or all stainless options.)

Gauges - Supplied with a 0-200 p.s.i.g. gauge and pressure differential gauge (standard).

Carbon Finishes - Internal welds are ground to a 36 grit finish on weld seams only. Internal finish is clear phenolic or epoxy. External paint is primed with white enamel finish coat.

Stainless steel Finishes - Interior welds ground to a 80 grit finish with no cracks, pits or crevices, hard wheel finish on weld seams only. Exterior welds to be cleaned. Sheet is a 2B mill finish.

Schematics



Hi-Vac Dust Collectors *(continued)*

Options For

Bags:

16 oz. polyester (standard)
16 oz. polyester with ground wire
22 oz. polyester
BHA Tex™ PTFE membrane

Finish:

Stainless: 4B finish sheet with interior welds ground to a 150 grit finish.

Attachments

Consider the following attachments:

1. Hopper with legs
2. Stub transition
3. Fan with bracket
4. Pressure differential switch

Notes

1. Dimension includes tubesheet thickness.
2. NEMA 9 units are shipped with polyester bags with stainless steel ground wire and metal bag cups.
3. Bags, cages and clamps shipped separately for field installation.
4. Hopper is 60°.
5. HV-24 Units and above are provided with double bag housing access doors.

Dimensions - Hopper

Model No.	G inch/ mm	H inch/ mm
HV-8	44.625/1133	70.625/1794
HV-14	49.5/1257	75.5/1918
HV-18	54.75/1391	80.75/2051
HV-24	60.25/1530	86.25/2191
HV-30	65.5/1664	91.5/2324
HV-38	70.75/1797	96.75/2457
HV-46	76/1930	102/2591
HV-54	81.25/2064	107.25/2724
HV-64	86.5/2197	112.5/2858
HV-74	91.75/2330	117.75/2991

* 26" height is based on 8" discharge and will vary with the size of the discharge.

Dimensions - Unit

Model No.	Cloth Area Sq. Ft.	No. of bags	Comp. Air (SCFM)	A inch/mm	B inch/mm	C inch/mm	D inch/mm	E inch/mm	Wt.** Lb./Kg.
18HV-8	18	8	4	30/762	34/1864	29/737	20.75/527	49.75/1264	200/91
36HV-8	36	8	4.1	30/762	34/1864	47/1194	20.75/527	67.75/1721	215/98
58HV-8	58	8	4.5	30/762	34/1864	69/1753	20.75/527	89.75/2280	220/100
84HV-8	84	8	5.0	30/762	34/1864	96/2438	20.75/527	116.75/2965	230/104
36HV-14	63	14	4.0	36/914	40/1016	47/1194	21.50/546	68.50/1740	275/125
58HV-14	102	14	5.5	36/914	40/1016	69/1753	21.50/546	90.50/2299	320/145
84HV-14	147	14	5.8	36/914	40/1016	96/2438	21.50/546	117.50/2985	370/168
36HV-18	81	18	5.5	42/1067	46/1168	47/1194	22.19/564	69.19/1757	300/136
58HV-18	131	18	6.0	42/1067	46/1168	69/1753	22.19/564	84.19/2138	375/170
84HV-18	190	18	6.5	42/1067	46/1168	96/2438	22.19/564	118.19/3002	425/193
58HV-24	175	24	6.7	48/1219	52/1321	69/1753	22.75/578	91.75/2330	475/215
84HV-24	253	24	7.0	48/1219	52/1321	96/2438	22.75/578	118.75/3016	530/240
58HV-30	218	30	7.5	54/1372	58/1473	69/1753	23.75/603	92.75/2356	500/227
84HV-30	316	30	7.8	54/1372	58/1473	96/2438	23.75/603	119.75/3042	675/306
58HV-38	276	38	8.0	60/1524	64/1626	69/1753	24.50/622	93.50/2375	680/308
84HV-38	400	38	8.5	60/1524	64/1626	96/2438	24.50/622	120.50/3061	750/340
58HV-46	335	46	9.0	66/1676	70/1778	69/1753	25.50/648	94.50/2400	800/363
84HV-46	484	46	9.5	66/1676	70/1778	96/2438	25.50/648	121.50/3086	910/413
58HV-54	393	54	10.5	72/1829	76/1930	69/1753	26.25/668	95.25/2419	950/431
84HV-54	569	54	11.0	72/1829	76/1930	96/2438	26.25/668	122.25/3105	1100/499
58HV-64	466	64	11.0	78/1981	82/2083	69/1753	27/686	96/2438	1275/578
84HV-64	674	64	11.5	78/1981	82/2083	96/2438	27/686	123/3124	1410/640
58HV-74	538	74	12.5	84/2134	88/2235	69/1753	27.88/708	96.86/2460	1475/669
84HV-74	780	74	13.5	84/2134	88/2235	96/2438	27.88/708	123.86/3146	1650/748

** All weights are for carbon steel units and are nominal.

Information on this page is subject to change without notice. Please call for additional information on this and other Shick Tube-Veyor products and services.

Dust Filtration Bags

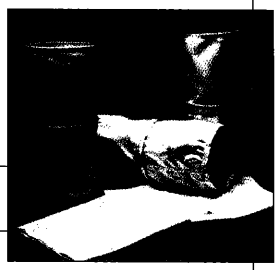
Fiber Reference Chart

FIBER	Acid Resistance	Alkali Resistance	Recommended safe temperature limit	Resistance to Mildew	Characteristics (Dry Filtration)
Cotton	Poor	Fair	210° F	Poor	General application up to 210°F in neutral conditions.
Nylon	Fair	Excellent	275° F	Excellent	Excellent mechanical resistance.
Dacron Polyester	Very Good	Good	300° F	Excellent	High temperature resistance. High tensile strength and mechanical resistance. Excellent dimensional stability.
Poly-propylene	Excellent	Excellent	200° F	Not attacked by Mildew	Excellent resistance to most acids and alkalis. Limited resistance to high temperature. Good resistance to sunlight and abrasion.
"Nomex" Nylon	Fair	Excellent	475° F	Excellent	Excellent resistance to high temperature. High tensile strength and mechanical resistance.

Bags & Sleeves

Dust Filtration Bags

- All OEM Applications
- 12 oz. & 16 oz. Polyester Felt
- Singed, Eggshell and Plain Finishes – Single and Double Sided
- Additional Felts Available Upon Request
- Specialty Fabrics - Nomex®, and Tetratex®
- Automated Fabrication & Superior Quality
- Short Lead Times



Bags, Sleeves & Transitions

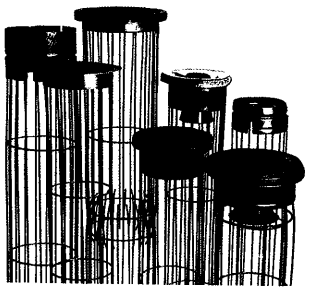
- Vent/Relief Bags
- Load Out Bags
- Material Handling Sleeves
- Standard Sifting & Transition Sleeves
- Diverse Selection of Materials & Fabrication Capabilities
- Custom-Made to Customer Specifications

Fabrication Capabilities

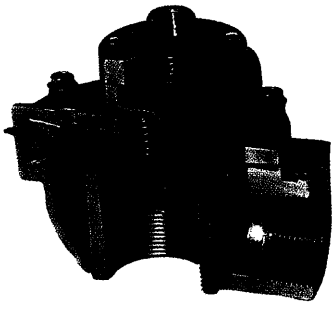
- All Types of Seaming Lapseam, Frenchfold, Serged, Per Specifications
- Circle Closed
- Pillowcase Closed
- Hanger Loops
- Serging
- Grommeting
- Tabs
- Support rings
- Shockcord or Elastic in Hems
- Drawstring
- Ground Wire
- Zippers
- Velcro
- Quilting
- Custom Fabrication

Replacement Parts

Pressure Gauges



Bag Cages



Diaphragm Valves

American Warming & Ventilating Dampers

Nearly a century of dedication to quality products and customer satisfaction has enabled American Warming & Ventilating to become an industry leader in the design and manufacture of industrial and heavy duty dampers.

A division of MESTEK, Inc., American Warming and Ventilating is backed by the finest collection of Engineers and state of the art production equipment to provide the exact damper model for your particular requirements.

We have designed dampers to operate in temperatures from 80° F. to 1800° F.. Pressures to 60 psi, velocities to 10,000 fpm. Clean air to highly corrosive and abrasive.

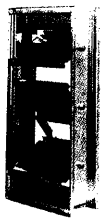
Our designs include nuclear and fossil power station dampers for use in baghouses, precipitators, scrubbers, boilers, air preheaters, gas turbine inlet and exhaust. We have also designed dampers for use in steel, aluminum and paper mills, cement plants, refineries, subways, tunnel, aircraft and submarines.

Regardless of the applications, you can rely on American Warming and Ventilating to develop practical, reliable, economical solutions to your most demanding needs. Let us put our design knowledge to work for you on your next project.

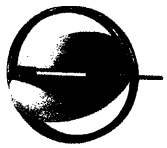
Quick Reference Index

Model	Description	Max. Face Velocity	Max. Pressure	Max. Temperature
Volume Control • Rectangular In-Duct Mount				
VC-1 (Parallel) VC-2 (Opposed)	Hat channel frame, single thk. blades, galv. steel constr.	**2000 fpm** (10 m/s) **3000 fpm** (15 m/s)	**4 in. wg** (1000 Pa)	**200°F** (95°C) w/o seals
VC-8 (Rectangular) VC-9 (Round)	Hat channel frame, single thk. blades, balancing damper, galv. steel const., low pressure, low velocity.	**1500 fpm** (8 m/s)	**1 in. wg** (250 Pa)	**150°F** (65°C)
VC-20 (Parallel) VC-21 (Opposed)	Hat channel frame, single thk. blades, galv. steel constr.	**3000 fpm** (15 m/s)	**2 in. wg** (500 Pa)	**200°F** (95°C) w/o seals **150°F** (65°C) w/ seals
VC-26 (Parallel) VC-27 (Opposed)	Hat channel frame, low leakage airfoil blades, galv. steel constr.	**4000 fpm** (20 m/s)	**6 in. wg** (1500 Pa)	**150°F** (65°C)
VC-28 (Parallel) VC-29 (Opposed)	Hat channel frame, airfoil blades; aluminum constr.	**4000 fpm** (20 m/s)	**6 in. wg** (1500 Pa) thru 48" (1219) W; **3 in. wg** (750 Pa) above 48" (1219) W.	**150°F** (65°C)
VC-30 (Parallel) VC-31 (Opposed)	Hat channel frame, airfoil blades; galv. steel constr.	**3000 fpm** (15 m/s)	**4 in. wg** (1000Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/seals
Volume Control • Round In-Duct Mount				
VC-22	Channel frame, single thk. blades, galv. steel constr.	**3000 fpm** (15 m/s)	**2 in. wg** (500 Pa)	**180°F** (82°C) w/o seals **150°F** (65°C) w/ seals
VC-23	Channel frame, single thk. blades, galv. steel const., vol. control or shut off use.	**3000 fpm** (15 m/s)	**2 in. wg** (500 Pa)	**180°F** (82°C) w/o seals **150°F** (65°C) w/ seals
VC-24	Channel frame, single thk. parallel or opposed blades, galv. steel constr.	**3000 fpm** (15 m/s)	**2 in. wg** (500 Pa)	**180°F** (82°C) w/o seals **150°F** (65°C) w/ seals
VC-25	Sleeve frame, double thk. blades, low leakage, galv. steel constr.	**3000 fpm** (15 m/s)	**2 in. wg** (1500 Pa)	**150°F** (65°C) w/ seals
Volume Control • Rectangular Duct Flange Mount				
VC-411	Channel frame, single thk. parallel or opposed blades, galv. steel constr.	**3000 fpm** (15 m/s)	**10 in. wg** (2500 Pa)	**250°F** (120°C)
VC-412	same as VC-411 above	**5000 fpm** (25 m/s)	**15 in. wg** (3725 Pa)	**250°F** (120°C)
VC-413	Channel frame, parallel or opposed single thk. blades, galv. steel constr.	**6000 fpm** (30 m/s)	**20 in. wg** (4965 Pa)	**250°F** (120°C)
VC-421	Channel frame, airfoil type, single thk. parallel or opposed blades, galv. steel constr.	**3500 fpm** (15 m/s)	**15 in. wg** (3725 Pa)	**250°F** (120°C)
VC-422	(same as VC-421 above)	**5000 fpm** (25 m/s)	**30 in. wg** (7475 Pa)	**250°F** (120°C)
VC-423	(same as VC-421 above)	**6000 fpm** (30 m/s)	**45 in. wg** (11170 Pa)	**250°F** (120°C)
VCA-621	Galv. steel channel frame, parallel or opposed alum. airfoil blades.	**3500 fpm** (17 m/s)	**6 in. wg** (1500 Pa)	**250°F** (120°C)
VCA-822	(same as VCA-621 above)	**5000 fpm** (25 m/s)	**20 in. wg** (4965 Pa)	**250°F** (120°C)
Diffusers				
DF-45/45F	Two and four way diffuser; individually adjustable airfoil blades, galv. steel constr.	**3000 fpm** (15 m/s)	**1 in. wg** (250 Pa)	**250°F** (120°C)
DF-46/46F	Two and four way diffuser; individually adjustable single thk. blades, galv. steel constr.	**2000 fpm** (10 m/s)	**1 in. wg** (250 Pa)	**250°F** (120°C)

VC-1 Parallel Blade

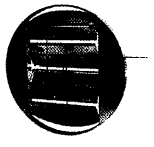


VC-2 Opposed Blade



VC-22

VC-23

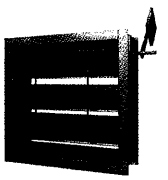


VC-24

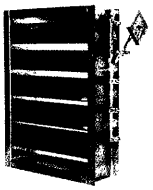
Quick Reference Index *(continued)*

Model	Description	Max. Face Velocity	Max. Pressure	Max. Temperature
Volume Control Dampers • Round Duct Flange Mount				
VC-561	Round isolation damper	**4000 fpm (20 m/s)**	**10 in. wg** (2500 Pa)	**150°F** (65°C)
VC-561	Rolled steel channel frame, round industrial damper.	**3900 fpm (20 m/s)**	**5 in. wg** (1250 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/seals
VC-562	(same as VC-561 above)	**5150 fpm (26 m/s)**	**8.5 in. wg** (2150 Pa)	(same as VC-561 above)
VC-563	(same as VC-561 above)	**6400 fpm (32 m/s)**	**13.5 in. wg** (3375 Pa)	(same as VC-561 above)
Inlet Vanes				
VC-81	Channel frame, single thk. blades, carbon steel constr., light duty.	**3000 fpm** (15 m/s)	**7 in. wg** (1750 Pa)	**250°F** (120°C)
VC-82	Channel frame, single thk. blades, carbon steel constr., medium duty.	**4000 fpm** (20 m/s)	**10 in. wg** (2500 Pa)	**250°F** (120°C)
VC-83	Channel frame, single thk. blades, carbon steel constr., heavy duty.	**6000 fpm** (30 m/s) to **10000 fpm** (50 m/s)	**15 in. wg** (3750 Pa) to **90 in. wg** (22500 Pa)	**250°F** (120°C)
Backdraft Dampers				
BD-40	Galv. steel hat channel frame, single thk. alum. blades, independent blade operation.	**1000 fpm** (5 m/s)	**.5 in. wg** (125 Pa) (Dampers will start to open at approx. **.05 in. wg** (12.5 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
BD-41	(same as BD-40 above except unit has blade to blade linkage.)	**3000 fpm** (15 m/s)	**.5 in. wg** (125 Pa) (Dampers will star to open at approx. **.05 in. wg** (12.5 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
BD-51	Channel frame, single thk. blades, galv. steel constr.	**3900 fpm** (20 m/s)	**.5 in. wg** (1250 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
BD-52	Channel frame, end pivoted airfoil blades, galv. steel constr.	**5150 fpm** (26 m/s)	**8.5 in. wg** (2100 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
BD-53	(same as BD-52 above)	**6400 fpm** (32 m/s)	**13.5 in. wg** (3350 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
Pressure Relief Dampers				
PR-10	Hat channel frame, single thk. tri-formed blades, galv. steel constr.	**3000 fpm** (15 m/s)	**2 in. wg** (500 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
PR-11	Channel frame, single thk. blades, galv. steel constr.	**3900 fpm** (20 m/s)	**5 in. wg** (1250 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
PR-12	Channel frame, end pivoted airfoil blades, galv. steel constr., flanged duct mount.	**5150 fpm** (26 m/s)	**8.5 in. wg** (2100 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals
PR-13	Channel frame, end pivoted airfoil blades, galv. steel constr., flanged duct mount.	**6400 fpm** (32 m/s)	**13.5 in. wg** (3350 Pa)	**250°F** (120°C) w/o seals **150°F** (65°C) w/ seals

BD-51



BD-52



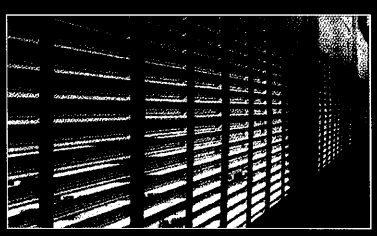
BD-53

Louvers

Adjustable Louvers are available with a variety of operators. Operator selection includes chain, crank, wing nut, worm gear, electric or pneumatic.

All aluminum and most formed adjustable louvers are available with vinyl blade edge seals and metallic compression jamb seals.

Multiple panels are joined by a substantial jackshaft assembly which is driven by one or more actuators.

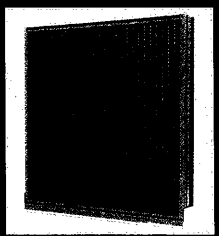


Combination Louvers

The LE-64BD is designed for exhaust applications and for preventing reverse airflow. It consists of a stationary louver and a backdraft damper. The LE-66C, with its combination of stationary and adjustable blades in the closed position. Vinyl blade edge and and jamb seals are standard on LE-66C.

AWV's LE-67VWD Wind Driven Rain Louver

American Warming and Ventilating has developed the LE-67VWD Wind Driven Rain Louver to counter the problem of wind driven rain damage. This extruded aluminum louver permits ZERO water penetration at 1250 fpm on a 48" x 48" louver and is the one that outperforms all other competitive 4", 6" and 8" wind driven rain louvers in the marketplace.



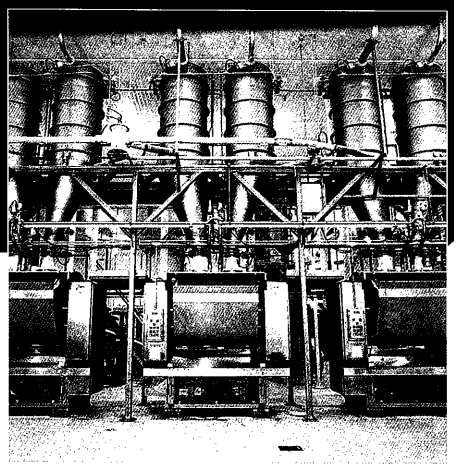
Dehumidification For Pneumatic Conveying Systems

Desiccant Technology

DESICAiR's complete line of dry desiccant dehumidification products represents leading edge technology for the removal of moisture from an air stream. All dehumidifiers include reactivation energy conservation to reduce operating costs.

The company pioneered rotary wheel-style units to remove moisture by the adsorption process using an advanced "silica gel", whereby humidity is adsorbed in the vapor phase. This process allows dehumidification of even cold air streams without frosting or freezing of components.

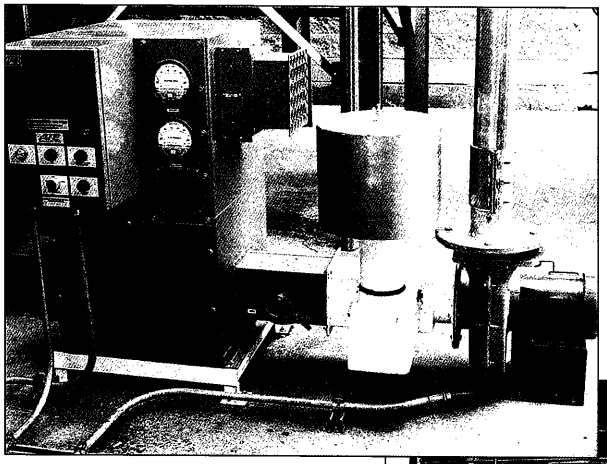
Working together, Thompson-Hill and the DESICAiR Division of Air Technology Systems, Inc. offer customers a powerful resource to meet difficult challenges. We provide the best solutions to customers' most demanding requirements.



A Winning Team

Thompson-Hill – a bulk materials handling specialist with headquarters in Lenexa, Kansas - and the DESICAiR Division of Air Technology Systems, Inc., located in Frederick, Maryland, have teamed up to meet the needs of the bulk materials handling industry. The team has developed a reputation for excellence in designing and installing bulk material handling systems - particularly for food, pharmaceutical, chemical and plastics applications.

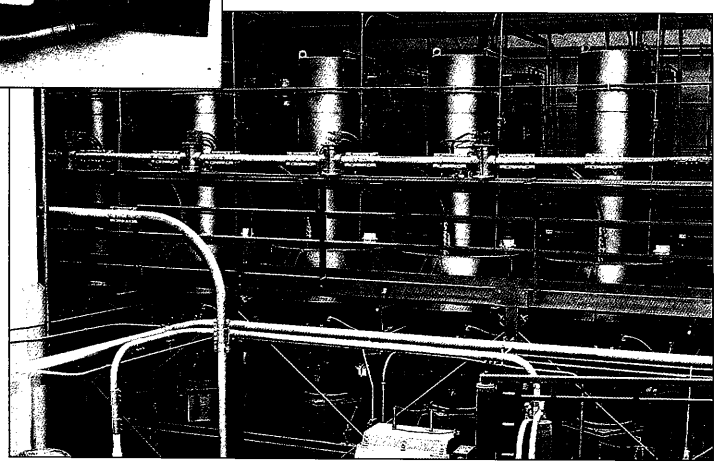
Thompson-Hill has almost two decades of experience applying state-of-the art dehumidification technology to material handling systems that convey and store bulk materials. The firm has earned a reputation for excellence in designing and installing bulk materials handling systems - particularly for food, pharmaceutical, chemical and plastics applications.



We Improve

Bulk Storage By:

- Maintaining product quality and integrity
- Eliminating condensation inside silos
- Preventing mold growth



We Enhance

Pneumatic Conveying Systems By:

- Improving product flow
- Eliminating product buildup inside the conveying line
- Preventing products from sticking together during the conveying run

Hoffman T-Vacs Perform For Industry

The HoffmanT-Vac is characterized by rugged design, low-speed direct-drive exhausters, and extensive separation/filtration capacity. It's no surprise that the T-Vac line is an established top performer handling an extremely diverse variety of materials in all major industries. While many T-Vac applications can be classified as general housekeeping duty, an equally significant number of units are in service removing waste as part of a manufacturing process. So whether your need is simply the removal of dust from a wide area, or the collection of scrap from a point source, a Hoffman T-Vac will perform the job with rugged efficiency, ease of operation, and long term economy. Listed below are examples of some of the more common particulates handled in a variety of industries.

Chemical Manufacturing

- Catalyst
- Plastic Scrap
- Lime
- Carbon Black
- PVC Pellets
- Pigments

Power Generation

- Coal Dust
- Plant Dirt
- Ash Pickup

Electronics Manufacturing

- Clean Room Contaminants
- Solder Reclamation
- Circuit Foil
- Circuit Board Dust

Building Products

- Brick Dust
- Shingle Aggregate
- Gypsum
- Saw Dust

Machinery

- Welding Flux
- Metal Chips
- Machine Dust
- Tungsten Carbide

Food Processing

- Flour
- Crumbs
- Spices
- Cereals
- Packaging Trim
- Chocolate Dust

Agriculture

- Fertilizer
- Feed and Grain
- Silo Dust
- Elevator Refuse

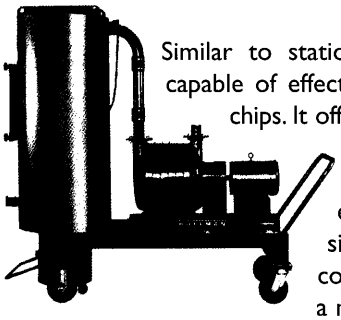
Miscellaneous

- Fiber Scrap
- Textile Wastes
- Powdered Paint
- Sanding Dust
- Wood Chips
- Bark
- Graphite

Pharmaceuticals

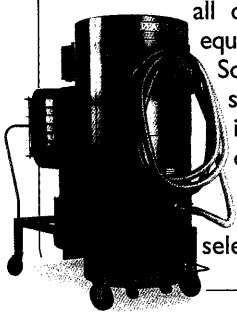
- Tablet Wastes
- Process Dust
- Packaging Scrap
- Clean Room Particulates
- Latex Powder

Mobile T-Vac Units



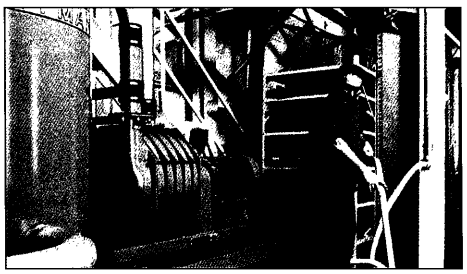
Similar to stationary units the mobile T-Vac is wheel-mounted and capable of effectively collecting anything from fine dust to large metal chips. It offers you unmatched durability versatility and high capacity in a compact and manageable frame. For operation with 3-phase 60 cycle power, these 5 to 9 HP units efficiently collect material in a 100 foot diameter from a single electrical outlet. And depending on the type and concentration of debris the larger T-Vacs can accommodate a number of simultaneous operators.

The Hoffman Solo Vac



The Hoffman Solo Vac portable unit provides the ultimate in ease of handling and all of the ruggedness and reliability expected from Hoffman vacuum equipment. With its direct connected, vertically mounted exhauster, the Solo Vac provides the ability to maneuver through the narrowest spaces with a true heavy-duty unit. Exhauster bearings are independent of the standard NEMA frame motor to extend the life of rotating components and simplify maintenance. Offered in 5 HP and 7 1/2 HP models (SV-50 and SV-75 respectively), the Solo Vac is available with nearly all the optional features and the hose and tool selection larger Hoffman vacuum systems.

Stationary T-Vac Systems

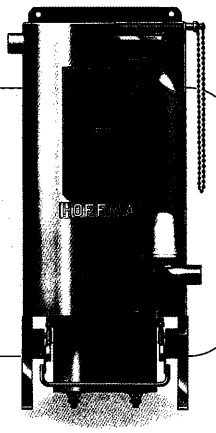


This line of self-contained systems is designed with the rugged construction you demand for industrial service. The T-Vac's compact size combined with a wide variety of available accessories and options makes it the ideal solution for plants of all sizes. The installation of a stationary T-Vac system is ideal for removal of debris or product transport in predictable quantities from established locations. Stationary T-Vac's are permanently installed in a central area from which Smoothflow tubing is run to multiple pick-up locations.

The T-Vac Exhauster

At the heart of every vacuum system is the rotating divide that produces suction. With the T-Vac, this is a durable multi-stage centrifugal exhauster constructed with sheet metal sections. Unlike competitive vacuum units, the T-Vac exhauster is directly driven by a standard 3600 rpm electric motor. This arrangement increases longevity and simplifies maintenance. The "T" series exhauster contains high-strength composite aluminum/carbon steel impellers mounted on a carbon steel shaft. Each end of this dynamically balanced rotating assembly is carried by an outboard ball bearing solidly fixed to a rugged cast-aluminum head. With thousands of units in operation performance of the T-Vac exhauster speaks for itself. It's not only rugged, but the relatively low rotating speed also means that it's quiet, in most instances the unit will be 80 dB or less.

The T-Vac Separator



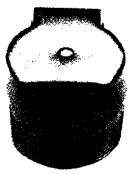
The T-Vac separator is designed to operate as two separators in one. Dirty air enters the bottom inlet and is immediately directed to a deflection plate. In this primary separator region, heavy matter is removed from the air stream by mechanically induced changes in particulate momentum and reductions in air velocity.

Finer particles move with the airstream to the secondary separator region where they are collected by fabric dust bags. With low air-to-cloth ratios, our standard cotton sateen dust bags can handle volumes of different debris without plugging or overloading. And with the combination "primary/secondary" separator bag life is extended as much as possible.

Industrial Vacuum Hose, Tools & Accessories: 1 1/2" & 2"

Inlet Valves

All 1-1/2" inlet valves have 1-1/2" female slip joint connections for 1-1/2" hose and 2" male pipe thread for installation, except latching type valves, which are 1.8" I.D.



Escutcheon Plates

Fit all inlet valves.

Floor Rods

For use with General Duty floor tools.

Overhead Tools

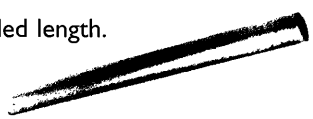
For use with General Duty hand tools adapter and wall or extension rods.

Wall Rod

For use with General Duty brushes.

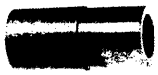
Extension Rod

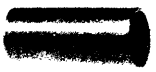
Provides added length.



Hose Accessories

For use on end of hose with hand tools. 1-1/2" female and male slip joints (1 lb.) Provides manual air control.

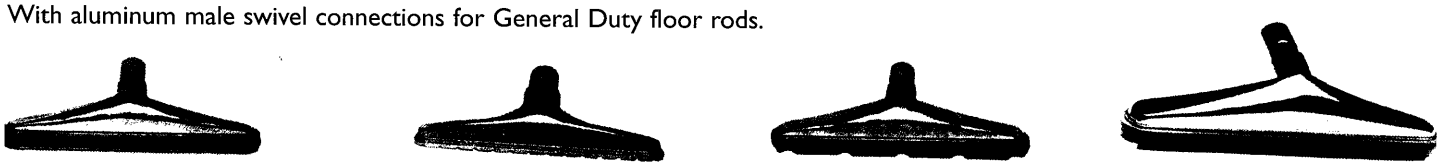




Industrial Vacuum Hose, Tools & Accessories *(continued)*

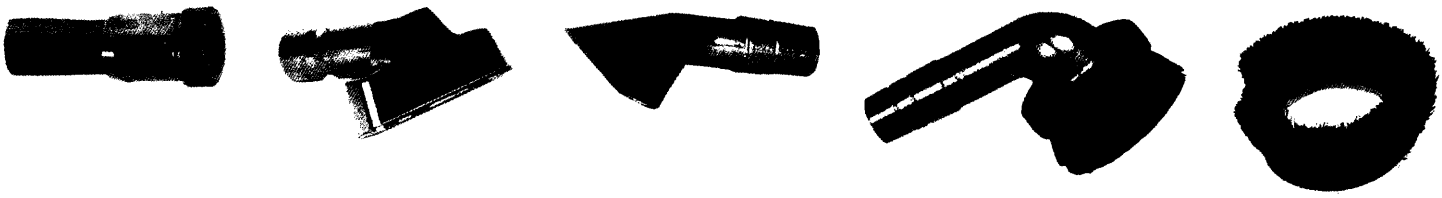
Floor Tools

With aluminum male swivel connections for General Duty floor rods.



Hand Tools

For use with General Duty hand tool adapter and wall or extension rods. All have 1-1/2" male ends.



Hoffman Hose

F A light weight, very flexible, helically reinforced, thermoplastic hose. Hose consists of a wire helix with a single ply cover. (Wt/Ft: .33 lbs.; Max T: 180° F) **Ideal for use in general and industrial applications. This light weight flexible hose offers good air flow characteristics, along with excellent helix-to-cover adhesion.**

XL A light weight, very flexible rubber hose. A static wire of braided stainless steel is spiraled throughout the hose and a high tensile steel reinforcing wire is spiraled in intimate contact with the static wire. The hose has a corrugated, white cloth cover finish. (Wt/Ft: .41 lbs.; Max T: 180°F) **The double grounding features of this hose make it excellent in both general and heavy industrial environments where sparking should be kept to a minimum.**

L A light weight, very flexible hose fabricated of static conductive rubber. In addition, two static wires of braided stainless steel are spiraled throughout the hose, and a high tensile steel reinforcing wire is spiraled in intimate contact with the static wire. A rubber covering gives the hose a black corrugated finish. (Wt/Ft : .53 lbs.; Max T: 180° F) **It's triple grounding feature makes this hose excellent for military and/or explosive environments where conductivity is essential.**

VF A medium weight, very flexible industrial duty hose with smooth vinyl interior and exterior coatings separated by a layer of vinyl foam in the middle. Hose is heavily reinforced with multiple steel wires and nylon cords interwoven in the helix throughout the hose length. (Wt/Ft: .70 lbs.; Max T: -20 to 210° F) **Applicable for use in general and industrial environments where a rugged hose is required. Stands up well to most abrasive products and chemicals. The smooth vinyl surface gives efficient and uninterrupted flow of materials and liquids. The smooth exterior is easy to clean and makes this hose especially recommended for food processing plants. Construction resists crushing, kinking and breaking.**

RS A medium weight, flexible rubber hose with a smooth inner bore. Hose is heavily reinforced with a high tensile steel copperized wire at 40 turns per foot. The cover is a synthetic coated nylon giving a black smooth cover finish. (Wt/Ft: .50 lbs.; Max T: 160°F) **Applicable for use in general and heavy industrial environments where a rugged hose is required for floor, wall and hand cleaning operations.**

HS A heavy duty, flexible, abrasion resistant rubber hose with a smooth inner bore. Hose is heavily reinforced with a high tensile steel copperized wire at 40 turns per foot. The cover is a synthetic coated nylon giving a black smooth cover finish. (Wt/Ft: .60 lbs.; Max T: 160°F) **Applicable for use in heavy industrial environments where a rugged hose is required for floor, wall and hand cleaning operations.**

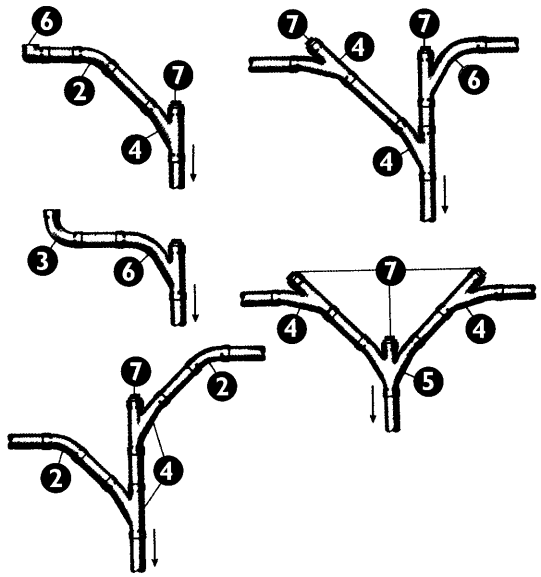
M A heavy duty flexible metal hose constructed of a continuous strip of metal spirally wound so that the edges interlock to form hose. (Wt/Ft: .90 lbs.; Max T: 300°F) **Applicable for use in heavy industrial environments for temperatures up to 300° F.**

Smooth Flow-Tubing & Fittings

The majority of central vacuum cleaning and in-plant pneumatic conveying systems effectively utilize lightweight smooth flow tubing and fittings in place of heavy cast iron piping and drainage fittings. Smooth flow provides an efficient and cost effective piping system available in sizes from 2" to12", and gauges 16 through 12. With the range of fittings available, system design and installation are easily accomplished. One added benefit: since free air flow decreases friction loss, the most efficient exhauster can be utilized. Smooth flow materials of construction include plain carbon steel, zinc coated (galvanized) carbon steel, 304 Stainless Steel and 6061 Aluminum.

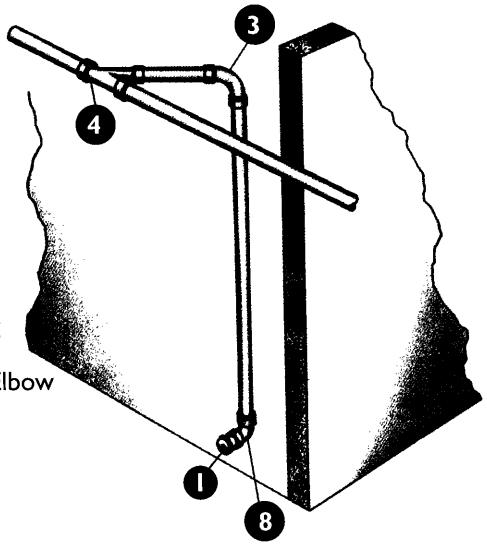
Hoffman representatives will facilitate the installation of your system by providing layout drawings and information on the correct method for installation. A full supply of tubing and fittings are available from our stock.

Typical Plan Views



1. Inlet Valve
2. 45° Elbow
3. 90° Elbow
4. 45° Y
5. Double 45° Y
6. 90° TY
7. Cleanout Plug
8. 90° Adapter Elbow

Typical Drop Showing Side Pipe Take-Off



Expanded Fitting

Compression Coupling

Note: The above methods of joining are intended for use only in vacuum and low pressure (under 15 PSIG) pneumatic material handing systems.

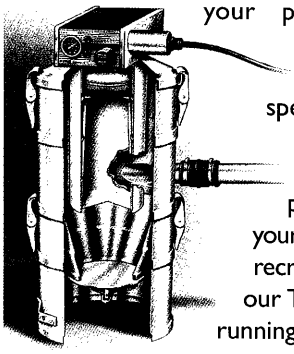
Shrink Sleeve

Note: Shrink sleeve is intended for use only in vacuum and low pressure (under 10 PSIG @ 120°F) pneumatic material handling systems.

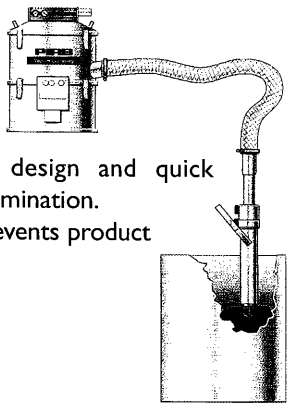
Slip Coupling

The Best Solution For Transferring Bulk Powders

Whether you're transporting powder from drums, super sacks, bags or process equipment, PIAB's exclusive air-driven vacuum conveyor systems make it all happen. Precisely for your process or packaging application. Without mechanical moving parts. With far greater efficiency and speed. With far less downtime. First we design a system powered by PiAB's respected multi-ejector vacuum pump. A solution configured exactly to yours and your industry's demands. Then we recreate your conveyance environment in our Test Center and test your new system running your materials.



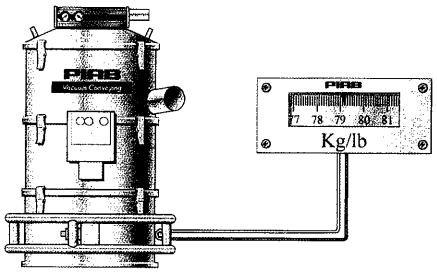
PIAB's Vacuum Conveyor System Advantages



- Sanitary. USDA/FDA approved, stainless steel construction with no motor or oils.
- Hygienic. Lightweight modular design and quick change filters prevent cross-contamination.
- Dust free. Vacuum technology prevents product blow-by or leakage.
- Virtually maintenance-free
- No vibrations or oil mist
- Compact size
- Easy installation
- 5-year guarantee

Process Guarantee

Because we can recreate your system in our own PIAB Test Center, we can confidently guarantee that your PIAB conveyor system will work to your satisfaction every time.



Versatility

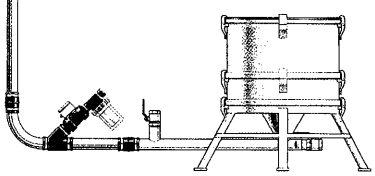
The design of PIAB vacuum modules and accessories allows us to bring an effective vacuum system solution to a wide range of processes and environments. In conveying particulate and granular materials, for example, feeding can be accomplished directly from the bag or other open container, from a hopper or feed station, from a bulk-bag or silo, and even from process equipment. Over 100 standard vacuum module configurations are available to suit your application. Both feeding and receiving points are adjustable. PIAB's pneumatically driven vacuum pumps require only compressed-air connection for flexible installation.

Custom Engineering

Beyond the versatility of our standard systems, PIAB also offers you expertise in the design of special-purpose units incorporating, for instance, custom receivers, special-diameter piping, separate filter systems or weighing modules for more accurate batching. Whatever your specific conveying need, we can build the solution for it at PIAB.

Efficiency

PIAB Vacuum Conveyors transport materials both vertically and horizontally with far greater efficiency, reliability and speed than manual or mechanical material-handling techniques.

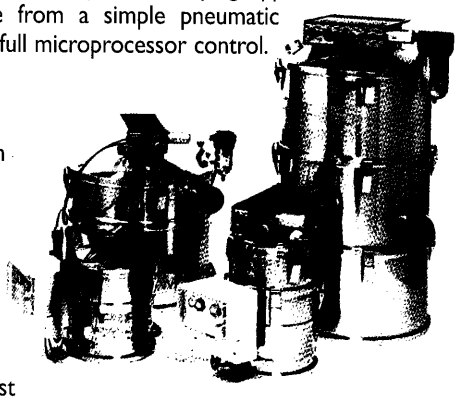


Environmental Safety

As an essentially or fully sealed system, your PIAB vacuum conveyor prevents the entrance of potentially harmful – or costly – raw materials into the workplace, even in the event of an internal leak. Further, conveying systems can be grounded to minimize the risk of dust explosions, while any toxic or noxious gases can be diverted with an exhaust adapter.

Control Options

Depending upon the demands of your conveying application, system control can range from a simple pneumatic switch or electric timer to full microprocessor control.



Reliability

PIAB vacuum pumps, driven solely by compressed air, contain no mechanical moving parts, minimizing the routine maintenance and downtime. To further enhance system reliability, all components are manufactured from the most durable quality materials, including high-grade polished 316 stainless steel.

Hygiene (USDA/FDA approved)

The PIAB Vacuum Conveyor is available in a USDA version which is approved for federally inspected meat and poultry plants.

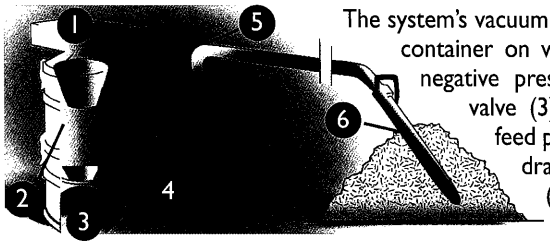
Conveyor System Characteristics

Vacuum Conveyor	Internal Volume (ft3)	Weight (pounds)	Sound Level (dBA)	Air Consumption at 87 psi** (scfm)	Dimensions (inches)	Vacuum Inlet (inches)
VC100	.04	22.0	60-65	12.72	11.5x15.2	1.25"
VCP100	**.14**	**26.4**	**60-65**	**12.72**	**11.5x20.5**	**1.25"**
VC200	.14	33.0	72-76	25.44	11.5x21.6	2.00"
VCP200	**.14**	**37.4**	**72-76**	**25.44**	**11.5x26.7**	**2.00"**
VC400	.14	37.4	72-76	50.88	11.5x26.7	2.00"
VCP400	**.14**	**46.2**	**72-76**	**50.88**	**11.5x37.1**	**2.00"**
VC400L	.64	74.9	72-76	50.88	22.4x25.7	4.00"
VC800	**.64**	**94.7**	**72-76**	**101.76**	**22.4x31.1**	**4.00"**
VCP800	.64	116.7	72-76	101.76	22.4x43.2	4.00"
VC1200	**.64**	**121.1**	**72-76**	**152.64**	**22.4x43.2**	**4.00"**
VCP1200	.64	143.2	72-76	152.64	22.4x55.3	4.00"

** All PIAB Vacuum Conveyors are equipped with a PIAB Vacuum Pump.

The Operating Principle

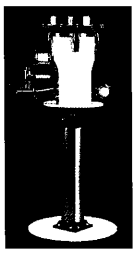
Although the diversity of potential applications and system designs necessitates a range of individual, sometimes unique, solutions, the basic operation of PIAB's Vacuum Conveyors may be illustrated as follows:



The system's vacuum pump (1) evacuates the receiving container on which it is mounted (2), creating negative pressure that closes the discharge valve (3) and initiates suctioning at the feed point (6). The suctioned material is drawn through the system's pipeline (5) into the receiving container, emptying through the discharge valve, which opens when the pump stops (pneumatically or automatically). The filter element (4), which prevents particles from entering the pump or work environment, holds a reservoir of compressed air during system operation then releases it to purge itself at pump shut-off. Running and discharge cycles may be regulated by timer or microprocessor control.

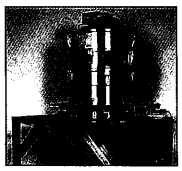
To Complete Your PIAB Vacuum Conveying System . . .

Bulk Bag Unloaders



Our bulk bag unloaders feature an inflatable seal for a dust-tight attachment. Using an air cylinder to break up any bridging gives it a compact design. The bulk bag unloader is also portable as it can be put on casters and quickly maneuvered around.

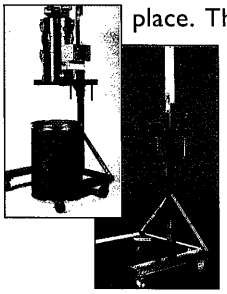
Discharging & Dosing System



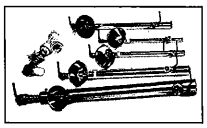
Combined multi-purpose Discharging and Dosing System for free- to difficult flowing bulk powders with unique advantages regarding hygiene, dosing accuracy, flexibility and reliability.

Portable Cart

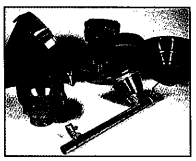
This portable stand provides for more application possibilities. The conveyor can be easily moved around on demand with its 6"sanitary casters that can be locked in place. The stand allows the conveyor to be placed over drums of 17" to 22" diameters with the drum's height of between 14" to 35". The stand is made of 304 SS with 2B mill finish and weighs 65 pounds. Custom stands can be produced to your own specifications.



Conical Feed Adapters

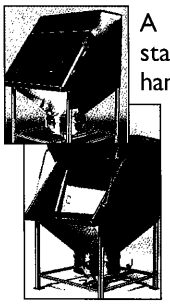


Our conical feed adapters provide the correct proportions of material and air by using adjustable ball valves on each end of the adapter. The conical design allows the product to completely empty from the adapter which reduces cleaning or change out times. All product contact surfaces are made in AISI316 SS, pipe sizes from 1.25" to 4" diameter.



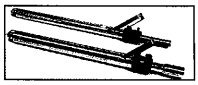
Custom Stainless Steel Components Available.

Bag Dump Station



A sanitary bag dump work station for ergonomic bag handling. The stainless steel bag dump station incorporates the innovative PIAB fluid cone for complete discharge of even the most difficult materials. It is also available without fluidization.

Feed Wands



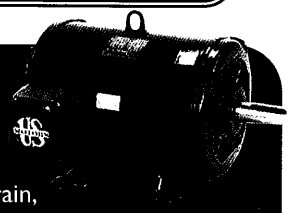
Designed to prevent the suctioning of plastic liners while drawing from barrels, these stainless steel nozzles employ a double inner tube to aspirate even dense materials.

INTRODUCING THE WORLD MOTOR

U.S. Electrical Motors is proud to announce the introduction of the World Motor into the integral horsepower motor market. The World Motor is more than just another energy efficient motor – this product incorporates World Class design ...World Class features ... and World Class testing.

Our World Motor, introduced in 1997, lends itself to international requirements and is available in open dripproof, totally enclosed fan cooled and hostile duty cast iron designs.

WORLD MOTOR

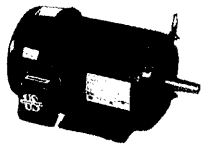


Open Dripproof

Open motors, types FR and FD, are constructed to minimize the entrance of rain, snow and airborne particles. Our enclosures exceed NEMA requirements because U.S. Motors has built in the extra protection needed for rugged outdoor applications. The ventilation system is designed to provide optimum cooling for both windings and bearings. Motor type FD is steel frame from 56 through 320 T. Type FR is constructed of cast iron and is available from 360 through 449T frame.

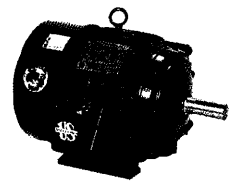
Unimount® Totally Enclosed Fan Cooled

Designed to feed a wide range of solids and powders in gravity, pressure or vacuum applications. The exclusive Tapered Rotor Design allows rotor clearance to be field adjusted without rotor removal. This can be used to compensate for temperature, wear or product variations. The Tapered Rotor Design also simplifies tear-down and reassembly. The "V" neck inlet reduces product shearing. Cast bodies, precision machining, adjustable packing glands and permanently sealed outboard bearings assure high reliability and long operating life.



Hostile Duty

Totally Enclosed Hostile Duty machines, type FCT, are available for more demanding environments. The rugged cast iron frame and end bells provide greater durability (140 frame is rolled steel). The Corro-Duty® paint withstands a 250 hour salt spray for added protection. Cast iron conduit box and fan guard kits are available to upgrade to full Corro-Duty® for corrosive atmospheres. The Hostile Duty is available from 1 through 200 horsepower in frames 140 through 447T.



New Energy Laws

As global concern for energy conservation increases, more countries acknowledge and appreciate the need for motors with higher efficiency levels. The U.S., Canada and Mexico have all passed legislation stipulating that integral horsepower motors meet efficiencies shown in NEMAMG1, 12-10. In the U.S., the Energy Policy Act of 1992 (EPACT '92) becomes effective October 24, 1997 and impacts the following types of squirrel cage induction motors:

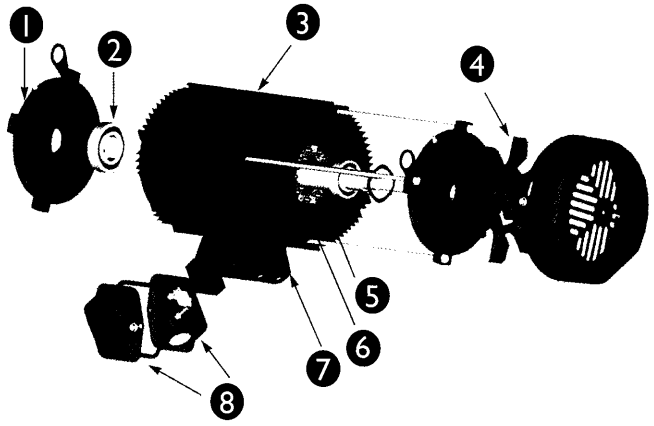
• General Purpose	• Foot Mounted
• Open and Enclosed	• Design A or B
• NEMA T-Frame	• 230/460
• Single Speed	• 60 Hertz, Three Phase

Other types of motors not immediately covered by the legislation, such as labeled hazardous location motors, have an additional two year window to come into compliance. Definite and special purpose motors are not currently included in the legislation.

The World Motor was designed with these efficiency requirements in mind.

A Closer Look at the World Motor

1. C-Face and D-Flange kits available
2. Double shielded vacuum degassed bearings on most ratings
3. Corro-Duty® type paint withstands 250 hour salt spray test
4. Non-sparking polypropylene fans on all TEFC ratings
5. Low loss lamination steel and increased active material for energy efficiency
6. 250 frames and larger ratings suitable for Wye-Delta starting
7. Removable base on all Unimount® TEFC ratings
8. Terminal block and cable gland kits available



Product Features

		Open Dripproof	Open Dripproof	TEFC Unimount	TEFC Hostile Duty
Type		"FD"	"FR"	"FUT"	"FCT"
Frame Material		Steel	Cast Iron	Aluminum (56-140 Rolled Steel)	Cast Iron (140 Rolled Steel)
End Shield Material		140-250 Aluminum 280-320 Cast Iron	Cast Iron	Aluminum	Cast Iron
Paint		Corro-Duty (250 hour salt spray)	Corro-Duty (250 hour salt spray)	Corro-Duty (250 hour salt spray)	Corro-Duty (250 hour salt spray)
Horsepower Range		1/3 thru 60 HP	30 thru 400 HP	1 thru 30 HP	1 thru 200 HP
Frame Sizes		56 thru 320 T Frame	360 thru 449T Frame	56 thru 286T Frame	140 thru 447T Frame
CE Mark on Nameplate		Yes	Yes	Yes	Yes
Phase		Three phase	Three phase	Three phase	Three phase
Speeds	**60 Hz**	3600-900 rpm	3600-900 rpm	3600-900 rpm	3600-900 rpm
	50 Hz	3000-750 rpm	3000-750 rpm	3000-750 rpm	3000-750 rpm
Voltage	**60 Hz**	200, 208-230/460, 460, 575 volt	200, 230/460, 460, 575 volt	200, 208/460, 460, 575 volt	200, 208/460, 460, 575 volt
	50 Hz	190/380, 380 volt	190/380, 380 volt	190/380, 380 volt	190/380, 380 volt
Hertz		50/60 hertz on 230/460 volt & 460 volt only, 60 Hz on 200 & 575 volt	50/60 hertz on 230/460 volt & 460 volt only, 60 Hz on 200 & 575 volt	50/60 hertz on 230/460 volt & 460 volt only, 60 Hz on 200 & 575 volt	50/60 hertz on 230/460 volt & 460 volt only, 60 Hz on 200 & 575 volt
Service Factor		1.15 on 60 Hz 1.0 on 50 Hz	1.15 on 60 Hz 1.0 on 50 Hz	1.25 on 60 Hz 1.0 on 50 Hz	1.25 on 60 Hz 1.0 on 50 Hz
Starting Method					
Across-the-Line		56-360T	360-449T	56-280T	56-447T
Wye-Delta		250-360T	360-449T	250-280T	250-447T
Part Winding start		56-360T	360-449T	56-280T	56-447T
Bearing type		Sealed on 56-140T Double shielded 180-320T	Double shielded 360T Open 400-440T	Shielded on 56-140T Double shielded 180-280T	Double shielded 140-360T Open 400-440T
Regreasing Provisions		Yes 180 Frame and larger	Yes	Shaft End	250 Frame and larger

Electrical Components

Full Line Control From Square D

Square D is a worldwide supplier of products, systems and services for the distribution, application and control of electrical energy. We've been serving industrial and construction markets, as well as public utilities, individual consumers and government agencies for over 85 years.

We offer unsurpassed quality and innovative design, the largest distribution and delivery network in the industry, and a committed staff of trained sales representatives and service technicians willing to stand behind every product we sell.

Our full line of control products includes:

- Push Buttons, Selector Switches and Pilot Lights
- Foot Switches
- Relays, Timers and Terminal Blocks
- Limit Switches and Pressure Switches
- Solid State Sensors
- Definite Purpose Contractors and Starters
- Manual Starters and Switches
- Combination Starters
- IEC Contractors and Overload Relays
- Control Transformers
- Lighting Contractors
- AC Drives
- Medium Voltage Control
- Crane Control

Control Stations & Enclosures

Standard Duty Control Stations. Square D offers a complete line of standard duty control stations that are designed for use with magnetic starters to govern the starting, stopping or reversing of all types of electric motors. Surface and flush mounting general duty types and watertight and hazardous location versions are available.

Security Control Stations. Available in cast aluminum for surface mounting or stainless steel for flush mounting. Square D's security control stations are recommended for a variety of applications including control of overhead doors and gates in stores, shopping centers, warehouses, parking garages and commercial buildings.

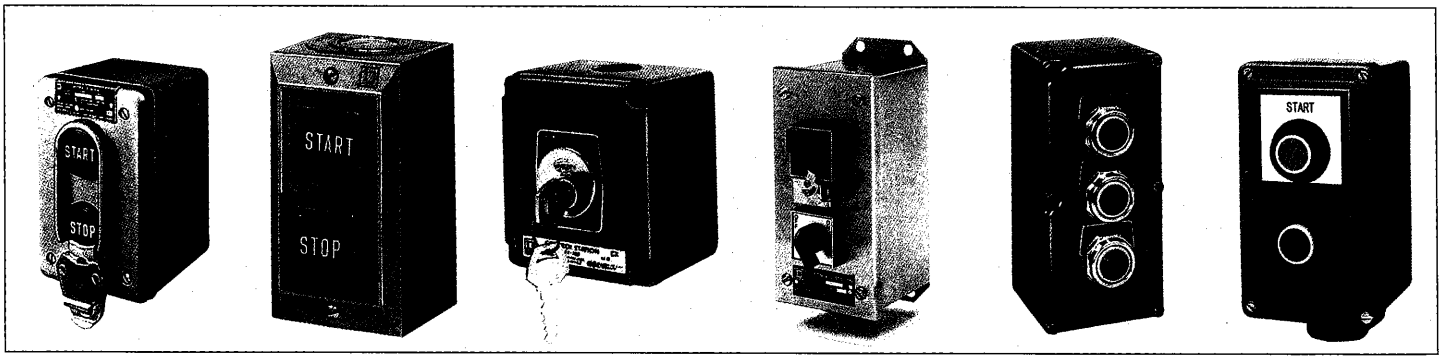
Control Stations and Enclosures. Square D offers a complete line of assembled control stations that are designed to meet virtually any application needed. Factory assembled standard stations are available or order enclosures and operators and assemble to your specifications.

Custom stations with up to 30 units will be delivered in three days or less from our factory with no additional charge for assembly.

Die-Cast Aluminum Enclosures. Square D's type KY die-cast aluminum enclosures are rated for both NEMA and UL Types 1,3,4, and 13 oiltight, watertight and dusttight applications.

Stainless steel Enclosures. Type KYSS stainless steel enclosures are rated for both NEMA and UL Types 1, 3, 4, 4X and 13 oiltight, watertight, dusttight and corrosion resistant applications.

Fiberglass Enclosures. Square D's Type SKY fiberglass enclosures are rated for both NEMA and UL Types 1, 3, 4, 4X and 13 oiltight, watertight, dusttight and corrosion resistant applications.



Circuit Breakers

A Simple Case For Protection, Transformation And Termination

Our full line of operating mechanisms and door closing mechanisms are designed to be rugged, yet easy to install, easy to operate, and easily convertible from right hand to left hand flange mounting.

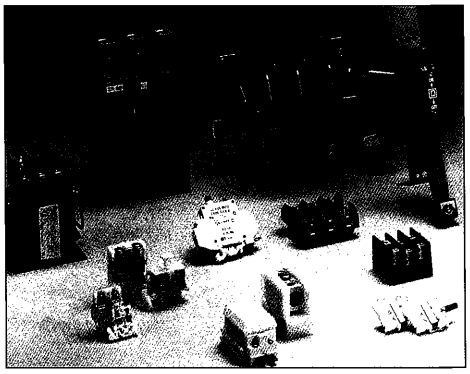
A wide variety of flange mounted, variable depth disconnect switches, fusible or non-fusible, with visible blades and accessories simplify all 30 through 400 ampere applications.

In addition, both flange and door mounted operating mechanisms (15 through 1000 amperes) are available for use with Square D circuit breakers as main or branch circuit disconnect devices in control enclosures. They feature NEMA 1, 3, 3R, and 12 handle assemblies, mechanical door interlocks, and padlock provisions which allow the handle to be padlocked in the "off" position.

Also, a complete line of UL listed, CSA certified and IEC rated thermal-magnetic molded case circuit breakers are available in one, two, and three pole, and in 100 through 2500 ampere frames with standard interrupting 240Vac/250Vdc through high interrupting 600Vac ratings.

Ground fault modules, as well as OEM unit mounting bases are available, and can be ordered from the factory with or without auxiliary switches, alarm switches and cylinder blocks.

Our Type K control transformers have set new industry standards for design



innovation and top performance. They are available in a wide range of voltages, in sizes up to 5000 VA. And for your unique requirements, we will design, manufacture and ship a special transformer in as little as three weeks or less.

The Most Complete Line Of Switches In The Industry

	Amp Range	Vac Max	Vdc Max	Fusible	Enclosure Type
General Duty	30-600	250 Vac	—	Fusible and Not-Fusible	Type 1, 3R
Heavy Duty	30-1200	600 Vac	600 Vdc	Fusible and Not-Fusible	Type 1, 3R, 4, 4X, 5, 12
4 Pole Heavy Duty	30-600	600 Vac	600 Vdc	Fusible and Not-Fusible	Type 1, 3R, Stainless Steel, 12
6 Pole Heavy Duty	30-200	600 Vac	—	Fusible and Not-Fusible	Type 1, 3R, Stainless Steel, 12
Double Throw	30-600	600 Vac	250 Vdc	Not-Fusible	Type 1, 3R, Stainless Steel, 12
Interlock Rec. Switches*	30-100	600 Vac	250 Vdc	Fusible and Not-Fusible	Type 1, 3R, 4, 4X, 5, 12
Hazardous Location Switches	30-100	600 Vac	250 Vdc	Not-Fusible	Used in Class 1, Groups C and D, Type 7, and Class II, Groups E, F, and G, Type 9 or Class III, Type 9 as defined in NEC article 500

* Appleton POWERTITE, Cross-Hinds ARKTITE, and HUBBELLOCK receptacles

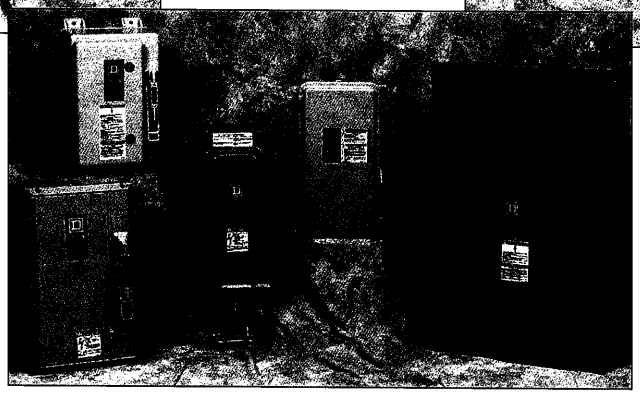
Type 1 (indoor), Type 3R (outdoor), Type 4, 4X, 5 (water and dust-tight, corrosion resistant) (cast aluminum, stainless steel, Glass Polyester or KRYDON), Type 12 (JIC-Mill and Foundry type).

Switches are UL Listed (UL98 Enclosed Switches) and meet or exceed the NEMA KSI standard.

Safety Switches

For Over 90 Years, Safety Switches Have Been Our Business

We've built that business by listening to our customers, following through on their requests, and delivering high quality products that meet their needs. Maybe that's why Square D is consistently ranked #1 in surveys for brand preference and is the overall market-share leader for the past twenty years. The explanation for this success is really very simple. In safety switches, we do as much as we can for our customers—then we do more.



Heavy Duty Safety Switches →

Designed for applications where safety, maximum performance and continuity of service is required. They are suitable for use in service entrance applications when installed in accordance with applicable codes.

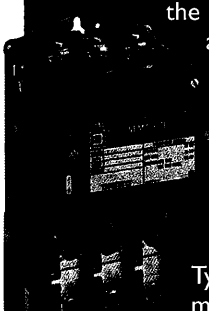
General Duty Safety Switches ↑

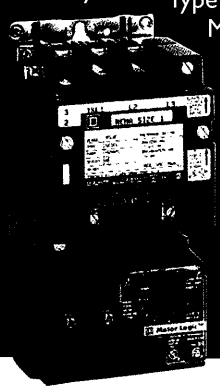
Designed for residential and light commercial applications where duty is not severe and economy is a prime consideration. They are suitable for use in service entrance applications when installed in accordance with applicable codes.

Type S Starters

Comprehensive Overload Protection

Class 20 thermal units provide the best protection for most motor applications. Class 10 quick-trip thermal units provide the necessary protection for motors with short allowable locked rotor time, hermetically-sealed motors and submersible pumps. Class 30 slow-trip thermal units provide protection for motors with long acceleration times, eliminating nuisance tripping during start-up.





Type S starters are provided with melting alloy overload relay blocks standard. Their trip-free construction allows the overload relay to trip even if the reset lever is blocked or held in the reset position. Features such as the manual trip-to-test and the visible trip indicator minimize troubleshooting time.

Type S starters are also available with the Motor Logic ™ solid state overload relay. Motor Logic overloads are available in Class 10 or 20 trip and do not require thermal units. The solid state design of the Motor Logic relay provides phase loss and phase unbalance protection and repeat trip accuracy of +/- 2%. Motor Logic overloads are capable of directly replacing existing melting alloy and bi-metal devices. Bimetallic overload relays are also available as a factory modification.

Combination Starters

Soon after introducing the basic Type S starter in 1965, Square D presented another leader to the electrical industry: Type S Combination Starter. This device merged the requirements of motor overload and short circuit protection into one single, convenient package.

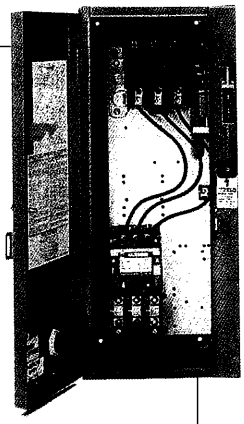
With the Type S starter as a foundation, most any motor control assembly can be constructed. Square D's disconnect switch starters and circuit breaker combination starters provide standard NEMA features that exceed most code, safety and quality requirements.

Standard Features

Handle Mechanism: Includes a color-coded knob for quick and easy ON/OFF; a mechanical interlock which inhibits opening of the door when the starter is energized *OR* inhibits energizing the starter when the door is open; and a lockout provision for additional safety when a padlock is used.

Door Closing Mechanism: Supplied on NEMA 12 devices. Ensures door and enclosure integrity with an additional provision for padlocking.

Solid Ground Bar: Included in all enclosed starters to meet the most stringent control and conduit grounding requirements.

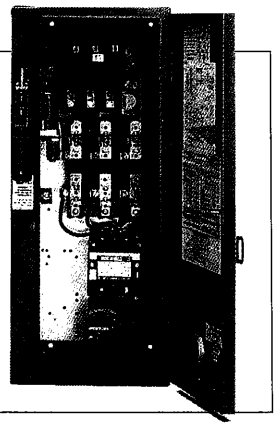


Disconnect Switch Starters

Switch-type combination starters are available with fusible or non-fusible disconnect switches. The switch itself is constructed of a molded, insulated material that delivers arcquenching performance similar to that of high voltage switch gear. Visible blade construction confirms safety and proper performance at a glance. Many industries have standardized on the feature.

Non-fusible assemblies can be field converted to fusible designs easily and quickly. Factory-built fusible units will accept the industry standard Class H, K or J fuses. Class R fuse clip kits can be factory or field installed to meet rejection fuse requirements.

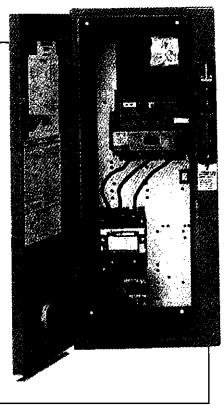
The various units have specific UL listed short circuit withstand ratings that range from 5,000 to 100,000 amperes. Specific ratings are influenced by many components, including the size of the disconnect switch and the type of fuses used with the switch.



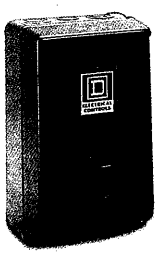
Circuit Breaker Starters

For applications requiring a breaker-type combination starter, Square D provides both a thermal magnetic circuit breaker and a motor circuit protector.

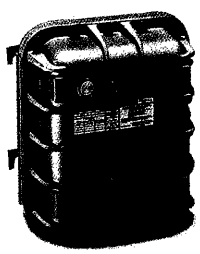
The most widely used overcurrent protection devices are thermal-magnetic circuit breakers, which use bimetals and electromagnets to provide both thermal and magnetic over-current protection. MAG-GARD® motor circuit protectors are similar in construction, but provide only short-circuit protection. When MAG-GARD devices are used with motor starters, the adjustable instantaneous trip provides maximum motor protection based on specific amperage and application. Type S combination starters using thermal magnetic breakers carry a UL listed short circuit withstand rating from 5,000 to 30,000 amperes. If a MAG-GARD Type GJL breaker is used, the withstand rating increases to 100,000 amperes. Specific ratings and listings may vary depending on the specific combination of components used in the assembly.



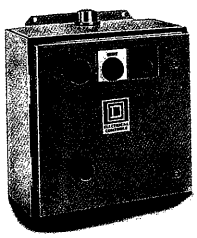
Versatile Enclosure



NEMA Type 1



NEMA Type 7 & 9



NEMA Type 4 & 4X

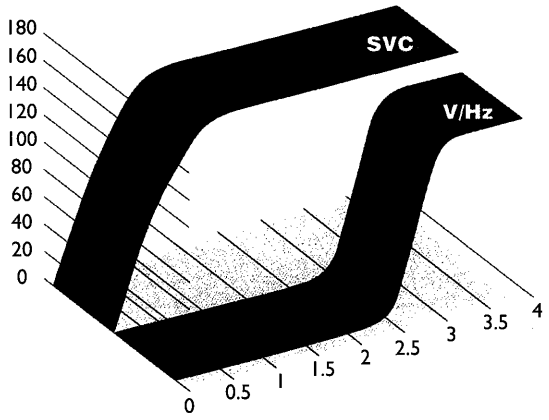
NEMA Type 12

The Complete ALTIVAR Family: Choose the Appropriate Level of Performance

Customize SQUARE D Drives and Soft Starts to Your Specific Application

ALTIVAR drives and ALTISTART soft starts allow easy access to data so you can respond on the spot.

Sensorless vector control technology in ALTIVAR drives provide motor performance improvements you can chart.



ALTIVAR® and **ALTISTART®** products are especially proficient at delivering energy savings and increased productivity in fan, pump, compressor and industrial process applications. Customizing them to meet the requirements of these applications is quick and easy as well.

HVAC Fans

"Better" HVAC means more efficiently delivered heated or cooled air. Fan systems built around conventional single speed or two-speed starters are prone to electrical in-rush and high motor torque at start-up which can result in mechanical wear and tear and adversely affect system performance. SQUARE D drives and soft starts solve these problems by providing more complete system control.

The best way to achieve more energy efficient HVAC is with air handling systems which vary the air volume by adjusting fan motor speed. Our ALTIVAR products were developed to drive variable air volume (VAV) systems. Using ALTIVAR drives rather than electromechanical controls, you can cut energy costs by reducing fan motor RPM's and expensive starts and stops. You can minimize the size of air handling systems and shift to smaller, high-efficiency motors. And you can do it all with one of the lowest installed costs of any energy saving investment.

SQUARE D makes the transition easy, too. Factory-configured, enclosed ALTIVAR drive "packages" are available with the NeC-required disconnects. Operators and pilot lights may be added if you choose.

For high inertia fans and centrifuges, which may require long starting times, the patented torque control system of the ALTISTART 46 unit is ideal. ALTISTART 46 allows you to adjust current limit and overload protection and define a maximum start time. This minimizes starting current requirements, reduces wear on mechanical couplings and protects against stalling.

Pumps

Pump systems are generally designed to use a full-speed, non-reversing motor to drive a water mover. The output of these systems is controlled by mechanically constricting the flow with throttling valves.

Constricting water reduces the flow but not the load on the motor and the power required to run the motor. Therefore, flow constriction is not very efficient. Running a system this way is like driving a car with the accelerator pressed to the floor while controlling speed with the brake.

An adjustable frequency drive, on the other hand, allows precise control of motor output. In the case of pumps which must handle varying flow levels, which is true of most pumps, variable torque products such as ALTIVAR drives can deliver a significant reduction in the power required to handle the loads.

Compared to electromechanical controls of traditional soft starts, the ALTISTART 46 unit offers much improved performance for the controlled acceleration and deceleration of pumps. Because the ALTISTART 46 unit bases ramping on the motor torque rather than on current or voltage, you get optimal starting and stopping control regardless of flow rate. Water hammer and pipe damage is reduced, as well as motor wear. Plus, the ALTISTART 46 unit provides overload and underload protection and allows for remote management, control and monitoring of the motor and starter.

Altistart 46 Soft Start

A New Generation of Soft Starts

The ALTISTART® 46 Soft Start introduces the principal of Torque Control System (TCS™) ramping. By controlling motor torque, the ATS 46 soft start is ideal for a wider variety of application than traditional soft starts which simply provide a voltage ramp or current limit. Setting the new industry standard in sort start control, TCS can provide a linear speed ramp without external feedback and helps prevent water hammer independent of the load condition.

Ease of Selection

The ATS 46 soft start is available in 21 power ratings from 17 to 1200 amps and each model is rated for use at any voltage between 200 and 500 VAC at 50 or 60 Hz. Given the improved performance TCS ramping offers and the variety of model sizes, product selection is a simple consideration of motor horsepower and duty cycle requirements.

Ease of Installation

The ATS 46 soft start is preset for quick and easy start-up without adjustment for the majority of installations.

Ease of Configuration

If modification of the factory presets is required, the settings can easily be adjusted using a digital keypad or optional PLC or PC connections.

Ease of Operation

For worry free operation, the motor, starter and fault status communication occurs through a user-friendly dialog.

Starting and Stopping

The Altistart 46 provides a choice of starting methods:

- TCS soft start, adjustable from 1 to 60 seconds
- Custom TCS Ramp, initial starting torque and torque limit may be adjusted for customized starting performance
- Current limit, adjustable from 150 to 500% of the device rating
- TCS with "boost," adjustable from 50 to 100% of mains voltage

Section Guide	ALTISTART **ATS 46**	Enclosed ALTISTART **Class 8636/38/39**	Modular Soft Start **LH4N**
		SOLID STATE	
Enclosures			
Open	X		X
TYPE 1		X	
TYPE 12		X	
TYPE 3R/4			
Combination Devices			
Fusible Disc		X	
Circuit Breaker		X	
Max Motor Voltage			
480 Vac	X	X	X
575 Vac			X (LH4N2)
Maximum Horsepower			
At 480 Vac	900	500	60
Starting Method			
TCS (Torque Control System)	X	X	
Voltage Ramp	X	X	X
Current Limit	X	X	
Starting Current			
% Starter Rated Current	200-500%	200-500%	200-500%
Starting Torque			
% Rated Torque	10-100%	10-100%	10-70%
Starting Time			
Acc Ramp Time	1-60 sec.	1-60 sec.	0.5-5 sec.
Factory Settings	10	10	
Methods of Stopping			
Decel Ramp	X	X	X (LH4N2)
Braking	X	X	
Free Wheel	X	X	X
Communication Options			
MODBUS	X	X	
Unitelway	X	X	
Analog Output	X	X	
CE Mark	X		X

Altistart 46 Soft Start *(continued)*

The ALTISTART 46 also provides a choice of stopping methods which may be used even if a shorting contactor is used to bypass the soft start while running:

- Freewheel or coast to stop
- TCS soft stop, adjustable from 1 to 60 sec.
- InTele™ Braking does not require external components for a faster than freewheel stop.

Protective Features

A microprocessor continuously monitors motor and starter status, providing state-of-the-art protection, even when a shorting contactor is used to bypass the soft start when the motor is up to speed. Protective features include: choice of Class 10, 20 or 30 motor overload protection with pre-alarm, phase loss and selectable underload detection, stall, jam and phase reversal protection.

Monitoring and Indication

A digital keypad and flexible I/O are standard for customized system integration. Comprehensive diagnostics are provided for easy troubleshooting and maintenance as well as real time indication of motor and starter status.

Enclosed Soft Start Controller Options

Altistart controllers are also available as packaged solutions for immediate installation. Enclosed controllers are factory tested and provide SCR fault isolation for optimal protection on the motor and operating personnel. A door-mounted keypad is standard for convenient setup and monitoring. Enclosed options include:

- Non-combination controllers in NEMA Type 1 or 12 enclosure through 400 HP
- Combination controllers with a circuit breaker or fusible disconnect in NEMA Type 12 enclosure through 500 HP
- Combination controllers in motor control centers feature full voltage bypasses standard through 500 HP
- Optional shorting and isolation contractors, reversing service, control operators, pilot lights and meters.

Contact Thompson-Hill for further information.

Selection Guide

Catalog Number	Rated Amps	Horsepower 208V	230V	460V	Dimensions Height	Width	Depth	Weight Lbs
ATS46D17N	17	3	5	10	13	7	6	9
ATS46D22N	22	5	7.5	15	13	7	6	9
ATS46D32N	32	7.5	10	20	15	7	6	10
ATS46D38N	38	10	–	25	15	7	6	10
ATS46D47N	47	–	15	30	13	9	7	15
ATS46D62N	62	15	20	40	13	9	7	15
ATS46D75N	75	20	25	50	13	9	10	24
ATS46D88N	88	25	30	60	13	9	10	24
ATS46C11N	110	30	40	75	15	9	10	26
ATS46C14N	145	40	50	100	17	9	10	35
ATS46C17N	176	50	60	125	27	14	11	97
ATS46C21N	210	60	75	150	27	14	11	97
ATS46C25N	257	75	100	200	27	14	11	97
ATS46C32N	320	100	125	250	27	14	11	97
ATS46C41N	410	125	150	300	37	16	14	123
ATS46C48N	480	150	–	350	37	16	14	137
ATS46C59N	590	–	200	400	37	16	14	137
ATS46C66N	660	200	250	500	37	16	14	137
ATS46C79N	790	250	300	600	40	30	14	247
ATS46M10N	1000	350	400	800	40	30	14	273
ATS46M12N	1200	400	450	900	40	30	14	273

Specifications

Three phase supply voltage ..... 280V -10% to 240V +10%
380V -15% to 415V +10%
440V -10% to 500V +10%

Frequency ..... 50/60 Hz, self adjusting, +/- 5% during start, + 5% -15% while running

Rated current ..... 17 to 1200 A in 21 ratings

Motor power ..... 2 to 1000 hp

Ambient air temperature ..... Operation: 0°C to +40°C without derating (between +40°C and +60° C, derate the ATS46 by 1.2% for each degree C) Storage: -25°C to 70°C

Max. relative humidity ..... 93% without condensation or dripping water

Max. ambient pollution ..... Degree 3, conforming to IEC 664

Max. operating altitude ..... 1000m without derating (above this, derate the ATS46 current by 0.5% for each additional 100m)

Operating position ..... Max. vertical inclination +/-15 degrees with respect to the normal mounting position

Degree of protection ..... IP20: ATS46D17n to C14N models
IP00: ATS46C17N to M12N models

Shock resistance ..... Conforms to IEC 68-2-27

Vibration resistance ..... Conforms to IEC 68-2-6

Resistance to electrostatic discharges .... Conforms to IEC 1000-4-2, level 3

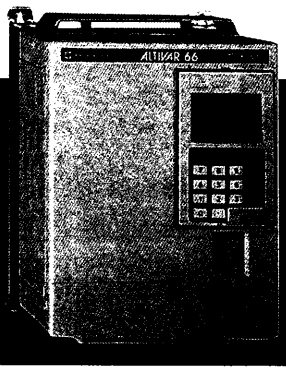
Immunity to radio-electric interference. Conforms to IEC 1000-4-3, level 3

Immunity to rapid electrical transients .. Conforms to IEC 1000-4-4, level 4

Conformity to standards ..... UL Listed, CSA approved, carries CE Marking, conforms to IEC-947-4-2.

Altivar 66 AC Drives

Basic Drive



The ALTIVAR 66 drive is designed for use with standard three-phase asynchronous motors with a power range of 1 to 350 hp (constant torque) or 400 hp (variable torque), 2.2 to 220 kw (constant torque) or 250 kw (variable torque). With its modular design and extensive range of options and accessories, the ALTIVAR 66 drive can be used in all types of industrial environments, commercial construction, and OEM applications.

The ALTIVAR 66 drive benefits from a new concept, PRO System (Performance Regulation Optimization), providing a solution for demanding drive applications.

Features include:

- New motor flux control algorithms
- Automatic adaptation of motor parameters
- Sensorless flux vector control without encoder
- Transient overtorque necessary for starting

Factory Setting

The ALTIVAR 66 drive is factory preset for use in most common applications.

- Maximum available torque at low speeds without adjustment
- Automatic adjustment of acceleration and deceleration ramp times when torque capabilities are exceeded

The drive can be configured for either constant or variable torque applications.

Drive Operator Interface

A keypad display is mounted on front of the drive. It allows:

- Choice of six languages
- Drive identification, parameter and fault display
- Recall of adjustments and drive configuration
- Display of running values such as output frequency or a fault
- Local control of the drive

The LCD graphic screen displays graphs and has reverse video for enhancing text or numerical values on the screen. An access locking switch on back of the keypad and a software key allow partial or total access to parameters. Adjustments can be saved on a PCMCIA card (Personal Computer Memory Card International Association) and subsequently downloaded into other ALTIvAR 66 drives. Three LEDs on front of the drive indicate status:

- Red LED illuminated: Drive fault
- Yellow LED illuminated: Current limit: flashing: Prealarm
- Green LED illuminated: Drive powered

Reduction of Motor Noise

For use with constant or variable torque, a high switching frequency (2 kHz, 4 kHz, or 10 kHz) is available.

The switching frequency is randomly modulated to reduce audible motor noise while limiting losses in the drive.

Sensorless Flux Vector Control

The ALTIVAR 66 basic drive incorporates flux vector control without encoder feedback, giving rated motor torque at 0.5 Hz without adjustment.

This sensorless flux vector control provides:

- Exceptional torque performance with a standard motor
- Rapid dynamic response with digital speed regulation
- Optimal performance for extruders, specialty machines, and material handling applications
- Economic solution for high torque and low speed

Protection

The drive automatically protects itself against short circuits:

- Between output phases
- Between output phases and ground
- On the outputs of internal supplies
- On the logic and analog outputs

The drive provides UL rated electronic motor thermal protection.

The drive also provides:

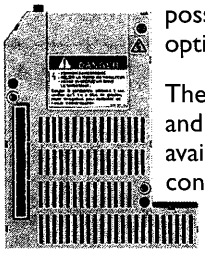
- Thermal protection against excessive overheating
- Protection against input line supply undervoltage and overvoltage
- Protection against input and output phase loss

Altivar 66 AC Drive *(continued)*

Options

I/O Extension Modules

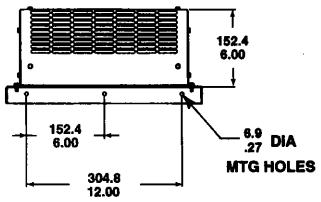
When the ALTIVAR 66 drive is first powered up, it is ready for use in its standard configuration for most applications. It is possible to add other functions by using and optional Input/Output Extension Module.



The I/O Extension Module adds additional logic and analog inputs and outputs. Two versions are available, for 24 VDC control and for 115 VAC control, allowing the drive to be adapted to your configurations.

Accessories

Dynamic Braking



A braking transistor is integrated into the ALTIVAR 66 drive.

The addition of an external resistor permits dissipation of excess braking energy, allowing the drive to function in quadrants 2 and 4 of the speed/ torque curve.

PC Connection

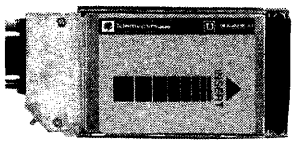
The PC Connection option allows the drive to be connected to a personal computer via RS 232C.

The software provides the following advantages:

- Prepare a drive configuration without connecting the drive to the computer.
- Save configurations and adjustments on a floppy or hard disk.
- Download configuration and adjustments into the drive.
- Provide a printout of drive configuration for future reference.

Communication

Designed to be integrated into modern automated architectures, the ALTIVAR 66 drive can be connected to several different multidrop communication buses.

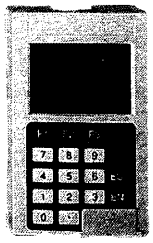


Communication is possible with the most common industrial protocols:

- UNI-TELEWAY
- MODBUS RTU/ASCII
- MODBUS Plus

Other interfaces are available through third party offerings.

Keypad Door Mounting Kit

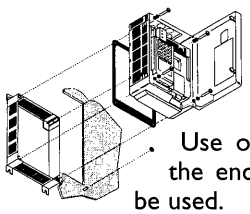


The keypad display can be remotely mounted with the use of a Keypad Door Mounting Kit.

The Keypad Door Mounting Kit allows the keypad to be mounted in the enclosure door. It allows you to view the display and access the keypad. The kit also allows three LEDs to be mounted in the enclosure door:

- Red LED illuminated: Drive fault
- Yellow LED illuminated: Current limit; flashing: Prealarm
- Greed LED illuminated: Drive powered

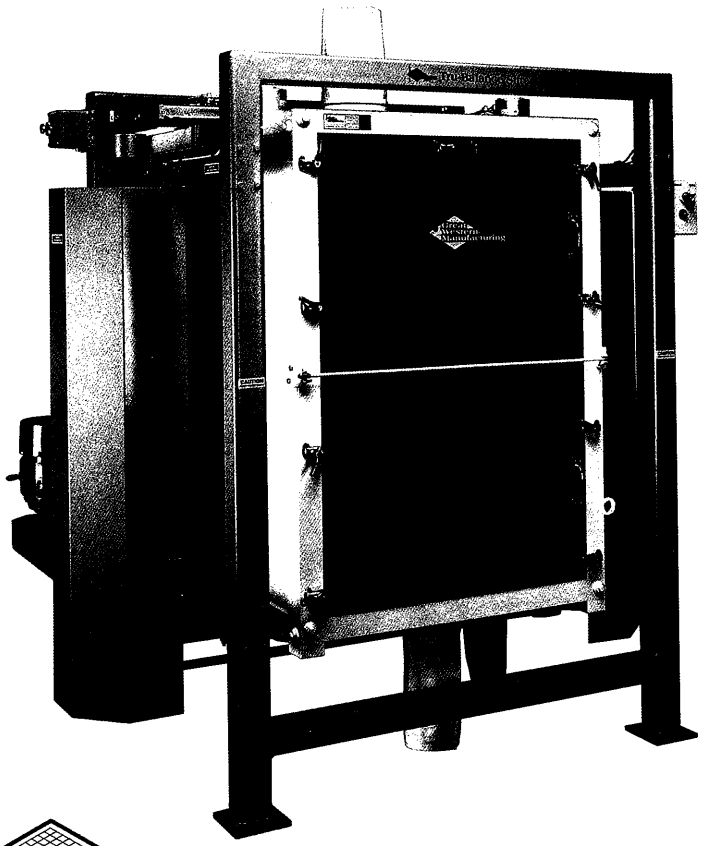
Recess Mounting Kits

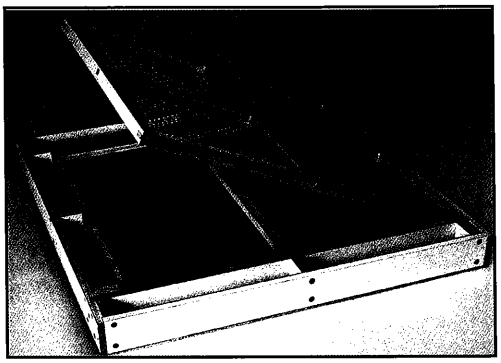


The heat sink on the drive can be mounted through the enclosure wall.

The Recess Mounting Kit can be used with Type 1 or Type 12 enclosures. Use of these kits reduces heat dissipated in the enclosure, allowing a smaller enclosure to be used.

The Complete Line of Sifting, Screening and Scalping Equipment





Featuring

- Modular Tru-Balance
- Stainless Steel Tru-Balance
- In-Line Tru-Balance
- Agitator/Blenders
- Sampl-Sifters
- Stream Dividers
- Screen Stretchers

Great Western Manufacturing

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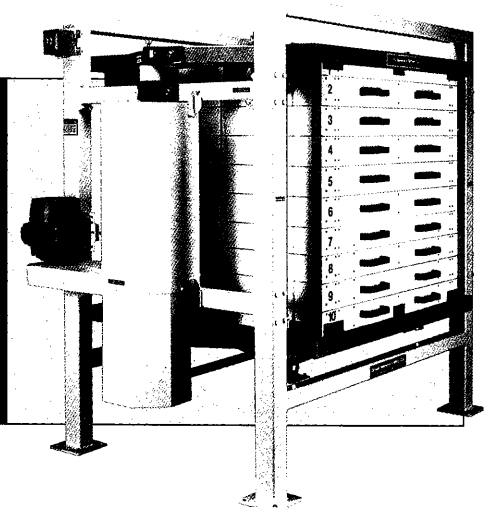
Modular Tru-Balance

The Modular Tru-balance was developed to provide a simple and economical machine with reliable performance and excellent sanitation features when conditions do not dictate stainless steel construction or require complex separations. The Modular Tru-Balance, like the Stainless Steel model, has a box-less design with nest-together sieve frames and utilizes the same pneumatic sieve clamping system or reliable cable clamping system. The wooden frames are bonded with plastic laminate on all exposed surfaces. The sifter uses from 4 to 9 sieves in two different frame sizes to provide from 15 to 100 ft^2 of screening area. Up to three separations can be obtained.



Stainless Steel Tru-Balance

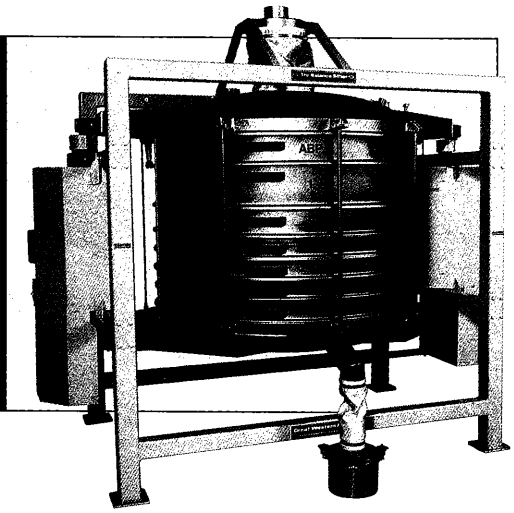
The Stainless Steel Tru-Balance is the ultimate in a sanitary gravity flow, atmospheric pressure sifter. It features easy to access and maintain sieve frames in a reliable vibration free drive mechanism. The Stainless Steel Tru-Balance has a box-less design with nest-together sieve frames and utilizes a pneumatic sieve clamping system which maintains constant dust-tight operation and makes access for sieve inspection and maintenance as easy as the turn of a key. The sieve frames are fabricated from precision laser cut stainless steel and assembled without rivets, nuts, or bolts. The sifter uses from 4 to 9 sieves in three different frame sizes to provide from 15 to 58 ft^2 of screening area. Arrangements can make up to five separations.

In-Line Tru-Balance

Designed for direct insertion into a vacuum or pressure pneumatic conveying line as a quality assurance tool for removing a small amount of oversized impurities from the product.

Placed in pneumatic unloading or transfer systems, it eliminates equipment such as cyclone receivers, airlocks, receiving hoppers and blowers which would be required if a standard (atmospheric pressure) sifter were utilized.

All product contact surfaces are fabricated of stainless steel which ensures compliance with the most stringent sanitation standards. Built in three different models to achieve capacities from 250 to 1,000 lbs/min. of hard or soft wheat flour on a 30 or 40 mesh screen.



Great Western Manufacturing *(continued)*

Agitator/Blenders

Designed for efficient flour bleaching or enrichment addition in flour mills or blending facilities. The Agitator/Blender is built for long-lasting, dependable service. Three different capacity sizes, built in four different arrangements, allow the machine to be tailored to your specific requirements.

Sampl-Sifters

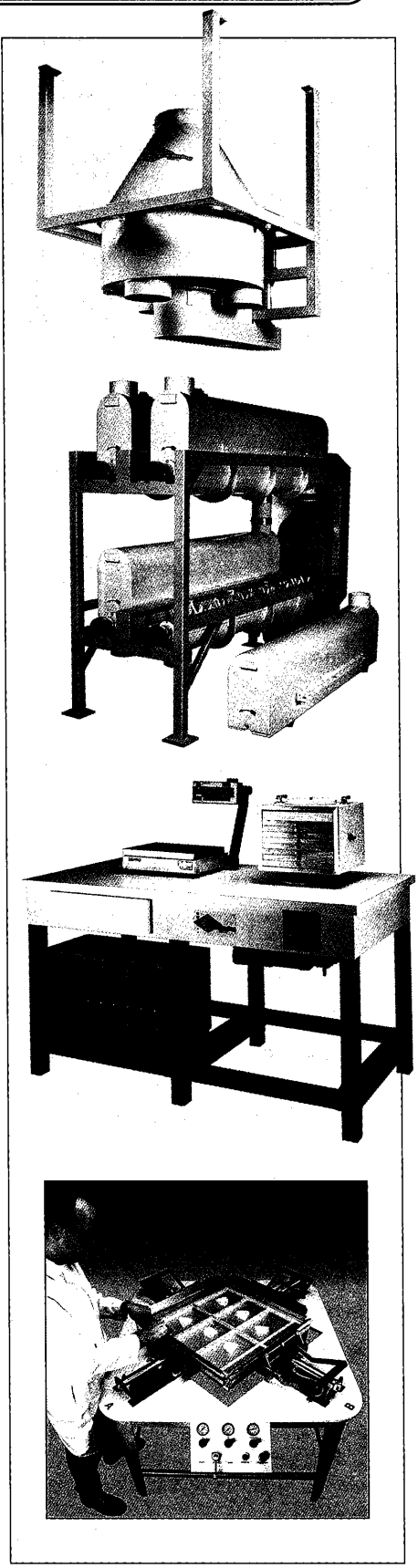
Sample size sifter is widely used in the cereal processing industry to determine break release, monitor sifting performance, and to perform other quality control testing. Operated with a standard single phase motor and controlled with an adjustable built-in-electronic timer, the Sampl-Sifter is available in a table top version or installed in a work table.

Stream Dividers

Great Western Manufacturing Stream Dividers are the ideal choice for precision division of a single gravity-flow product stream into two to twelve separate streams. The housing and internal turnhead are built from sanitary and durable stainless steel mounted in a tubular steel frame for floor or ceiling installation. Standard models or custom designed units to suit any requirement.

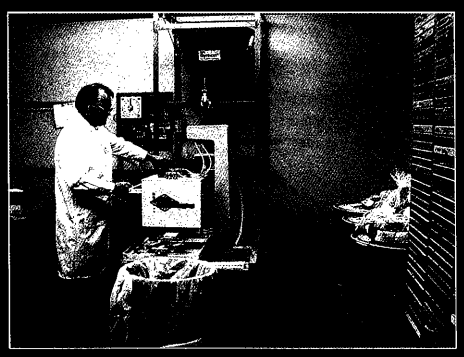
Screen Stretchers

Designed to stretch clothing for uniform and consistent tensions on sieve or purifier frames. They offer non-contact stretching and screen elongation control. Two different pneumatic models each feature horizontal stretching without contact with the sieve tray/frame during the primary stretching phase. Our manual stretcher is a reliable economical solution.

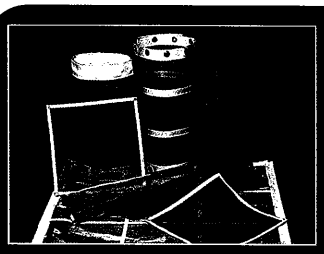


Free Testing Service

Great Western Manufacturing maintains a complete testing laboratory to evaluate product samples and make equipment recommendations. Testing will be encountered. Test results state area requirements and serve as a guide in determining the optimum equipment size and specifications. There is no charge or obligation for this service.



Wire



Sefar America is an exclusive distributor of BOPP SI wire cloth in North America. BOPP SI is recognized as the industry standard for precision wire cloth, with the tightest tolerances and most consistent specifications available on the market today. Our wire inventory includes a wide selection of screening media in all grades — market, mill, and bolting cloth, available in stainless steel, plain steel, high carbon, tinned mill, and special alloys such as brass. We also stock a diverse and comprehensive inventory of type 430 magnetic stainless steel wire.

Products Available

- BOPP SI Wire Cloth
- Other quality options available to match your application

SEFAR
Mesh + Technology

Standard Sifting Cloths For:

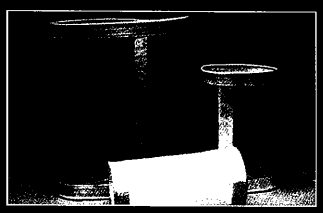
- Gyratory Sifters
- Reciprocating Screeners
- Purifiers
- Rotex Screeners
- Bran Finishers
- Vibrosifters
- Test Sieves
- Round Screens
- Millerator Screens
- Hammermill Screens
- OEM Applications

Fabrication Capabilities

- Edging & Wearstrips
  - bondedge
  - fabric - cotton & synthetic
  - hook strips
  - edges with clips
- PTP Edging
- Soldered Seaming
- Washing
- Grommeting
- Slitting
- Stamping

Synthetics

As a member of the international Sefar organization, our Nylon and Polyester product lines are widely recognized as the finest available in the industry. Our large and diverse inventory assures you of immediate response to your orders.



Products Available

- Normal Quality XX
- Milling Forte MF
- Heavy Quality XXX/HD
- Polyester/Nylon GG

Standard Sifting Cloths For:

- Gyratory Sifters
- Reciprocating Screeners
- Purifiers
- Rotex Screeners
- Rotary Sifting Reels
- Bran Dusters
- Vibrosifters
- All OEM Sifter Manufacturers
- Test Sieves

Fabrication Capabilities

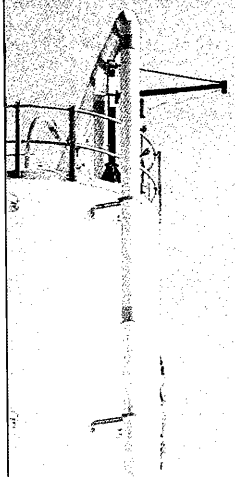
- Edging
- Yardage
- Cut Pieces
- Custom Shapes & Sizes
- Grommets
- Painted Seams

X-Y Cutting Table - this state-of-the-art technology utilizes computerized drawing (Auto-Cad) software to duplicate your design, providing consistent cut pieces to your exact specifications.

AR Seamer - applies adhesive seam for synthetic reels. This seam reduces the likelihood of bug infestation while increasing sifting area. The seam produced is much stronger than traditional seaming technologies.

Die Cutting Capabilities - utilizes metal cutting dies to stamp out exact measurements.

Thompson-Hill has been in business for 74 years servicing a wide range of material handling applications. Our long term customer list is impressive, including many industry leaders, striving for the technology of the future. We are confident we have the experience and resources to meet your challenging operational requirements.



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- Dehumidification Systems
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On-Site System Analysis
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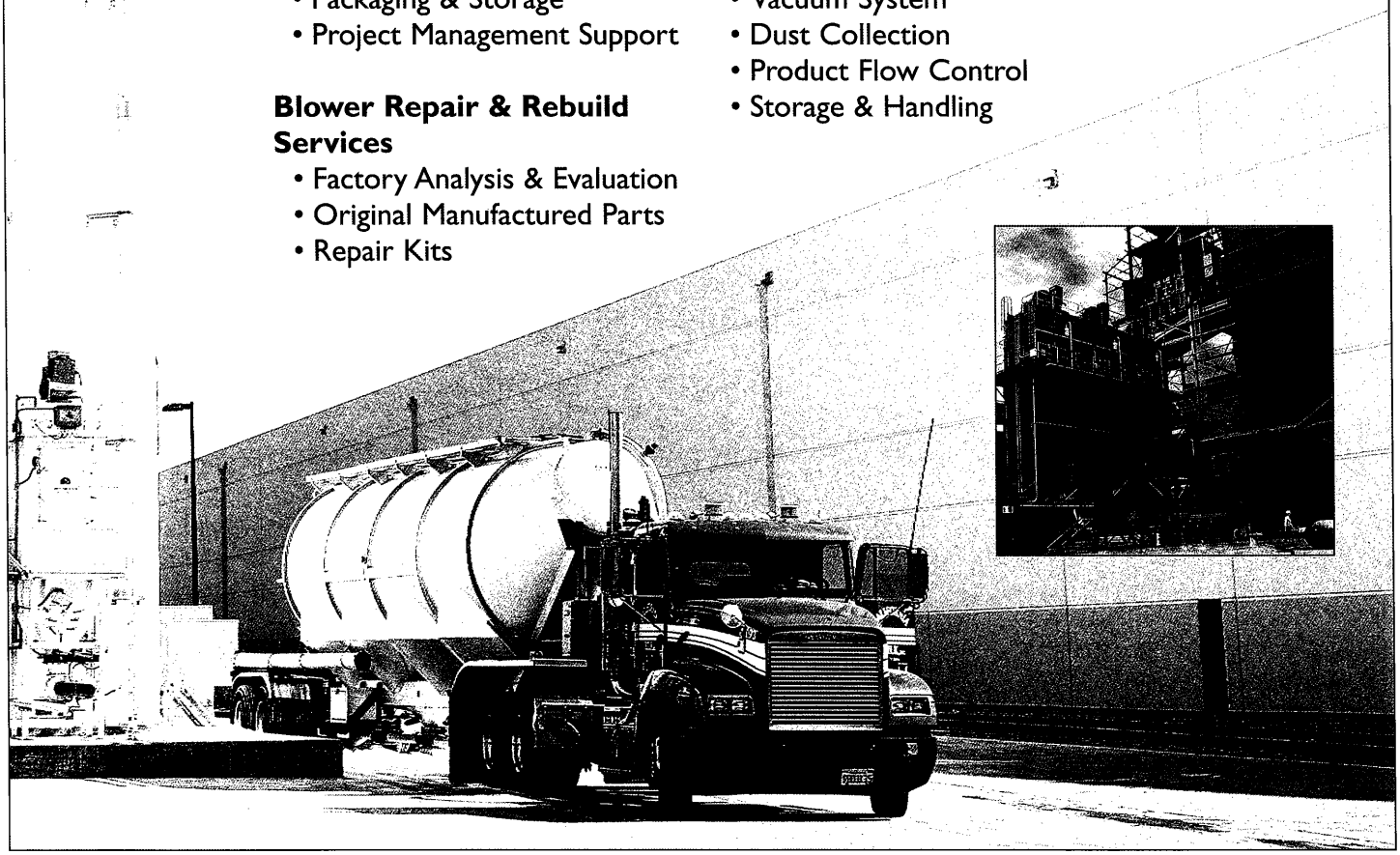
- Vacuum System
- Dust Collection
- Product Flow Control
- Storage & Handling



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We extend our sincerest appreciation to the suppliers found on these pages.