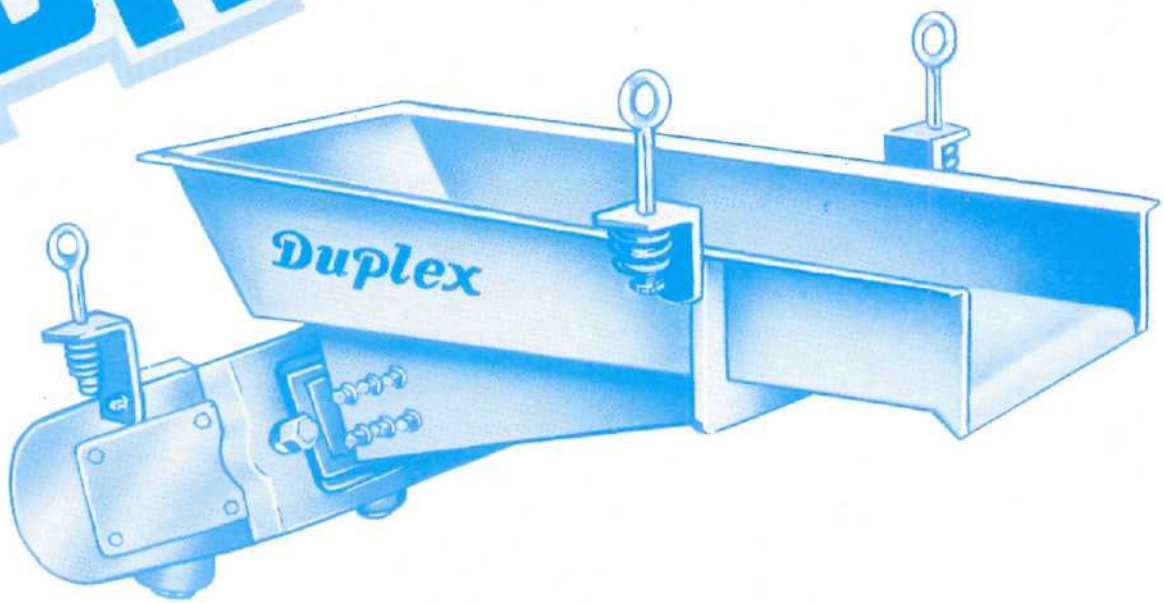
Duplex VIBRATING FEEDERS



DUPLEX VIBRATING FEEDERS:

The Duplex vibrating feeder is used to transfer bulk materials from hoppers or storage silos, driers, mixers, grinders, crushers, mullers or screens in food processing, chemical, mining, foundry, quarrying and iron and steel industries.

PRINCIPLE:

When the magnet coil is energised by connecting it to a pulsating current, it transmits motions to the feeder tray through leaf springs which are clamped to the two ends of the power unit

CONSTRUCTION FEATURES:

"Duplex[111] Vibratory Feeders are ElectromagneticaJly driven conveying device used principally for feeding material from hoppers. They are mounted immediately underneath the opening of the hopper and as soon as the feeder tray is set vibrating, it produces uniform flow of material.

"Duplex" Vibratory Feeders are constructed in the most simple way. The two main parts are the Electromagnetic Activating Device and the Tray connected rigidly to it. The Magnetic Vibrator has no bearings or points to be lubricated and thus operates without wear or need for maintenance.

CONVEYOR UNITS TYPES:

The construction and material of the conveyor unit is determined by the following factors : application, size of grain, bulk density and nature of the bulk material. Trough Conveyors for Slightly Abrasive Bulk Goods. These units are mainly used as bin discharge troughs or as trough conveyors fof medium conveyance sections. There is a variety of materials and linings available which take a great deal of stress and for bulk materials which tend to stick.

Trough Conveyors for Severely Abrasive Bulk Goods.

All depending on the type and extent of the stress, bin discharge troughs can be manufactured as a heavy construction, or with linings of various strengths, trough conveyors with linings are suitable for medium conveyance sections. The bottoms and walls of lined troughs are additionally reinforced by means depending on the type of stress they are to be subjected to.

ADVANTAGES:

The electro magnetic design and rugged construction the feeder offers unparalled durability and reliability. There are no mechanical parts, such as gears, cams, reentries, belts or bearings requiring lubrication. The drive unit is encased in a dust tight housing. Down time and maintenance are extremely rare, even when the feeder operates under abusive environmental conditions. Transmission of extraneous vibrations is prevented by a completely balanced structure.

The feeder is smooth and easy to operate with a fully electrical stepless control by means of a rheostat. The running cost of a vibrating feeder is very low.

INSTALLATION:

The vibrating feeder is usually installed by-suspension mounting using four adjustable tie-rods and turn buckles. It can also be supplied for floor mounting on a solid base or with a combination of floor and suspension mounting. Clearance must be maintained between the hoppers/skirt boards

and the feeder trough. Vibrations must not be impeded by rigid attachments to adjacent the trough and the adjacent object must be flexible preferably of cloth or rubber.

SELECTION:

The capacity of a feeder is affected by the width of the conveying trough, the stroke and frequency applied to the trough, the mounting position (horizontal or declined) and the response of the material to the vibrating action.

A feeder is a volumetric flow device: the flow is a product of width times depth times velocity of material. The wider the feeder trough, the greater the capacity. However, the material depth in the trough can become significant when it becomes too high since the conveying speed of the material on the top becomes less than that on the bottom. Similarly, the rate can also diminish simply because the vibrations cannot penetrate effectively through the material depth. Lower material depths arc allowed for fine materials compared to coarse materials.

The stroke and frequency applied to the vibrating trough are important because they provide the action tc the material causing it to move linearly down the trough.

"Duplex" vibrating feeder operates at 3000 vibrations per minute and at any amplitude of upto 15 mm making suitable for handling a wide range of materials. The amplitude can be varied from 0 to 100% through control panel supplied with the feeder. The capacity of standard feeders are given in the table below and these are based on handling dry sand, or coarse materials weighing 1600 Kgs/m^3. The capacity will reduce with lighter and/or finer materials and simultaneously increase with heavier materials.

MATERIALS:

Steel is very easy to mould and weld and its resistance to wear is adequate for the majority of applications. The special steel TISCRAL is used where there is a greater tendency to wear. Synthetic linings made of low density polyethylene or rubber linings are particularly suitable for abrasives, stickly and chemically aggressive bulk materials.

There is also a choice of heat resistant steels available for higher temperature.

DELIVERY FLOW:

The delivery flow gives attainable with the respective conveyor unit are the figures based on gravel or damp sand. The values given apply to any bulk material which can be conveyed easily wit a bulk density = 1.6 t/m^1 and having an approximately round or cubic grain form. Jt should, however, be noted that all the specified delivery flows are liable to decrease when bulk material is conveyed with:

— high bulk densities
— flat, scaly forms of granulation
— broken, sharp-edged grains (such as coke or chippings)
— a high moisture content
— a high proportion on fines
— flexible properties (refuse, thin metal and wood parings)

Fixed side-cheeks are essential for layer heights greater than 250 mm.

INSTALLATION GUIDE LINES:

Bin discharge troughs should, Where ever possible, be relieved of the bin pressure. The shape of the bin outlet and the ratio between the depth of the bin T and the passage height H 1:1 are important factors specified (with normal and above all with increased layer (heights). The units are supported or suspended on rubber pads, tension springs or compression springs. This prevents the vibrations travelling to the frame structure.

SPECIFICATIONS:

SR. NO.	DVF TYPE	MAX. LUMP SIZE	TROUGH SIZE (W x L)	CAPACITY PER HOUR OF MATL. WEIGHING (100 LBS/CU. FT.) 1600 KGS/CU.MT.	POWER CONSUMPTION (230/440 VOLTS)
1	DVF-1	50 MM	200 x 500 MM	8 M. TONNES	100 WATTS
2	DVF-2	100 MM	250x1000 MM	20 M. TONNES	250 WATTS
3	DVF-3	150 MM	500x1000 MM	30 M. TONNES	300 WATTS
4	DVF-4	200 MM	630x1000 MM	50 M. TONNES	450 WATTS
5	DVF-5	250 MM -	800x1500 MM	100 M. TONNES	1200 WATTS
6	DVF-6	300 MM	1000x1500 MM	150 M. TONNES	1500 WATTS
7	DVF-7	400 MM	1200x1800 MM	250 M. TONNES	3000 WATTS
8	DVF-8	450 MM	1400x2000 MM	400 M. TONNES	4500 WATTS
9	DVF-9	500 MM	1500x2500 MM	500 M. TONNES	6000 WATTS

THE ABOVE CAPACITIES ARE CALCULATED ASSUMING THAT THE VIBRATING FEEDER IS INSTALLED AT 10° DOWN SLOPE AND SKIRT BOARDS ARE USED ON THE SUPPLY HOPPER.

DUPLEX ENGINEERING WORKS

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