

ASPHALT VIBRATORY COMPACTOR (AVC)

**MODEL AVC II
For
FABRICATING ASPHALT SPECIMENS**

USER'S GUIDE

(Updated 11/4/03)

**PAVEMENT TECHNOLOGY INC. (PTI)
9308-A Industrial Drive NE
Covington, GA 30014
(770) 388-0909
FAX: (770) 388-0149**

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Chapter 1

Introduction

1.1 Overview of Pavement Technology Inc. (PTI)

- A. **Company Mission:** To be the industry leader in the manufacture and development of innovative asphalt and aggregate sampling and testing equipment.
- B. **History:** In the spring of 1996, PTI was formed by a joint venture between Ronald Collins and ASTEC Ind. The first Asphalt Pavement Analyzer and Asphalt Vibratory Compactor were manufactured at ASTEC Ind., in Chattanooga, TN. In the fall of 1996 PTI moved to a temporary facility in Conyers, GA. And in the fall of 1998, PTI moved to its current location in Covington, GA.
- C. **Products:** PTI currently manufactures eight products for the asphalt and aggregate industry, they are:
 - 1. **The Asphalt Pavement Analyzer (APA)**
 - 2. **The Asphalt Pavement Rut Tester**
 - 3. **The Mix Verification Tester**
 - 4. **The Asphalt Vibratory Compactor (AVC)**
 - 5. **The Single and Double Pugmill Mixers**
 - 6. **The Laboratory Automatic Gradation Unit (AGU)**
 - 7. **The Robotic Truck Sampling Device**
 - 8. **Mobile and Skid Mounted Laboratories**
- D. **Research/Training:** PTI is dedicated to Asphalt Research and Training for the Hot Mix Asphalt Industry and is available as requested.
- E. **Service:** PTI offers complete service for all company products. We encourage our customers to contact us day or night if they have any problems. Technical help can be given via telephone and if necessary we have a team of fully trained field technicians who can repair any malfunctions.

F. People

1. Ronald Collins, President-PTI. Former Georgia DOT, State Materials and Research Engineer, Retired. He helped in the development of the Georgia Loaded Wheel Tester (GLWT) in 1985 to evaluate rutting characteristics of asphalt while at Georgia DOT. Upon his retirement, Ronald joined with Don Brock, CEO, ASTEC Ind., to develop the modern GLWT known as the APA.
2. Wade Collins, Vice-President-PTI. Wade began working with PTI in 1996. In 1997 Wade took over sales and marketing of all PTI products.

1.2 Warranty Conditions

1. Products manufactured by Pavement Technology, Inc. (PTI) are warranted to be free of defects in materials and workmanship for a period of 90-days, from the date of shipment (f.o.b. factory). If, within such warranty period, any machinery or part should be proved to PTI's satisfaction to be defective, it will be repaired or replaced. Domestic repair or replacement of the defective part may take place at the factory or customer's location as necessary. International repair or replacement of defective parts involving the transportation and lodging of company personnel to a customer's location is not covered by this warranty. Other manufacturers' warranties will apply to such components as motors, pumps, cylinders, gauges, etc. which PTI must purchase outside of its facility.

Note: PTI will not assume responsibility for the cost of repairs or the replacement of parts that result from misuse or abuse of its products in the field by the end user.

2. Should the purchaser cancel a purchase order during or after shipping, it will be the purchasers' responsibility to cover the cost of return shipping.
3. The delivery date on the invoice or proforma is only an estimated date of delivery. PTI will make every effort to insure delivery by the due date. However, should unexpected delays be encountered at the factory, PTI shall not be held financially liable for such delays.
4. PTI's liability insurance does not cover loss or damage to its manufactured products after physical control has been relinquished to the shipping agency. It is recommended, therefore, that the purchaser insure all products ordered from PTI (f.o.b.) to their final destination. If any loss or damage should occur to purchased goods during shipments enroute, PTI is to be held harmless against any claims arising from such loss or damage.

1.3 Machine Specifications

MACHINE DESCRIPTION: The Asphalt Vibratory Compactor II (AVC II) utilizes the unique vibratory compression actions to consolidate and compact asphalt mixtures to fabricate beam specimens and cylindrical specimens to within a close tolerance of the target density value quickly. The compaction actions from this vibratory compaction machine closely simulate the field compaction of asphalt mixtures by the vibratory compaction roller.

SPECIFICATIONS:

Width: 34in.
Length: 61 in.
Height: 81 in.
Weight: 2,350 lbs.
Power Requirements: 220 VAC, 60 HZ, 40 Amp
Electrical Requirements: (2) Single Phase 208 Volt Motors
(1) 3TF 3200 Starter Contactor.
(1) 15 Feet Power cord attached to Pedestal.

Compacted specimen size: Standard Specimens:

125 mm wide by 300 mm long by 75 mm height beam
150 mm diameter by 75 mm height cylinder
Other specimen size by special order

1.4

SAFETY INSTRUCTION

**THE EMERGENCY STOP BREAKER REMOVES ALL
POWER EXCEPT THAT FROM THE PLUG
TO EMERGENCY STOP BREAKER.**

**UNPLUG MACHINE BEFORE OPENING CONTROL
PANEL.**

**TURN OFF EMERGENCY STOP BEFORE
OPENING DOORS.**

CHAPTER 2

Unpacking and Installation of the Asphalt Vibratory Compactor

2.1 Checking the Parts

The following parts are included with the Asphalt Vibratory Compactor (AVC II).

1. One rectangular mold for 125 mm X 300 mm beam specimen
2. One cylinder mold for 150 mm diameter cylinder specimen
3. Three compaction plates for 125 mm X 300 mm beam specimen
4. Three compaction plates for 150 mm diameter cylinder specimen
5. One 125 mm X 300 mm beam specimen compaction head
6. One 150 mm diameter cylinder specimen compaction head
7. One pair of specimen extraction restraining brackets with 4 bolts
8. Two copies of the User's Guide

2.2 Location and Power Source

Location: The overall dimensions of the machine are 34 in. wide by 61 in. long by 81 in. high. The machine should be located on a level floor, using shims to adjust and level the machine. The machine is operated from the front. A space of 3 ft. in front of the machine should be adequate for the normal operation. A space of 2 ft. is needed on one side and in the rear to allow for access to the back of the machine for maintenance.

Electrical Requirements: A single-phase 220 Volt 40 Amp fused electrical outlet is required. It is recommended that a separate circuit serving only this machine be provided and be equipped with a 40 ampere circuit breaker. A three-foot power cord is provided with a 40-ampere plug on the end. The machine is operated by a pedestal stand facing the machine.

2.3 Names of Parts

This section identifies the major parts of this compaction machine and gives a brief description of the function of each. The part names introduced in this section will be used throughout this manual. The machine, as shown in Figure 1, consists of the following four basic components:

- (A) Vibrating compaction assembly
- (B) Specimen mold
- (C) Specimen extruding assembly
- (D) Operation control system

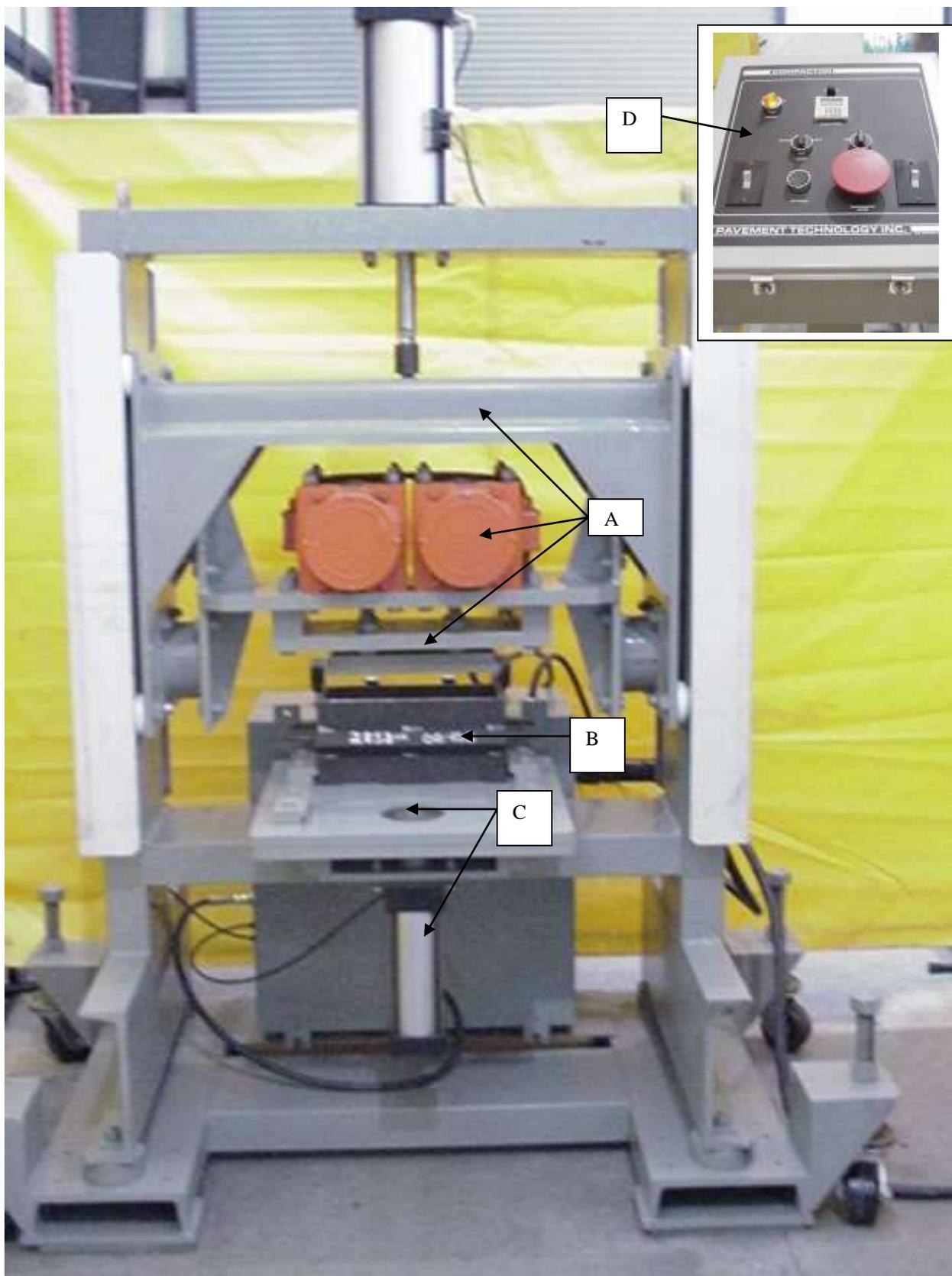


Figure 1

(A) Vibrating compaction assembly

Figure 2 shows the vibrating compaction assembly. Figure 3 and Figure 4 show the beam specimen compaction head and the cylinder compaction head attached under the vibratory unit. This system consists of the following components.

- (A1) 4 in. diameter pneumatic actuator, for driving the vibrating assembly and providing the compressive force necessary for compacting loose asphalt mixtures.
- (A2) Vibrating assembly, consisting of two high efficiency vibrators (A2a) bolted to the base plate (A2b) through four rubber connectors (A2c) to isolate the vibrating actions. Eight-track rollers (A2d) restrain the vibrating compaction motion in a vertical direction to guide the vertical sliding assembly.

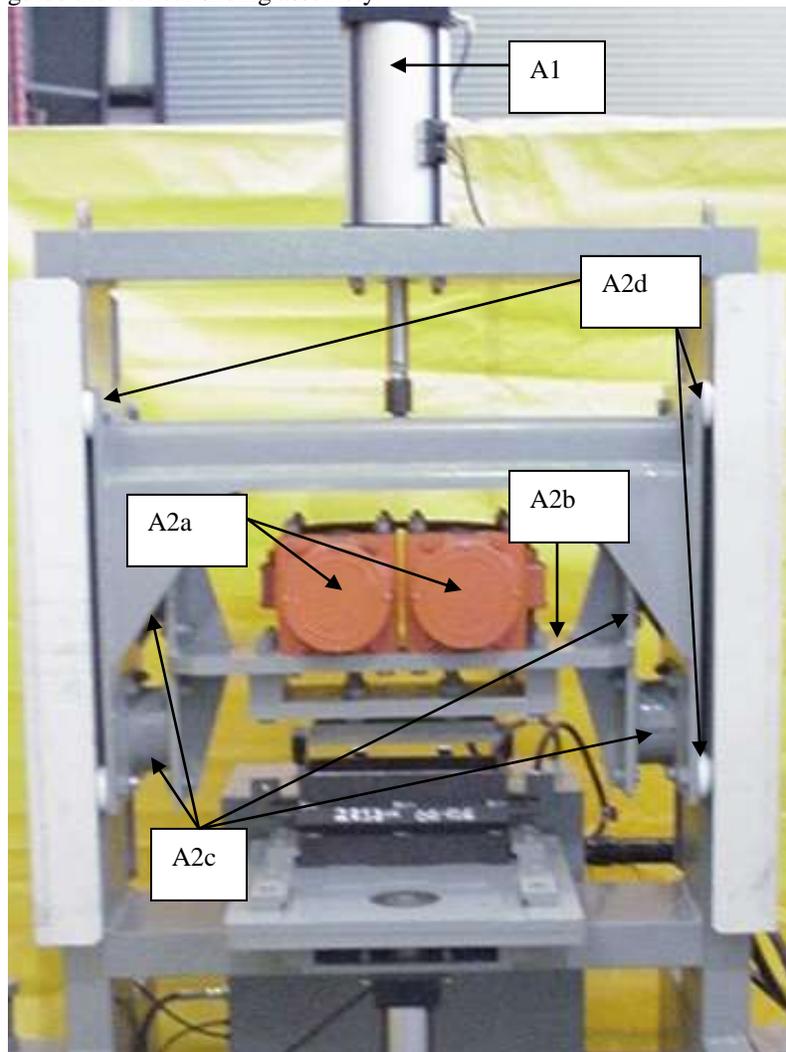


Figure 2

- (A3) Compaction head. Two different compaction heads, a rectangular head (A3a) for 125 mm by 300 mm beam specimens and a circular head (A3b) for 150 mm diameter cylindrical specimens, can be attached to the vibrating assembly base plate using 4 sets of bolts and nuts and the compactor head adjustment plate (A3c) as shown in figure 3.

- (A4) Specimen supporting base, see Figure 3 and Figure 4, with a recessed area positioned directly below the compaction head for the beam mold or the cylinder mold to fit into during the compaction operation.



Figure 3. Beam Specimen Compaction Head

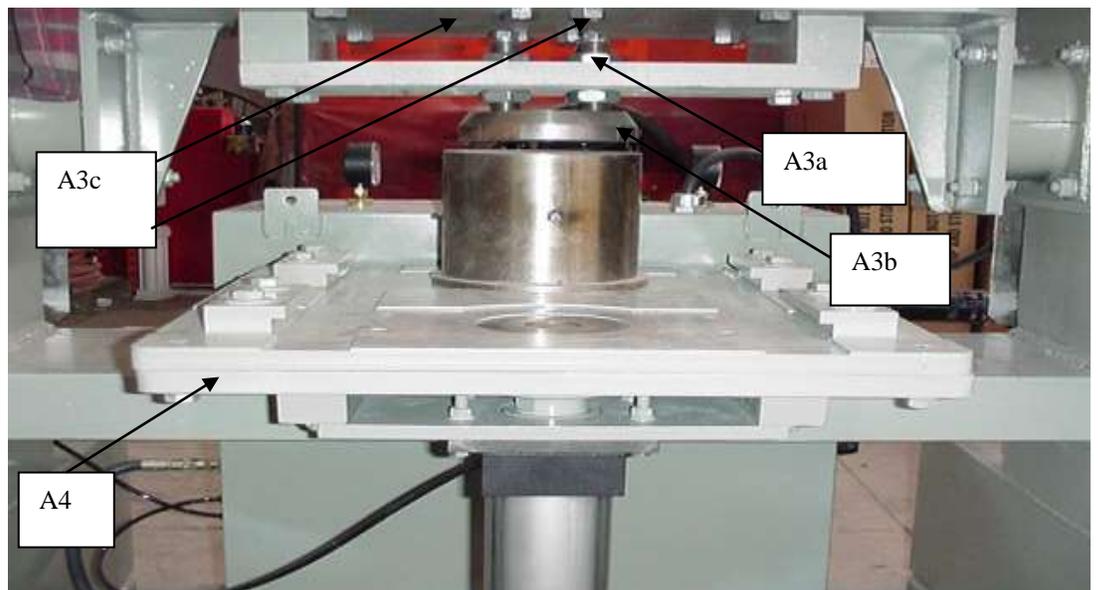


Figure 4. Cylinder Specimen Compaction Head

(B) Specimen mold

Two types of specimen molds, see Figure 5 & 6, are provided for making the beam specimen and the cylindrical specimens.

- (B1) Beam mold assembly, consisting of a rigid rectangular side frame (B1a), a rigid movable bottom (B1b), and two compaction plates (B1c).



Figure 5 Rectangular Mold

- (B2) Cylinder mold assembly, consisting of a rigid circular sidewall (B2a), a rigid movable circular bottom (B2b), and two circular compaction plates (B2c).

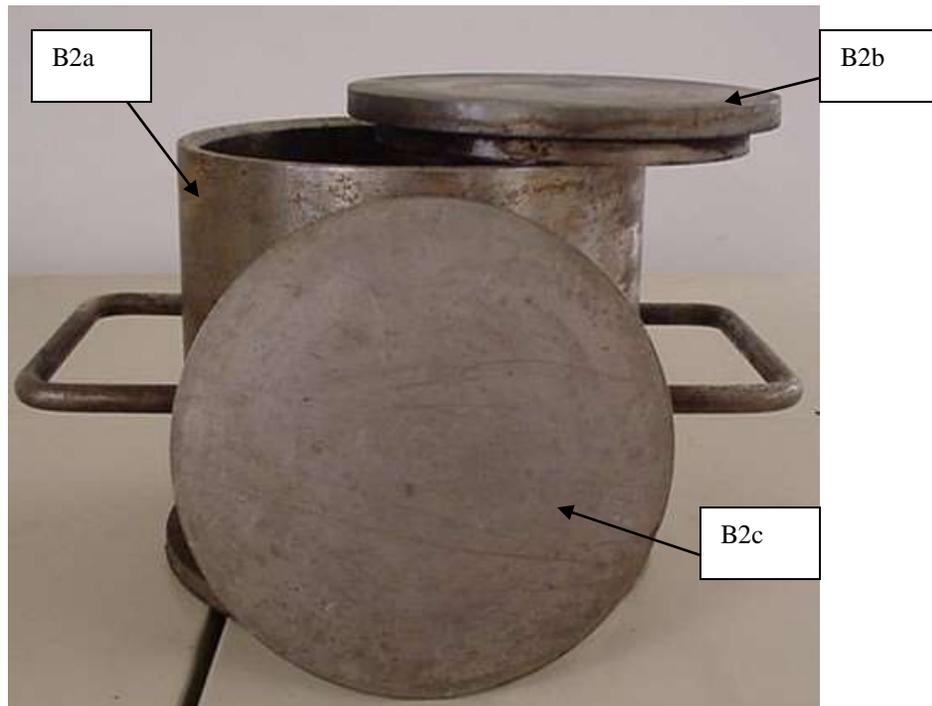


Figure 6 Cylindrical Mold

(C) Specimen extruding assembly

This assembly is for extruding the specimen from the specimen mold immediately after compaction. This assembly consists of the following components:

- (C1) Specimen supporting base, see Figure 7 and Figure 8: The base has a recessed area for the beam mold or the cylinder mold to fit into for positioning the specimen mold during the extruding operation.
- (C2) Specimen restraining brackets, see Figure 7.
- (C3) Extrusion pneumatic cylinder, see Figure 7.

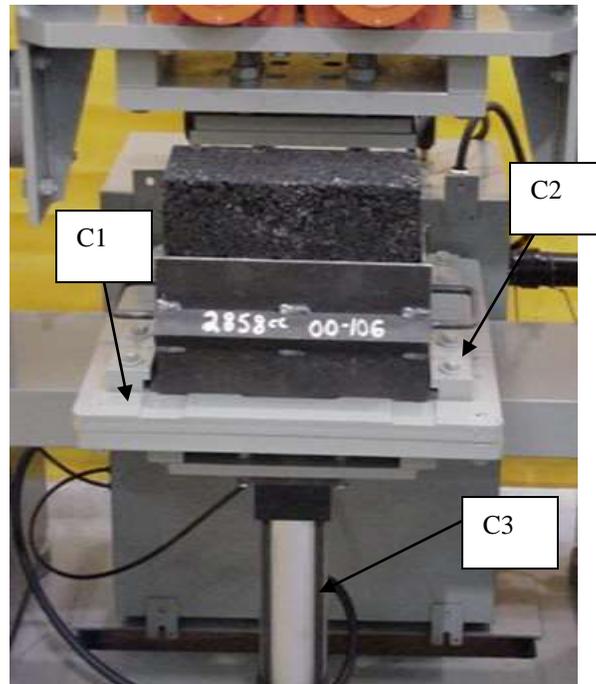


Figure 7

D) Operation control system

The operation control system is used to perform the specimen compaction and extrusion operations and consists of following components:

- (D1) Stand alone control unit.
- (D2) Two palm switches on each side. (May be red or green)

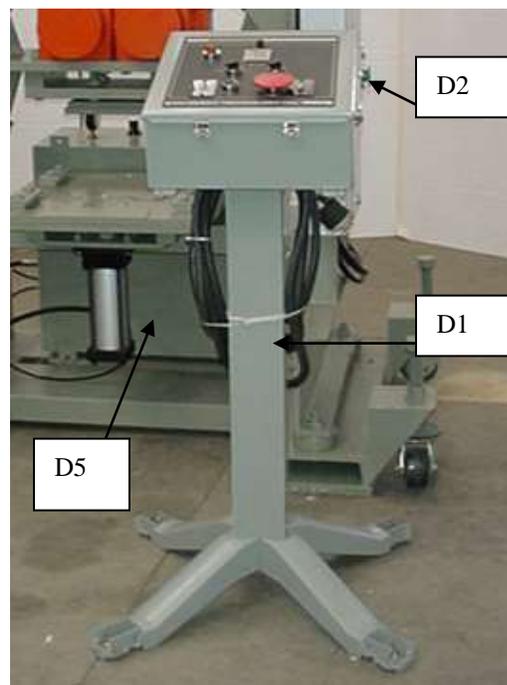


Figure 8

- (D3) System pressure regulator (D3a) and pressure gauge (D3b) (set to 115 PSI). (mounted on top of rear enclosure). See Figure 9
- (D4) Counter balance pressure regulator (D4a) and pressure gauge (D4b) (set to 20PSI).

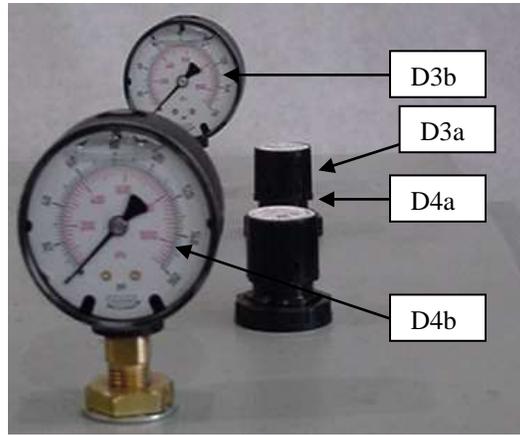


Figure 9

- (D5) Control circuit box, see Figure 8.

2.4 Installation

Perform the following installations after the machine is moved to the designed location and leveled.

- (A) Check that the power cord is connected to the power source.
- (B) Place the stand alone control unit at the position about 2 ft. in front of the machine and about 1 ft. to the left or to the right of the machine, see Figure 1.
- (C) Connect cables from the machine to the control unit.

2.5 Testing the Machine

Follow the steps described below to test the machine.

- (A) Before connecting the main power cord to the power source, take a few minutes to familiarize yourself with the switches on the control unit, see Figure 8.
- (B) On the control unit, turn the MODE switch to MANUAL, VIBRATION switch to OFF, depress the EMERGENCY STOP button.
- (C) Plug the main power cord to the power source and turn power switch on. Check the left and right pressure gauge readings. The left pressure gauge should indicate a 100PSI pressure and the right pressure gauge should indicate a 20PSI pressure. If the pressure gauges do not indicate these readings, use the pressure regulator adjacent to the pressure gauge to make the adjustment. (Most models have the pressure regulators and pressure gauges mounted on top of compactor back panel).

(D) Pull up the EMERGENCY STOP button on the control unit. Turn the VIBRATION switch to ON. The vibration assembly should start the vibration motions. Turn the switch to OFF to stop the vibration motions change.

(E) Press both green palm buttons simultaneously. This should cause the vibrating assembly to move downward. The downward movement should stop immediately when the palm button, either one, or both, is released.

(F) With the vibrating assembly at the low position, press and hold the RETRACT button on the control unit to raise the vibrating compaction assembly.

This completes the testing of the machine. If any of the operation does not work as described, go to Section 6.1 Trouble Shooting to resolve the problem.

Chapter 3

Calibrating the Asphalt Vibratory Compactor

3.1 Preparation

1. The rectangular compaction head is normally mounted and calibrated by PTI at the factory. Each customer should verify the calibration after the AVC has been delivered.
2. Each AVC is equipped with one rectangular compactor head mounted to a vibrator assembly base plate and one cylindrical compactor head mounted to a vibrator assembly base plate.
3. Each AVC is equipped with one rectangular and one cylindrical calibration block. These will be used to establish a 75mm compaction height.
4. Each compaction head is held to the vibrator assembly base plate with eight adjustment nuts. These nuts allow the compactor head to be adjusted vertically to achieve the correct compaction height.
5. Each vibrator assembly base plate is held to the vibrating assembly with four bolts.
6. Once the compaction head height is set, the rectangular and cylindrical heads may be changed by removing the vibrating assembly base plates. This avoids the need to recalibrate the compaction height when the rectangular and cylindrical heads are exchanged.

3.2 Calibrating the Compactor Head

The following steps should be completed before starting the specimen compaction operations.

1. To check the calibration of the rectangular head, loosen the eight nuts on the compactor head adjustment plate.



2. Place the white calibration block and two of the steel compaction plates into the steel mold.
3. Place the mold under the compaction head.
4. Switch the AVC to “Manual” and Vibrators “OFF”.
5. Lower the compactor head into the mold.



6. When the vibrating assembly base plate rests on the steel mold, tighten the four nuts on the top of the compaction head until they touch the compaction head.



7. Raise the compactor and tighten the four remaining nuts under the compaction head.



3.3 Adjusting Compaction Pressure

1. The compaction effort required to compact an HMA to achieve the density requirement, depends on the type of HMA.
2. The amount of compaction effort that can be delivered by the AVC depends on the static compaction force and the duration of the vibrating action, both can be adjusted.
3. The static compaction force is controlled by the compaction pressure (system pressure) and the counter balance pressure.
4. The relationship between these two pressure readings and the net compaction pressure are shown in the following table.
5. To compact beam specimens and cylinder specimens of different types of HMA the following settings should be sufficient to achieve $7\pm 1\%$ air voids.

Specimen Type	System Pressure	Counter balance Pressure	Vibrating Time, sec
150 mm dia cylinder specimen	120 PSI	30 PSI	25 sec
125 mm x 300 mm beam specimen	100 PSI	20 PSI	25 seconds, rotate beam 180° and compact another 25 seconds

6. The system pressure is shown on the pressure gauge located on the left side of the machine.
7. The counter balance pressure is shown on the pressure gauge located on the right side of the machine.



8. Vibrating time can be adjusted from the CYCLE TIME counter on the control unit.

Chapter 4

Asphalt Vibratory Compactor Test Method

4.1 Mixture Preparation

1. The AVC is designed to produce specimens with a target density of 7±1% air voids.
2. The volume of the mix (in grams) should be determined from the mold volume.
 - a. Beam mold

$$\frac{\text{Length(mm)} \times \text{Width(mm)} \times 75\text{mm height}}{1000 \text{ mm}^3/\text{cm}^3} = \text{Volume in cm}^3$$
 - b. Cylindrical Mold

$$\frac{3.14(\pi) \times (150\text{mm radius})^2 \times 75\text{mm height}}{1000 \text{ mm}^3/\text{cm}^3} = \text{Volume in cm}^3$$
 - c. Grams of mix = mold volume (cm³) x 0.93 x Gmm*
 - d. *Gmm = mix maximum specific gravity
 - e. 0.93 = density@7% air voids
3. Heat the binder to its mixing temperature.
4. Heat 6400 grams of aggregate to not more than 50° F above the mixing temperature. This will provide enough mix to compensate for spillage.
5. Mix the aggregate and asphalt until all particles are thoroughly coated.
6. With the calculation from step 2c weigh out the material into a pan. The pan should be large enough so that the thickness of the mix in the pan is between 25 mm and 50 mm (1" to 2").
7. Insert a thermometer into the mix and place in a forced draft oven for two hours at the desired compaction temperature.
8. Inspect the steel mold and make sure it is clean then place it in the oven.

4.2 Compaction Operation

The following specimen compaction procedures may be used for compacting either cylinder or beam specimens.

1. Place the specimen mold on top of a counter adjacent to the AVC.
2. Insert a preheated compaction plate into the mold. If desired, apply a light coat of oil on the inside surfaces of the mold and the compaction plate. A can of cooking oil spray (available from supermarkets) works well for this purpose.
3. Remove loose HMA from the oven and pour the entire batch into the mold and level the mixture at the top.
4. If desired, spray the preheated top compaction plate with cooking oil and place it on top of the mold.
5. Measure the temperature in the mixture. Temperature at the start of compaction should be within the specified compaction temperature range for the mixture. If not place it in the oven until it reheats.
6. Transfer the specimen mold to the supporting base of the machine and fit it in the recessed area.
7. On the pedestal, set CYCLE TIME to 25, turn MODE switch to AUTO, VIBRATING switch to AUTO, and pull up (disable) the EMERGENCY STOP.
8. Press and hold both green palm buttons (or red buttons on some models). This will cause the vibrating assembly to move downward automatically.
9. When it reaches the top of the steel mold the vibrating actions will be activated automatically. You may release the palm buttons at this time.
10. Under the static compression force and the vibrating actions, the compaction head will move downward to consolidate and compact the loose asphalt mixture confined in the specimen mold for 25 seconds.
11. For most of HMA the compaction will be achieved in 25 seconds. The bottom surface of the vibrating assembly base plate should be in contact with the top surface of the specimen mold

- causing the compaction head to be “bottomed out”. This controls the average compaction density in the specimen by compacting the specimen to a standard height of 75 mm.
12. After the 25 seconds vibrating time is completed, the vibrating compaction assembly will automatically retract.
 13. If the compaction head did not contact the steel mold, rotate the mold 180 ° repeat compaction an additional 25 seconds. Repeat this rotation/compaction process until the compaction head is visibly “bottomed out”. If the compaction head will not “bottom out”, there may be too much mix in the mold, the mixture may be too cold, or the Gmm used to calculate mix weight may be incorrect.
 14. This completes the compaction operation.
 15. Lift the specimen mold from the compaction position, move forward and slide the edges of the specimen mold under the restraining brackets and position the specimen mold in the recessed area at the extruding support base.
 16. On the control unit, turn the MODE switch to EJECT.
 17. Press and hold down both palm switches to raise the Eject Cylinder head to extrude the specimen from the mold, Figure 1.



Figure 1

18. Remove the top compaction plate, Figure 2.



Figure 2

19. Remove the compacted specimen with the bottom compaction plate from the rigid bottom of the mold and place them on a firm counter top, Figure 3.



Figure 3

20. Press the RETRACT button on the control unit to retract the extrusion cylinder head.
21. Remove the specimen mold from the extrusion-supporting base.
22. Allow sufficient time (about 1 hour, or until the mix can be comfortably handled with the bare hand) for the mix to cool and remove the bottom compaction plate, Figure 4.



Figure 4

Chapter 5

AVC Maintenance

5.1 Hydraulic System Overview

1. The AVC features an air over hydraulic operation system. Compressed air is used to force the hydraulic fluid into the Compaction and Eject Cylinders.
2. The type of hydraulic fluid used is Dexron/Mercon III transmission fluid.
3. Hydraulic fluid only enters the bottom of each cylinder.
4. The top of each cylinder will have only air. No fluid should ever be present is the top of either cylinder.
5. The AVC rear enclosure contains two hydraulic fluid reservoirs. The smaller reservoir operates the Eject Cylinder. The larger reservoir operates the Compaction Cylinder.

5.2 Compaction Cylinder Theory of Operation

1. Air enters the AVC through the main pressure regulator.
2. The air is then controlled by the valve pack.
3. When air is released from the valve pack to the Compaction cylinder reservoir, the Compaction Cylinder is retracted upward. The air pushes the fluid from the reservoir to the bottom of the Compaction cylinder and forces the cylinder to retract.
4. When the Compaction Cylinder is extended downward, the air pushing the cylinder up is vented from the Compactor Cylinder reservoir allowing the hydraulic fluid to return to the reservoir. Compressed air is then switched to the top of the cylinder to force the cylinder down.
Note: When the air is vented from the reservoir, some of the hydraulic fluid will be caught in the air and escape through the vent on the valve pack. Over time this will cause hydraulic fluid to build up in the rear enclosure of the AVC.
5. The balance pressure regulator will always oppose the movement of the Compactor Cylinder when it is extended downward. It stabilizes the movement of the Compactor Cylinder and has a net effect equal to the difference between the Main Pressure and the Balance Pressure. For example: If the main pressure is 115PSI and the balance pressure is 20PSI the compactive force of the AVC will be 95PSI.

5.3 Eject Cylinder Theory of Operation.

1. When air is released from the valve pack to the Eject Cylinder reservoir, the Eject Cylinder is extended upward. The air pushes the fluid from the reservoir to the bottom of the Eject Cylinder and forces the cylinder to extend.
2. When the Eject Cylinder is retracted downward, the air pushing the cylinder up is vented from the Eject Cylinder reservoir allowing the hydraulic fluid to return to the reservoir. Compressed air is then switched to the top the cylinder to force the cylinder down. **Note:**

When the air is vented from the reservoir, some of the hydraulic fluid will be caught in the air and escape through the vent on the valve pack. Over time this will cause hydraulic fluid to build up in the rear enclosure of the AVC.

5.4 Hydraulic Reservoir Fluid Levels

1. It is very important that the reservoirs not be over filled. Overfilling will eventually cause excess hydraulic fluid to be forced out of the AVC through the valve pack.
2. When to fill the reservoirs
 - a. When there is not enough fluid in the reservoir to make the Compactor Cylinder retract.
 - b. When there is not enough fluid in the reservoir to make the Eject Cylinder extend.
3. To fill the Compactor Cylinder reservoir;
 - a. On the control pedestal, switch the vibrators OFF
 - b. Switch the MODE to MANUAL
 - c. Depress the Palm Switches to extend the compaction assembly until it is fully extended all the way down. This will cause all of the fluid in the Compaction Cylinder into the Compaction Cylinder reservoir.
 - d. The fluid should be within 2-3 inches of the top of the reservoir.
4. To fill the Eject Cylinder reservoir.
 - a. Check the reservoir while the Eject cylinder is in it's normal retracted downward position.
 - b. The fluid should be within 2-3 inches of the top of the reservoir.

Chapter 6

Trouble Shooting and Electrical Drawings

6.1 Trouble Shooting

1. AVC will not operate
 - a. Check circuit breaker located either in the Control Pedestal or in the AVC rear enclosure.
 - b. Check for loose wires in the rear enclosure
2. Vibrators will not operate
 - a. Check both vibrator thermal overload switches located either on the Control Pedestal, in the Control Pedestal or in the rear enclosure.
3. AVC does not achieve desired air voids.
 - a. Check temperature at time of compaction and increase 5-10C°
 - b. Check air pressure and experiment by adjusting both up and down 5-10PSI
 - c. Increase length of compaction time up to 120 seconds rotate mold 180° and compact up to 120 seconds more
 - d. Check mold dimensions and recalculate volume
 - e. Check vibrators and determine if only one is operating
 - f. Check vibrators and determine if they are counter rotating (the vibrators must counter rotate to achieve maximum compactive effort)
 - g. Verify the weight of mix used in mold is correct.
 - h. Check Gmm used to calculate required mix weight.
4. Compaction Cylinder leaks down
 - a. Check the cylinder to see if there is hydraulic fluid leaking past the piston ring. If any fluid is found in the top of the cylinder the cylinder wall may be damaged

6.2 Electrical Drawings(Available as Needed)

Chapter 7

Procedure for Compacting Beam Specimens

1. Calculate the correct amount of mix based on the desired height and volume of the mold and heat to compaction temperature. (PTI recommends +5°F above compacting temperature.)
2. Add the bottom 3mm thick plate to the mold and spray the mold with cooking spray or petroleum lubricant and heat to compacting temperature. (+5°F above compacting temperature recommended.)
3. Carefully pour mix into mold. Even the mix across the top to provide a level surface.
4. Insert thermometer into the mix, spray the top plate and place in the mold.
5. Return mold/mix to the oven and allow to heat to compacting temperature. (+5°F above compacting temperature recommended.)
6. Set the Timer on the AVC pedestal to 30-60 sec (Most mixes only require 30 sec). Both the MODE and VIBRATOR switches should be in AUTO. The Main Pressure Gauge should be set to 100-120 PSI (this pressure will be applied to the top of the cylinder during the compaction process.)
7. At this point the Balance Pressure Gauge will read 0 PSI.
8. Place the mold into the AVC and depress the palm switches.
9. When the vibrators start, the Balance Pressure Gauge will indicate any pressure being applied to the bottom of the cylinder and should be set to 20 PSI. If not, dial the Balance Pressure Regulator to 20 PSI.
10. During the compaction cycle the AVC will generate the most compaction effort when one can visibly see the compactor head jumping up and down on the mix. There will also be a notice change audibly in how the compactor sounds when it making the most compaction effort.
11. If the vibrations level out and create just a steady hum with no up and down motion, the Balance Pressure Regulator needs to be increased (usually between 60-80 PSI) until the compactor head begins to visibly jump up and down on the mix.
12. The compactor head mounting plate should make metal to metal contact with the top of the steel mold. (Note: If metal to metal contact is made for more than 5-10 sec the VIBRATOR switch may be turned to OFF until the compaction cycle ends. This may prevent the Thermal Overload switches from being tripped.)
13. If the compaction cycle ends before the metal to metal contact is achieved, wait till the head raises out of the mold and rotate the mold clockwise (or counterclockwise) 180°
14. Be certain to dial the Balance Pressure Regulator back down to approximately 20 PSI. There will be no pressure on the gauge until the vibrators start at the beginning of the next compaction cycle.
15. When the compactor has finished retracting at the end of the first compaction cycle repeat steps 6-12 then follow step 16 and be certain to dial the Balance Pressure Regulator back down to approximately 20 PSI.
16. After the second compaction cycle even if there is no metal to metal contact, remove the beam from the mold with the Sample EJECT.
17. Measure the Air Voids and if they are above the target range increase the amount of compaction time above 30 sec as necessary to achieve compaction.
18. If more beams need to be made immediately and metal to metal contact was not achieved, increase the cycle time to 40 sec and make the next beam. Increments of 10 sec may be made on successive compaction attempts if necessary to achieve metal to metal contact.