



Distributor and chipsreader operation and calibration

Brian Horner Etnyre



Let's talk
about
distributors



E. D. Etnyre & Co.

















**Safe Operation
Results From
Knowledge of
Materials and
Equipment**





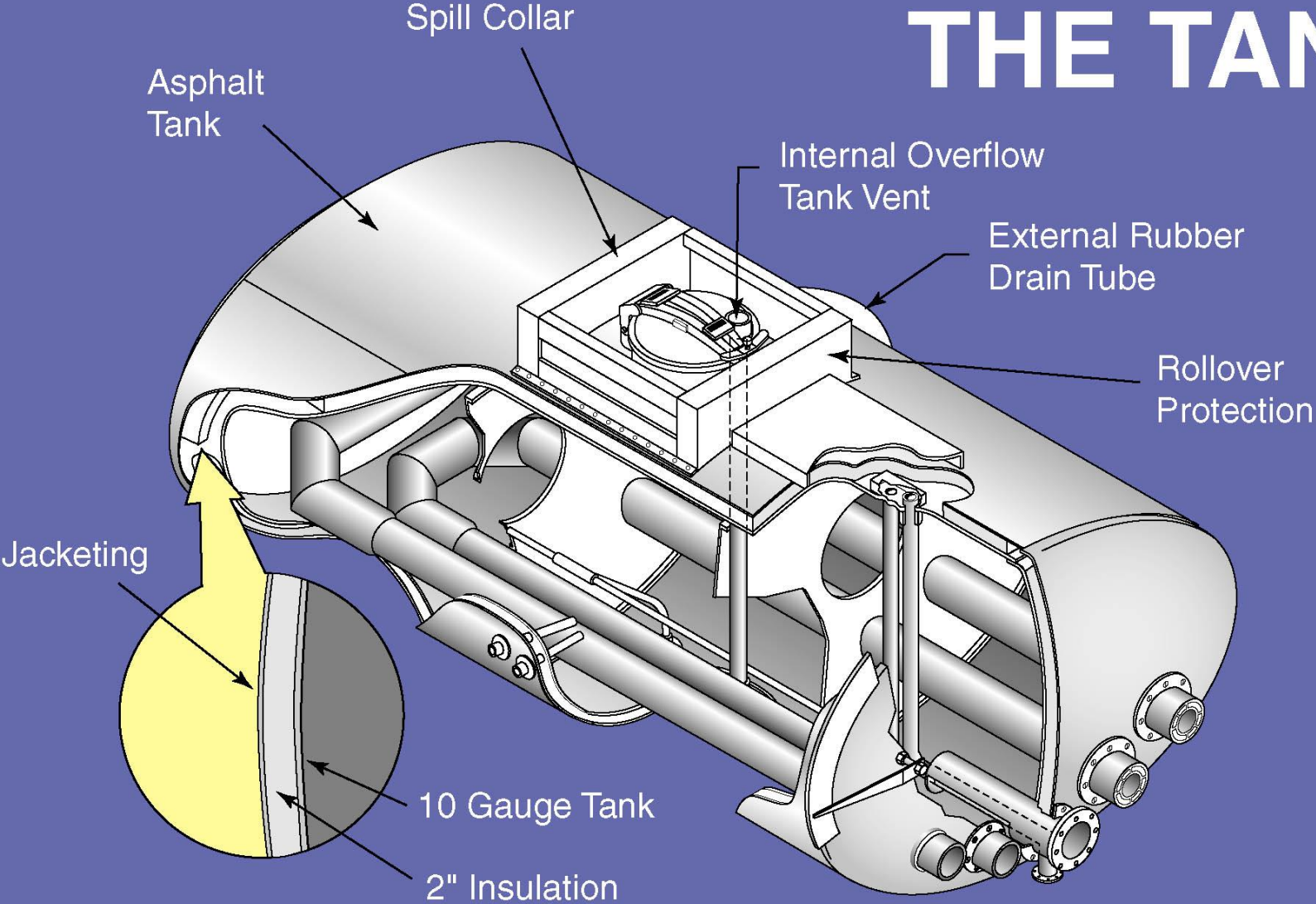
FRESH
OIL



Basic Components

1. Tank
2. Heating system
3. Asphalt pump and circulation system
4. Spraybar
5. Flushing and Clean-Out system
6. Power
7. Application Control and Metering
8. Chassis

THE TANK

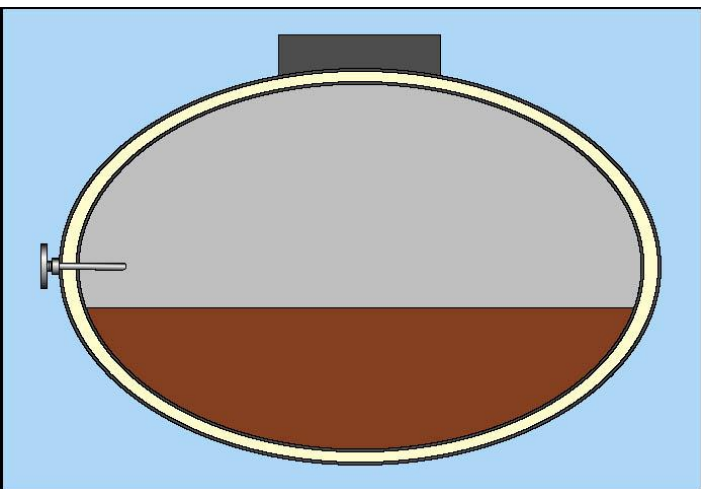


CAUTION

DO NOT REPAIR OR
REPLACE PARTS
WHILE RUNNING

WARNING

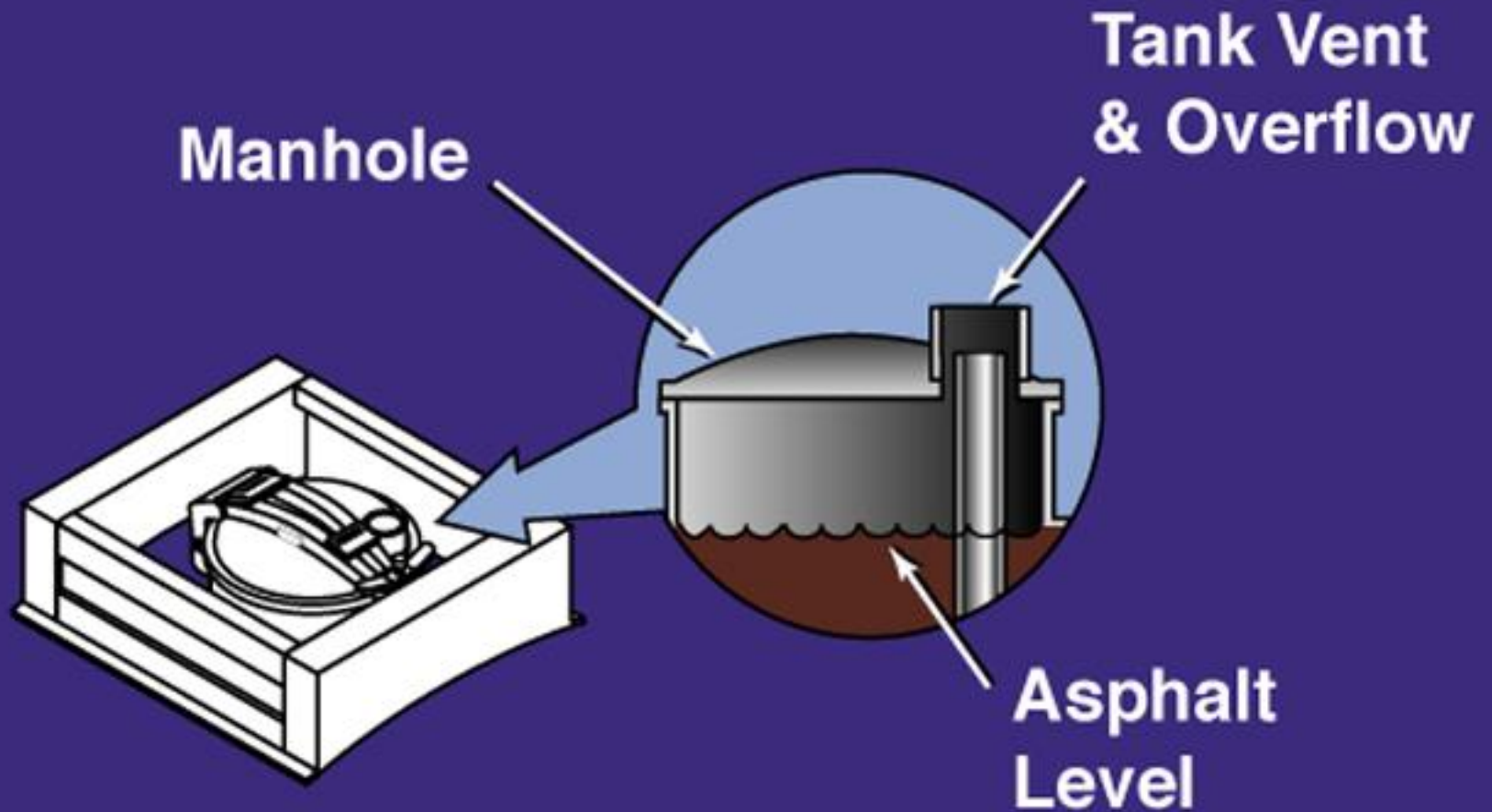
Do not operate the
machine unless the
warning label is
properly displayed.
Failure to follow
the label instructions
could result in
serious injury or
death. For more
information, see
the operator's manual.
Always use proper
technique when
operating the machine.
Always use proper
technique when
operating the machine.
Always use proper
technique when
operating the machine.

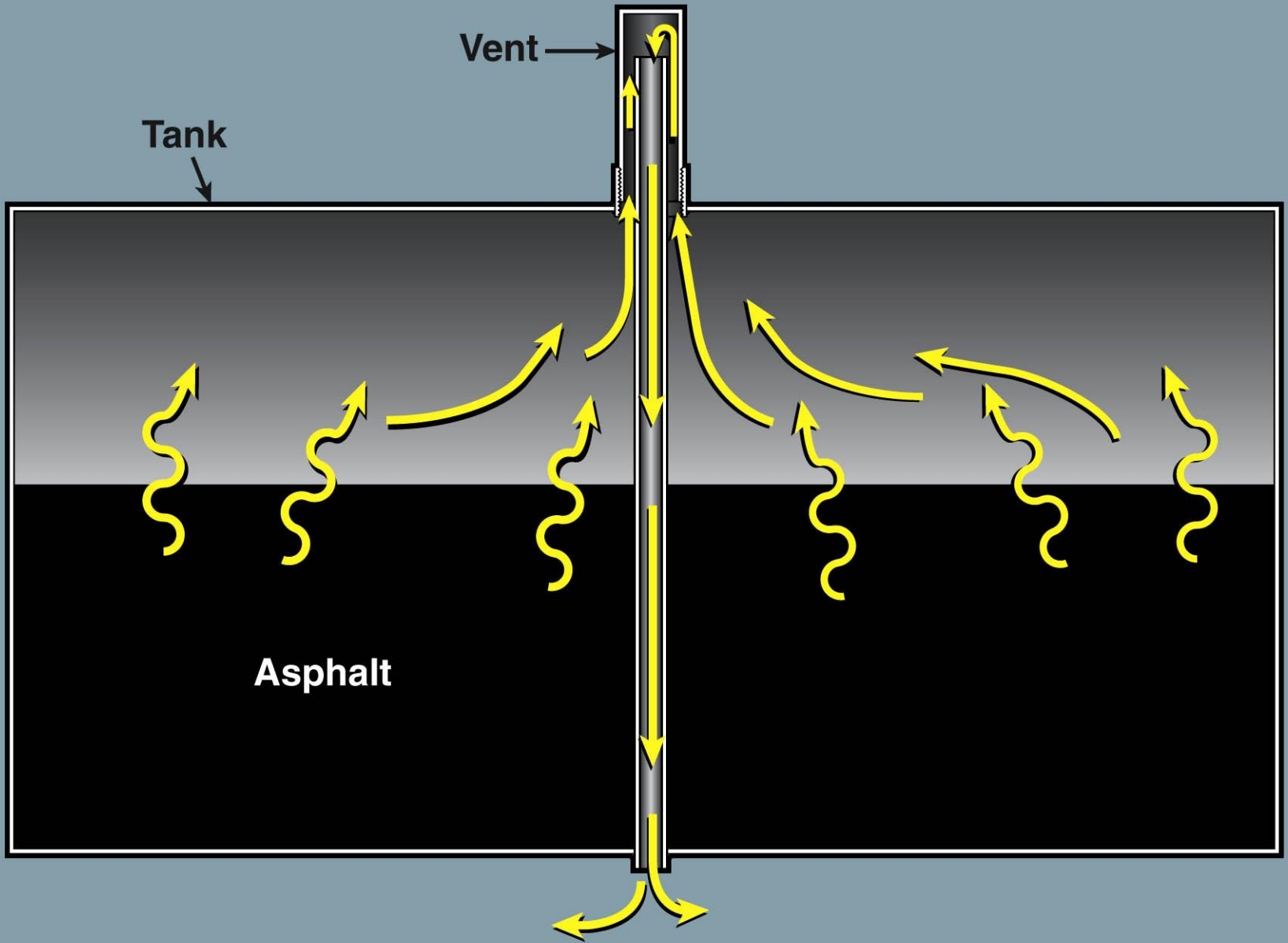


CAUTION
HOT SURFACE. REMAIN
CLEAR UNTIL COOL.



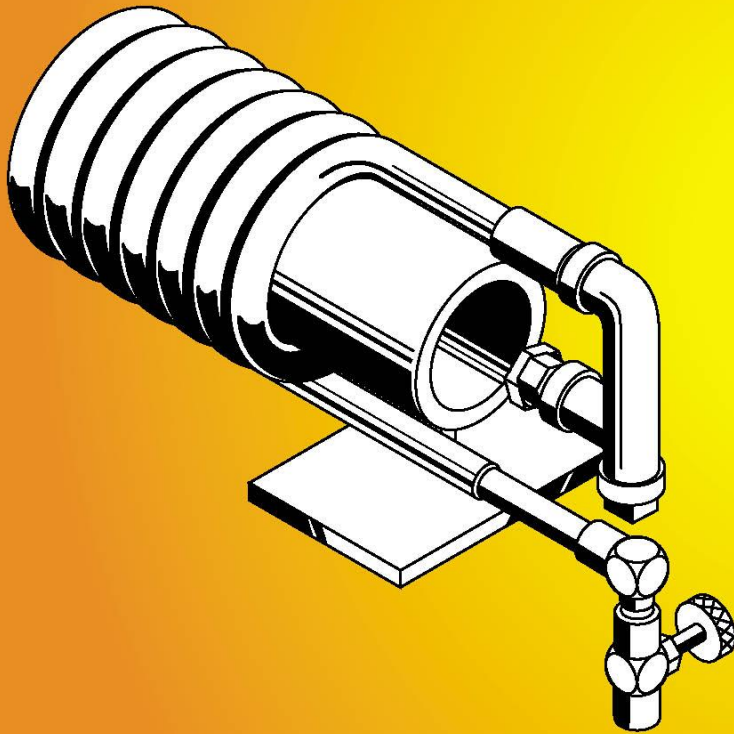
TANK VENT



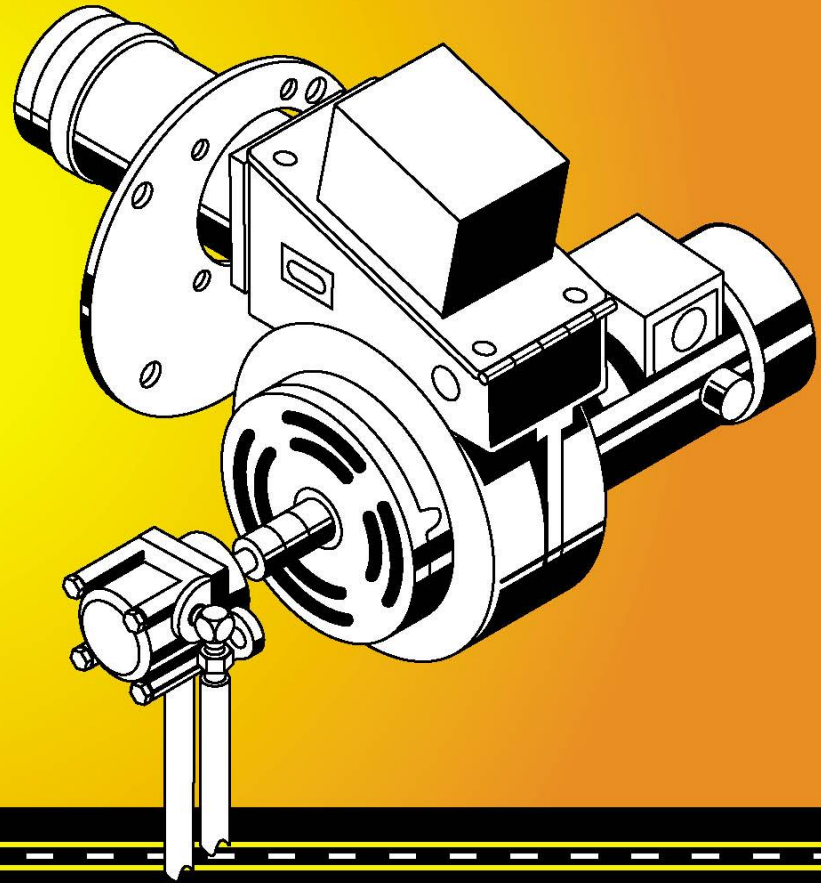


BURNERS

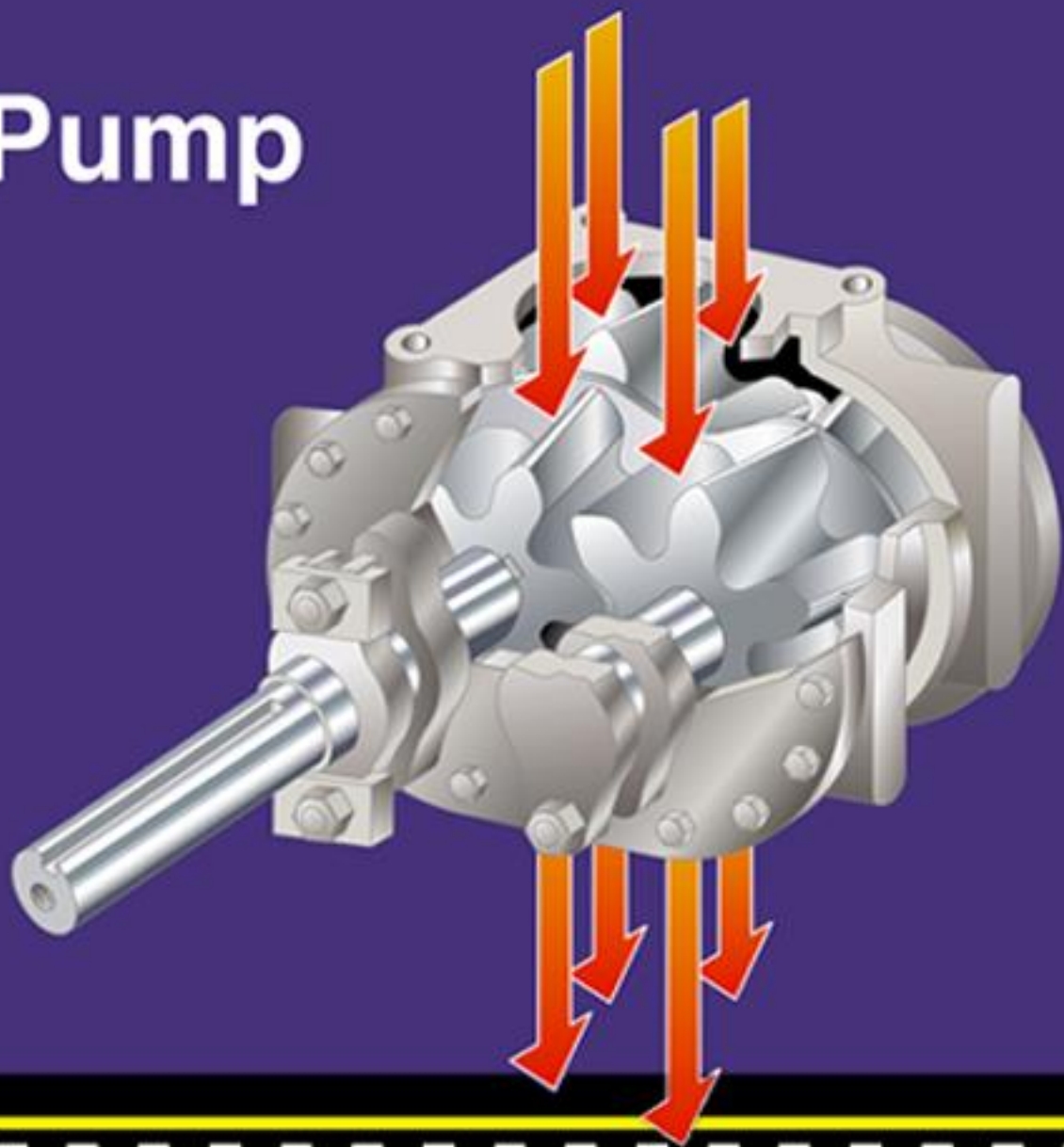
LPG



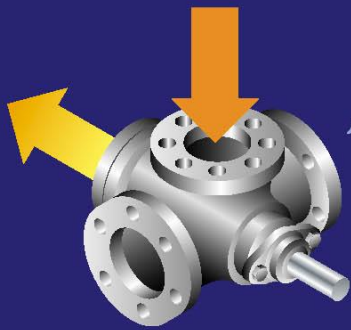
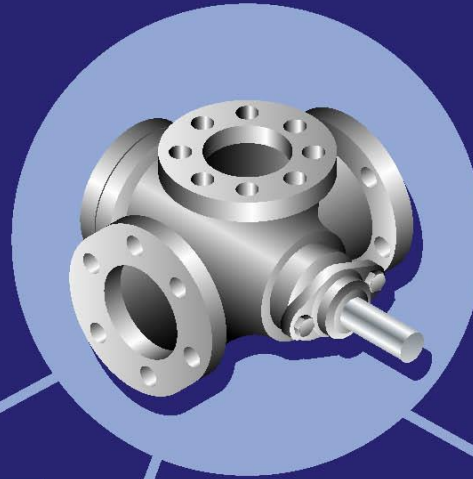
Fuel Oil



Asphalt Pump



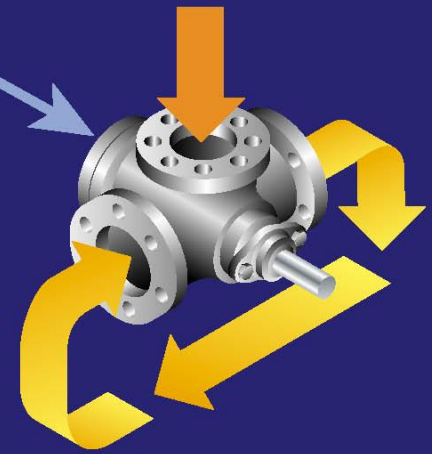
Asphalt Control Valve



Tank Circulation



Spray



Spray Bar Circulation



SPRAY BAR



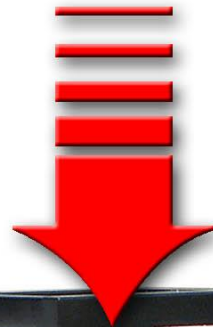


Basic Functions

1. Fill the tank
2. Heat material in tank
3. Circulate material in tank
4. Circulate material in spray bar
5. Spray metered amount of material
6. Handspray
7. Suck-back/clean out
8. Unload/transfer
9. Flush

FILL

Top load

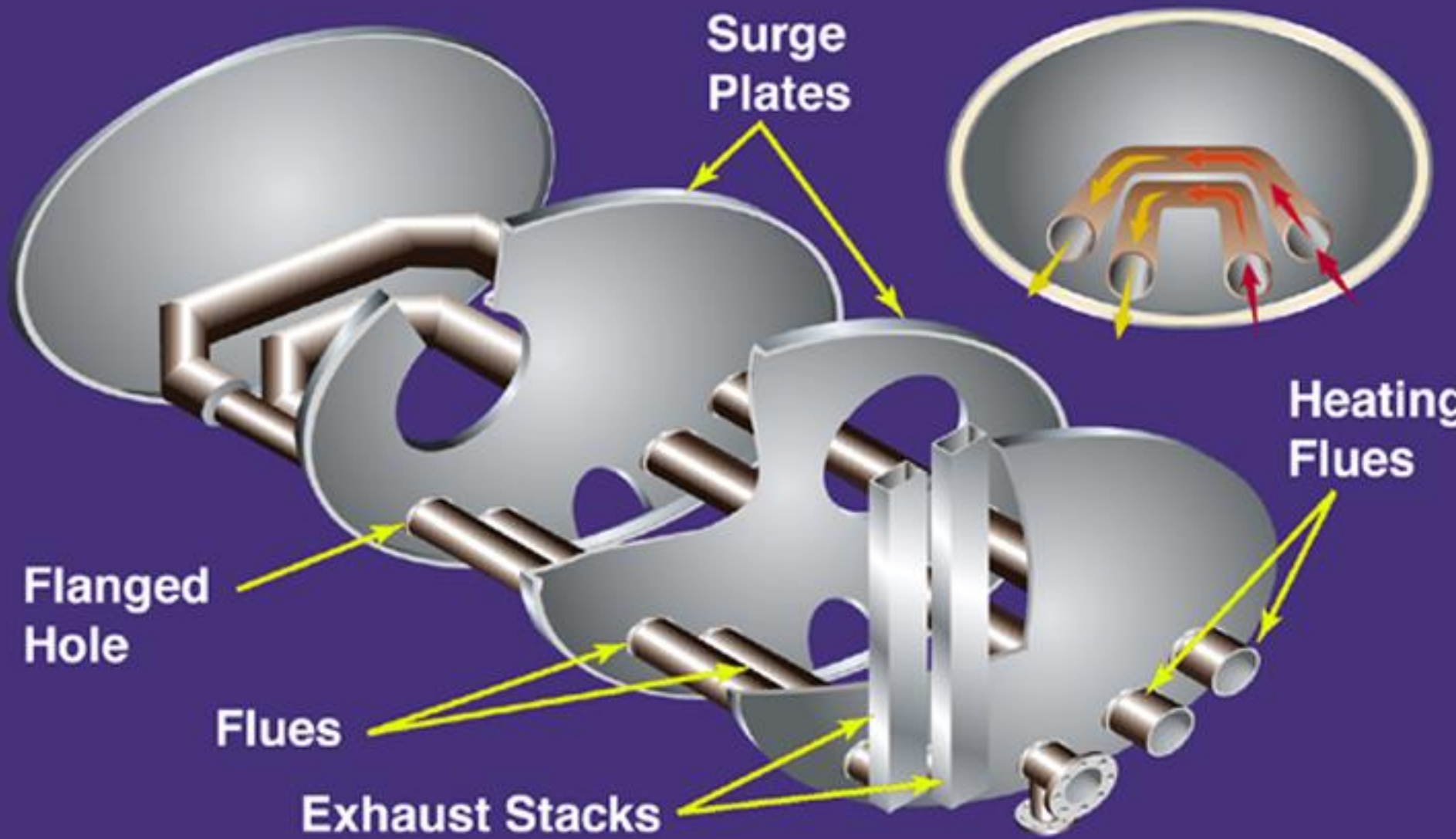


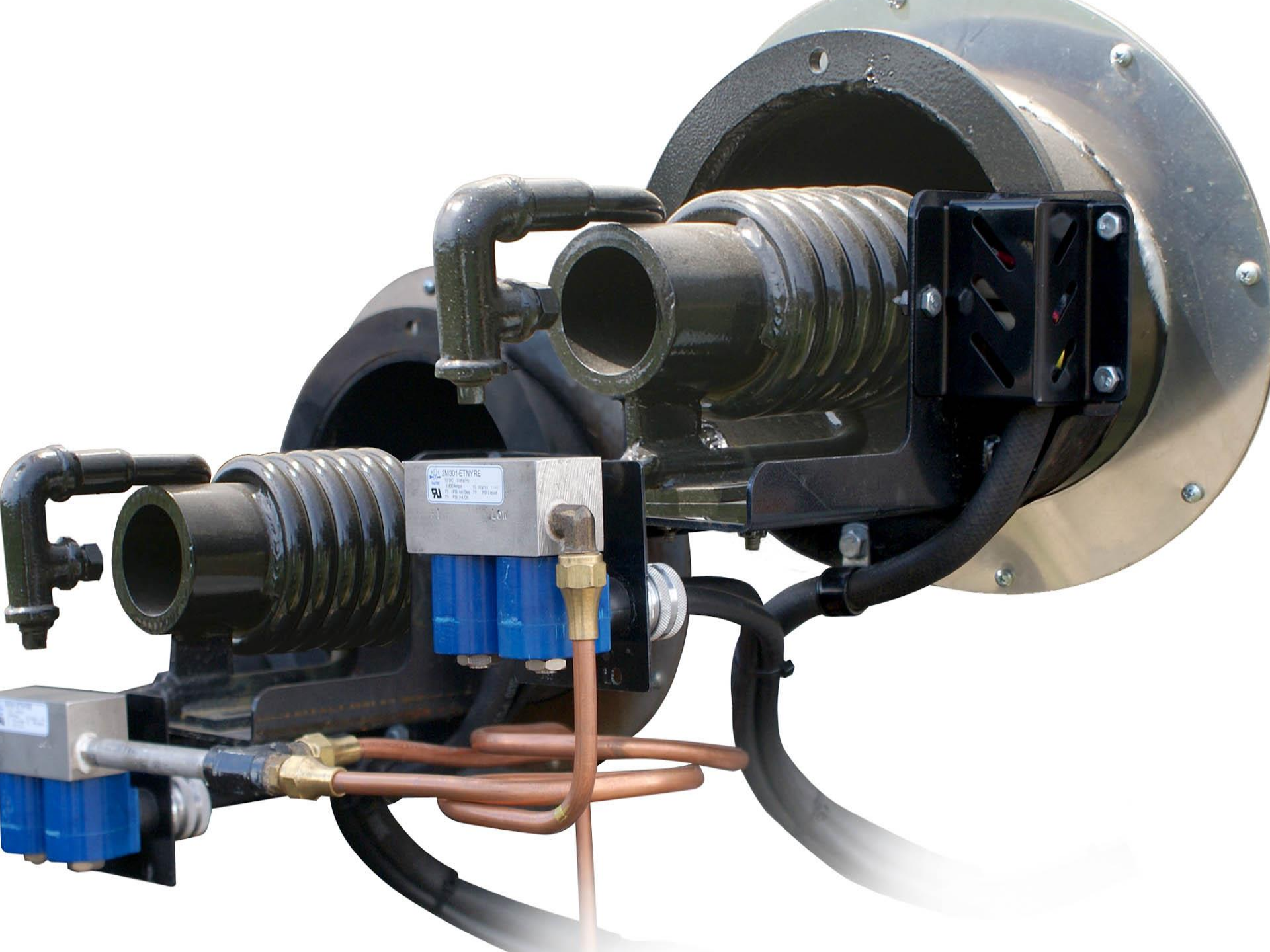
Load with Pump



BURNER OPERATION

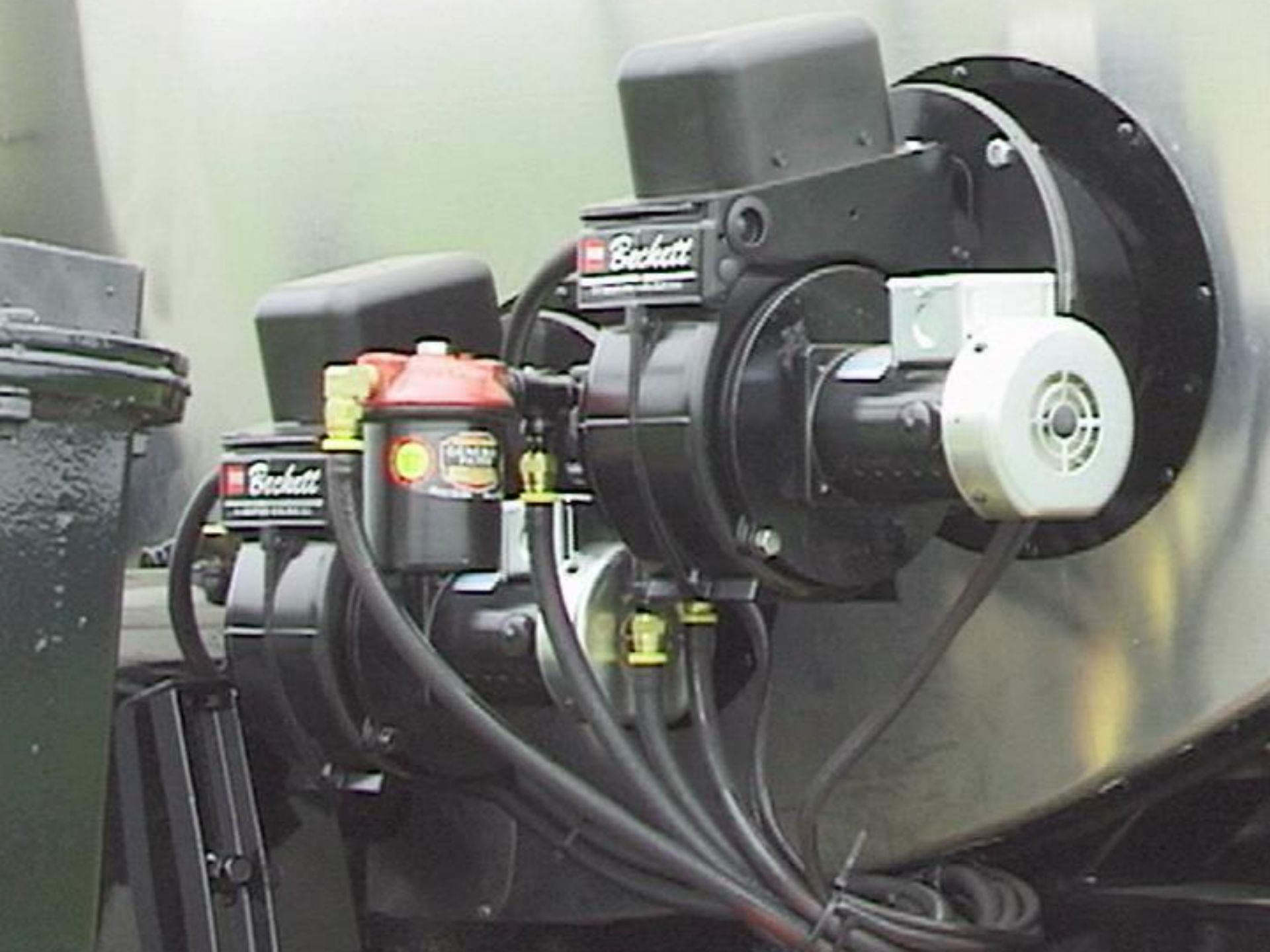






411 2M301 ETNYRE
110C 10000
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110C 10000

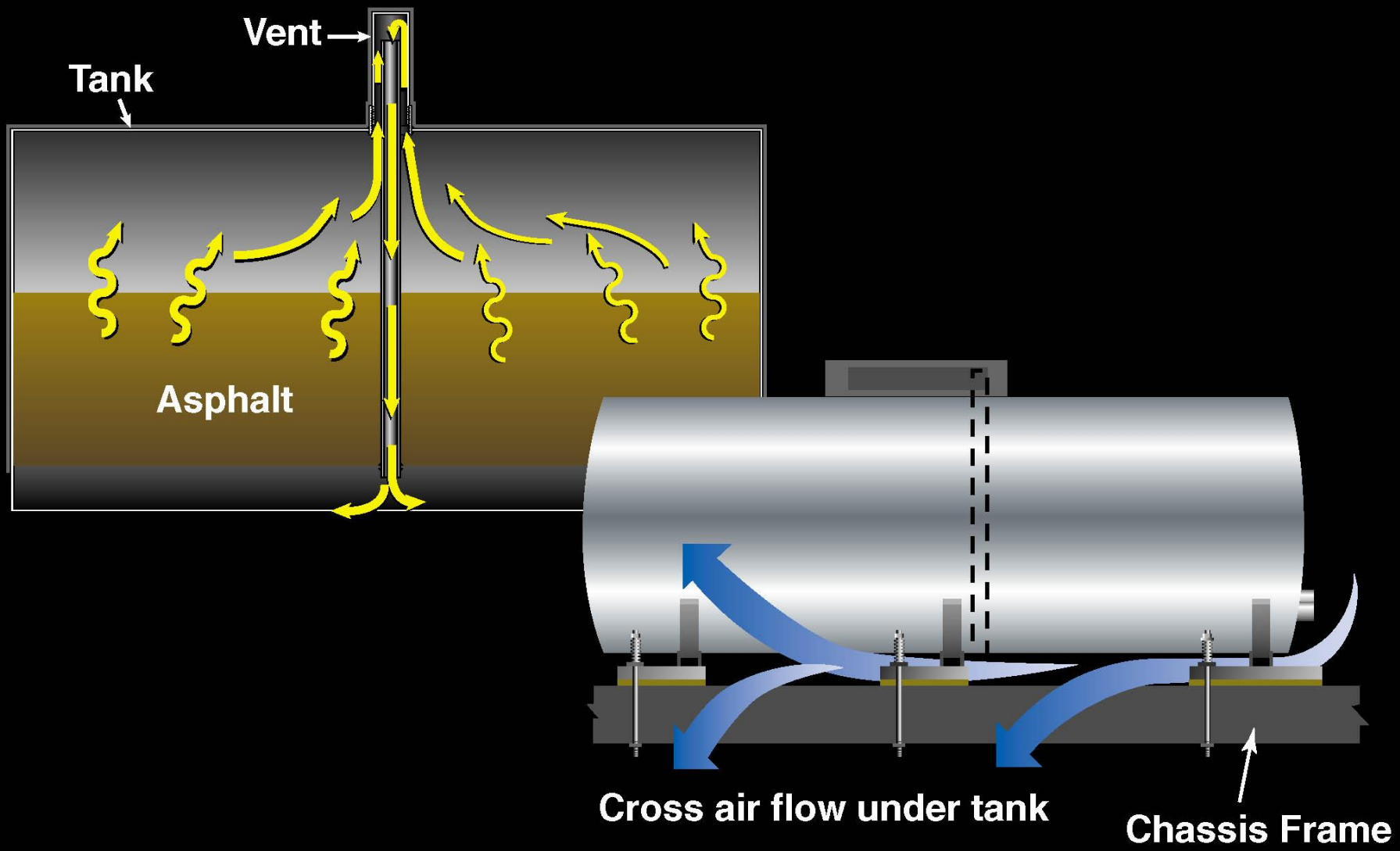




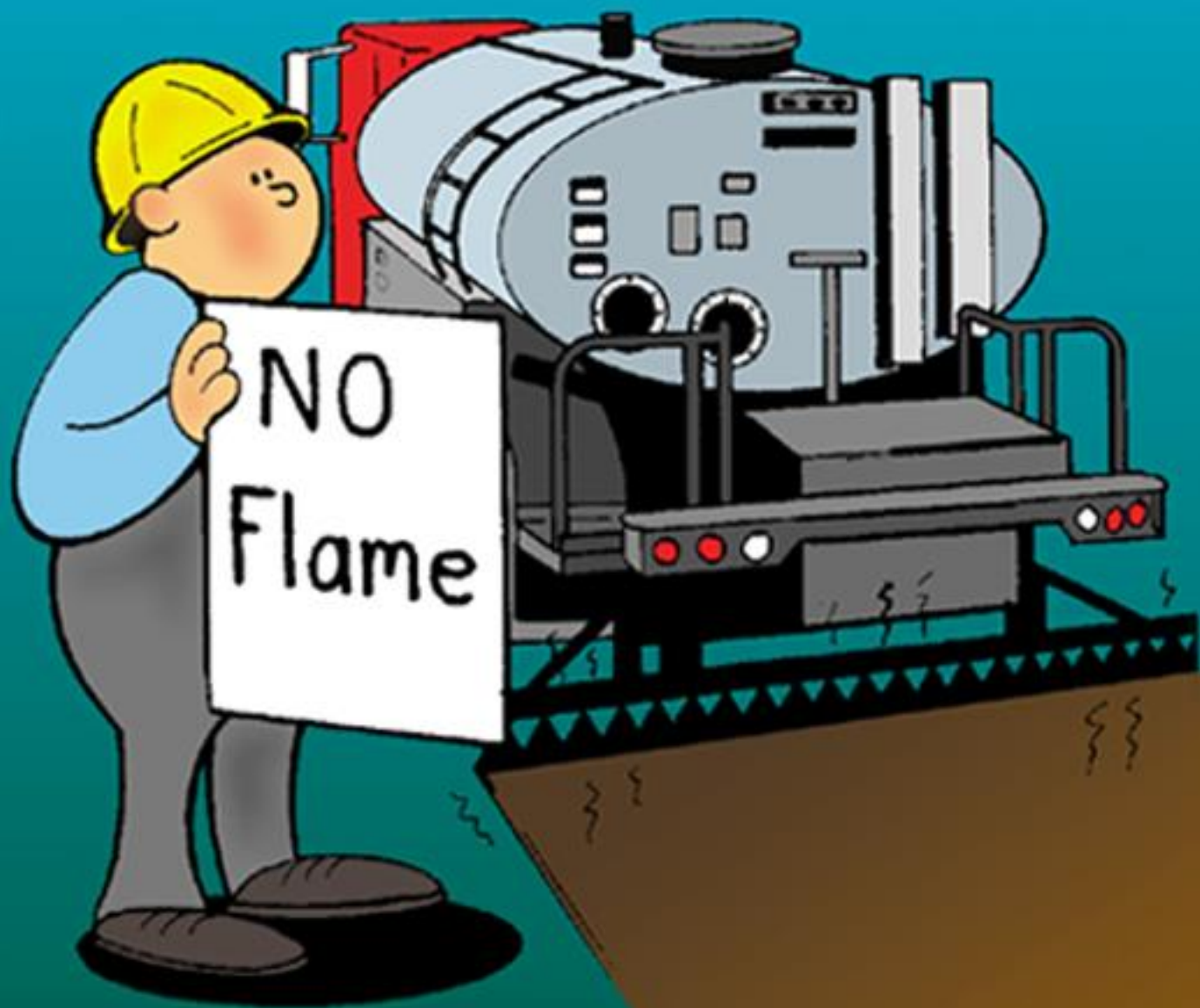




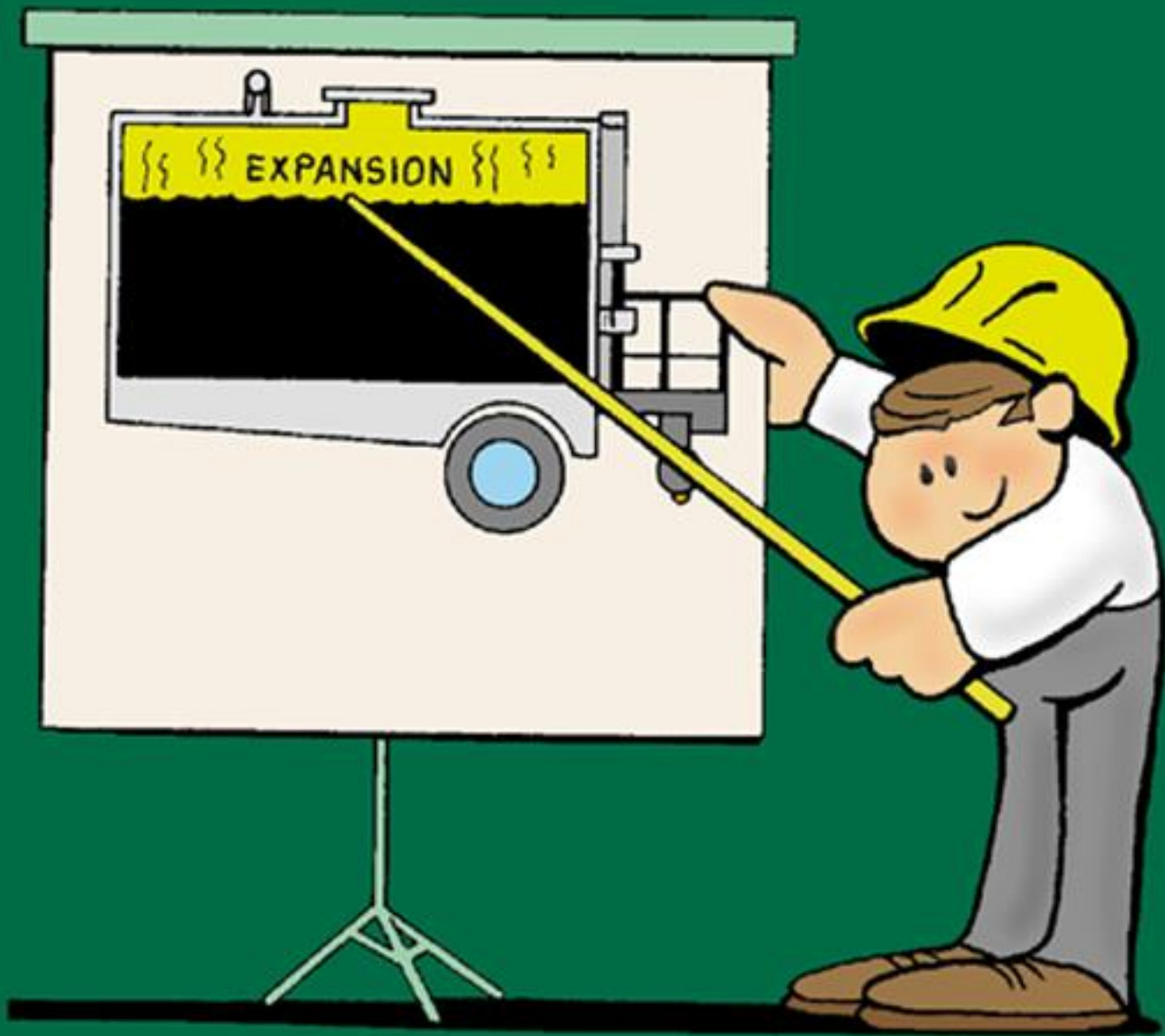


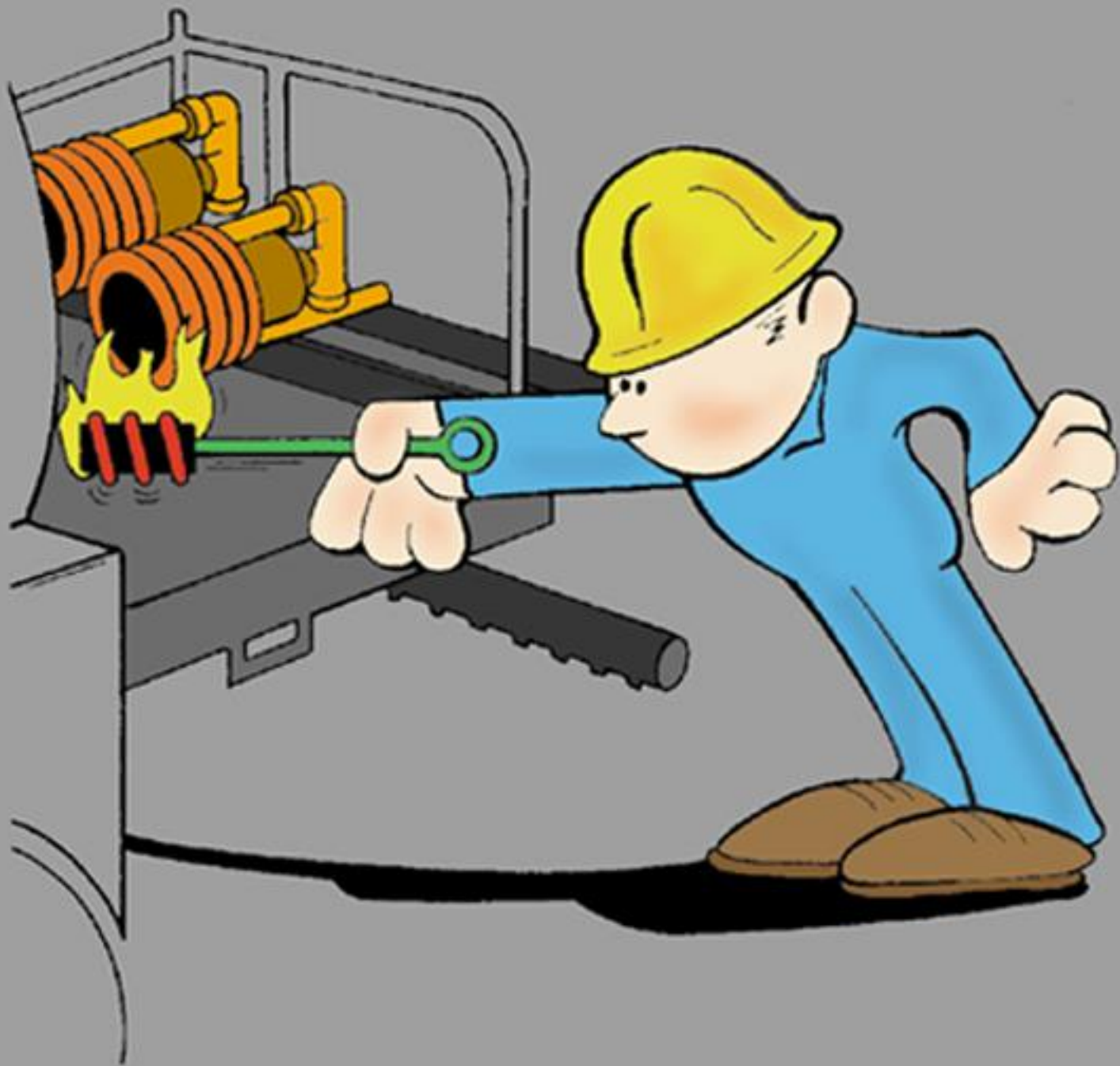






NO
Flame





HEATING TIPS

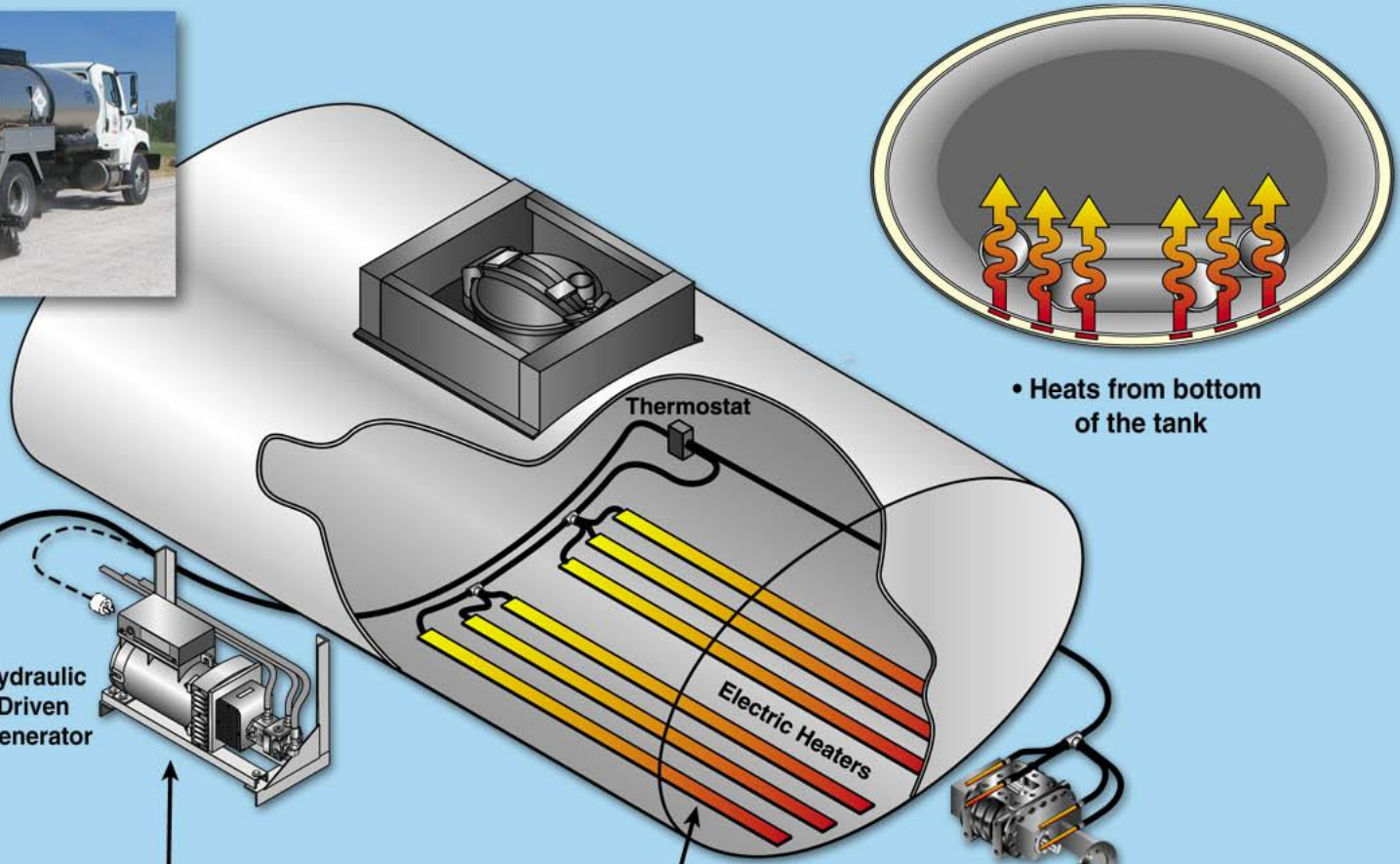
- Knowledge of operation and material
 - Fire extinguisher
 - Vent broadside to wind
 - Flues covered
 - Attend to burners
 - Circulate material in tank
-







Electric Belly Heat with Heat to Asphalt Pump Black-Topper® Centennial Asphalt Distributor



• Plug into building for overnight heat.

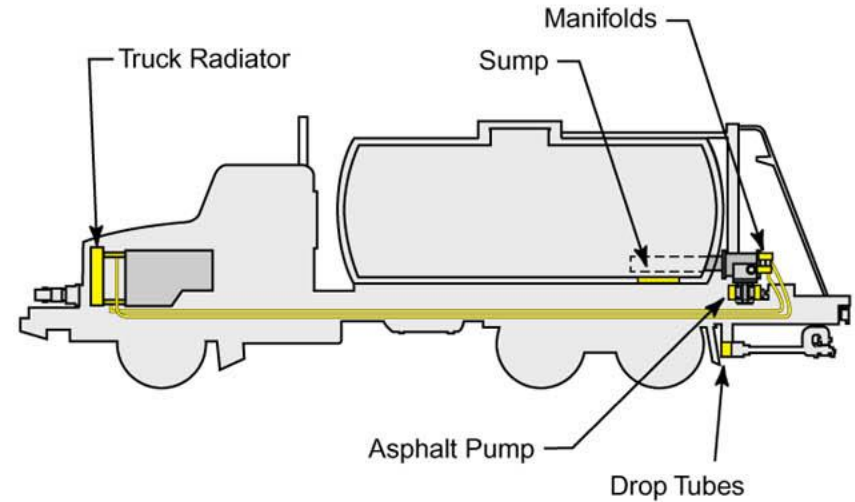
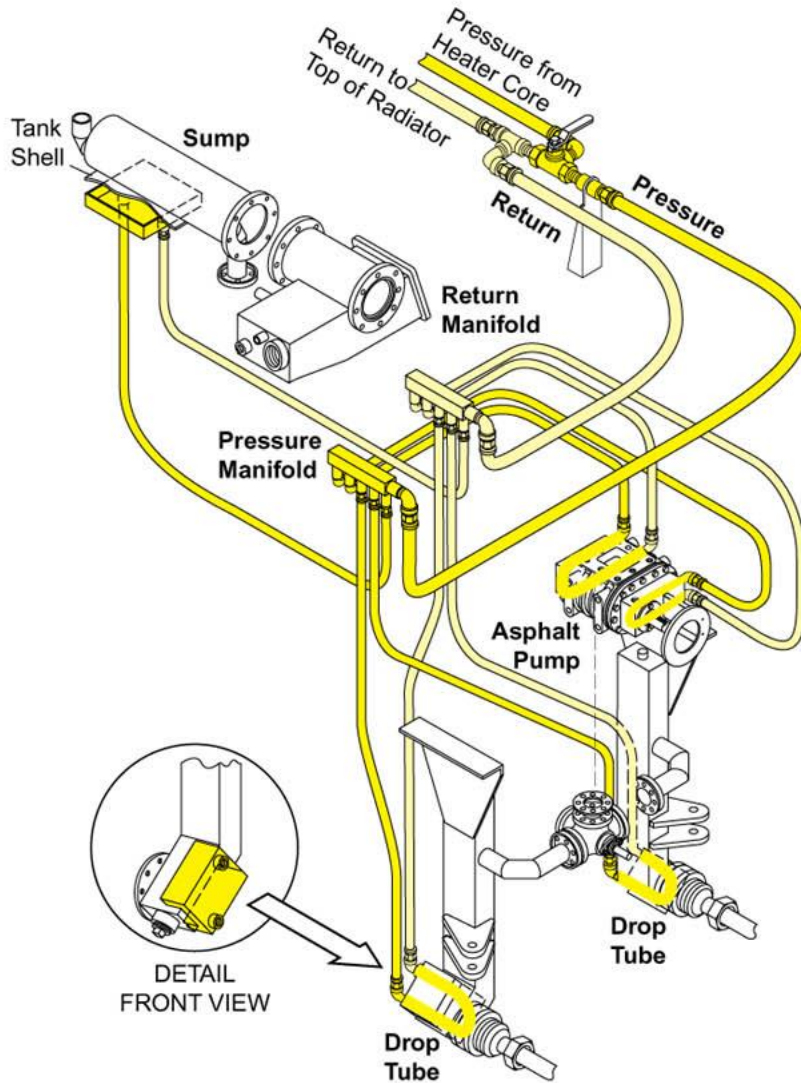
• Hydraulically driven generator set allows in-transit heating.

• Electric Belly Heat Strips.

• Asphalt Pump Heating.

Heated Pump, Sump and Drop Tubes (optional)

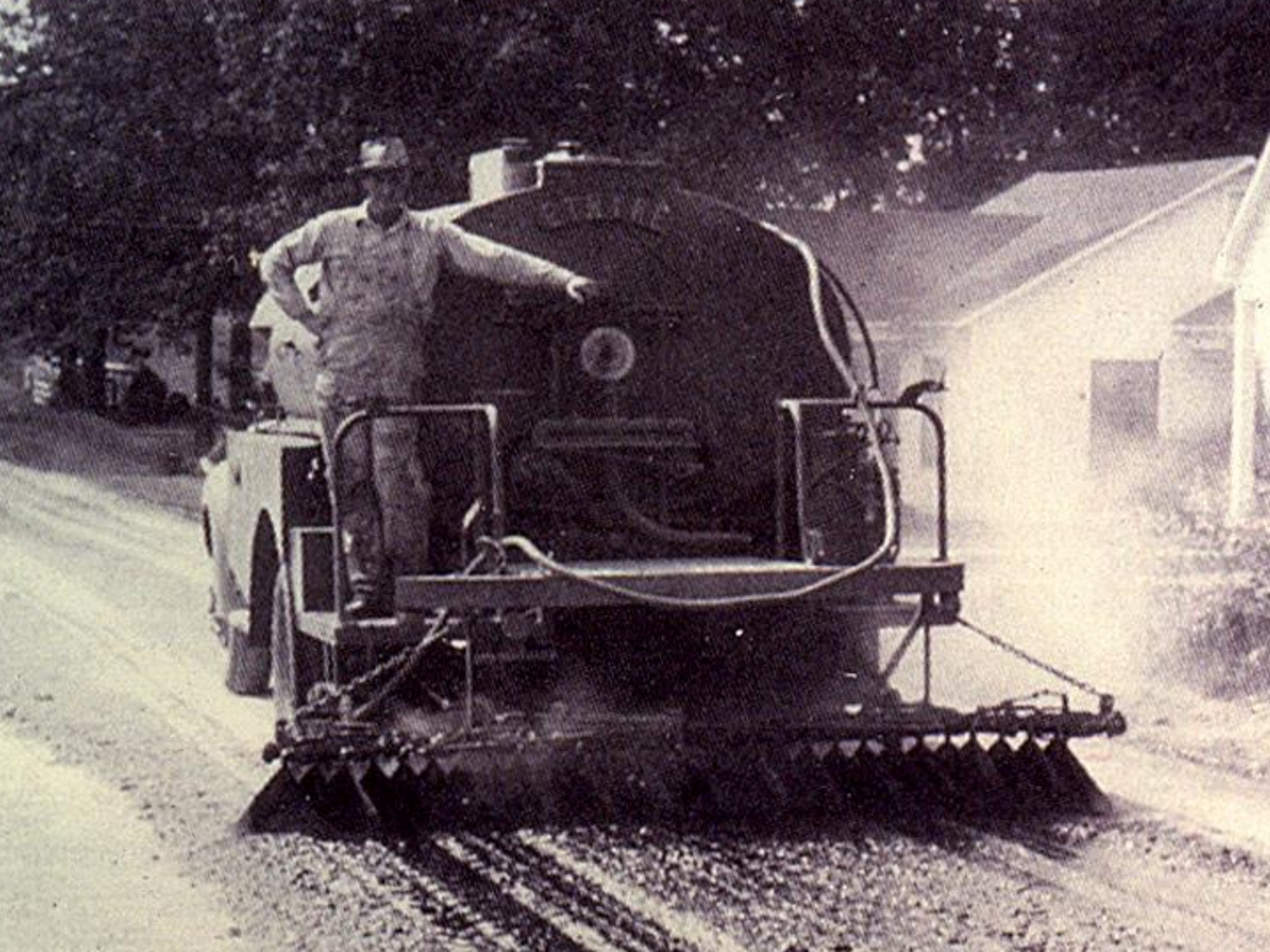
(from truck cooling system)



- Truck engine coolant circulates through system warming pump and circulation system piping.
- Decreases start up problems on cold mornings.
- Decreases prep time on initial start ups.

What about application?





Metering System

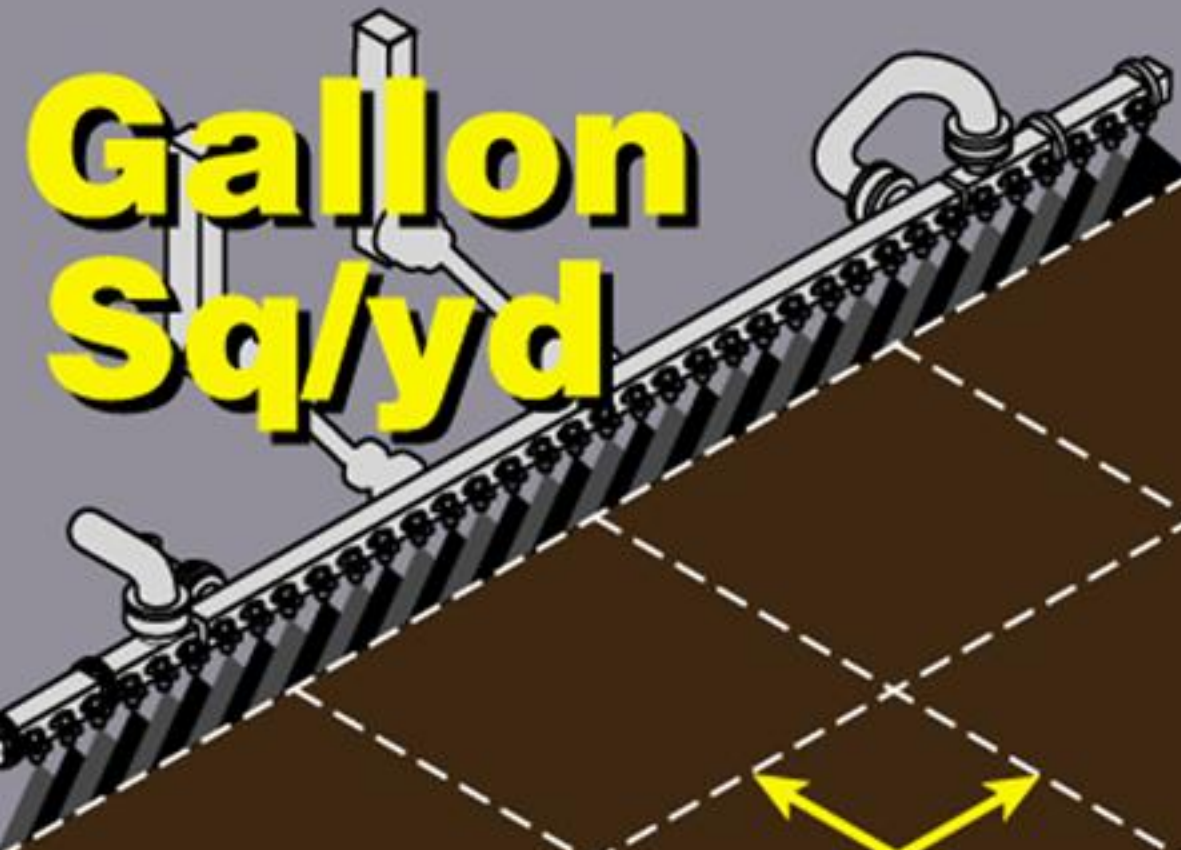
Four important features to keep in mind

1. Desired application rate – gallon /yard²
2. Forward ground speed – feet per minute
3. Width of spray bar – feet
4. Asphalt pump output – gallons/minute



Calculated Eye



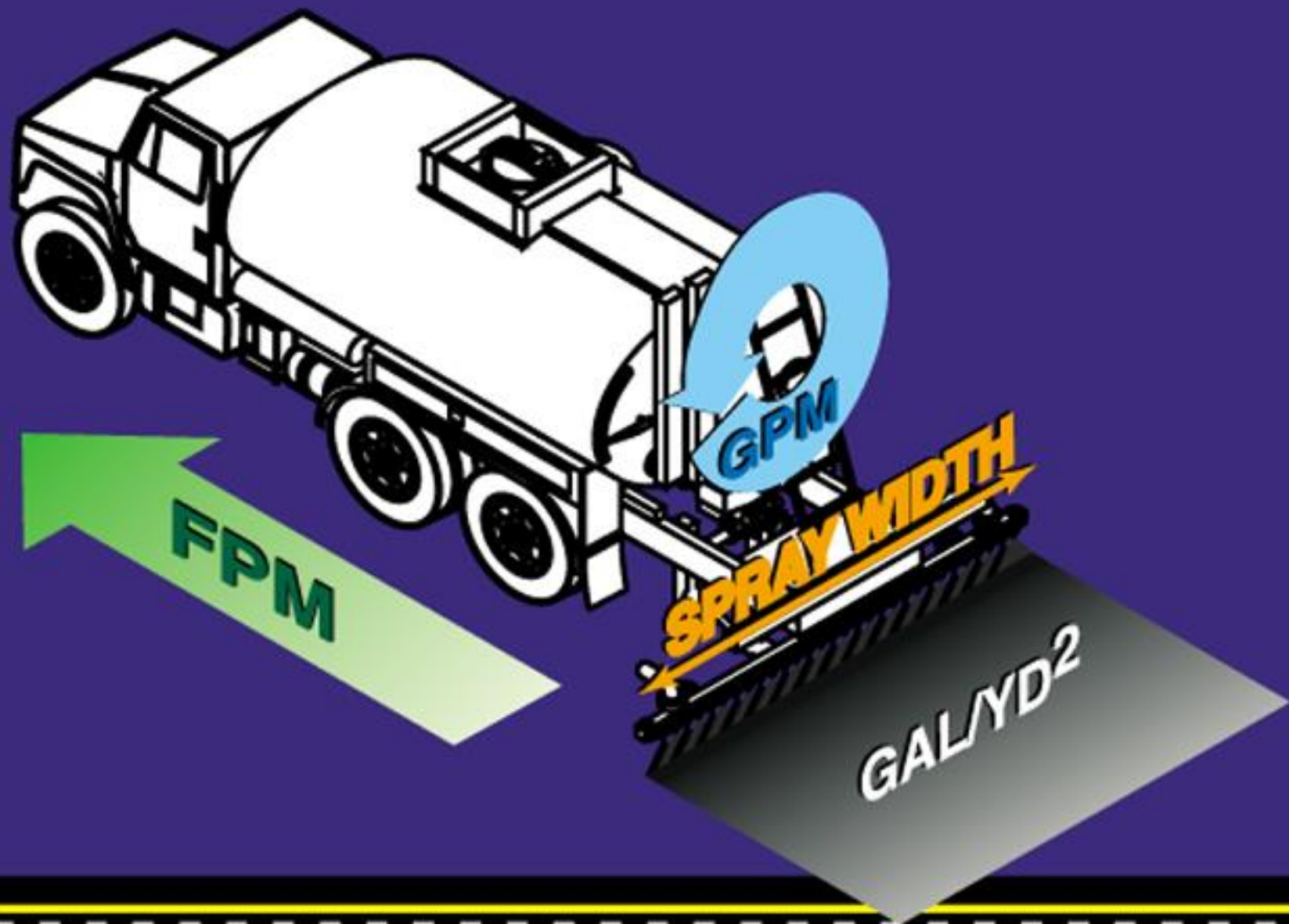


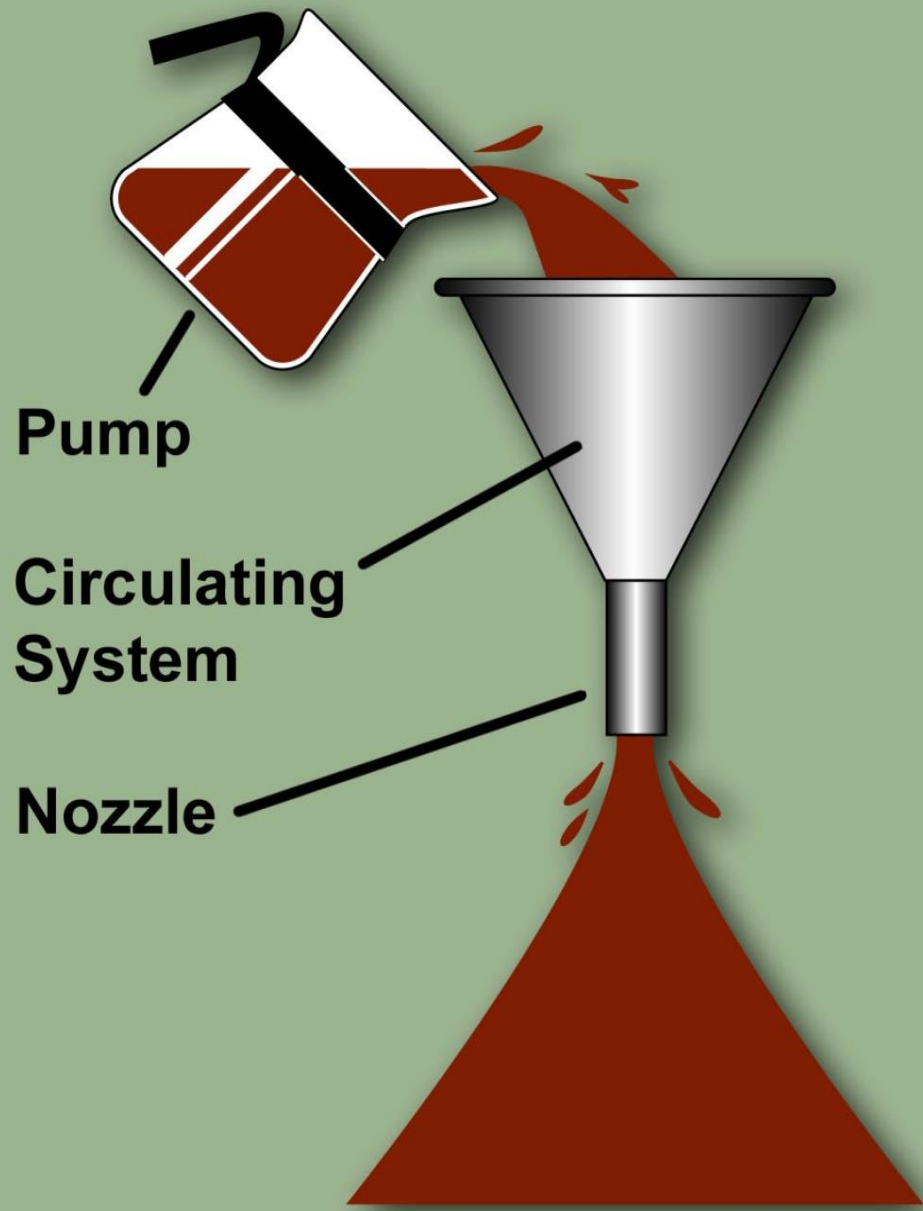
**Gallon
Sq/yd**

.04 → 1.0





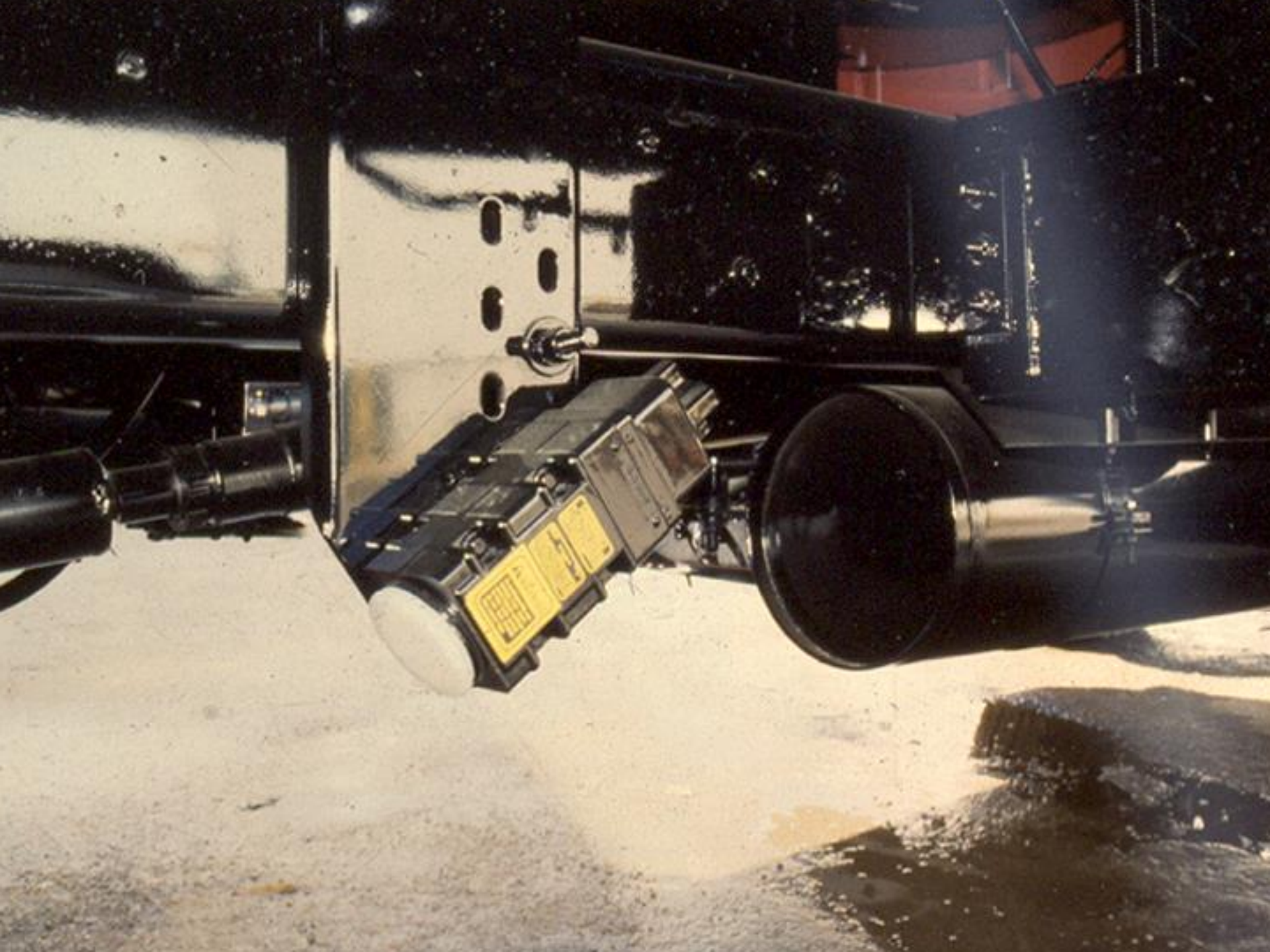




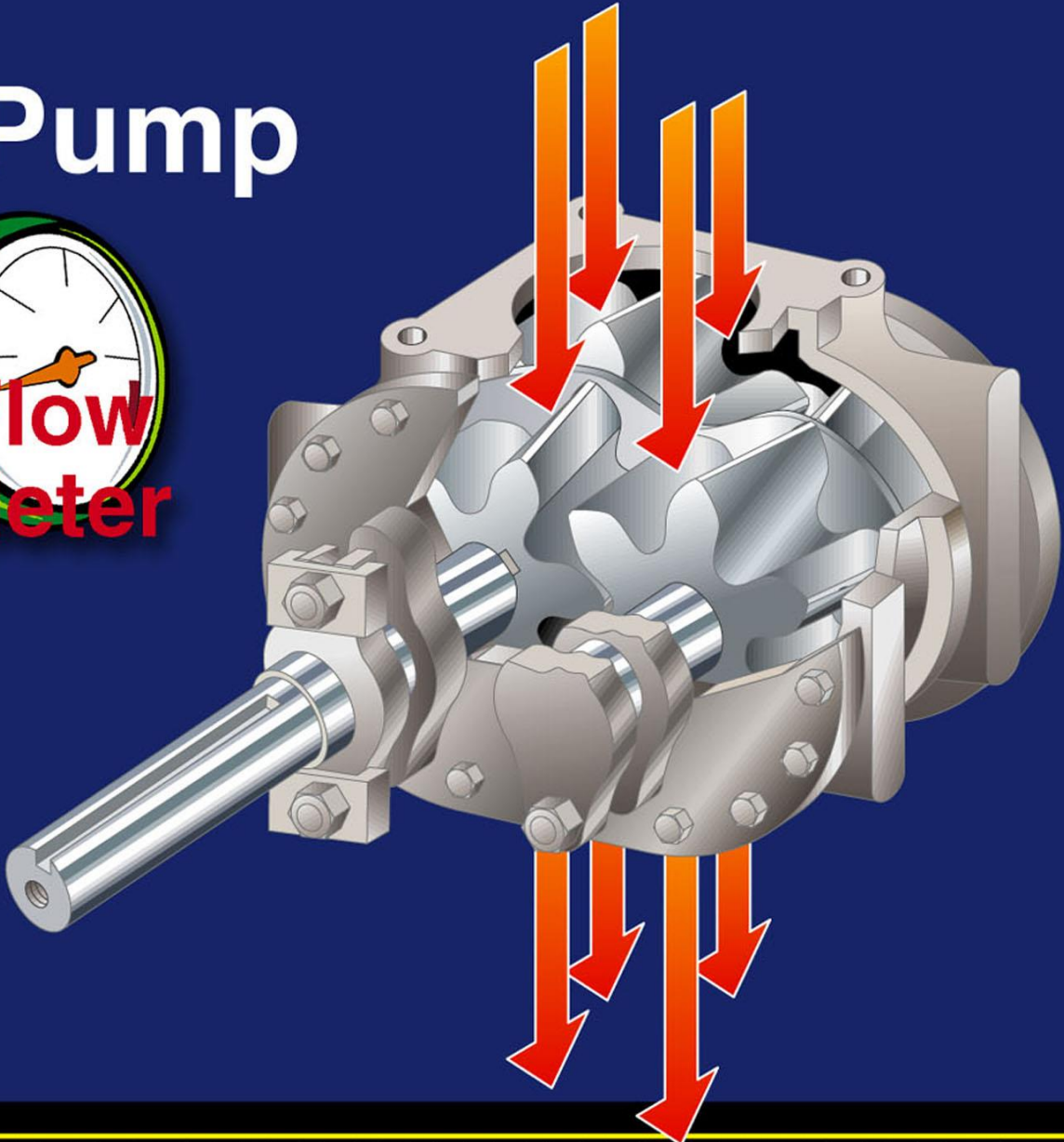
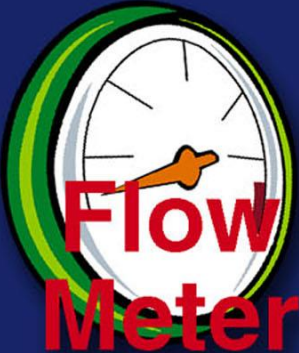
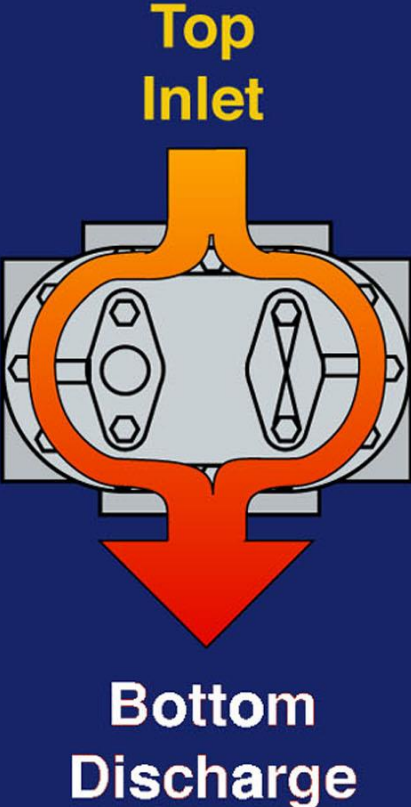
Pump

**Circulating
System**

Nozzle



Asphalt Pump







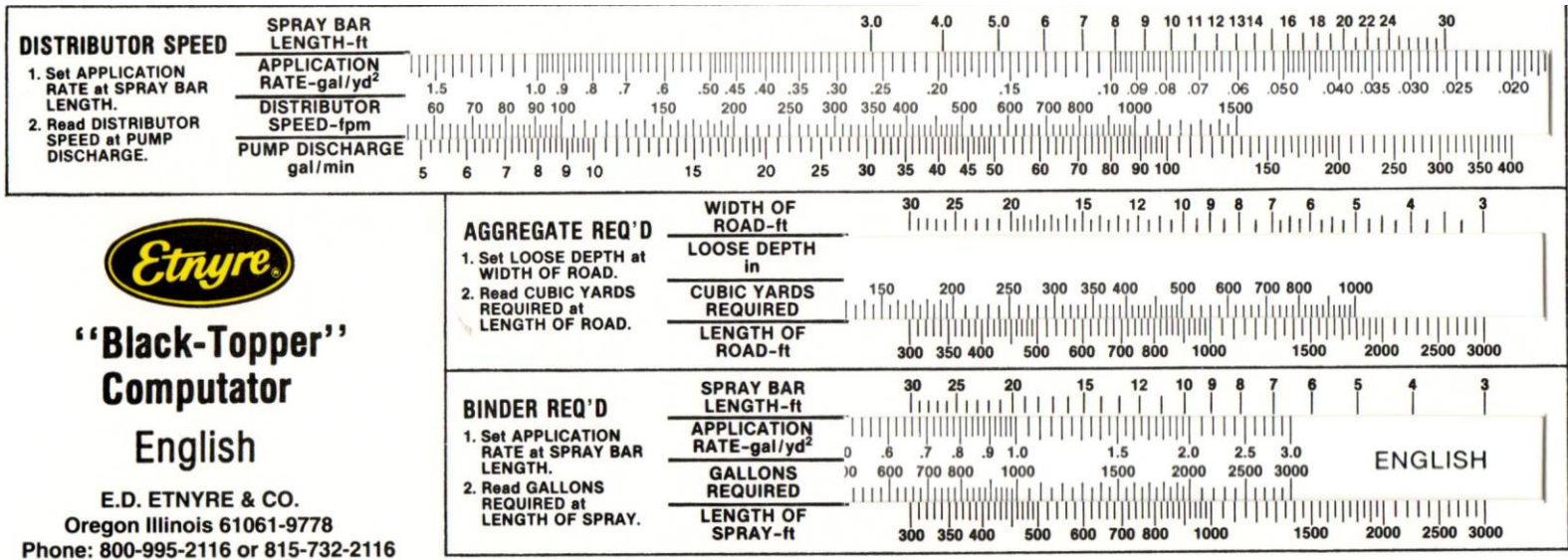


FPM

GPM

“BLACK-TOPPER COMPUTATOR”

- Used to determine the gallon per minute discharge rate for a stated application rate and distributor speed. It also shows the gallons of binder required for a particular application.

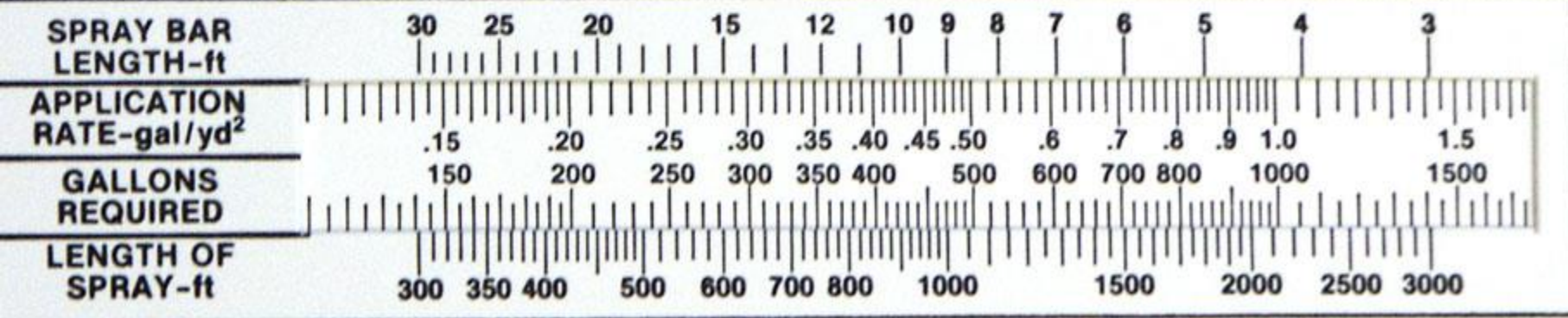
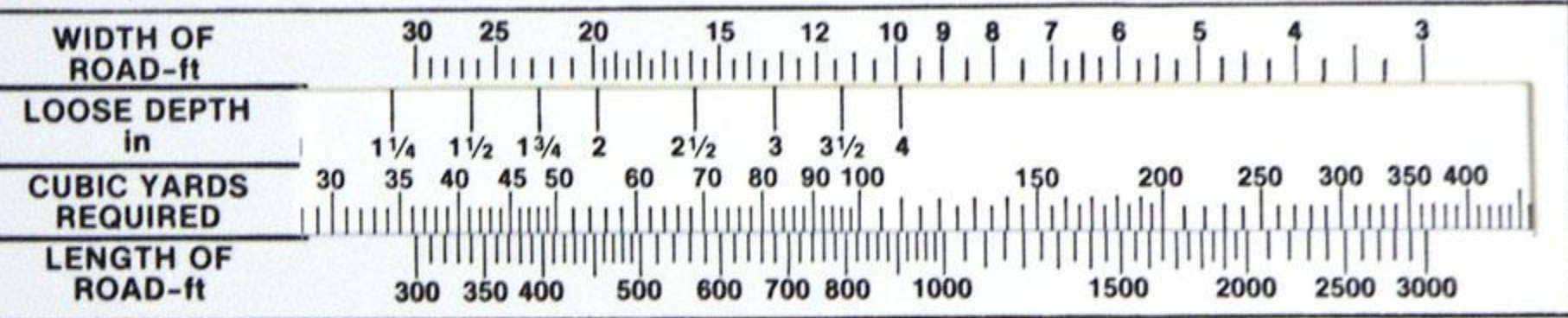
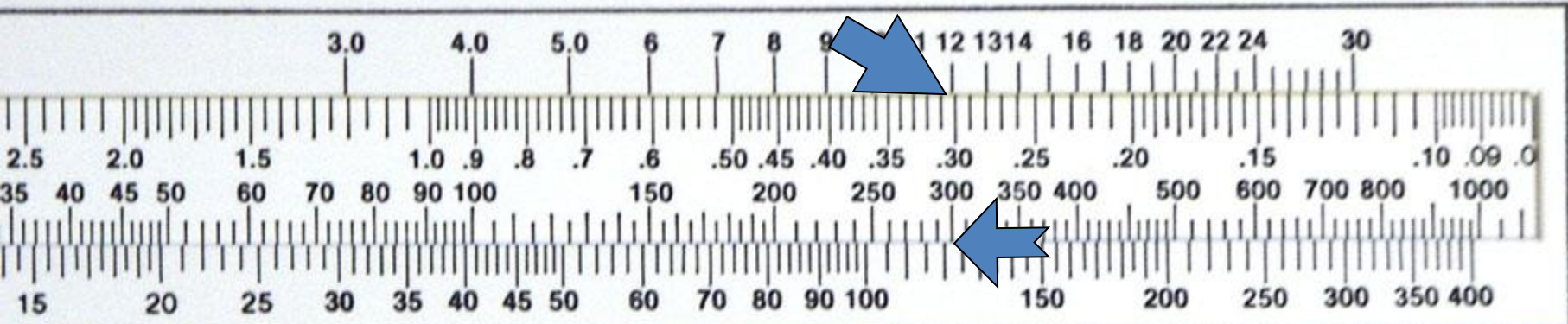


“Black-Topper”
Computator

English

E.D. ETNYRE & CO.
Oregon Illinois 61061-9778
Phone: 800-995-2116 or 815-732-2116





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Introducing the new
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Etnyre Black-Topper On-line Computator

<https://www.etnyre.com/calc/>

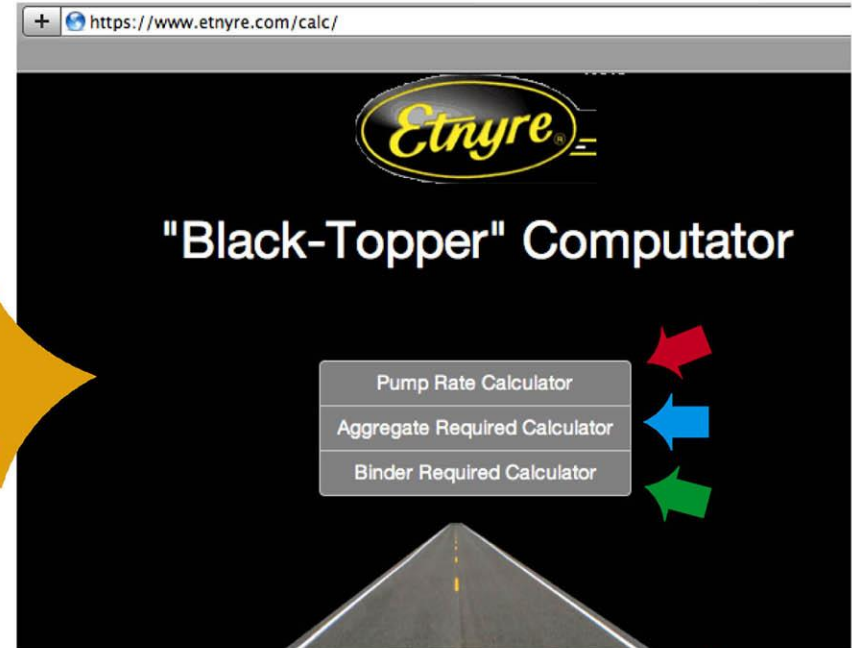
Etnyre Black-Topper On-line Computator



www.etnyre.com/calc/



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Web Site: www.etnyre.com



Browser address bar: <https://www.etnyre.com/calc/>

Etnyre

"Black-Topper" Computator

- Pump Rate Calculator
- Aggregate Required Calculator
- Binder Required Calculator

Pump Rate

Spray Bar Length ft

Application Rate gal/sq yd

Distributor Speed ft/min

Pump Rate gal/min

English Metric

Aggregate Required

Road Width ft

Road Length ft

Application Rate lb/sq yd

Overage (optional) percent

Aggregate Req'd tons

English Metric

Binder Required

Spray Bar Length ft

Application Rate gal/sq yd

Road Length ft

Binder Required gal

English Metric



Pump Rate

Spray Bar Length (ft)

Application Rate (gal/sq yd)

Distributor Speed (ft/min)

Calculate

Pump Rate (gal/min)

Nozzle (optional)

Configuration

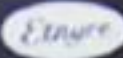
Recommended Speed (270 - 472 ft/min)

English Metric

Clear

Aggregate Calc

Binder Calc



SPRAYBAR ON
OFF

POWER ON
OFF

.300 GAL/YD2
300 FPM 120 GPM

CIRCULATION RATE

CHANGE DISPLAY

MEMORY

RESET FEET METERS

RESET GALLONS LITRES

APPLICATION RATE

HYD OIL BAR

MAIN BAR

TEMP CENTERED

PTO LOW TANK LEVEL

LEFT WING

RIGHT WING

MARKER 12 11 10 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 10 11 12 MARKER

WING FOLD

FRONT REAR SUCTION

LIFT

LOAD IN BAR LOAD SUCK BACK

ERROR OFF BAR LATCH

SUCKBACK LOW HYD MOTOR

REAR CONTROL BOX KNOB STYLE



CAB CONTROL BOX



REAR CONTROL BOX PUSH PAD STYLE



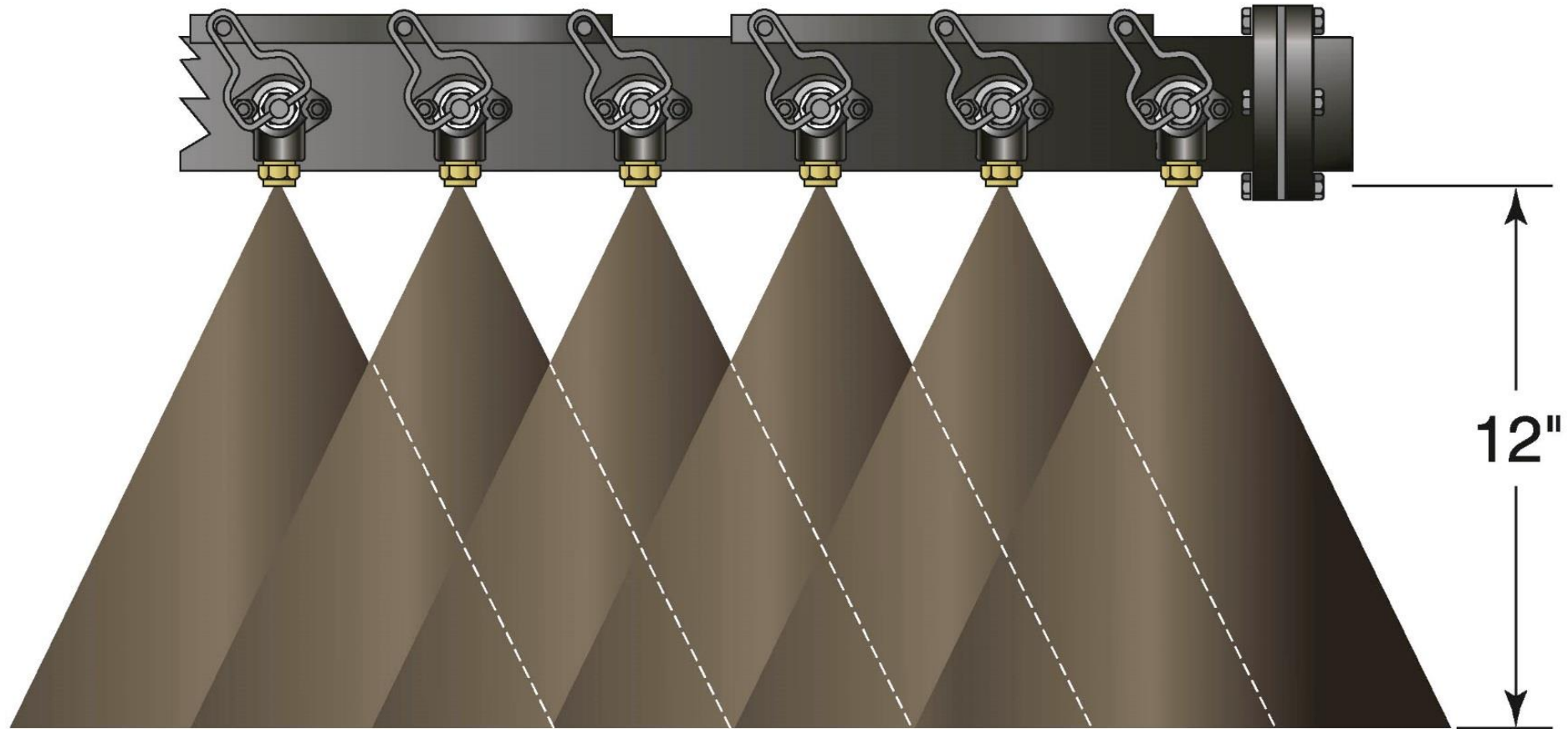
SPRAY BAR

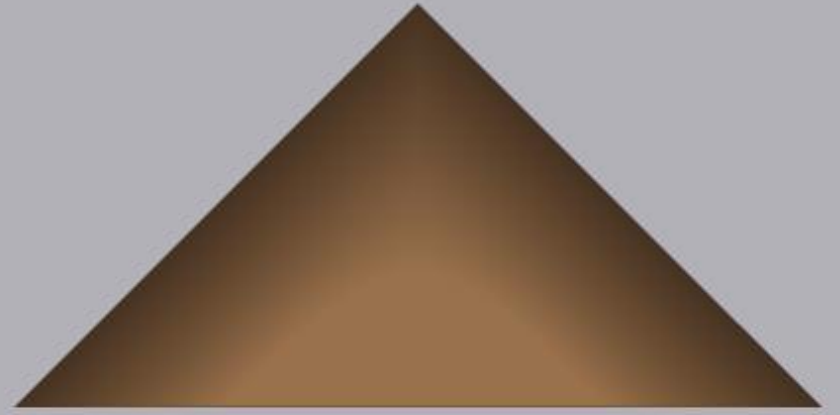
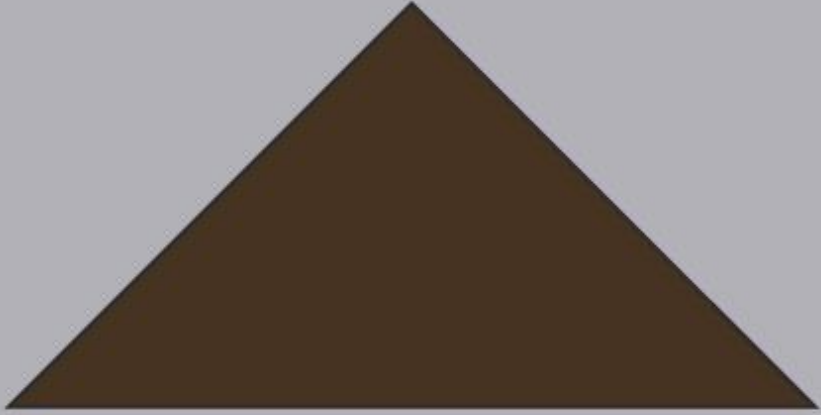




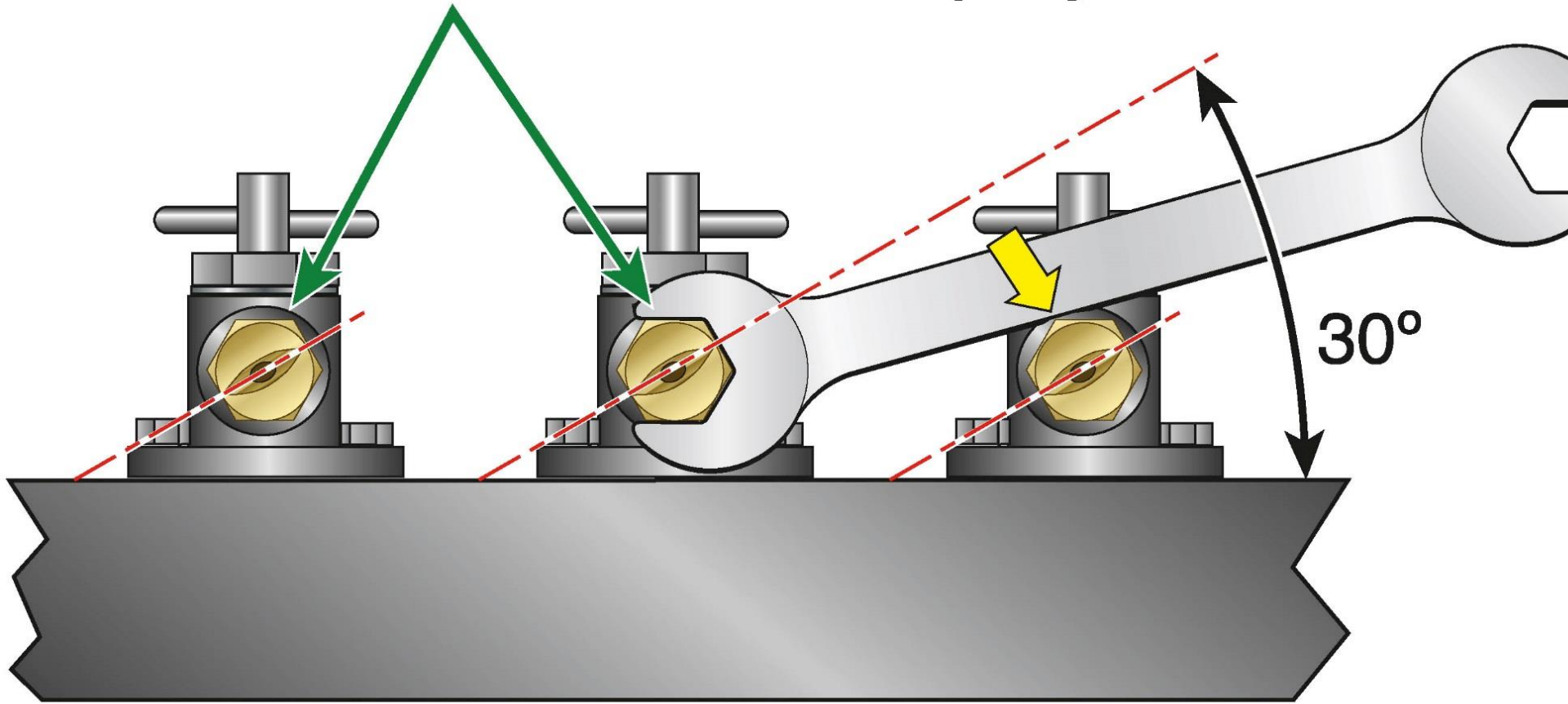


Triple Overlap





Nozzle Slot 30° from Spray Bar



Spray Bar (viewed from bottom of bar)



Ref.	Part No.	Description	Application Gallons Per Square Yard	Application (Metric) Liters Per Square Meter	US Flow Gallons Per Minute Per Foot
1	3353788	V Slot Tack Nozzle 1/8" Rifle Bored	.05 - .20	.23 - 0.91	3.0 - 4.5
	3351013*	V Slot Tack Nozzle 1/16" Coin Slot	.05 - .20	.23 - 0.91	3.0 - 4.5
	3354904	V Slot Tack Nozzle 1/8" Counterbored	.05 - .20	.23 - 0.91	3.0 - 4.5
2	3351008	S36-4 V Slot	.10 - .35	.45 - 1.58	4.0 to 7.5
3	3351009	S36-5 V Slot	.18 - .45	.81 - 2.04	7.0 to 10.0
4	3352368	Multi-Material V Slot	.15 - .40	.68 - 1.81	6.0 to 9.0
5	3351015	3/32" Coin Slot	.15 - .40	.68 - 1.81	6.0 to 9.0
6	3352204	Multi-Material V Slot	.35 - .95	1.58 - 4.30	12.0 to 21.0
7	3355154	End Nozzle (use with 3352204 nozzle)	.35 - .95	1.58 - 4.30	12.0 to 21.0
8	3352205	Multi-Material V Slot	.20 - .55	.91 - 2.49	7.5 to 12.0
9	3352210	End Nozzle (use with 3352205 nozzle)	.20 - .55	.91 - 2.49	7.5 to 12.0
10	3351014	3/16" Coin Slot	.35 - .95	1.58 - 4.30	12.0 to 21.0
11	3351010	1/4" Coin Slot	.40 - 1.10	1.81 - 4.98	15.0 to 24.0


* Special Order

Nozzle Range GPM

Min X Ft. Bar = Minimum GPM

Max X Ft Bar = Maximum GPM

Nozzle Application Charts



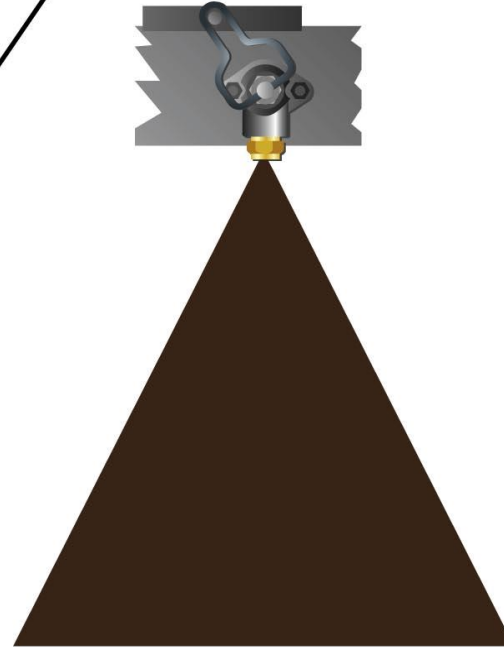
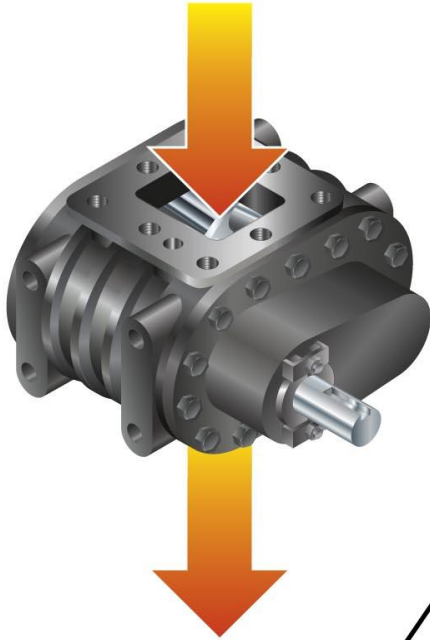
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3	3351009	S36-5 V Slot	.18 - .45	.81 - 2.04	7.0 to 10.0
4	3352368	Multi-Material V Slot	.15 - .40	.68 - 1.81	6.0 to 9.0
5	3351015	3/32" Coin Slot	.15 - .40	.68 - 1.81	6.0 to 9.0
6	3352204	Multi-Material V Slot	.35 - .95	1.58 - 4.30	12.0 to 21.0
7	3352205	Multi-Material V Slot	.20 - .55	.91 - 2.49	7.5 to 12.0
8	3352210	End Nozzle (3352205)	.20 - .55	.91 - 2.49	7.5 to 12.0
9	3351014	3/16" Coin Slot	.35 - .95	1.58 - 4.30	12.0 to 21.0
10	3351010	1/4" Coin Slot	.40 - 1.10	1.81 - 4.98	15.0 to 24.0

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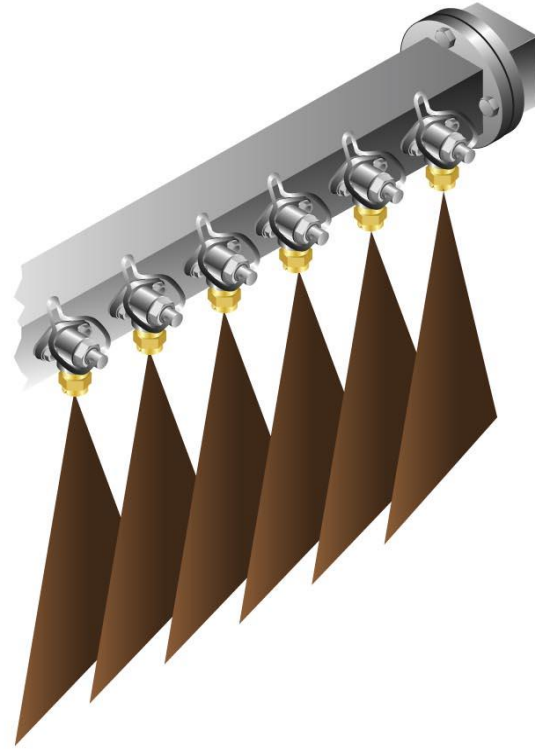
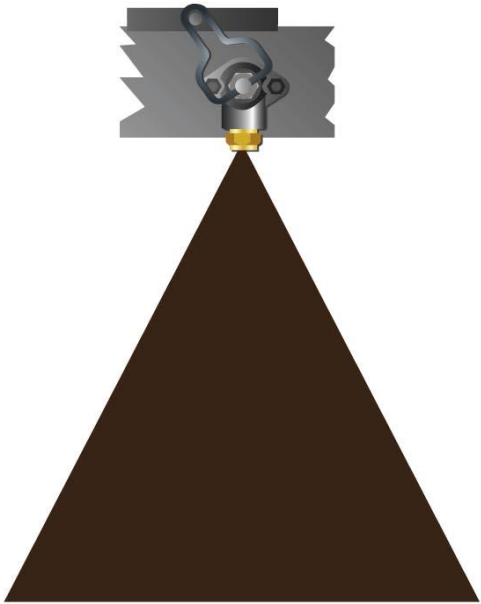


Pump Meter – Volume



Spray – Pressure

Flat Fan

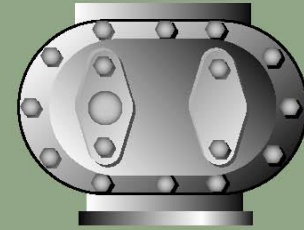
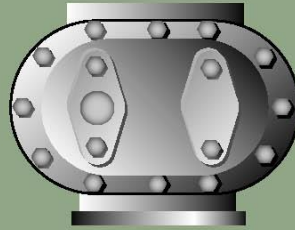
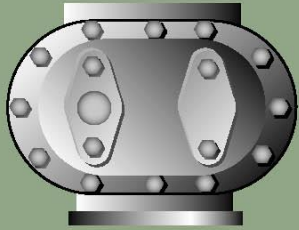


50 GPM

50 GPM

50 GPM

Asphalt
Pump



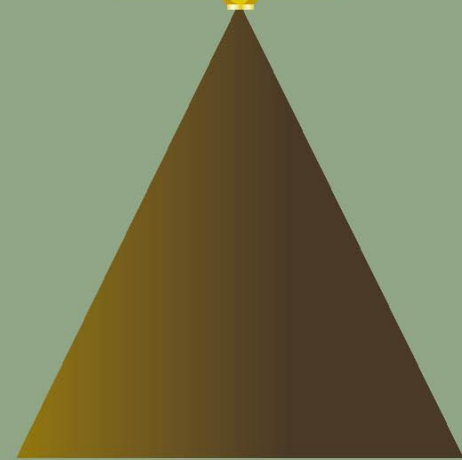
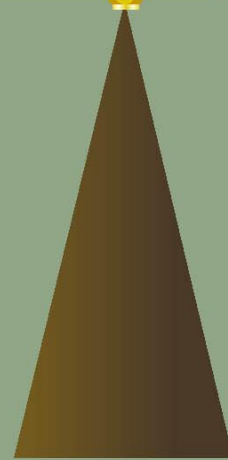
3/16"



1/8"



1/16"



Nozzle Size

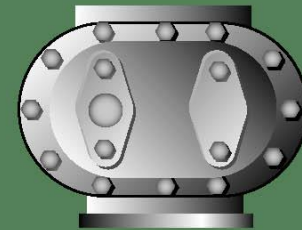
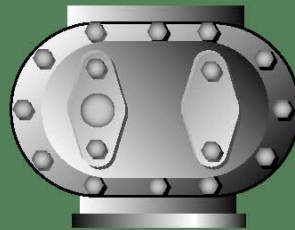
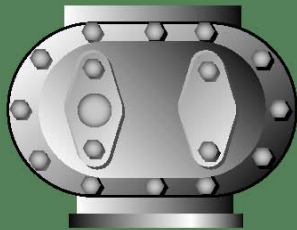
↑ FPM

50 GPM

100 GPM

150 GPM

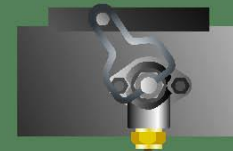
Asphalt
Pump



1/8"

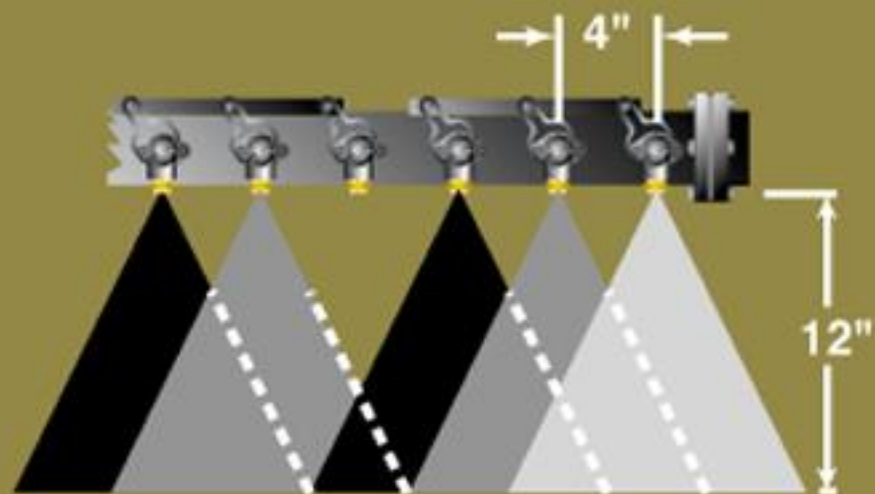


1/8"

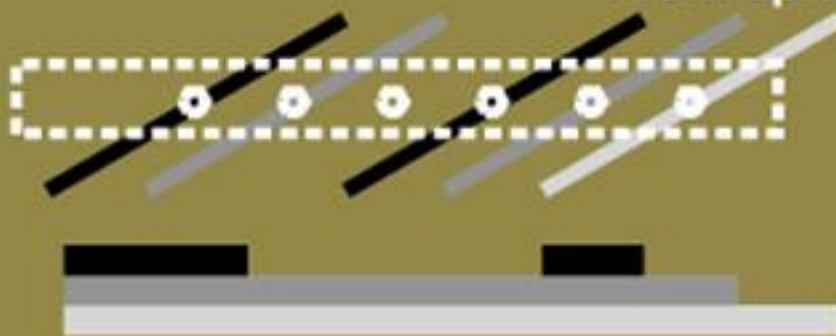


1/8"

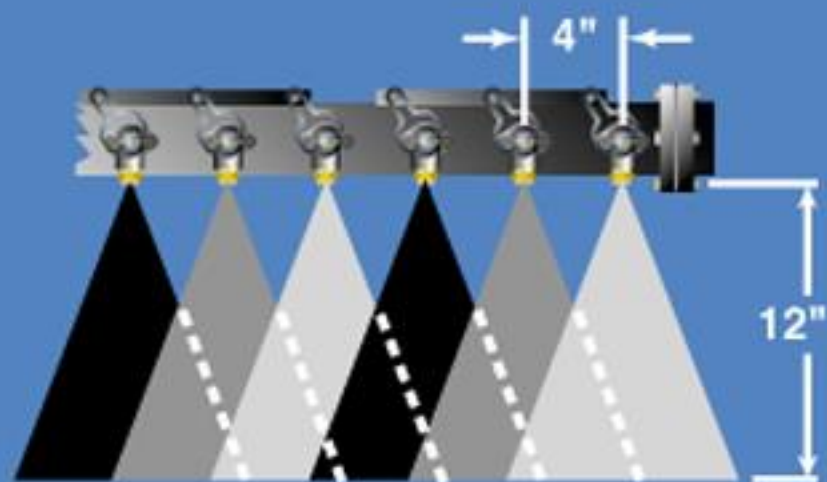
Plugged Nozzle



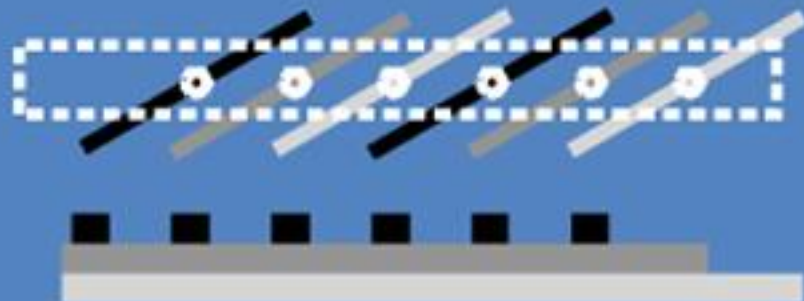
Nozzle Slot 30°
From Spray Bar



Low Pressure



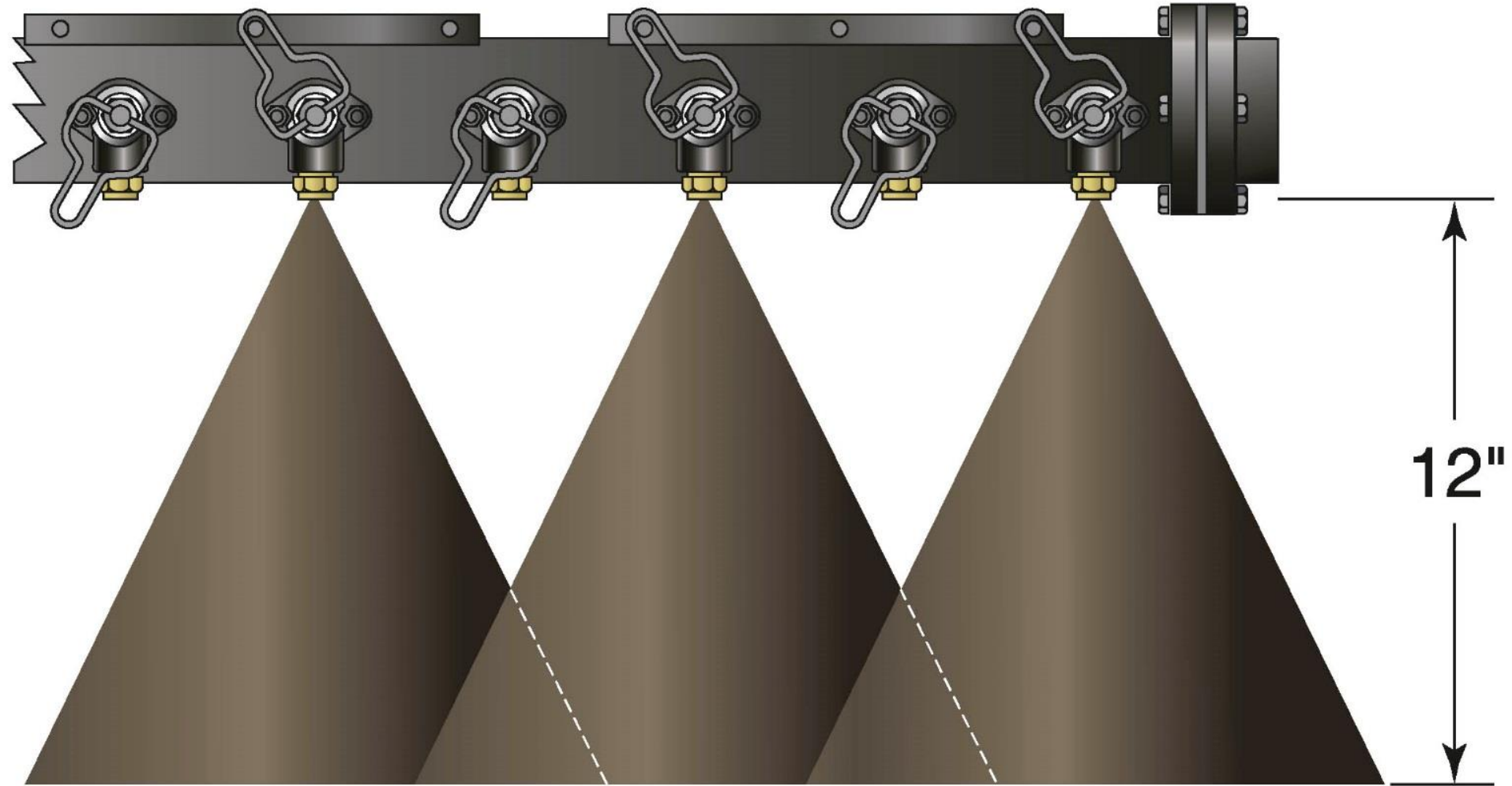
Nozzle Slot 30°
From Spray Bar



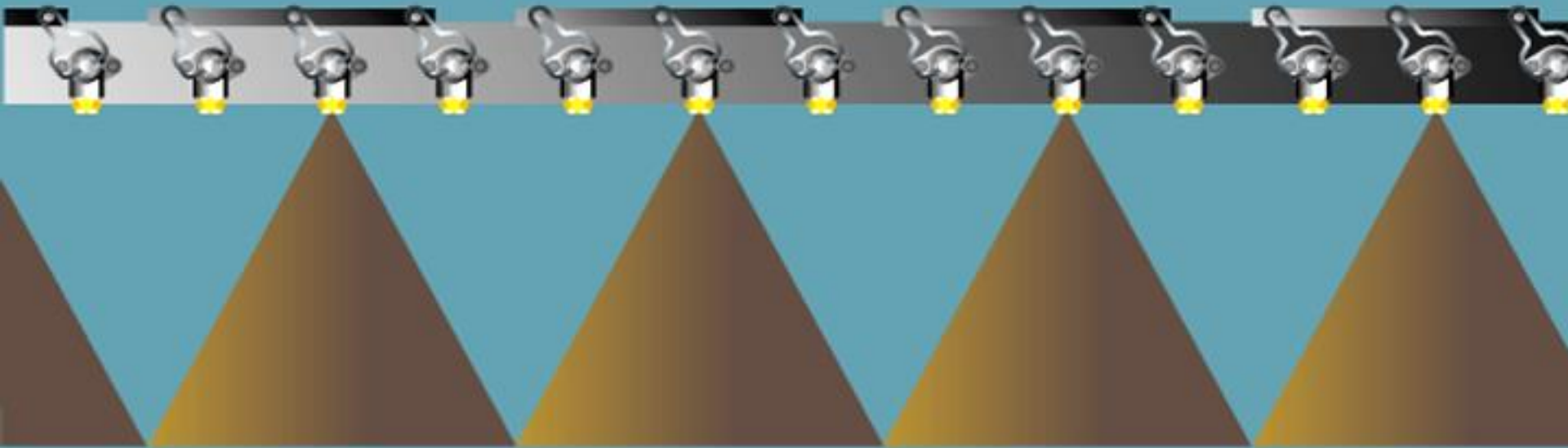
Let's Cheat
the System



Every Other Nozzle



1 NOZZLE PER FOOT







Calibration

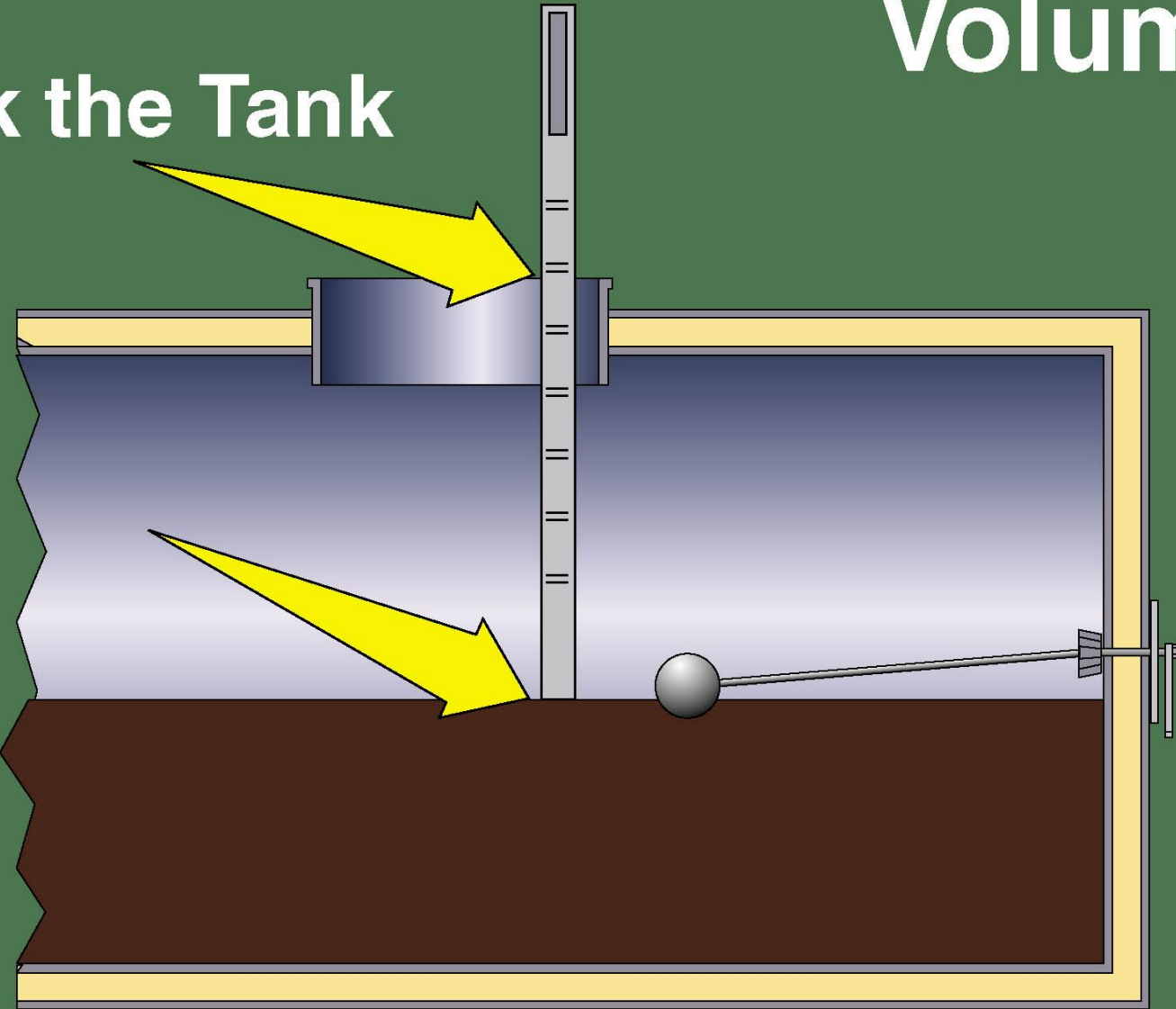


WHY SHOULD YOU CHECK YOUR DISTRIBUTORS CALIBRATION?

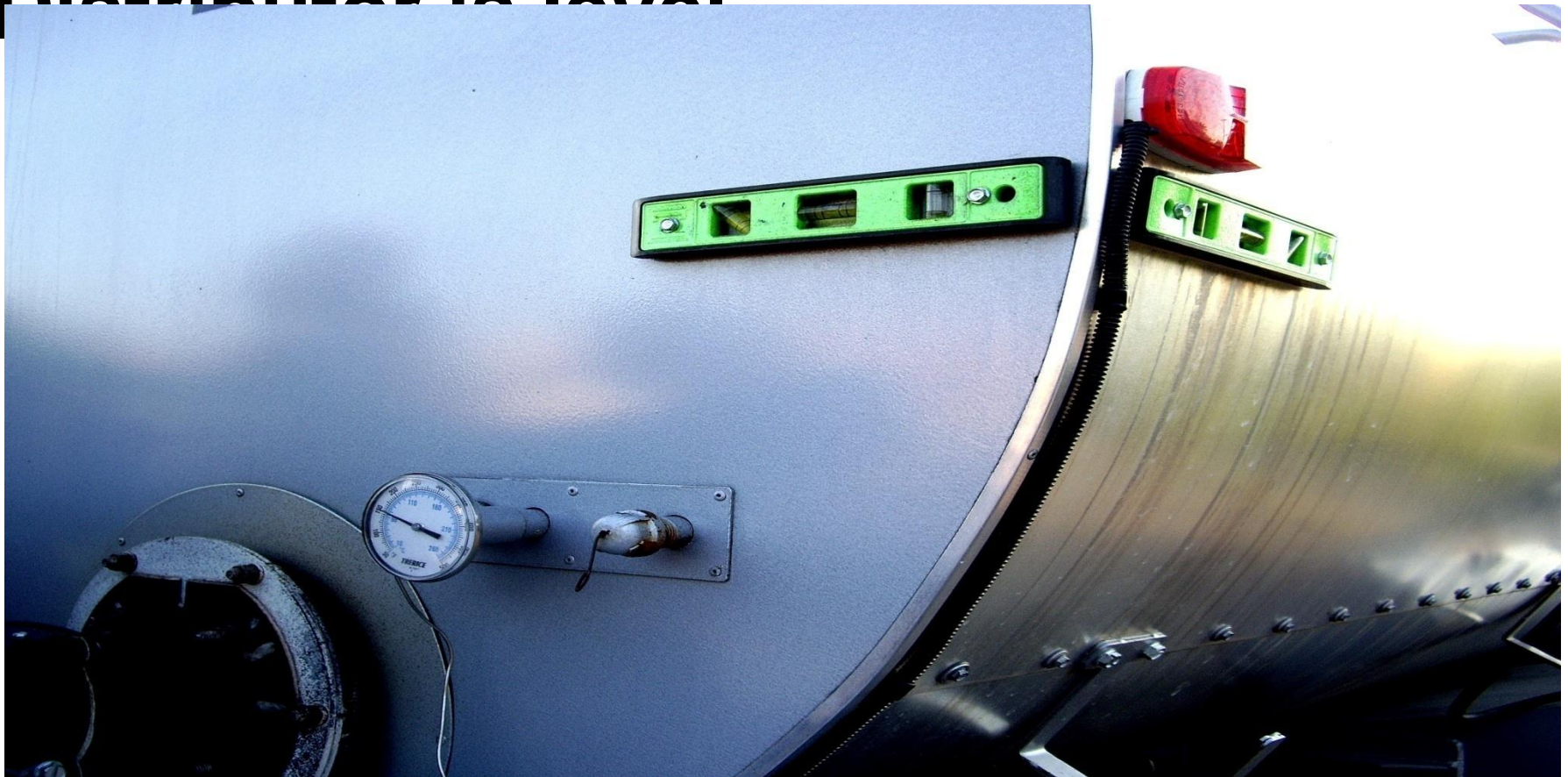
- To make sure the computer rate matches what's going on the ground
- To avoid bleeding or flooding of material
- To make sure there is enough material to retain the chip, or assure a good bond for paving surface
- To avoid increased cost of material do to over application

Volume

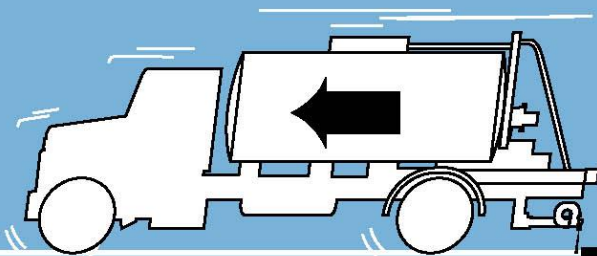
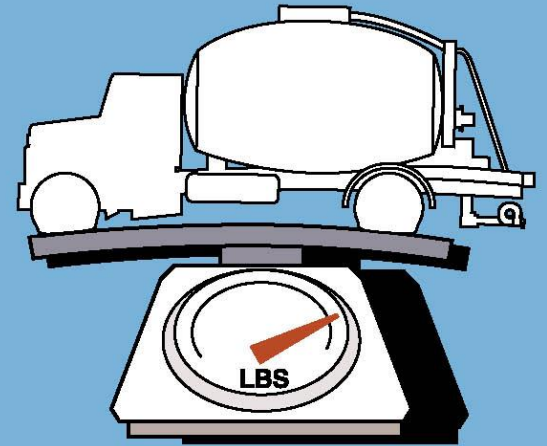
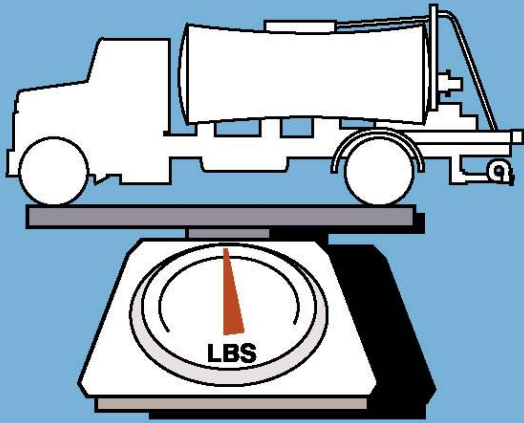
Stick the Tank



Before checking your volume by sticking the tank , make sure Distributor is level



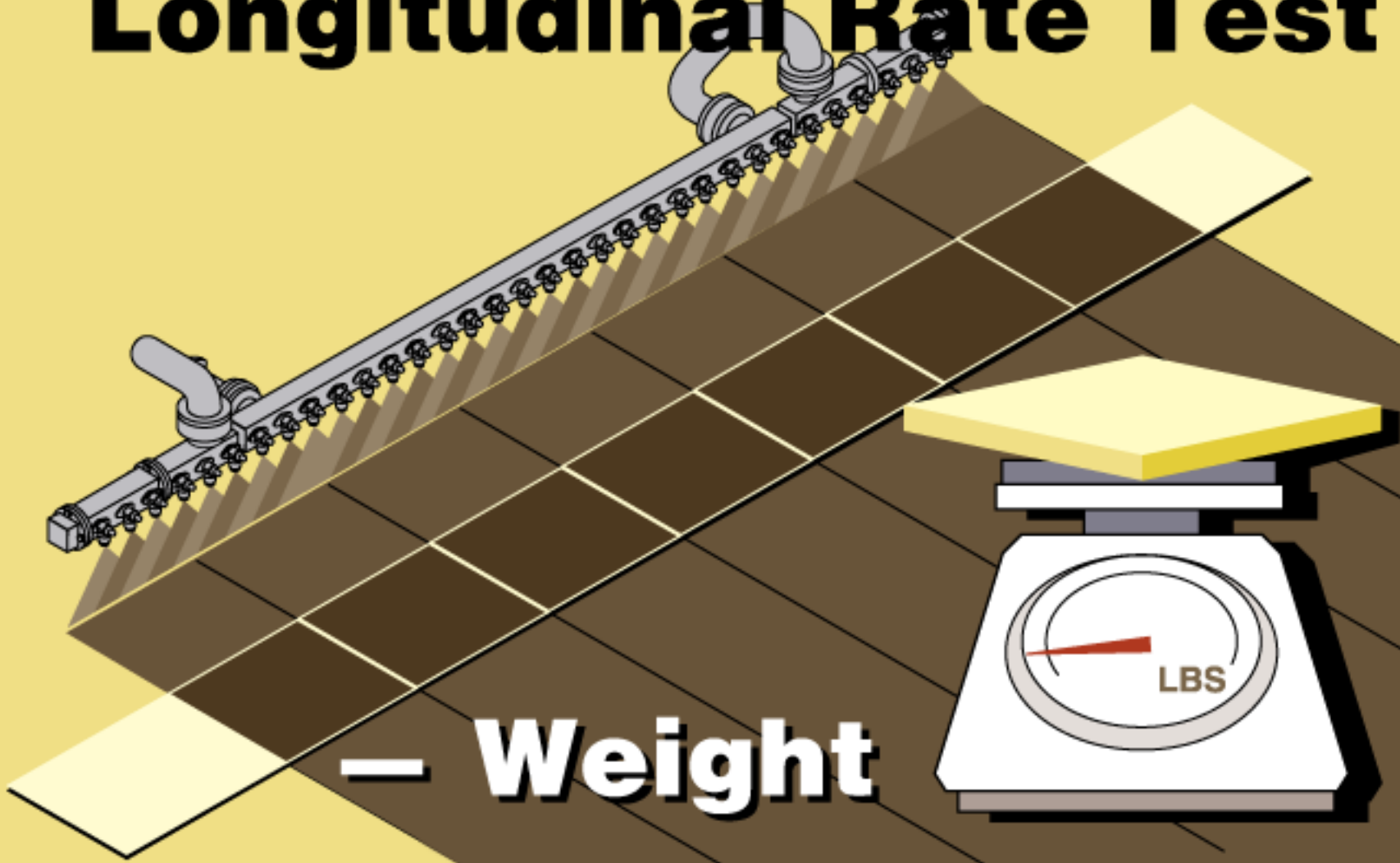
Weight



(g/y)

← # (Feet) →

Longitudinal Rate Test



— Weight

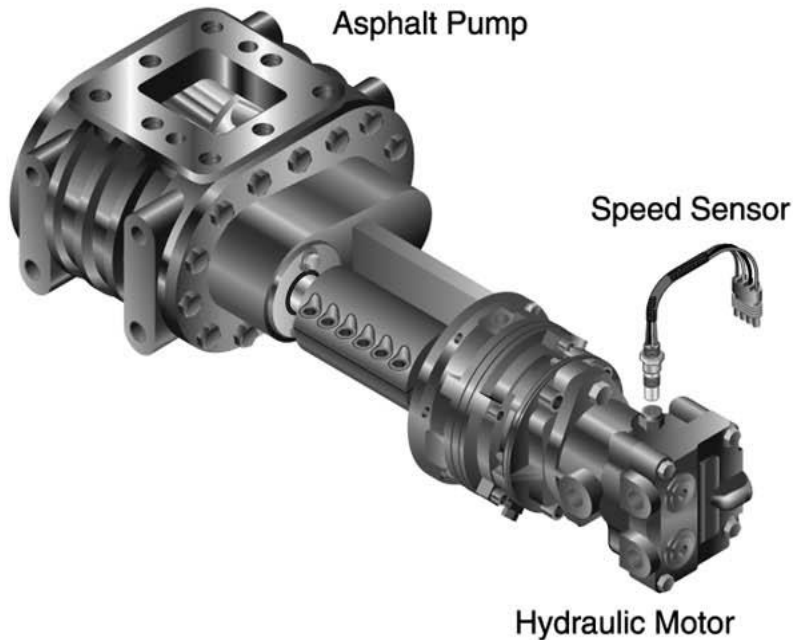


WHAT ARE WAYS TO CHECK YOUR DISTRIBUTOR CALIBRATION?



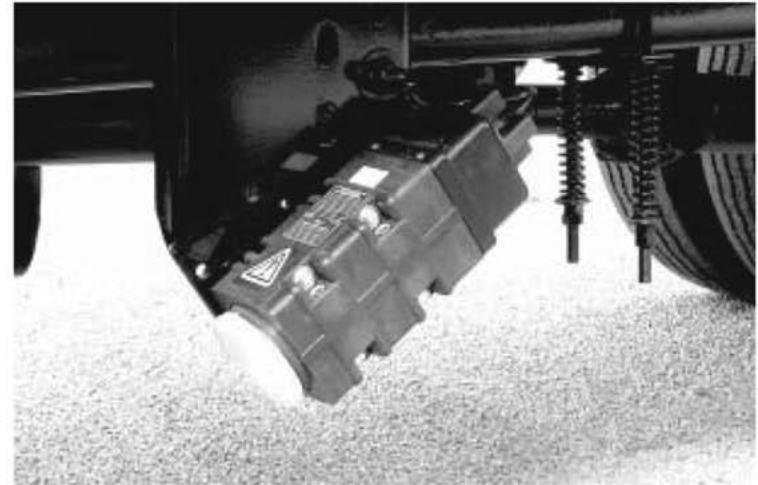
Metering and Control System continued

Magnetic Pump Speed Sensing



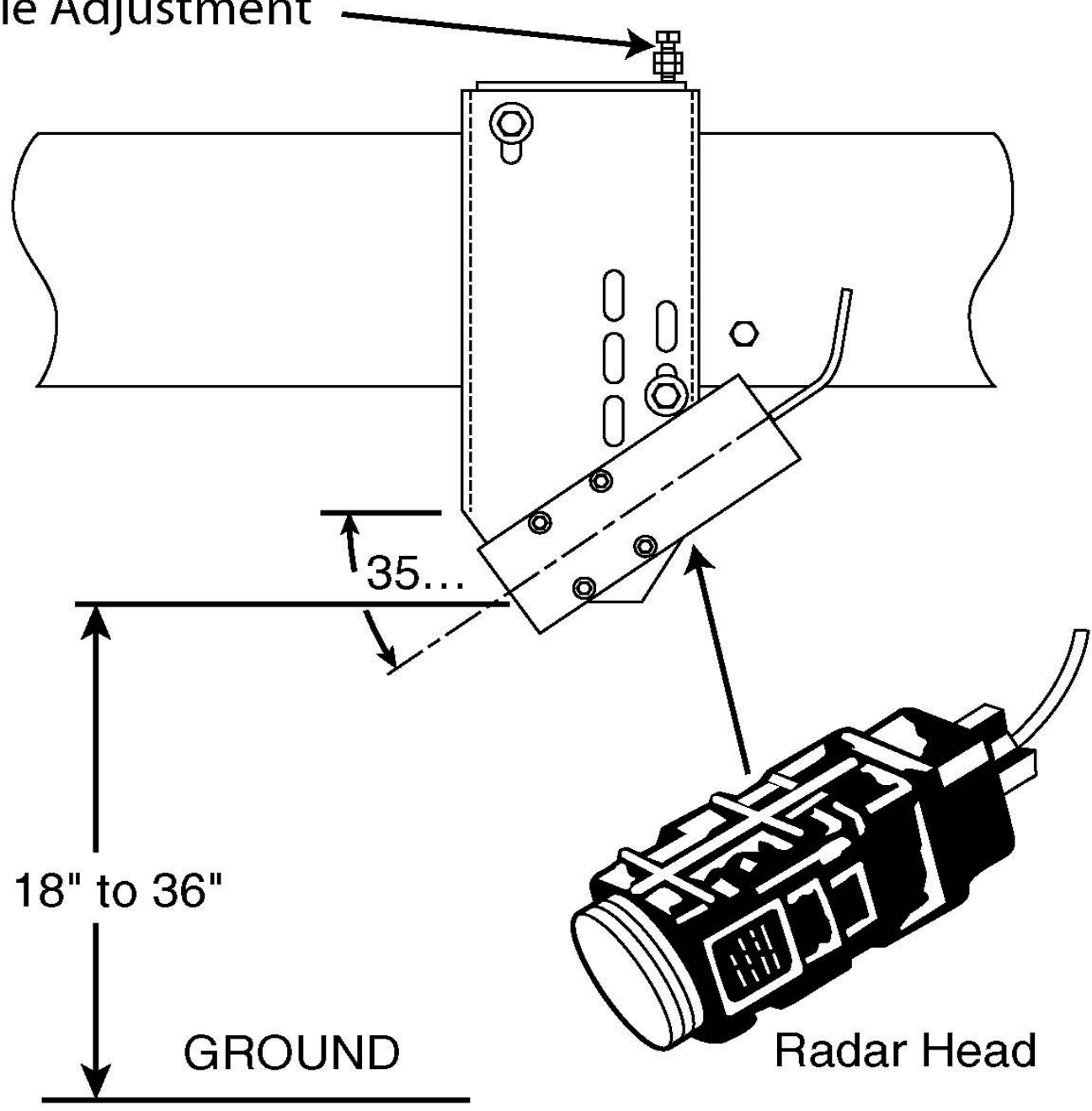
- Speed sensor pick-up counts the revolutions of the asphalt pump.
- Speed sensor is internal to the hydraulic motor.
- Pump output is displayed on an analog gage or sent directly to computer.
- Pump output is measured with Gallons Per Minute (GPM)

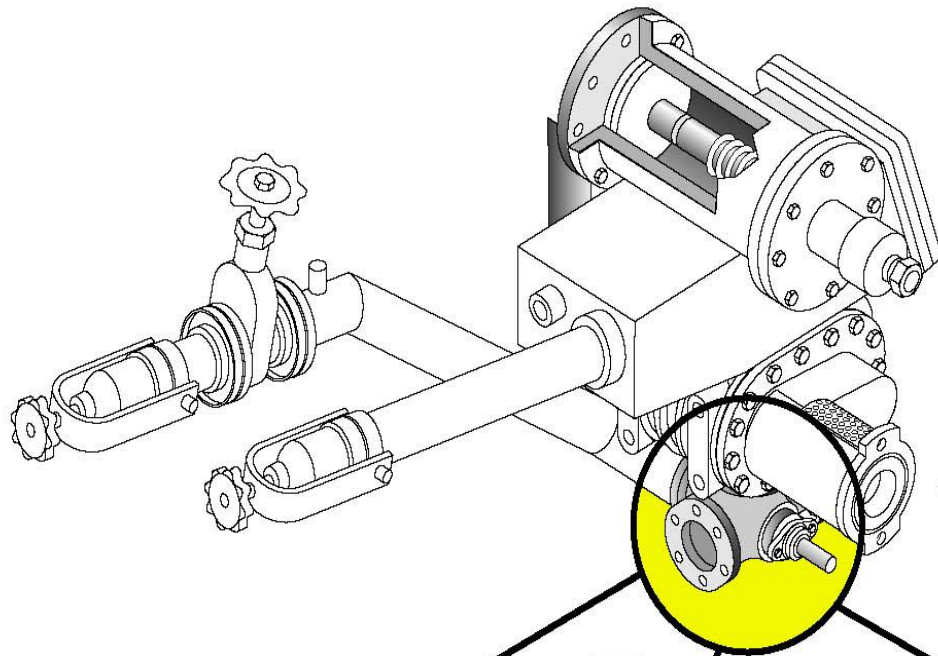
Radar Ground Speed Sensing



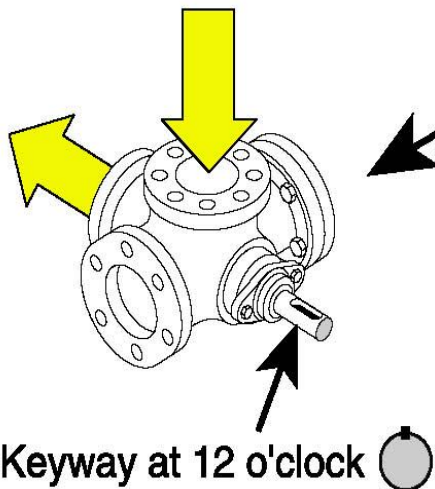
- Radar Speed sensing is **standard equipment**.
- Vehicle speed displayed on analog gauge or sent to computer.
- Precise measurement of ground speed and distance.
- No moving parts to wear out, less maintenance, and less chance of damage.
- Ground speed is measured in Feet Per Minute (FPM).

Angle Adjustment

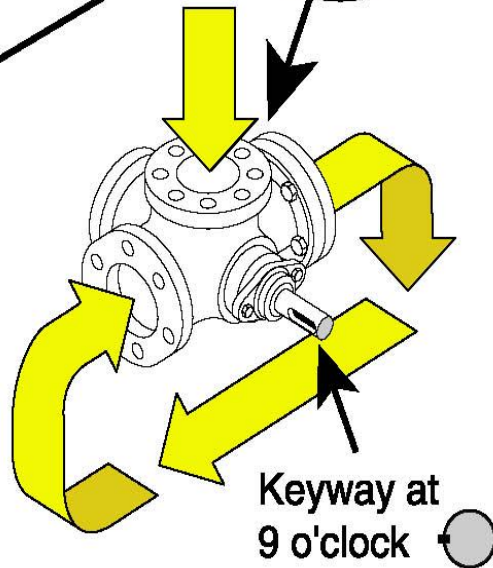




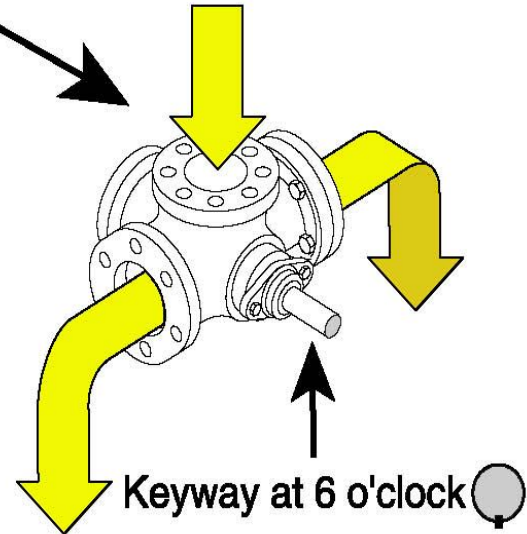
Control Valve



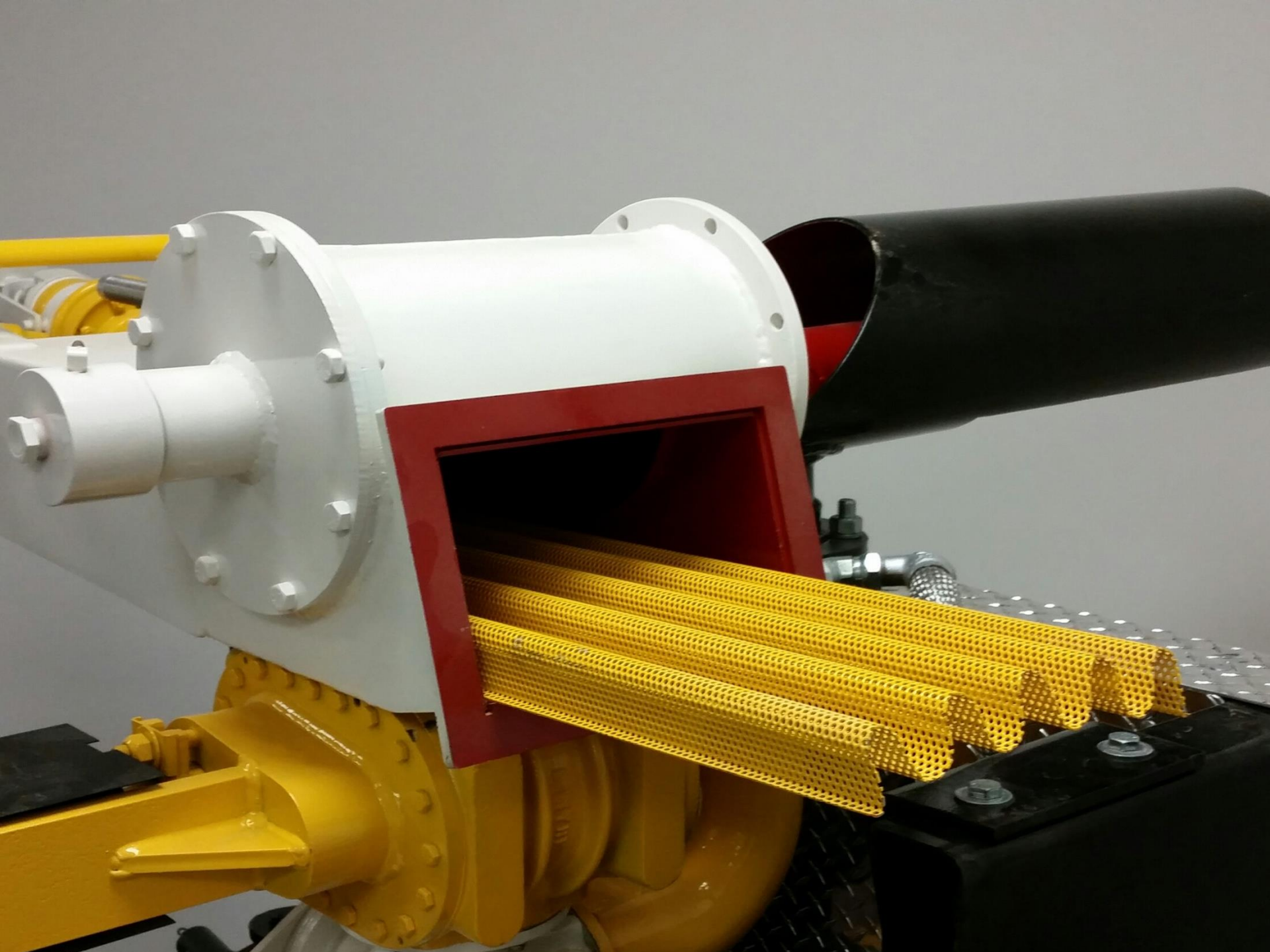
Circulate In Tank



Circulate In Bar



Spray











Distributor Strainers

with Handles

		<u>1/8" holes</u>	<u>3/16" holes</u>	<u>1/4" holes</u>
BT-1	10 3/16" x 23 3/8"	3343191	3343243	3343245
S-2000/Centennial	10 3/16" x 29 1/2"	3342860	3342898	3343221
Big Contractor Package	10 3/16" x 33 3/8"	3343193	3343195	3343247
Cone Strainer	3343190	3342667	3343285





Ref.	Part No.	Description	Application Gallons Per Square Yard	Application (Metric) Liters Per Square Meter	US Flow Gallons Per Minute Per Foot
1	3353788	V Slot Tack Nozzle 1/8" Rifle Bored	.05 - .20	.23 - 0.91	3.0 - 4.5
	3351013*	V Slot Tack Nozzle 1/16" Coin Slot	.05 - .20	.23 - 0.91	3.0 - 4.5
	3354904	V Slot Tack Nozzle 1/8" Counterbored	.05 - .20	.23 - 0.91	3.0 - 4.5
2	3351008	S36-4 V Slot	.10 - .35	.45 - 1.58	4.0 to 7.5
3	3351009	S36-5 V Slot	.18 - .45	.81 - 2.04	7.0 to 10.0
4	3352368	Multi-Material V Slot	.15 - .40	.68 - 1.81	6.0 to 9.0
5	3351015	3/32" Coin Slot	.15 - .40	.68 - 1.81	6.0 to 9.0
6	3352204	Multi-Material V Slot	.35 - .95	1.58 - 4.30	12.0 to 21.0
7	3355154	End Nozzle (use with 3352204 nozzle)	.35 - .95	1.58 - 4.30	12.0 to 21.0
8	3352205	Multi-Material V Slot	.20 - .55	.91 - 2.49	7.5 to 12.0
9	3352210	End Nozzle (use with 3352205 nozzle)	.20 - .55	.91 - 2.49	7.5 to 12.0
10	3351014	3/16" Coin Slot	.35 - .95	1.58 - 4.30	12.0 to 21.0
11	3351010	1/4" Coin Slot	.40 - 1.10	1.81 - 4.98	15.0 to 24.0

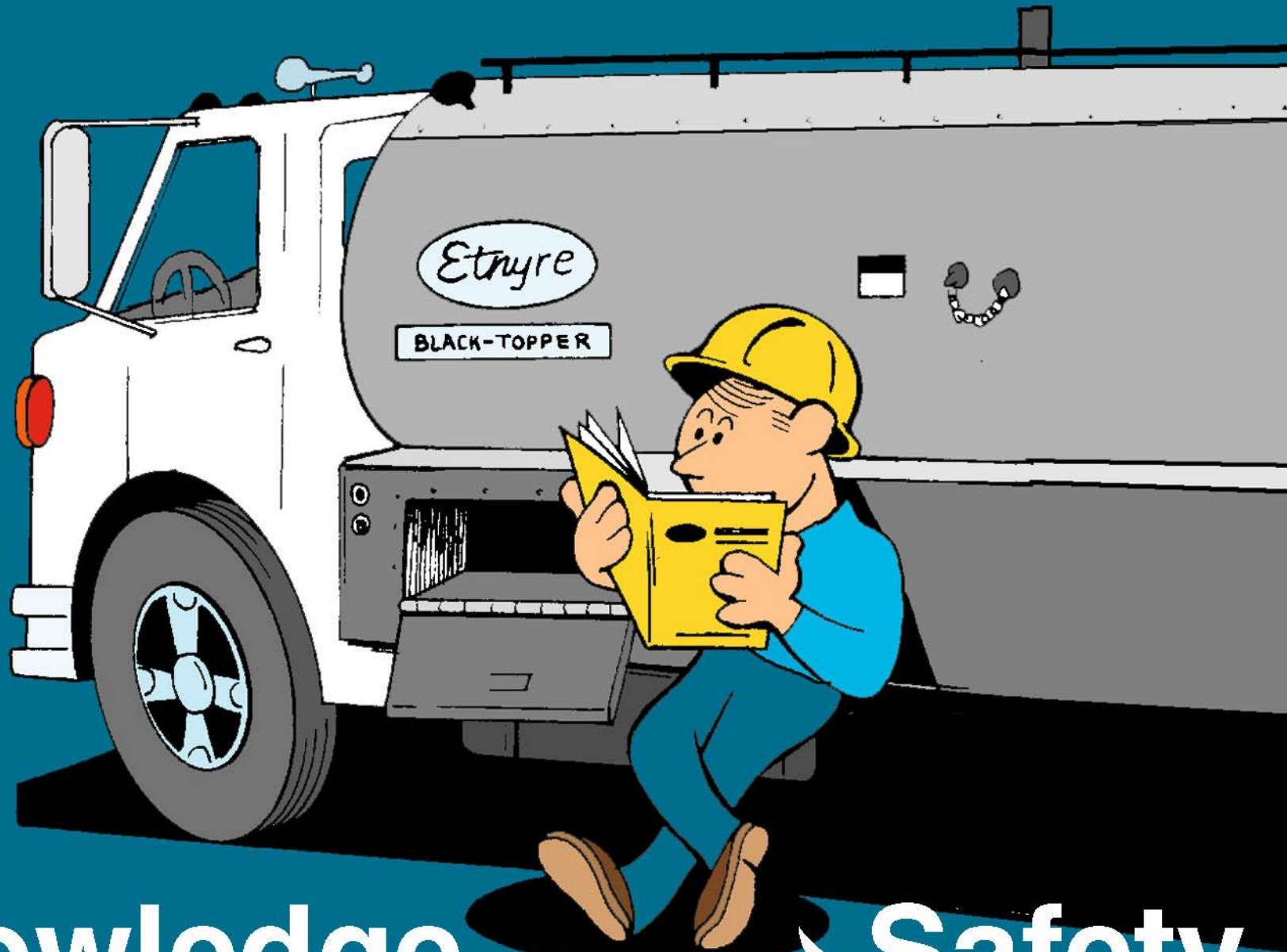
* Special Order

THINGS TO REMEMBER

- NOZZLE SIZE
- 4-WAY VALVE TIMING
- RADAR
- STRAINER
- HYDRAULICS
- PUMP SENSOR

Distributor





Knowledge → **Safety**



Let's talk about
Chipspreaders

Chip Spreaders







Chip Spreader



CHIPSREADER

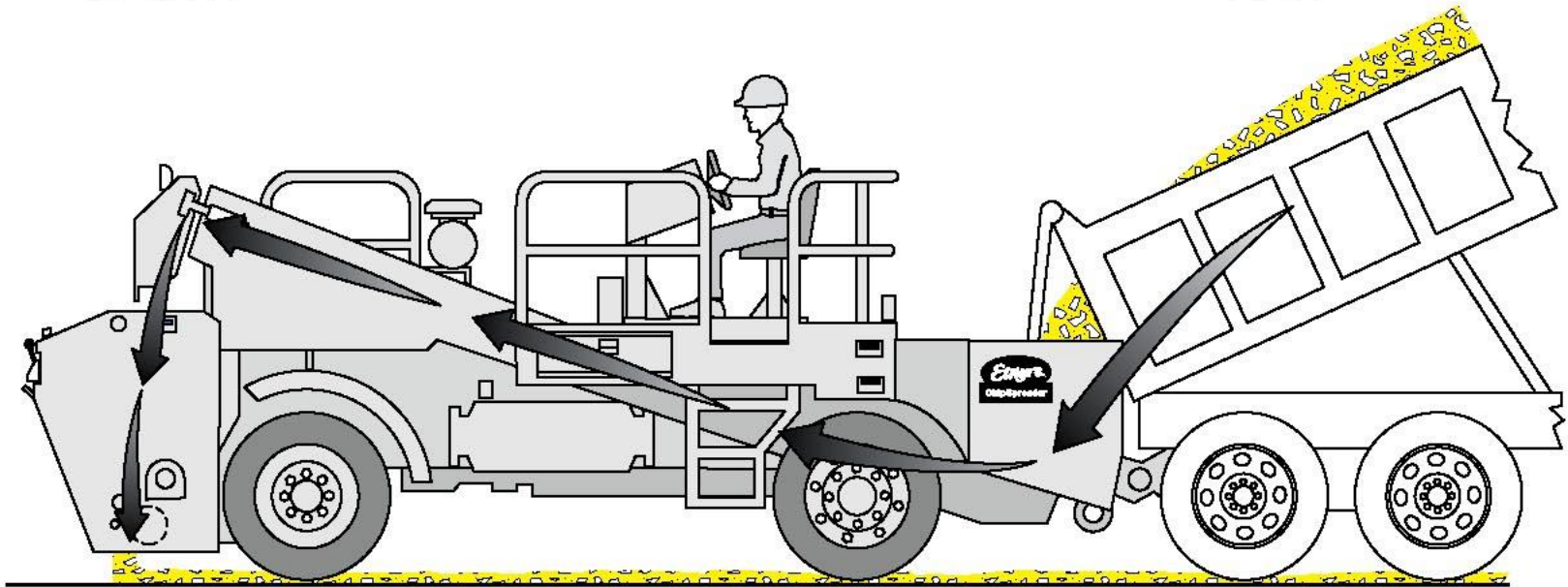
- APPLY COVER AGGREGATE OVER SEAL
- APPLY UNIFORM APPLICATION
- SAVES MONEY ON AGGREGATE
- INCREASE PRODUCTION

Here's how the ChipSpreader works

**Rock
Out**

**Control
Position**

**Rock
In**



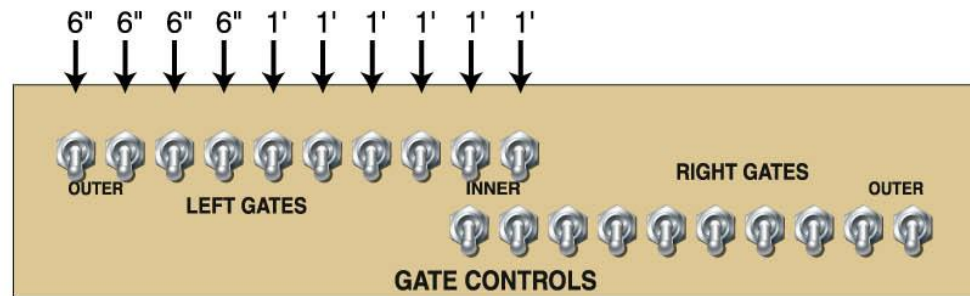
CHPSREADER COMPONENTS

- POWER TRAIN OR TRACTOR
- FRONT SPREAD HOPPER
- REAR RECEIVING HOPPER
- CONVEYOR BELTS
- CONTROLS

K 1' Power Gates on Fixed Width Hopper



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

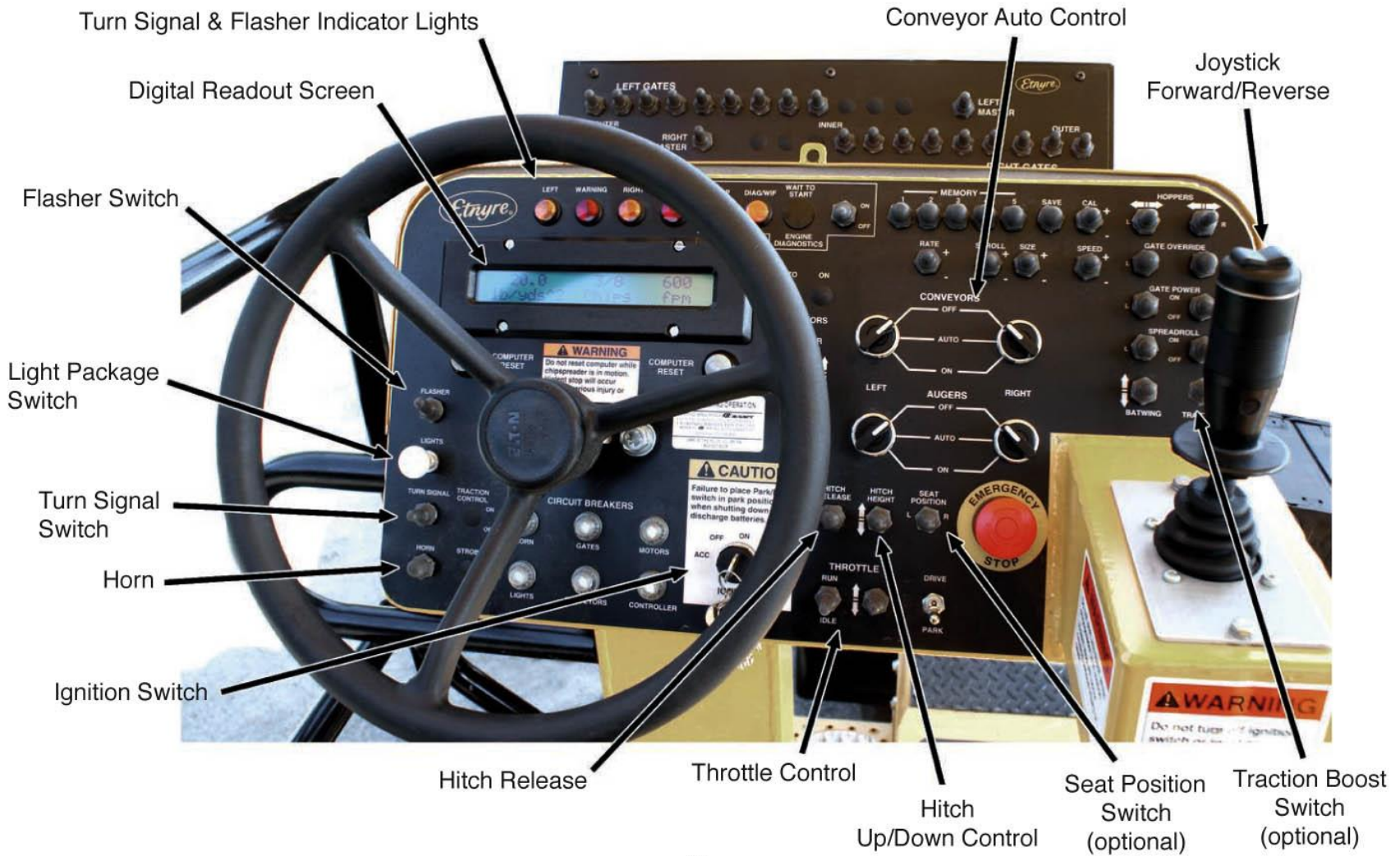






5 Controls / Instrumentation

A Driver / Operator Control Panel:



CHIPSREADER CALIBRATION

- GATE OPENING
- COMPUTER SETTINGS
- CONVEYOR SPEEDS
- AUGER SPEEDS
- TIRE PRESSURE



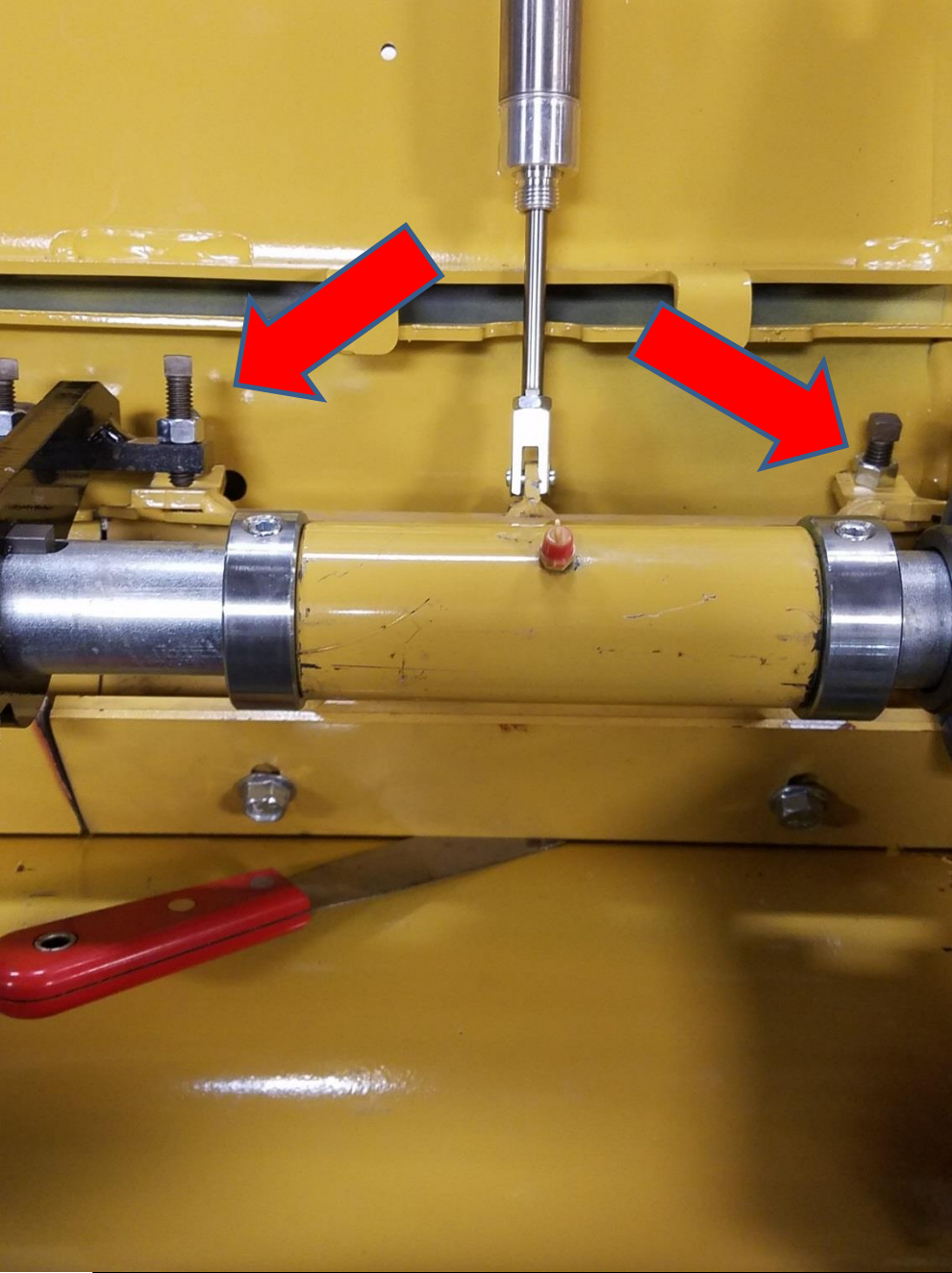
First step in calibration is to make sure the spread hopper gates are set correctly

Incorrect





correct





E. D. Etnyre & Co.













LB

0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50

Chip Spreader

Tire Pressure

Will Bounce

**If Pressure To
High**

(Rub Board)

Gate Opening

**Calibrating
Rate**



Success Is Insured With Teamwork!

- Teamwork Is the
Difference Between
Success and Failure

NOT MY JOB!



Thank You

- We are just a phone call away, have a question or problems let us know.
 - E.D. Etnyre
 - 800-995-2116
 - Etnyre.com
- Brian Horner
815-977-1663



E. D. Etnyre & Co.

