to the bottom of the cylindrical extension of block **43** by machine screw **52**. Cylindrical flow passage **45** is extended upward past the intersection of passage **44** to provide for overflow when a bottle is filled. Teflon insert **53** is inserted in the overflow extension to ensure that all water which could possibly find its way into a sample bottle is in contact with an inert surface. Flow passage **54** is drilled into block **43** and intersects flow passage **45** through Teflon insert **53** and connects to an overflow tube **55** at the bottom to complete the overflow section of the turret.

FIG. **4** is a view of the sample-distribution turret from below which shows the arrangement of eight sample bottles **40**. Eight holes **56**, spaced between the sample bottles, connect to drain tubes. If a sample bottle is not in a collection position, one of these drain tubes is, so that any residual water in the collection system is drained before the next bottle is moved into position.

FIG. **5** is a cross-sectional view of sample turret sump. The overflow tube **55** and eight drain tubes **57** enter the top section of tube **58** which passes through the bottom plate **19** of the sampler enclosure. Water from drain tubes **57** drops straight through tube **58** to ground; however, overflow tube **55** enters elbow **59** which is connected to parallel tubes **60** and **61**. The water from the overflow tube **55** enters tube **60** which contains a short capillary restriction **62** which causes the water to back up trapping air in tube **63**. As water rises farther in tube **60**, the pressure in tube **63** increases causing the overflow pressure switch **36** to close. Closing of the overflow pressure switch **36** informs the electronic controller **23** that a sample bottle is full. The controller then initiates action to move the turret another step which seals the filled bottle and moves a drain tube **57** into the collecting position. If water flows at a rate sufficient to completely fill tube **60**, the excess will overflow through tube **61**. Water passing through restrictive capillary **62** or through overflow tube **61** enters tube **58** at opening **65** and is discharged to ground.

FIGS. **6**, **7** and **8** illustrate the actuating mechanisms. Cover lift cylinder **27** is attached to cover shaft **67** which passes through bearings **68** and **69**. The complete cover lift mechanism is attached to support post **72**. The top of the cover shaft **67** is attached to cover bearing **70** which fits over bearing **69** to make a water protected seal. When the cover lift cylinder **27** is activated, rod **71** moves upward raising the sample collector cover **4** so that it clears the sample collection funnel **5**. When cylinder **27** completes its upward stroke, it opens switch **29**, shown as a rotation cylinder air switch allowing cylinder **31** to rotate raised cover.

Turret rotation penumatic cylinder **28** is actuated simultaneously with the cover lift cylinder **27**. The extension rod **73** attached to the rod **92** of cylinder **28** is designed to engage turret index pins **66** as the rod moves forward. This action causes the turret to rotate one-sixteenth of a complete rotation each time the rod **92** of cylinder **28** is actuated.

FIGS. **7** and **8** are overhead views of the cover rotation and turret rotation mechanisms. Cover rotation cylinder **31** is attached to support block **74** by swivel connector **75**. The rod **78** of cylinder **31** is attached by swivel connector **76** to arm **77** which is attached to cover shaft **67**. When the cover **4** is raised, the switch, e.g., an air switch, activates cylinder **31** and rod **78** moves forward causing the cover to rotate about 120° from the initial closed position of the cover over the collecting funnel as demonstrated in FIG. **7** to the open cover position demonstrated in FIG. **8**. Cover open limit switch **32** shows as a magnetic reed switch attached to cylinder **31** closes when rod **78** is fully extended signalling the controller that the cover is fully rotated. The controller de-energizes solenoid valves **26** and **30**. Rotation cylinder **31** is supplied by a four-way solenoid valve **30** and hence pressure is maintained to hold the piston rod in the extended position. Cylinders **27** and **28** are supplied by a three-way solenoid valve which causes these cylinders to vent to the atmosphere when the valve is de-energized. Both cylinders are of the spring return type and thus the cover drops as rod **71** as shown in FIG. **6** moves downward and extension rod **73** retracts from the extended position demonstrated in FIG. **7** to the withdrawn position as demonstrated in FIG. **8**. Spring **80** pushes the turret rotation pneumatic cylinder **28** in toward the cylinder support bracket **81** to permit extension rod **73** to align with the next turret index pin. Cylinder support block **79** contains a swivel mount **93** for cylinder **28** permitting the slight rotation necessary from the spring action. The cylinder support mechanism is attached to turret support block **43**.

FIG. **9** is a block diagram which shows the interrelation between the sensing switches which provide input information to the electronic control unit **23** and the actuating elements of the system which respond to output signals from the controller. The controller is powered by a battery **24** controlled by a power switch **39** and outputs to a digital clock **25** and memory system **41** which records the time at which each sample was collected and also the sample position on the collection turret.

With reference to FIGS. **9** and **10**, when precipitation detector **16** is actuated, controller **23** actuates the air supply solenoid valve **26** and the four-way solenoid valve **30A**. This action permits compressed gas to flow to the cover lift cylinder **27** and to the turret rotation penumatic cylinder **28**. The turret rotation penumatic cylinder **28** produces a partial rotation of the sample turret, causing a sample bottle to move into a collection position and the closing of the bottle open limit switch **94**. The action of the cover lift cylinder **27** causes sample collector cover **4** to rise and when the action is complete, to open air switch **29** which allows air to flow to four-way valve **30A** and allows the rotation cylinder **31** to open, causing the cover to rotate about 120° from its initial position directly above sample collection funnel **5**. When the cover is fully rotated, the cover-open limit switch **32** is closed signalling controller **23** that the sample collection funnel **5** is completely uncovered. The controller **23** then de-energizes the solenoid valves **26** and **30A** which permit gas to escape from the cover lift cylinder **27** and the turret rotation pneumatic cylinder **28**. The result is that both cylinders return to the retracted position by spring action; thus the cover drops and the turret rotation cylinder resets such that the next rotation of the turret can be made when called for.

With reference again to FIGS. **9** and **10**, the complete action of the automatic precipitation sampler can be described. An earlier section described the sequence of events leading to uncovering the sample collection funnel **5** following detection of precipitation. When the precipitation detector **16** signals that rain has ceased, the controller **23**, then actuates solenoid valves **26** and **30B**. Valve **26** is energized causing the cover to lift, the turret to move to the next position, and close the bottle close