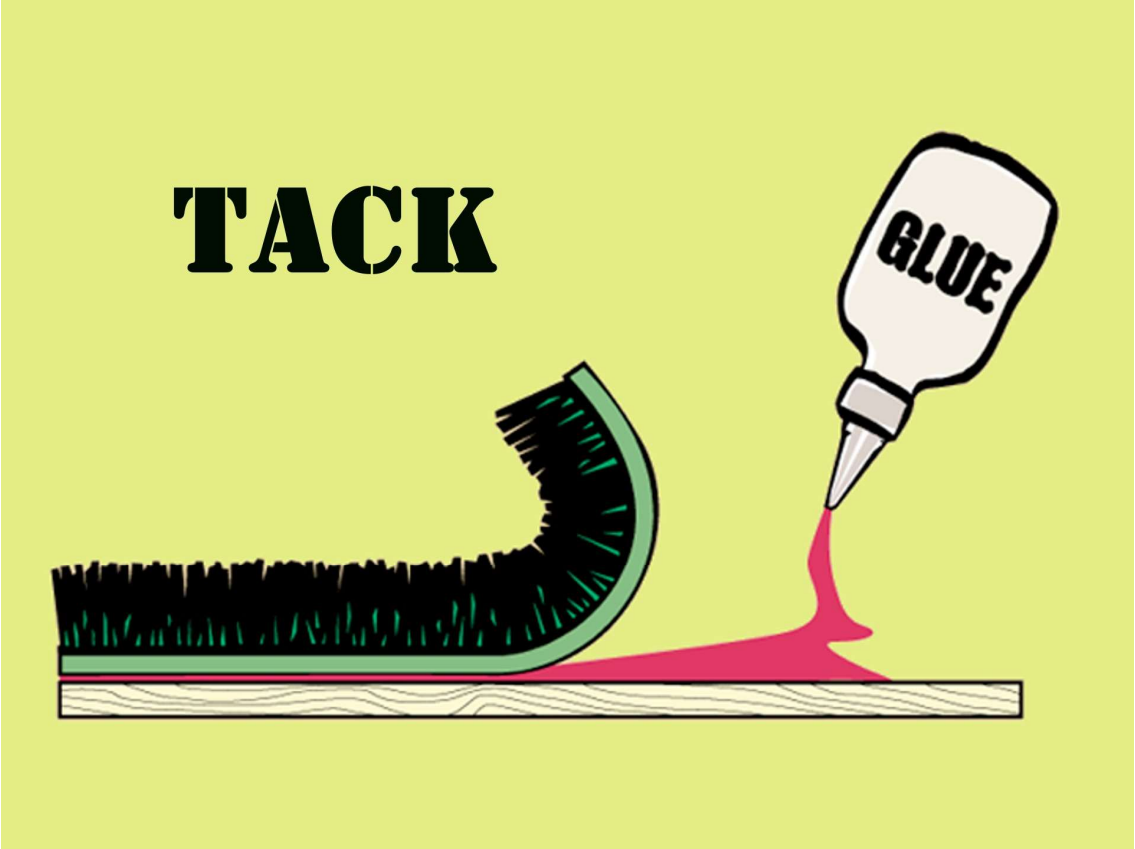
Tack Coat

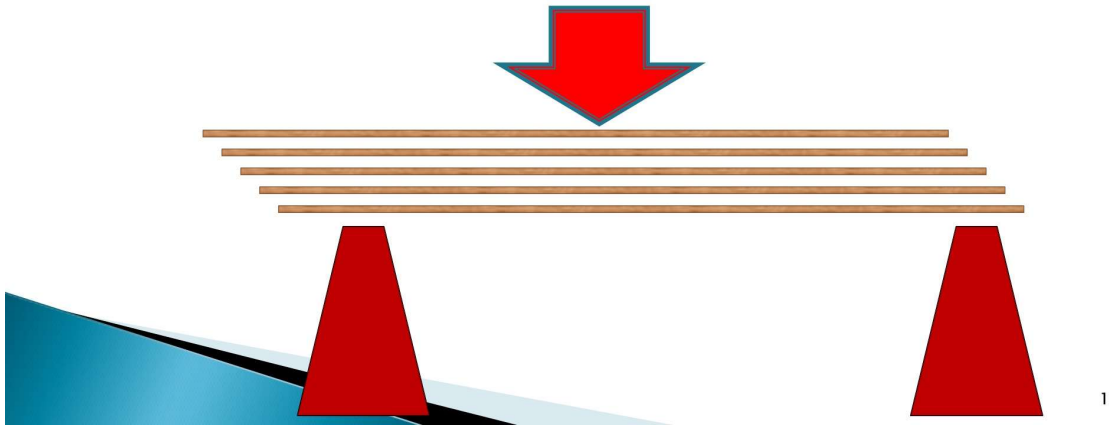
Problems & Solutions

Let’s Talk Tack

Why do we use tack?


TACK
GLUE

Materials are stronger when glued together….less slippage also



Types of Tack Coat Failures

Delamination of overlay from underlying pavement

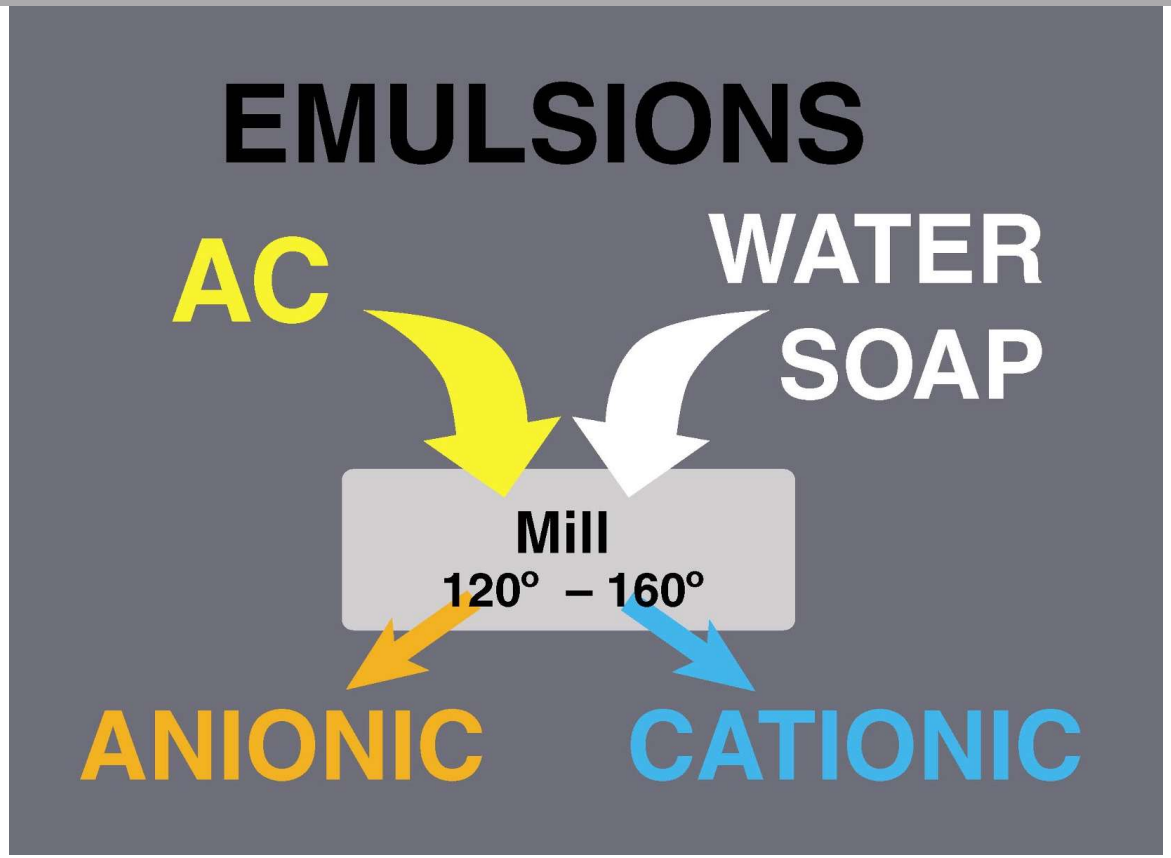
Slippage Failure


FRESH
OIL

Let’s look at the products used for tack.

- 1. Emulsion
- 2. Non-tracking
- 3. Hot applied.

So what are emulsions?


EMULSIONS
AC
WATER
SOAP
Mill
120° – 160°
ANIONIC
CATIONIC

EMULSIONS

- CRS-1
- CRS-2
- CRS-1H
- CSS-1H
- CMS-2
- SS-1
- SS-1H
- SS-1HP

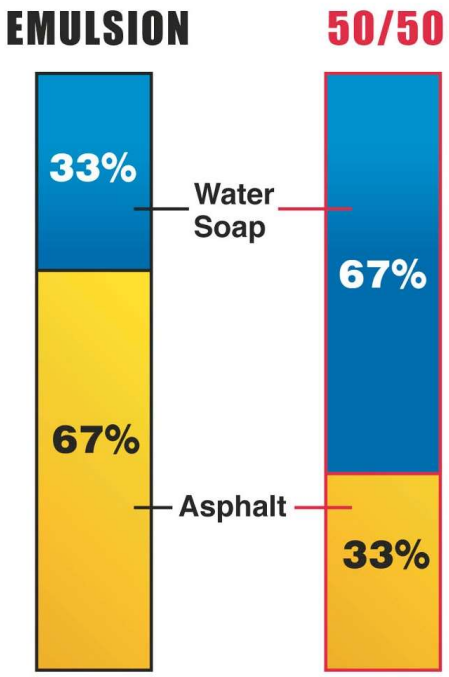
Remember – it is all about the **residual asphalt**

What amount of asphalt or “glue” that remains on the surface prior to hot mix.

Calculation of Application Rate for Emulsion

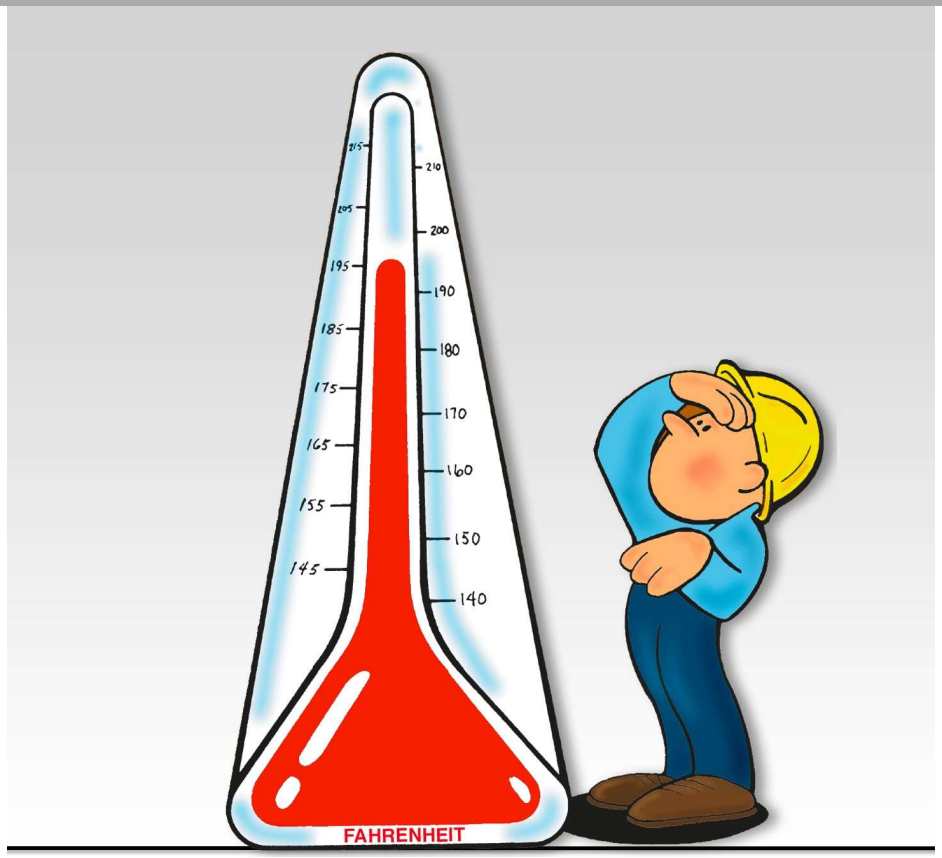
Based on a ration of 2/3rds Asphalt and 1/3rds water; the required application amount of asphalt binder in an asphalt emulsion will be 1.5 times greater than the residual amount.

Application Rate = 1.5 x Desire Residual Asphalt



SHOT RATE		RESIDUAL
0.05	=	0.034
0.075	=	0.05
0.05	=	0.017
0.15	=	0.05


ACME
Asphalt Co.
Recommended
Temperature:


215
210
205
200
195
190
185
180
175
170
165
160
155
150
145
140
FAHRENHEIT

Example of Emulsion Break

Unbroken Emulsion

After Breaking

Non-Tracking Tack

Very similar to the emulsions we just talked about, but need some special care and handling.

Keep Circulated
Keep Hot
Short Shelf Life
Larger Strainer
Do Not Dilute

Non-Tracking Tack - DO

- Store the product in a tank that can be circulated or gently agitated at least once per week
- Store the product at the recommended temperature of 50ºF to 110ºF
- Clear paving surfaces of dust and dirt immediately before application
- Ensure the product application temperature is 160ºF to 180ºF
- Apply product to D.O.T. specifications, within a range of 0.06 to 0.10 gal/yd2 while ensuring FULL coverage
- Allow the product to BREAK, DRY, and SET prior to permitting any vehicles on the surface (typically 15 to 30 mins. under normal paving conditions.)
- Follow safety procedures and wear personal protective equipment (PPE).

Non-Tracking Tack – DON'T

- Contaminate the product with diesel fuel or other solvents
- Contaminate the product with ionic products of opposite charge
- Dilute the product for tack coat operations
- Allow the product to freeze, or drop below a temperature of 45ºF
- Allow the product to boil, or rise to a temperature of 180ºF
- Heat the product without gentle agitation or circulation
- Store the product for more than 1 week without agitation
- Use the product after 4 weeks of storage
- Apply product when raining, or to a wet surface
- Apply product to dusty or dirty surfaces
- Apply the product to surfaces that are extremely hot (over 150ºF)
- Apply the product at a rate exceeding 0.10 gal/yd2

Things to Keep in Mind

1. KEEP AT A CONSISTENT TEMP
2. DO NOT OVER-CIRCULATE
3. USE TACK AND GET FRESH AS OFTEN AS POSSIBLE
4. SUCK BACK SPRAY SYSTEM
5. MINIMIZE DIESEL USEAGE WHEN FLUSHING

Hot Applied Tack

- Various Types
- 265ºF to 400ºF
- Use caution when handling due to temperature
- Use caution when switching products in tank

What about application?

Successful Tack Coat

The Ultimate Goal: Uniform, complete, and adequate coverage

Construction Issues

Uniformity of the Tack Coat Application

Non-Uniform Application

Uniform, proper application

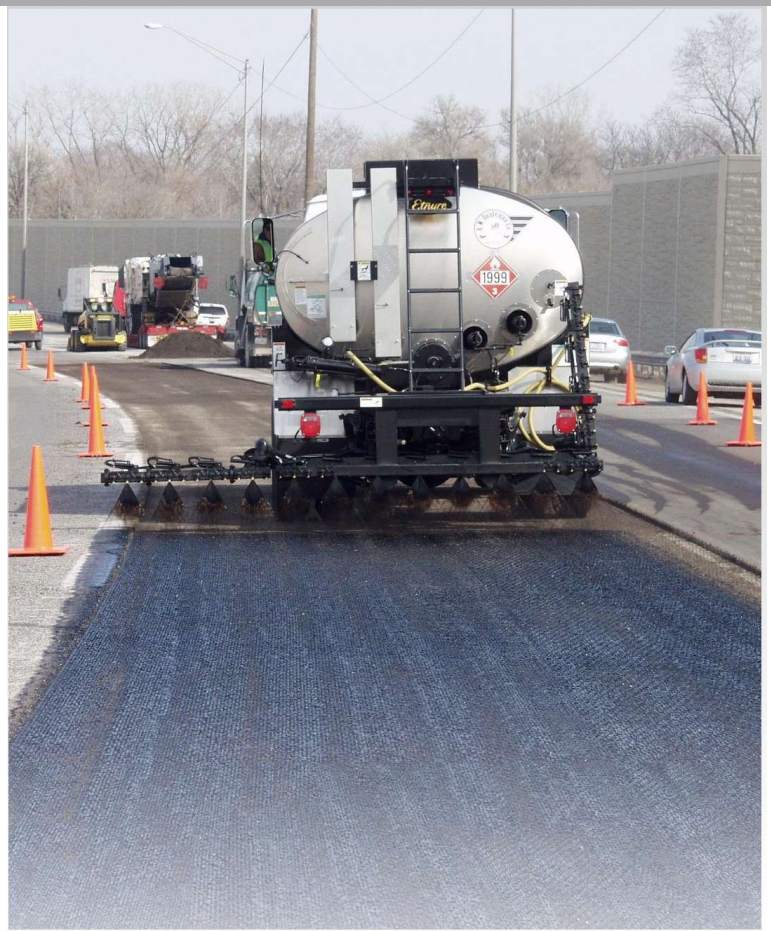
Construction Issues

Uniformity of the Tack Coat Application

Tack application with blocked nozzles AND no overlap of nozzle spray fan

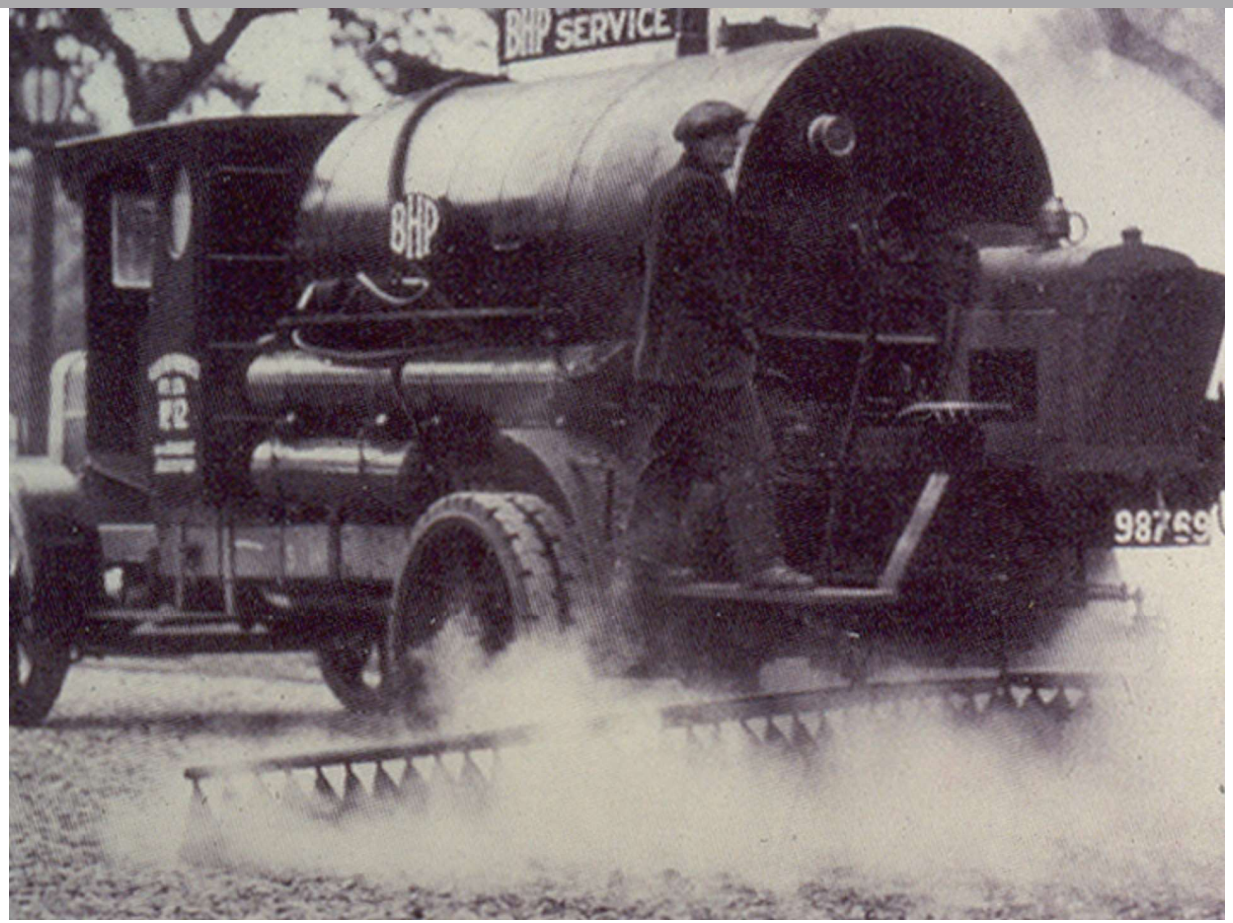
Nozzles may be too large


OLD RIDGE RD
AMERIFIRST


Etnyre
1999


2012/08/28 05:24

Let’s talk about the equipment.


BHP SERVICE
BHP

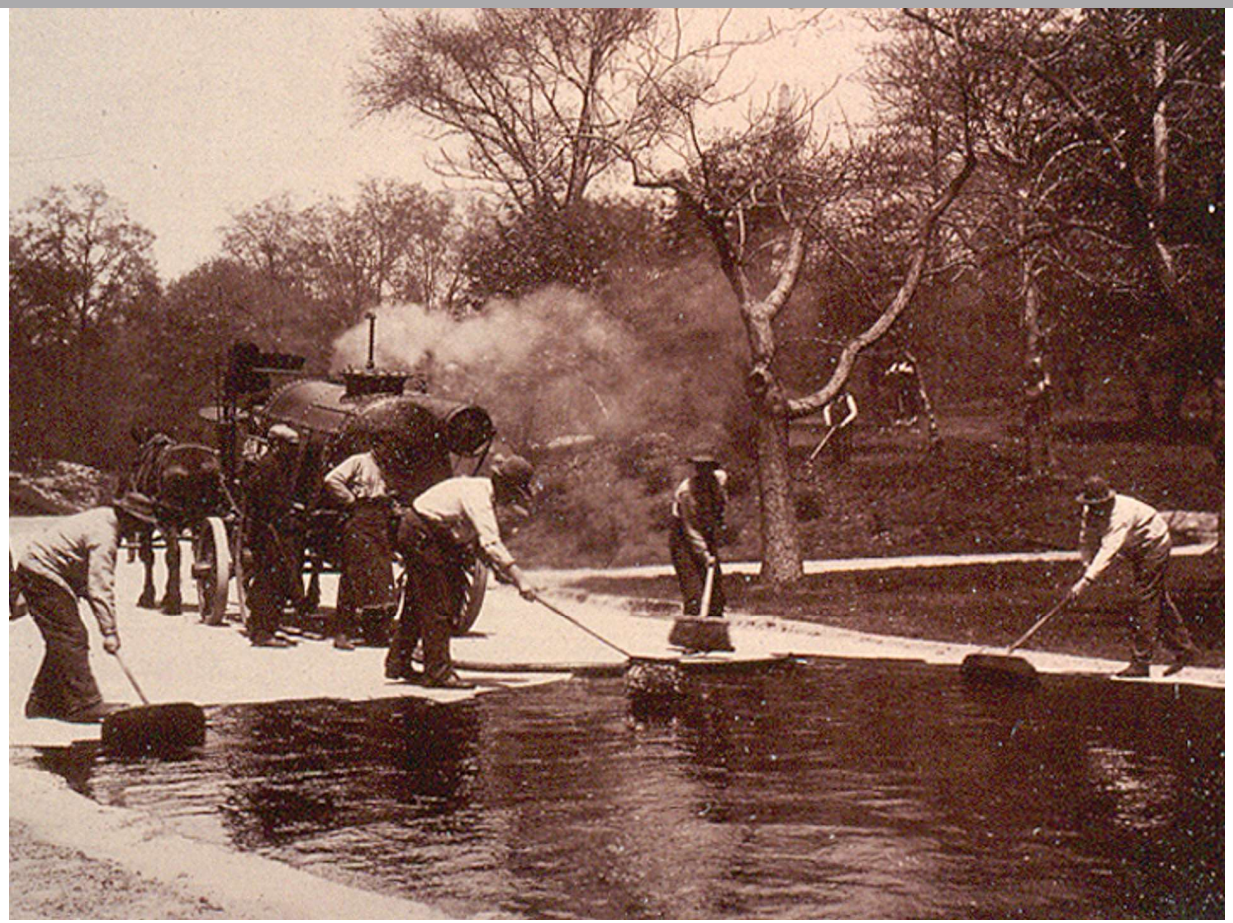
Basic Functions

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

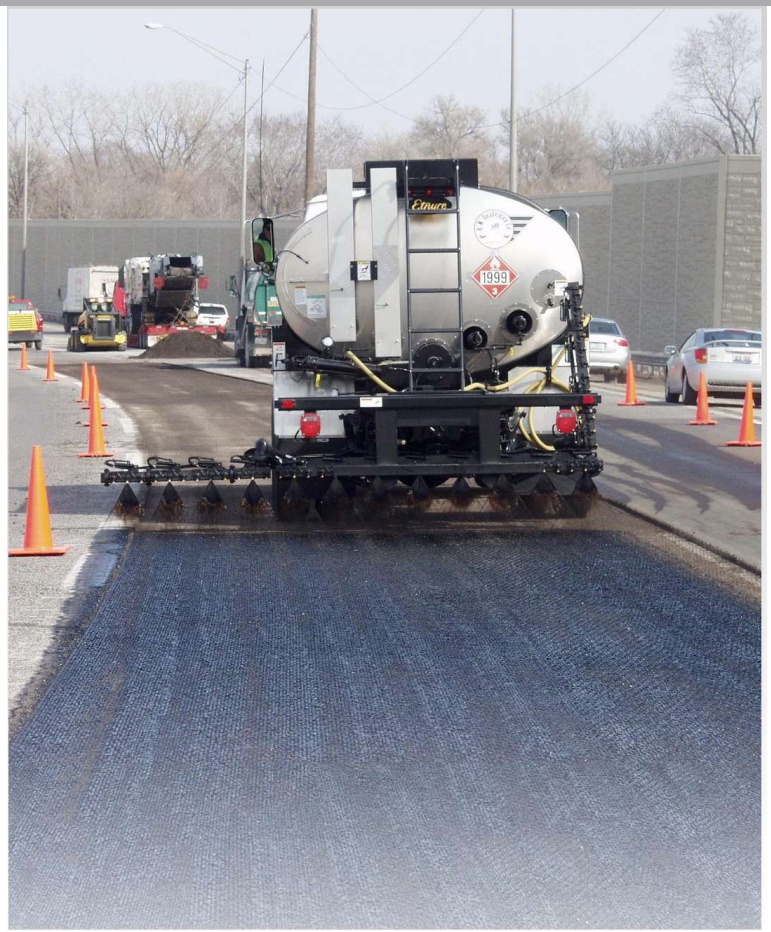
Metering System

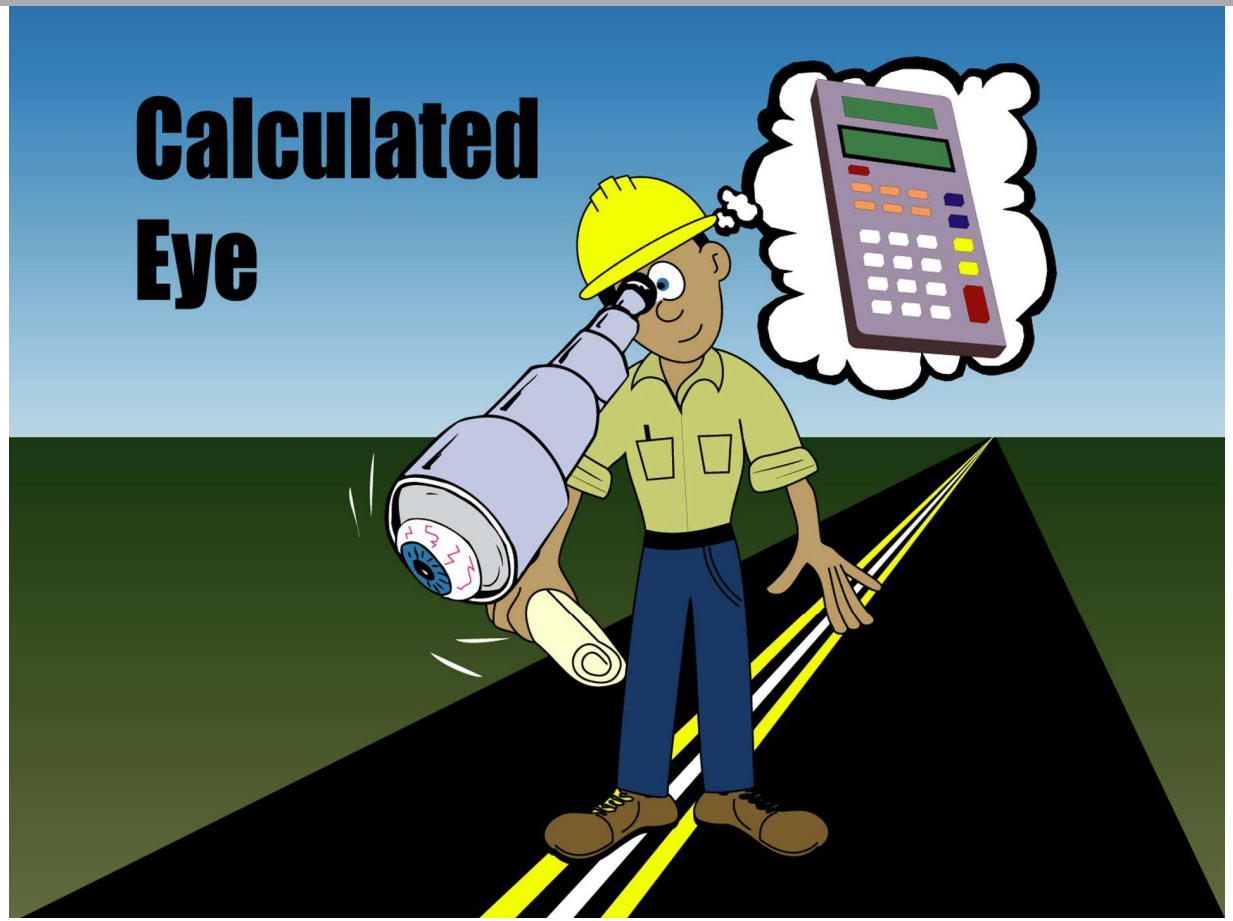
Four important features to keep in mind.

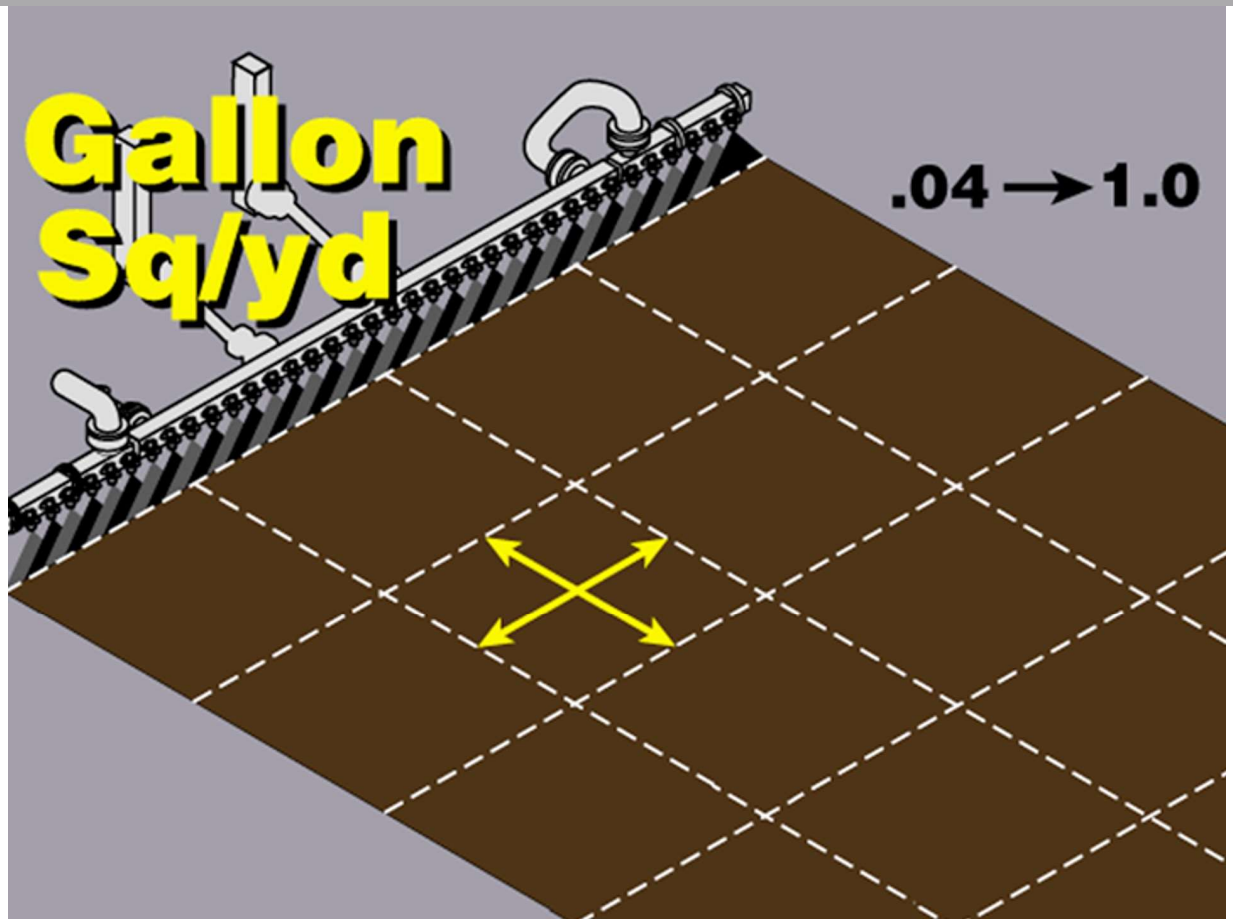
1. Desired application rate – gallon/sq. yard
2. Forward ground speed – feet per minute
3. Width of spray bar – feet
4. Asphalt pump output – gallons/minute

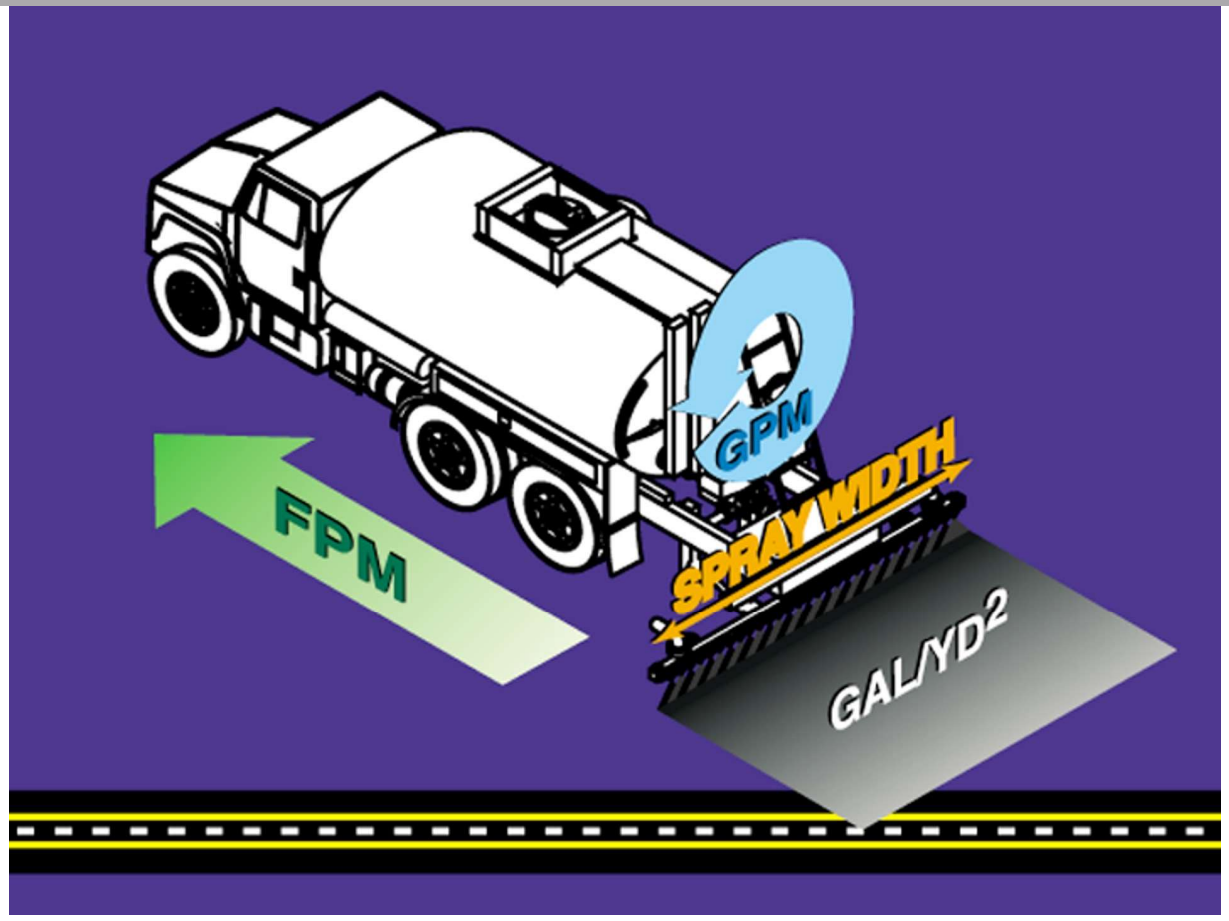


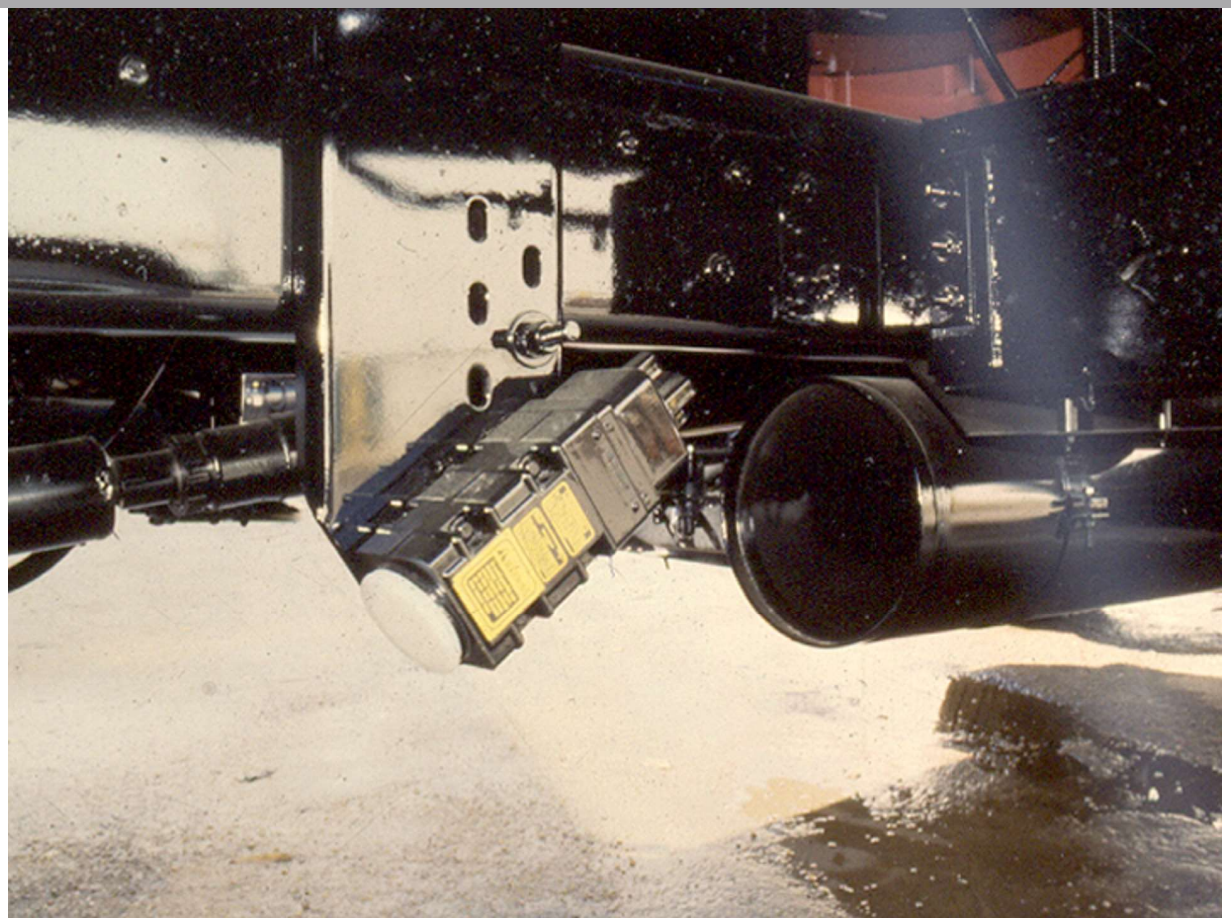

PBB 7412

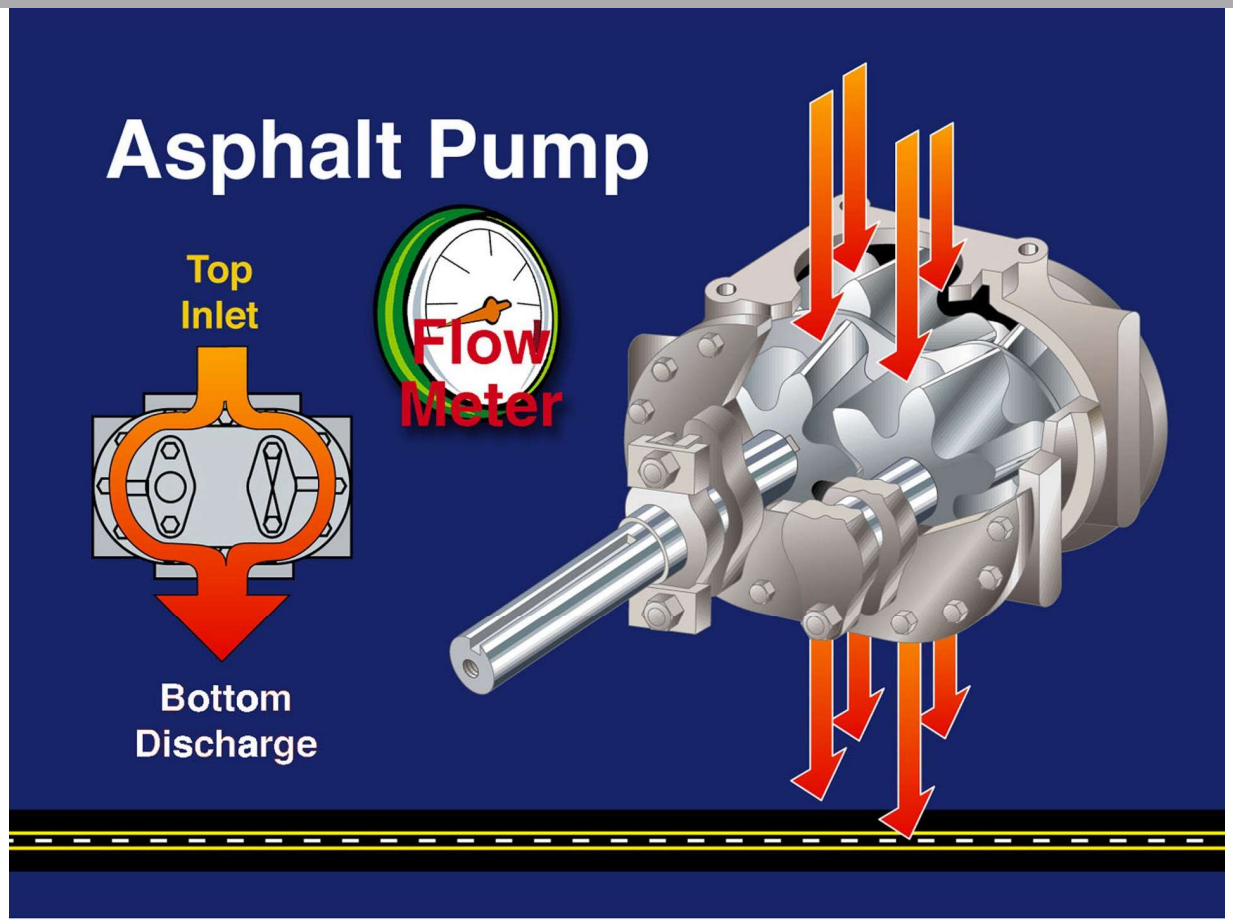

Etnyre
1999


Calculated
Eye


Gallon
Sq/yd
.04 → 1.0


GPM
SPRAY WIDTH
FPM
GAL/YD2



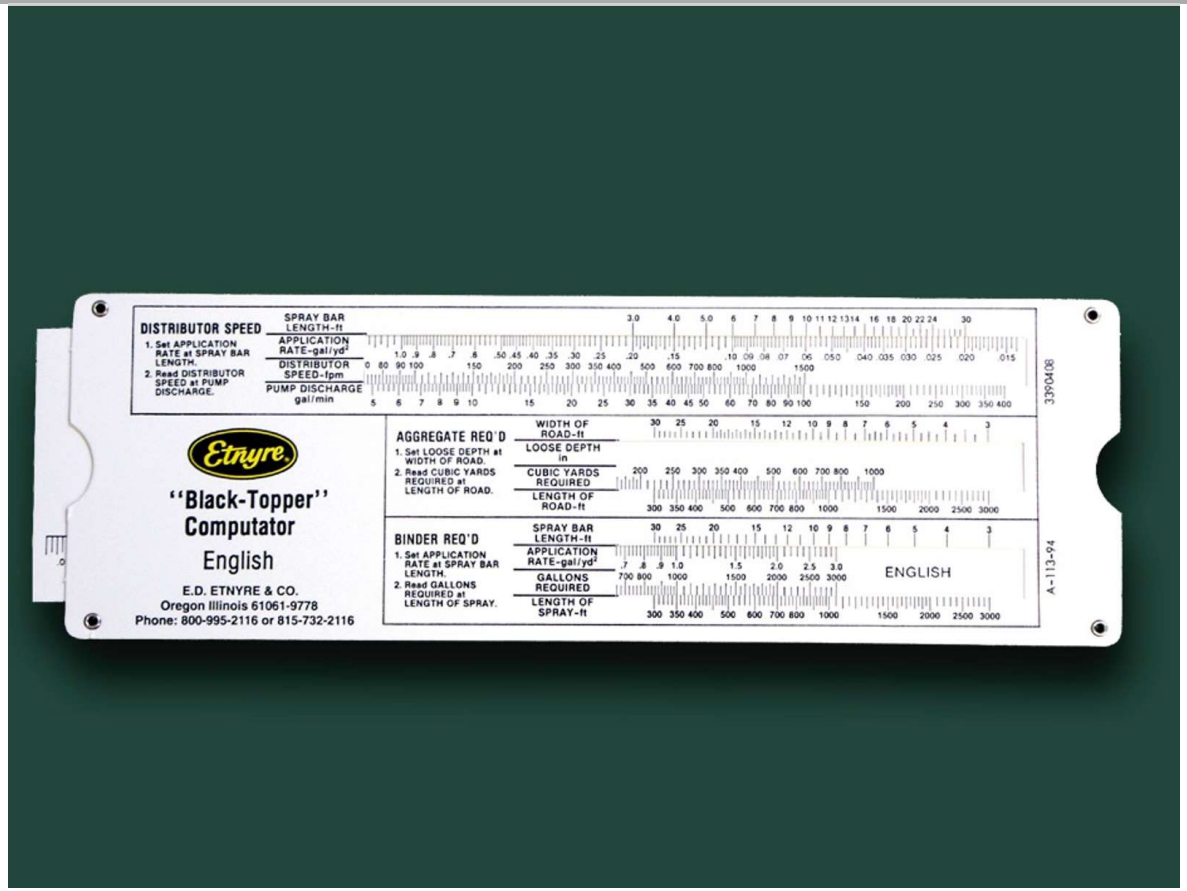

Asphalt Pump
Top
Inlet
Flow
Meter
Bottom
Discharge

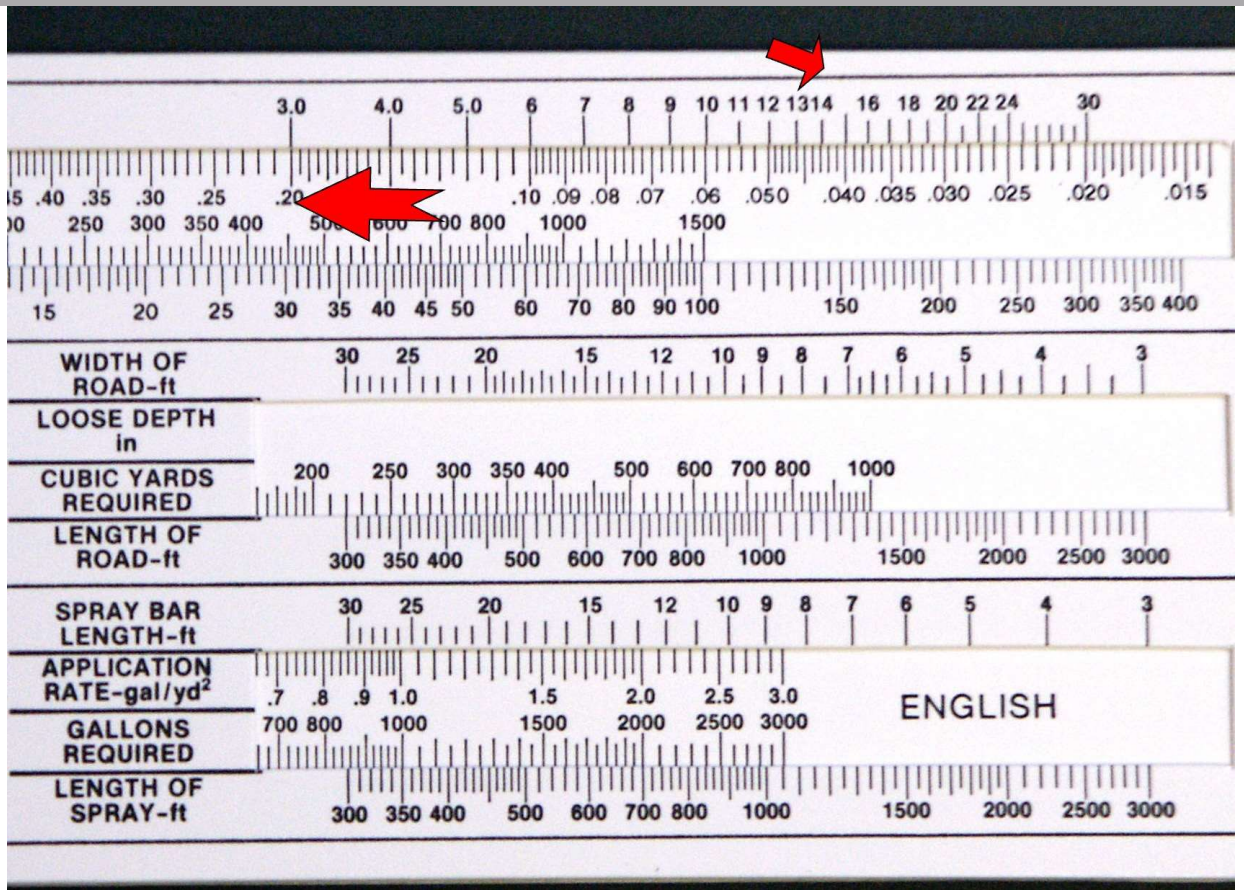

FPM
GPM


.300 GAL/YD2
300 FPM 120 GPM
SPRAYBAR
POWER
MEMORY
MAIN BAR
HYD OIL
TEMP
BAR
CENTERED
PTO
LOW TANK LEVEL
LEFT WING
RIGHT WING
MARKER
WING FOLD
FRONT
REAR
LIFT
OFF
BAR LATCH
SUCKBACK
LOW HYD MOTOR


SPRAY
ON
OFF
MARKER
AUTO
OFF
ON
12 11 10 9 8 7 6 5 4 3 2 1
ON
OFF
1 2 3 4 5 6 7 8 9 10 11 12
MARKER
AUTO
OFF
ON
Etnyre
SHIFT
LEFT BAR
RIGHT BAR
LIFT
BAR
LATCH
UNLATCH
WING FOLD
0 FPM 8-0 FT-IN
A 186 GPM 0.400 G/SQYD
POWER
ON
OFF
TANK VALVE
FRONT
REAR
SUCKBACK OVERRIDE
ON
OFF
START
CLEAR
MESSAGE
SELECT
VALUE
APPLICATION RATE MEMORIES
1 2 3 4 5 1-5
6 7 8 9 10 6-10
3361858


SHIFT
LEFT BAR
RIGHT BAR
LIFT
BAR
LATCH
UNLATCH
WING FOLD
CLEAR
MESSAGE
0 FPM 8-0 FT-IN
A 187 GPM 0.400 G/SQYD
EMERGENCY
UPPER BURNER
ON
OFF
TIMER
LOWER BURNER
RESET
WASH PUMP
SELECT
PUMP CONTROL
START
MANUAL
AUTO
PUMP SPEED
VALUE
WORK LIGHTS
Etnyre
3361859


DISTRIBUTOR SPEED
1. Set APPLICATION RATE at SPRAY BAR LENGTH.
2. Read DISTRIBUTOR SPEED at PUMP DISCHARGE.
SPRAY BAR LENGTH-ft
APPLICATION RATE-gal/yd²
DISTRIBUTOR SPEED-fpm
PUMP DISCHARGE gal/min
3390408
Etnyre
"Black-Topper" Computator
English
E.D. ETNYRE & CO.
Oregon Illinois 61061-9778
Phone: 800-995-2116 or 815-732-2116
AGGREGATE REQ'D
1. Set LOOSE DEPTH at WIDTH OF ROAD.
2. Read CUBIC YARDS REQUIRED at LENGTH OF ROAD.
WIDTH OF ROAD-ft
LOOSE DEPTH in
CUBIC YARDS REQUIRED
LENGTH OF ROAD-ft
BINDER REQ'D
1. Set APPLICATION RATE at SPRAY BAR LENGTH.
2. Read GALLONS REQUIRED at LENGTH OF SPRAY.
SPRAY BAR LENGTH-ft
APPLICATION RATE-gal/yd²
GALLONS REQUIRED
LENGTH OF SPRAY-ft
ENGLISH
A-113-94


WIDTH OF ROAD-ft
LOOSE DEPTH in
CUBIC YARDS REQUIRED
LENGTH OF ROAD-ft
SPRAY BAR LENGTH-ft
APPLICATION RATE-gal/yd²
GALLONS REQUIRED
LENGTH OF SPRAY-ft
ENGLISH

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Etnyre Asphalt Computator App

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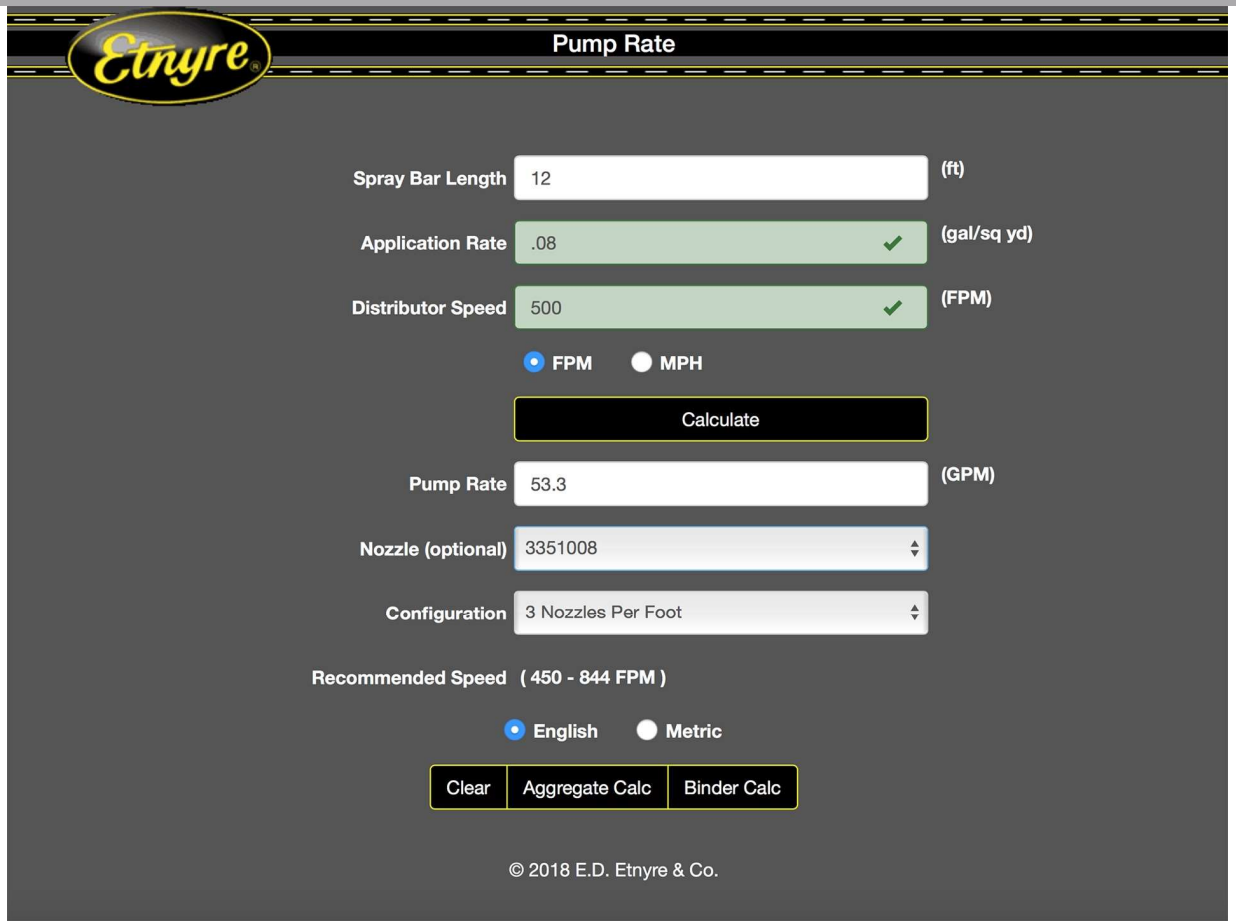
Free


Etnyre
Pump Rate
Spray Bar Length
12
(ft)
Application Rate
.08
(gal/sq yd)
Distributor Speed
500
(FPM)
FPM
MPH
Calculate
Pump Rate
53.3
(GPM)
Nozzle (optional)
3351008
Configuration
3 Nozzles Per Foot
Recommended Speed (450 - 844 FPM)
English
Metric
Clear
Aggregate Calc
Binder Calc
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Asphalt Distributor Nozzle Range Indicator

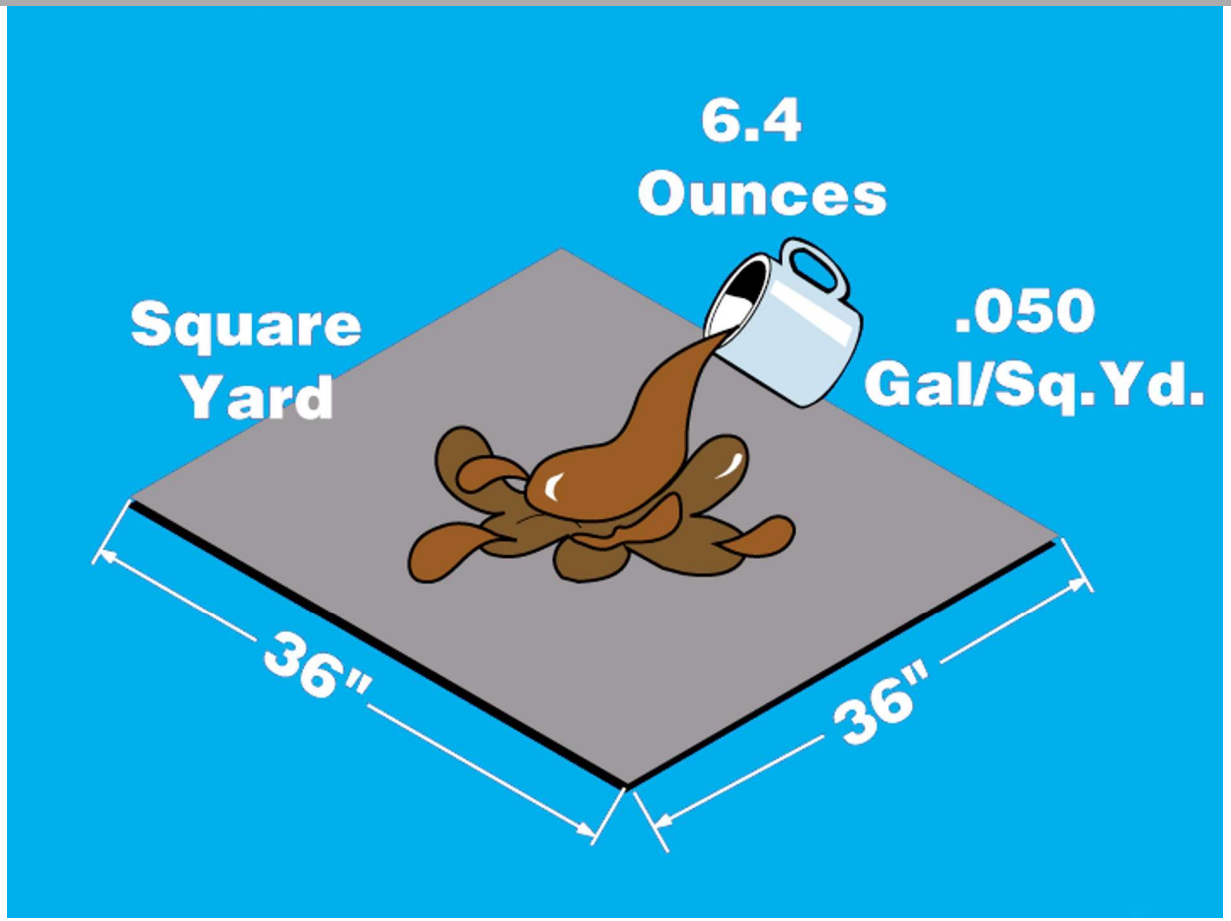
FOR NEW AND RETROFIT

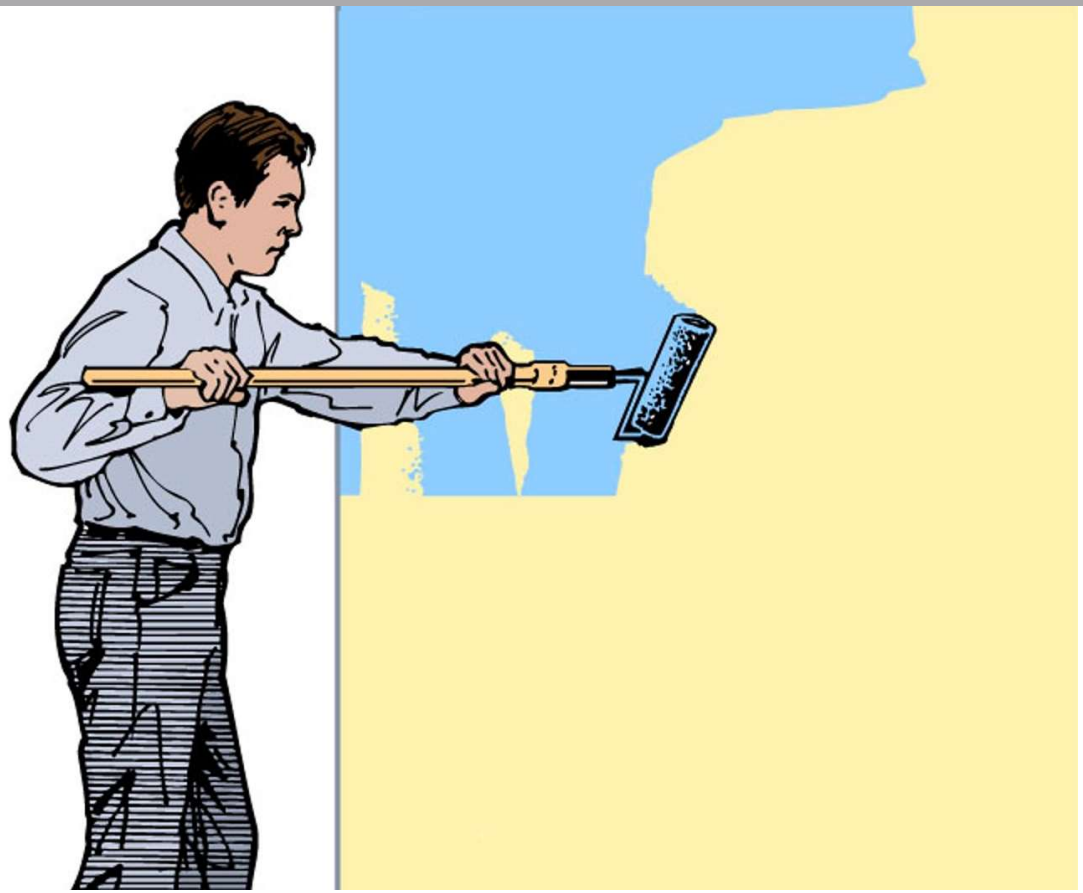
Supporting you by providing:

- Operators with real-time feedback.
- Adjustable light box mounting.
- Visual speed indicators for nozzles.
- Compatibility with distributors S5500 and up.

Contact the Etnyre Team for Prices and Availability

A-150-19R

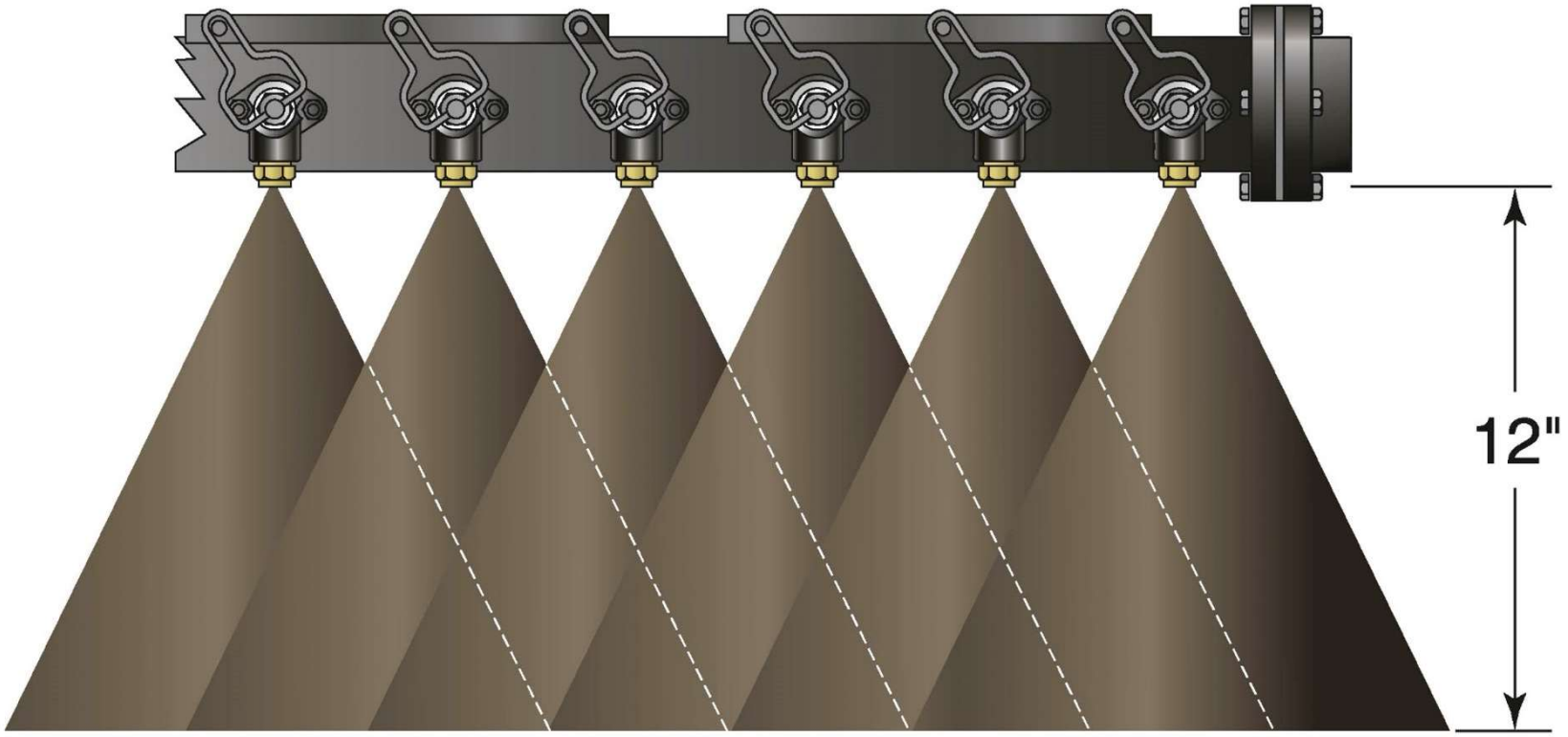

6.4
Ounces
Square
Yard
.050
Gal/Sq.Yd.
36"
36"



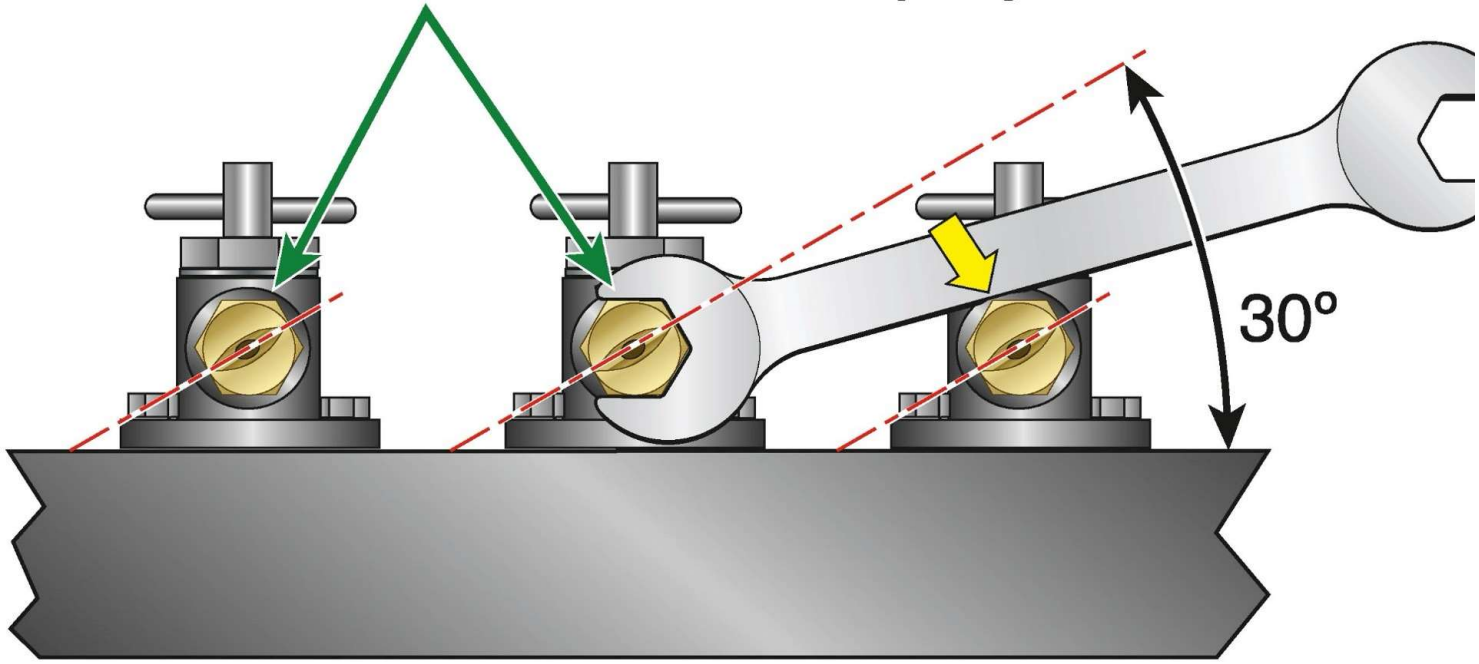

ETNYRE
NON-DRIP
SPRAY-BAR


SPRAY BAR

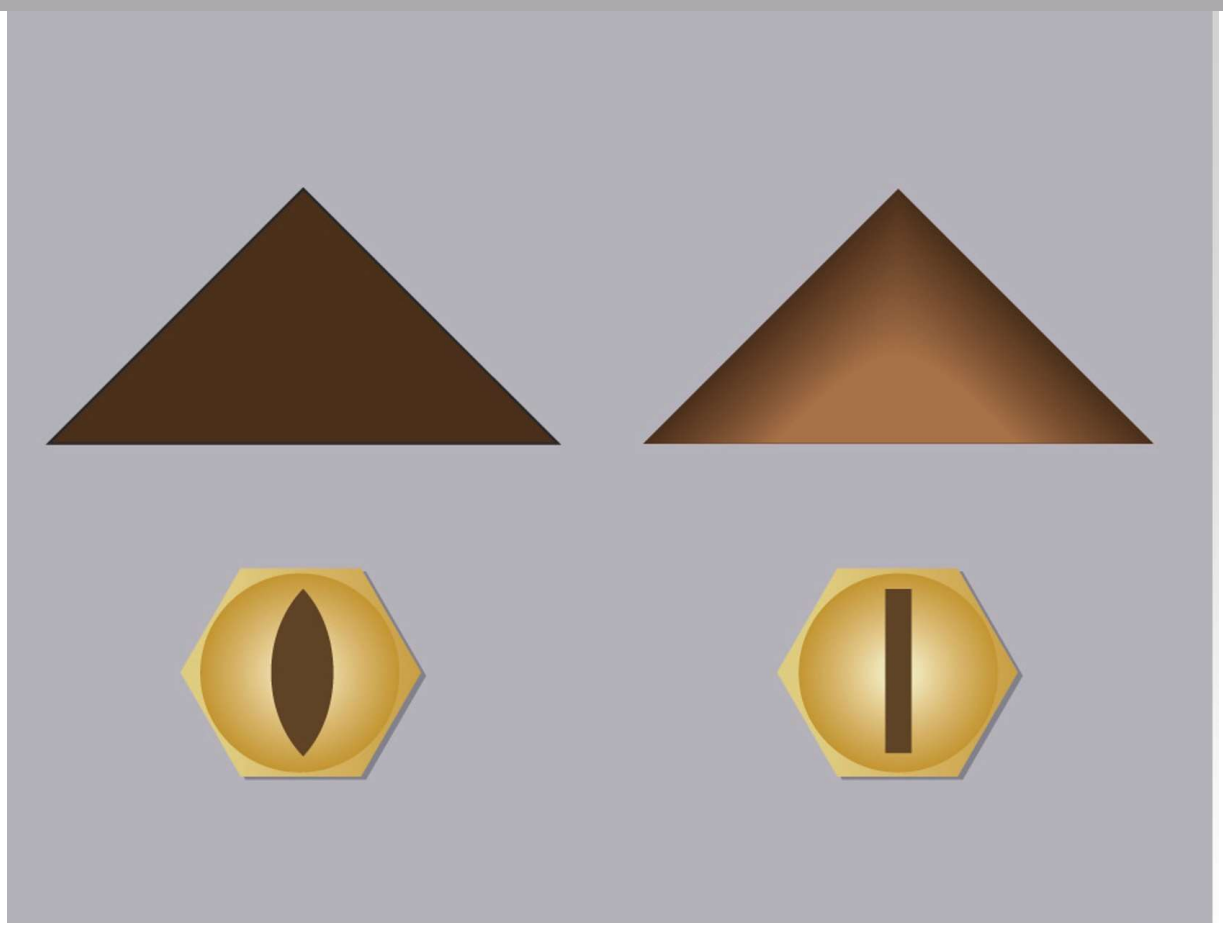
TRIPLE OVERLAP



Nozzle Slot 30° from Spray Bar



Spray Bar (viewed from bottom of bar)



1	2	3	4	5	6	8	7, 9	10	11
3353788	3351008	3351009	3352368	3351015	3352204	3352205	3352210 3355154	3351014	3351010

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

1	2	3	4	5	6	8	7, 9	10	11
3353788	3351008	3351009	3352368	3351015	3352204	3352205	3352210 3355154	3351014	3351010

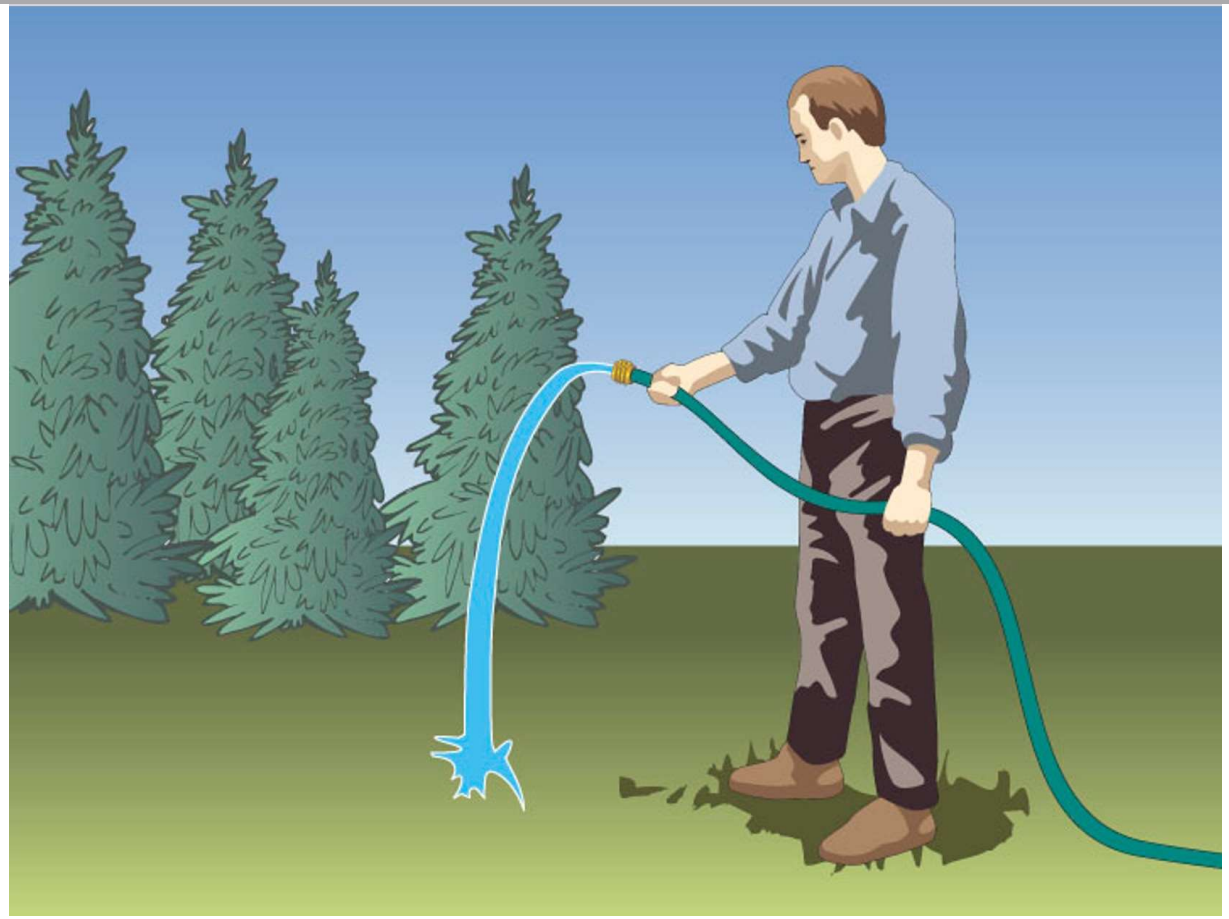
Ref.	Part No.	Description	Application Gallons Per Square Yard	Application (Metric) Liters Per Square Meter	US Flow Gallons Per Minute Per Foot
1	3353788	V Slot Tack Nozzle 1/8" Rifle Bored	.05 - .20	.23 - 0.91	3.0 - 4.5
	3351013*	V Slot Tack Nozzle 1/16" Coin Slot	.05 - .20	.23 - 0.91	3.0 - 4.5
	3354904	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

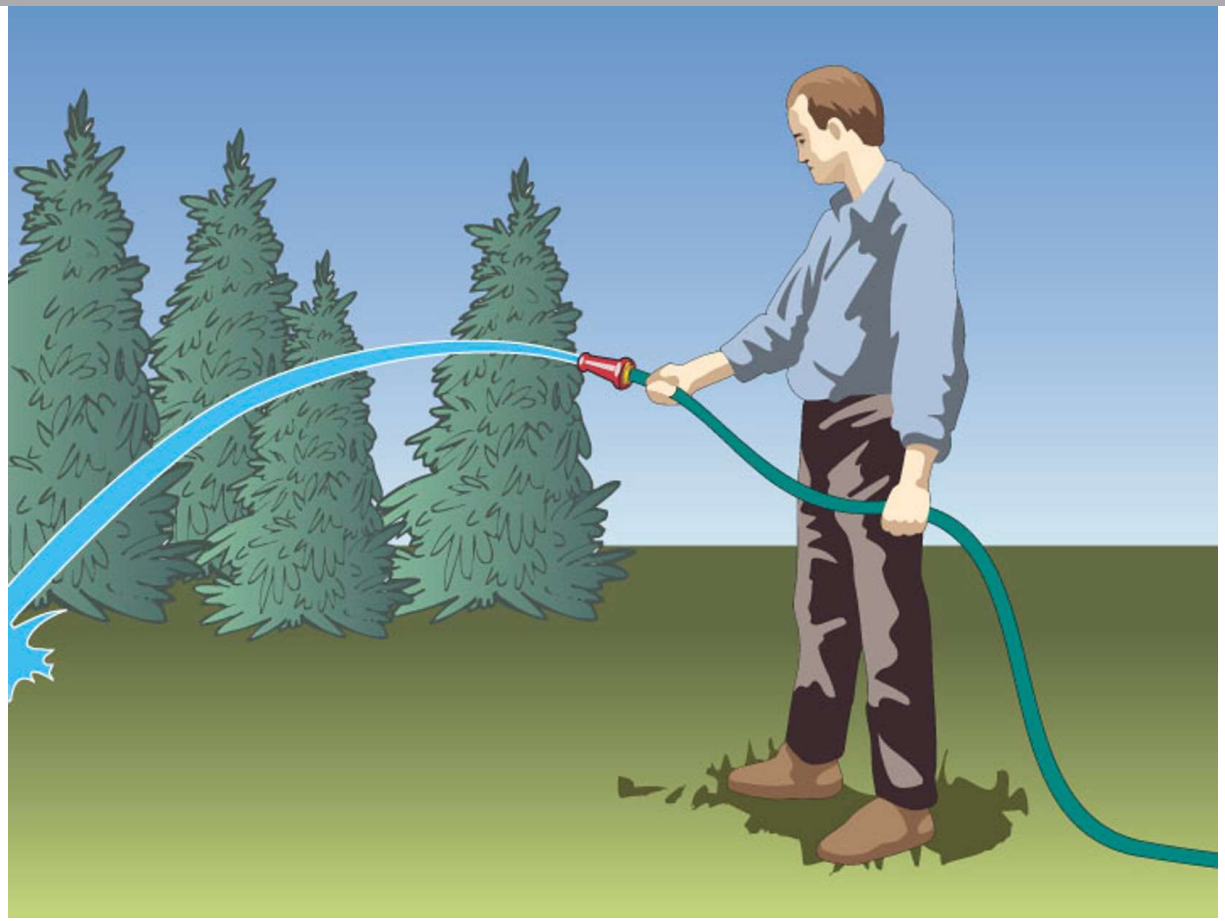
* Special Order

3353788 Etnyre V Slot Tack Nozzle App Rate 0.05 – 0.20

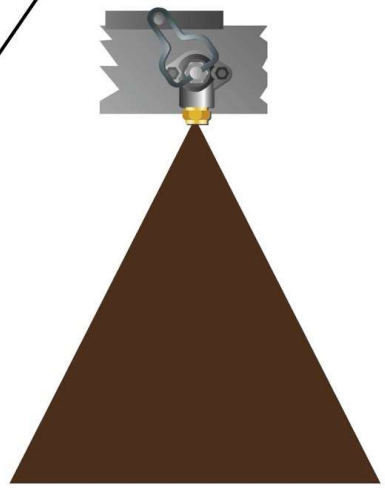
Drive Distributor to achieve GPM between Min. and Max. for application accuracy

# of Feet	Min GPM	Max GPM	# of Feet	Min GPM	Max GPM
1	3	4.5	13	39	58
2	6	9	14	42	63
3	9	13	15	45	67
4	12	18	16	48	72
5	15	22	17	51	76
6	18	27	18	54	81
7	21	31	19	57	85
8	24	36	20	60	90
9	27	40	21	63	94
10	30	45	22	66	99
11	33	49	23	69	103
12	36	54	24	72	108



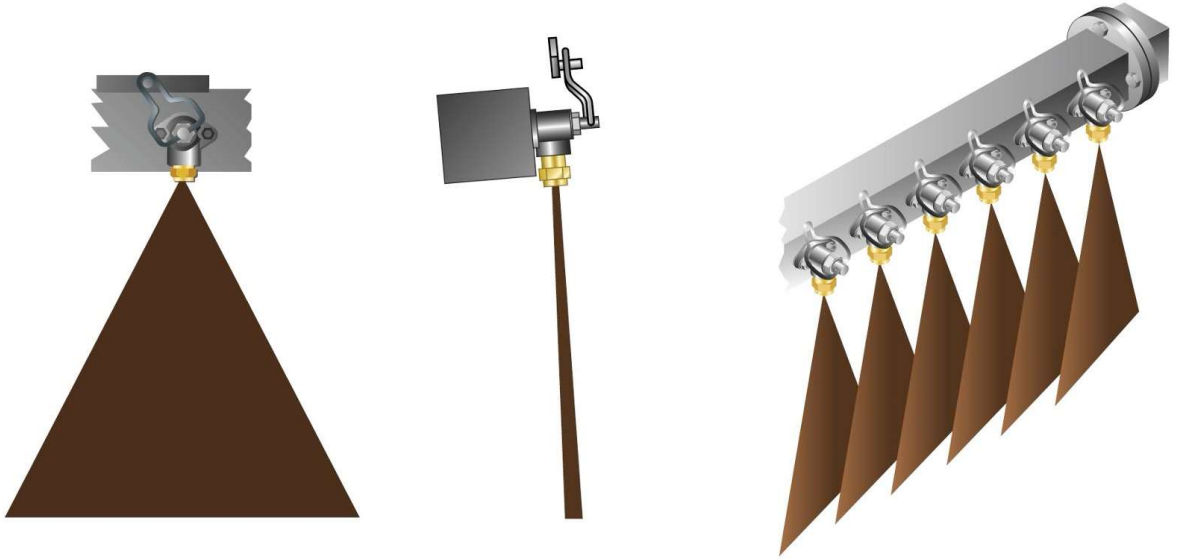


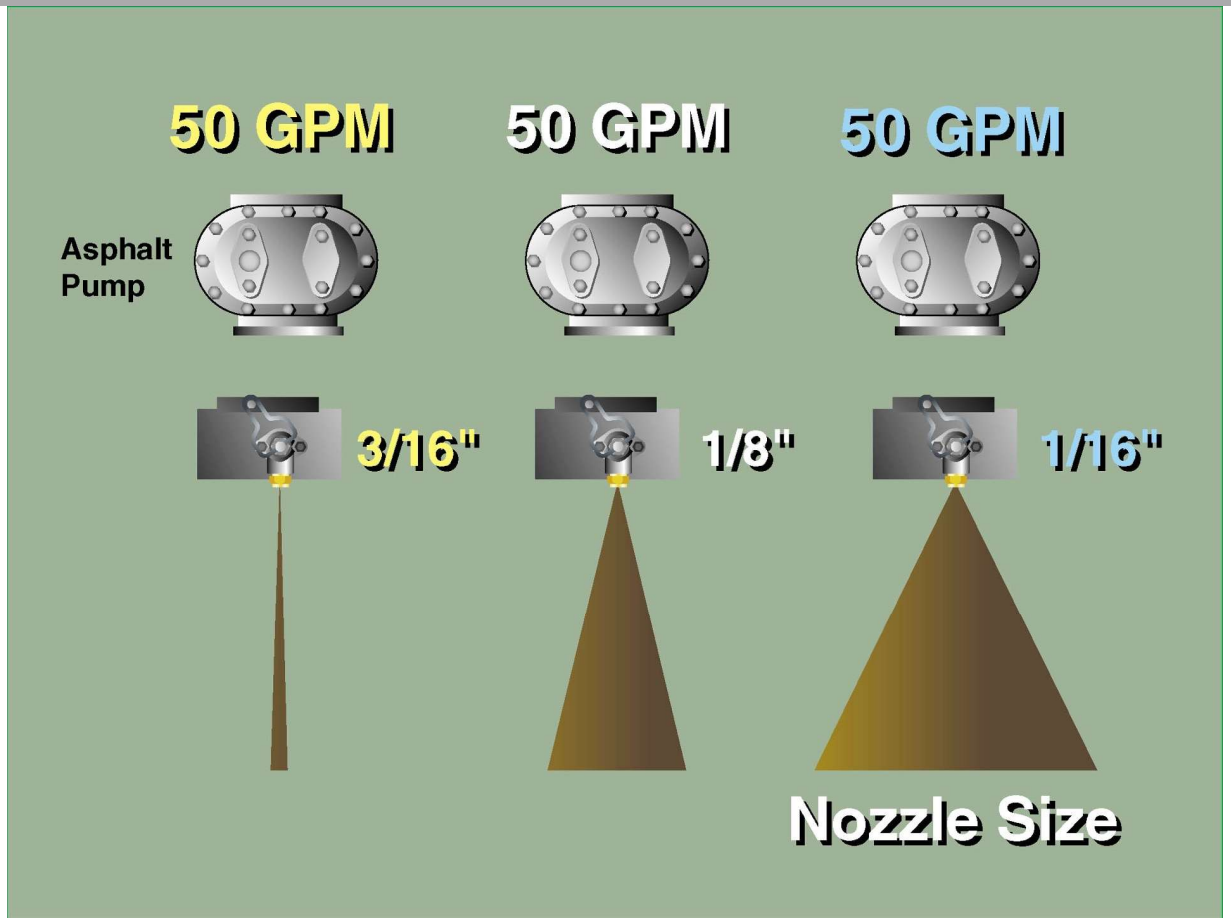
Pump Meter – Volume

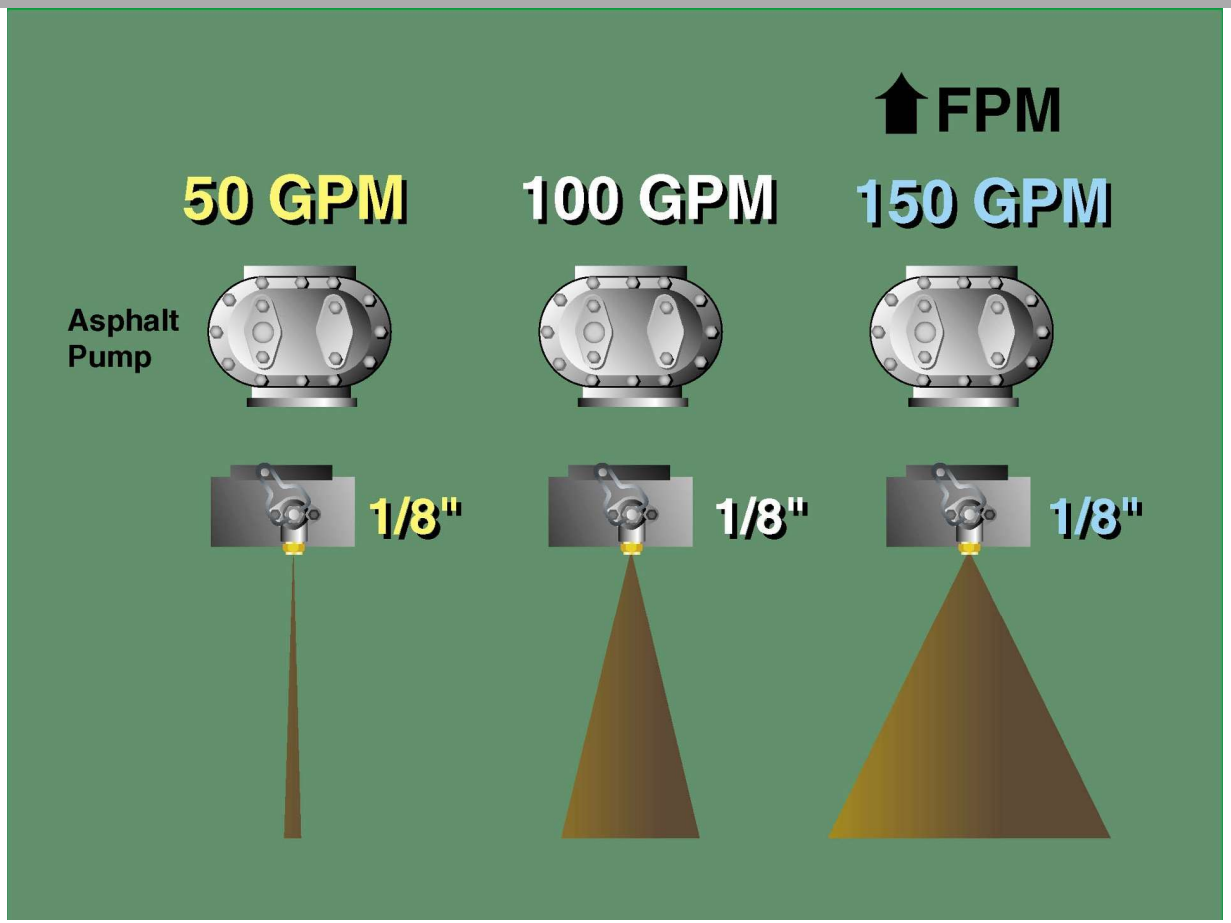


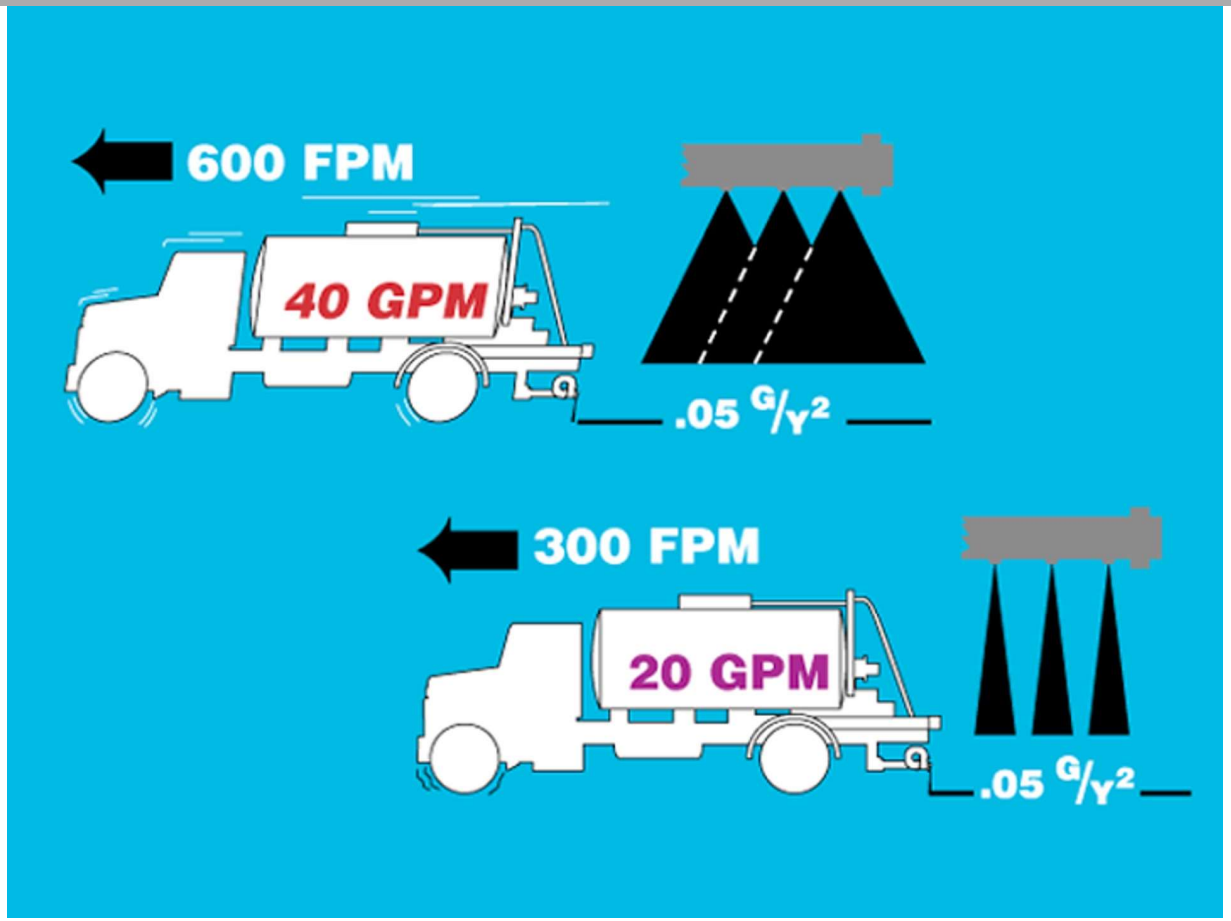
Spray – Pressure

Flat Fan



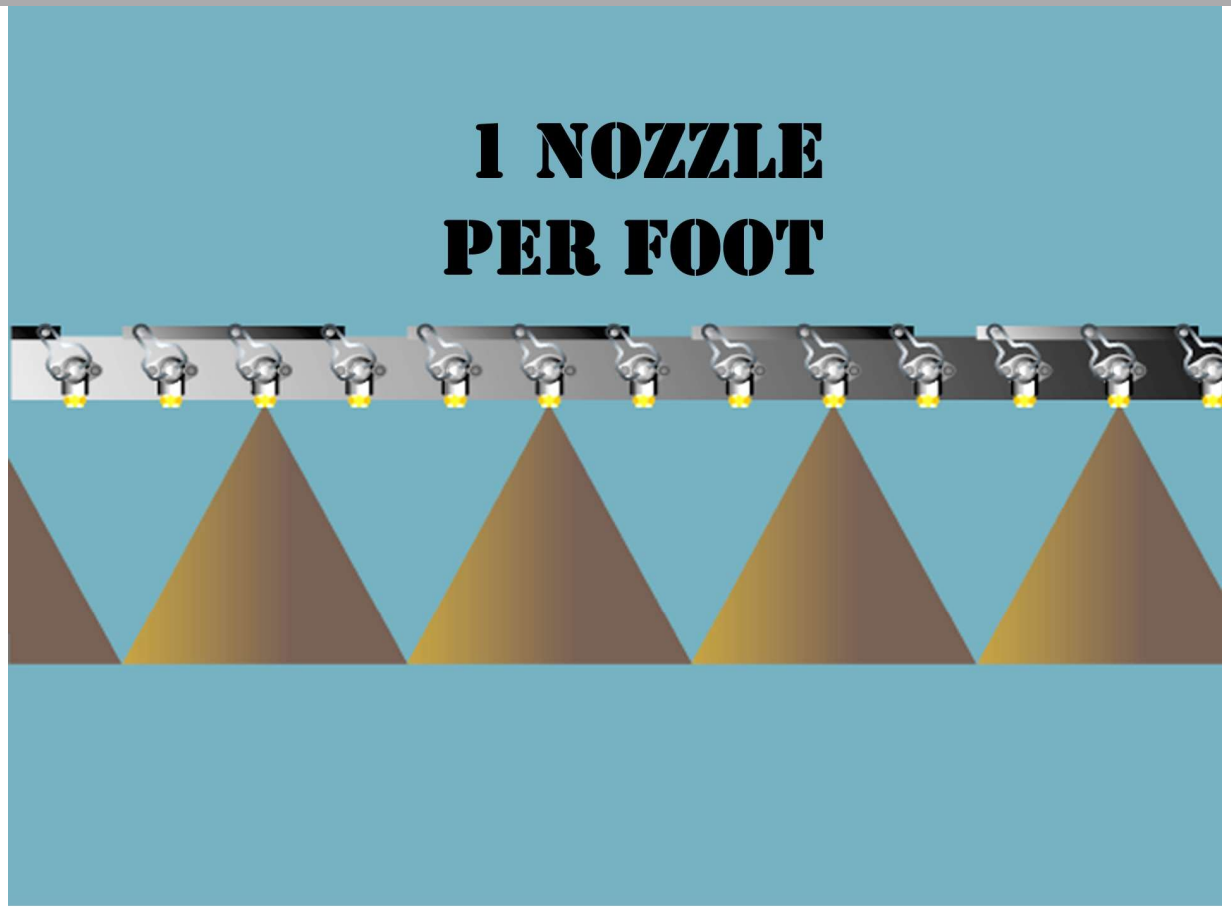

50 GPM
50 GPM
50 GPM
Asphalt
Pump
3/16"
1/8"
1/16"
Nozzle Size


FPM
50 GPM
100 GPM
150 GPM
Asphalt
Pump
1/8"
1/8"
1/8"

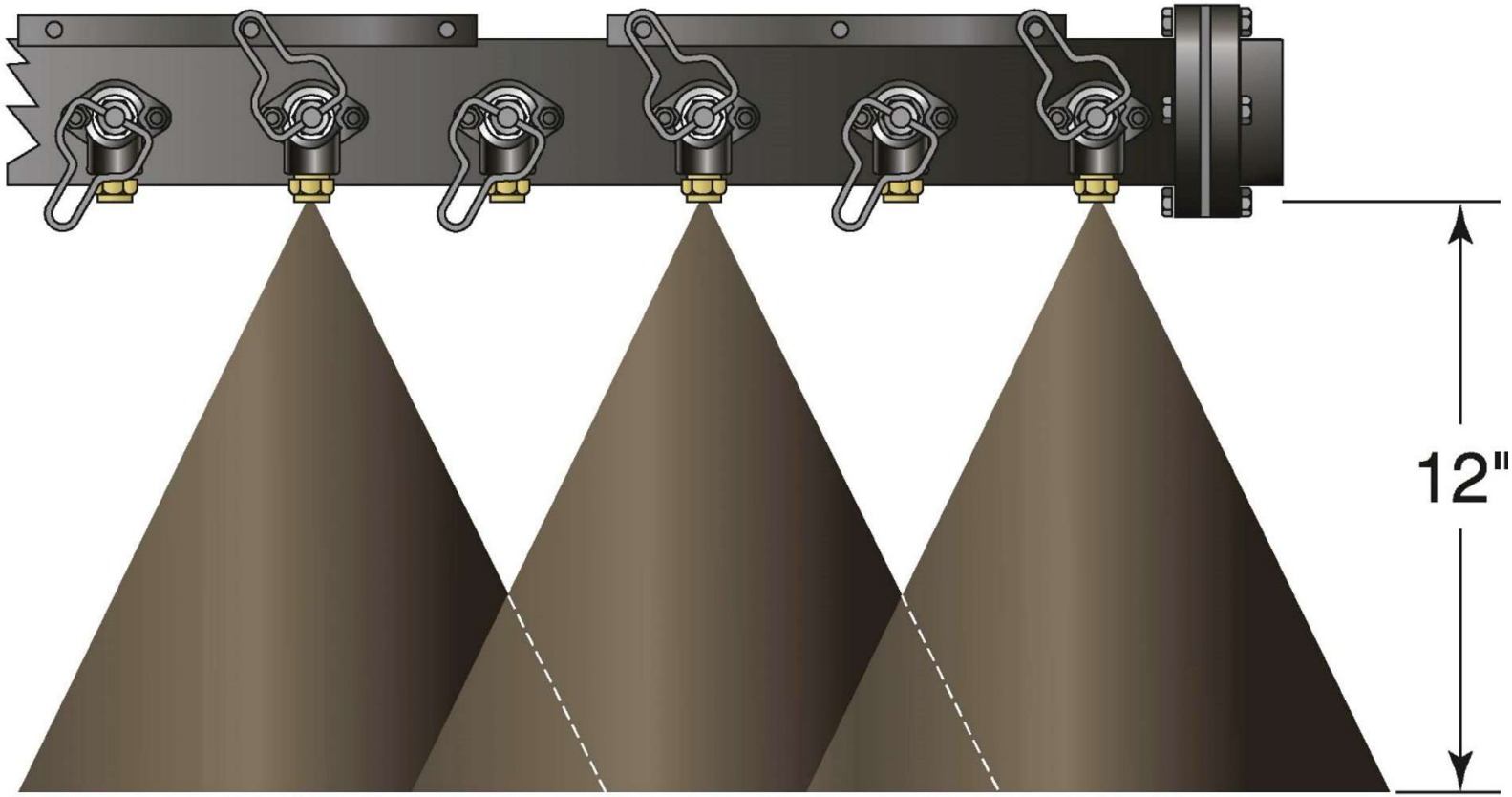

600 FPM
40 GPM
.05 G/Y2
300 FPM
20 GPM
.05 G/Y2


Tarmac

Let’s cheat the system.


1 NOZZLE
PER FOOT

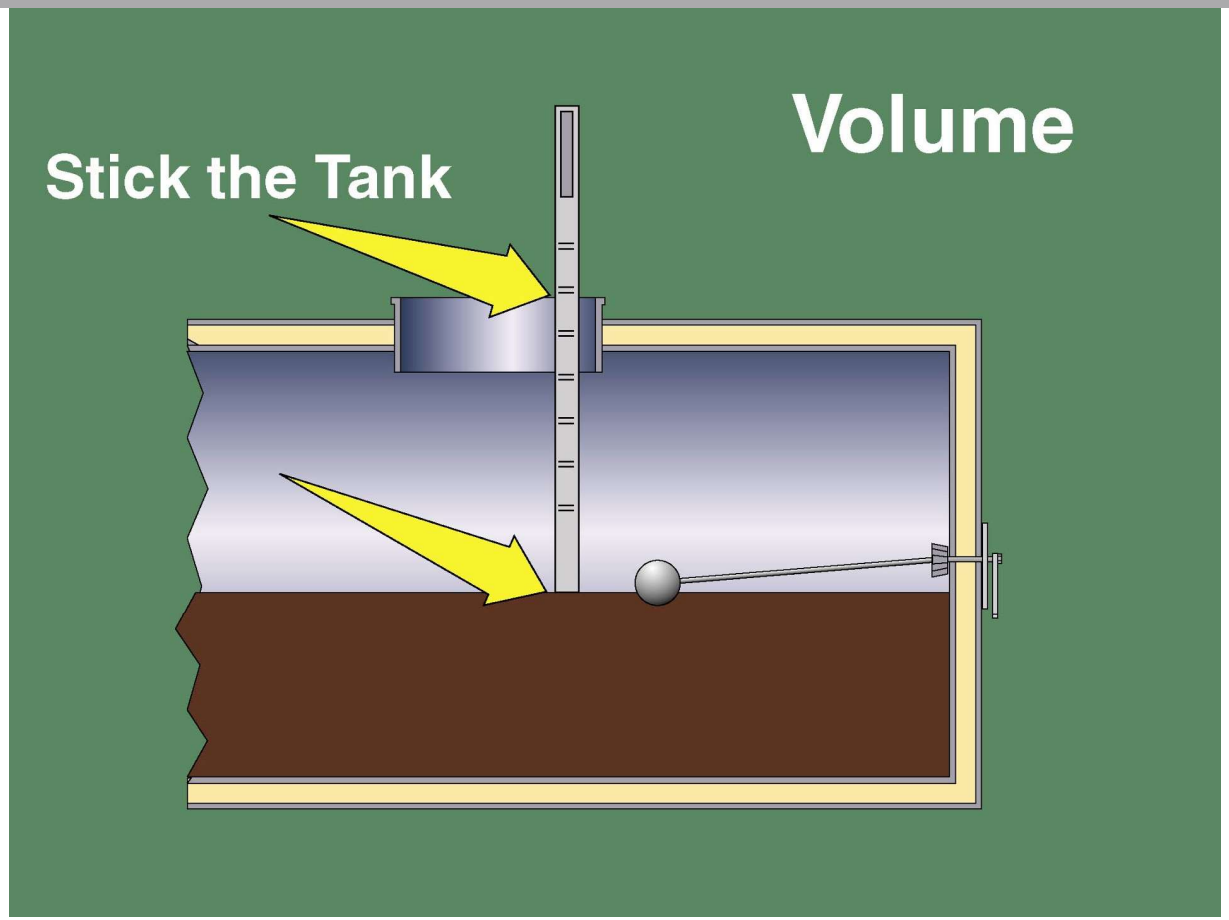
EVERY OTHER NOZZLE




FRESH
OIL

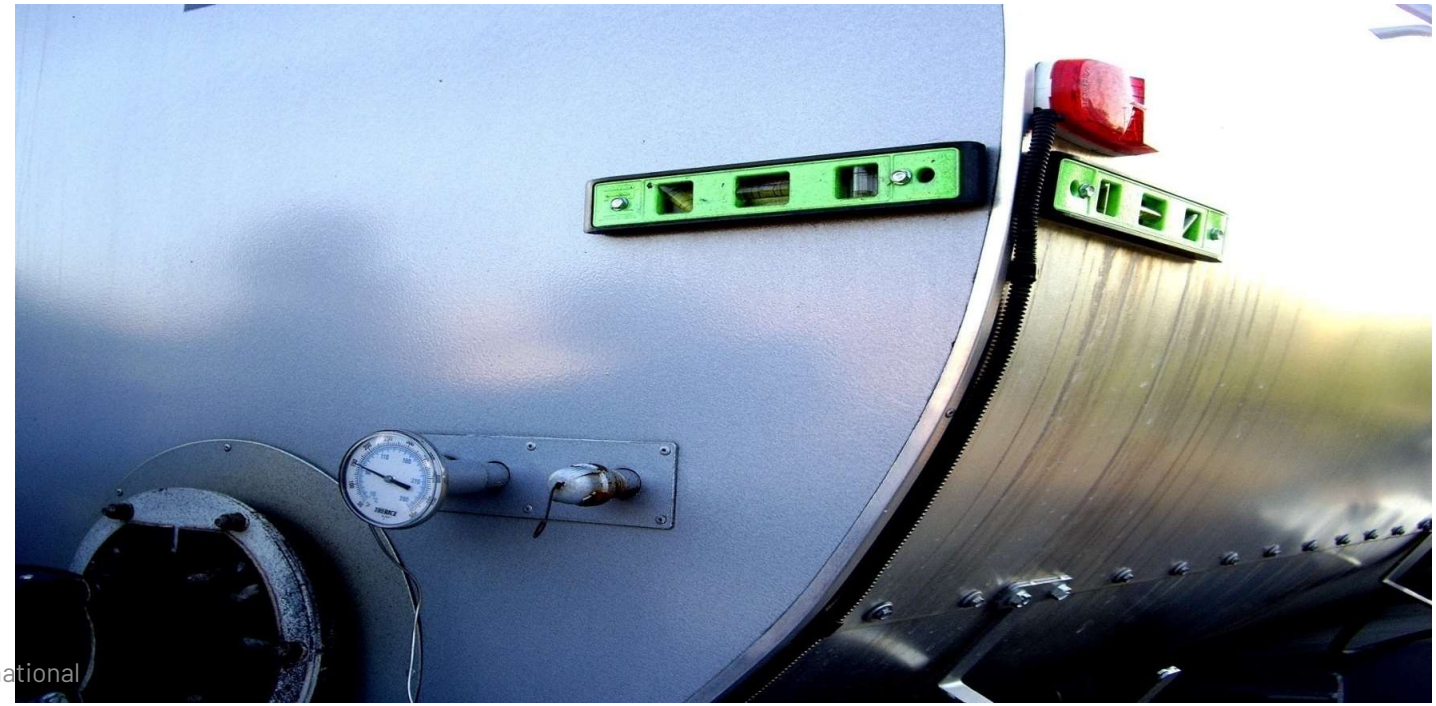
Calibrating your Distributor Truck

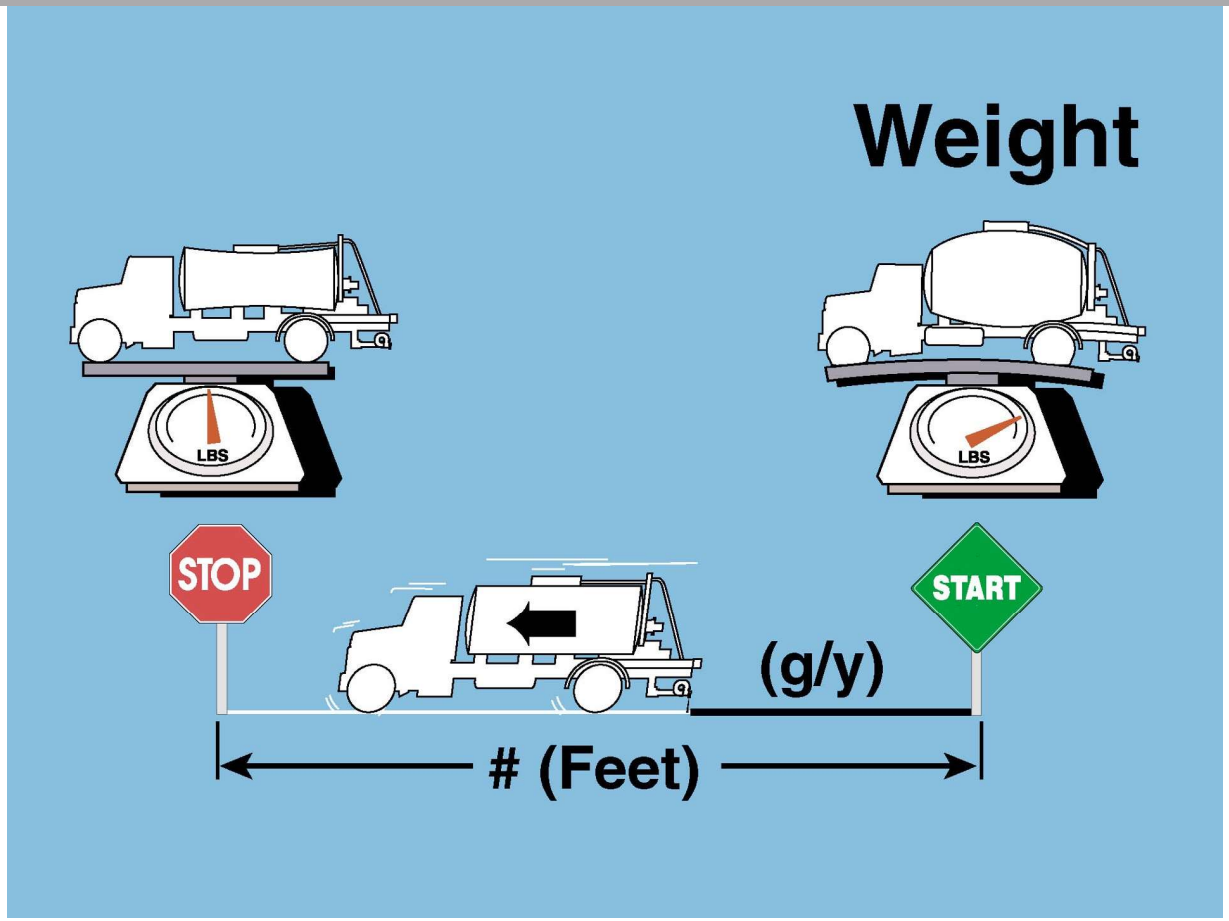
1. What do we mean when we say calibrating your distributor?
2. Why should you check your distributor's calibration?
3. How do you check your distributor calibration?
4. What components are involved in calibrating your distributor truck?

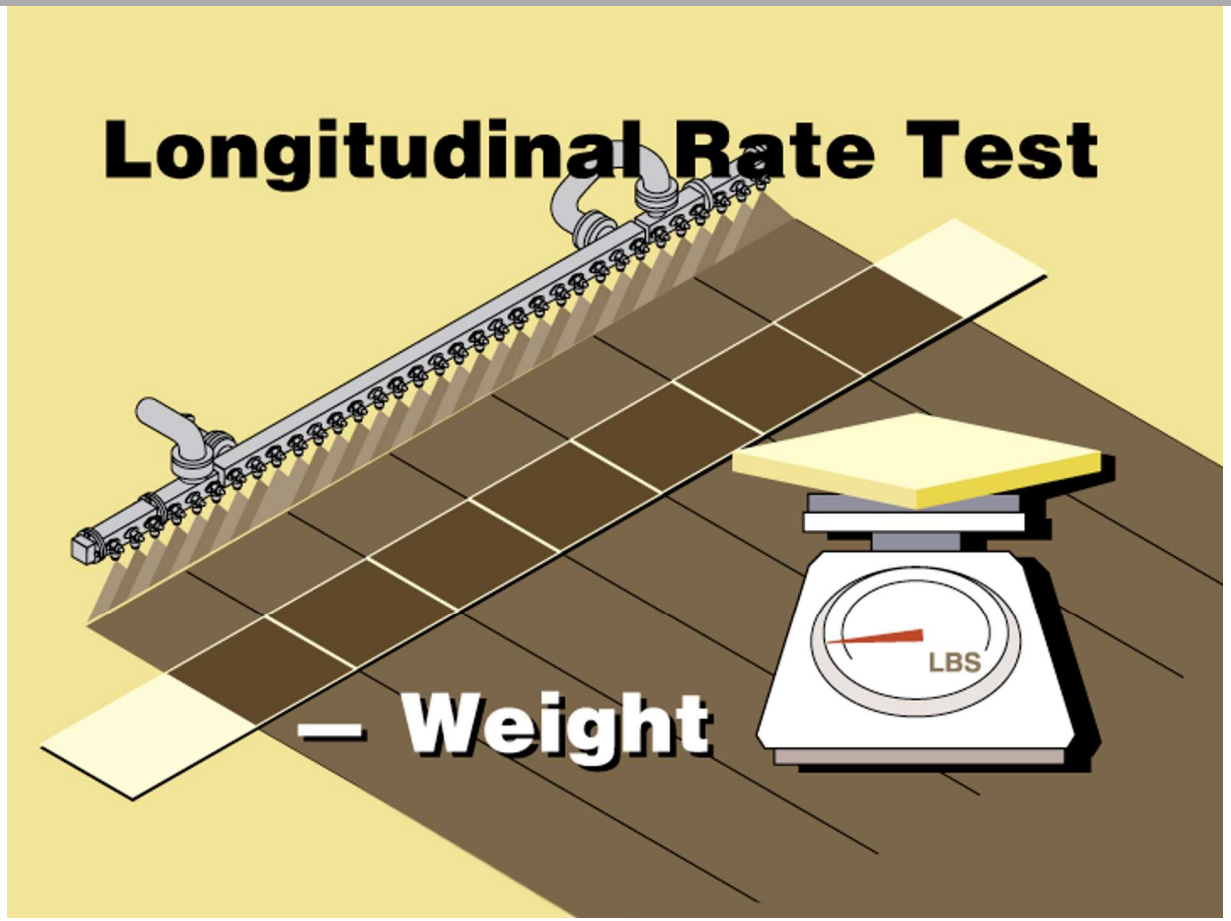

Volume
Stick the Tank

Tank Volume Calibration

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




Weight
LBS
LBS
STOP
START
(g/y)
(Feet)


Longitudinal Rate Test
— Weight
LBS


ONE LANE
ROAD
1000FT

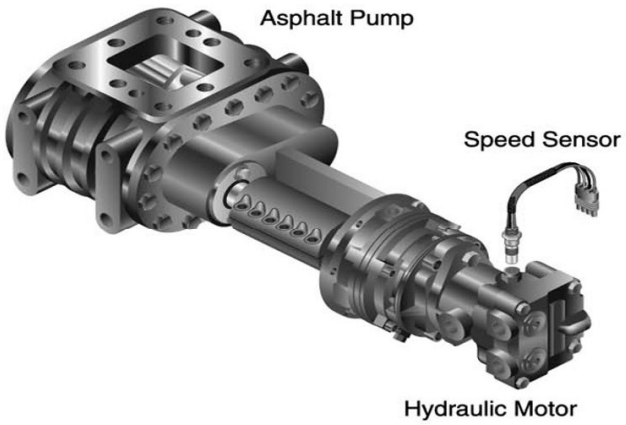
What are ways to check your Distributor calibration?

Pump and Radar

34

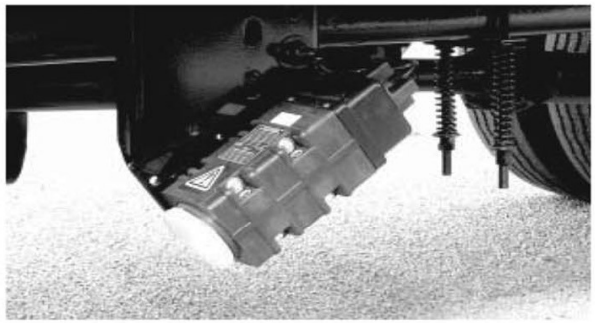
Metering and Control System continued

Magnetic Pump Speed Sensing



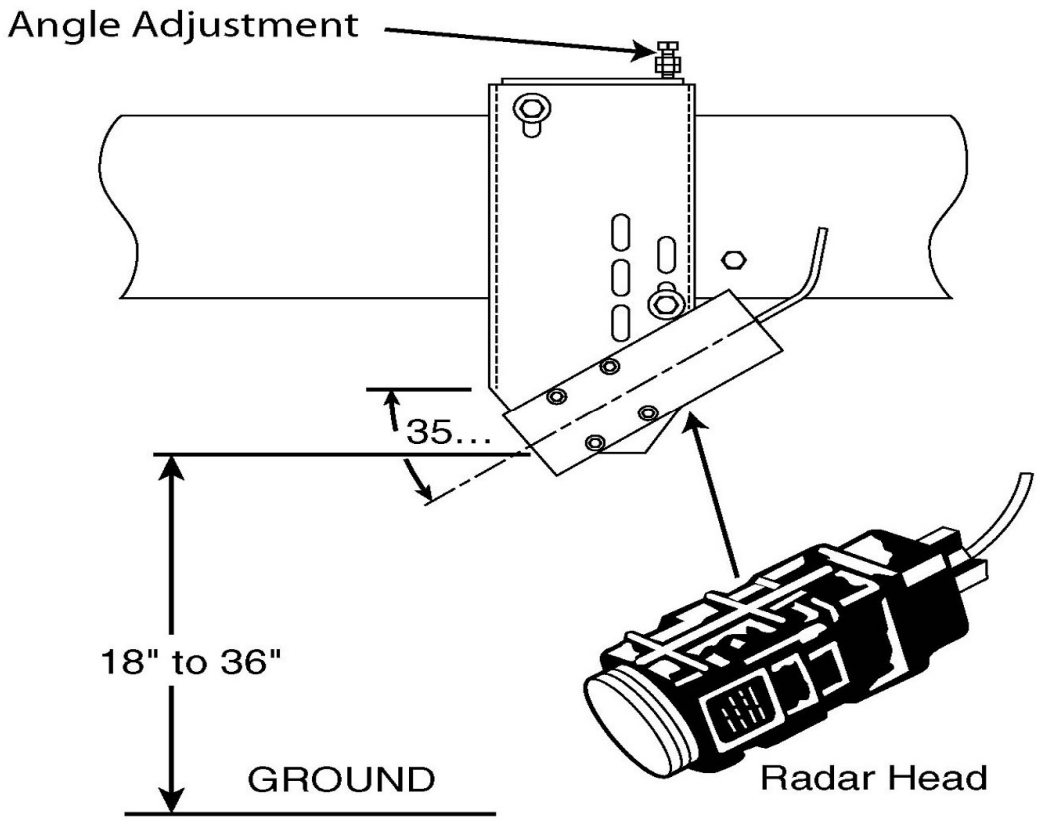
- Speed sensor pick-up counts the revolutions of the asphalt pump.
- Speed sensor is internal to the hydraulic motor.
- Pump output is displayed on an analog gage or sent directly to computer.
- Pump output is measured with Gallons Per Minute (GPM)

Radar Ground Speed Sensing

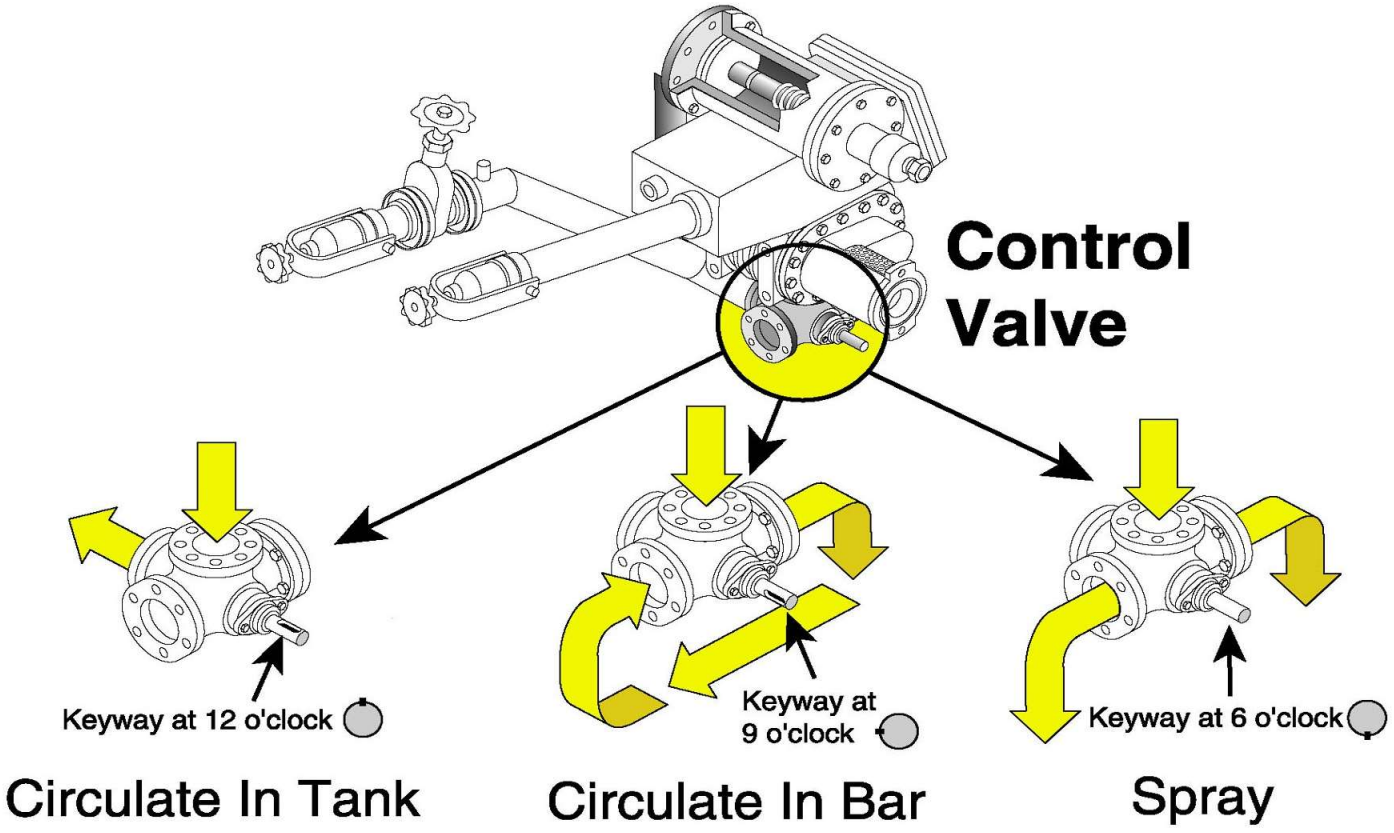


- Radar Speed sensing is **standard equipment.**
- Vehicle speed displayed on analog gauge or sent to computer.
- Precise measurement of ground speed and distance.
- No moving parts to wear out, less maintenance, and less chance of damage.
- Ground speed is measured in Feet Per Minute (FPM).

Radar Adjustment



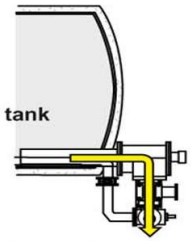
Control Valve Timing



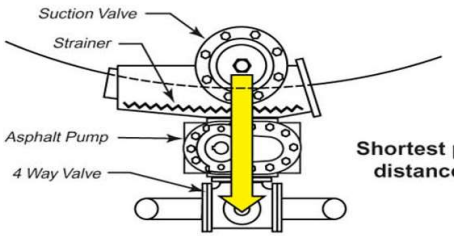
Strainer

Circulating System continued

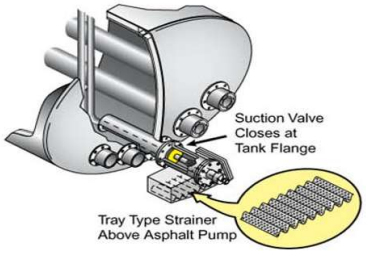
Tank Suction Valve



- Located at bottom of tank.
- Air control open, spring close.
- No sump to trap liquid asphalt in the tank.
- Disc valve closes at tank flange. Always in contact with hot asphalt.
- No external line between valve and tank to freeze up with cold asphalt.

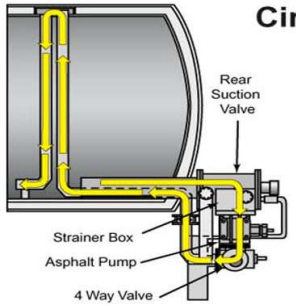


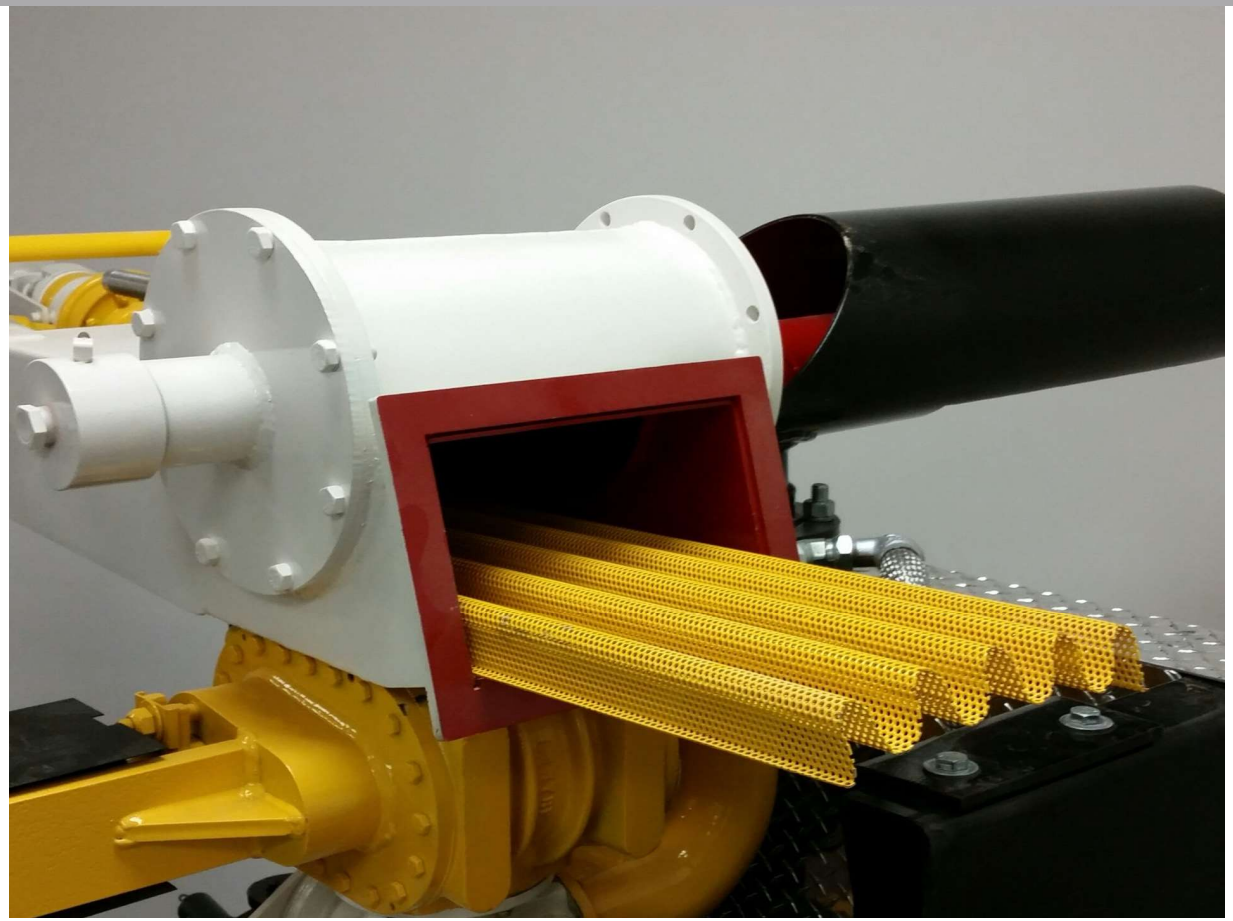
Strainer



- Strainers, one tray type between tank and asphalt pump and between fill line and asphalt pump.
- All liquid asphalt goes through a strainer before it gets to the asphalt pump.

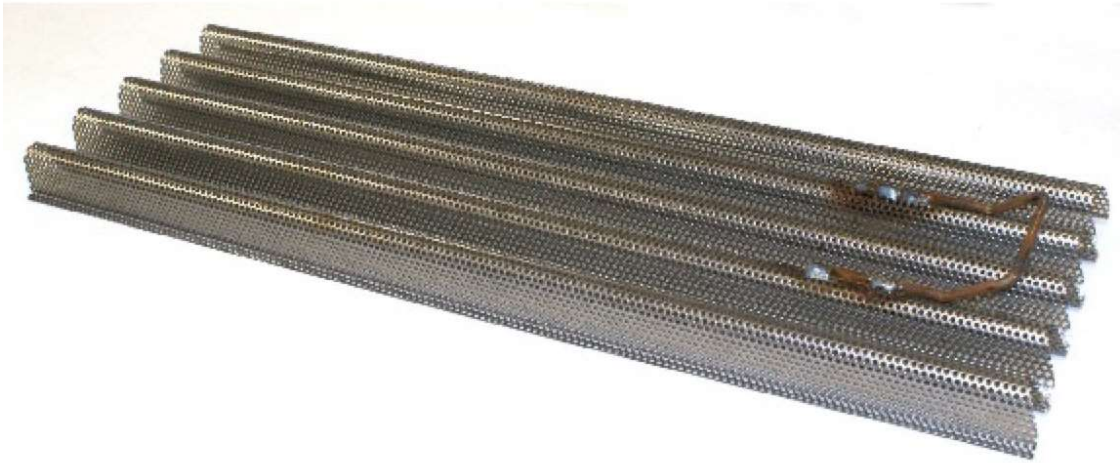
Circulating In Tank





Distributor Strainers – with handles

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



1	2	3	4	5	6	8	7, 9	10	11
3353788	3351008	3351009	3352368	3351015	3352204	3352205	3352210 3355154	3351014	3351010

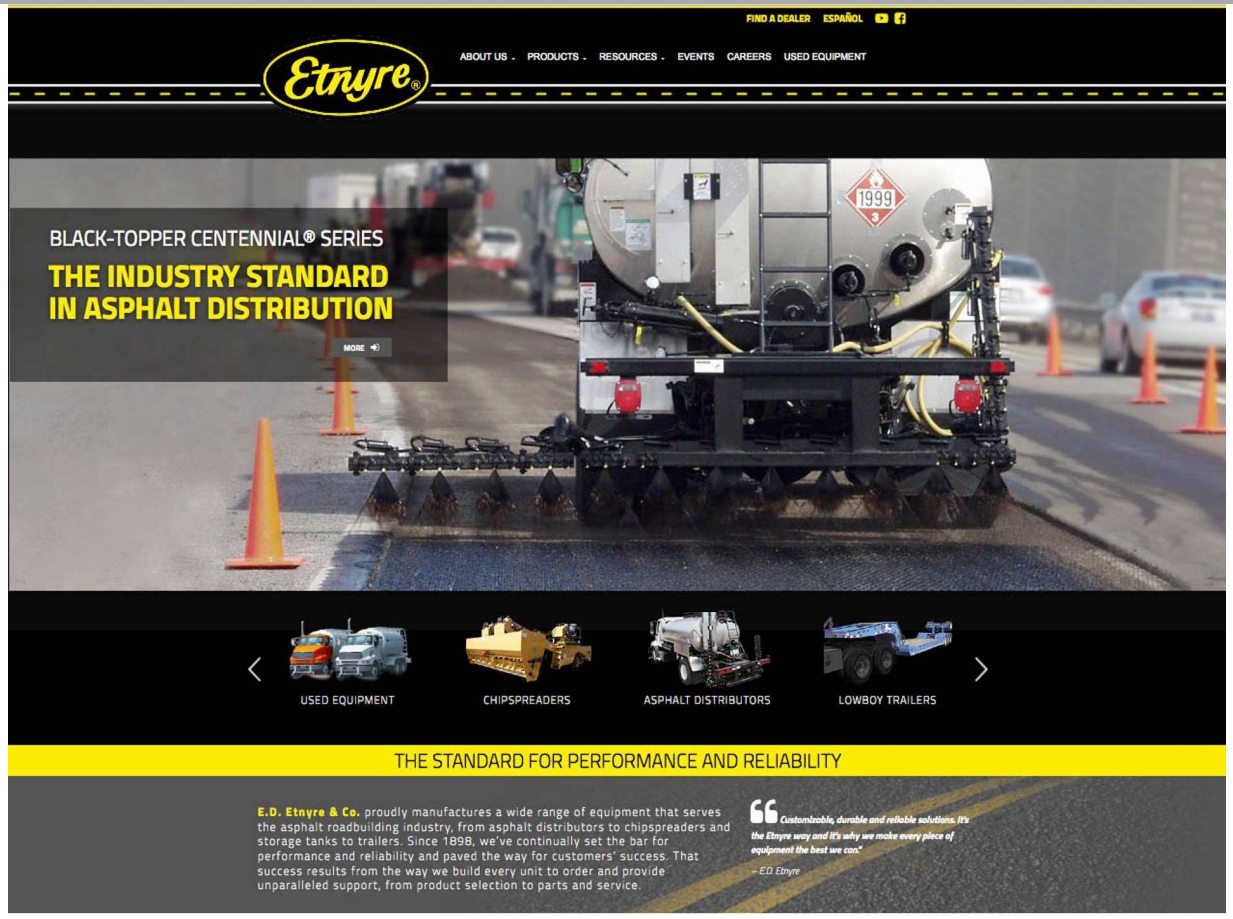
Ref.	Part No.	Description	Application Gallons Per Square Yard	Application (Metric) Liters Per Square Meter	US Flow Gallons Per Minute Per Foot
1	3353788	V Slot Tack Nozzle 1/8" Rifle Bored	.05 - .20	.23 - 0.91	3.0 - 4.5
	3351013*	V Slot Tack Nozzle 1/16" Coin Slot	.05 - .20	.23 - 0.91	3.0 - 4.5
	3354904	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

What happened here?


Safe Operation
Results From
Knowledge of
Materials and
Equipment

Not My Job!!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Keep an eye on your tilt switches....

Just image no linked video yet.


SEE YA- ALL LATER