

1. SCREW CONVEYORS

Introduction –

The screw conveyor is one of the most cost-effective methods for transporting bulk materials. Screw conveyors are used in thousands of applications in almost every industry. MITECK SYSTEMS has provided successful bulk material handling solutions for over 20 years. If you have a difficult application, please [Contact Us](#). We have the solution. From replacement parts to complete systems, MITECK SYSTEMS will meet all of your bulk material handling needs.

PRIMARY CONSIDERATIONS FOR THE SELECTION OF A SCREW CONVEYOR ARE:

1. Type and condition of the material to be handled, including maximum particle size, and, if available, the specific bulk density of the material to be conveyed.
2. Quantity of transported material, expressed in pounds or tons per hour.
3. The distance for which the material is to be conveyed.

In the next sections is the necessary information for the selection of a screw conveyor system, presented in a series of five steps. These steps are arranged in logical order, and are divided into separate sections for simplicity.

THE FIVE STEPS ARE:

1. Establishing the characteristics of the material to be conveyed.
2. Locating conveyor capacity (conveyor size and speed) on capacity tables.
3. Selection of conveyor components.
4. Calculation of required horsepower.
5. Checking of component torque capacities (including selection of shaft types and sizes).

All necessary calculations are expressed in graphic and equation form, and use of all charts, graphs, etc. will be explained fully at the end of each section.

Engineering data regarding the design of screw feeders and their selection, is presented in a separate section, immediately following the screw conveyor data.

Any unusual applications, or special designs, should be referred to Miteck Systems Mfg's. Engineering Department

Technical Specification –

APPLICATIONS OF SCREW CONVEYORS

- **Examples of applications where such experience is required include:**
- **Corrosive Products** –Screw conveyors must be fabricated from alloys not affected by the corrosive product. Typical materials of construction for corrosive products are 304, 310, 316, 410 and 430 stainless steels. Also, high nickel alloys such as Inconel, Monel and Hastalloy may be used.
 - **Abrasive Products** –Screw conveyors must be fabricated from abrasion resistant alloys when handling abrasive products. Typical materials of

construction are AR235, AR360, AR500, cobalt based or chromium carbide based hard surfacing materials. These materials are harder and tougher than A36 carbon steel for resisting abrasion. The carrying face of the screw may be hard surfaced with a weld-on hard surfacing material. Lining of all surfaces in contact with the product with rubber or special resins also reduces abrasion. It is also very important to reduce the trough loading and the speed of the screw conveyor when handling abrasive products.

- **Hygroscopic Products** –Screw conveyors must be sealed from the outside atmosphere. In extreme cases, it is necessary to provide jacketed troughs or housings with an appropriate circulating heat transfer medium to maintain the material at an elevated temperature. Purging of the conveyor with a suitable dry gas is also used in some installations.
- **Products That Emit Harmful Vapors or Dusts** –Screw conveyors must be sealed to contain the harmful vapors or dust. These may be safely handled in dust-tight U-troughs or tubular housings. Special shaft seals may be required.
- **Products That Emit Explosive Dusts** –Screw conveyors may be fabricated from non-sparking materials. Screw conveyors must be sealed to contain the harmful vapors or dust. These products may be safely handled in dust-tight U-troughs or tubular housings. Special shaft seals may be required. Exhaust systems are also advisable for the removal of explosive dusts.
- **Products Subject to Packing** –Screw conveyors may utilize ribbon flights, mixing paddles, cut flights or cut and folded flights to breakup products that tend to pack. Larger inlets and discharges may be required in order to provide a larger area for the product.
- **Products Subject to Fluidizing or Aerating** –Screw conveyors may utilize short-pitch close tolerance screws and tubular housings to reduce the possibility of product flowing around the screw. Also, the screw conveyor may be inclined to reduce the head pressure of the product. This condition may be used to advantage in some installations by declining the screw conveyor toward the discharge end.
- **Products That Degrade** –Screw conveyors for handling products that easily degrade are typically oversized and operated at reduced speeds. The trough loading is also kept to a minimum.
- **Products at Elevated Temperature** –Screw conveyors may be fabricated from high temperature alloys depending upon the operating temperature. Special consideration is required for handling thermal expansion of the screw and housing. High temperature seals and gasketing are required. Extensive industry specific experience with "exotic" alloy fabrication that includes all stainless steel grades, including 254SMO, Hastalloy, Inconel, Alloy 20, Monel, etc. (pipe, plate and overlay).

Feature

The screw conveyor has many benefits over other types of bulk material handling equipment. Some of the advantages are:

- Screw conveyors are capable of handling a great variety of bulk materials from sluggish to free-flowing.
- Screw conveyors can have multiple inlet and discharge points. Bulk materials can be conveyed and distributed to various locations as required. Slide gates or valves can be added to control the flow into and out of a screw conveyor.
- When a screw conveyor is used as a metering device, it is considered a screw feeder. Screw feeders are used to initiate a material process by metering product from a bin or hopper.
- Screw conveyors are very compact and adaptable to congested locations. Screw conveyors do not have a return similar to a belt or drag conveyor.
- Screw conveyors are totally enclosed to contain the product and prevent spillage. Screw conveyors can be utilized in the horizontal, vertical or any inclined position depending upon the characteristics of the product being conveyed.
- Screw conveyors can be used for mixing various products together and for breaking up large lumps.
- Screw conveyors can be designed without a center pipe. This type of conveyor is called a shaftless screw conveyor and is designed for conveying wet, sticky, sluggish products such as industrial sludges and biosolids.
- Screw conveyors can be used to cool, heat or dry products in transit. Depending on the heat transfer requirements, a screw conveyor can be jacketed, or a hollow-flight design utilized to provide the necessary heat transfer for the application.
- Screw conveyors can be designed to be vapor-tight or hold an internal pressure. This is very important when conveying toxic or hazardous products such as those in the chemical industry.
- Screw conveyors can provide an air lock between upstream and downstream equipment.

Photos







1.1 VERTICAL SCREW CONVEYOR

Introduction –

Vertical Screw Conveyors offer many advantages over other options:

- They convey a wide variety of materials very efficiently
- Vertical Screw Conveyors occupy a very small footprint
- They have very few moving parts so reliability is high
- Conveyor Eng. & Mfg. has built Vertical Conveyors that have reliably elevated products to heights up to 45 feet
- Construction is available in many materials including stainless steel and various types of corrosion resistant alloys as well as carbon steel and abrasion resistant materials
- Shaftless Vertical Screw Conveyors are available for sticky materials
- As with all bulk material handling equipment Conveyor Eng. & Mfg. makes, Vertical Screw Conveyors can be custom made to fit your needs
- Vertical Screw Conveyors are a good fit for many industries including Chemical, Grain, Food, Mining, Pulp & Paper, etc.
- The housings are fully enclosed keeping contamination potential very low. Fully dust and vapor tight designs are available

In most cases Conveyor Eng. & Mfg. offers free, full scale, actual product testing of custom Vertical Screw Conveyors. You can ship us a bulk bag of your product and we will run a series of tests on your conveyor prior to shipping it. This guarantees successful operation and capacity flow.

Technical Specification –

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Feature

The screw conveyor has many benefits over other types of bulk material

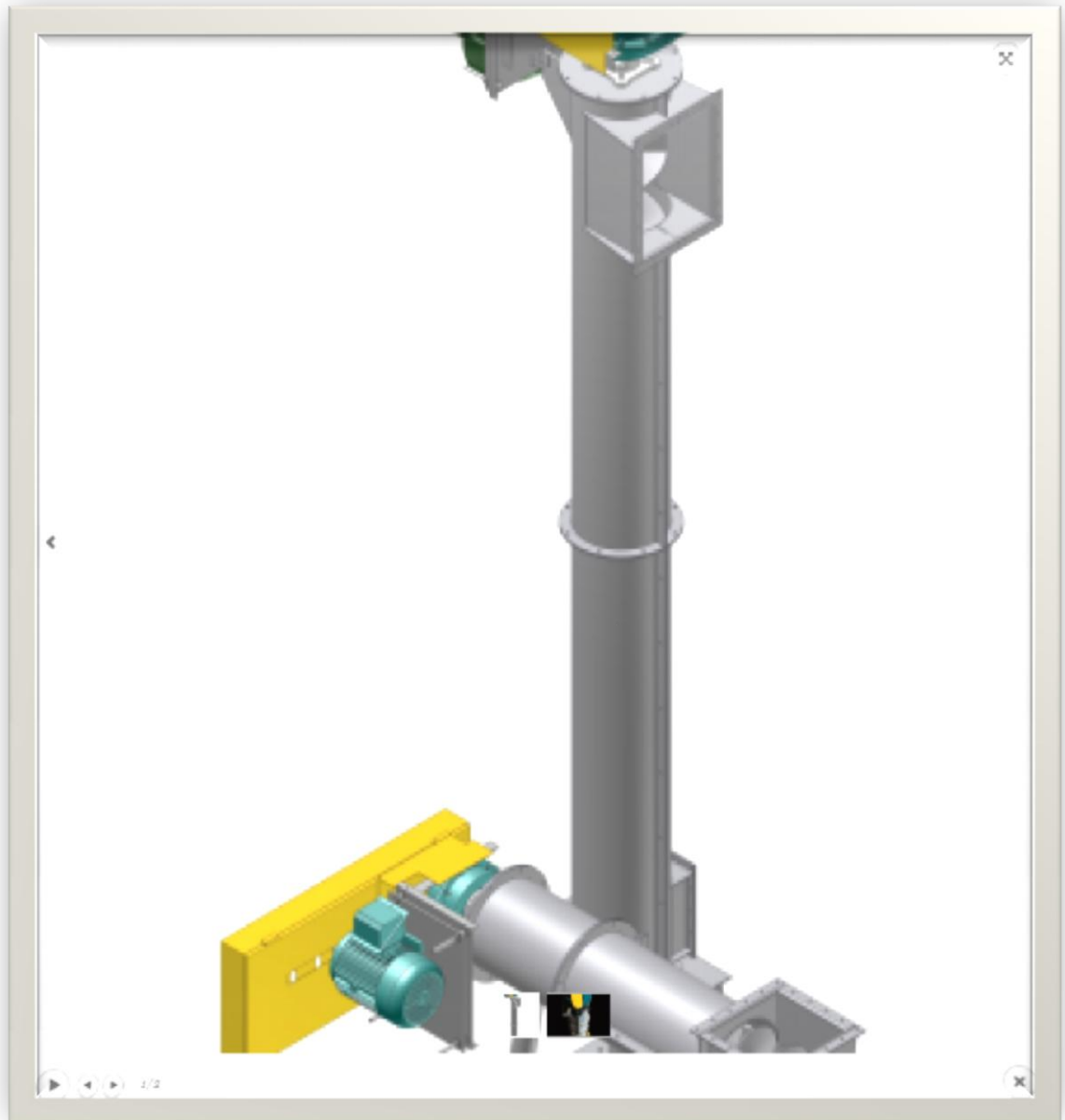
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- Screw conveyors can provide an air lock between upstream and downstream equipment.



Photos



1.2 INCLINED SCREW CONVEYORS

Introduction –

A screw in the horizontal is a conveyor or feeder, but as a screw is inclined it very quickly becomes a lift or pump. All of the charts & formulas for calculating speed and capacity for a screw, in the horizontal are no longer applicable, what now comes into play is product knowledge and experience for sizing and calculating speed and horse power for incline and vertical screws.

The need to elevate material can pose many challenges. Some of the things that must be determined are:

- **How high must the material be lifted?**
- **How far horizontally is the material to be moved?**
- **What is the material to be conveyed?**
- **What are its characteristics?**
- **Is close clearance of the screw to the housing required?**

How is the material going to be fed into the screw

The answers to these questions will tell you the degree of incline of the screw and the true length of the screw. Based on product knowledge the size and speed of the screw can be estimated. Incline screw should never have internal screw supports, as they pose an obstruction to the product flow (product flow vertically and or up an incline is always critical).

Product flow is controlled by speed, but speed can only be estimated, once you know the true length of the screw, the degree of incline and the material flow characteristics. Speed of the screw = horsepower required. Also when estimating horse power the number of starts and stops, the time in-between stops and restarts, and the estimated amount of residual material in the conveyor when starting all must be considered.

Since the initial screw speed was estimated based on the information provided and experience the drive for an incline or vertical screw should always have the ability for screw speed changes, i.e. "v" belts and sheaves. This gives the ability to make speed adjustments in order to get the desired product through put at the desired housing loading.

It can be very hard to use a vertical or incline screw as a feeder. The speed necessary to convey the material may produce a greater product flow than desired, the speed necessary to convey the material may cause "tip rejection" and there for no flow of material. If a vertical or incline screw needs to deliver a uniform feed rate this is a good example for the use of a cantilevered screw feeder to provide the uniform positive force feed into the incline or vertical screw conveyor.

Technical specification –

INCLINED SCREW CONVEYORS

- **More horsepower is required for Inclined Screw Conveyors:** This is due to both lifting the product and "re-conveying" product that falls back.
- **Hangers should be eliminated:** They create a "dead flow" area that is emphasized with inclined conveyors. This often results in the use of longer screws which require their own design considerations.

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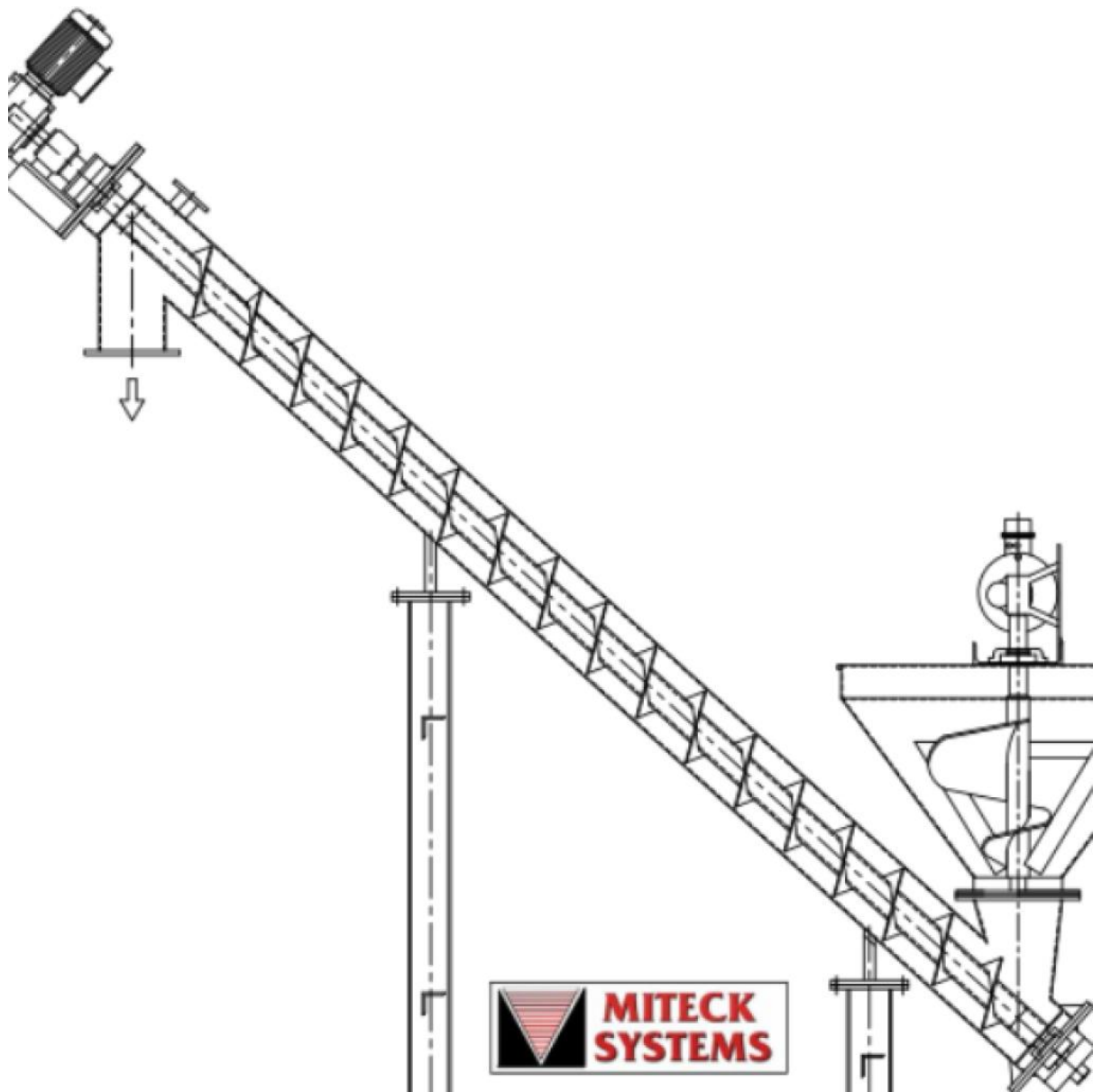
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Photos



2 ROTARY AIRLOCK VALVE

over sixteen years, Miteck System's Rotary Airlock valves have been leading industry in Design, Workmanship, Functionality, Longevity and Serviceability. They have repeatedly proven to be the best quality as well as economical.

Miteck has an extensive range of rotary valves used in a wide range of applications from heavy minerals industries to light agricultural applications. Rotary valves, otherwise known as rotary feeders, rotary air locks or star valves have applications in the solid gas separation applications or solids metering applications. Miteck rotary valves are ideally suited for air locks on dust collection systems or solids feeding applications and can service a very wide range of industries

2.1 DROP THROUGH ROTARY AIRLOCK VALVE

Rotary Airlock Valve is used to Control application beneath dust collector and cyclone separators.

The Rotary Airlock Valve is designed for economical, reliable material metering.
Ideal for Pollution

Control application beneath dust collector and cyclone separators.

- Ideal for pollution control application in wood, grain, food, textile, paper, rubber.
- The DTRAV works beneath dust collector and cyclone separators, where temperatures do not exceed 200°C and pressure differential is less than 7 PSI.
- DTRAV Valves available with square or Circular.

UNMATCHED COMPETITIVE ADVANTAGES OF Rotary Airlock Valve

- Available in five sizes from 150mm through 560mm.

Round or square flange assures system compatibility

- 8 vane open end rotor
- Full flow throat design permits maximum flow to rotor pocket
- Oversize shaft diameters reduce deflection for maximum torque
- Rugged cast iron construction and stainless steel provides maximum structural stability
- Outboard sealed bearings never need lubrication
- Application specific options including speed switches, motors, drives and accessories
- Externally replaceable packing with split compression design

The basic use of the **Rotary Airlock Valve** is as an airlock transition point, sealing pressurized systems against loss of air or gas while maintaining a flow of material between components with different pressure. Rotary Airlock Feeders are also widely used as volumetric feeders for metering materials at precise flow rates from bins, hoppers or silos into conveying or processing systems.

COMMON SERVICE CONDITIONS

- Pressure Rating = 7 PSI
- Maximum operating temperature – 350° C
- Material Type – Dry free flowing mildly abrasive.



2.2 BLOW THROUGH ROTARY AIRLOCK VALVE



2.3 QUICK CLEAN ROTARY VALVES

Introduction

QUICK CLEAN ROTARY VALVES

The Quick clean rotary valves Series is designed for fast dis assembly, cleaning and reassembly of the material contact surface. The Quick clean rotary valves is specifically designed to be cleaned without tools and removal from service. This type of valve we normally supply to the pharmaceutical industry and food industry.

- The Quick Clean Rotary Valves are specially designed for application where frequent cleaning, sanitizing or inspection of the bulk handling system is required with minimum down time. They are also ideal for batch systems where regular cleaning between cycles is required.
- The valve needs no tools to unscrew the release handles and remove the head plate. Four slide bars with linear bearings, provide maximum support for the rotor. The rotor and head plate can be pulled out and the valve can be thoroughly cleaned, sanitized and inspected.
- Re-assembly is quick and simplified as no special tools are required.
- Three design levels to meet your specific cleaning needs in stainless or polished sanitary.

These type of valve normally we supply to pharmaceutical industry & food industry.

Technical Specification:

GENERAL SERVICE CONDITION of Quick clean rotary valves

- Pressure Ration: 15 psi
- Maximum Operating Temperature: 400°F
- Materials: Dry Free-Flowing Food grad or contamination sensitive Powders

RELEVANT INDUSTRIES

- pharmaceutical, food and chemical applications.

Available sizes in Casting in mm

Circular Flange Square Flange

100 Diameter 100 X 100

Feature

SUPREME COMPETITIVE ADVANTAGES

- Available in 3 sizes from through 100 mm to 300 mm
- SS 316 and SS 304 are standard providing maximum structural stability
- Tool-free hand fasteners for rotor removal and regular inspections
- Four Slide bar design, using linear, bearings for full support of rotor and head plate
- Permanently Sealed bearings ensure protection for contamination



2.4 SEMI ISOLATING ROTARY VALVE / FLOW CONTROL ROTARY VALVE

Based on Ball valve mechanism to suit your application. This types of rotary valves are normally used below storage cylo.

This valves are used where material above valve is sticky , highly abrasive & column load is very high Miteck systems provide customized solution for Rotary airlock valves

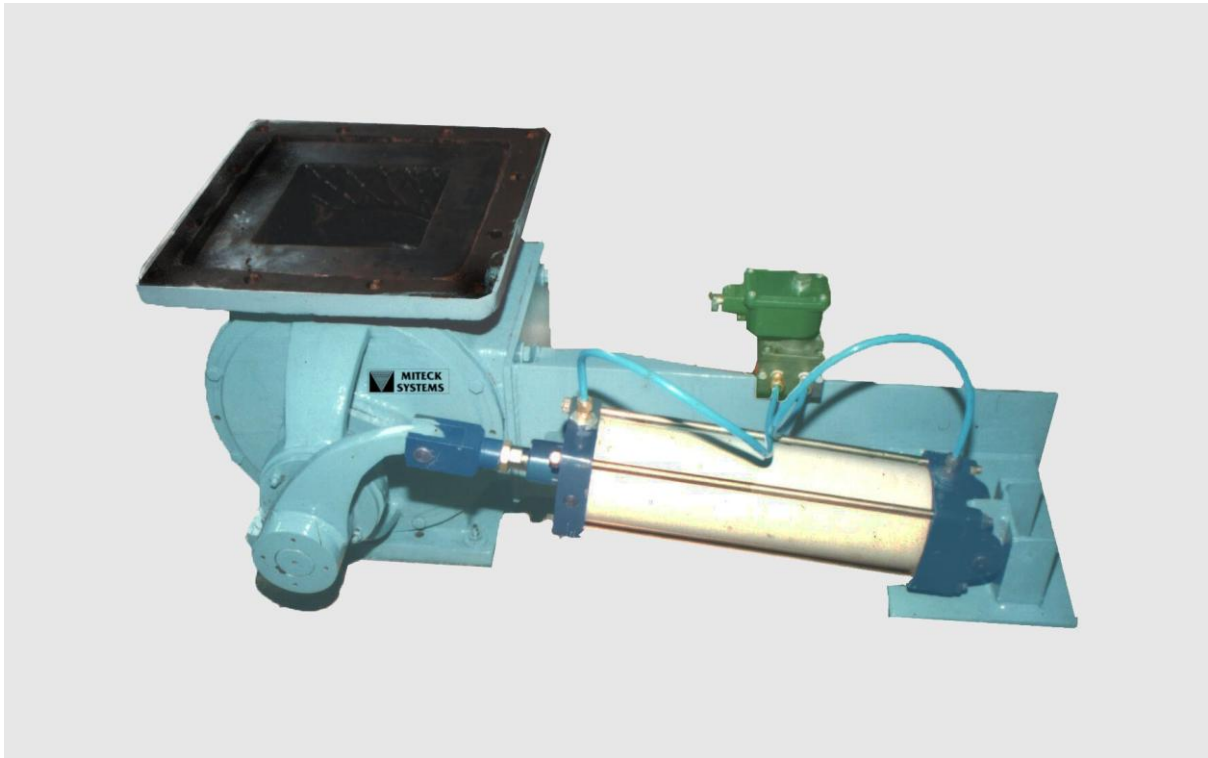
- Sizes Available Are 250,300,350 mm Circular/Square

Feature

UNMATCHED COMPETITIVE ADVANTAGES

- Available in five sizes from 150mm through 60 mm Round or square flange assures system compatibility
- Full flow throat design permits maximum flow
- Oversize shaft diameters reduce deflection for maximum torque

- Rugged cast iron construction and stainless steel provides maximum structural stability
- Outboard sealed bearings never need lubrication
- Application specific options including speed switches, motors, drives and accessories
- Externally replaceable packing with split compression design



2.5 SIDE ENTRY ROTARY VALVE

Introduction

Side Entry – Side discharge model Rotary Air Lock Valve [Side entry rotary valve] lines are specially designed with offset inlet and discharge opening to reduce product shearing while maintaining an efficient product flow in conveying or metering applications. The Valve name derives from the Offset inlet and outlet flanges, where product enters the side of the rotor instead of top.

On a normal valve, shearing takes place as rotor rotates into the housing. When these two edges meet on a typical drop thru rotary Air Lock the product is caught on the upswing of the rotor blades so that the product is constantly filling away from the shear point. The rotor pockets also do not fill completely, reducing the likelihood of shearing. Lastly, the through out has V shape which helps push product out of the way.

TYPICAL APPLICATIONS Side entry rotary valve

- Railcar unloading

- Pneumatic Conveying
- Vacuum Loaders

Technical Specification

COMMON SERVICE CONDITIONS Side entry rotary valve

- Pressure Rating: 15 PSI.
- Maximum Operating Temperature: 1000 C
- Materials: Pellets, Chips, Flakes, Cubes.

RELEVANT INDUSTRIES:

CEMENT, STEEL, MINING, CHEMICAL, WOOD, TOBACCO, GRAIN, TEXTILE, FOOD,
PAPER, PAINT, RUBBER

Side entry rotary valve
Available sizes in Casting in mm
Circular Flange Square Flange
100 Diameter 100 X 100

Feature

SUPREME UNMATCHED FEATURES

- Available in sized 150mm to 1000mm
- Maintenance free
- Offset side inlet and discharge provides optimal material product flow
- Round Flange
- Optimal adjustable slide gate for optimal material feed, rate control
- "V" type inlet throat minimizes product shearing and degradation
- Housing vent connection improves valve efficiency
- Rugged corrosion resistant cast stainless steel construction provides maximum structural stability.



3. DIVERTORS

Introduction

Diverter Gate Valve is used for selecting one out of two outlet ports. The flow through these valves is essentially a gravity flow and the position of the diverter flap decides which of the two outlet ports will be active.

MITECK SYSTEMS manufactures & supplies these fabricated valves as per customers' requirements.

Diverter valves are designed to direct product flow outlets of storage bins, silo conveyors, gravity flow chutes and other discharge points handling powders, granules, grains and other bulk solids. These valves are available in deflector or diverter types, with three-positional control on diverter if required to split the flow. The splitting of flow can be achieved by positioning the diverter flap in an intermediate position. However, middle position will not necessarily mean equal splitting of flow as the location of valve and material flow characteristic can influence the flow splitting ratio.

MITECK SYSTEMS also manufactures "TRIVERTOR GATE VALES", which is a variation on Diverter gate valves having three possible outlets instead of two.

Application

As the name suggests, Diverter Gate Valves are used to determine the outflow of bulk, free flowing material from a vessel bin. The vessel could be hoppers, silos, bag filter, bins etc. and the feeder can be any type of bulk material conveyor.

3.1 TWO WAY DIVERTER

Introduction

TWO WAY DIVERTER

Two way diverter gate valve is used for selecting one out of two outlet ports. The flow through these valves is essentially a gravity flow and the position of the diverter flap decides which of the two outlet ports will be active.

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- They are used in various industries such as cement, chemicals, mining, mineral process, textile, paper, food grains, etc

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Technical Specification

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3.3 MATERIAL FLOW DIVERTER

INTRODUCTION

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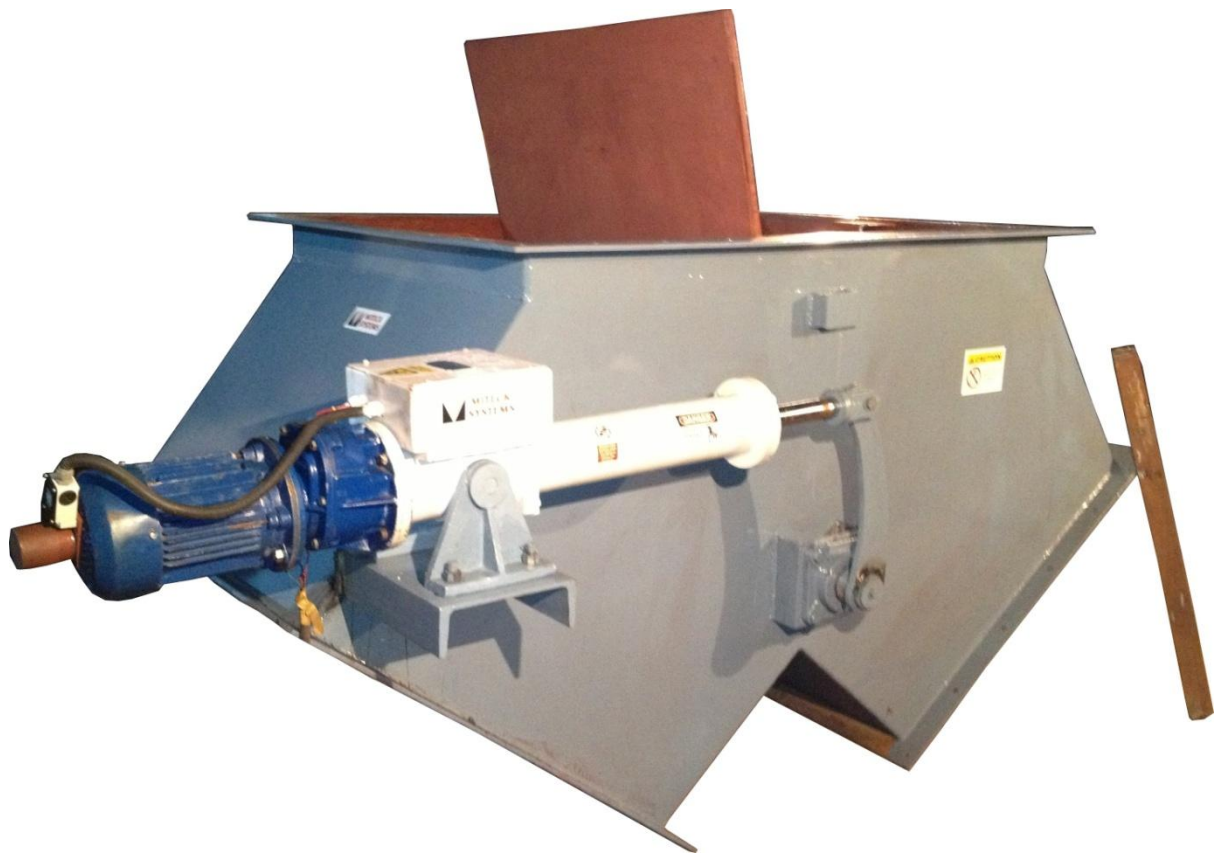
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4. INDUSTRIAL DAMPERS

4.1 BUTTERFLY DAMPERS

Butterfly dampers are typically used to intercept or regulate gas flows; they are similar to single-louver dampers with one blade and they can be used in round or square/rectangular ducts.

Blade is typically designed with air-foil configuration which minimizes the pressure drop; shafts are made of solid section and "stub" type to be connected to the blade by keys and blocks. This basic rule of design will optimize the assembly operations reaching high accuracy; in addition, in

case of need, the blade can be removed from the damper frame without removing the complete unit from ductwork.

Actuation system is normally by electric actuator, pneumatic actuator or manual by irreversible gear box.

Butterfly dampers can be supplied with internal or external fiber insulation or, when required, with internal concrete (refractory) insulation. A large variety of metals are used in design and fabrication, from simple carbon steel to stainless steel and low-alloy/high-alloy materials.

Several types and configurations of Butterfly dampers are available: feel free to contact us for any request or application you need.

ROUND BUTTERFLY

- Flow Control of gas in round ducts is best accomplished with round opposed-blade .
- Butterfly dampers provide excellent control of static pressure and volume in mid-range, but less than adequate low-flow control when compared to opposed-blade louvers.
- Radial vane dampers are preferred for control of gas entering centrifugal or radial fans.
- Flap diverter dampers are designed to control flow during startup of waste heat equipment.
- Positioning devices with analog or digital inputs are available to maintain reliable flow control on most damper configurations.
- Feedback instrumentation is available to provide exact positioning data

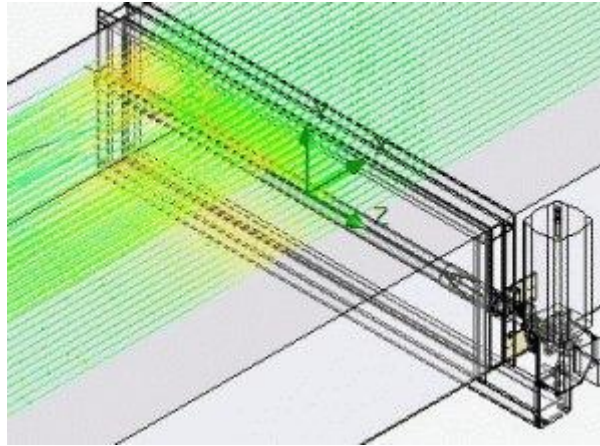
Image



4.2 MULTI LOUVER DAMPER

LOUVER DAMPERS EMPLOY FAST ACTING SINGLE OR DUAL ROWS OF RECTANGULAR BLADES, MOUNTED WITHIN A RIGID FRAME FOR INSTALLATION IN ROUND AND RECTANGULAR FLANGED DUCTING.

Louvers are particularly well suited for flow modulation, bypass, isolation and back flow prevention applications.



louver

ACTUATION SYSTEM CAN BE BY EITHER ELECTRIC, PNEUMATIC , MANUAL ACTUATION IS ALSO POSSIBLE BY MEANS OF AN IRREVERSIBLE GEAR BOX.

Louver and Multi louver dampers can be supplied with internal or external fiber insulation or, when required, with internal concrete (refractory) insulation.

A large variety of metals are used in design and fabrication, from simple carbon steel to stainless steel and low-alloy/high-alloy materials.

Technical Specification

The body of multi louver damper is fabricated from different type of material suitable for site condition and client requirement. Standard materials of construction for critical parts of butterfly damper are-

1. **Body** :A36, IS 2062, A516, IS 2002, Corten, SS 304,SS 316, Inconel etc.
2. **Blade** :A36, IS 2062, A516, IS 2002, Corten, SS 304,SS 316, Inconel etc.
3. **Shaft** :En8, SS 410, SS 304,SS 316, Inconel etc.
4. **Seal** : SS 316Ti, Inconel etc.
5. **Bearing** : C.I lined Bush type with Grafoil Sheet maintenance free/ Antifriction
6. **Shaft Packing** :SS 316Ti/ Braided Graphite.

Other materials of construction can be used as required by client.

SEAL

These dampers are design for sealing up to 99.9% without seal air system and 100% with seal air system. Type of seals: Omega seal/ Solid seal

DRIVE

Multi-louver dampers can be provided with one side or double side drive as required by client.

Types of drive

- Manual by Hand Wheel/ Lever/ Chain/ Winch Pulley Arrangement
- Motorized
- Pneumatic

Feature

performance advantages

- 99% sealing efficiency with standard structural seal (99.5% with optional jamb seals and blade edge seals)

- Low pressure drop airfoil blade design
- Superior flow and pressure control with opposed blades
- Superior flow isolation and fan spin control with parallel blades
- High structural rigidity to eliminate frame distortion and blade jamming

standard design features

- Welded monocoque airfoil blades
- Fixed linkage employs hardened steel pivots with thin-film PTFE (Teflon®) bushings
- Ball bearings on blade shafts
- Shaft seal gland consists of two compressible rings mounted separately from bearing
- Actuator is mounted directly to driving shaft, reducing frame flex and hysteresis.

4.3 MOTORISED DAMPER

Introduction

Motorised damper are typically specified for gas shut-off of ducts and they are commonly installed in furnaces, heaters, reformers and other chemical and petrochemical application or cement industry as well as isolators downstream diverters in GT exhaust systems or any other heavy duty industrial application.

Motorised damper employ a sliding blade inserted into the duct from an external frame to block flow in rectangular and round ducting. Motorised damper provide a mechanized means of inserting a duct blanking plate and offer superior isolation of

flue gas applications containing heavy particulate loads and are ideal for tight shut off applications.

APPLICATIONS

- Scrubbers
- Precipitators
- Oxidizers
- Bag houses
- Heaters

MOTORISED DAMPER

The body of Motorised damper is fabricated from different type of material suitable for site condition and client requirement. Standard materials of construction for critical parts of Motorised damper are-

1. **Body:** A36, IS 2062, A516, IS 2002, Corten, SS 304, SS 316, Inconel etc.**2. Blade:** A36, IS 2062, A516, IS 2002, Corten, SS 304, SS 316, Inconel etc.
2. **Shaft/Screw:** En8, En24, SS 304, SS 316, etc.
3. **Seal:** SS 316Ti, Inconel etc.
4. **Bearing:** C.I lined Bush type with Grafoil Sheet, maintenance free / Antifriction

Other materials of construction can be used as required by client.

SEAL

These motorised damper are design for sealing up to 99.9% without seal air system and 100% with seal air system. Shut of blinds are also provide 100% sealing across blade & 99.9% duct to/from atmosphere. Type of seals: Bulb seal/ Flexible sea

DRIVE

These motorised damper can be provided with single or double screw / rack-pinion arrangement depending on client requirements and the size of motorised damper.

Type of drives –

- **Manual by Hand Wheel/ Chain/ Winch Pulley**

Arrangement

- **Motorized**
- **Pneumatic (For small sizes)**

Feature

Miteck performance advantages

- Low pressure drop due to full blade retraction from flow stream
- Dual chain or rack and pinion drive designed for actuator maximum stall output

- Reliable man safe isolation with optional seal air system

standard design features

- Self cleaning blade seats for 99.99% sealing efficiency
- Self lubricated sleeve bearings
- Maintenance-free drive design
- Corrosion resistant drive and follower shafts
- Clean out access
- Actuator is directly coupled to the drive shaft options
- Push rod/chest style for high temperature or pressure
- Spectacle designs
- Enclosed bonnets
- Dual blade
- Seal air systems
- Position indicators

4.4 GUILLOTINE DAMPER

INTRODUCTION

Guillotine damper are typically specified for gas shut-off of ducts and they are commonly installed in furnaces, heaters, reformers and other chemical and petrochemical application or cement industry as well as isolators downstream diverters in GT exhaust systems or any other heavy duty industrial application.

Guillotine damper employ a sliding blade inserted into the duct from an external frame to block flow in

rectangular and round ducting. Guillotine damper provide a mechanized means of inserting a duct

blanking plate and offer superior isolation of flue gas applications containing heavy particulate

loads and are ideal for tight shut off applications.

APPLICATION

- Scrubbers
- Precipitators
- Oxidizers
- Bag houses
- Heaters

GUILLOTINE DAMPER

The body of Guillotine damper is fabricated from different type of material suitable for site condition and client requirement. Standard materials of construction for critical parts of Guillotine damper are-

1.
 1. **Body:** A36, IS 2062, A516, IS 2002, Corten, SS 304, SS 316, Inconel etc.**2. Blade:** A36, IS 2062, A516, IS 2002, Corten, SS 304, SS 316, Inconel etc.
 2. **Shaft/Screw:** En8, En24, SS 304, SS 316, etc.
 3. **Seal:** SS 316Ti, Inconel etc.
 4. **Bearing:** C.I lined Bush type with Grafoil Sheet, maintenance free / Antifriction

Other materials of construction can be used as required by client.

SEAL

These guillotine damper are design for sealing up to 99.9% without seal air system and 100% with seal air system. Shut of blinds are also provide 100% sealing across blade & 99.9% duct to/from atmosphere. Type of seals: Bulb seal/ Flexible sea

DRIVE

These guillotine damper can be provided with single or double screw / rack-pinion arrangement depending on client requirements and the size of flue gas damper.

Type of drives –

- **Manual by Hand Wheel/ Chain/ Winch Pulley**

Arrangement

- **Motorized**
- **Pneumatic (For small sizes)**

Feature

Miteck performance advantages

- Low pressure drop due to full blade retraction from flow stream
- Dual chain or rack and pinion drive designed for actuator maximum stall output
- Reliable man safe isolation with optional seal air system

standard design features

- Self cleaning blade seats for 99.99% sealing efficiency
- Self lubricated sleeve bearings
- Maintenance-free drive design
- Corrosion resistant drive and follower shafts
- Clean out access
- Actuator is directly coupled to the drive shaft options
- Push rod/chest style for high temperature or pressure
- Spectacle designs

- Enclosed bonnets
- Dual blade
- Seal air systems
- Position indicators

Images

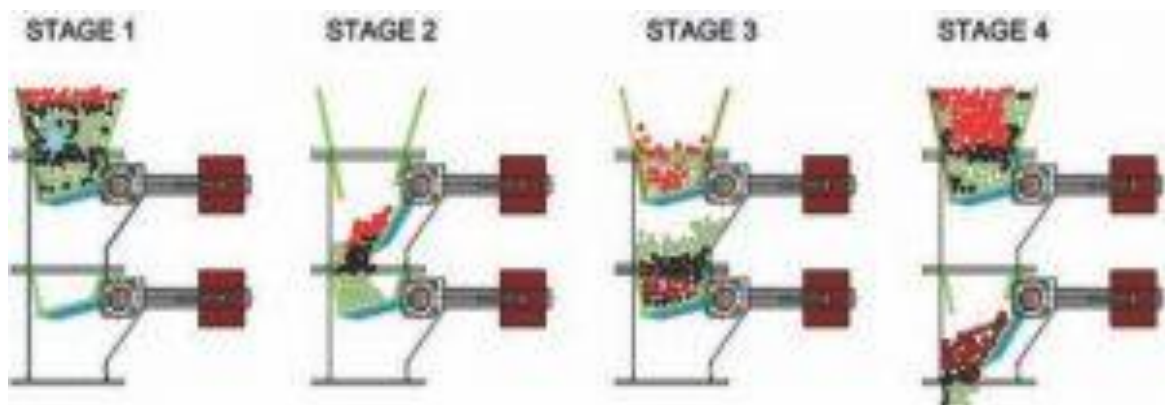


5. DOUBLE FLAP GATE VALVE

Introduction

UNLIKE A ROTARY VALVE THAT INEVITABLY HAS SOME AIR LEAKAGE BECAUSE OF THE CLEARANCE REQUIRED BETWEEN THE BLADES AND THE HOUSING, THE DOUBLE FLAP GATE VALVE IS DESIGNED TO SEAL COMPLETELY AND ISN'T SUBJECT TO THE KIND OF WEAR THAT ROTARY VALVES WOULD ENDURE UNDER EXTREME

THE DOUBLE-FLAP GATE AIRLOCK VALVE IS SPECIFICALLY DESIGNED TO CONTROL THE RATE OF MATERIAL FLOW THROUGH A SYSTEM, WHILE AT THE SAME TIME PREVENTING AIR LEAKAGE BY ISOLATING THE PROCESSING SYSTEM'S PRESSURES. APPLICATION CONDITIONS.



Miteck Brochure double flap-gate valve stages

Typical application

includes

- 1 – Batch feeding
- 2 – Mixing
- 3 – Drying
- 4 – Pneumatic Conveying
- 5 – Material Recovery
- 6 – Dust Collection

Technical Specification

The Double-Flap gate Airlock Valves are designed for high-pressure applications up to 20 psi and temperature extremes up to 1,650°F or higher depending upon the application.

Double-flap gate product that can operate reliably in pneumatic conveying

systems at these pressures.

All models are offered with a choice of pneumatic, electro-mechanical or gravity/counterweight actuation.

A triple flap gate configuration is also available if better suited to your particular application.

COMMON SERVICE CONDITIONS

- High Pressure With Up To 20 psi Differentials
- Extreme Temperatures To 1,650°F or Higher
- Highly Corrosive Materials

SCREW CONVEYORS

Common industry uses Double flap gate valve:

Foundries	Mold sand handling
Breweries	Grain & hops handling/storage
Wood Products	Waste & sawdust
Paper	Pulp & chip handling
Gypsum	Gypsum conveying for wallboard
Lead Products	Recycled lead
Food Handling	Various food-grade applications
Salt Mines	Mixing, conveying, blending
Steel Mills	Dust collection & storage
Sewage Plants	Sludge conveying & storage
Chemical Plants	Prevents contamination
Feed & Grain	Various applications
Rendering	Extensive use, washes down
Glass Plants	Conveying & metering

The body of Screw conveyor is fabricated from different type of material suitable for site condition and client requirement. Standard materials of construction for critical parts of Screw conveyor are-

1.
 1. **Body:** A36, IS 2062, A516, IS 2002, Corten, SS 304, SS 316, Inconel etc.
 2. **Blade:** A36, IS 2062, A516, IS 2002, Corten, SS 304, SS 316, Inconel etc.
 2. **Shaft/Screw:** En8, En24, SS 304, SS 316, etc.
 3. **Seal:** SS 316Ti, Inconel etc.
 4. **Bearing:** C.I lined Bush type with Grafoil Sheet, maintenance free / Antifriction

Other materials of construction can be used as required by client.

SEAL

These Screw conveyor are designed for sealing up to 99.9% without seal air system and 100% with seal air system. Shut of blinds are also provide 100% sealing across blade & 99.9% duct to/from atmosphere. Type of seals: Bulb seal/ Flexible sea

DRIVE

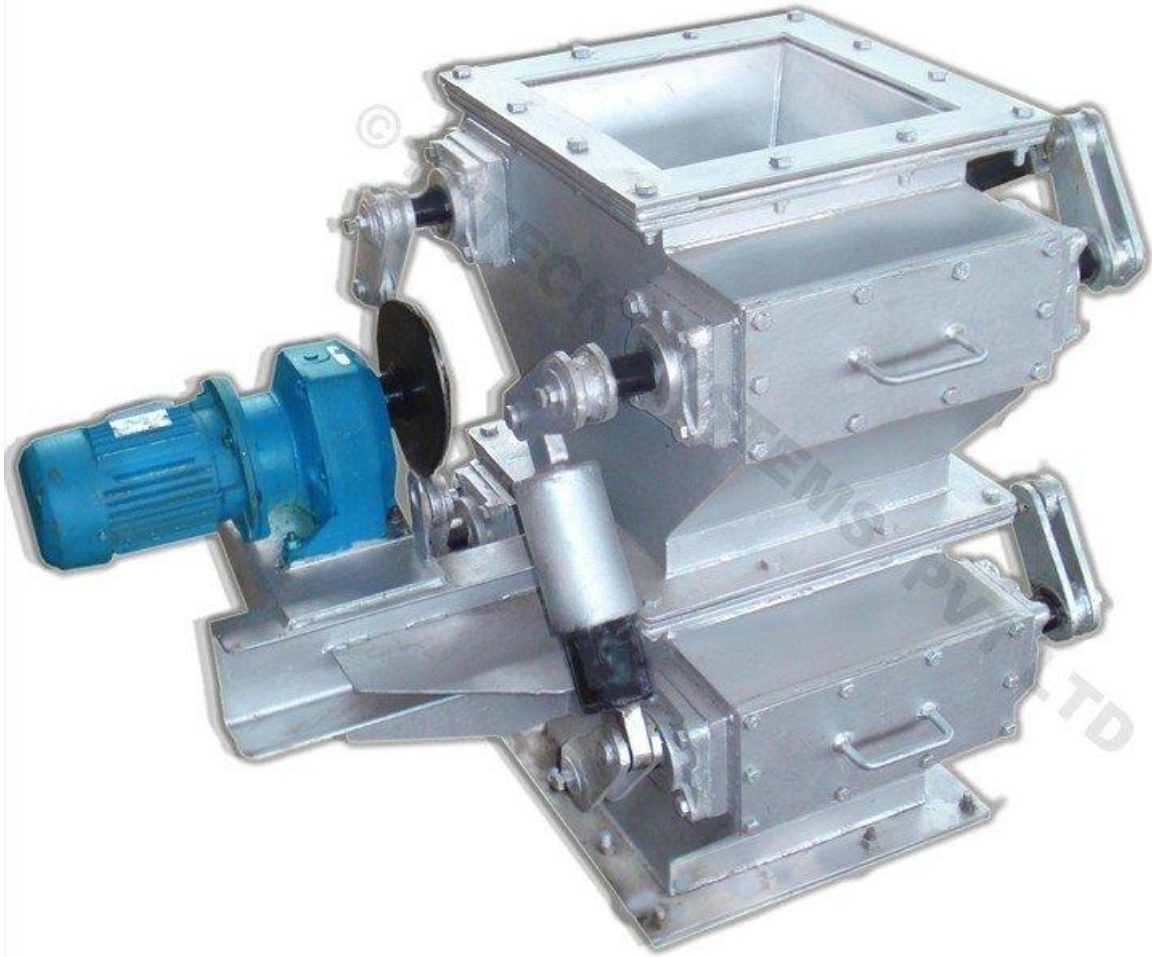
These dampers can be provided with single or double screw / rack-pinion arrangement depending on client requirements and the size of dampers.

Features

- Increased Safety – robust, hybrid construction with no external pinch points
- Up to 60% Larger Diameter Shafts and Support Bearings – means less downtime due to premature shaft failure
- Larger Adjustable Packing Gland Shaft Seals – minimizes system leakage to exterior and allows for air purging
- Front and Rear Access Panels – simplifies interior inspection and maintenance
- Dual Lever Arms – assures more uniform gate-to-seat contact and enhances the gate's ability to close against higher-pressure differentials
- Out board sealed bearings never need lubrication



**FLAP
VALVE**





5.1 PNEUMATIC FLAP VALVE

INTRODUCTION

Unlike a rotary valve that inevitably has some air leakage because of the clearance required between the blades and the housing, The DoubleFlap gate Airlock Valve is designed to seal completely and isn't subject to the kind of wear that rotary valves would endure under extreme

The Pneumatic flap valve is specifically designed to control the rate of material flow

through a system, while at the same time preventing air leakage by isolating the processing system's pressures. application conditions.

Typical application

includes

1 – Batch feeding

2 – Mixing

3 – Drying

4 – Pneumatic

Conveying

5 – Material Recovery

6 – Dust Collection

Technical Specification

The Pneumatic flap valves are designed for high-pressure applications up to 20 psi and temperature extremes up to 1,650°F or higher depending upon the application. Double-flap gate product that can operate reliably in pneumatic conveying systems at these pressures.

All models are offered with a choice of pneumatic, electro-mechanical or gravity/counterweight actuation.

A triple flap gate configuration is also available if better suited to your particular application.

COMMON SERVICE CONDITIONS

- High Pressure With Up To 20 psi Differentials
- Extreme Temperatures To 1,650°F or Higher
- Highly Corrosive Materials

Feature

- Increased Safety – robust, hybrid construction with no external pinch points
- Up to 60% Larger Diameter Shafts and Support Bearings – means less downtime due to premature shaft failure
- Larger Adjustable Packing Gland Shaft Seals – minimizes system leakage to exterior and allows for air purging
- Front and Rear Access Panels – simplifies interior inspection and maintenance
- Dual Lever Arms – assures more uniform gate-to-seat contact and enhances the gate's ability to close against higher-pressure differentials
- Out board sealed bearings never need lubrication

Images



5.2 MOTORISED FLAP VALVE

Introduction

Unlike a rotary valve that inevitably has some air leakage because of the clearance required between the blades and the housing, The Double Flap gate Airlock Valve is designed to seal completely and isn't subject to the kind of wear that rotary valves would endure under extreme.

The Motorised flap valve is specifically designed to control the rate of material flow through a system, while at the same time preventing air leakage by isolating the processing system's pressures. application conditions.

Typical application

includes

- 1 – Batch feeding
- 2 – Mixing
- 3 – Drying
- 4 – Pneumatic
Conveying
- 5 – Material Recovery
- 6 – Dust Collection

Technical Specification:

The Motorised flap valves are designed for high-pressure applications up to 20 psi and temperature extremes up to 1,650°F or higher depending upon the application.

Double-flap gate product that can operate reliably in pneumatic conveying systems at these pressures.

All models are offered with a choice of pneumatic, electro-mechanical or gravity/ counterweight actuation.

A triple flap gate configuration is also available if better suited to your particular application.

COMMON SERVICE CONDITIONS

- High Pressure With Up To 20 psi Differentials
- Extreme Temperatures To 1,650°F or Higher
- Highly Corrosive Materials

FEATURES

- Increased Safety – robust, hybrid construction with no external pinch points
- Up to 60% Larger Diameter Shafts and Support Bearings – means less downtime due to premature shaft failure
- Larger Adjustable Packing Gland Shaft Seals – minimizes system leakage to exterior and allows for air purging
- Front and Rear Access Panels – simplifies interior inspection and maintenance
- Dual Lever Arms – assures more uniform gate-to-seat contact and enhances the gate's ability to close against higher-pressure differentials
- Out board sealed bearings never need lubrication

5.3 TRIPLE FLAP GATE VALVE

Introduction

Unlike a rotary valve that inevitably has some air leakage because of the clearance required between the blades and the housing, The Double Flap gate Airlock Valve is designed to seal completely and isn't subject to the kind of wear that rotary valves would endure under extreme

The Triple flap valve is specifically designed to control the rate of material flow through a system, while at the same time preventing air leakage by isolating the processing system's pressures. application conditions.

Typical application

includes

1 – Batch feeding

2 – Mixing

3 – Drying

4 – Pneumatic

Conveying

5 – Material Recovery

6 – Dust Collection

Technical Specification:

The Triple flap valves are designed for high-pressure applications up to 20 psi and temperature extremes up to 1,650°F or higher depending upon the application.

Double-flap gate product that can operate reliably in pneumatic conveying systems at these pressures.

All models are offered with a choice of pneumatic, electro-mechanical or gravity/ counterweight actuation.

A triple flap gate configuration is also available if better suited to your particular application.

COMMON SERVICE CONDITIONS

- High Pressure With Up To 20 psi Differentials
- Extreme Temperatures To 1,650°F or Higher
- Highly Corrosive Materials

Feature:

- Increased Safety – robust, hybrid construction with no external pinch points
- Up to 60% Larger Diameter Shafts and Support Bearings – means less downtime due to premature shaft failure
- Larger Adjustable Packing Gland Shaft Seals – minimizes system leakage to exterior and allows for air purging
- Front and Rear Access Panels – simplifies interior inspection and maintenance
- Dual Lever Arms – assures more uniform gate-to-seat contact and enhances the gate's ability to close against higher-pressure differentials
- Out board sealed bearings never need lubrication



6. CONE VALVE

Introduction

CONE VALVE TYPICAL APPLICATION IS USED WHERE PRESSURE DIFFERENCE BETWEEN UPPER SECTION & DISCHARGE SECTION IS HIGH & SEALING REQUIREMENT IS CRITICAL ALSO USED WHERE MATERIAL HANDLED IS ABRASIVE

Miteck's Heavy duty cone valve series ensure a reliable, long-lasting seal even when the material is abrasive or corrosive.

Easy and inexpensive to maintain for decades of "like new" operation; and, fit their specific applications. All models match the standard industry flange pattern and height. The low-profile design of the MPSA model enables it to fit in restricted space without costly structural changes. All models are offered with the following choice of pneumatic, electro-mechanical or gravity/counterweight actuation. We offer a non wearing seal and will operate flawlessly under all types of continuing process conditions. This would include applications with extreme temperature ranges, abrasive, corrosive materials and high-pressure differentials. During operation, product builds up on the cone until a sufficient load overcomes the counterweight. The cam alternately opens each cones, allowing material to pass through the separate chambers in batch form and thereby ensuring a gas seal. After cam release, the counterweights (or springs) smoothly return each cone to the sealed

position. This type units are suitable for pressure differentials of up to 20 inches water gauge. However with special.

The Motorized cone valve is specifically designed to control the rate of material flow through a system, while at the same time preventing air leakage by isolating the processing system's pressures. application conditions consideration to the contact points between the inlet and the cone, a seal can be incorporated to allow pressures up to 15 psi.

APPLICATIONS

- Scrubbers
- Precipitators
- Oxidizers
- Bag houses
- Heaters

Images





7. ISOLATION GATE AND SLIDE GATE

7.1 MOTORIZED SLIDE GATE

Introduction –

Motorized slide gate are typically specified for gas shut-off of ducts and they are commonly installed in furnaces, heaters, reformers and other chemical and petrochemical application or cement industry as well as isolators downstream diverters in GT exhaust systems or any other heavy duty industrial application.

Gates that use a rack and pinion to control movement of the slide can be ordered with an electric drive to provide for remote operation. This is accomplished by a . Two Class II G / 2 No +2 NC limit switches are standard and are set to indicate the fully open and fully closed position of the slide. Separate position indicators are optional for use on any manual, air, hydraulic or standard electrically operated slide gate.

Consult the Miteck for more information on these. We make a great variety of other sizes that are custom-built to your particular needs and requirements. All hole layouts are based on our standards and can be changed to meet your specifications.

Round inlet plates, square to rounds and companion flanges are available to help fit these gates into your applications.

Images



APPLICATIONS

- Scrubbers
- Precipitators
- Oxidizers
- Bag houses
- Heaters

FEATURE

Miteck performance advantages of Motorized slide gate

- Low pressure drop due to full blade retraction from flow stream
- Dual chain or rack and pinion drive designed for actuator maximum stall output
- Reliable man safe isolation with optional seal air system

standard design features-

- Self cleaning blade seats for 99.99% sealing efficiency
- Self lubricated sleeve bearings
- Maintenance-free drive design
- Corrosion resistant drive and follower shafts
- Clean out access
- Actuator is directly coupled to the drive shaft options
- Push rod/chest style for high temperature or pressure
- Spectacle designs
- Enclosed bonnets
- Dual blade
- Seal air systems
- Position indicators

7.2 Pneumatic Slide Gate / Isolation Gate

Introduction

Pneumatic slide gate / isolation gate are typically specified for gas shut-off of ducts and they are commonly installed in furnaces, heaters, reformers and other chemical and petrochemical application or cement industry as well as isolators downstream diverters in GT exhaust systems or any other heavy duty industrial application.

Pneumatic slide gate employ a sliding blade inserted into the duct from an external frame to block flow in rectangular and round ducting. Pneumatic slide gate provide a mechanized means of inserting a duct blanking plate and offer superior isolation of flue gas applications containing heavy particulate loads and are ideal for tight shut off applications.

Applications

- Scrubbers
- Precipitators
- Oxidizers
- Bag houses
- Heaters

Miteck performance advantages

- Low pressure drop due to full blade retraction from flow stream
- Dual chain or rack and pinion drive designed for actuator maximum stall output
- Reliable man safe isolation with optional seal air system
- Self cleaning blade seats for 99.99% sealing efficiency
- Self lubricated sleeve bearings
- Maintenance-free drive design
- Corrosion resistant drive and follower shafts
- Clean out access
- Actuator is directly coupled to the drive shaft options
- Push rod/chest style for high temperature or pressure
- Spectacle designs
- Enclosed bonnets
- Dual blade
- Seal air systems
- Position indicators

7.3 RACK & PINION GATE

Introduction

Manually or electrically operated Rack & Pinion Slide Gate with a rack and pinion drive system. A rack and pinion drive system utilizes spur gears attached to a drive shaft to provide motion to the blade. The drive shaft and spur gears rotate, they drive the blade by inter-connecting the spur gears with the rack secured to the blade surface.

8. PUG MILL / ASH CONDITIONERS

Introduction

The Pug Mill/Ash conditioner is applicable to many industries. Where pollution control is a factor, the mill effectively blends dust recovered from such equipment as electrostatic precipitator, mechanical collectors and bag houses with various liquids, thus allowing transport without the particulate matter escaping into the air. The Pug Mill/Ash conditioner also lets you recover valuable elements such as lead, iron and copper and return them to the process stream. This is especially beneficial in sintering, as it returns the recovered dust to the process providing a closed circuit. The Pug Mill/Ash conditioner are designed to work on a continuous basis accepting a controlled feed of material from either a screw feeder, or rotary valve etc.

Paddle blade formation is set to give the most efficient mixing action with water being added by an arrangement of atomized spray nozzles up to 30% by weight. All Conditioners are of heavy duty design, of single or twin shaft formation, material of construction can be mild steel or stainless steel. Throughput rates depend upon the type and properties of the product being handled. Sleeve will specify the machine size, length, speed and power to suit the actual plant and capacity requirements.

APPLICATIONS

- Scrubbers
- Precipitators
- Oxidizers
- Bag houses
- Heaters

Features

MITECK PERFORMANCE ADVANTAGES OF PUG MILL/ASH CONDITIONER

- Top feed opening can be modified to mate with equipment supplied by other manufactures.
- Paddle shafts, flanged at both ends, simplify maintenance; permit removal of entire assembly.
- Timing gears are sealed in a heavy duty oil bath case which features fill and drain points and an oil level gauge. These gears allow for paddle intermeshing which provides a vigorous mixing action.
- The four spray pipes are connected to a common header and are equipped with spray nozzles. Individual control valves meter the proper amount of various wetting agents to each pipe.

TYPES OF PADDLE FOR FIXED PADDLE OF PUG MILL / ASH CONDITIONER



Replaceable blades of Pug Mill Ash conditioner design

