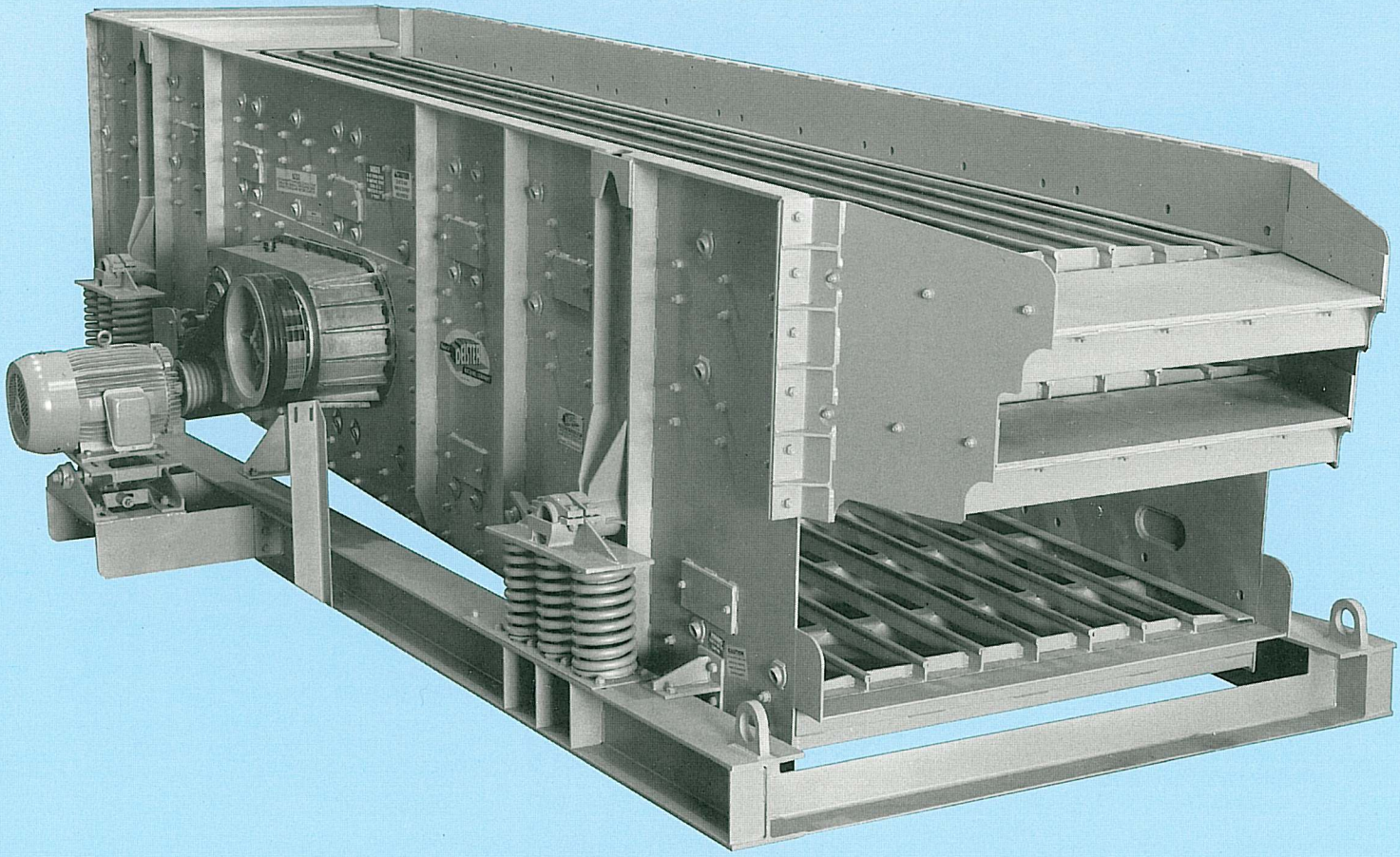
Bulletin No. 333-A



DEISTER®

INC. 1912

Heavy-duty Horizontal Triple Shaft

VIBRATING SCREENS

Deister Heavy-duty Horizontal Triple Shaft Vibrating Screens

Deister horizontal triple shaft vibrating screens combine the efficiency and low head room of horizontal screens with the benefits of a smooth running oval stroke usually associated with inclined screens. Optimum performance and design flexibility make Deister vibrating screens the obvious choice of producers and portable plant designers throughout the industry. Deister engineers welcome the opportunity to work with you in solving your toughest screening problems.

Deister recognizes the need for truly rugged vibrating screens to perform in today's demanding portable plant as well as stationary plant applications. One look at Desiter equipment tells you that no one builds vibrating screens with more quality. Extra protection is provided at all wear points. Heavy-duty bracing and frame members insure long vibrating frame life.

Available units vary in size from a double deck, 5′ x 14′, to a triple deck, 8′ x 20′, including a triple deck, 6′ x 24′.

Explanation of Model Letters

B = H-Beam Base

T = Trunnion Type spring support system

F = Flat (horizontal)

M = Middle vibrating mechanism located between decks

3 = Three shaft

P = Portable Plant Type

Explanation of Model Numbers

First Number = Number of Decks

Second Number = Width in Feet

Third and Fourth Number = Length in Feet

Example . . . BTFM3P-2616 H-Beam Base . . . Trunnion Mounts . . . Horizontal . . . Mechanism between Decks . . . Three Shaft . . . Portable . . . Two Decks, 6′ wide x 16′ long.

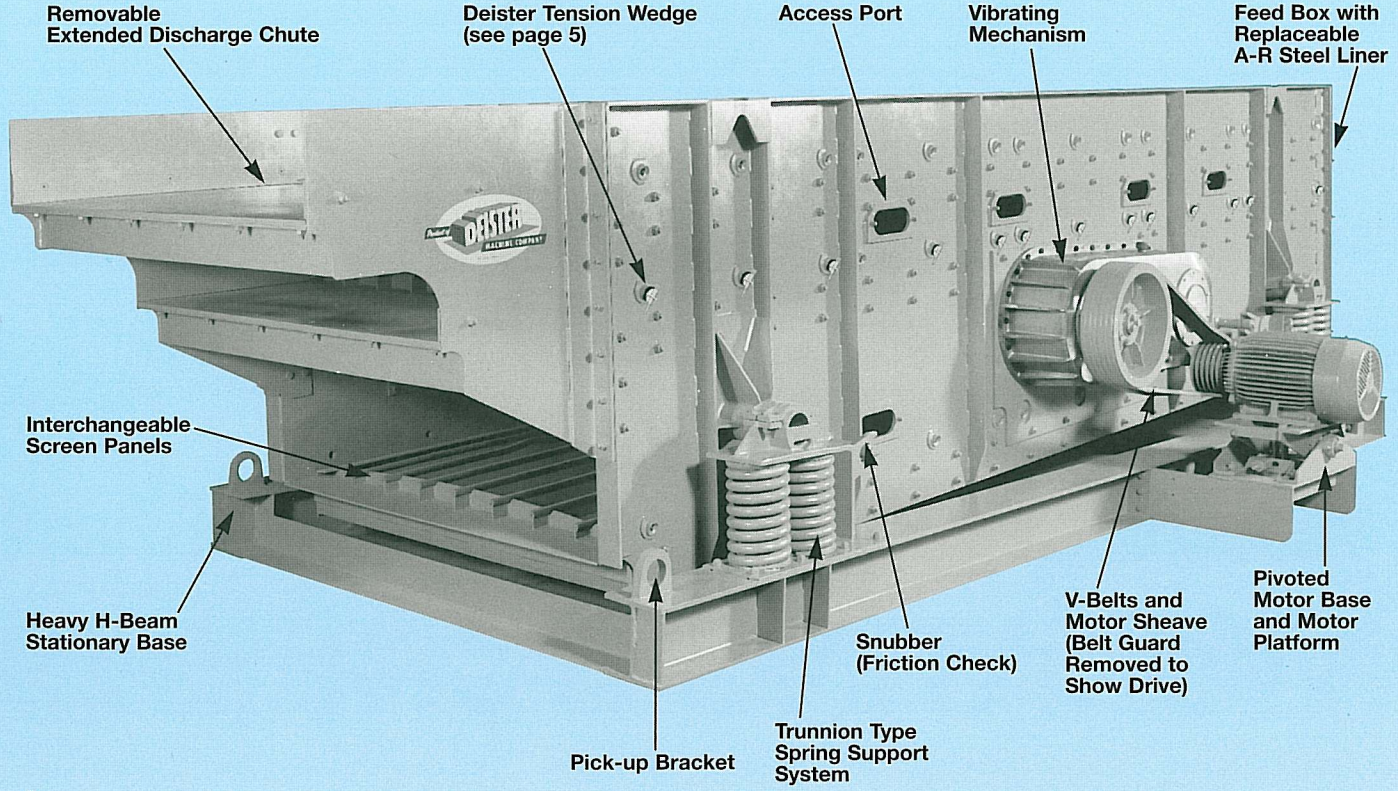
STANDARD FEATURES

Deister vibrating screens have many outstanding features which are standard equipment on each unit:

1. Oil lubricated vibrating mechanism
2. Pivoted motor base, motor sheave, wideband V-belt, guards
3. Trunnion type suspension system
4. "Automatic" spring-tension, tension wedge and "rubber-spring" or heavy-duty screen cloth tensioning devices
5. Interchangeable screen panels
6. Removable back plates completely seal feed end
7. 3/8″ thick sideplates reinforced with 5/8″ x 3 1/2″ vertical braces
8. Bolted construction for easy replacement of wear parts
9. Adjustable throw
10. Tension plates of exclusive design
11. 6″ discharge lips
12. Access ports
13. Snubbers for quiet shutdown
14. Pick-up brackets
15. Feed Box with 3/8″ A-R wearplate
16. Steel or rubber mechanism tube shield

(Cover illustration)
BTFM3P-3624, 3 deck, 6′ x 24′

Type BTFM3P-3620, 3 deck, 6′ x 20′, Triple Shaft Horizontal



FINE TUNE STROKE FOR MAXIMUM EFFICIENCY AND PROFIT

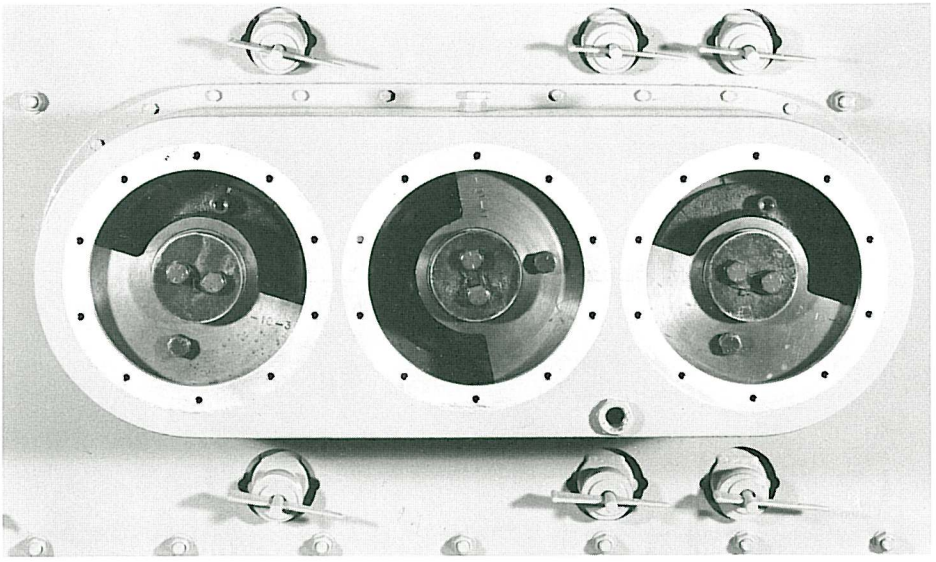
By simply adjusting accessible external slip-counterweights on each side of the machine, the stroke configuration can be changed from near linear (Fig. 1) to near circular (Fig. 2). Wedge shaped material that would plug an opening on typical horizontal screens is thrown free by the circular action. Finer adjustments of the stroke configuration can be made quickly at the center shaft.

In addition to an adjustable stroke configuration, the amplitude of the configuration can be easily changed from less than 3/8" to over 11/16" (Fig. 3). Thus, it is possible to fine tune the screening action for either coarse or fine openings from one site to another.

The rate of travel of material down the deck directly affects the depth of bed, and therefore, the screening efficiency. By changing the gear timing (engagement) the degree of incline of the stroke configuration axis can be changed from the standard 45°. Flattening the stroke axis will speed the flow and thin out a deep bed of material. Increasing the degree of incline of the stroke axis slows the rate of travel but improves the screening efficiency of a lightly loaded screen deck.

Screen operating speed can be changed depending on the available capacity of the roller bearings. Also, the direction of rotation can affect the flow rate of material significantly.

Five different adjustable parameters combine for hundreds of different possible operating modes.



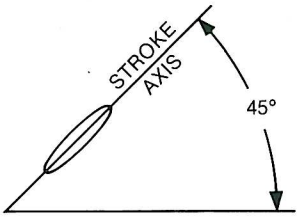


Figure 1

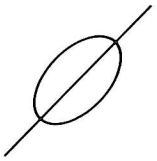


Figure 2

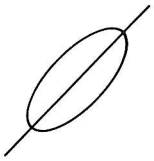


Figure 3

OPTIONAL EQUIPMENT INCLUDES:

1. H-beam base with motor platform
2. Bolted A-R steel or rubber wear liners
3. Extra heavy-duty (XH) models
4. Spray pipe holes
5. Spray pipe equipment
6. Ball tray decks
7. Polyurethane coating on exposed surfaces
8. Rubber-covered tension plates
9. Manganese and A-R steel wear plates for tension plates
10. Screen support panels for modular snap-in screen media
11. Dust enclosure
12. Special removable extended discharge lips or chutes

DEISTER LONG-LIFE VIBRATING MECHANISM

The entire vibrating mechanism is a precision constructed, jig assembled unit. It incorporates three eccentric shafts, two bearings each, and runs in a bath of oil with internal and external labyrinth seals to prevent loss of oil and entrance of dirt.

A recirculating oil bath lubrication system insures maximum bearing and gear life. Deister's exclusive slingermist lubricating system makes it possible for Deister screens to operate at higher speeds and at lower operating temperatures. Separate oil reservoirs prevent simultaneous contamination of bearings on both sides of the screen. This system is the ultimate in oil lubrication of anti-friction bearings and assures safe operating temperatures under extremely hot climatic conditions where it, in effect, acts as an oil cooling system. The lower portion of the counterweight/gear cover serves as the oil reservoir. The oil is agitated by the counterweights and constantly envelops the spherical roller bearings and all moving parts. It should never be necessary to add oil to the mechanism, with oil changes recommended every 500 hours. Oil changes take only minutes with easily accessible external oil fill and drain plugs and a large oil sight glass.

Replaceable bronze sleeves between the inner race of the bearing and the shaft prevent wear on the shaft. Should wear on the sleeve occur, even after years of rugged service, the original close "factory tolerances" can be easily restored by the simple replacement of the sleeve. In its 70 years of building vibrating screens, Deister Machine Company has always designed its vibrating mechanisms with the bearing a slip fit on the shaft or replaceable sleeve, and a press fit in the housing (Sleeves not used prior to 1950). The replaceable sleeve is a slip fit on the shaft. Slip fits assure more even wear on bearings and sleeves—providing longer life—easier replacement.

The small steel shaft casing tubes can be protected by either steel or abrasion-resistant rubber shields.

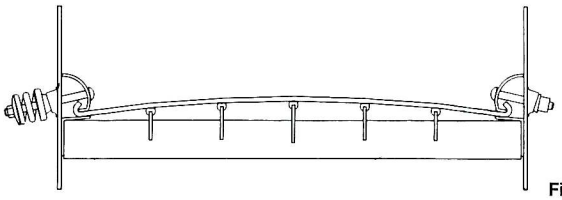


Figure 1

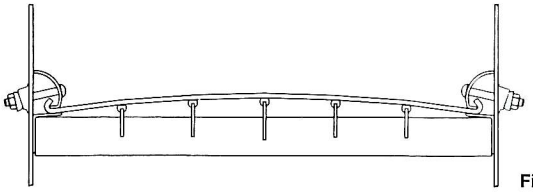


Figure 2

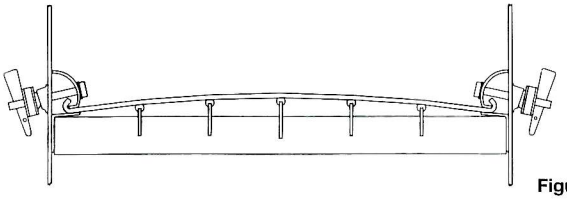


Figure 3

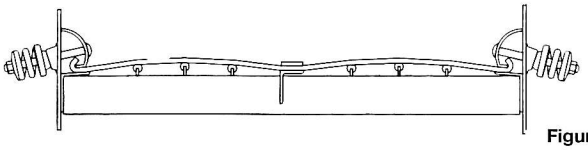


Figure 4

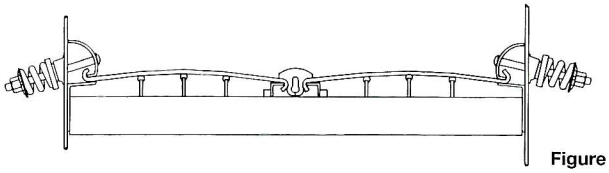


Figure 5

Deck Surface Tension Systems

FIGURE 1. Standard "automatic" spring tension assembly for 5′ and 6′ wide models. Powerful coil tension springs and tension plates hold the screen cloth over a series of support bars arranged in an arc. Support spacing is governed by size of opening and shape of screening media. As the screen cloth wire wears thin or becomes stretched, the springs automatically keep the cloth in constant tension, thereby preventing whipping or flexing of the cloth, causing wire breakage. The side opposite the spring is held by a half-sphere cast iron nut with indentations fitting the lugs on the steel casting welded to the sideplate, which prevents the nut from backing off.

Ledge angles are formed to 94° to provide the correct interlocking fit between tension plate, screen cloth hook strip, and the supporting ledge angle—prevents pinching or "rocking-up" of the screen cloth in the hook-strip area, which causes premature breakage.

Fewer tension assemblies are required due to the stronger curved tension plates. The method shown in Figure 1 is recommended for medium and fine screen cloth or lightweight perforated plate.

All assemblies (Figure 1 thru 5) are interchangeable, as holes and castings in sideplates are identically located.

FIGURE 2. Standard heavy-duty tension assembly for heavy wire cloth or perforated plate with hook strips.

FIGURE 3. Standard tension wedge and "rubber-spring" assembly. See below.

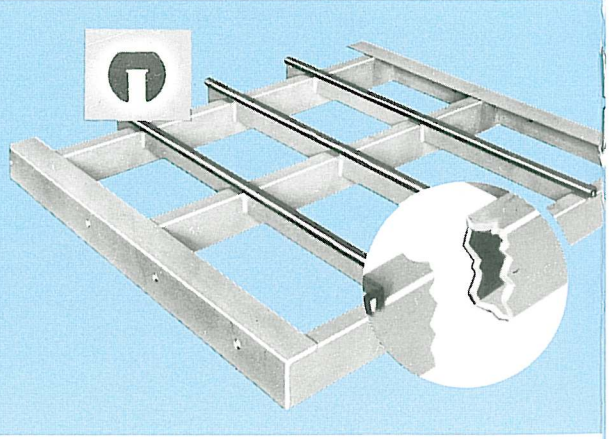
FIGURE 4. Standard "automatic" spring tension assembly at both sideplates on 6′ wide units with center hold down.

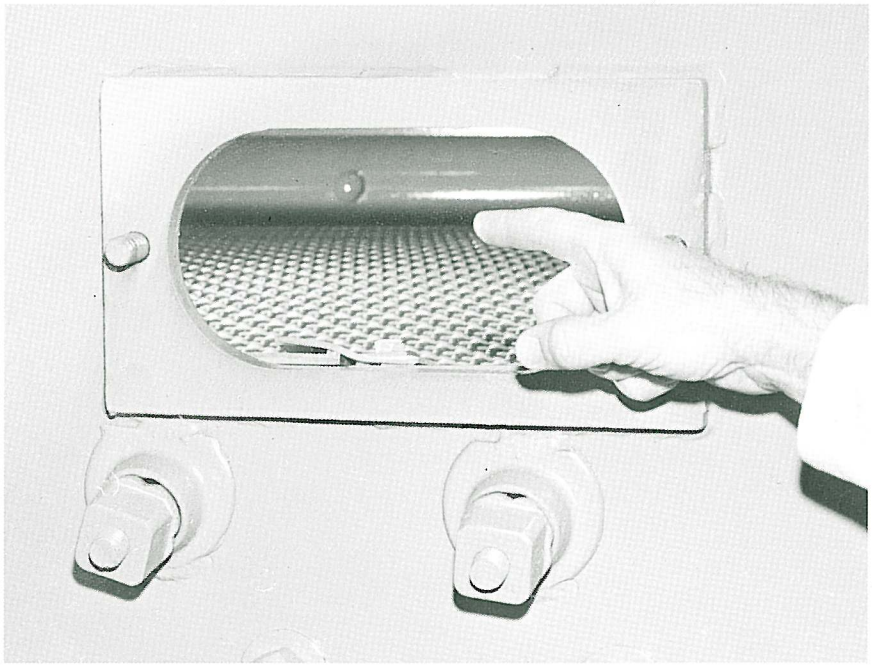
FIGURE 5. Standard "automatic" spring tension assembly for 7′ & 8′ wide units—double crown with split screen cloths—downward hooks in center with molded rubber (as shown) or steel "bolted-type" cover strip—provides easier replacement, even flow of material over entire width of unit, better tensioning capability giving longer screen life. Standard heavy duty (Fig. 2) or tension wedge (Fig. 3) can also be used with this type construction.

Standard tension plates are available with abrasion-resistant rubber or urethane wear surface, 1/4″ x 1 1/4″ manganese steel wear surface or with A-R steel formed wear plates welded to tension plate.

REPLACEABLE SUPPORT TRAYS

Replaceable trays to support large opening screen cloth, perforated plate, rubber cloth, modular urethane screen panels or other special screening media are constructed of tubular or channel transverse members welded to side members bolted to the vibrating frame—constructed for each particular application but designed to permit interchangeability of screening medium with minimum alteration.





INTERCHANGEABLE SCREEN PANELS

Divided interchangeable screening sections are identical in size and may be readily interchanged or shifted to distribute normal wear and prolong the life of the screening medium.

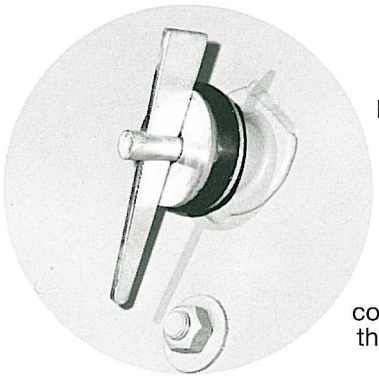
One exception to the above is when the openings in the screen cloth are smaller than the normal spacing between the screen panels. In this case, one or more of the sections should be ordered approximately 1″ to 1 1/2″ longer so that they can overlap.

The screen sections are of bent edge or "shrouded hook-strip" construction to provide easiest screen cloth replacement and proper tensioning.

ACCESS PORTS

Access ports ("hand-holes") are provided on multiple deck units to permit removal and replacement of any one screening surface without disturbing the other decks and eliminating the necessity of a person or persons between decks when "hold-downs" are not used. These ports, with doors removed, also provide the operator easy inspection of the screening surface to check deck wear, possible blinding or plugging, depth of bed, or any matters connected with the operation of that particular deck.

These oval-ended rectangular openings are reinforced with 5/8″ thick steel frames welded to the sideplates. Easily removed plates cover the openings.



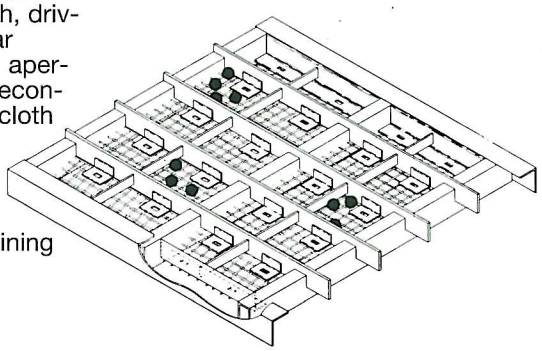
TENSION WEDGE

Deister Tension Wedge and "Rubber-Spring" screen cloth tensioning device, with the advantage of quick tightening or easy release, while at the same time providing constant tension through the action of the molded rubber spring.

Type TFM3P-2620, 2 deck, 6′ x 20′ with 40″ and 18″ removable discharge chutes.

BALL TRAY DECKS

The ball tray is used as a means of reducing or eliminating blinding of the meshes in the screen cloth, usually in the bottom deck. It consists of a wire cloth panel or perforated plate with relatively large openings placed beneath the screen cloth, and the space between divided into compartments for the purpose of carrying resilient rubber cleaning balls. The vibration of the screen causes the balls to bounce up against the underside of the screen cloth, driving out the near-size irregular shaped particles wedging in apertures as well as creating a secondary vibration in the screen cloth that prevents fine particles from sticking and building up on the wires. In most cases, a ball tray will be effective with material containing as much as 5% moisture.



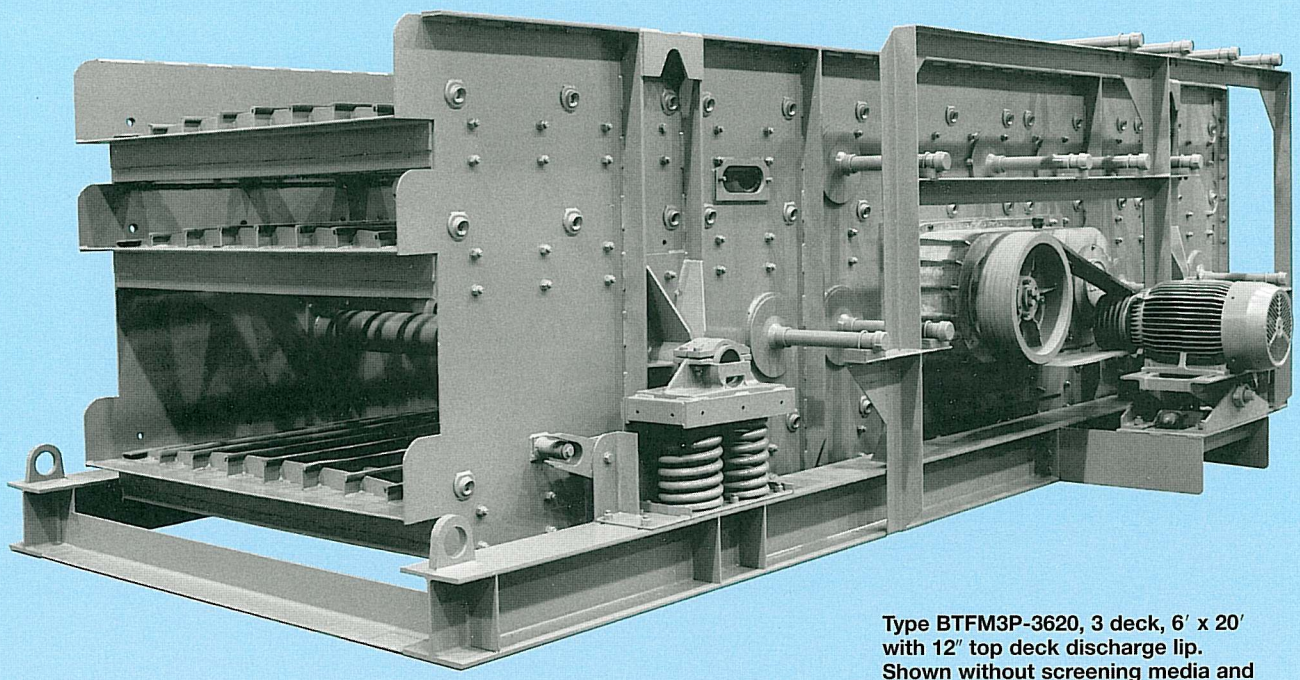
SPRAY PIPE EQUIPMENT

Deister Screens can be equipped with specially designed spray equipment—stationary supporting brackets and 2″ pipe headers fitted with threaded spray nozzles, and complete manifold systems. The supporting framework is welded to the H-beam base, with the individual headers resting on small hardwood blocks to allow for height adjustment. Where the headers pass through the sideplates between decks, the round hole in the sideplate is reinforced by a 5/8″ thick steel ring welded to the plate. The opening is sealed by a polyurethane flange that fits over the spray pipe and is placed against the reinforcing ring.

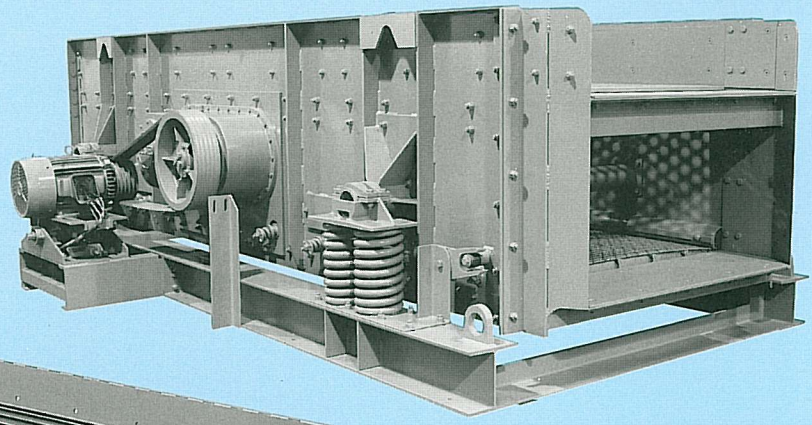
The brass or steel nozzles fan out water jets into sheets, which provide broad bands entirely across the screen, giving complete coverage under each header. The nozzles are "staggered" in order to provide two solid sheets of water per header.

Complete manifold systems including all piping, fittings, and individual brass gate valves for each header, mounted on the H-beam base, can be furnished as optional equipment.

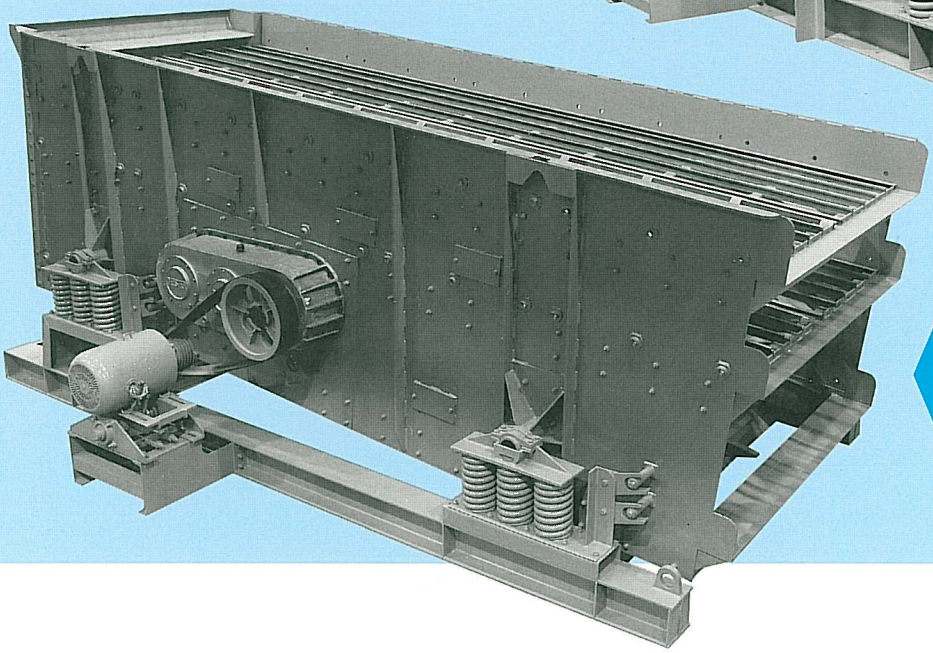
SPRAY PIPE HOLES can be provided for operator installation of spray pipes or for possible future addition of spray equipment. The holes in the sideplate are reinforced by a 5/8″ thick steel ring 8 1/2″ in diameter welded to the sideplate. This ring may be drilled and tapped to accommodate capscrews fastening a steel coverplate until future installation of spray pipe equipment.



Type BTFM3P-3620, 3 deck, 6′ x 20′ with 12″ top deck discharge lip. Shown without screening media and tensioning devices.

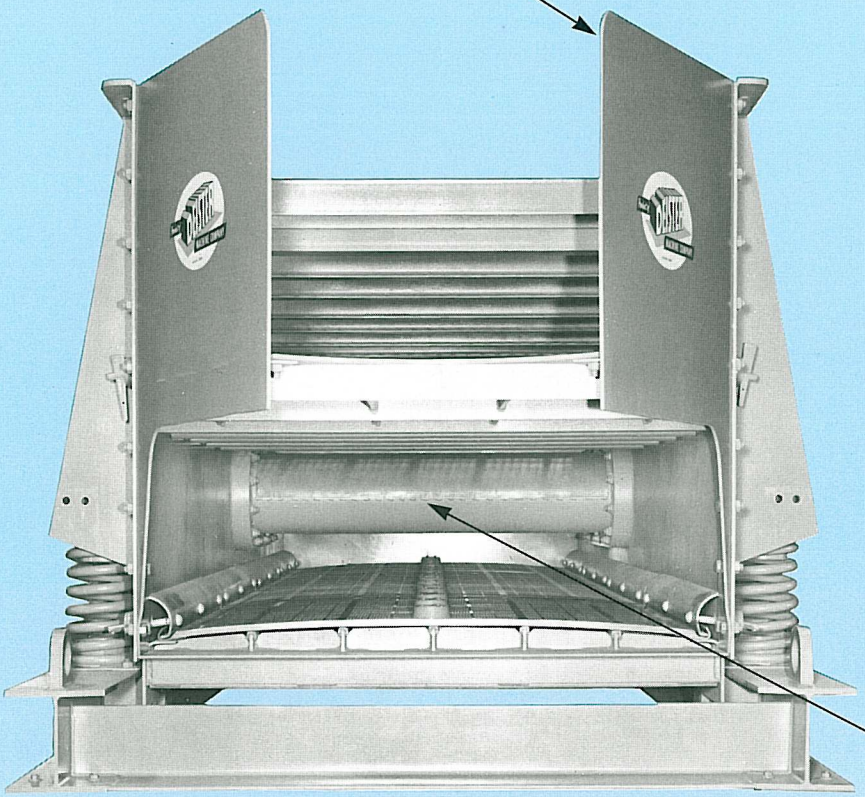


BTFM3P-2516xH, 2 deck, 5′ x 16′ Scalping Screen with 2½″ Round Opening Flat Perforated Plate on Top Deck.



BTFM3P-3820, 3 deck, 8′ x 20′ with End-Tension Bottom Deck.

Removable converging discharge chute.



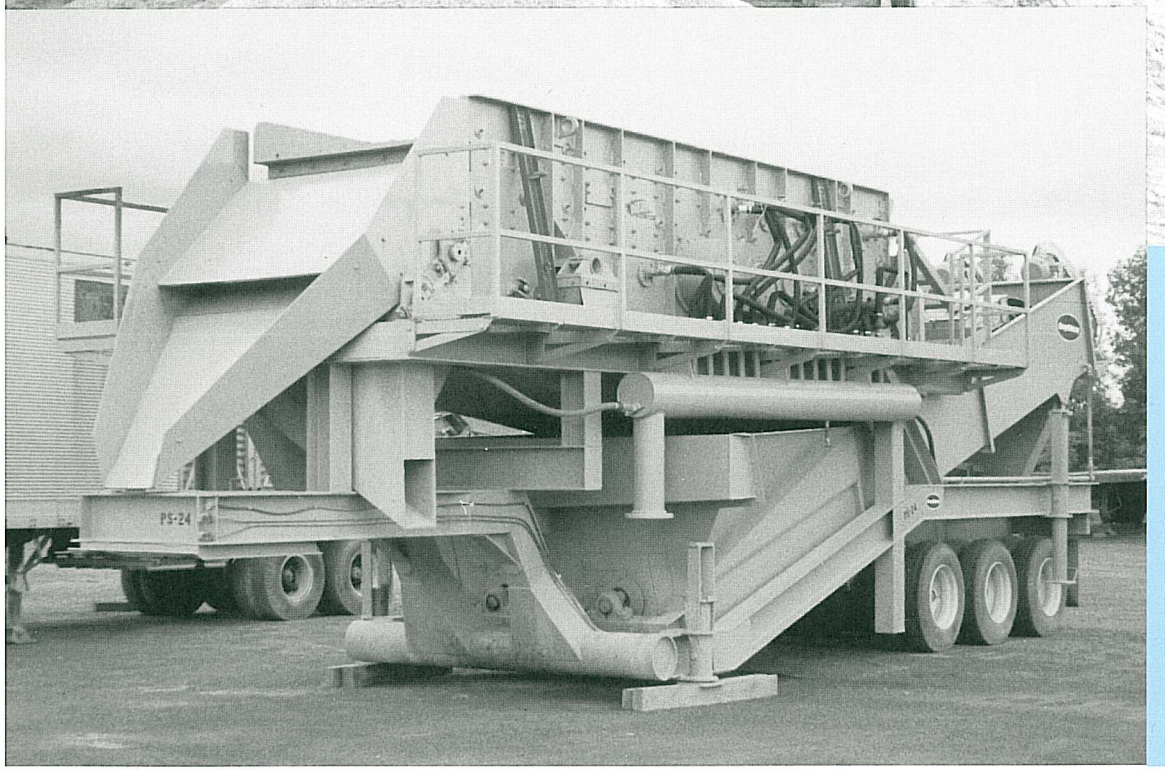
Wear resistant rubber tube shield glued to light gauge steel plate, tack-welded to tube.

FEED BOX

Feed boxes are standard equipment on most units with size depending on model and application of vibrating screen. Constructed of 5/16″ thick steel plate, formed, braced and welded, with a 3/8″ thick replaceable A-R steel wear plate in the bottom. The feed box is bolted to angles welded to the vibrating screen.

DISCHARGE LIPS

Up to 54″ long special discharge lips can be supplied to discharge onto belts, chutes, or into the top of a crusher. Both top and middle decks of a triple deck screen can easily discharge into a crusher since the vibrating mechanism is located between the middle and bottom decks.



Two BTFM3P-3620, 3 deck,
6′ x 20′ screening 450 TPH
of 3/4″ x 0 crushed stone.

TFM3P-3620, 3 deck,
6′ x 20′ Washing Screen on
Twin-Screw Portable Plant.

DEISTER MACHINE COMPANY, INC.
P.O. Box 5188, Fort Wayne, Indiana 46895
Phone (219) 426-7495 FAX (219) 422-1523
E-Mail dmco@gte.net
www.deistermachine.com

DEISTER®
INC. 1912

Printed in U.S.A. 2.5M 2/00