DEISTER MACHINE COMPANY, INC.

Vibrating Screens ◆ Feeders
Scalpers and Grizzlies
Foundry Shakeouts ◆ Vibrating
Conveyors ◆ Sand Reclaimers

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General Feeder Information

Use the Table of Contents below to navigate among the various sections for additional information on usage and maintenance of your Deister Equipment. Contents of this section are general in nature. For detailed and specific information on a particular unit, please contact Deister Machine directly.

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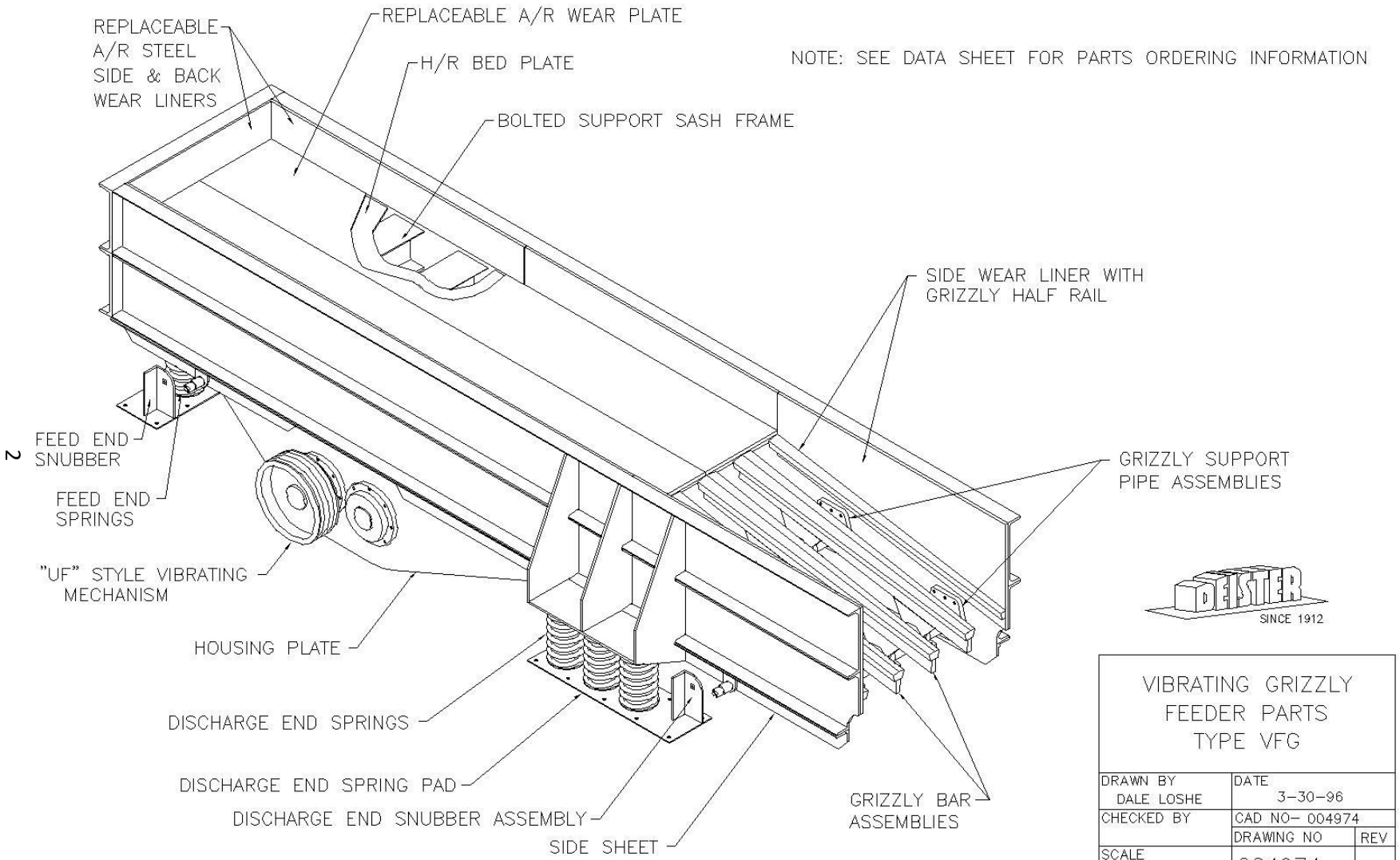


VIBRATING GRIZZLY FEEDER PARTS TYPE VFG		
DRAWN BY DALE LOSHE	DATE 3-30-96	
CHECKED BY	CAD NO- 004974	
	DRAWING NO	REV
SCALE NONE	004974	

A. Storage

If possible, store the unit in a building, away from excessive moisture. If the unit is going to be stored for more than two months before start-up, precautions should be taken to prevent rust and pitting from developing on the bearing races and rollers due to condensation. Make sure the unit is sitting level and in a dust-free, clean environment.

Remove the sheave to expose the dirt flinger (See the mechanism drawing). Pull the dirt flinger back and fill the entire groove in the housing cap with grease. Push the flinger back into place and replace the sheave. Add to the tube ten gallons of the oil recommended in the oiling instruction section of this manual. On less than six-foot wide units add only six gallons. Once a month the shaft should be rotated several times to relubricate the upper bearing portion. Before starting up, remove all grease from the housing cap groove. Drain the oil and fill the tube to the proper operating level with new oil.

Keep records of storage maintenance procedures and dates.

B. Handling

When lifting the unit, be sure to raise it evenly at all four corners to avoid twisting the frame. Attach cable slings, via spreader bar, to the pick-up lugs provided on the H-beam or channel base. If the unit was supplied without a base, use the 3" dia. pick-up hole in the center trunnion gusset above each spring cluster. Check that your lifting equipment is safely sized for the total weight of the equipment to be lifted.

C. Removal From/Reattachment of Vibrating Frame to Stationary Base or Structure

Should it be necessary to remove the vibrating frame from the base in order to facilitate installation, be sure to loosen the snubber check arm bolt. The arm should move freely before continuing.

CAUTION

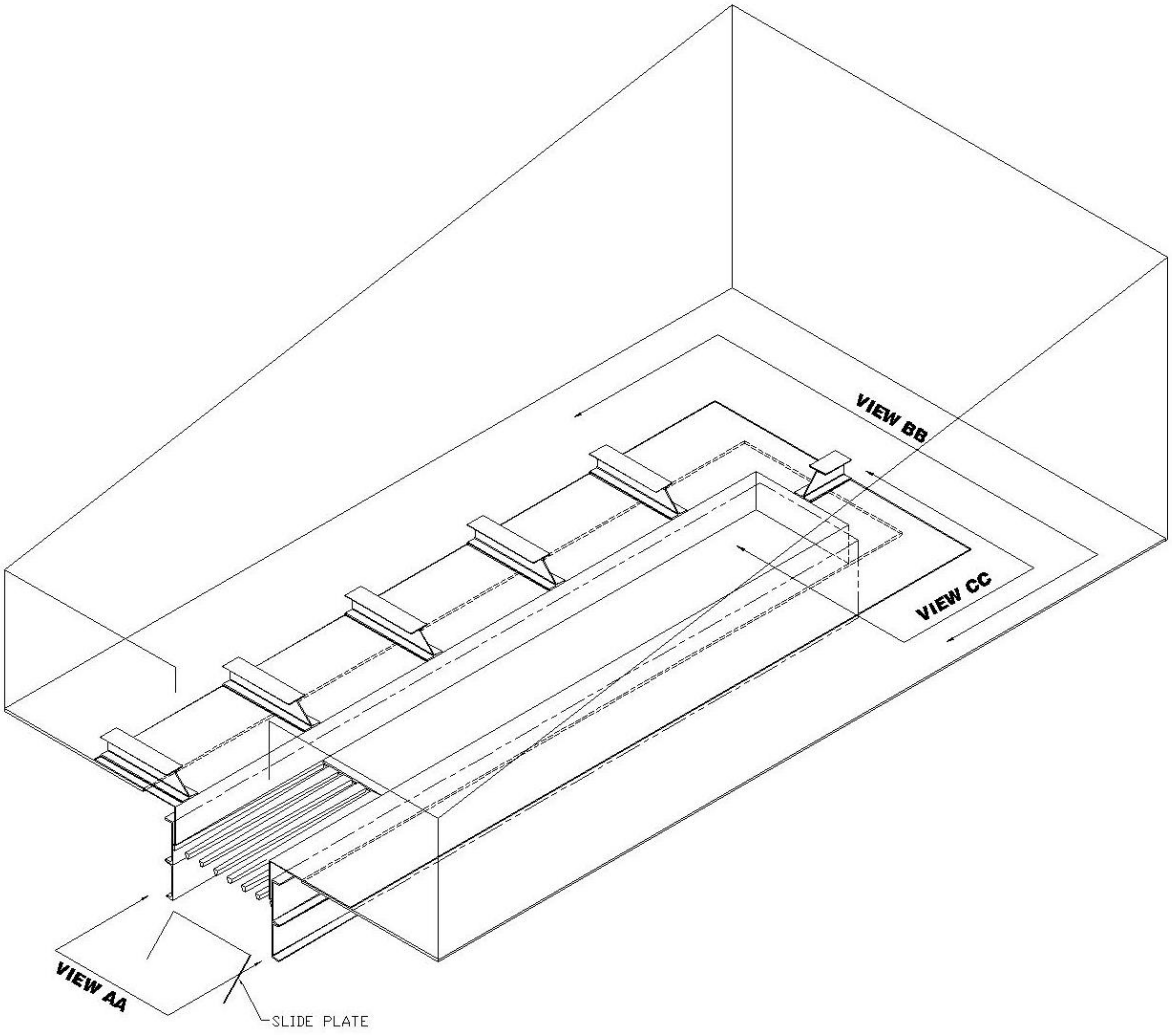
Failure to loosen bolt may result in breakage to the arm. After re-assembly of frame to base, snubber check arm bolt must be tight enough so that arm cannot be moved by hand. It should be torqued to 150 ft./lbs.

WARNING

Failure to tighten snubber check arm bolt will result in excessive vibration during shut-down and may result in damage to the feeder as well as the support structure.

D. Clearances

Customer Note: This drawing is furnished as a generalization to aid in the design of a FEEDER HOPPER. It does not take into account all design considerations, such as: hopper capacity, haul truck capacity, material angle of repose, crusher type, feed capacity, feeder pan slope, etc. Deister Machine Company assumes NO RESPONSIBILITY OR LIABILITY connected with the construction or use of this design.



Wherever possible, a minimum of 24" side clearance should be provided on each side of the machine. This enables the attendant to check the unit's condition and operation.

Allow sufficient clearance in front of the screen at the discharge end or in the rear at the feed end for replacing screen sections. A suggested clearance would be at least one foot longer than longest screen panel.

A minimum vertical clearance of at least five inches should be maintained between the vibrating frame and any stationary structures such as the feed hopper or discharge chutes and bins. Avoid providing places for dust and stones to accumulate and interfere with the movement of the vibrating frame.

CAUTION

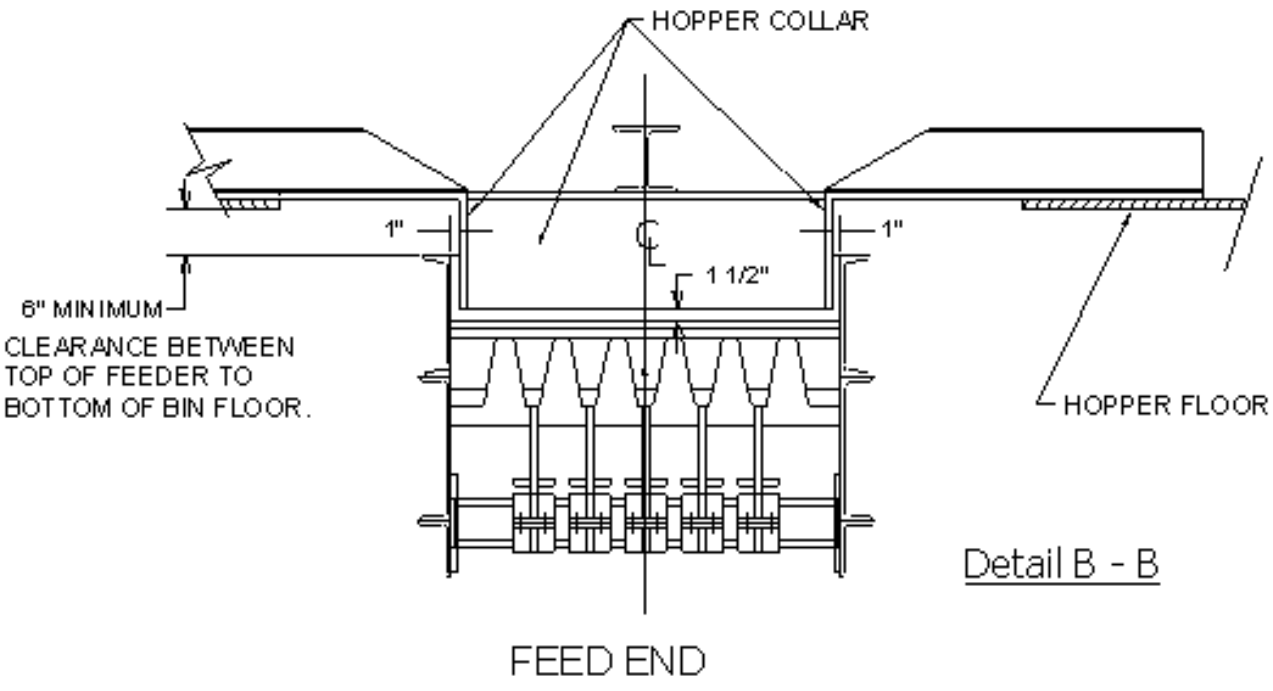
During start-up and shut down the frame may experience a brief period of much larger movement as the vibrating frame passes through the resonant frequency of the support springs. The vibrating frame must not contact any stationary object during this time.

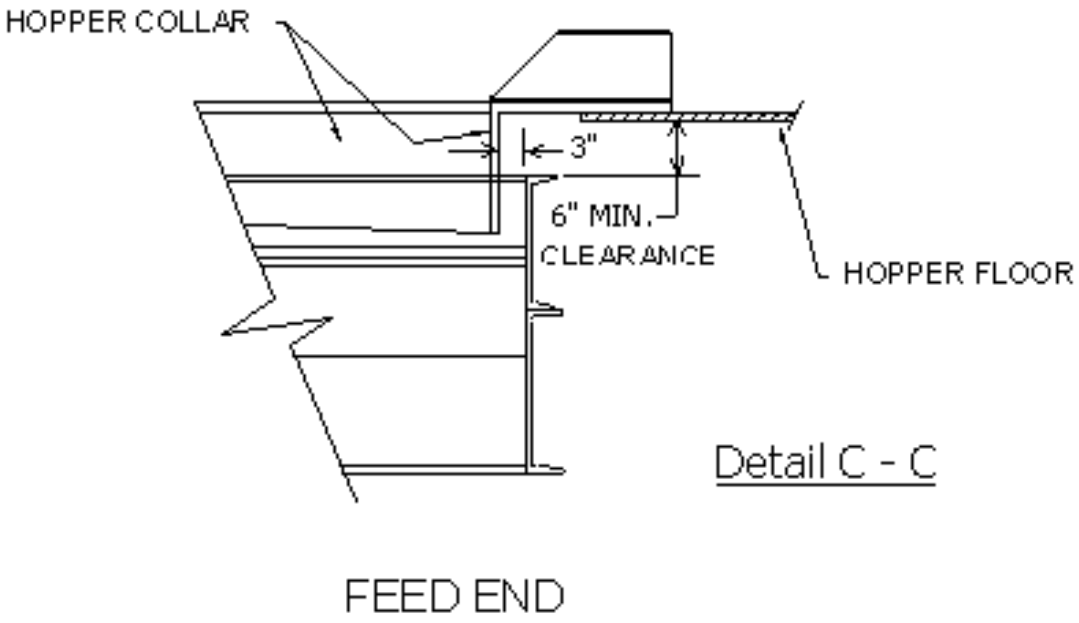
WARNING

ALL HOLD DOWN BRACKETS AND SHIPPING STRAPS MUST BE REMOVED BEFORE FINAL LEVELING AND BEFORE START-UP.

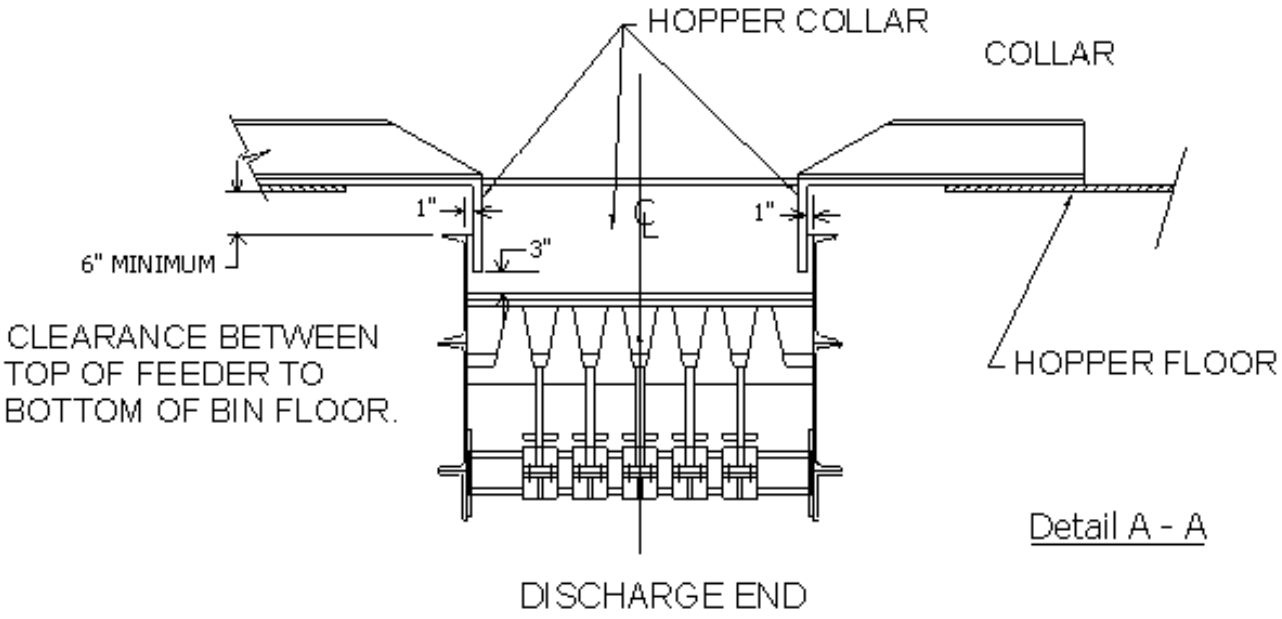
E. Hopper Clearance Diagrams

1. Feed End





2. Discharge End

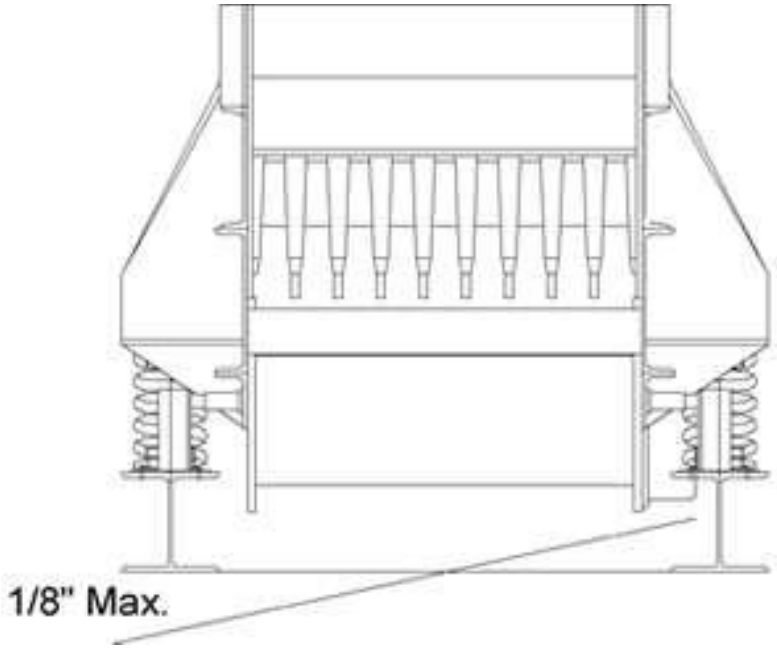


F. Level and Degree

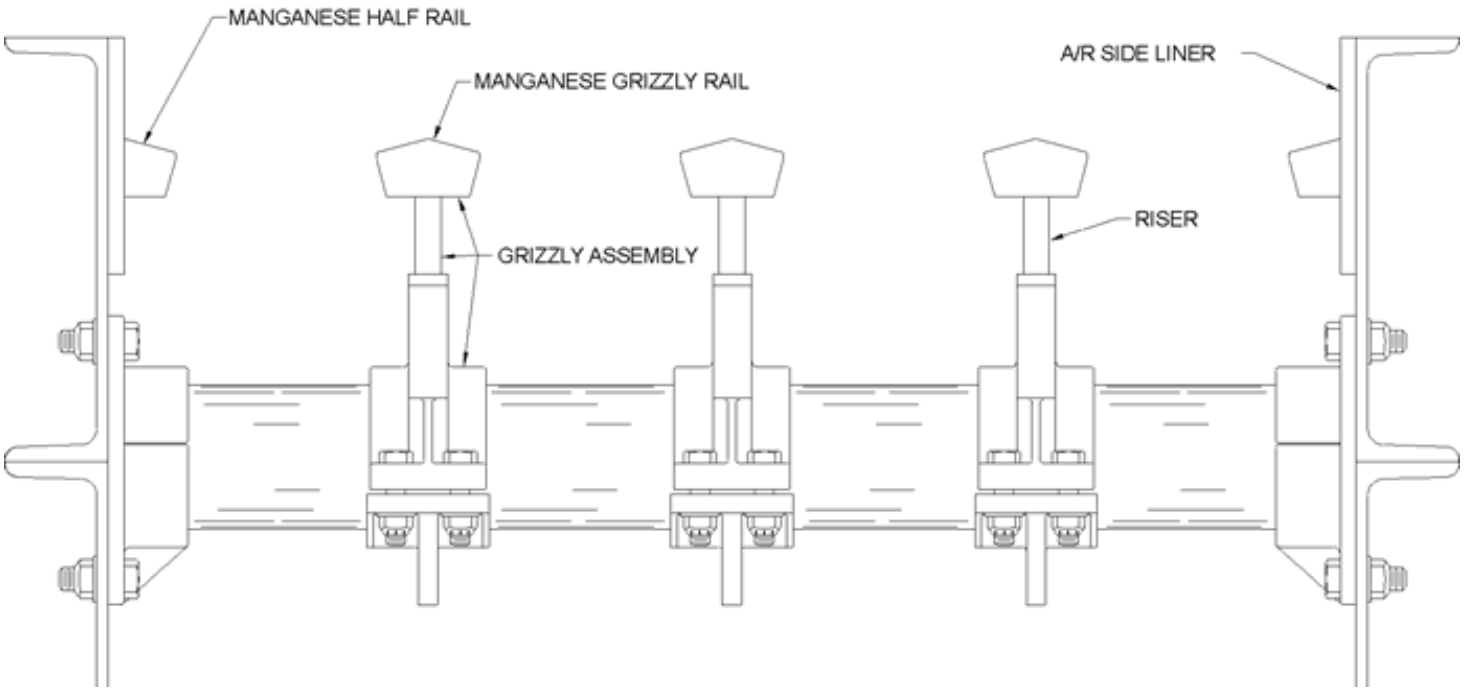
If the base is provided, the live frame is set level with the base at the factory before shipping. However, it is very important that the sub-structure supporting the base be level or that the spring pad pedestals be level and located according to Deister drawings. The degree of incline of the unit should be within 1/2 degree of the intended degree in order to assure proper oil gauge readings, bearing lubrication and capacity.

CAUTION

The unit must be level transversely within 1/4" for seven foot and wider, and 1/8" for less than seven foot wide. Failure to do so can result in premature bearing failures, metal fatigue and uneven material flow. Level should be checked periodically after start-up of a new plant or a portable plant in the event that settling has occurred.



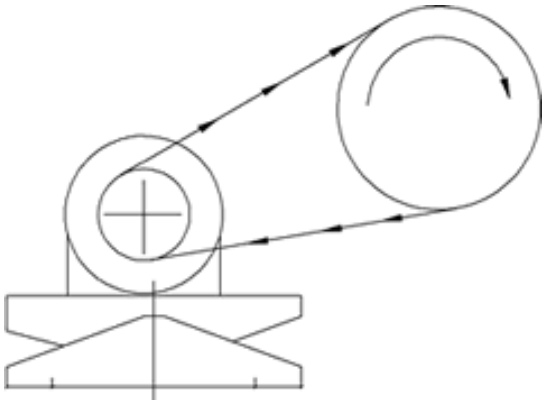
G. Grizzly Section Diagram



H. Motor and Drive

1. Direction of Rotation

The direction of rotation of the motor is important to the operation of his unit and should rotate only as shown on the overall (General Arrangement) drawing. Reversing the direction will not affect the vibrating mechanism. If a pivot motor base has been supplied, the direction of rotation may affect belt slippage during start-up. The belts usually grip best when the driven sheave rotates Over and Away From the Motor (OAFM).



2. Motor Location

When Deister does not supply the motor support frames, it is very important that the motor be located as shown on the overall (General Arrangement) drawing. All Deister screen sheaves are specially machined so that, when in operation, there is a point of zero sheave run out. In other words, if a line were drawn from the center of the driven sheave through the center of the motor sheave, there would be no movement towards or away from the motor sheave where that line crosses the outer diameter of the driven sheave. This, of course, means that the center distance is remaining constant and the belts are running smoothly. If the motor is located improperly, the line may not cross at the point of zero run out. This results in belt damage and excessive plant vibration.

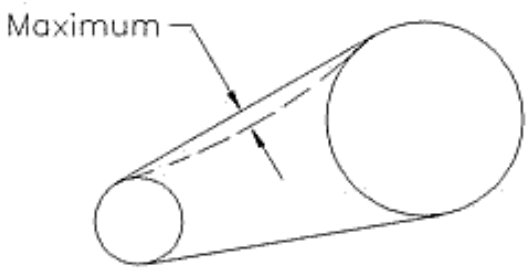
3. Belt Tension and Alignment

Proper belt tension is important to machine performance. Belts that are too loose will slip during start-up and may not be able to start the unit. Belts that squeal during start-up or in operation, or whip excessively, may indicate insufficient belt tension.

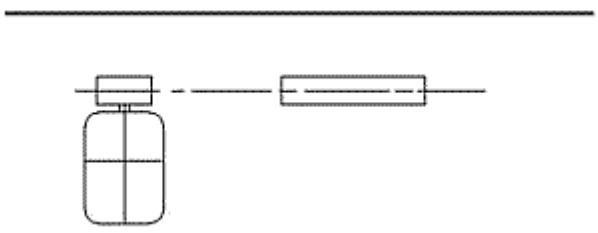
CAUTION

Be careful, however: belts that are tensioned too tightly can cause much more serious damage. As belts are over-tightened, the vibrating frame is pulled out of square with the support frame. Operating in this twisted position introduces stresses that can lead to spring failure, metal fatigue, cracking and broken welds in the vibrating frame.

In addition, the twisting will affect the stroke amplitude and character, thus affecting material flow. Over-tightened belts put an extra load on the mechanism bearings that is unnecessary and may tear up motors and motor bases. Ideally, the belts should only be tight enough that they do not slip during start-up.



After proper tension has been applied to the V-belts, check that the sheave faces have proper angular and parallel alignment.



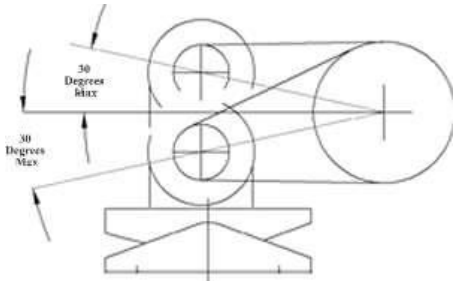
4. a. Torsion Motor Base (If Applicable)

If not properly operated, the torsion motor base cannot perform its job, which is providing uniform belt tension at all times.

CAUTION

The top of the base must be parallel to the bottom of the motor base or the base will not have adequate adjustability.

The center of the motor sheave should be located within 30 degrees up or down from the horizontal center of the feeder sheave.



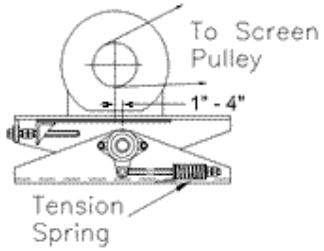
4. b. Pivot Motor Base (If Applicable)

If not properly operated, the pivot motor base cannot perform its job, which is providing uniform belt tension at all times.

CAUTION

The top of the base must be parallel to the bottom of the motor base or the function of the base will be interrupted during start-up and shut down.

The tension spring is always located towards the feeder sheave. The location of the motor on the pivot base is very important as well. By locating the center of the motor one to seven inches horizontally past the center of the motor base, away from the feeder sheave, the weight of the motor actually assists in maintaining belt tension. Final belt tensioning is made by adjusting the compression of the spring in the motor base. Proper spring compression greatly affects belt whip and belt life. The center of the motor sheave should be located within 30 degrees up or down from the horizontal center of the feeder sheave.



WARNING

Never adjust belt tension while the feeder is operating, and always replace all guards.

I. Snubber Assemblies

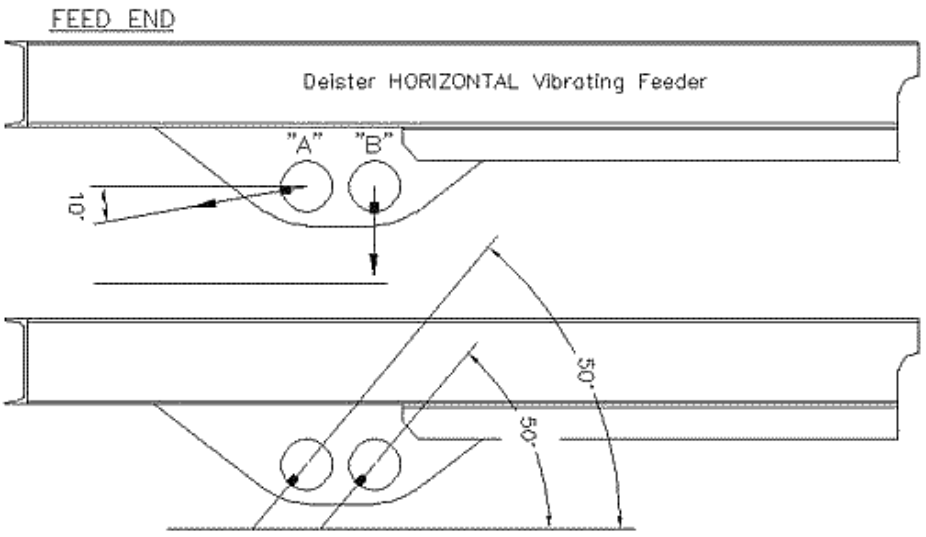
Any vibrating frame that is supported by resilient springs has a resonant or natural frequency at which the frame can jump and lurch very erratically. On Deister equipment this frequency is normally between 120 and 150 cycles per minute. During start-up and shut down the unit must pass through this phase as quickly and as smoothly as possible. That is why Deister equips each unit with snubbers. The snubbers restrict large movements that could damage the vibrating frame and stationary tower yet do not hamper the normal oscillating motion of the unit. Always smear water resistant grease on each side of the check arm against the brass discs. When tightened to approximately 150 FT.- LBS. the snubber assembly should not be moveable by hand or foot. It should be moveable with a medium length pry bar.

CAUTION

The snubber assemblies should be inspected periodically and worn parts replaced when necessary. See the accompanying drawing.

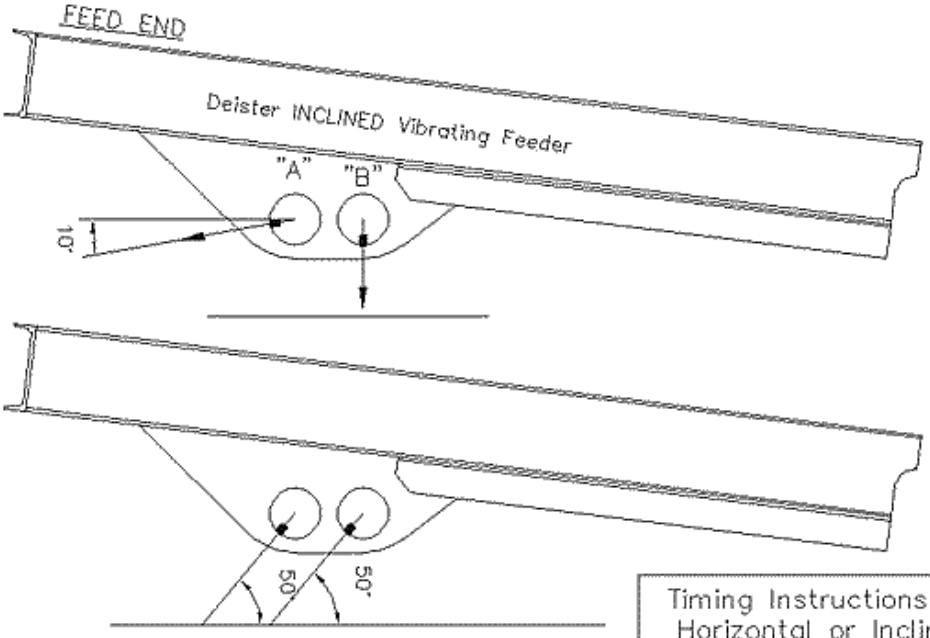
IMPORTANT PARTS TO CHECK FOR WEAR: Friction Spring, Brass Disc, Spindle Bushing

J. Gear Timing Instructions



BEFORE ENGAGING GEAR TEETH IN THE VIBRATING MECHANISM PROCEED AS FOLLOWS:

1. POSITION THE KEYWAY IN SHAFT "A" DOWN 10° FROM HORIZONAL, TOWARD FEED END OF FEEDER.
2. POSITION THE KEYWAY IN SHAFT "B" STRAIGHT DOWN.
3. WITH SHAFTS POSITIONED AS ABOVE, ENGAGE GEARS.
4. ONCE GEARS HAVE BEEN ENGAGED GENTLY RELEASE SHAFTS AND CHECK DEGREE OF KEYWAYS.
5. KEYWAYS SHOULD BE 50° TO HORIZONTAL WITH KEYS POINTING DOWN, TOWARDS THE FEED END OF FEEDER. SEE APPROPRIATE FIGURE.



Timing Instructions for Horizontal or Inclined Deister Vibrating Feeder

K. Recommended Nut Torque in FT.- LBS.

BOLT DIAMETER

	7/16"	1/2"	5/8"	3/4"	7/8"
GRADE 5 BOLT	45	65	125	220	325
GRADE 8 BOLT	55	100	200	375	475

All bolts should be visually checked for tightness after approximately one day of operation. Periodic inspection for loose bolts should be conducted. Replace loose hardware with the appropriate new hardware.

L. Support Springs

The quantity and stiffness of the steel coil support springs were selected for your machine's weight and application. The springs are soft enough to minimize the vibration transmitted to the stationary structure but, at the same time, stiff enough to handle moderate feed surges. If the springs are too soft or too stiff, several different stiffness springs are available to fit in the existing spring seats. Consult Deister Machine Company.

If springs are allowed to bottom out, serious damage can be done to the screen frame, tower and springs. Worn paint or bare metal between coils is hard evidence that the spring has been totally collapsed. If this has occurred, an unusually heavy feed surge, plugged chutes, or stalled equipment is most likely to be the cause and should be corrected immediately.

WARNING

If the vibrating frame is bottomed out on the springs due to the weight of backed up material, shut down the unit immediately. The back-up should be cleared by hand. Attempting to clear the back-up by running the unit will lead to spring and frame breakage. Clear away dust and stones from the base of the springs daily.

Support springs should be closely inspected at least once a month. In extremely corrosive applications where spring breakage can be more frequent, Deister can supply specialty springs.

M. Preventative Maintenance Checks

Daily Checks
a. Oil level (for one week after oil change)
b. Clear away stones and dust build-up from any moving parts.

Weekly Checks
a. Screen cloth tension
b. Wear on screen media and tension plates
c. Oil level
d. Even material feed and distribution
e. Loose bolts

Monthly Checks
a. Wear on bucker-up rubber wear strips at screen cloth changes
b. Wear on snubber assemblies
c. Drive belt tension
d. Support springs

Semi-Annual Checks
a. Wear on V-belts and sheaves
b. Type of oil being used
c. Wear on cloth support decks
d. Wear on feed and discharge wear plates (if applicable)
e. Test oil samples at oil change intervals

N. Housekeeping Practices

CAUTION

Accumulation of dust and stone around moving parts is one of the largest single causes of part failures. Pivot motor bases, support springs and the vibrating frame are especially susceptible to poor housekeeping. Any sustained impact between the vibrating frame and accumulated material will lead to side sheet and support deck cracking in addition to tower vibrations. Sheaves and belts are susceptible to material jumping over the side sheets and causing damage. Where possible, stationary skirt plates or rubber flaps should be used to deflect airborne material back onto the machine.

Regular housekeeping practices will greatly reduce parts cost and down time.

Troubleshooting Guide

PROBLEM	CAUSE	CORRECTION
Excess carry-over or scalping inefficiency	Excess tonnage creating too deep of a bed of material	Reduce tonnage fed to grizzly or increase slope of grizzly.
	Not enough stroke action	Increase the machine stroke
	Material flowing too fast	Increase the machine stroke or replace grizzly bars to restore taper.
	Grizzly opening too small	Change size of grizzly opening
Material flows to one side	Uneven material distribution	Center the feed
	Feeder running crooked in base due to too much belt tension	Adjust belt tension
	Machine out of level	Level the machine in the base
	Operating at critical speed	Change speed slightly
Breaking support springs	Spring bottoming due to feed tonnage or load exceeding the spring rating	Change to heavier springs
	Material build-up around spring	Install spring covers or deflect material. Keep area around springs clean
	Harsh or corrosive environment	Change to premium springs
	Machine running crooked in the base due to too much belt tension	Adjust belt tension
	Different rated springs on one side of feeder than on opposite side	Install proper springs, per operating manual
Side sheets, support decks, or cross members cracking	Machine running crooked in the base due to too much belt tension, causing side motion	Adjust belt tension
	Machine running with side motion due to natural frequency of plant structure	Adjust speed of machine
	Vibrating frame hitting on stationery plant structure, or building material.	Allow adequate clearance
	Running with broken spring	Replace the spring
	Impacting on feeder pan or grizzly with pedestal breaker	Impact on stone, not equipment

Excessive plant vibration	Machine running erratically due to natural frequency of plant structure	Adjust speed of machine
	Drive belts are too tight	Adjust belt tension
	Broken support spring	Replace broken spring
	Support springs are too stiff	Replace with softer springs
	Insufficient X-bracing in the plant	Add bracing in plant
Drive belts slipping, flopping or coming off	Improper sheave alignment	Adjust alignment
	Improper belt tension	Adjust belt tension
	If pivot motor base, direction of rotation incorrect	Reverse rotation - Top of belt should go toward feeder sheave
	Grooves in sheave are worn	Replace sheave
	Belts oily or dirty	Clean off belts and sheaves
	Motor located in wrong position resulting in excessive runout. (see section H.2)	Relocate motor per overall H.2 drawing or order new eccentric bushing.
Mechanism leaking oil	Too much oil in tube	Install correct amount of oil. Refer to operating manual
	Machine out of level, causing oil to flow to low side of machine	Level the machine
	Housing bolts or bolts around housing cap have become loose	Tighten bolts with Loctite®
	Housing cracked	Replace housing
	Machined surfaces between housing and housing cap flared or have burrs	Smooth burrs or replace parts
	Housing cap bolts are bottomed out in tapped hole	Use shorter housing cap bolts
	Bad or missing housing cap gasket	Install new gasket
	Bad or missing gear cover gasket	Install new gasket
	Crack in tube assembly	Consult Deister Machine Co.
Oil in mechanism excessively hot	Too much oil in tube	Install correct amount of oil. Refer to operators manual
	Machine out of level, causing oil to flow to low side of machine	Level the machine

	Improper type of oil	Install type of oil recommended in operators manual
	Bearing failing	Replace all bearings sharing the same oil bath
Short bearing life	Contamination in oil	Change oil, making sure oil in storage is clean, and clean containers are used to transport oil
	Infrequent oil changes	Change oil more frequently. Refer to operators manual
	Improper type of oil	Install oil recommended in operators manual
	Improper shaft end play	Should have 3/64" to 1/16" shaft travel side to side. Rebuild mechanism. Consult Deister if assistance needed.
	Machine out of level, causing oil to flow to low side of machine	Level the machine
	Thrust load on bearings	Correct cause of side motion in vibrating frame
	Improper type of bearing	Replace with proper bearing
	Machine running too fast	Change sheave ratio or motor speed
	Machine impacting on stationary structure or built-up material	Eliminate hitting

P. OSHA hazard communication/state right-to-know

Deister uses and recommends MOBILGEAR 600 XP 320 or MOBIL SHC 632 oil. MSDS (Material Safety Data Sheets) are available at https://www.msds.exxonmobil.com/