Diamond Z Horizontal Grinders

Features and Benefits

Diamond Z Models

DZH 4000

DZH 6000

DZH 7000

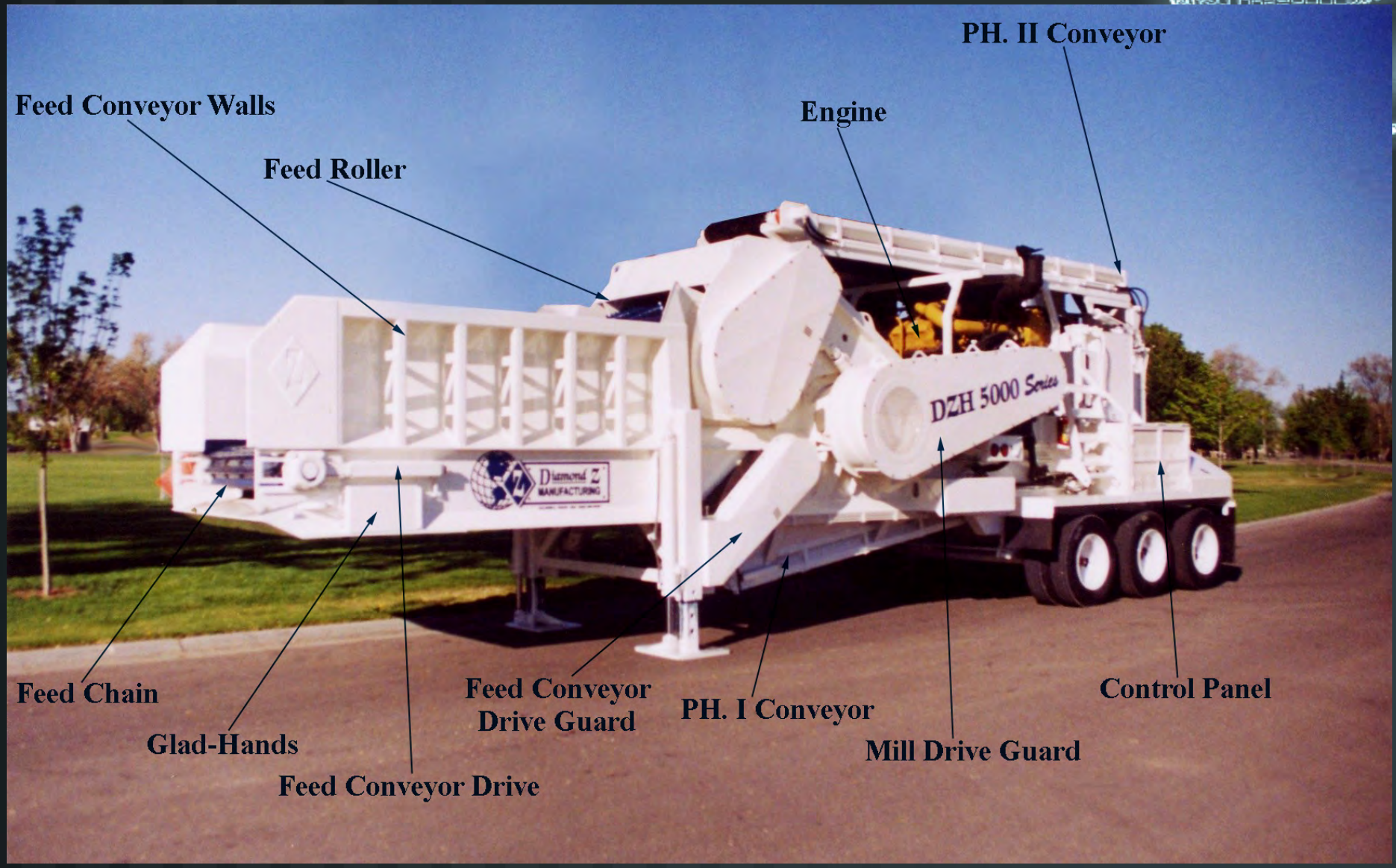
All models available wheel or track mounted.
All models available diesel or electrical driven.
Stationary mounts available

Horizontal Grinders

- **Advantages**
- Over length material
- Little or no screen to side wall plugging
- Safety thrown zone greatly reduced
- Tolerant to contaminants

- **Disadvantages**
- Ability to process large diameter material
- Less consistent finish product

External Overview



Engine Options

- Manufacturer: Caterpillar
- Models: C18, C27, C32.
- Horse Powers: 700, 750, 765, 850, 860, 875, 1000, 1050 and 1200.
- Emission Rated: Tier 2, Tier 3 and Tier 4 Interim options available.

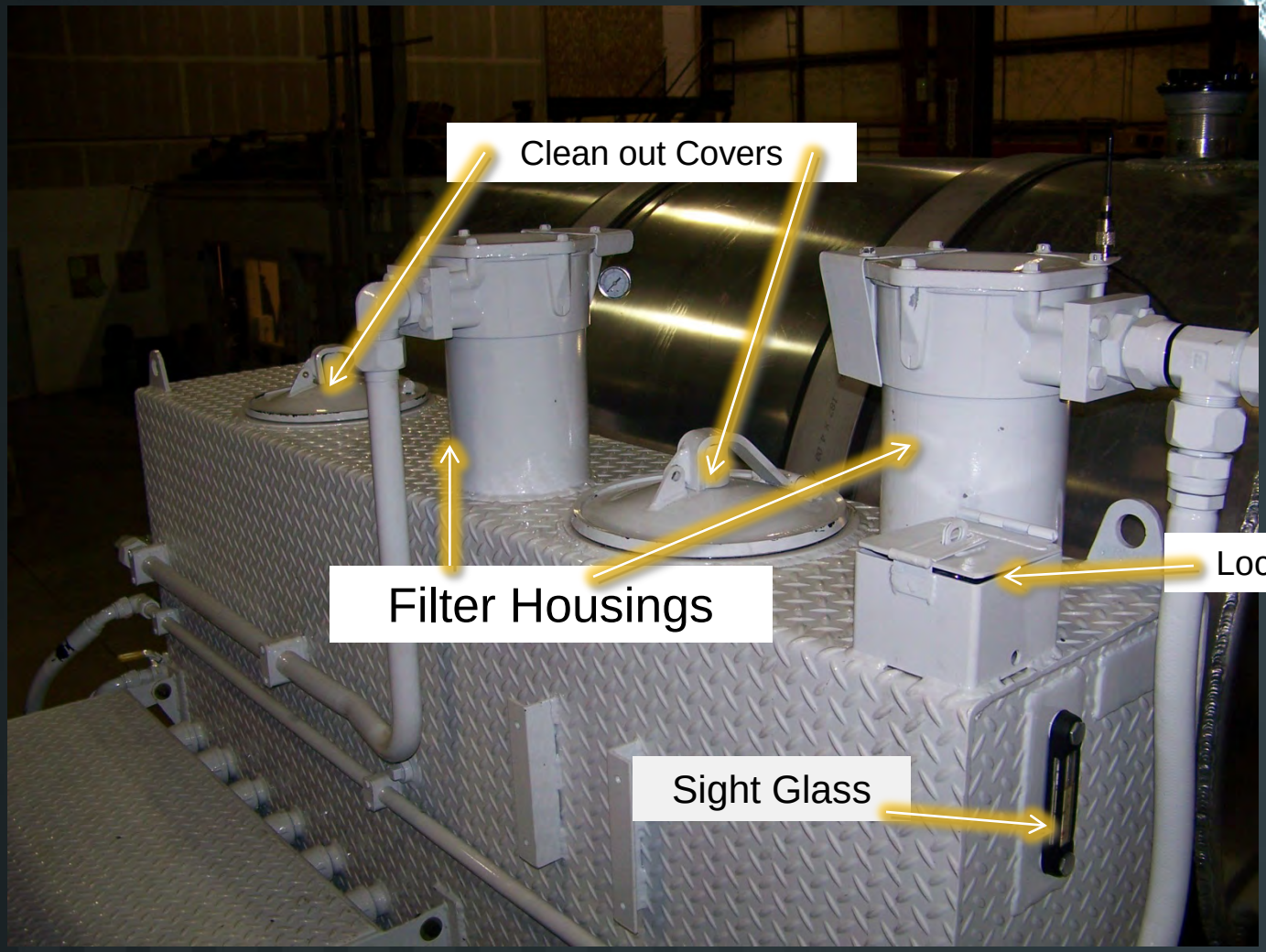
Corrugated Radiator Pre Screen

Corrugated prescreen mounted to the front of the radiator doubles the square inches of screen area reducing the suction per square inch resulting in less plugging.
All DZ models' coolant systems are engineered to 120°F ambient temperature allowing for normal operating temperature in even the harshest environments.

Hydraulics

Hydraulic Oil Cooler

Hydraulic Fluid Tank



All Diamond Z Grinders have 3 to 4 time the required hydraulic filtration capacity.

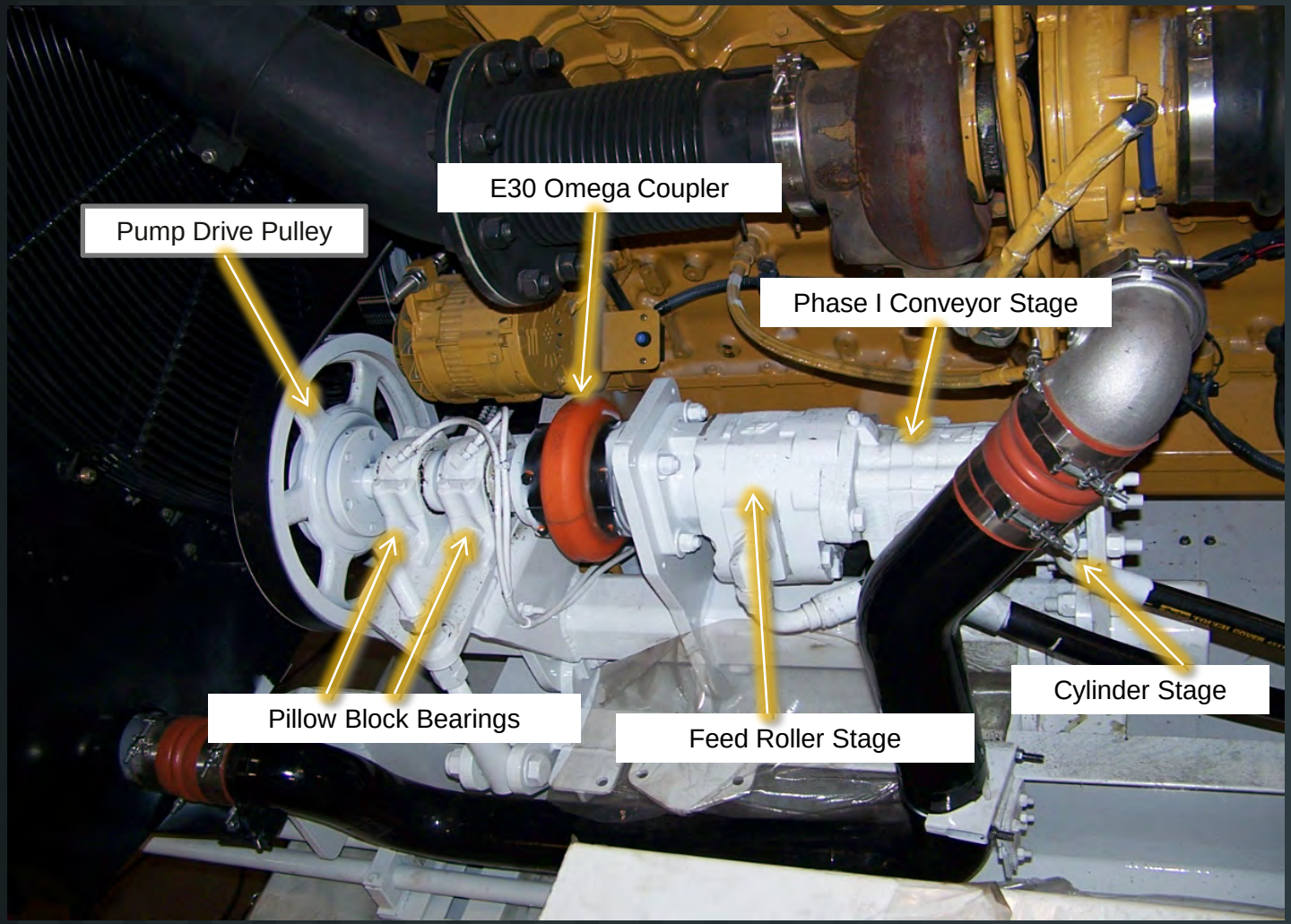
Hydraulic Tank Valves

All Diamond Z Hydraulic tanks have Ball Valves on Tank lines.

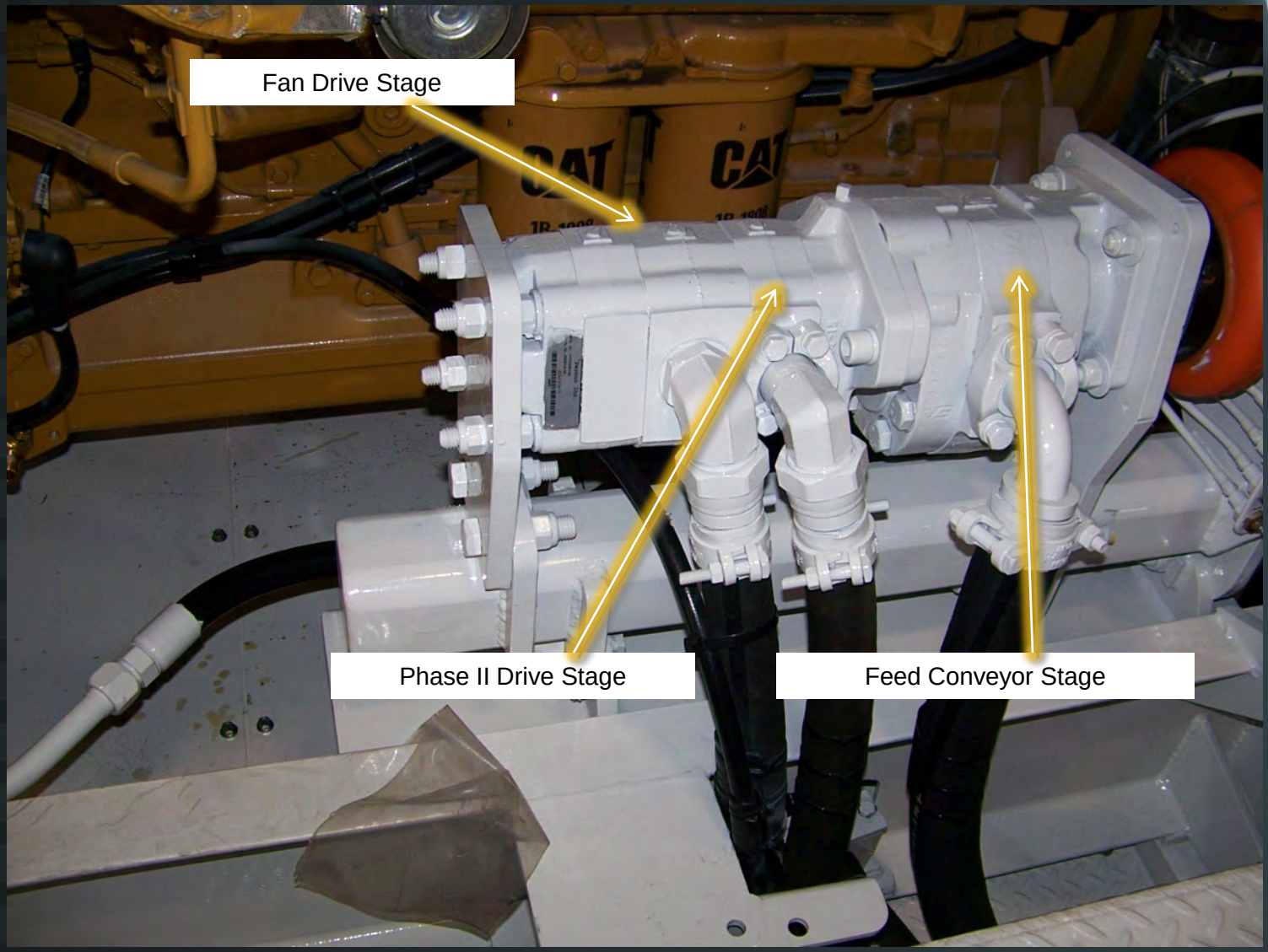
Pressure Sensing Proportionally Controlled Feed Conveyor and Crush roller

- This proportionally controlled hydraulic system allows for gradual speed control of both the feed floor and roller allowing for processing of any material and controlling your rate of feed and thru put.
  While sensing the engine and mill loads and rpm's, the feed hydraulic pressure, and both the phase one and phase two conveyors, the automated feed control system will stop, start and reverse as necessary. Both hydraulic drive systems components are protected by gas charged accumulators to eliminate shock and pressure spikes.

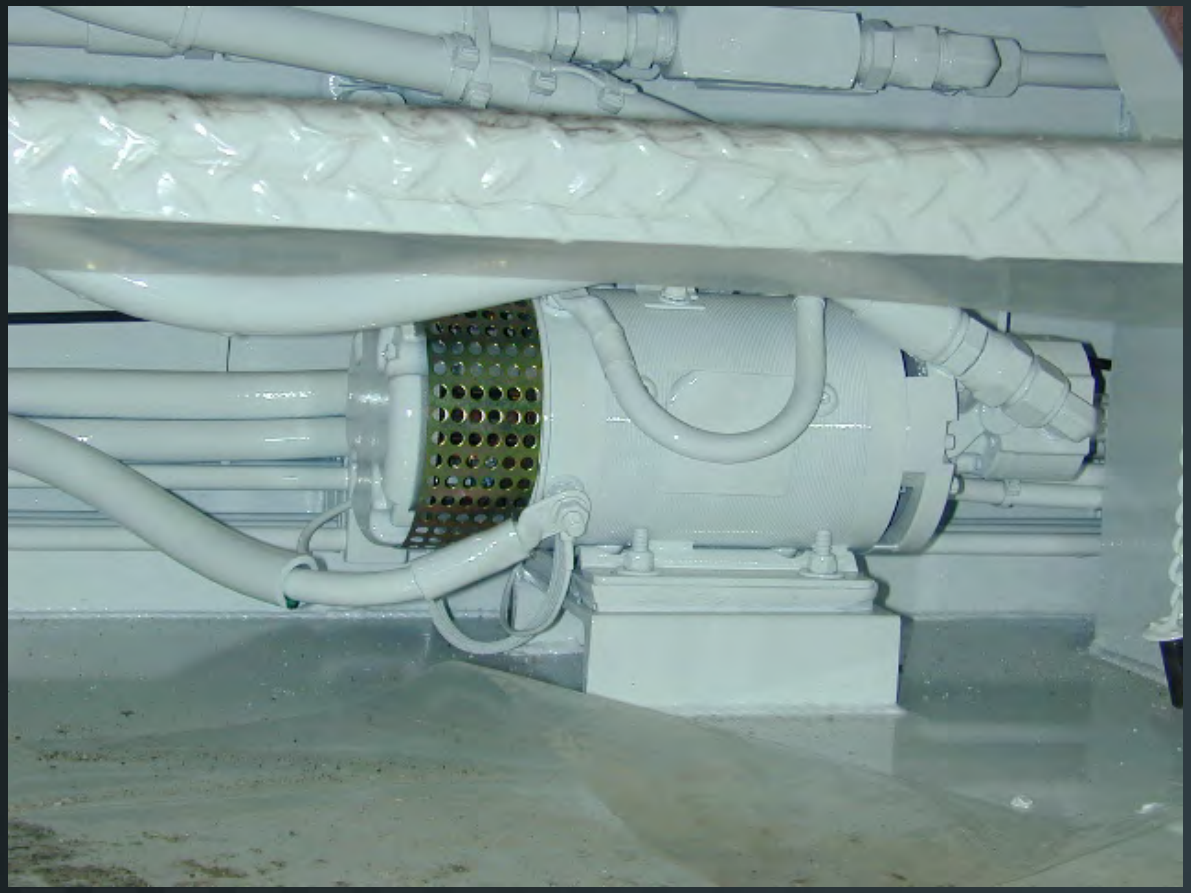
Hydraulic Front Pump



Hydraulic Rear Pump



Auxiliary Hydraulic Pump

- 

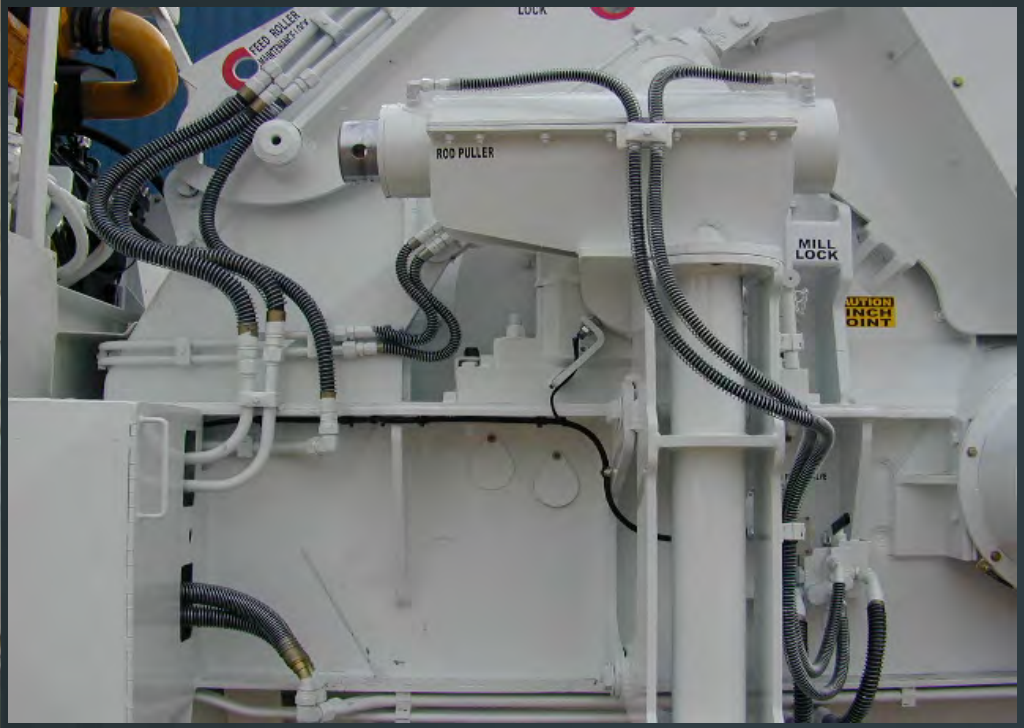
All horizontal machine offer an auxiliary hydraulic pump option. This option allows you to operate any hydraulic cylinder function without starting the engine such as raising the feed roller, folding the conveyor, operating the landing legs, etc.

Hydraulic Landing Gear

The hydraulic landing gear on the 4000 can be raised high enough allowing for easy clean up and to attach a truck also low enough for easy access to the feed box.

On both the DZH6000 and DZH7000 the hydraulic landing gear can either be controlled by manual valve or remote and will raise the front of the machine in excess of 6 feet. This position allows for easy clean out of any build up of debris at the front of the grinder.

Hydraulic Rod Pusher/Puller

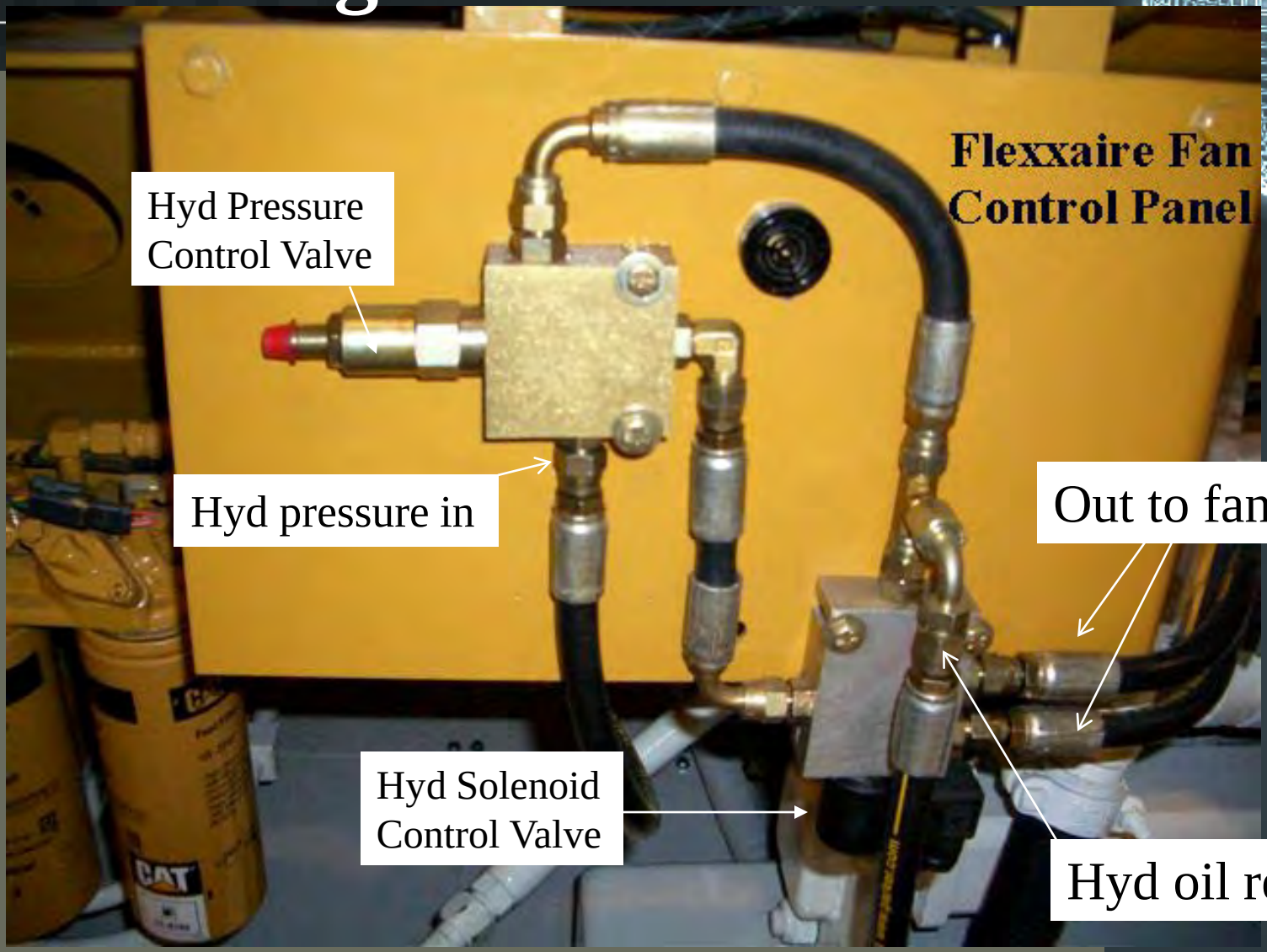


- The Hydraulic Rod Puller / Pusher is a safer, efficient benefit to the operator of the Diamond Z Grinder.

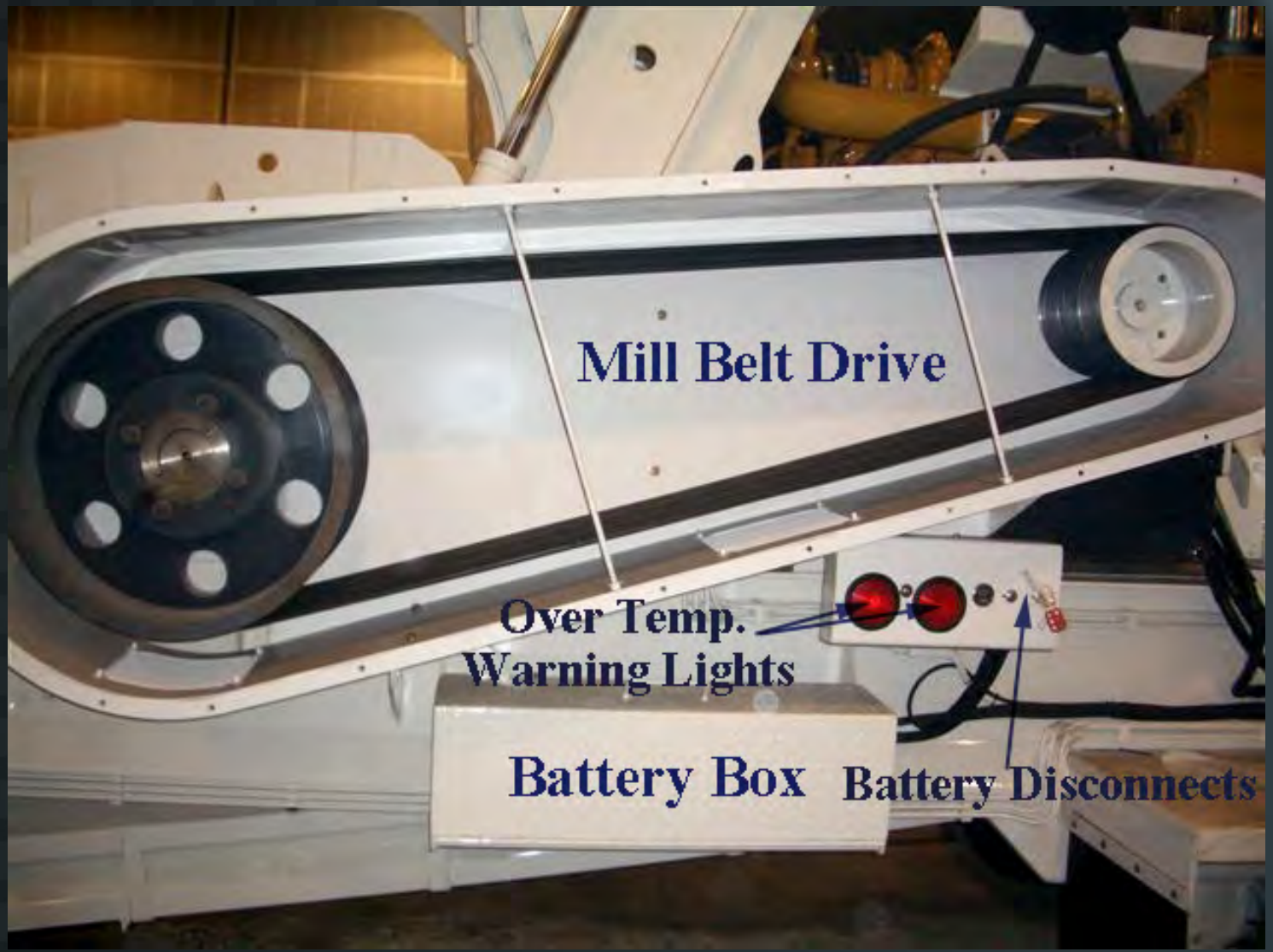
Reversing Fan System

All Diamond Z Horizontals include **Flexxaire Reversing Fans**. This fan does not reverse as the statement above implies but rather the blades turn on their axis, much like a helicopter, reversing the air flow and purging the debris from the front of the radiator

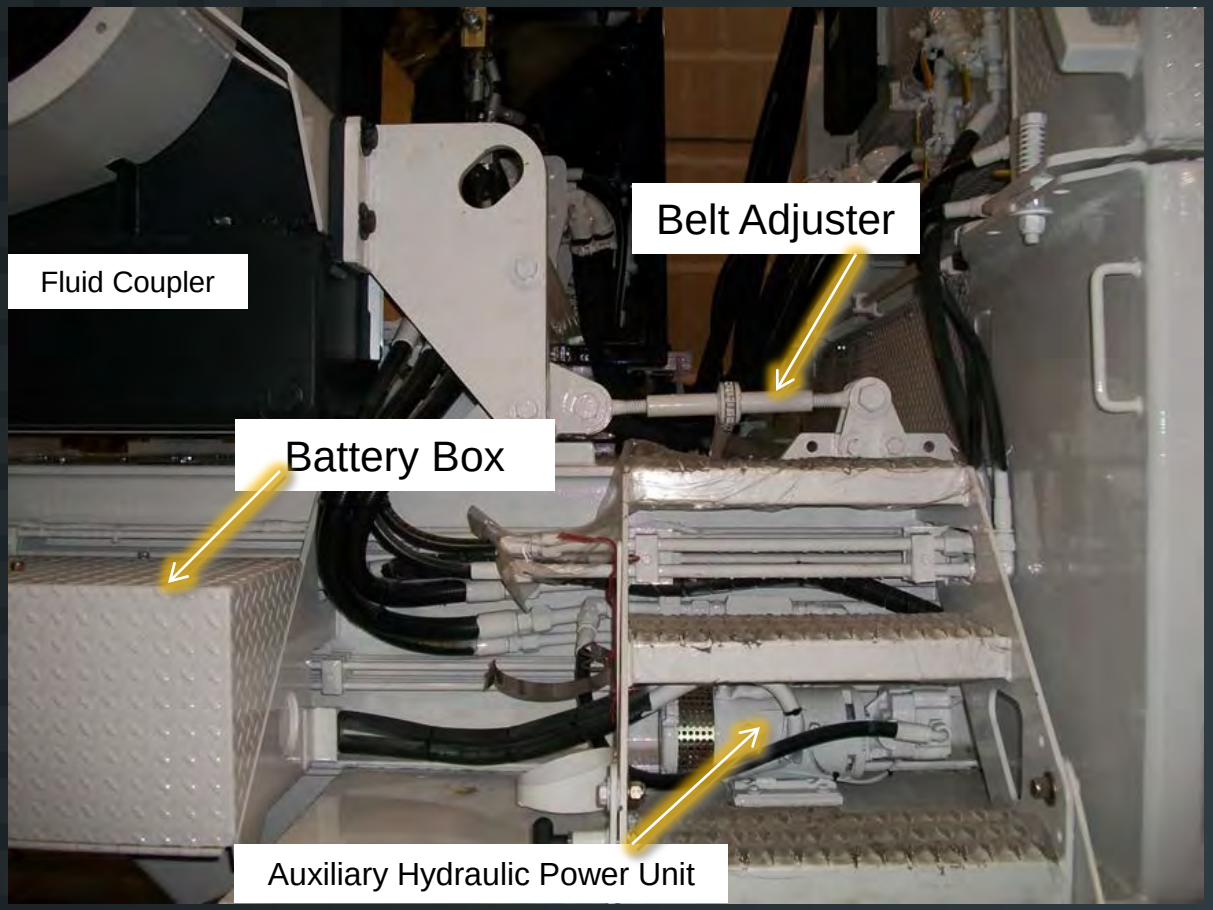
Reversing Fan Control Panel



Horizontal Mill Drive



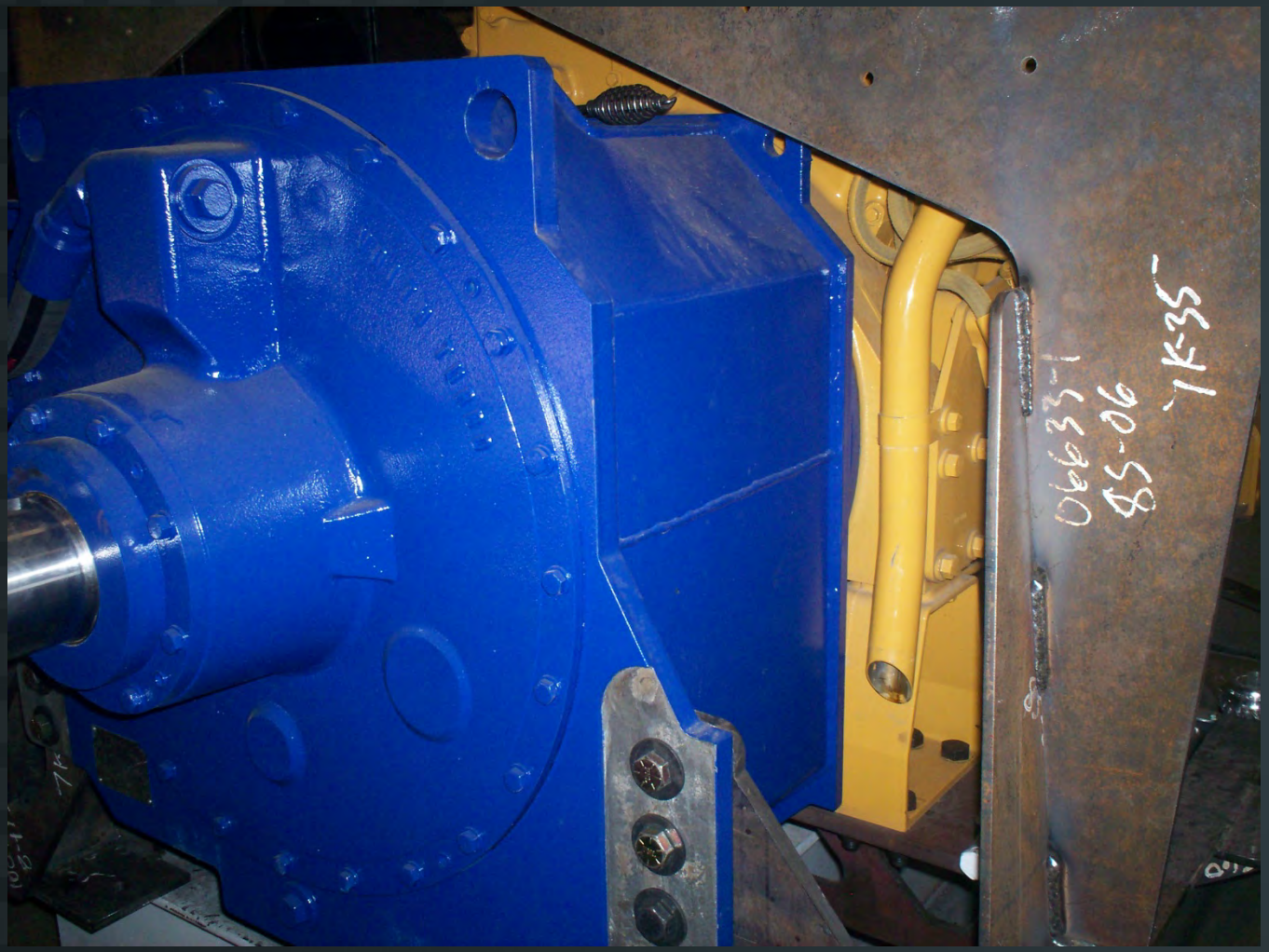
Mill Drive Belt Adjusters



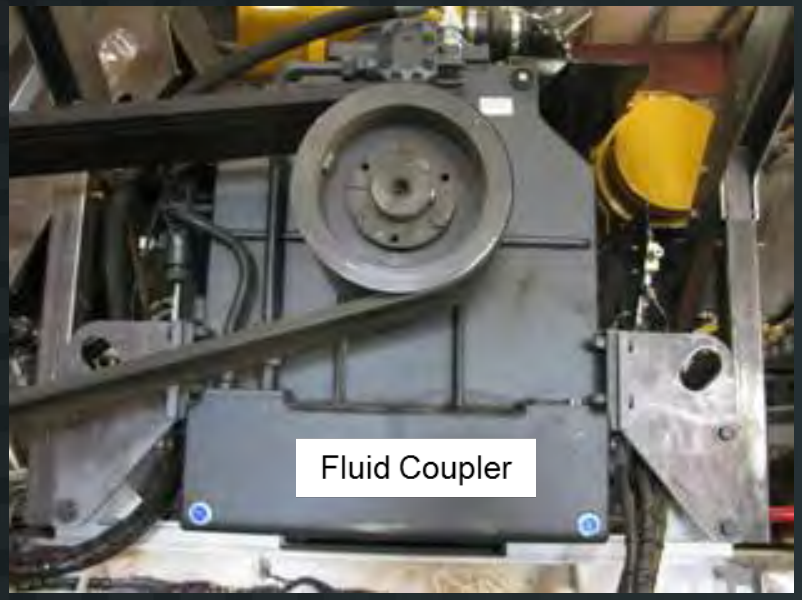
- All mill drive belts are easily adjusted.

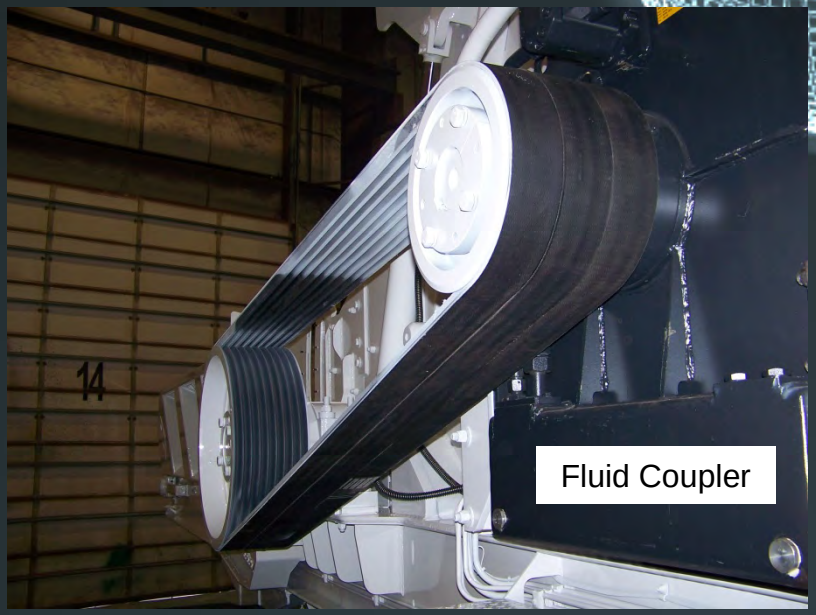
Fluid Coupler

Hammer Mill Drive System
All Diamond Z Horizontal Grinders are driven by a Fluid Coupler



Fluid Coupler



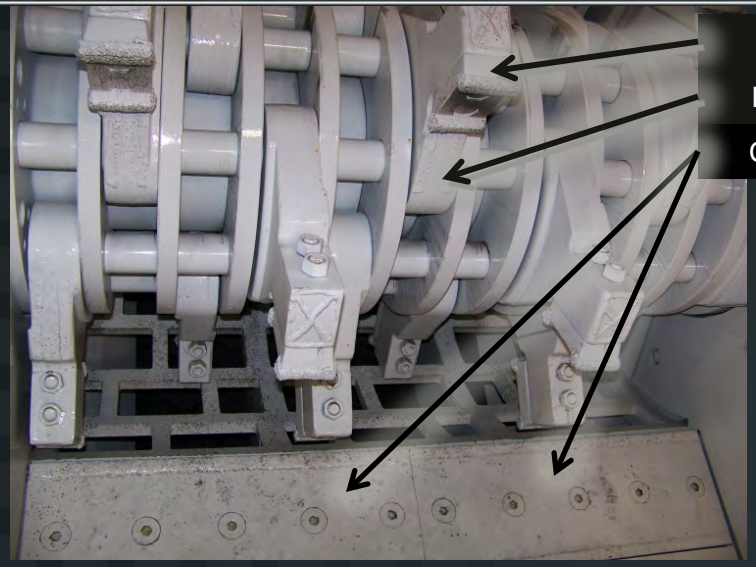


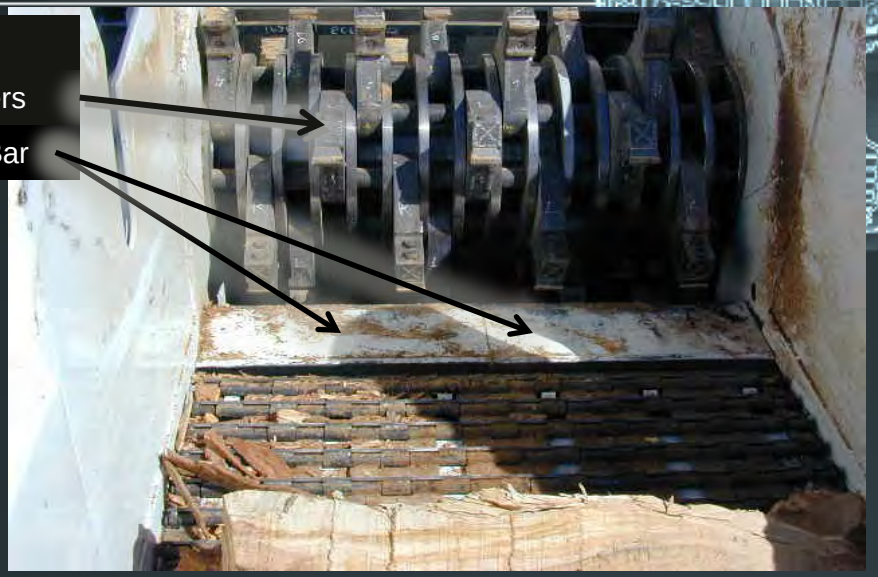
All Diamond Z Horizontals come standard with fluid couplings. These couplings eliminate all friction elements prone to wear and failure as with other competitors. This fluid drive also eliminates any shock being transferred to the engine in the event of contaminants entering the grinding chamber. The coupling is electronically monitored for heat and cannot be abused as it will automatically shift into the neutral position if a blockage is present at start up. This fluid drive also increases production while keeping the engine working in the optimum torque and rpm range “sweet spot” more consistently than with standard friction disc couplings. There are no adjustments. Oil changes are required every 3000 hours.

Mill Drive Belts

All Diamond Z Horizontals are driven with Aramid corded, or “kevlar” type, drive belts. The service factor utilized in the engineering of this design is typically 20 to 40 higher than that of our competitors.

Mill Area





All Diamond Z horizontal grinders feature the most efficient down cut hammer mill design as well as off set hammers for complete grinding coverage across the mill.

All standard machines include a heavy duty pin and plate style hammer mill. To date we have never had to replace a single mill.

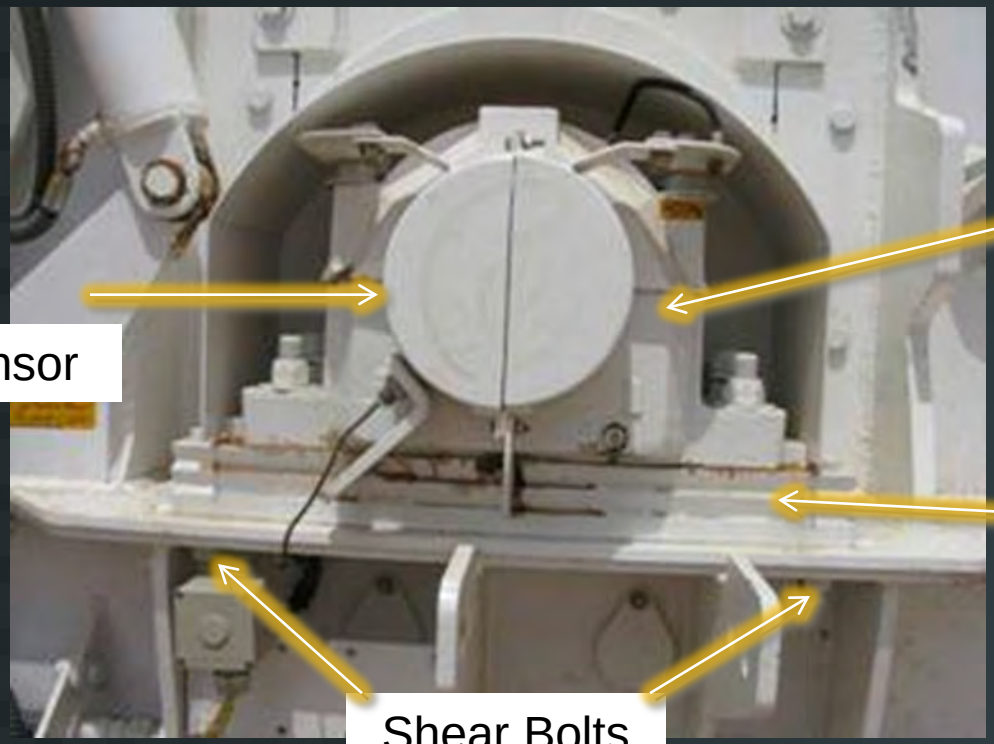
All cutting edges and wear areas in grinding chamber are bolt on replaceable components. Another Diamond Z innovation.

Access Holes for Wear Plate Replacement

- Special attention to detail is given to longer term maintenance items like these access ports which enable you to utilize a ratchet and socket when removing the mill side wear plates.

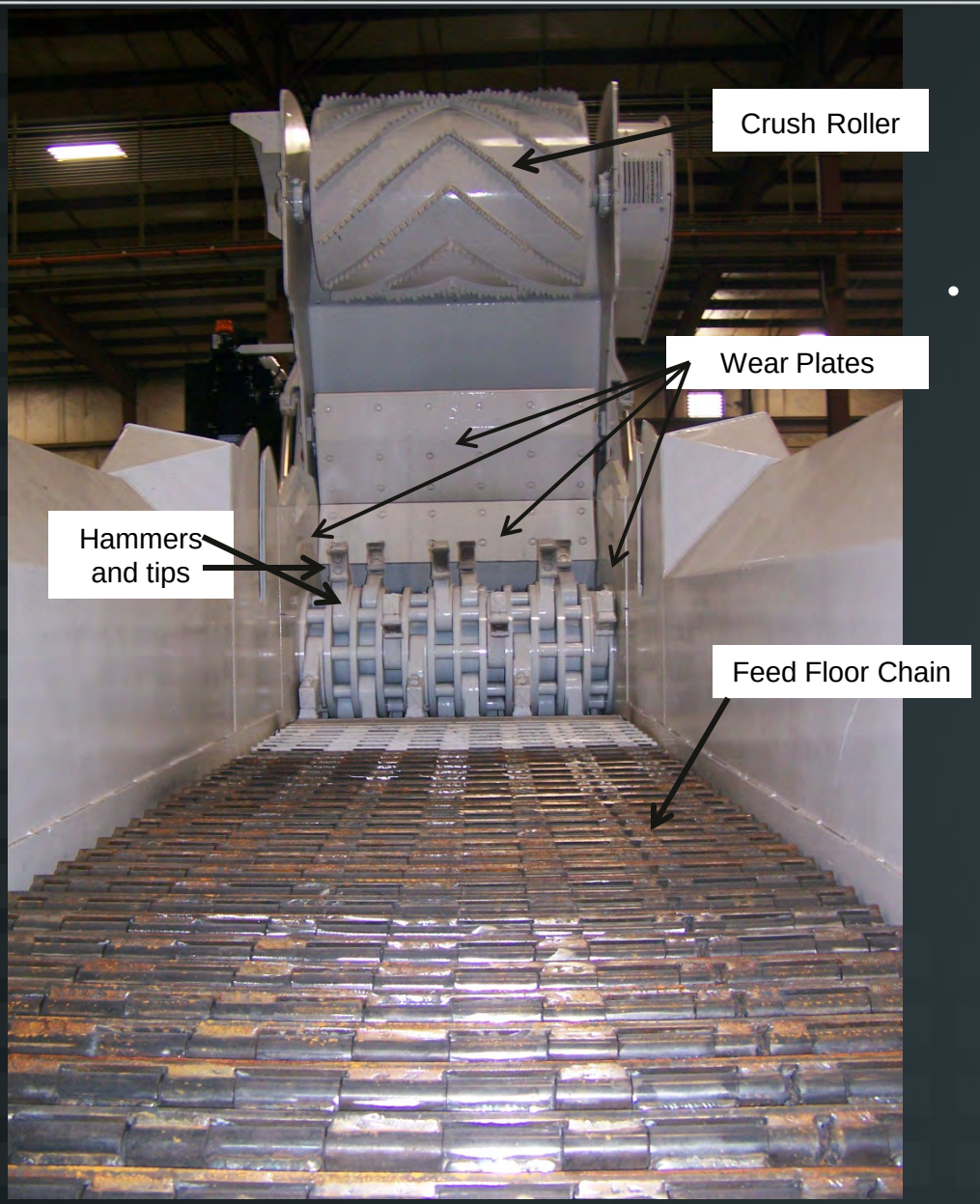
Patented Break away Mill Bearing Mounts.

- This impact reduction system allows for relief when the hammer mill impacts large contaminants. Although all DZ grinders are very impact resistant in the event the mill encounters contaminates, the bearings have the ability to reduce the impact load on the mill shaft.



Please note the **Proximity Sensor** located at the 7:30 position. This location allows for the main control PLC to monitor exactly what the mill rpm's are at all times, providing a quicker reaction time to the automated feed control system. To date, we have never bent a mill in a horizontal grinder.

Safe access to hammer mill for all wear part maintenance and screen replacement.



- **Safe access to hammer mill for all wear part maintenance and screen replacement.**

Crush roller raises up hydraulically lifting both the feed roller and the mill cover assemblies completely past the center of gravity. Once both assemblies are raised they are then hydraulically locked into this safe, maintenance position. With both assemblies in this position you have full access to the grinding chamber for any necessary maintenance requirements. In this position the screens are un locked and can easily be changed out in as little as 15 minutes.

It is never necessary to enter the grinding chamber with the feed roller over head as with many competitors' designs.

Aggressive Feed system

- The crush roller assembly can weigh in excess of 10,000 lbs providing enough down pressure for processing larger more difficult material with minimal or no interaction by the operator. DZH4000 has a single high pressure hydraulic drive motor. Both the DZH6000 and DZH7000 have dual drive hydraulic motors providing the highest crush roller torque in the industry. The crush roller is heavy duty in design and has a patented variable height, with alloy teeth in a “V” pattern providing an aggressive bite and adding structural strength to the roller.

The feed floor is assembled from alloy plate, stress proof rods and thick wall bushings. The cleats are 1.75” tall making for a very aggressive durable floor providing 2-4 times the life as compared to our competitors, typically 3-6000 hours. Every link is a master and can easily be removed. The under plated floor is also segmented and can be unbolted for replacement. This entire process can easily be completed in a day versus several days as with our competitors. This aggressive design is an integral part of the grinders ability to process material at the highest rate in the industry.

Crush Roll and Mill Cover Maintenance Position

As you can see in the photos once the crush roller and mill hood are hydraulically raised into the maintenance position you can perform necessary maintenance while standing upright and not crawling in an unsafe position underneath heavy components as with many competitors.

Also in this maintenance position the two one inch thick product sizing screens are free and can be easily removed and replaced in twenty minutes or less. Some of our competitors screen change out process can take 4.5 hours easily.

Hydraulic Maintenance Safety locks

Maintenance Lock engaged

Maintenance Lock not engaged

Feed Roller Drive

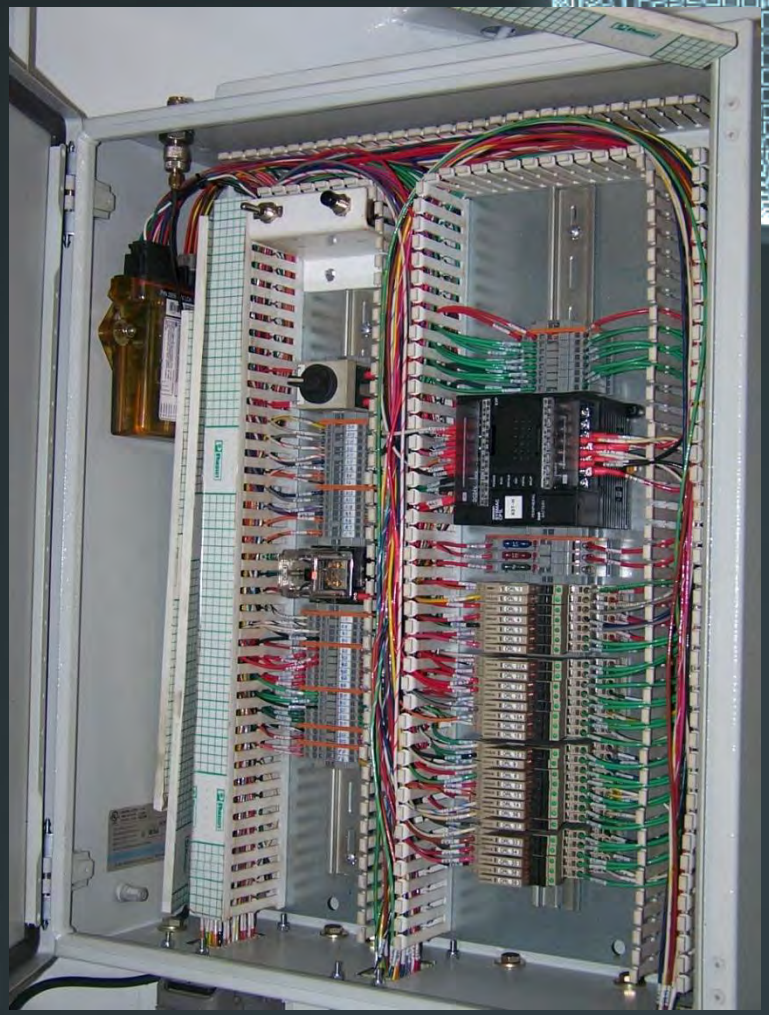
The feed roller on the DZH4000 is hydraulically driven on one side by a VIS high torque drive motor with a heavy duty 140 drive chain and ductile steel heavy duty sprockets. This drive system can be easily accessed and adjusted. All cover panels are aluminum and easy to handle.

On both the DZH6000 and DZH7000 there are dual drive motor assemblies on both sides of the feed roller.

Main Control Panel

All controls are clearly marked and conveniently located providing ease of operation. All main functions can be either controlled by the radio remote or manually.

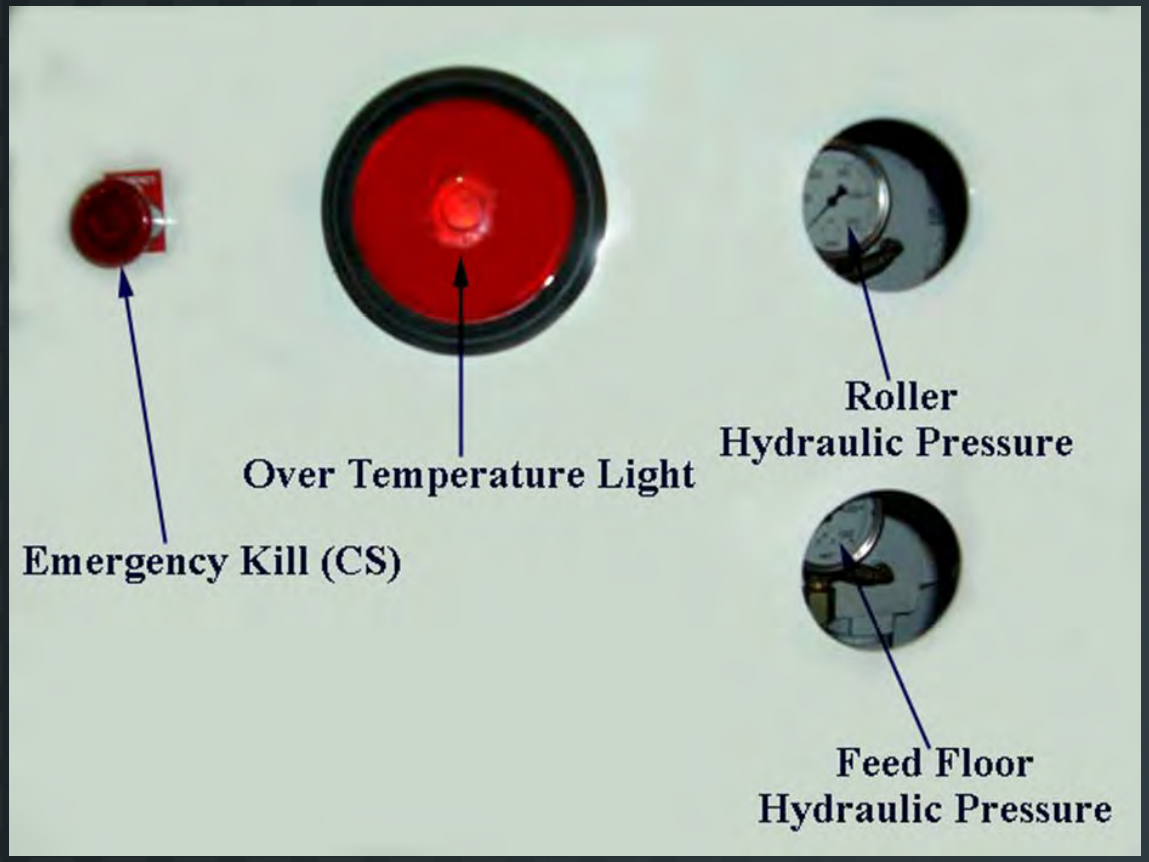
Electrical Controls



- All Diamond Z grinders have NEMA III rated, steel, vibration isolated, electrical control enclosures. These enclosures all have plugs for ease of change out and bench testing. All electrical connection where possible are crimped, soldered, and shrink-wrapped. State of the art components are in rail mounted and spring loaded cage clamps eliminating loose circuits.

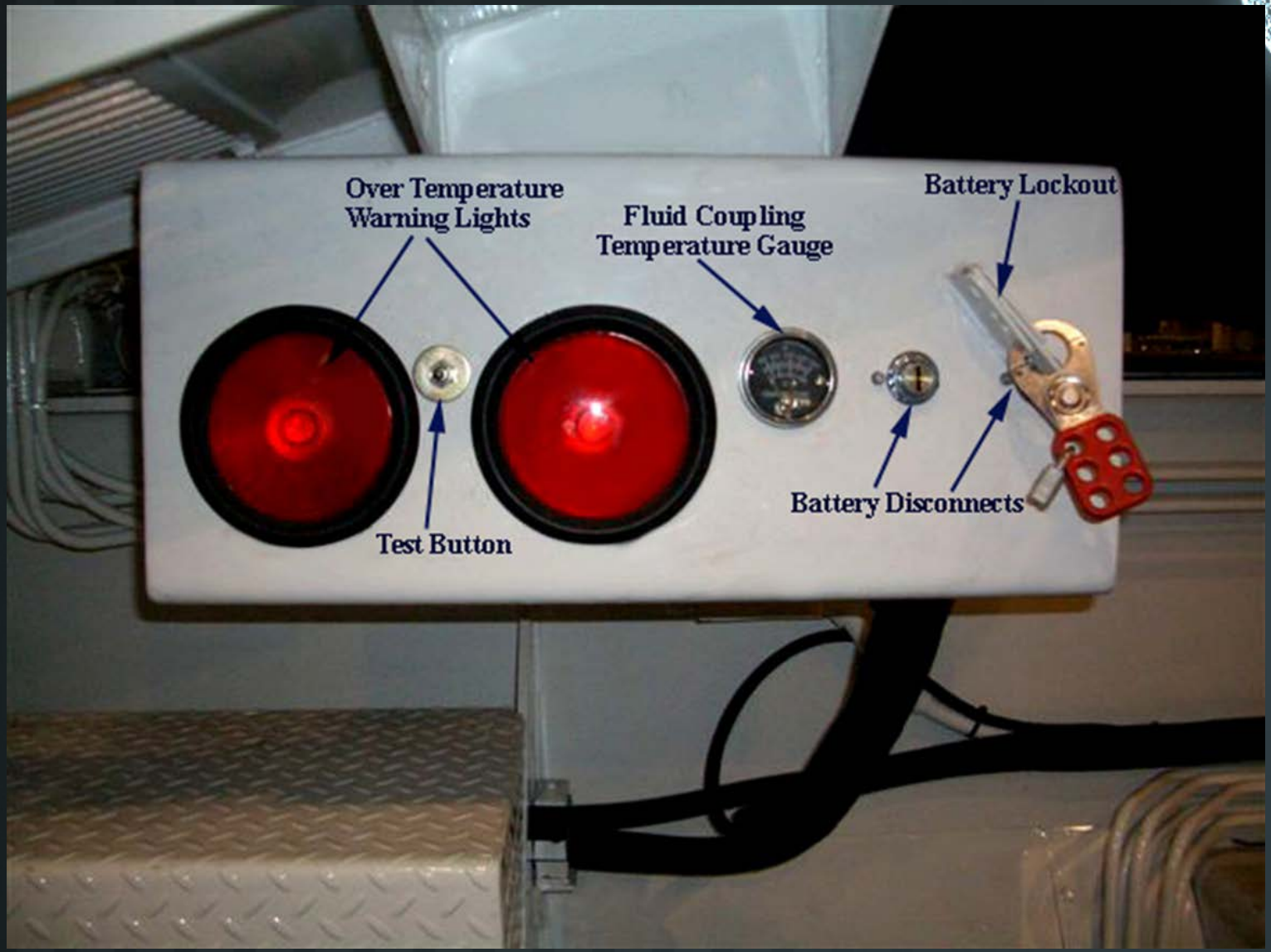
Early Over Temp Warning Systems and Instrumentation

- All diamond Z grinders have warning lights and gages alerting the operator of a potential over heat situation with the coolant water or fluid coupling.



Hydraulic Gauges

All hydraulic circuits have a dedicated gauges showing running and stall pressures.


Over Temperature
Warning Lights
Fluid Coupling
Temperature Gauge
Battery Lockout
Test Button
Battery Disconnects

Easy Access Batteries

Both HD12V batteries are easily accessible and have both negative and positive lock out switches.

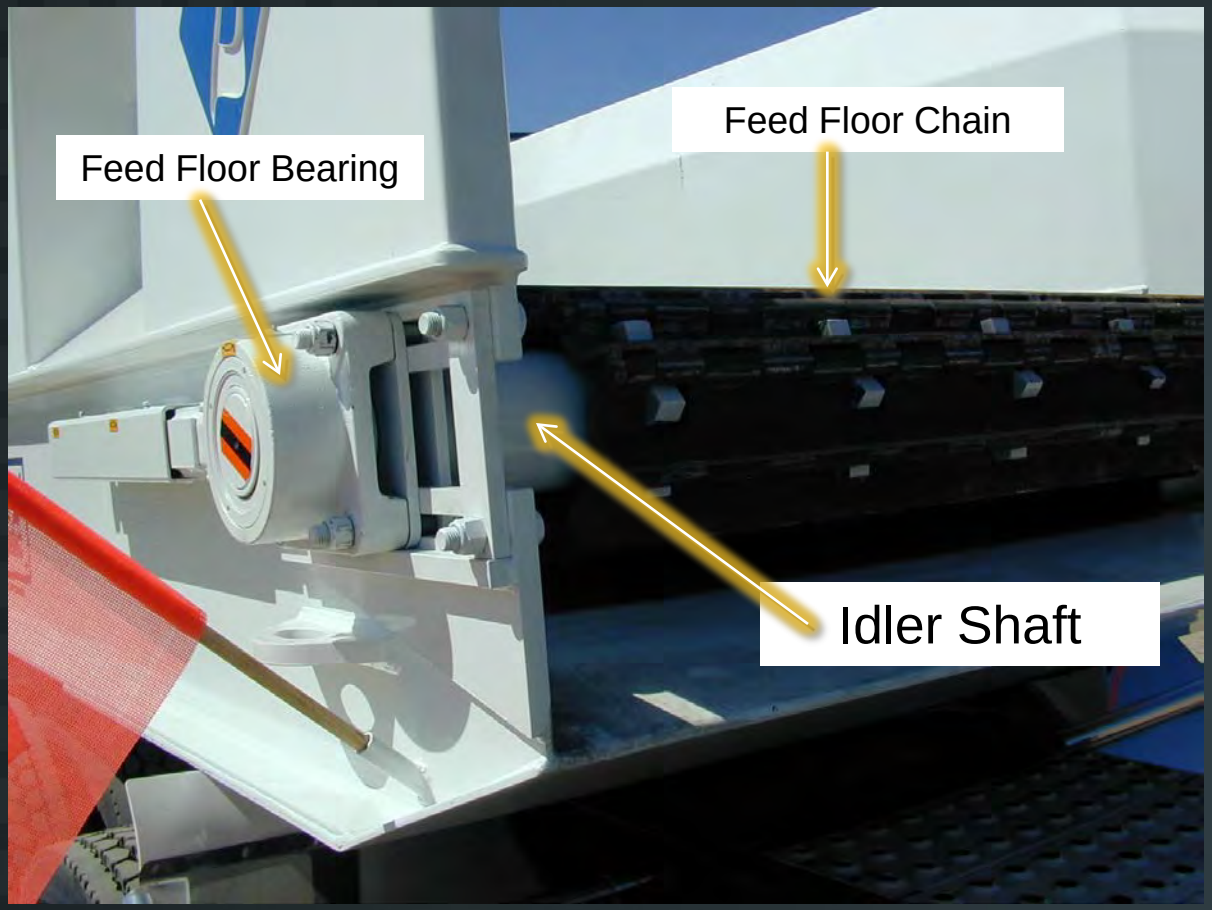
Proximity Sensor

- **This sends a signal to the PLC monitoring the mill rpm's at all times.**

Dual Hydraulic feed floor drive motors.

This dual drive design provides equal load to both side of the drive roller and additional torque for stronger feed floor capacity. Both drive assemblies are accessed by removing the easy to handle aluminum cover panels. Peep holes allow you to determine if the drive chains need re-tensioning.

Feed Floor Idler Shaft

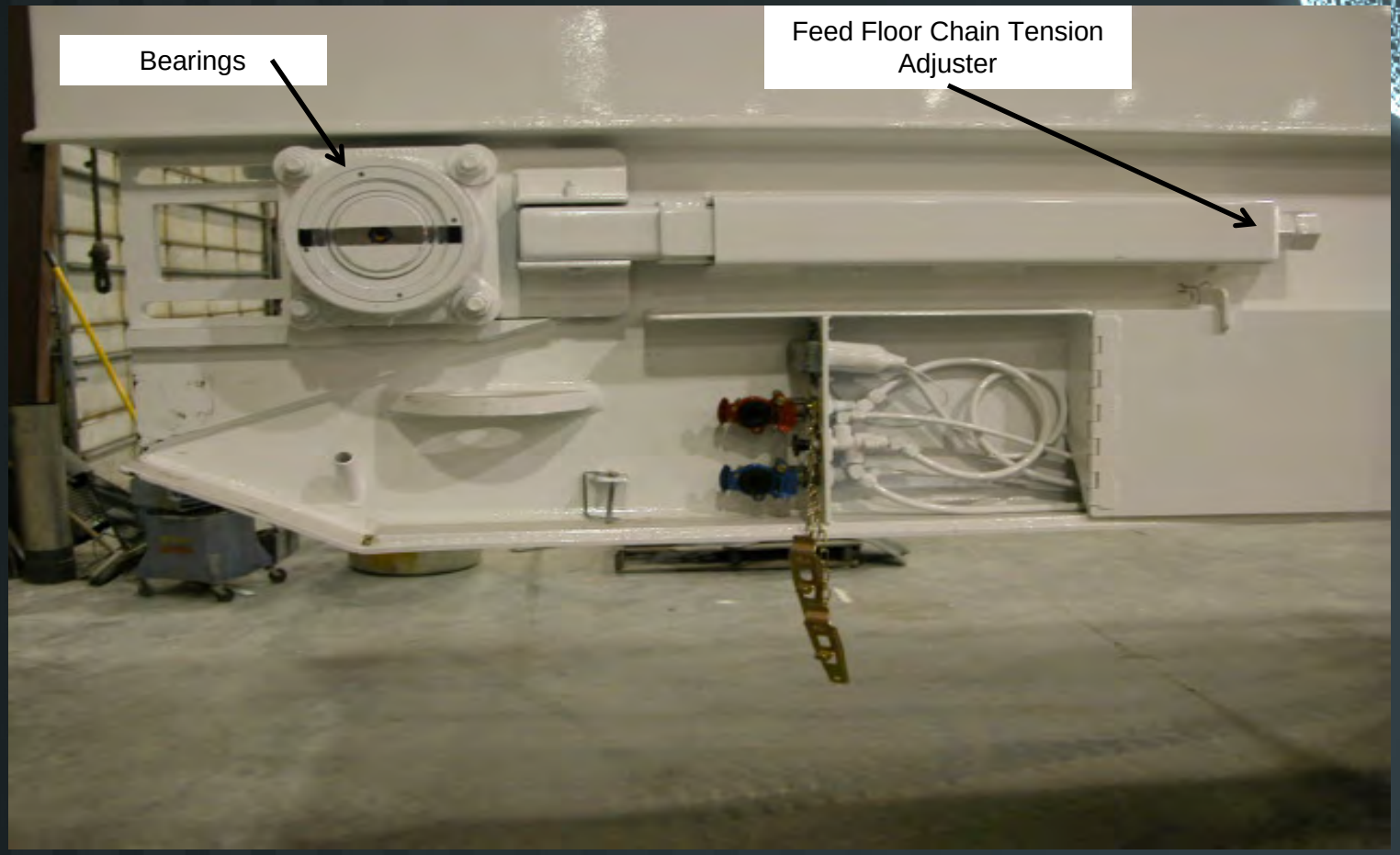


6.5” diameter idler shaft to insure durability. Even when abused and large material is dropped day after day, no failures occur.

Replaceable Feed Conveyor Pan

All DZ horizontal models feature a replaceable, bolt in underlayment pan beneath the feed floor which interlocks for extended wear and durability.

Heavy duty feed floor bearings



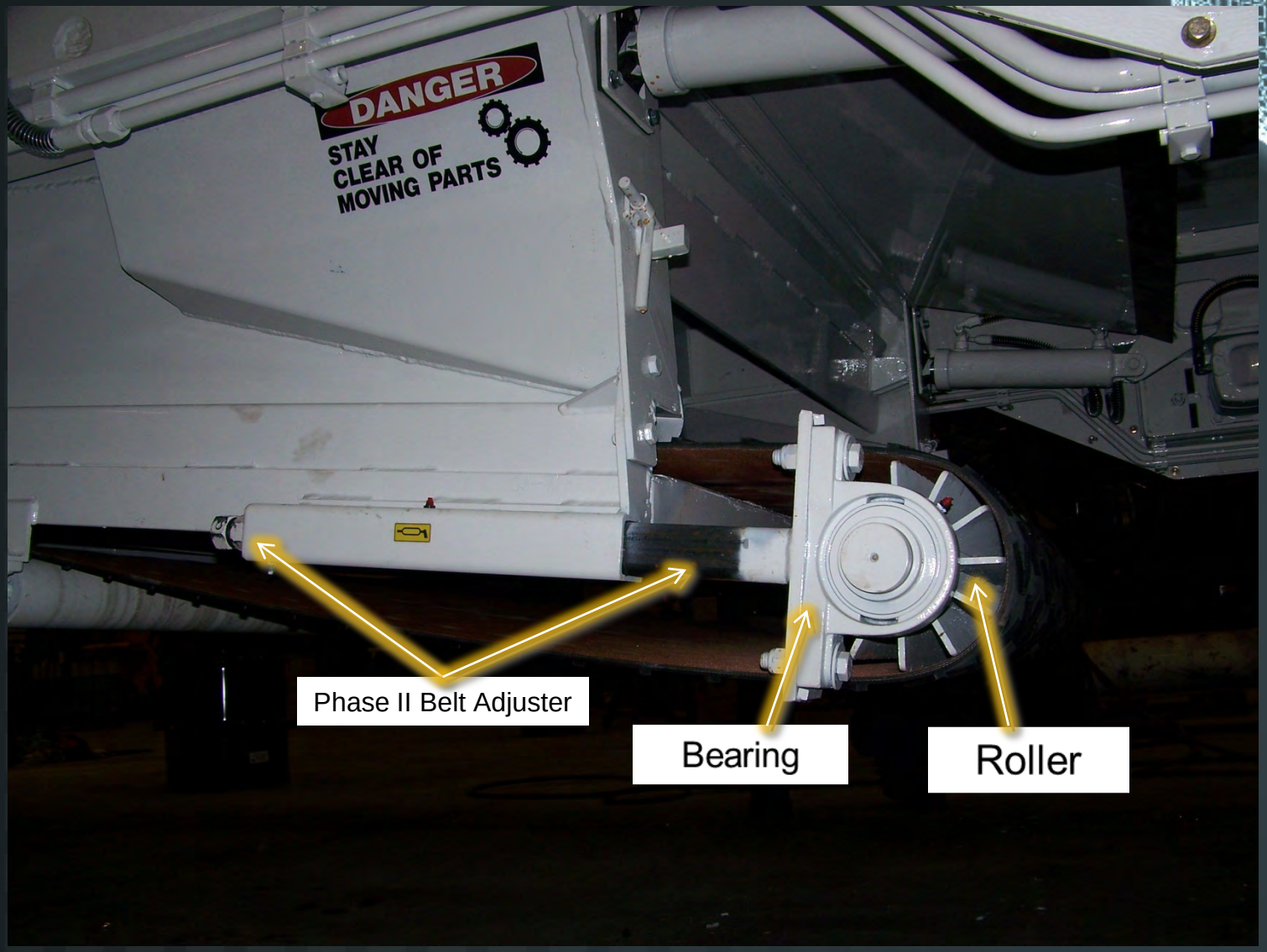
Heavy duty spherical feed floor bearings insure long life as opposed to the competition.

Phase One Conveyor

- Diamond Z Grinders phase one, or belly conveyors are pan type and self cleaning.
  Both the drive and idler pulleys are self cleaning.
  All phase one conveyors have a thicker impact resistant bed directly below the grinding chamber and adjustable UHMW skirting up the sides.
  All Conveyors are pulled not pushed. UHMW friction reduction strips are optional.
  Track machines have return rollers.

Fully Adjustable Self Cleaning Conveyor Rollers

Both the drive and driven rollers on phase one and phase two conveyors come standard with self cleaning rollers. These rollers will not build up in wet, muddy conditions. All idler rollers are adjustable.



Access / Fines Door

Hydraulically operated fines door directs any material that drops between the feed floor chain, the drive pulley and the cutter bar either onto the phase one conveyor or out the front of the in-feed floor. It also serves as an access to the mill area.

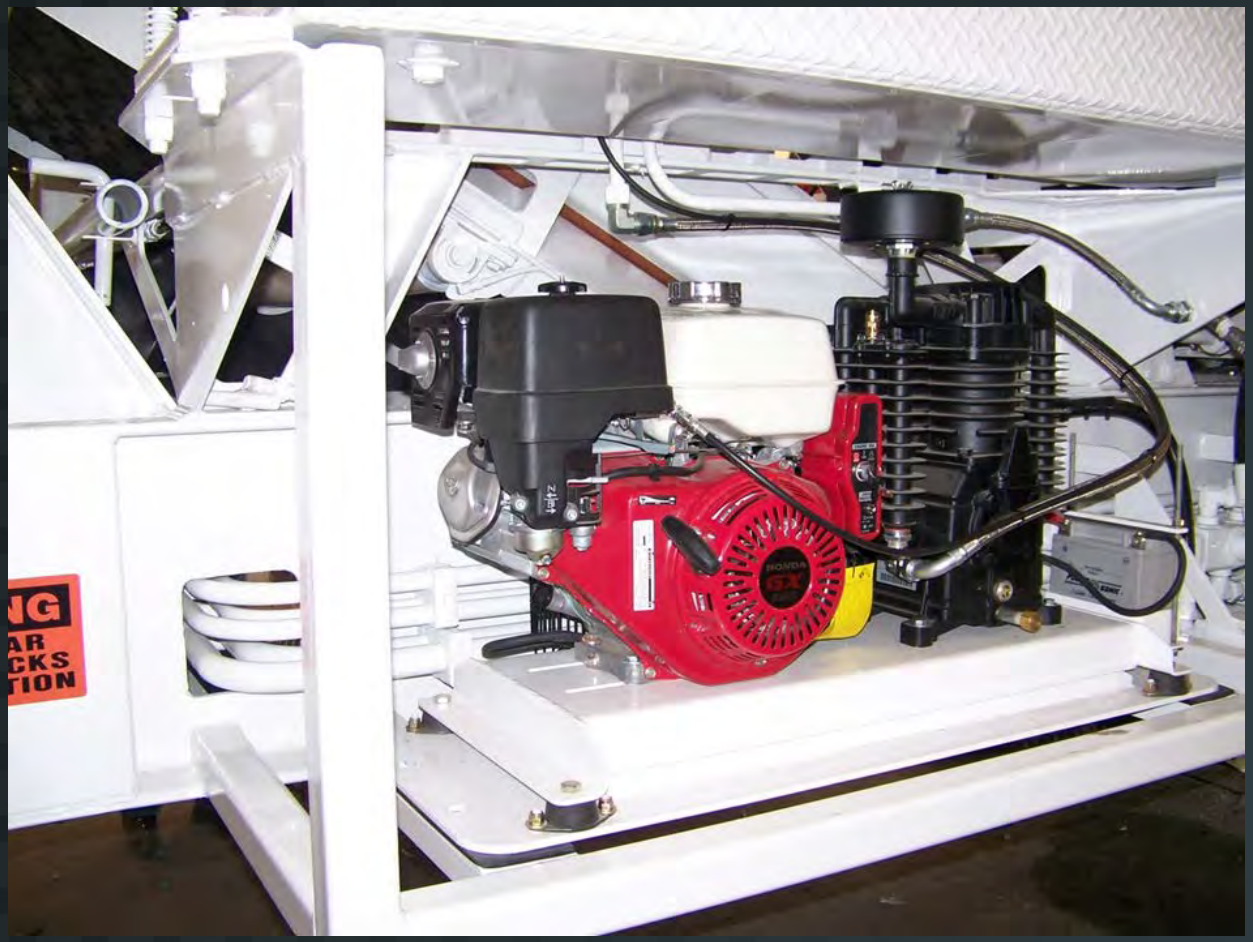
Phase 2 Conveyor

- Diamond Z grinders are equipped with free standing pan type self cleaning stacking conveyors. Models can easily load a standard 13’6” trailer.
  Stacking conveyors fold up hydraulically for transport.
  Conveyor belts are pulled not pushed.
  UHMW friction reduction strips are optional.

Attention to Detail

All track mounted DZ horizontals have chain down points to aid with ease of transportation.

Air Compressor Option



Air compressor swings out for access to both sides of the unit for ease of maintenance. Diamond Z grinders were designed for operators, by operators so user convenience is evident throughout the machine

Foldable Access Ladder

- **(Access ladder folds up for transportation)**

Fuel Tanks

- All Diamond Z grinders have enough fuel capacity to run a typical shift. All tanks are baffled and made of reinforced construction. These tanks are vibration isolated mounted and built from heavy gauge material. All fuel tanks are equipped with dipstick level indicators, locking fuel caps, cross over lines and ball valves.

Tool Boxes

Tool Boxes

- All Diamond Z Horizontal grinders include built in, lockable, fender tool boxes.

Mobility and Power Options

Most all Diamond Z Grinders are offered in track mount, wheel mounted, diesel or electrical driven, mobile or stationary mounted.

Track machine transport options