

ASPHALT PAVEMENT ANALYZER-JUNIOR (APA JR.)

SPECIFICATION



General:

The APA-Jr. is a multifunctional loaded wheel tester that is used to evaluate Cold Mix, Warm Mix, and Hot Mix asphalt in a dry or submerged in water condition. The APA Jr. automatically displays in a numeric and graphical format the real-time development of permanent deformation. The APA Jr. is CE approved and meets all provisions of EN12697-22.

The APA Jr. can perform the AASHTO T 324-14 Test Method (Hamburg Test Utilizing Solid Stainless Steel Wheels) and the AASHTO T 340-10 Test Method (Rut Testing Utilizing Stainless Steel Concave Wheels and Hoses),

The APA Jr. has a frequency drive that allows a user to test mixes at multiple speeds and multiple rates of loading.

The APA Jr. has a "High Pressure Feature" that allows a user to perform High-Pressure testing at High Contact Pressures of 250+psi (Airport Runways, Taxiways, Intersections, Etc)

The APA Jr. incorporates electronic digital regulators that allow a user to set and maintain the load during a test. These regulators combined with the PLC PC based control system allow a user to change load during a test if desired.

Options

- **Chiller for Low Temperature Fatigue Testing on Asphalt Beam Specimens. The beam specimens are compacted with the Asphalt Vibratory Compactor (AVC). Chiller also allows a user to perform Studded Tire Wear at Low-Temperatures. This option comes with (2) Studded Wheels, (2) Aluminum Molds, and Software.**
- **Microsurfacing/Slurry Seal testing capability(Test Method TB 109 and TB 147)**

The APA Jr. charts depth versus stroke count and depth versus elapsed time. The APA Jr. control system is capable of determining the "Rate of Rutting". The APA Jr. can test the following type samples:

- Cylindrical
 - Gyrotory
 - Marshall(4" and 6")
 - Hveem
 - Roadway Cores
 - Other Cylindrical Samples
- Beam
 - Vibratory
 - Rolling Wheel
 - Slabs
 - Other Beam Samples



Completed Hamburg Test with Gyrotory Samples

The APA-Jr. has two standard loaded wheels

- Hamburg-Type-Solid Stainless Steel Wheels
- APA Stainless Steel Concave With Hoses for Rut Testing

Optional Wheels available:

- Rubber Wheels for Slurry Seal/Microsurfacing Testing(Provided if Slurry Seal Option is Purchased)

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- Solid Stainless Steel Wheels for Fatigue Testing(Provided if Optional Chiller is Purchased)
- Rubber Wheels with Metal Studs (Provided if Optional Chiller and Cold Plate are Purchased. Temperature range down to -5F[-20C])

The APA-Jr. is operated utilizing a PLC PC Based Control System. The operating system allows a user to perform all calibrations and functions directly with a Personal Computer.

All measurements for rutting and fatigue are obtained utilizing a personal computer. The APA Jr. has "Reed Switches" which allows the user to obtain up to 5 measurements during a single pass over a beam specimen and up to 3 measurements during a single pass over a cylindrical specimen. The system is extremely accurate and can calculate the data up to .00001 of a millimeter. Below is the Specification for the Computer:

- **Intel/Windows PC Based PLC**
- **Data Output-Microsoft Excel**
- **DVD+/- RW/CDROM Drive**
- **17" Flat Screen Monitor**
- **HP Color Printer HP Color Printer**

Overall Dimensions:

Width: 68.58cm (27 inches)
Length: 114.30 cm (45 inches)
Height: 154.94 (61 inches)
Weight: 590.90 Kg (1300 lbs.)

Electrical Requirement:

208/230 Volt, 50Hz or 60Hz, 40 Amp, Single Phase

Compressed Air Requirement:

8 SCFM @ 827 Kpa (120 PSI)

Water Tank Capacity:

2 Cu Ft. 15 Gallons Full

Water Tray Capacity:

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1.6 Cu Ft. 12 Gallons Full

APA Jr. Basic Components:

- A) Wheel tracking/loading system
- B) Sample holding assembly
- C) Temperature control system
- D) Speed
- E) Water submersion system
- F) Vertical Measurement System
- G) Rut depth measurement device
- H) Operating controls

A) Wheel Tracking / Loading System: The wheel tracking and loading system applies wheel loading on repetitive linear wheel tracking actions with controlled magnitude and contact pressure on cylindrical or beam samples for rutting, fatigue, and moisture damage testing. This system consists of the following components:

A1) Driving Assembly, consisting of a gear motor and cam connected to the loading assembly through a sliding frame and drives the loading assembly at variable frequencies (0-120 passes per minute) and up to a 12-inch stroke.

A2) Loading Assembly, consisting of a sliding frame, two independent pneumatic cylinders (250 lbs. capacity), each attached with a Wheel(8" Solid Stainless Steel, 6" Concave Stainless Steel, or 3" Rubber), and individual solenoids, able to develop an adjustable contact pressure up to 250+ PSI.

A3) Hose Rack Assembly (Stainless Steel), equipped with two (2) hoses and high pressure airlines and fittings.

B) Sample Holding Assembly: The assembly holds the samples directly underneath the Wheels to allow the samples to be subjected to the wheel tracking actions during testing. A Fold-Down Water Tray Gate that allows the samples to be placed inside the chamber for testing and removed from inside the chamber after a test is complete. The assembly consists of the following components:

B1) Sample Molds, Four (4) Ultra High Molecular Weight (UHMW).

- Two (2) each for Hamburg Type Testing, 150 mm \pm 0.5 mm Diameter x 62mm \pm 0.5mm in height. (Additional sizes can also be provided)

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- Two (2) each for cylindrical specimens, (rutting and/or moisture damage), 150 mm \pm 0.5 in diameter, 75mm \pm 0.5 in height.

*Molds can also be provided for the Fatigue Testing Option, Studded Wheel Option, and Slurry Seal Option.

- C) Temperature Control System: heating and cooling of the main chamber is accomplished by a series of heating elements inside a heater box and a heater fan. An optional cooling unit, which is regulated by a microprocessor based temperature controller. The temperature can be controlled from -9° C to 80° C \pm 1.5° C (15° F to 176° F).
- D) Speed: Utilizes a Frequency Drive that allows variable speed from 0 to 120/passes per minute.
- E) Water Submersion System: A water submerging system allows water to cover the test samples inside the water tray during a submerged water test and readily drains when testing is completed. The system is temperature controlled up to 80C and has a continuous circulating water system. The system consist of the following components:
- E1) Water Tank (Stainless Steel) with heating element and external pump (continuous circulating) for introduction of water into reservoir. Capacity 15 gallons.
- E2) Water Reservoir -Capacity Approx. 12 gal. (Stainless Steel) which is flooded with water for submerged-in-water testing. When pumping, a constant water level of approximately 1/2 inch over the top of the test specimen is maintained during the submerged-in-water test.
- F) Vertical Measurement System: Linear Position Transducer
- G) Rut Depth Measurement Device: Temposonic Transducers (Mounted inside pneumatic cylinders) are used to obtain all measurements.
- G1 Calibration Device, for calibrating wheel load, with 0.001 inch precision.

H) Operating Controls: The operating controls utilize a PLC PC Based Control System. All calibration and operation of the APA Jr. is performed utilizing a personal computer.

"THE FOAMER"



"THE FOAMER" is designed and manufactured to provide highly accurate and repeatable foamed asphalt samples that are used for Warm Mix Asphalt Mix Designs in the Laboratory. The Foamer can also be used for Cold Mix Designs and can be used as an Asphalt Dispenser. **"THE FOAMER"** is rugged and can easily be used in tandem with a laboratory mixer. Below are some features of **"THE FOAMER"**:

- Fully Automated PLC Control System (Digital Graphic Interface) assures correct timing and control of the foamed asphalt and features touch screen controls for all operations.
- Proportions, flow-rates, timing, pressures, and volume of both Asphalt Cement (AC) and Water can all be validated and are adjustable.
- Up to 14 pounds of AC can be accommodated by this system
- Reservoir is lined with special high-temperature, disposable polymer bag which can be discarded upon completion of test.
- The System accepts standard 1 quart and 1 gallon cans of asphalt cement at room temperature; handling of hot asphalt and containers is not necessary
- The System incorporates a "Quick-Change" feature that allows batches to be sequentially run with literally no clean-up.
- System allows for easy clean-up and minimum residual asphalt
- Unit is Mobile and has adjustable dispensing height

SPECIFICATIONS

DIMENSIONS:

Width	35"
Length	36"
Height	85"
Weight	300lbs.

REQUIREMENTS:

Electrical	120 VAC, 20-Amp
Compressed Air	50 PSIG (551.58 kPa); consumption <1 SCFM (28.32 SLPM)
Water	Standard Tap Water; consumption <1 CFM (28.32 liters)



Disposable Bag and Tube

CAPACITY:

Asphalt Cement 1.64 US gallons liquid

TEMPERATURE: Maximum System Temperature 350F (176.67C)

COMPONENTS:

Frame

Extruded Aluminum Framing

Chamber

Heated and Pressurized Aluminum Chamber with reservoir which accepts standard 1 quart and 1 gallon containers of asphalt cement. High Temperature Polymer Bag and Tube are located inside the reservoir.



Heated/Pressurized Chamber

Controls

Fully Automated PLC Control System (Digital Graphic Interface) assures correct timing and control of the foamed asphalt and features touch screen controls for all operations. Control System has an attached printer which is used to print test parameters.

Adapters

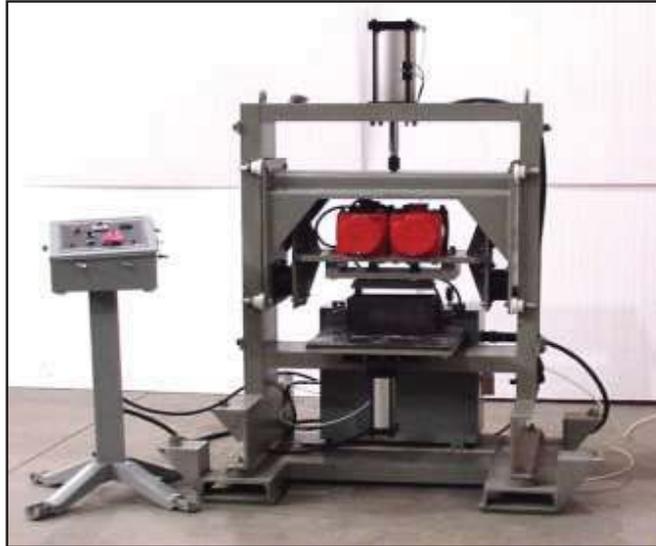
Utilized to accept standard 1 quart and 1 gallon containers

Pneumatic Cylinder

Utilized to Raise and Lower Chamber for various laboratory mixer heights.

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ASPHALT VIBRATORY COMPACTOR SPECIFICATION



General:

The Asphalt Vibratory Compactor (AVC) is designed to form rectangular and cylindrical test specimens used for evaluating the susceptibility of permanent deformation (rutting), fatigue cracking, and moisture damage of asphalt mixes. The AVC compacts specimens at the same amplitude, same frequency, and same relative weight that a contractor experiences with a vibratory compactor on the roadway.

Overall Dimensions:

Width: 86.73 cm (34 inches)
Length: 155.61 cm (61 inches)
Height: 206.63 cm (81 inches)
Weight: 1063.00 kg (2350 lbs.)

Electrical Requirement:

208 VAC, 60HZ, 40 Amp, Single Phase – 4-wire, NEMA#L14-20

Compressed Air Requirement:

8 SCFM @ 827 Kpa (120PSI)

AVC Basic Components:

- 1) Compactor Assembly**
- 2) Vibratory Compactor Unit**
- 3) Sliding Tray For Sample Loading/Unloading**
- 4) Specimen Extractor**
- 5) Controls**

- 1) Compaction Assembly:**

- 1a) Rigid steel frame construction mounted on noise absorbing supports and isolators.

- 2) Vibratory Compaction Unit**

- 2a) Compactor with rectangular and cylindrical compaction head, with (2) Vibco Vibratory Motors capable of exerting pressure up to 22 psi with frequency of 3600 rpm and force of 2450 lbs.

- 3) Sample Tray for Sample Loading/Unloading**

- 3a) Manual slide tray for sample accessibility.

- 3b) Two (2) steel molds, one (1) each for fabricating rectangular and cylindrical specimens.

- 4) Specimen Extractor**

- 4a) Air cylinder to extract compacted specimen.

- 5) Controls**

- 5a) Remote control for initializing Vibratory compaction unit.

- 5b) Remote control for specifying a predetermined compaction time.

- 5c) Specimen height-control device.

- 5d) Main Power Switch

- 5e) Specimen Ejection Switch

PTI's MiniPugmill™ Single Mixer



GENERAL:

Hot-Mix Asphalt Laboratories have needed an efficient mixing system for many years. PTI has solved this problem by developing the Single Pugmill Mixer.

The Single Pugmill Mixer utilizes Stainless Steel Augers, which are offset inside the pugmill chamber. The chamber can mix as little as 4.5 kg. (10 pounds) or as much as 20 kg. (44 pounds); therefore it can prepare mixture closely simulating plant mix for a large range of size specimens. For example it can prepare enough mix for two (2) Asphalt Pavement Analyzer (APA) Beams in one mixing. The augers in the chamber are designed in such a way as to push the mix away from the chamber walls toward the middle of the chamber. This feature insures that the aggregate particles achieve total coating in less than 1 minute. The Single Pugmill Mixer has heated chambers that are capable of maintaining temperatures up to 400-Fahrenheit.

DIMENSIONS:

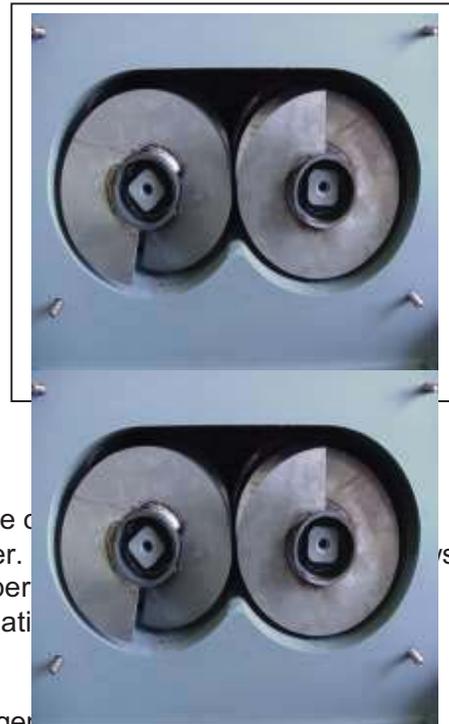
Height:	49"	(125 cm)
Width:	47"	(120 cm)
Depth:	25"	(64 cm)
Weight:	1100 lbs.	(500 kg)

MIXING CHAMBER:

- The Chamber is made of 3/8 inch steel plate with an access door assembly for introducing mixture ingredients.
- The chamber can mix from 4.5 kg. (10 pounds) to 20 kg. (44 pounds).
- The mixing chamber has a slide gate operated by a pneumatic cylinder for discharging mix into a receiver pan.

- The mixer has one receiver pan 0.7 cubic foot in capacity. The pan is constructed of 14-gauge steel.
- The chamber has (2) augers that can be easily removed and cleaned. An end plate is secured by 4 Allen Taps on the end of the chamber. Auger assembly is detached by removing a 7/16" allen bolt from end of the shaft.

Below are Mixing Chamber Pictures:



CONTROLLED CHAMBER TEMPERATURE:

- (8)-500 Watt electric heaters are mounted on the chamber walls.
- The chamber has a digital temperature controller. A user can set the desired temperature inside the chamber.
- Heated chamber walls prevent mixture accumulation.

CONTROL PANEL:

- Main power switch on control panel is the emergency stop.
- Mixer start and stop with amber light when mixing.
- Temperature set point for the chamber on control panel.
- A digital display of temperature for the chamber is on the control panel.
- An off / on switch for the heaters for the chamber.
- Amp gauge for current draw observation.
- Control panel is accessible on front of cabinet.
- A Push/Pull Button is mounted above the chamber to open/close the pneumatic slide gate.

POWER AND SERVICE:

- The Mixer is powered by 3HP electric motor.
- The mixer requires 230 VAC, 60 HZ, 20 AMP circuit, Single Phase – 4 wire NEMA#L14-20
- The mixer requires compressed air of 3 SCFM @ 827 Kpa (120 psi minimum)

CABINETS:

- The cabinets are constructed of an attractive light gray steel cabinet with control panel on front for easy access.

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PAVEMENT TECHNOLOGY INC. (PTI)

Introduces

“The Sound Deadening Enclosure for the Asphalt Vibratory Compactor (AVC)”



Front View of Enclosure



AVC in Enclosure



Rear View of Enclosure

- **Constructed with 14 gauge sheet metal**
- **Access Doors are located on the front and back of the enclosure**
- **Enclosure has 1” noise-deadening close cell insulation on interior panels and doors**
- **Dimensions are 84”H x 64”W x 42”D**

For additional information, please contact Wade Collins-VP of Sales at 770-388-0909. E-Mail address is wadec@pavementtechnology.com.

PTI's MiniPugmill™ Double Mixer



GENERAL:

Hot-Mix Asphalt Laboratories have needed an efficient mixing system for many years. PTI has solved this problem by developing the Double Pugmill Mixer.

The Double Pugmill Mixer utilizes Stainless Steel Augers, which are offset inside each pugmill chamber. It can mix as little as 4.5 kg.(10 pounds) or as much as 20 kg.(44 pounds) in each chamber. The Mixer can prepare mixture closely simulating plant mix for a large range of size specimens. For example it can prepare enough mix for two (4) Asphalt Pavement Analyzer (APA) Beams in one mixing. The augers in each chamber are designed in such a way as to push the mix away from each chamber wall toward the middle of each chamber. This feature insures that that the aggregate particles achieve total coating in less than 1 minute. The Double Pugmill Mixer has heated chambers that are capable of maintaining temperatures up to 400-Fahrenheit.

DIMENSIONS:

Height:	49"	(125cm)	Depth:	25"	(64cm)
Width:	64"	(163cm)	Weight:	1480 lbs.	(672kg)

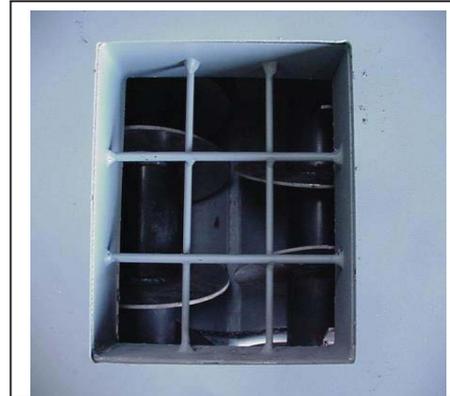
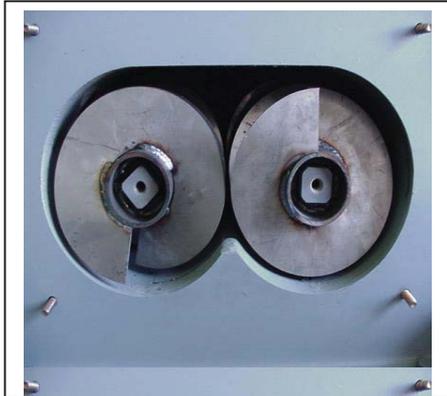
MIXING CHAMBER:

- Two chambers are made of 3/8" steel plate with an access door assembly for introducing mixture ingredients.
- Each chamber can mix from 4.5 kg. (10 pounds) to 20 kg. (44 pounds).
- Both chambers mix simultaneously

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- Each mixing chamber has a slide gate operated by a pneumatic cylinder for discharging mix into a receiver pan.
- The mixer has two receiver pans 0.7 cubic foot in capacity. The pans are constructed of 14-gauge steel.
- Each chamber has (2) augers that can be easily removed and cleaned. An end plate is secured by 4 Allen Taps on the end of each chamber. Auger assembly is detached by removing a 7/16" allen bolt from end of the shaft

Below are Mixing Chamber Pictures:



CONTR

- The temperature controller is mounted on the outside of the pugmill
- The temperature controller is connected to the temperature controller. The temperature controller controls the temperature inside each chamber.
- The temperature controller prevents mixture accumulation.

ATURE:

CONTR

- The emergency stop button is the emergency stop.
- Mixer start and stop with amber light when mixing.
- Temperature set point for the chamber on control panel.
- A digital display of temperature for the chamber is on the control panel.
- An off / on switch for the heaters for the chamber.
- Amp gauge for current draw observation.
- Control panel is accessible on front of cabinet.
- A Push/Pull Button is mounted above each chamber to open/close the pneumatic slide gate.

POWER AND SERVICE:

- The Mixer is powered by 3HP electric motor.
- The mixer requires 230 VAC, 60 HZ, 20 AMP circuit, Single Phase – 4 wire NEMA#L14-20
- The mixer requires compressed air of 3 SCFM @ 827 Kpa (120 psi minimum)

CABINETS:

- The cabinets are constructed of an attractive light gray steel cabinet with control panel on front for easy access.

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Pavement Technology, Inc. (PTI) Introduces “The Automatic Belt Sampler”



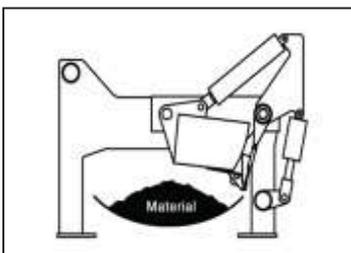
The PTI Auto-Belt Sampler (ABS) is an improvement on the traditional “stopped-belt” method of sampling, which involves the stopping of a loaded conveyor belt and removing a full cross-sectional sample from the flow. Although reliable, the major drawbacks of the stopped-belt method are its dependence upon dedicated personnel and its interruption of the production process. The Auto sampler is easily retrofitted to virtually any point along existing conveyor structures, and, once installed, eliminates the need for dedicated personnel, and has the ability to collect a complete cross-sectional sample of aggregate from a moving conveyor belt in less than one second.

When combined with an Automated Gradation Unit (AGU), the Auto-Belt will allow an operator to sweep a sample of crushed aggregate off a moving conveyor belt (at intervals set by the operator) and dump it through a chute into the inlet hopper of the AGU for processing. This automatic system will provide continuous real-time gradation information without stoppage to the conveyor belt.

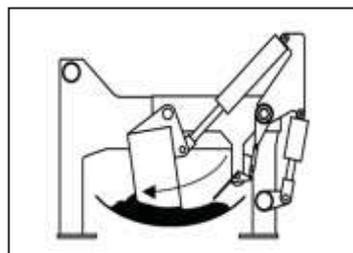
The ABS is pneumatically operated (90psi air required), and can accommodate belt widths 24” to 60” wide. As a rule of thumb, the cutter width must be 3 times the size of the largest aggregate (eg.6” if top size aggregate is 2”). Complete unit with accessories weighs approximately 1500 pounds and runs on 110 volt, single-phase current.

Auto-Belt Sampler (ABS) system includes:

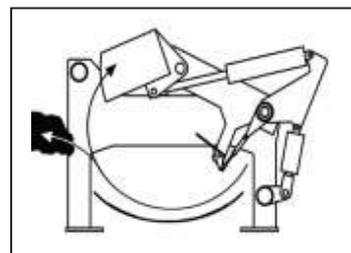
- Base machine
- Divider/Cutter Assembly
- Contour Support idlers at point of sweep
- Operating sensors & junction box (NEMA 4X)
- Basic hoses and fittings for plant air hook-up or complete set up with self contained air compressor



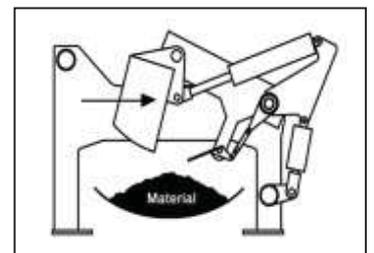
Parked Position



Sample Sweep Position



Retract Position



Retract Scoop

Pavement Technology, Inc. (PTI)

Presents “The Laboratory Automatic Gradation Unit”



Pavement Technology, Inc. (PTI) Automatic Gradation Unit (AGU) is a particle size analyzer that conducts a complete sieve analysis automatically and transmits the accumulated data to a computer, where the data is saved in an Excel spread sheet for further manipulation and analysis. The AGU has a carousel (mounted below the weigh hopper) that is used as a material separator. The carousel can accommodate 8-containers (5-gallon buckets) that rotate underneath the discharge hopper. The buckets collect the aggregate. The AGU also has an Automated Loading System that allows a user to stage up to 7 samples (40-45lbs.) for gradation analysis or material separation.

A typical sieving run (typically 10 minutes or less) with the AGU classifies and weighs each sieve, then produces a printout that shows the weights of each sieve, percent retained, percent cumulative, and percent passing. The AGU can accommodate samples up to 40-45 lbs. on 18" x 24" (nominal) screens, and meets ASTM specifications for screen size to sample weight ratio.

The AGU allows a user to automate the entire sieve analysis process and incorporate electronic data transfer. This allows the user to test samples more frequently and with better repeatability so that operator error and labor are minimized. The AGU has vibratory motors that ramp through the optimum resonant frequency for each sieve size. With this unique ability, the AGU will quickly and efficiently grade sample batches of aggregate in less time than would normally be required by conventional shakers using manual weighing and recording techniques.



LABORATORY AUTOMATIC GRADATION UNIT

SPECIFICATIONS:

DIMENSIONS:

Agu Unit: 60"L x 56"W x 120"H. Weight: 1,740lbs.

Automatic Loading System: 70"L x 48"W x 115"H. Weight: 2,840lbs.

Carousel(Material Separator): 60"L x 48"W x 20"H. Weight: 1,020lbs.

Power Panel: 36"L x 48"W x 72"H. Weight: 500lbs.

REQUIREMENTS:

Electrical: 230volt/208volt, 60HZ, 1-Phase

Compressed Air: 552 kPA (80psi minimum)

OPERATIONAL CONTROLS:

A Computer is used to input all controls to the AGU's operating mechanism. The software can select one sieve or any combination of sieves to be emptied and will allow the operator to set sieving time, sieving frequency, cleaning time, and cleaning frequency.

SIEVES:

The AGU is supplied with 7 sieves (18" x 24" nominal), each bolted into a rugged steel frame. The sieve frames are interchangeable and are held in the AGU vibrating cabinet by a secure binding system. Sieves can be changed in minutes using commonly available hand tools. Standard sieves are 37.5mm (1.5"), 25mm (1"), 19mm (3/4"), 12.5mm (1/2"), 9.5mm (3/8"), 4.75mm (#4), and 2.36mm (#8). Additional sizes are available, and the AGU can be supplied with additional screens upon request. Substitution of non-standard screens is available upon initial purchase.

CAROUSEL: (Used for Material Separation)

The AGU is supplied with an 8-position carousel that can accommodate eight 5-gallon buckets. After a sample is separated into different sizes, each screen door opens, and deposits the material into individual 5-gallon buckets that are positioned on the carousel.

AUTOMATED LOADING SYSTEM:

The AGU can be supplied with a 7 position automated loading system that allows a user to stage multiple samples for gradation analysis and material separation. The Automated Loading System deposits each sample into the AGU. After a gradation report is complete the Loading System deposits the next sample and all subsequent samples in the AGU. A user can load 7 samples, turn the AGU on, and have 7 gradations with reports complete in 1 to 1-1/2 hours.

Field Automatic Gradation Unit(AGU)



Field Automatic Gradation Unit(AGU)

The Field AGU is used to automatically run gradations on aggregate and related materials in the Field. After receiving the sample from a Belt Sampler or Similar Device, the Field AGU shakes(Utilizing Vibratory Motors) the sample and then deposits the material retained on each screen(ASTM Approved Screens-Like the ones used in a Gilson Shaker) into the weigh hopper. The AGU has a frequency drive that allows a user to move the frequencies up and down to insure material on the screens is deposited into the weigh hopper. There is an optimal resonant frequency for each screen size. The weigh hopper weighs the sample and the control system performs all calculations. The control system also generates an Excel Spreadsheet with Percent Passing, Percent Retained, Percent Cumulative, Etc. Typically a Sample can be shaken and a report generated in approximately 10 minutes.

150lb. Capacity Field Automatic Gradation Unit(AGU)

GENERAL

The Automatic Gradation Unit (AGU) is a particle size analyzer that conducts a complete sieve analysis automatically in the field and transmits the accumulated data to a computer, where the data is saved in an Excel spreadsheet for further manipulation and analysis. The AGU's sample capacity is 150lbs.

The AGU can accommodate up to 7 sieves (36" x 42"), which has ASTM approved screen wire. These sieves are clamped into individual rugged steel drawers. These drawers are interchangeable and are held in the AGU Vibrating cabinet by a secure binding system.

Deliverables:

- One AGU with 7 drawers and screens (36" x 42"). Screen sizes are 3.5", 2 1/4", 2", 1 5/8", 1", 1/2", and 3/8. *Note additional drawers with screens are available upon request. Customer can install screens in drawers with common hand tools
- Control System with Computer, Software, and Printer. Data is saved in an Excel Format.

- An Air Cylinder is used to rotate the AGU Carriage into a vertical and horizontal position. Horizontal Position is used to unload each screen into the weigh hopper. Horizontal position is also used to clean screens.
 - Two Vibratory Motors Mounted on AGU are used to set the optimum resonant frequency for each screen size.
 - Canopy for AGU
 - Drizzle Hopper for AGU. Hopper deposits sample onto screens.
 - Weigh Hopper with 3 load cells are utilized to weigh graded material.
- 50lb. Capacity Field Automatic Gradation Unit(AGU)

The Automatic Gradation Unit (AGU) is a particle size analyzer that conducts a complete sieve analysis automatically in the field and transmits the accumulated data to a computer, where the data is saved in an Excel spreadsheet for further manipulation and analysis. The AGU's sample capacity is 50lbs.

The AGU can accommodate up to 7 sieves (18" x 24"), which has ASTM approved screen wire. These sieves are clamped into individual rugged steel drawers. These drawers are interchangeable and are held in the AGU Vibrating cabinet by a secure binding system.

Deliverables:

- One AGU with 7 drawers and screens (18" x 24"). Screen sizes are 3.5", 2 1/4", 2", 1 5/8", 1", 1/2", and 3/8. *Note additional drawers with screens are available upon request. Customer can install screens in drawers with common hand tools
- Control System with Computer, Software, and Printer. Data is saved in an Excel Format.
- An Air Cylinder is used to rotate the AGU Carriage into a vertical and horizontal position. Horizontal Position is used to unload each screen into the weigh hopper. Horizontal position is also used to clean screens.
- Two Vibratory Motors Mounted on AGU are used to set the optimum resonant frequency for each screen size.
- Canopy for AGU
- Drizzle Hopper for AGU. Hopper deposits sample onto screens.
- Weigh Hopper with 3 load cells are utilized to weigh graded material.

REMOTE TRUCK SAMPLING DEVICE (RTSD)



GENERAL:

The Remote Truck Sampling Device (RTSD) safely captures a representative, repeatable, non-segregated sample of asphalt from a haul vehicle and deposits the sample into a specimen container.

The RTSD incorporates a “Telescopic Probe” which captures the sample inside the hump of Hot Mix Asphalt. The probe can traverse forwards and backwards and up and down. The angle of the probe can also be changed.

The probe has (2) 1100-watt cartridge heaters which heat the probe and maintain the preset temperature of the probe while capturing a sample. The probe also utilizes a “Stainless Steel” gate that opens and closes inside the hump of mix. The RTSD can extract a sample from a fully loaded truck as well as a partially loaded truck.

An elevator (mounted to the steel upright) is used to transport the sample from the probe head to ground height. Typical sample size is 40 to 50 lbs and can be captured in approximately 1 minute.



FEATURES

- Steel Uprights and Cross Members
- Heated probe with Stainless Steel Gates
- Elevator for transporting Hot Mix Asphalt Sample to Ground Height
- Hydraulic Pump, Hydraulic Lines, and Cylinders
- Operator Stand with Operational Controls



SUPERPAVE TESTING LABORATORIES



GENERAL:

The labs are constructed with large structural members and solid steel floors. The labs are designed to last 25-30 years. The labs include wood cabinets with stainless steel tops, an HVAC Unit, a 200-Amp load center, and all the needed receptacles for testing equipment.

Basic Sizes

65' x 10'

50' x 10'

35' x 10'





FEATURES

- 3/16" Solid Steel Floor
- Surface-Mounted Electrical for all receptacles and switches
- Wainscot Laminated Wallboard
- 200-Amp Load Center with Quick Connect
- Thermostatically Controlled HVAC Unit
- Wooden Cabinets with Stainless Steel Tops
- Office with wrap around desk capable of housing computer & printer
- Fluorescent Lighting
- R-19 Insulation in Walls and Ceilings



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Automatic Gradation Unit (AGU)-40F

GENERAL

The Automatic Gradation Unit (AGU) is a particle size analyzer that conducts a complete sieve analysis automatically in the field and transmits the accumulated data to a computer, where the data is saved in an Excel spreadsheet for further manipulation and analysis. The AGU's sample capacity is 40lbs.

The AGU can accommodate up to 7 sieves (18" x 24"), which has ASTM approved screen wire. These sieves are clamped into individual rugged steel drawers. These drawers are interchangeable and are held in the AGU Vibrating cabinet by a secure binding system. The AGU has a canopy, which will serve as protection.

The AGU requires compressed air: 3SCFM at 690kpa(100psi minimum). Air compressor is not included. The unit is designed to 240 volt, 60hz, 40 amps, and 3-phase power supply.

Customer Requirements and Options:

- Have Boom Truck available to place AGU at desired location.
- A Reinforced Concrete Pad 6" thick that is 5' x 7' will need to be poured. Detail for pad, plates, etc. will be provided.
- Customer to Provide 480-Volt, three phase, 60hz power to AGU
- Customer to provide 120psi compressed air. (Dedicated Compressor for AGU is recommended). Plant air can also be used.
- Customer to provide Heavy Duty Chute from ABS to Aggregate Dryer and from Dryer to AGU. Customer may elect to install a "Y" partition with diverter to allow ABS material to accumulate at ground level.
- Customer to provide conveyor, wheelbarrow, etc. for offloading graded sample.

GENERAL

The Dryer accepts a sample (40# max.) from the belt sampler. The Dryer is electrically heated and continuously weighs the sample during the drying process. The drying time is typically 30-40 minutes, depending upon the moisture content of the material. The control system monitors the drying process and generates reports proving moisture content information. The Dryer Operates on 240-Volt, Single Phase, 60hz power.

Deliverables:

- Aggregate Sample Dryer (Electrically Heated). Capable of accommodating up to a 40 lb. Sample. Accepts sample from belt sampler, continuously weighs sample during drying process. Provides moisture content of the sample.
- Canopy which will be mounted above Dryer

- Control system for activation of load cells, heating elements, and report generation
- O&M Manual

Customer Requirements:

- Have Boom Truck available to lift Drying Unit in place
- Provide 240-Volt Single Phase, 60hz, Single Phase power to Aggregate Drying System Location
- Customer to provide 120psi compressed air. (Dedicated Compressor for Dryer is recommended). Plant Air can also be used.
- Customer to Provide Heavy Duty Chute from Dryer to AGU.

Real – Time Quality Control (RTQC) for Asphalt Plants

The RTQC system for asphalt plants utilizes an RTSD, which captures a representative sample of asphalt from a haul vehicle and deposits the sample into the Field Ignition Oven (FIO). The FIO weights the sample, burns the asphalt off the sample, re-weights the sample, and produces an asphalt content test report. This burned sample is deposited into the Automatic Gradation Unit (AGU), which grades the sample and produces a gradation report in an Excel Format. Typical test time is 40-45 minutes.

“Real-Time Quality Control for Aggregate Plants”

Pavement Technology Inc. (PTI) has recently developed an aggregate quality control system, which utilizes an Automatic Belt Sampler (ABS) and an Automated Gradation Unit (AGU). These two units work in tandem to give on-the-spot-analysis of crushed aggregate. Typically they are located downstream from a secondary crusher.

The ABS is a technological advance on the traditional method of stopping the conveyor belt to obtain a sample, on the traditional method of obtaining a sample from a stockpile, and on the traditional method of obtaining a sample from a haul vehicle. The ABS is mounted on a conveyor belt. The ABS has adjustable idlers that conform the belt to approximately a 35-degree angle. A “Cutter Head” parks on the edge of the moving conveyor belt and sweeps a representative sample in 6/10’s of second and deposits the sample into a specimen into the AGU.

The AGU is typically mounted directly underneath the ABS or adjacent to it. The AGU receives the sample from the ABS. The AGU is capable of shaking up to a 90 lb. sample. Vibratory Motors shake the AGU screens (7-screens) and ramps through the resonant optimum frequencies for each screen size. After the shaking cycle is complete the screen rotate 90 degrees. Each screen has gate attached to the back of the screen. These gates open one at a time and deposit material into a hopper, which sits atop load cells. A Programmable Logic Unit (PLC) performs all calculations-percent passing, percent cumulative, percent retained, and the weights of all the sieves. A conveyor can be mounted underneath the weigh hopper to discharge tested material into a discharge pile. Tested material can also be sent to the original conveyor belt. Test result’s can be obtained in less than 10 minutes.

The ABS allows a user to sweep one or multiple sample from a moving conveyor belt and deposit these samples into the AGU. The AGU produces a test report, which can be sent to the control house. The plant operator can then make changes to the close side setting on a crusher. Real-time Quality Control allows aggregate producers to monitor plant production closely, run more material within specification, and utilize plant personnel and their expertise in other areas.