

Tips:

How to choose a conveyor screw

Which conveyor screw design will suit your application? Here's a concise rundown of available screw designs and how they're applied.

Discussing conveyor screw designs requires understanding some basic terms first. The conveyor screw's *hand* indicates the right- or left-hand orientation of screw rotation, which determines the direction of material movement. The conveyor screw's *pitch* is the distance between identical points on adjacent flighting surfaces. On a screw with *full-pitch flighting*, the pitch measures the same as the screw diameter, as shown:

A

Each of the common conveyor screw designs has a different flighting style: double flight, short pitch, variable pitch, tapered diameter, cut flight, cut-and-

folded flight, mixing paddle, and paddle conveyor. In some cases, more than one flighting style is used on the same conveyor screw. The variations are almost endless, so use these descriptions as guidelines only. For more help selecting a screw, work with a screw conveyor supplier's engineering department.

Double flight

B

A double-flight conveyor screw has two rows of flighting of the same hand wrapped around the conveyor pipe. The screw is suited to any free-flowing material. It produces even discharge and minimizes surging, which is especially desirable when you feed into a scale hopper. You'll typically need the double flighting only for the last two or three pitches prior to a discharge; the rest are usually single full pitch.

Short pitch

C

A short-pitch screw is usually half-pitch, but can be any pitch under a full pitch. You can use this design along the full length of an inclined conveyor to efficiently move a free-flowing material.

You can fit a half-pitch design under a choke-feed hopper to reduce the cross-section load (the percentage of the screw diameter covered by the material cross-section) beyond the feed area. Then you can extend the conveyor length by using intermediate hanger bearings. A screw conveyor with the half-pitch design has half the capacity of a full-pitch unit under the same cross-section load and moving at the same speed.

Variable pitch

D

You can use a variable-pitch screw, which is suited to virtually any material, as a feeder screw under a long storage hopper discharge. The design permits material to be drawn off over the hopper discharge's length. This prevents material from flowing only from the discharge's extreme end, which can keep the hopper from completely emptying and create dead spots in the hopper.

Tapered diameter

E

You can also use a tapered-diameter screw to draw off virtually any type of material over a hopper discharge's length. The screw's larger end is positioned toward the hopper discharge's end. It's best to use a tapered conveyor trough when using a tapered-diameter screw to reduce the material bed at the conveyor's feed end.

Cut flight

F

A cut-flight screw has deep notches in the flighting that chop and agitate the material as it's conveyed. You can use the screw to efficiently mix dry materials, particularly at high speed, or to convey a cohesive material that tends to ball or lump.

Cut-and-folded flight

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A cut-and-folded-flight screw is like the cut-flight screw but the notches are bent over to create even more agitation and aeration for conveying a very cohesive material. You can also use the screw to cool or dry lightweight materials in a conveyor fitted with a dome-type cover. The cut-and-folded flight lifts and exposes the particles to air, which aids cooling or drying.

Mixing paddle

H

A mixing-paddle screw can have cut or cut-and-folded flighting. The flighting is fitted with paddles to provide more mixing and to slow material flow through the conveyor. The paddles are typically welded opposite to the flighting hand; for instance, a screw with right-hand flighting would have left-hand paddles. The hand and pitch of the paddles can also be adjustable to slow conveying and extend mixing for hard-to-mix materials.

Paddle conveyor

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You can use a paddle conveyor — a shaft fitted with paddles and no screw flighting — to provide maximum stirring action when you don't need conveying efficiency. The paddle conveyor is suited to mixing lightweight materials and to blending dry materials with small amounts of liquid.

—Walter Geisler,
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