

Etnyre Hydrostatic Drive Self-propelled ChipSpreaders

Front wheel or 4 wheel drive



- More capacity
- More control
- More productivity
- More dependability

**Efficient
Hydrostatic Drive**



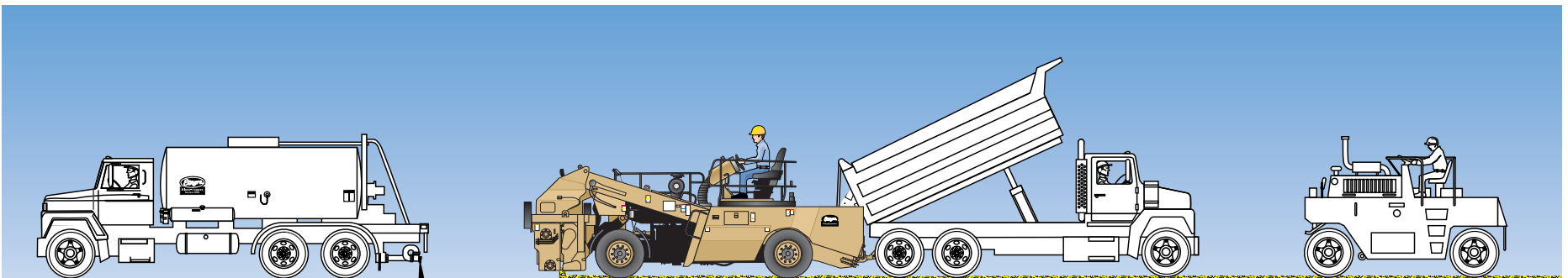
**Versatile
Variable Hoppers**



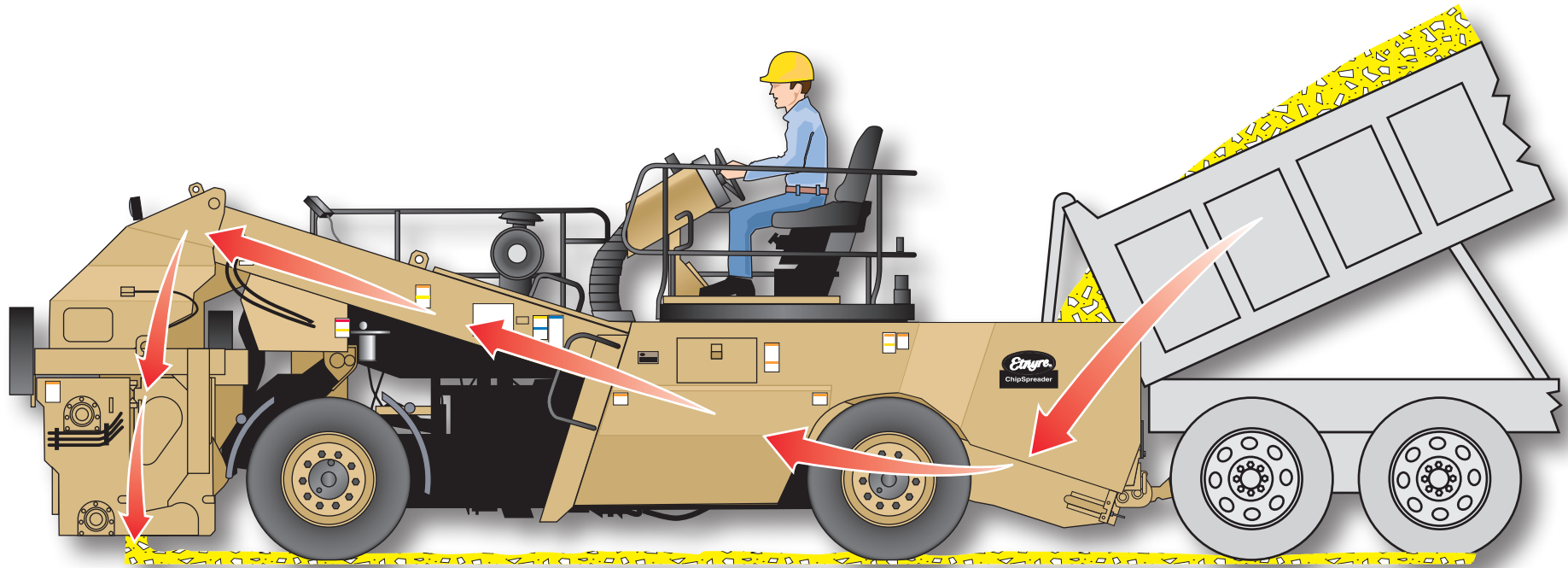
Self-propelled Chipspreaders are used by both contractors and municipalities. The main function of a chipspreader is to uniformly distribute cover aggregate into the hot liquid asphalt sprayed by an asphalt distributor truck.

It is very important that the chipspreader be designed and constructed to apply many different size aggregates at different speeds.

With that in mind, let's take a close look at the design features of the Etnyre self-propelled ChipSpreader.



Here's how the ChipSpreader works



Truck backs to spreader and automatically hitches itself, raises dump bed and releases tail gate.

Stone flows into the rear hopper where it is picked up by two conveyor belts.

The conveyor belts transfer the material to the spread hopper, which is equipped with a series of radial gates that are readily adjustable to the desired spread width.

As the spread hopper is loaded, the ChipSpreader is started and pulls the truck behind it.

Application rate computer controls the main gate control opening and the speed of the ChipSpreader.

The ChipSpreader operator has a clear view to insure an even longitudinal joint.

When truck is empty, it is released by the driver, and another truck attaches itself and dumps its load while the ChipSpreader keeps spreading.

Hydrostatic Drive

Why hydrostatic drive?

1. Hydrostatic drive features infinitely adjustable working speeds.
2. Computer control for accurate and repeatable chip application rate. Chip application is automatically controlled as ground speed increases or decreases.
3. Hydrostatic drive system provides smooth starting and stopping on steep grades with heavy loads. Less likelihood of tire spin on newly chipped road surfaces.
4. Optional 4-wheel drive available (see page 11 for more details).

There are six major systems in our self-propelled ChipSpreader.

- 1. Two-section frame assembly**
- 2. Aggregate handling system**
- 3. Power train**
- 4. Hydrostatic drive system**
- 5. Control system**
- 6. Front hopper spread system**

Let's take a closer look at each of these areas.

1 Frame Assembly

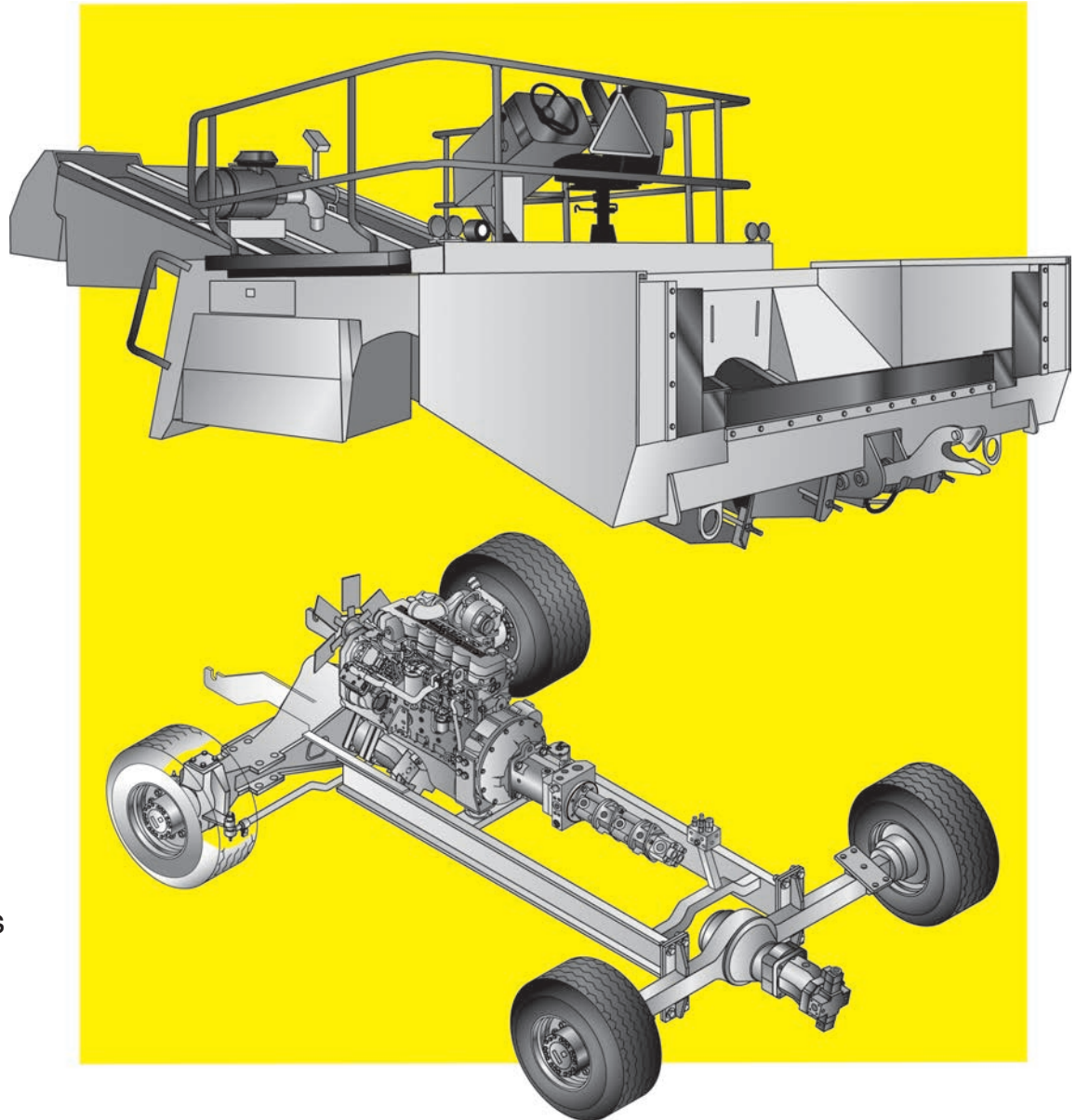
New Etnyre two section frame assembly.

Upper Section

- Both conveyors, right and left side ladder and walkways, 70 gallon hydraulic oil reservoir, 82 gallon fuel tank, rear hopper compartment.

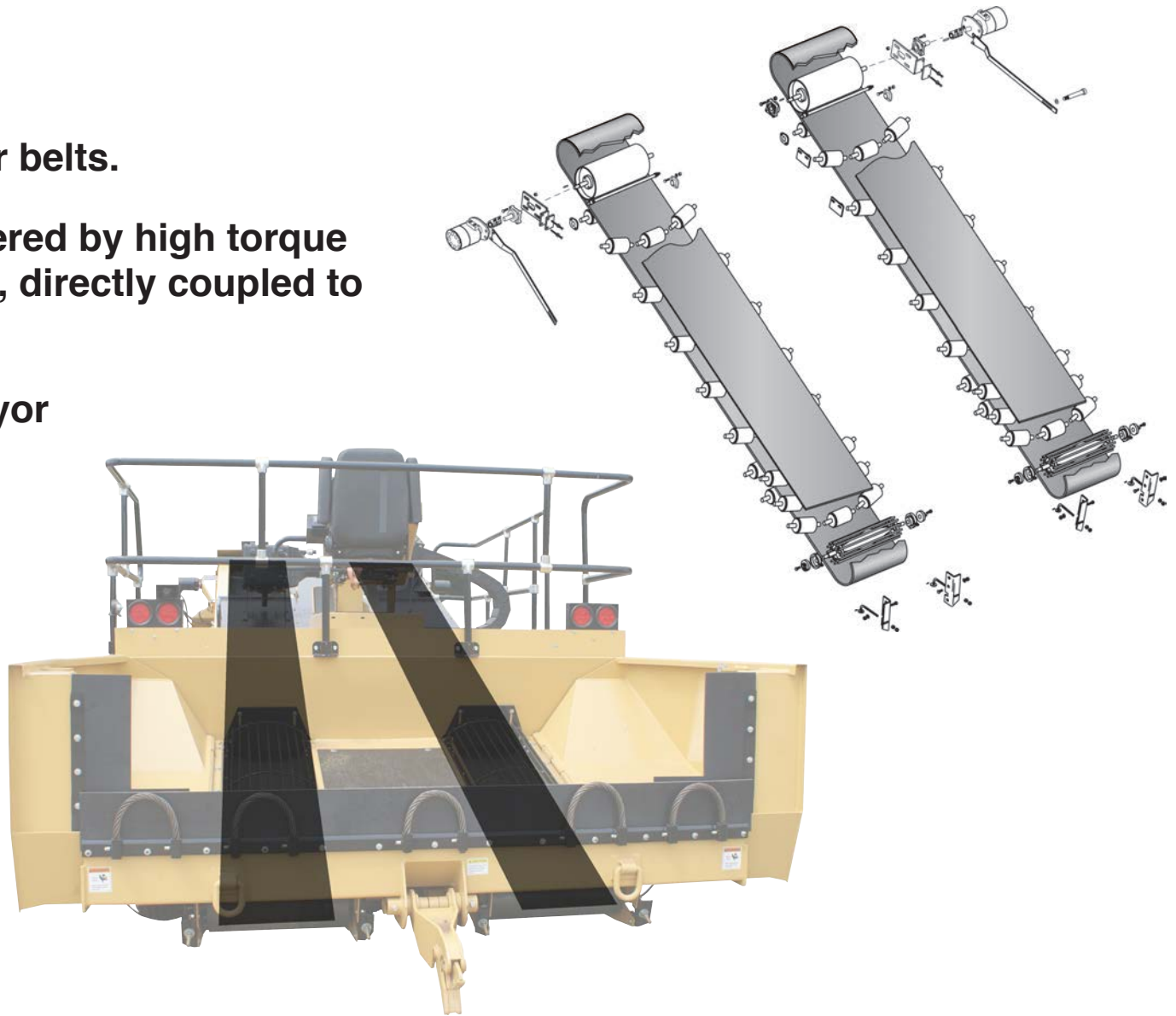
Lower Section

- Contains engine, hydrostatic drive system and front and rear axle assemblies.
- Bolts to main frame section.
- Complete frame is all 3/16" steel construction.
- Heavy duty design to handle all types of dump trucks (single axle, tandem axle and tri-axle models).



2 Aggregate Handling System

- Two 24" conveyor belts.
- Belt drive is powered by high torque hydraulic motors, directly coupled to the head pulley.
- Automatic conveyor control on/off.



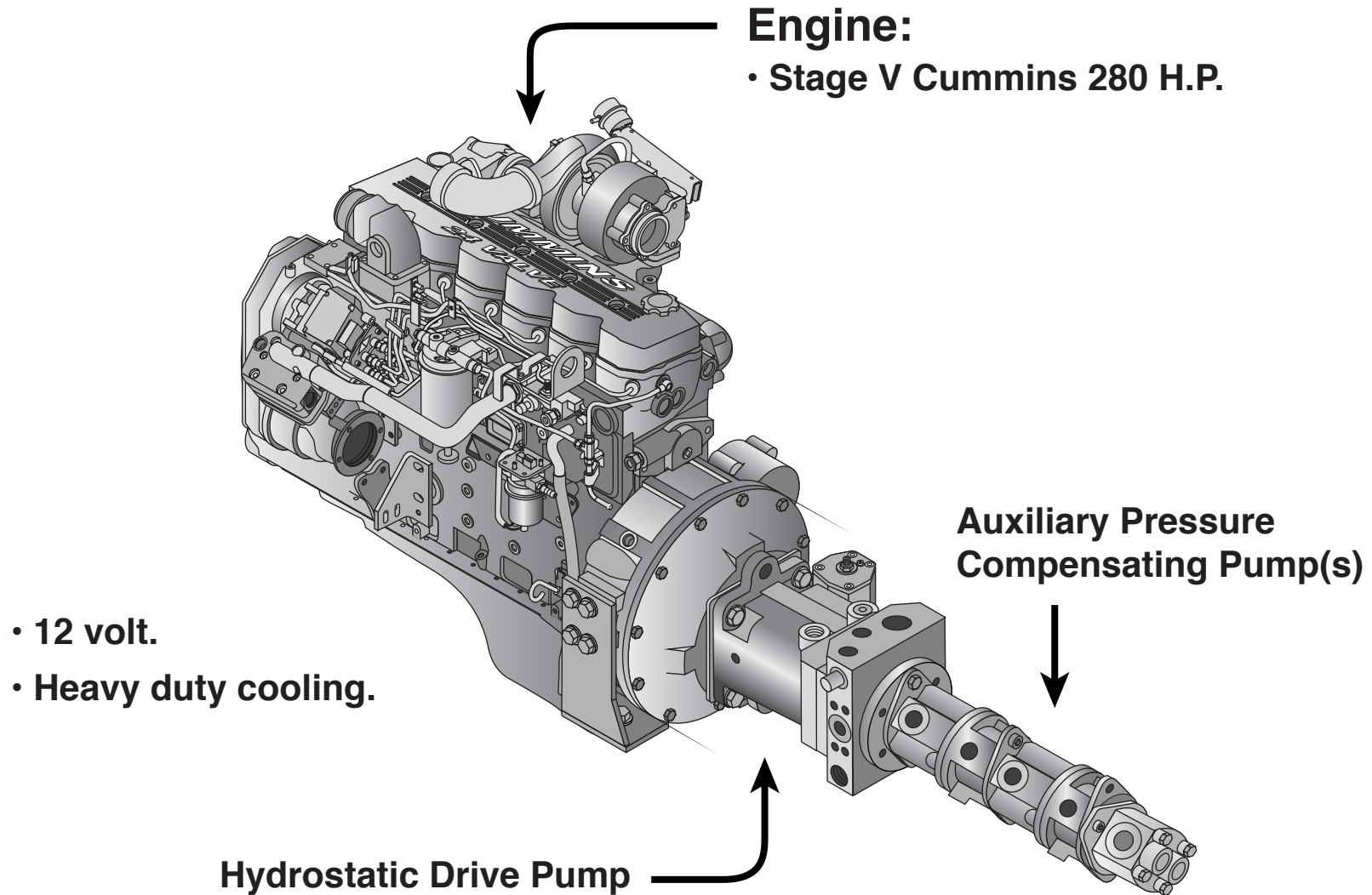
Folding Bat Wing Rear Receiving Hopper



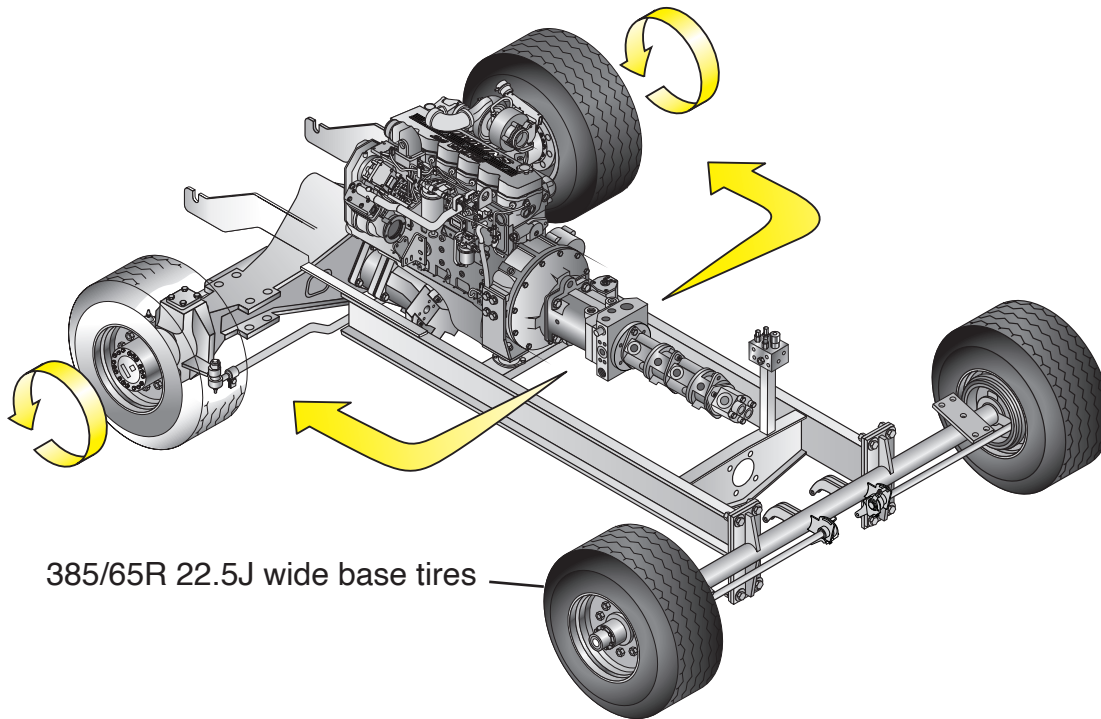
- Increased capacity of approximately 4 cubic yards.
- Improved utilization of on board aggregate capacity.
- Facilitates easy change of aggregate types.
- Provides easy clean out of rear receiving hopper.



3 Power Train



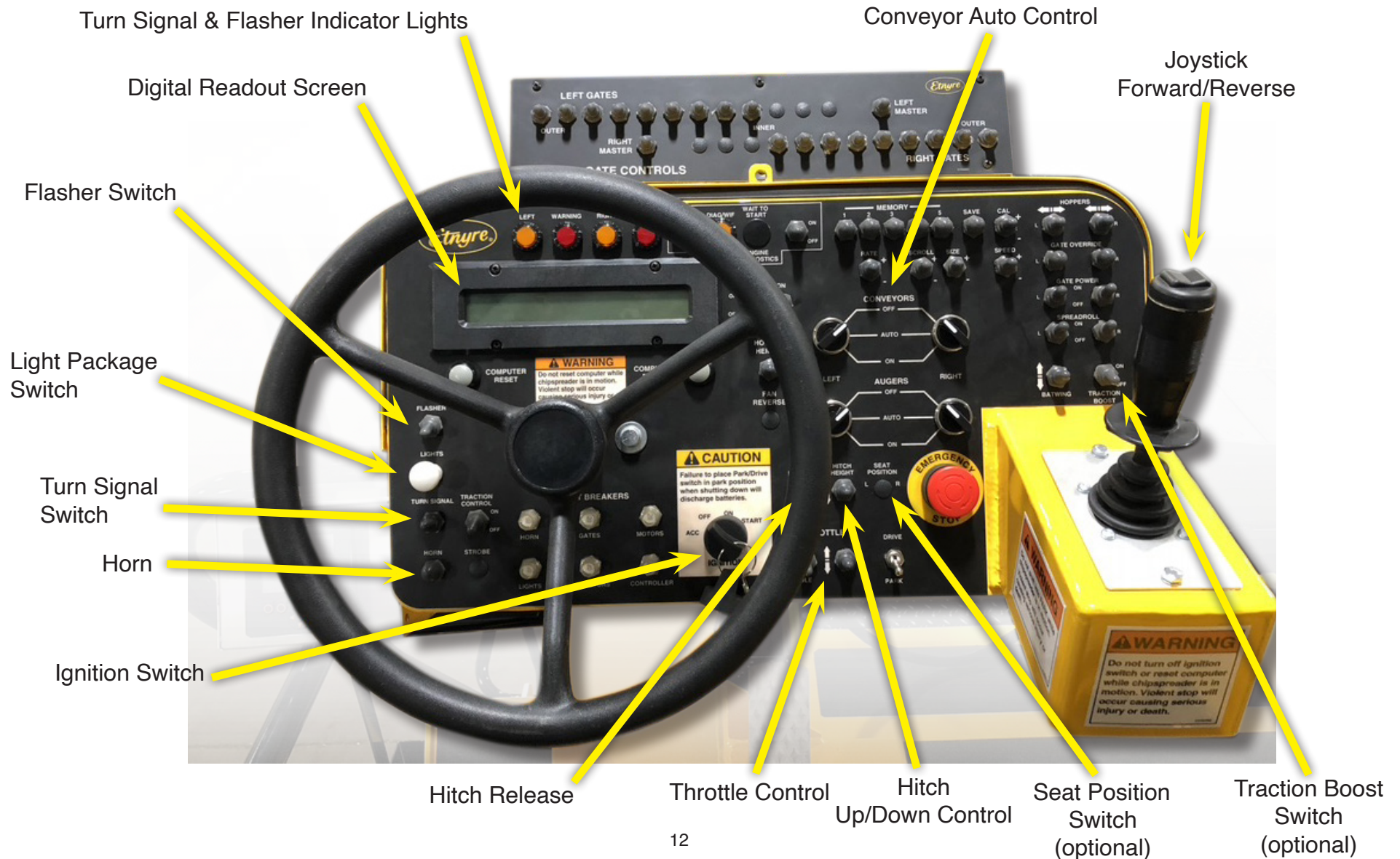
4 Hydrostatic Drive System



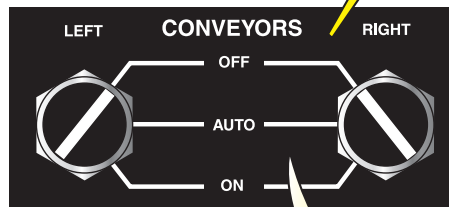
- **Direct hydrostatic FRONT wheel drive** provides smooth stopping and starting on steep grades with heavy loads. Infinitely adjustable travel speeds at full engine power and precise controls minimize the likelihood of tire spin on newly chipped surfaces.
- **Mechanical front wheel drive steer axle**, full oscillating, 75" wheel track, 20.4:1 gear ratio, 25,000 lb. rated, single speed differential. Driven by direct engine bell housing mounted 125 cc hydrostatic pump and 160 cc hydrostatic motor. Rear axle is 25,000 lb. rated with 95" wheel track. Infinitely variable speed from 0 to 19.5 M.P.H.
- **Large 70 gallon hydraulic oil tank.**
- **Working speed is infinitely adjustable.** Speed is controlled by a joystick. A separate panel control provides infinite adjustment of maximum chipping speed, allowing the operator to consistently match any job requirement.
- **Faster travel between jobs.** The hydrostatic system provides road speed to 19 m.p.h. (30 kph) maximizing relocation efficiency. Single speed, no shifting, for both controlled chipping and faster road travel.

5 Controls / Instrumentation

A Driver / Operator Control Panel:



B Conveyor / Belt Speed Controls



Conveyor

Conveyor controls have three operator controlled positions:

1. Off
2. **Auto:** In this position the conveyor on/off is automatically controlled by sensor switches located above the front hopper.
3. On

Belt Speed Controls

This feature allows the operator to vary the speed of each conveyor independently to provide a uniform distribution of material to the front hopper. Speed is adjusted through the computer display in the control panel at the operator's seat.

At any time, the operator located on the right catwalk can momentarily turn the conveyors on using the pushbutton switches in the front control box.

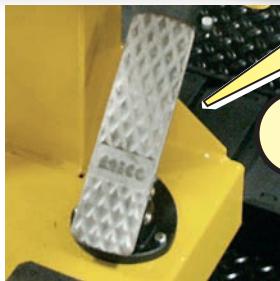
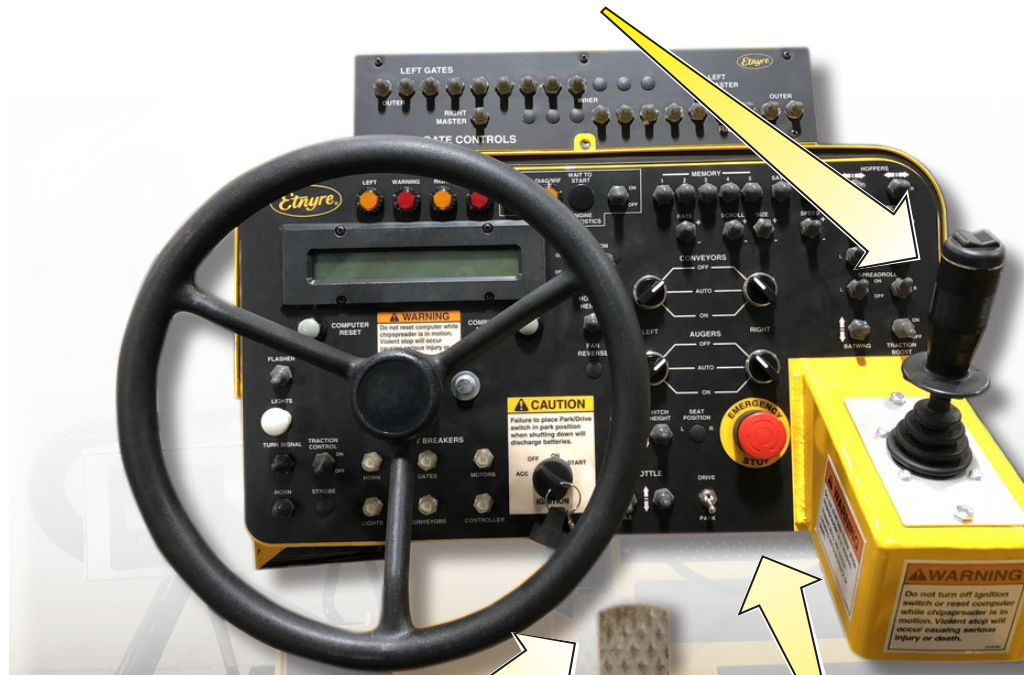
This feature is particularly useful in doing shoulder work or in operations requiring less than full hopper width. It is also useful in smoothing out delivery of material to match the rate being spread.

When properly adjusted, the conveyors should run approximately 80% of the time with the hopper at maximum width and the ChipSpreader traveling at maximum speed for the particular job.

C ChipSpreader Park/Drive Selector

1

Joystick
Forward / Reverse



2



3

Three Brake Systems

1) Hydrostatic.

The primary braking system is inherent and built into the hydrostatic drive system.

2) Mechanical brakes.

Conventional mechanical brakes assist the operator in controlling the starts and stops.

3) Parking Brake.

Used to hold the unit in park. Automatically sets whenever the unit is stationary.

D Speed/Direction Control Handle

Joystick Forward / Reverse



Speed/Direction Control Handle (joystick)

The control handle dictates the direction of travel (forward/reverse) as well as the rate of travel. The control handle incorporates position microswitches for neutral and reverse. The neutral microswitch provides the safety feature of requiring the control handle to be in the neutral position to start the engine and also applies the brake lights. This switch also insures the gates cannot be inadvertently applied while the control stick is in the neutral position. The reverse microswitch activates the back up alarm when the control handle is moved in the reverse direction. The handle has a detent in the neutral position and an adjustable friction drag for holding at any desired position other than neutral. Moving the handle out of neutral 3 degrees in either direction will release the parking brake and begin to increase the speed in the direction the handle is being moved. Further movement in either direction will increase the speed proportionally until the handle reaches full stroke, at which point the machine will hold the set point speed.

Stopping is always accomplished by returning the handle to neutral.

Decelerating is always accomplished by moving the handle toward neutral. Upon reaching the neutral position of the handle, the parking brake will automatically apply once the machine has come to a complete stop.

E Computer Control

Automatic Application Rate and Speed Control Computer

The Etnyre Application Rate Computer is standard on 2WD and 4WD hydrostatic ChipSpreaders.

The computer varies the gate opening to maintain a preset application rate regardless of the ChipSpreader speed. Application accuracy is maintained when starting and stopping and when ChipSpreader speed is adjusted to meet job requirements. Increased accuracy reduces aggregate expense and results in an improved road surface.

The computer can store five different aggregate/ application rate combinations in memory. Application rate can be varied infinitely or memory presets can be selected on the go.

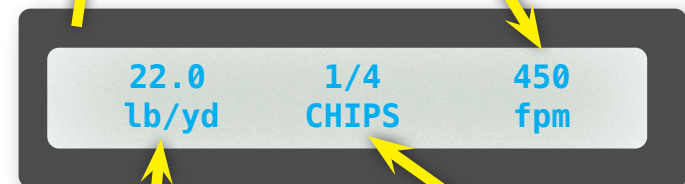
The computer can also be set to control the ChipSpreader's forward speed for consistent speed when following the distributor.

Conveyor and Auger speeds can be changed at the operator station.

Instrumentation includes a highly visible display to monitor engine, hydraulic oil temperature, fuel and speed. A systems monitor alerts the operator of abnormal conditions.



Preset speed when standing still and actual speed when the ChipSpreader is moving.



Application rate

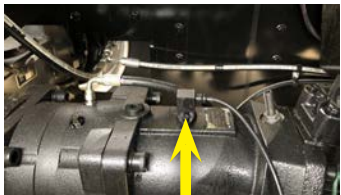
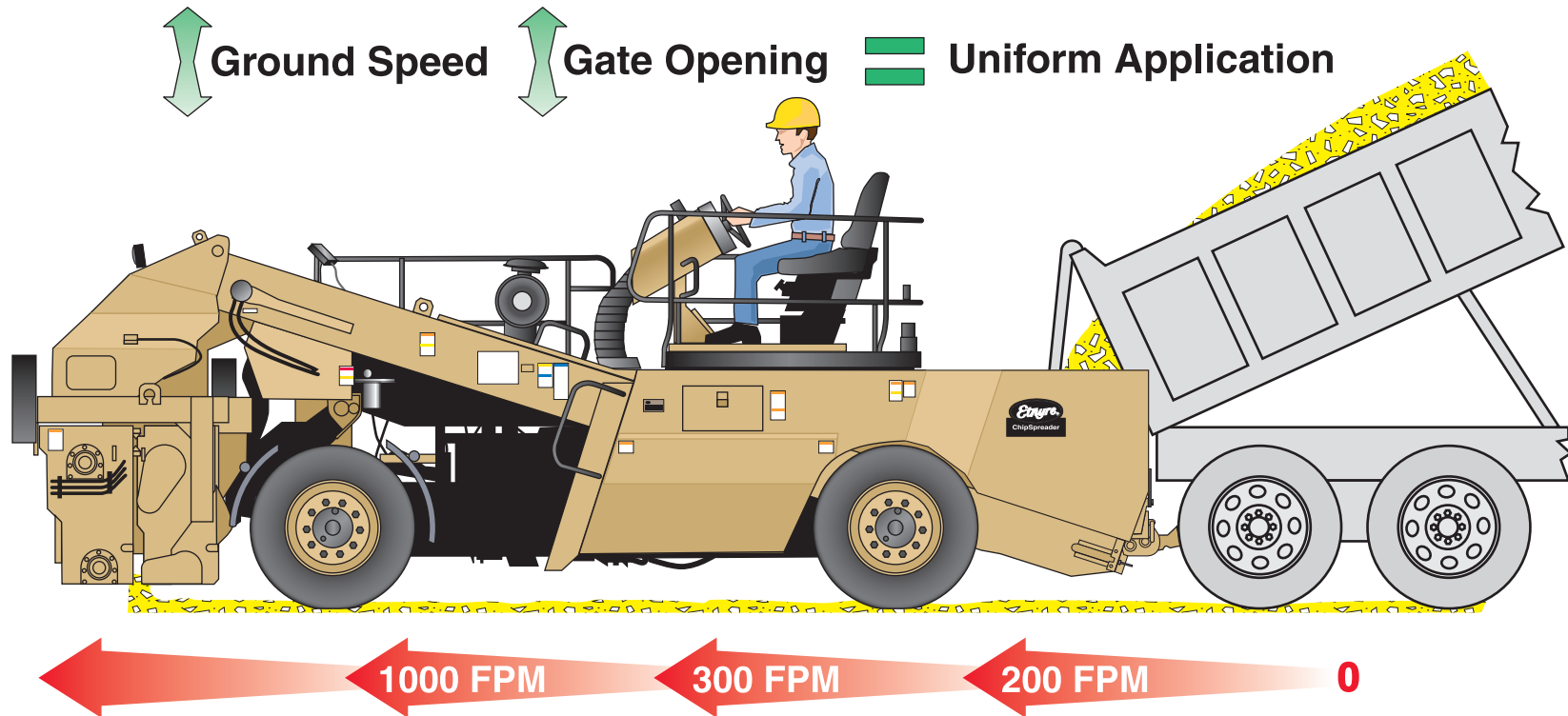
Aggregate size, type

Large character, high contrast, illuminated display.

Additional screens display engine temperature, engine oil pressure, fuel, engine RPM, hydraulic oil temperature, engine hours and battery voltage.

E Computer Control

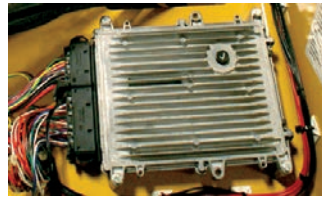
A preset and calibrated application rate is maintained throughout changes in forward ground speed.



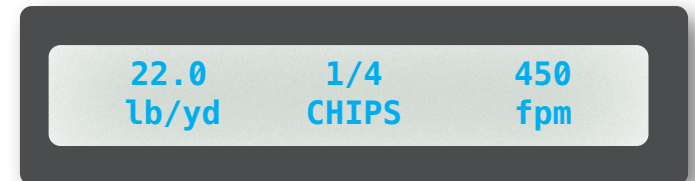
Ground Speed Pick-Up



Computer Controlled
Gate Opening

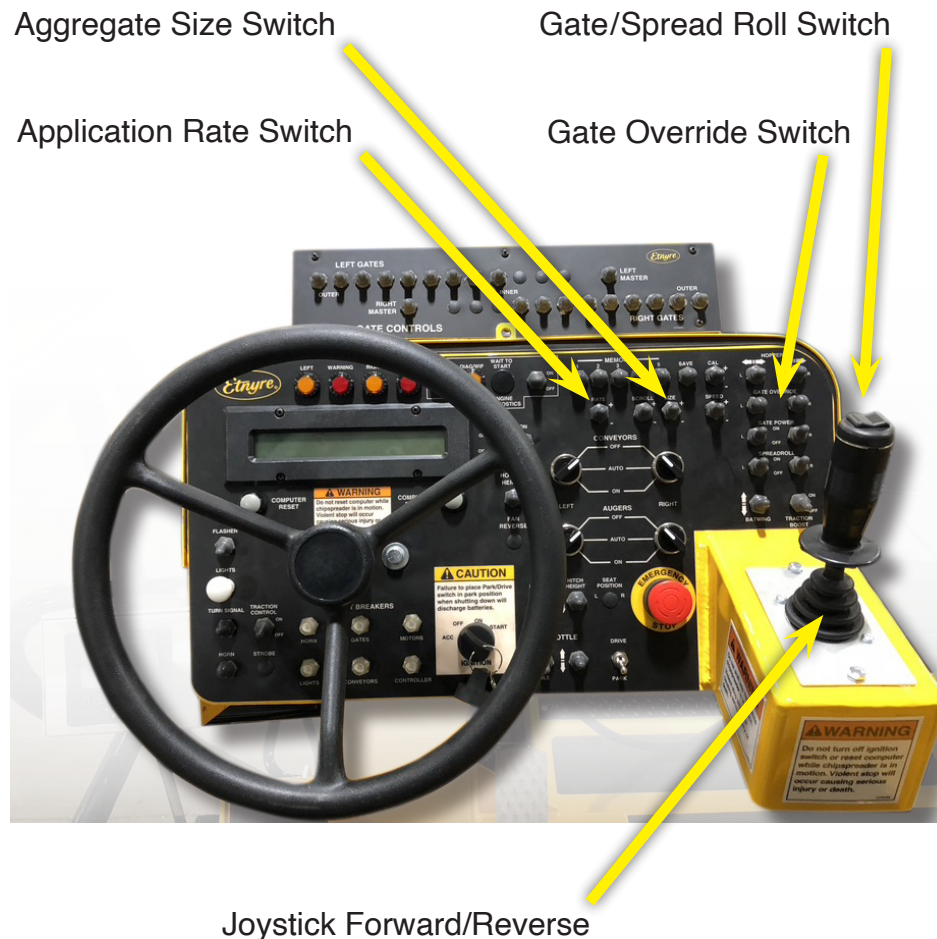


Micro Processor



Set-Up Screen

F Front Spread Hopper Controls



Gate/Spreadroll Switch

The rocker switch controls both the spread roll and the command circuit for the gates. As described previously, this switch is active only when the control handle is out of the neutral position. With the control stick out of neutral, depressing the right side of the rocker switch will activate the spreadroll and gate circuits. Centering the switch deactivates the circuits. The left side of the switch will also deactivate the circuits.

Aggregate Size Switch

The aggregate size switch determines the size of the material to be spread. Activating the switch up or down will scroll the display through the available aggregate selections. The size shown on the display should approximately match the size of stone to be used.

Application Rate Switch

The application rate switch adjusts the application rate set point in lb/yd^2 . Press the switch up to increase the application rate, and press it down to decrease the rate. The rate is adjustable “on the fly”.

Gate Override Push-button

Push down to momentarily fully open the hopper gate to clear a jam. Upon releasing the button, the gate will return to its original set point.

G Truck Hitch Control

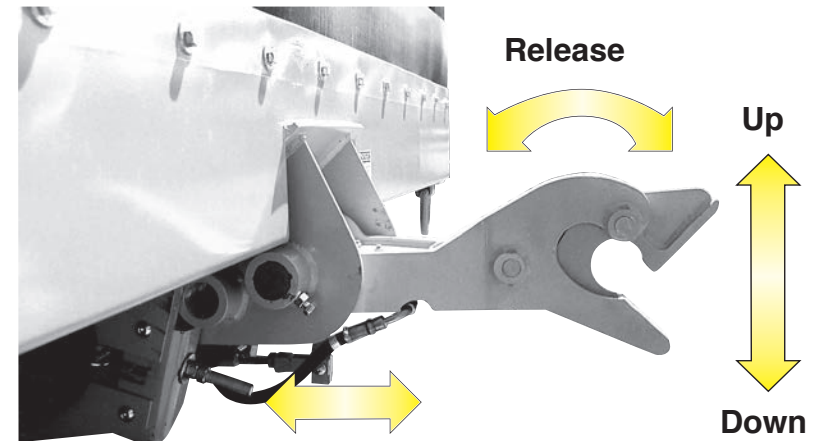
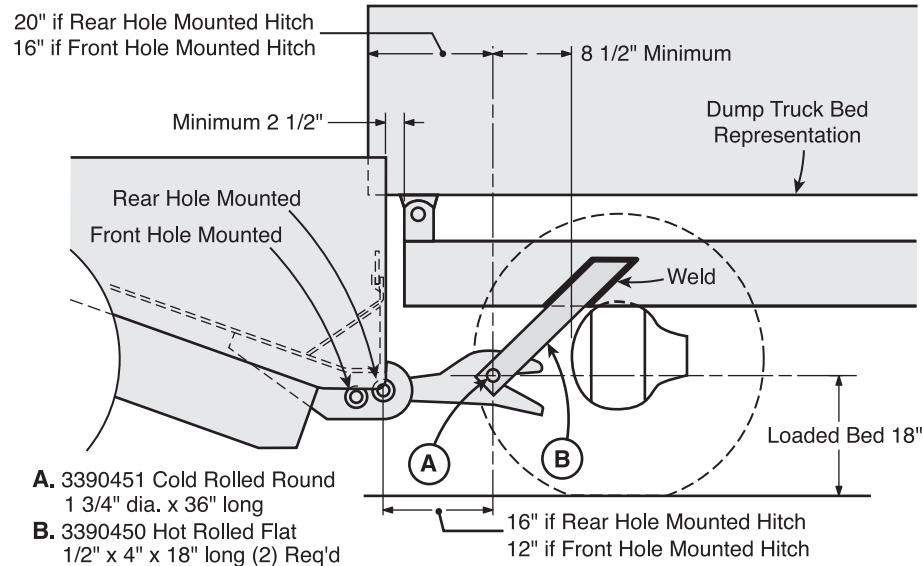


Hitch Release Push-Button

Push the hitch release push-button to disengage the supply truck from the ChipSpreader. Hitch will automatically reattach with next truck.

Hitch Height Switch

Push up to raise the hitch, push down to lower the hitch. When the switch is released, the cylinder will hold the hitch at a given height. A spring provides vertical articulation between the ChipSpreader and the truck.



H Hydraulic System for Conveyor / Hopper / Steering

1. Right Conveyor Motor

2. Left Conveyor Motor

3. Spread Roll and
Agitator Motor

4. Gate Cylinder

5. Gear Pump

Dedicated flow for steering circuit.

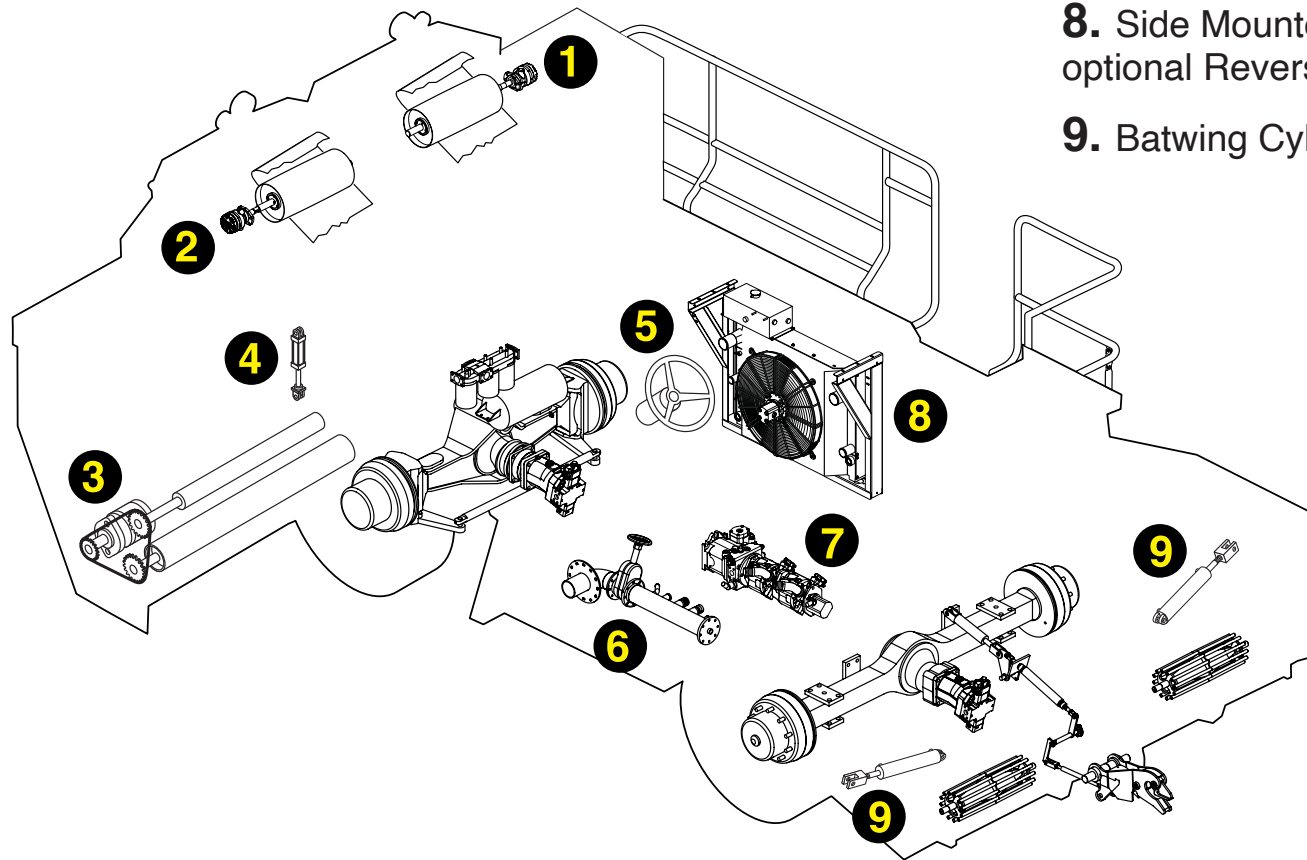
6. 95 Gallon Reservoir,
two 10 micron absolute return line
filters, valves, 30 GPM continuous
flow cooler and piping.

7. Hydraulic Pump

Axial piston, variable displacement
pump is direct crankshaft driven.
Pressure and flow compensation
provides constant speeds under varying
demands while maintaining optimum
efficiency and low hydraulic
oil temperature.

8. Side Mounted Radiator and
optional Reversing Fan

9. Batwing Cylinders



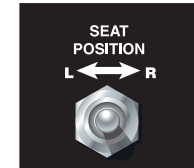
I Seat Console Control Feature is Standard Equipment

Allows for operation of the machine from either the right or left side or anywhere in between while keeping all the controls in the same relative position to the operator.

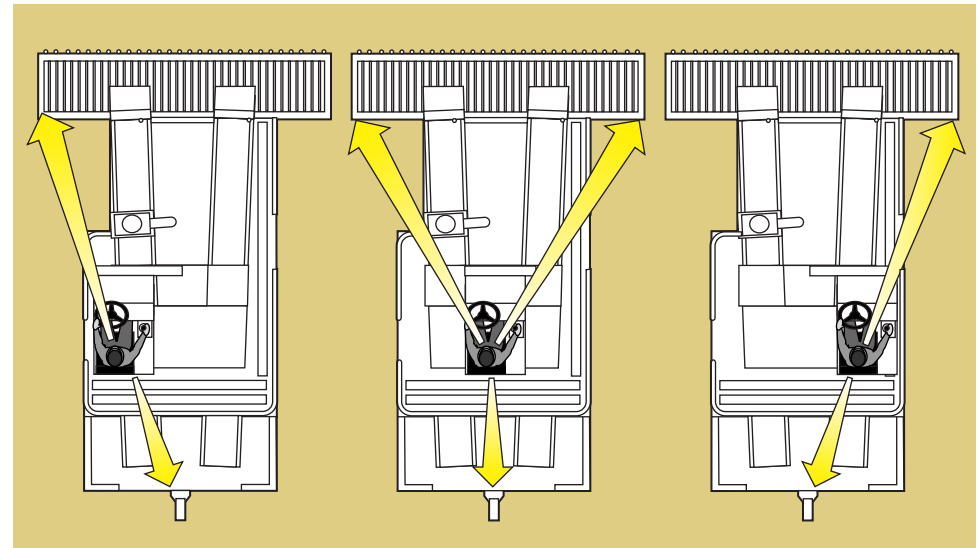
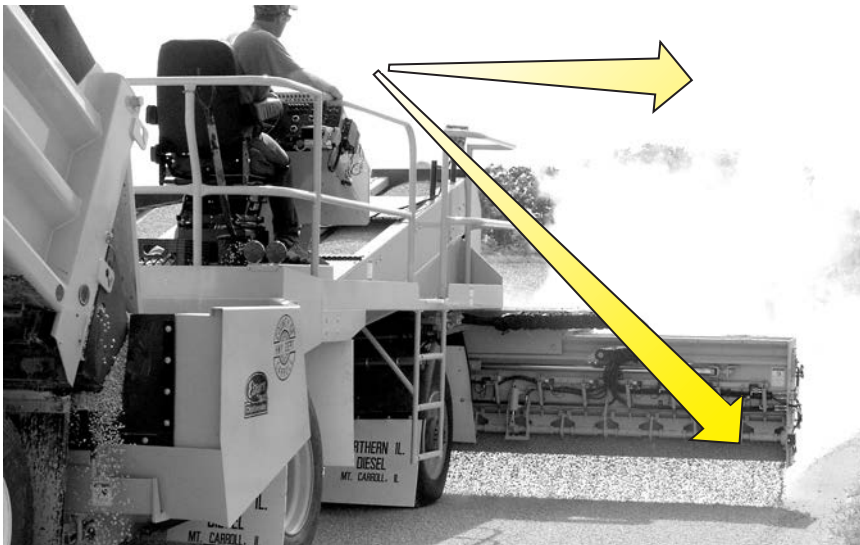


Sliding Pedestal - Etnyre Exclusive Feature

Optional Power Seat



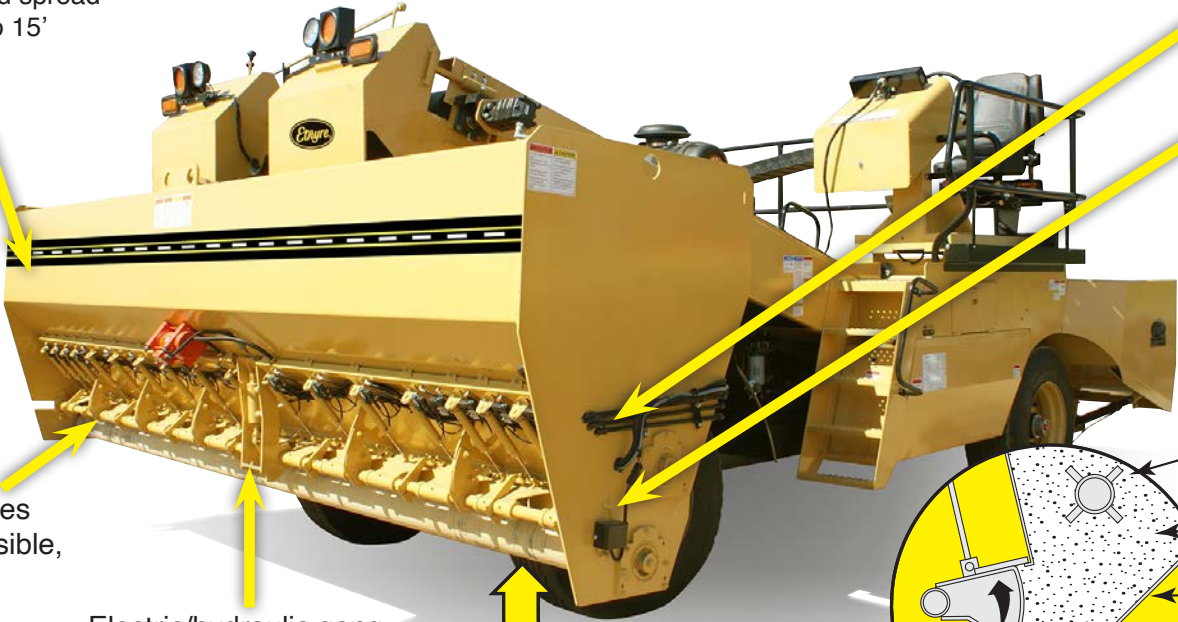
Optional powered seat and control panel movement for dual control operation

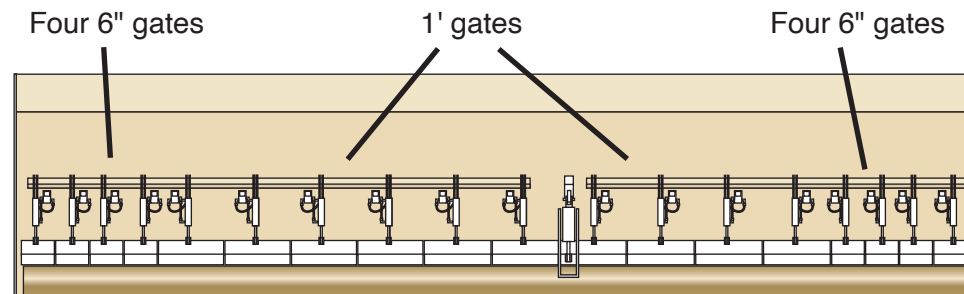
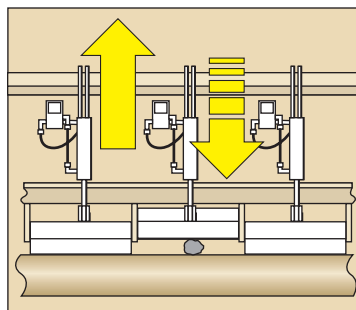
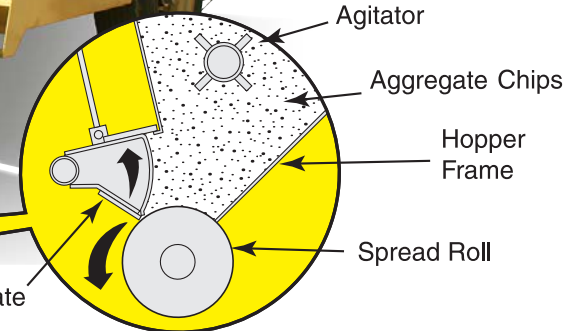


Infinite seat positions give the operator exceptional line of sight of all chipping functions.

J Fixed Front Spread Hopper - available from 10' to 15' wide

Includes:

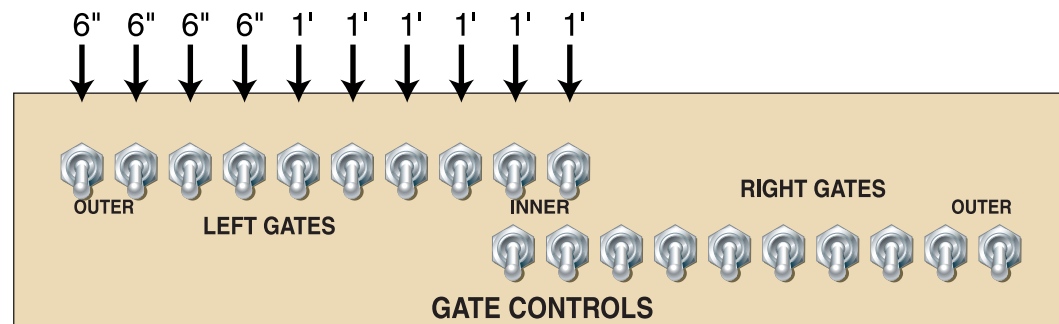
- 10' wide standard spread width (options to 15' spread width).
 - Individual 6" & 12" gates with adjustable, reversible, wear plates.
 - Electric/hydraulic gang opening controlled from operator seat position.
 - Quick disconnect drive mechanism for agitator and spread roll.
 - Driven by high torque hydraulic motor.
- 
- The diagram shows a yellow fixed front spread hopper. Yellow arrows point from the text descriptions to specific parts of the machine: the front hopper frame, the individual gates, the electric/hydraulic gang opening mechanism, the quick disconnect drive, and the hydraulic motor.



K Air Power Gates on Fixed Width Hopper



- **Total Power**
Individual gate
control from
operators station.



Now we have a complete Etnyre ChipSpreader - ready to go to work.



There are two major features offered by Etnyre that are very popular with both contractor and municipal customers.

- 1. Hydrostatic 4 wheel drive package**
- 2. Variable width front spreader hopper**

Let's take a closer look at these options...

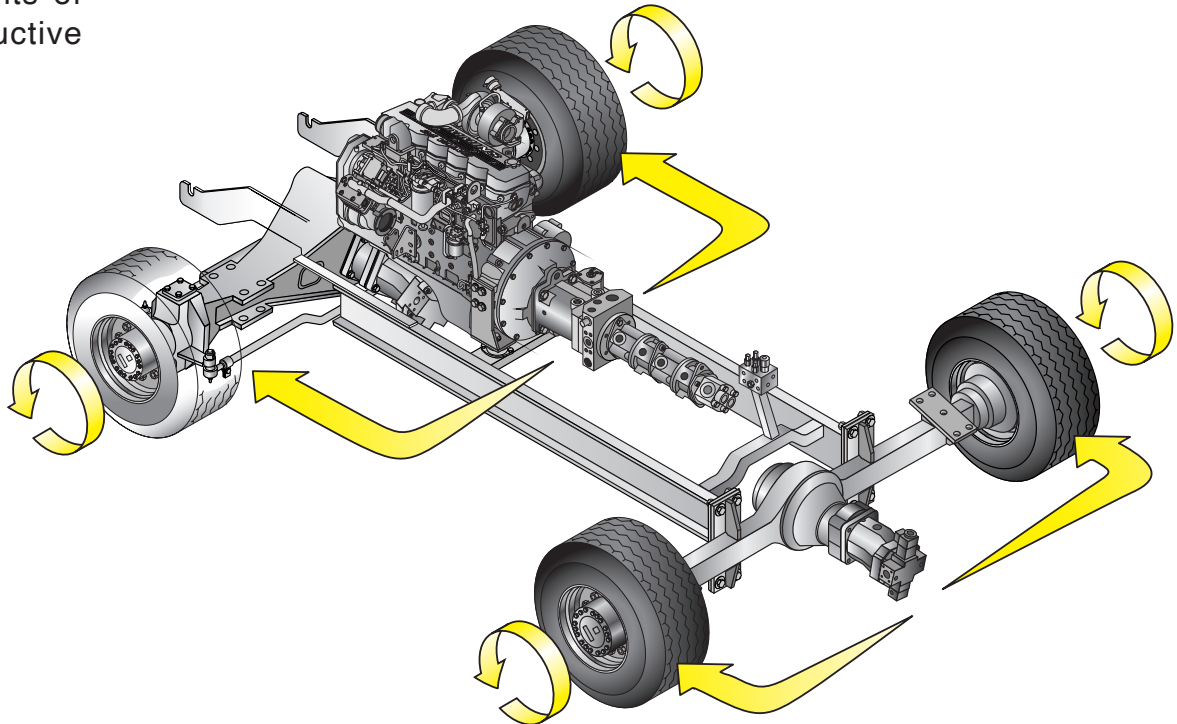
Option ① Hydrostatic 4 Wheel Drive

Hydrostatic 4 Wheel Drive Option Package.

Choose 4 WD for more traction, greater flexibility.

Adding the **4 Wheel Drive package** to your ChipSpreader gives you all the benefits of our standard model plus these productive advantages:

- Increased gradeability by up to 100%. Protects newly chipped surfaces by reducing the potential for tire spin on grades.
- More powerful, 280 H.P. Tier IV diesel engine standard with 4 Wheel Drive package. More power to handle difficult terrain and heavy loads.



Option ② Variable Width Front Spreader Hopper

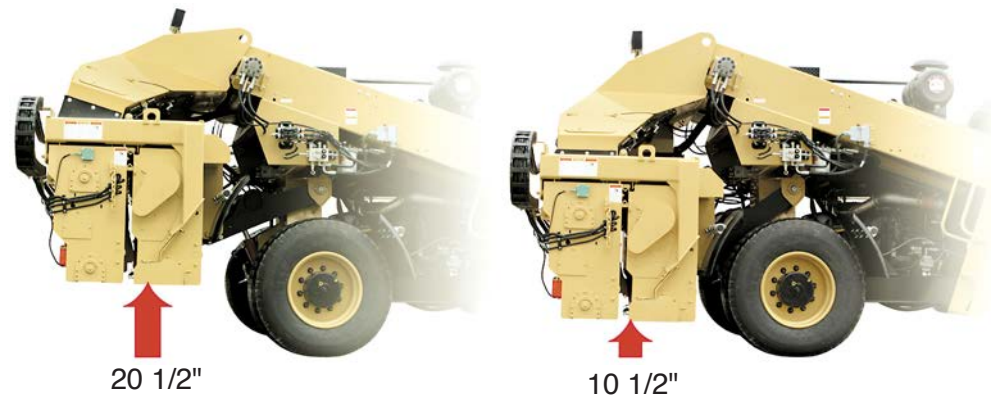


- Two independent spread hoppers work in unison. Width variable on left side, right side, or both sides at once.
- Full 4" hopper gate opening.
- Hopper controls located at both drivers seat and right front station.
- 12" diameter aggregate distribution augers with automatic controls.
- Electro-hydraulic control of spread rolls, auger drives and width changes.

The 4WD option is recommended for many variable hopper applications.

Hopper available in four sizes:

- 9'18' Hopper system, extendable 9' to 18'
- 10'20' Hopper system, extendable 10' to 20'
- 11'22' Hopper system, extendable 11' to 22'
- 12'24' Hopper system, extendable 12' to 24'



Variable height front hopper (optional equipment). Raise and lower hopper 10" to clear obstacles. Easier loading.

Variable Width Front Spreader Hopper

Infinite on the go width changes.
Increase productivity and flexibility.
One pass capability up to 24' wide.

The Etnyre variable width hopper hydraulically extends and retracts while spreading to cover the entire road and shoulder in one pass. The hopper width is adjusted using a control panel switch.

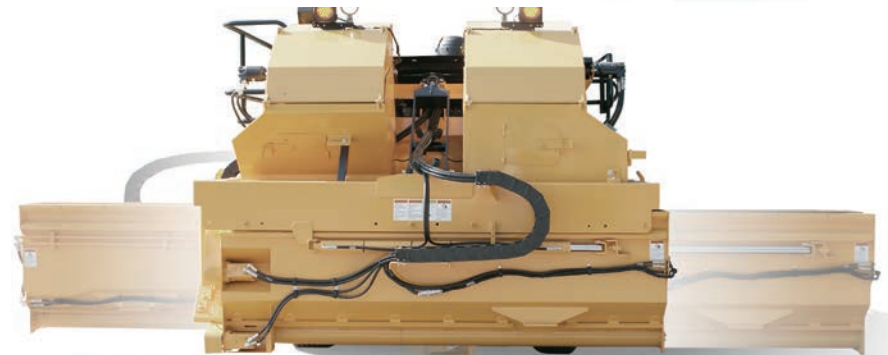
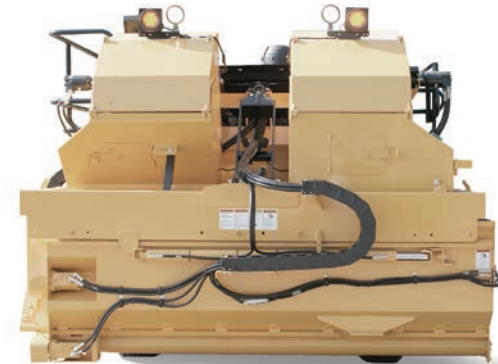
No parts to add or subtract.

No extra hopper extending beyond the spread width.

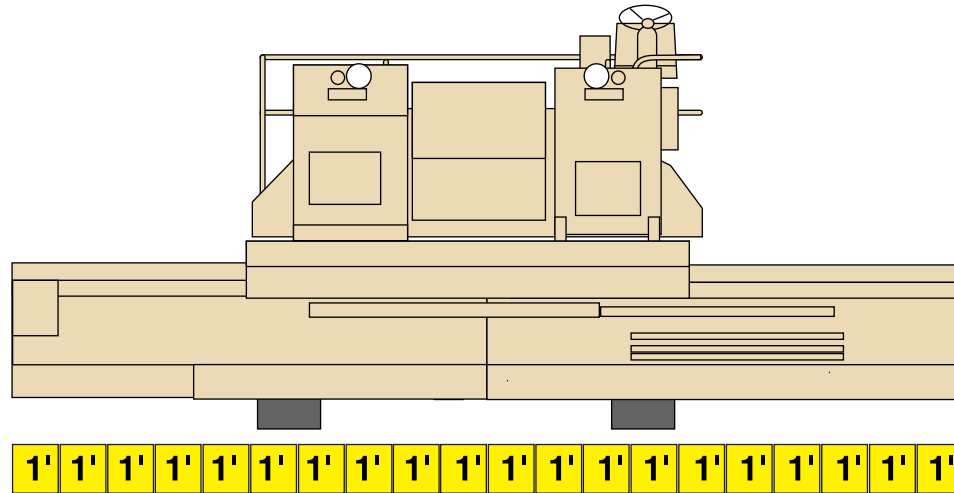
Unbeatable transportation convenience. The 9' to 18' spread hopper retracts to under 10' with the flip of a switch and is ready for transport only seconds after finishing a job.

Standard Equipment Specifications

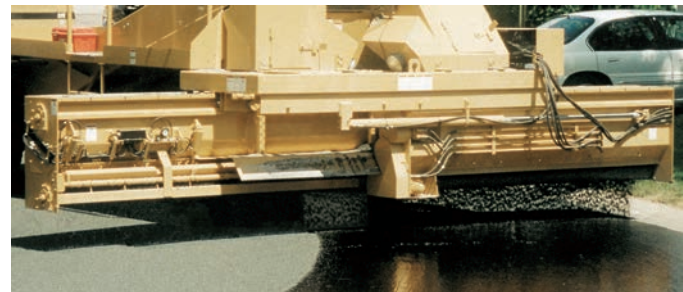
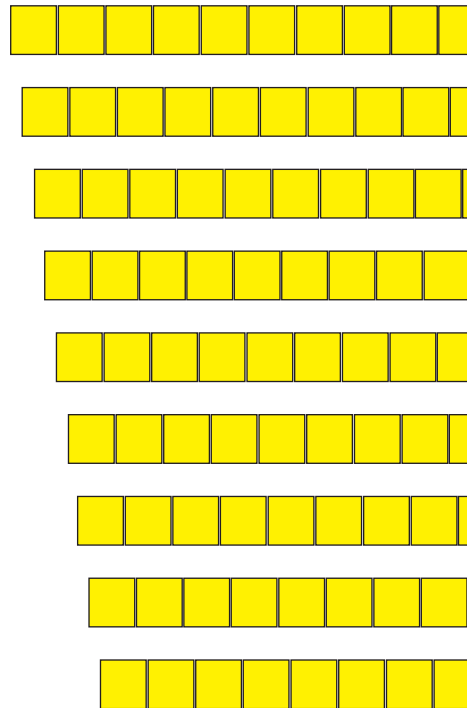
Variable width two section hopper system with independent conveyor feed to each section. Hopper capacity of .08 cubic yards of aggregate per foot of box width. Spread rolls 6" machine welded heavy wall tubing. Spread rolls and augers hydraulically driven, activated by gate opening control. One radial gate for each hopper section. Gate openings graduated into .01" increments. Expanded metal in top of spread hopper except directly under conveyor hoods where there are replaceable grates. Controls for operation of hopper and conveyors located at both driver's seat and right front station. Hydraulic cylinders and system to independently expand and retract each hopper.



Standard Individual 1' Gates with Variable Hopper



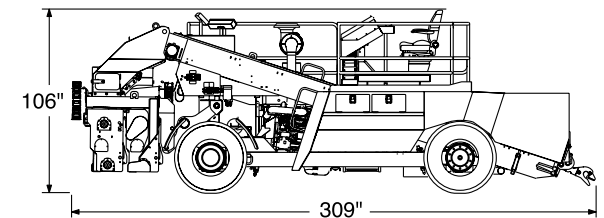
- Infinitely variable spread widths.
- 1 foot individual power gate controls.



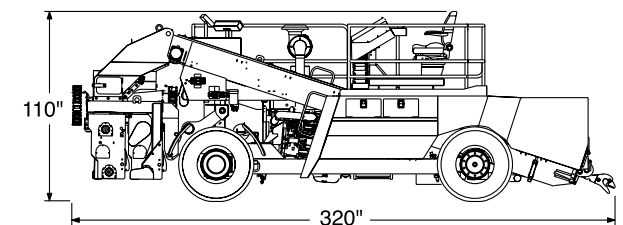
The BIG ChipSpreader...



Standard ChipSpreader	BIG ChipSpreader
<ul style="list-style-type: none"> • Fixed or Variable Width spread hoppers • 2 wheel drive (optional 4 wheel drive) • 280 HP Cummins QSB • 24" conveyor belts • 4" gate openings • Front hopper raise and lower system • 12" auger • 385/65R22.5-J tires 	<ul style="list-style-type: none"> • Variable Width spread hopper • 4 wheel drive • 310 HP Cummins QSB • 30" conveyor belts • 5" gate openings • Front hopper raise and lower system • 14" auger • 425/65R22.5-L tires



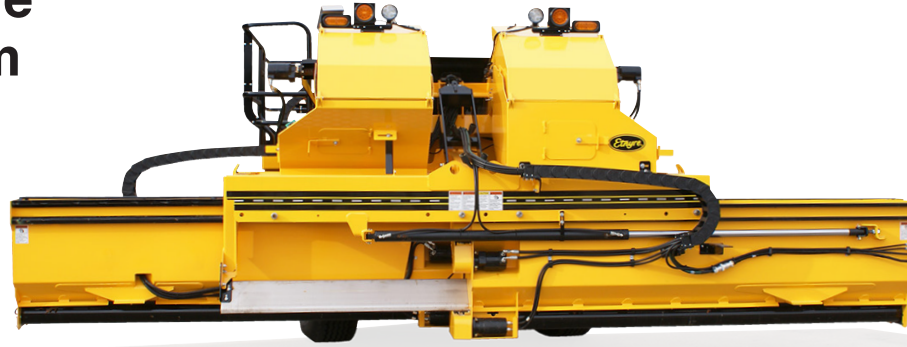
Standard ChipSpreader



BIG ChipSpreader



**Examine the Etnyre
ChipSpreader from
the front, rear, or
either side.**



A functional, well
designed unit for
use in bituminous
road construction
and maintenance.



Variable Width Hopper

Weight, Approx. 24,000 pounds
(with 12/24' hopper)

Height, 8'-11"

Width, 13'-4"

Length, 24'-9"

Loaded Capacity, 6.1 cubic yards

Maximum Speed, 19 M.P.H.



Fixed Hopper

Weight, Approx. 20,000 pounds
(with 13' hopper)

Height, 8'-11"

Width, with 13' box - 14'

Length, with box - 24' - 9"

Loaded Capacity, 6.1 cubic yards

Maximum Speed, 19 M.P.H.



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Photos and illustrations contain standard and optional equipment.