

# GEOPROBE® SCREEN POINT 15 AND SCREEN POINT 16 GROUNDWATER SAMPLERS

## STANDARD OPERATING PROCEDURE

Technical Bulletin No. 95-1500

PREPARED: October, 1995

REVISED: April, 2001



GEOPROBE SCREEN POINT 15 / SCREEN POINT 16 GROUNDWATER SAMPLERS



A DIVISION OF KEJR, INC.

**Geoprobe® and Geoprobe Systems® are Registered Trademarks of  
Kejr, Inc., Salina, Kansas  
Screen Point 15 and Screen Point 16 Groundwater Samplers  
manufactured under U.S. Patent 5,612,498**

COPYRIGHT© 2001, 1999, 1997 by Kejr, Inc.  
ALL RIGHTS RESERVED.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from Kejr, Inc.

## 1.0 OBJECTIVE

The objective of this procedure is to drive a sealed stainless steel or PVC screen to depth, deploy the screen, obtain a representative water sample from the screen interval, and grout the probe hole during abandonment. The Screen Point 15 and Screen Point 16 Groundwater Samplers enable the operator to conduct abandonment grouting that meets American Society for Testing and Materials (ASTM) Method D 5299 requirements for decommissioning wells and borings for environmental activities (ASTM 1993).

## 2.0 BACKGROUND

### 2.1 Definitions

**Geoprobe®:** A brand name of high quality, hydraulically powered machines that utilize both static force and percussion to advance sampling and logging tools into the subsurface. The Geoprobe brand name refers to both machines and tools manufactured by Geoprobe Systems®, Salina, Kansas. Geoprobe tools are used to perform soil core and soil gas sampling, groundwater sampling and monitoring, soil conductivity and contaminant logging, grouting, and materials injection.

**Screen Point 15 (SP15) Groundwater Sampler:** A direct push device consisting of a PVC or stainless steel screen that is driven to depth within a sealed, steel sheath and then deployed for the collection of representative groundwater samples. The assembled SP15 Sampler is approximately 50.5 inches (1283 mm) long with an OD of 1.5 inches (38 mm). Upon deployment, up to 41 inches (1041 mm) of screen can be exposed to the formation. The Screen Point 15 Groundwater Sampler is used primarily with 1.25-inch probe rods and machines equipped with a GH40 Series (GH40, GH41, or GH42) Hydraulic Hammer.

**Screen Point 16 (SP16) Groundwater Sampler:** A direct push device consisting of a PVC or stainless steel screen that is driven to depth within a sealed, steel sheath and then deployed for the collection of representative groundwater samples. The assembled SP16 Sampler is approximately 51.5 inches (1308 mm) long with an OD of 1.625 inches (41 mm). Upon deployment, up to 41 inches (1041 mm) of screen can be exposed to the formation. The Screen Point 16 Groundwater Sampler is designed for use with 1.5-inch probe rods and machines equipped with the more powerful GH60 Hydraulic Hammer. Operators with GH40 Series hammers may chose to use this sampler in soils where driving is difficult.

**Rod Grip Pull System:** An attachment mounted on the hydraulic hammer of a direct push machine which makes it possible to retract the tool string with extension rods or flexible tubing protruding from the top of the probe rods. The Rod Grip Pull System includes a pull block with rod grip jaws and two support straps that are bolted directly to the machine. A removable handle assembly straddles the tool string while hooking onto the pull block to effectively grip the probe rods as the hammer is raised. A separate handle assembly is required for each probe rod diameter.

### 2.2 Discussion

In this procedure, the assembled Screen Point 15 or Screen Point 16 Groundwater Sampler (Fig. 2.1A) is threaded onto the leading end of a Geoprobe probe rod and advanced into the subsurface with a Geoprobe direct push machine. Additional probe rods are added incrementally and advanced until the desired sampling interval is reached. While the sampler is advanced to depth, O-ring seals at each rod joint, the drive head, and the expendable drive point provide a watertight system. This system eliminates the threat of formation fluids entering the screen before deployment and assures sample integrity.

Once at the desired sampling interval, extension rods are sent downhole until the leading rod contacts the bottom of the sampler screen. The tool string is then retracted approximately 44 inches (1118 mm) while the screen is held in place with the extension rods (Fig. 2.1B). As the tool string is retracted, the expendable point is released from the sampler sheath. The tool string and sheath may be retracted the full length of the screen or as little as a few inches if a small sampling interval is desired.

There are three types of screens that can be used in both the Screen Point 15 and Screen Point 16 Groundwater Samplers. Two of these, a stainless steel screen with a standard slot size of 0.004 inches (0.10 mm) and a PVC screen with a standard slot size of 0.010 inches (0.25 mm), are recovered with the tool string after sampling. The third screen is also manufactured from PVC with a standard slot size of 0.010 inches (0.25 mm), but is designed to be left downhole when sampling is complete. This disposable screen has an exposed screen length of approximately 43 inches (1092 mm). The two screens that are recovered with the sampler both have an exposed screen length of approximately 41 inches (1041 mm). Alternate slot sizes and lengths may be custom ordered. Contact Geoprobe Systems for available options.

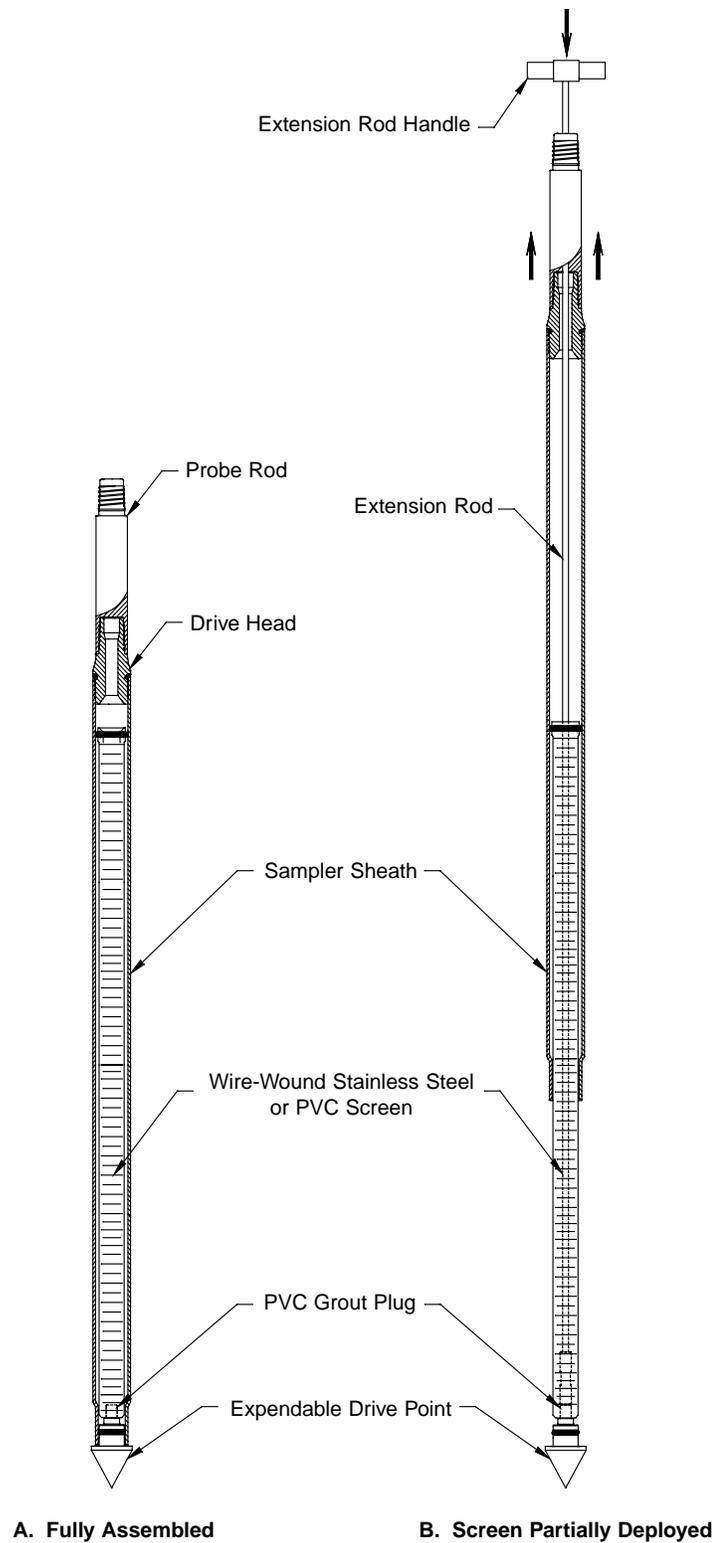
An O-ring on the head of the non-disposable screens maintains a seal at the top of the screen. As a result, any liquid entering the sampler during screen deployment must first pass through the screen. Disposable screens do not require an O-ring because the tolerance between the screen head and sampler sheath is near that of the screen slot size.

The screens are constructed such that flexible tubing, a mini-bailer, or a small-diameter bladder pump can be inserted into the screen cavity. This makes direct sampling possible from anywhere within the saturated zone. A removable plug in the lower end of the screens allows the user to grout as the sampler is extracted for further use.

Groundwater samples can be obtained in a number of ways. A common method utilizes polyethylene or Teflon<sup>®</sup> tubing and a Tubing Bottom Check Valve (GW42). The check valve (with check ball) is attached to one end of the tubing and inserted down the casing until it is immersed in groundwater. Water is pumped through the tubing and to the ground surface by oscillating the tubing up and down. If oscillating the tubing is undesirable (such as when sampling for volatiles analysis), lower the check valve and tubing to the bottom of the sampler without the check ball. Then drop the check ball into the tubing from the ground surface. The ball will seat in the check valve and trap the sample in the tubing. Collect the sample by withdrawing and draining the tubing.

An alternative means of collecting groundwater samples is to attach a peristaltic or vacuum pump to the tubing. This method is limited in that water can be pumped to the surface from a maximum depth of approximately 26 feet (8 m). Another technique for groundwater sampling is to use a stainless steel Mini-Bailer Assembly (GW41). The mini-bailer is lowered down the inside of the casing below the water level where it fills with water and is then retrieved from the casing.

The latest option for collecting groundwater from the SP15 and SP16 samplers is to utilize Geoprobe's GW1400 Series Pneumatic Bladder Pump. This type of pump is preferred for low-flow sampling (EPA 1996). It provides minimal disturbance of the sample because fluid is pushed, not drawn or vacuumed, to the surface. Turbidity is low and loss of volatile contaminants is negligible.

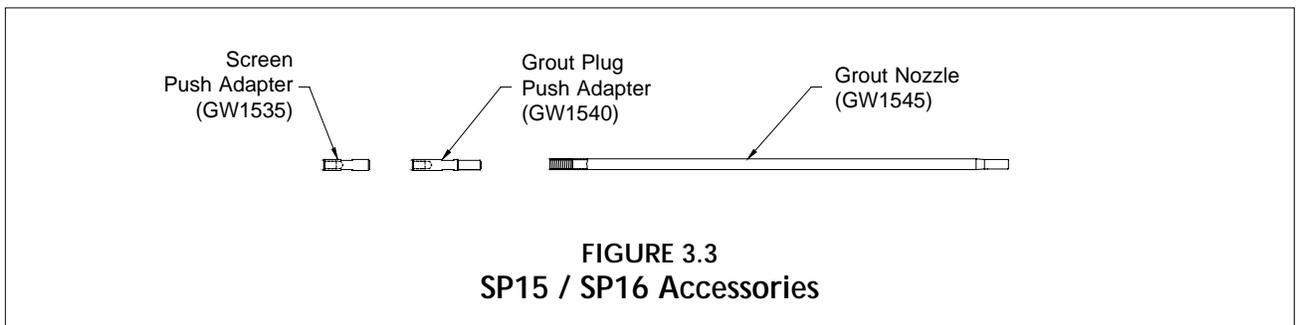
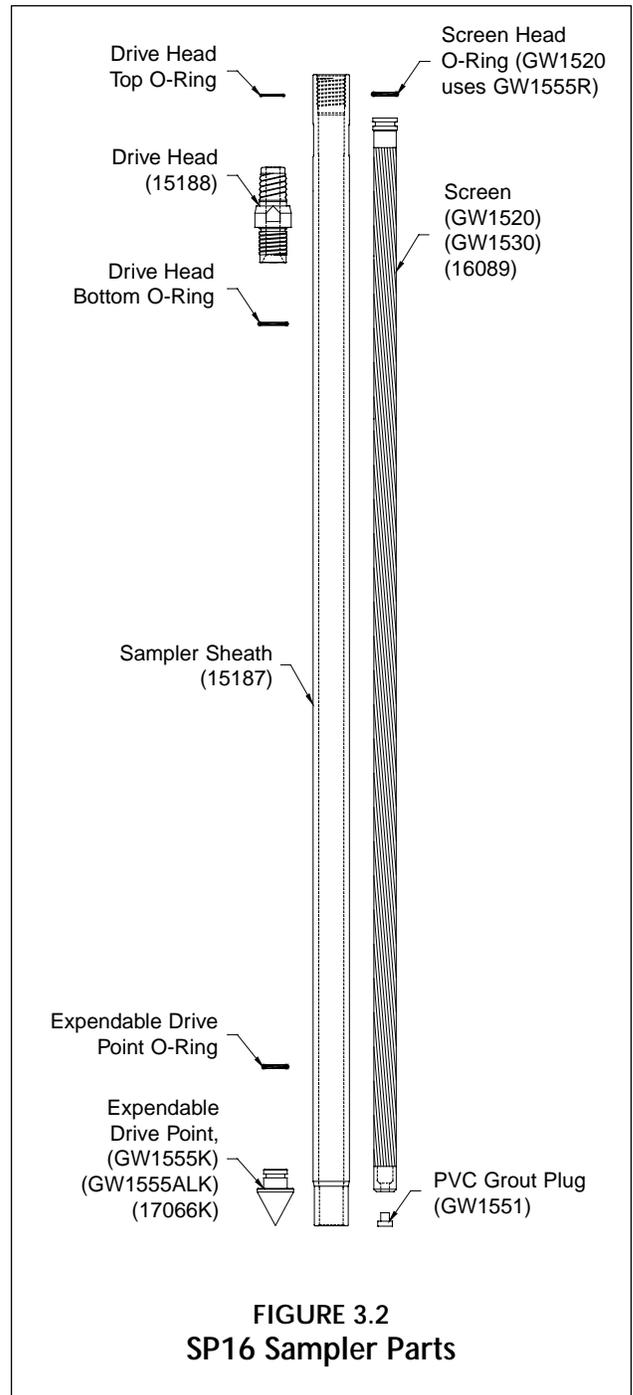
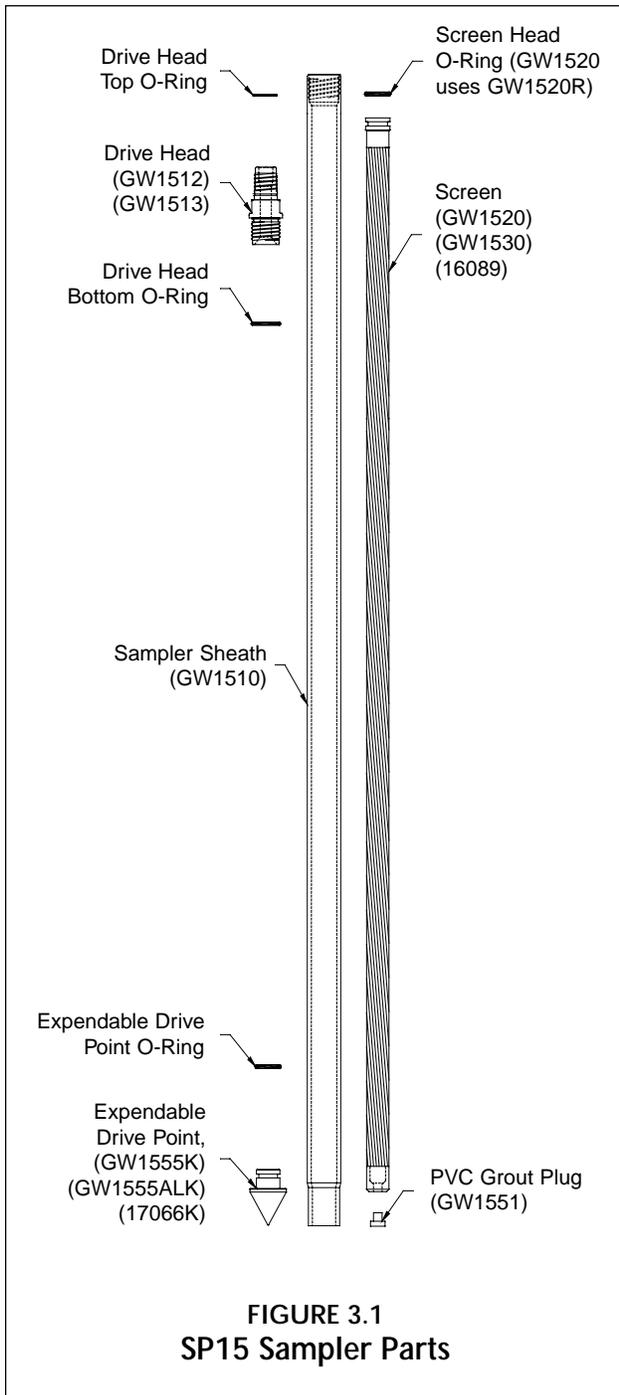


**FIGURE 2.1**  
**Screen Point 15 / Screen Point 16 Groundwater Sampler**

### 3.0 REQUIRED EQUIPMENT

The following equipment can be used to successfully recover representative groundwater samples with the Geoprobe Screen Point 15 and Screen Point 16 Groundwater Samplers. Refer to Figure 3.1 for identification of the specified SP15 sampler parts and Figure 3.2 for identification of the SP16 sampler parts.

<b>Screen Point 15 Groundwater Sampler Parts</b>	<b>Quantity</b>	<b>Part Number</b>
SP15 Sampler Sheath	-1-	GW1510
Drive Head, 0.625-inch bore, 1.25-inch rods	-1-	GW1512
Drive Head, 0.5-inch bore, 1.25-inch rods	-1-	GW1513
O-ring Service Kit, 1.25-inch rods (100 of each O-ring)	-1-	GW1505K
<i>Screen Point 15 Groundwater Sampler Kit, 1.25-inch Probe Rods</i>		<i>GW1512K</i>
<b>Screen Point 16 Groundwater Sampler Parts</b>	<b>Quantity</b>	<b>Part Number</b>
SP16 Sampler Sheath	-1-	15187
Drive Head, 0.625-inch bore, 1.5-inch rods	-1-	15188
O-ring Service Kit, 1.5-inch rods (100 of each O-ring)	-1-	GW1505K
<i>Screen Point 16 Groundwater Sampler Kit, 1.5-inch Probe Rods</i>		<i>15770</i>
<b>Accessories for SP15 and SP16 Samplers</b>	<b>Quantity</b>	<b>Part Number</b>
Screen, Wire-Wound Stainless Steel, 4-Slot	-1-	GW1520
Screen, PVC, 10-Slot	-1-	GW1530
Screen, Disposable, PVC, 10-Slot	Variable	16089
Screen Push Adapter	-1-	GW1535
Grout Plug Push Adapter	-1-	GW1540
Grout Nozzle	-1-	GW1545
Grout Plugs, PVC (Pkg. of 25)	-1-	GW1551K
Expendable Drive Points, Steel, 1.625-inch OD (Pkg. of 25)	-1-	GW1555K
Expendable Drive Points, Aluminum, 1.625-inch OD (Pkg. of 25)	-1-	GW1555ALK
Expendable Drive Points, Steel, 1.75-inch OD (Pkg. of 25)	-1-	17066K
<b>Geoprobe Tools</b>	<b>Quantity</b>	<b>Part Number</b>
Drive Cap, 1.25-inch probe rods	-1-	AT1200
Pull Cap, 1.25-inch probe rods	-1-	AT1204
Probe Rod, 1.25-inch x 48-inch*	Variable	AT1248
O-rings for 1.25-inch Probe Rods (Pkg. of 25)	Variable	AT1250R
Drive Cap, 1.5-inch probe rods, (for GH40 Series Hammer)	-1-	15590
Drive Cap, 1.5-inch probe rods, Threadless, (for GH60 Hammer)	-1-	12787
Pull Cap, Slotted, 1.5-inch probe rods	-1-	15164
Probe Rod, 1.5-inch x 60-inch**	Variable	11121
O-rings for 1.5-inch Probe Rods (Pkg. of 25)	Variable	15389
Extension Rod, 48-inch***	Variable	AT671
Extension Rod, 60-inch***	Variable	AT10073
Extension Rod Coupler	Variable	AT68
Extension Rod Handle	-1-	AT69
Extension Rod Jig	-1-	AT690
Quick Link Extension Rod Connectors	Variable	AT694K
Rod Grip Pull System, 1.25-inch Probe Rods (for GH40 Series Hammer)	-1-	GH1250K
Rod Grip Pull Handle, 1.5-inch Probe Rods (for GH40 Series Hammer)	-1-	GH1555
Rod Grip Pull Handle, 1.5-inch Probe Rods (for GH60 Hammer)	-1-	15554
Water Level Meter	-1-	GW2000
* Geoprobe 1.25-inch OD probe rods are also available in lengths of 36 inches, 60 inches, and 1 meter.		
** Geoprobe 1.5-inch OD probe rods are also available in lengths of 1 meter and 48 inches.		
*** Geoprobe extension rods are also available in lengths of 36 inches and 1 meter.		
<b>Additional Tools</b>	<b>Quantity</b>	
Adjustable Wrench	-1-	
Pipe Wrenches	-2-	



## 4.0 OPERATION

### 4.1 Basic Operation

The basic operation of the Screen Point 15 and Screen Point 16 Groundwater samplers is identical. Subtle differences in the design of the SP16 sampler make it more durable than the earlier SP15 system. Operators of GH60-equipped machines should always utilize SP16 tooling. Operators of machines equipped with GH40 Series hammers may also choose SP16 tooling when sampling in difficult probing conditions.

The SP15 and SP16 samplers utilize a stainless steel or PVC screen which is encased in an alloy steel sampler sheath. An expendable drive point is placed in the lower end of the sheath while a drive head is attached to the top. O-rings on the drive head and expendable point provide a watertight sheath which keeps contaminants out of the system as the sampler is driven to depth.

Once the desired sampling interval is reached, extension rods equipped with a screen push adapter are inserted down the inside diameter of the probe rod string. The tool string is then retracted approximately 44 inches (1118 mm) while the screen is held in place with the extension rods. At this point the system is ready for groundwater sampling. When sampling is complete, a removable plug in the bottom of the screen allows for grouting below the sampler as the tool string is retrieved.

### 4.2 Sampler Options

A 1.75-inch OD Expendable Drive Point (17066K) and Disposable PVC Screen (16089) provide the operator with two useful options. The 1.75-inch drive point may be used when soil conditions make it difficult to remove the SP16 sampler after driving to depth with a GH60-equipped machine. The disposable PVC screen may be left downhole after sampling (when regulations permit) to eliminate the time required for screen decontamination.

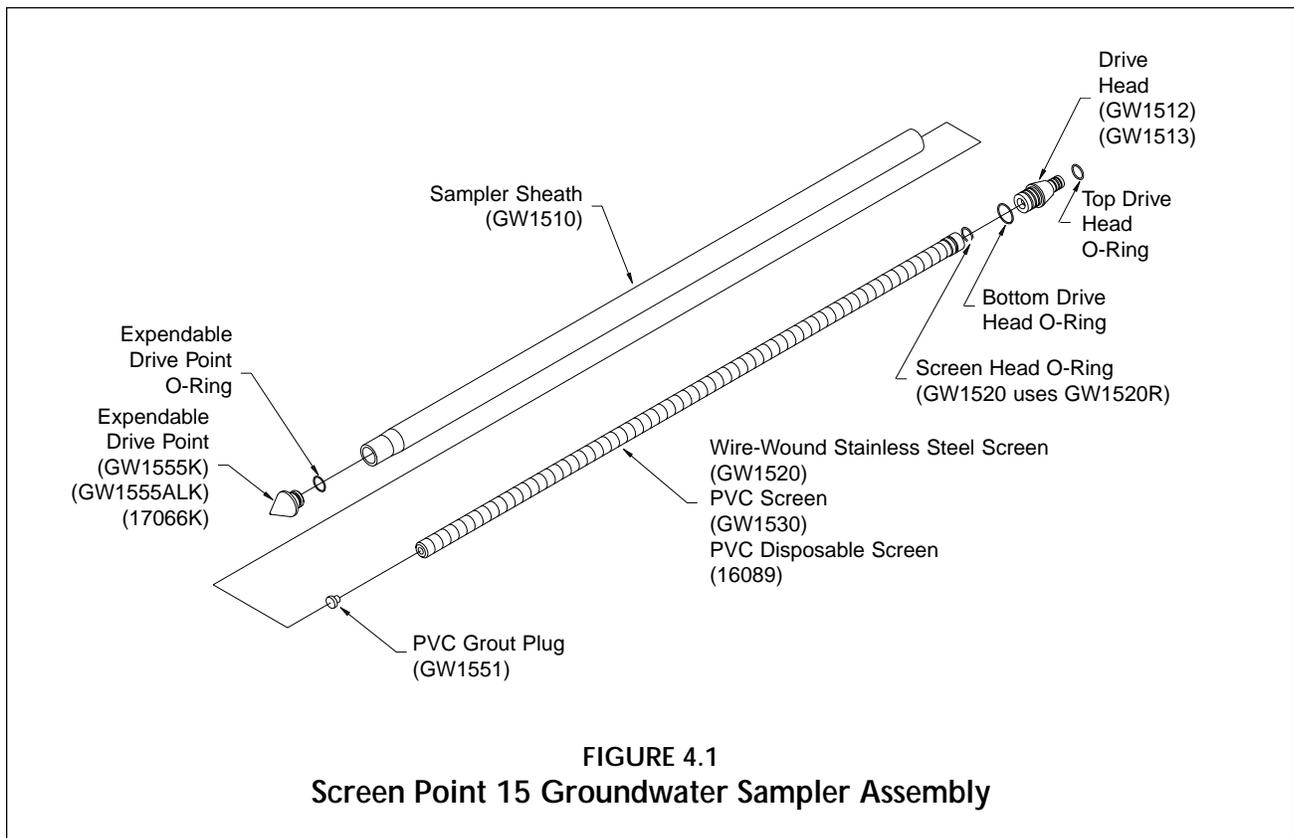
### 4.3 Decontamination

In order to collect representative groundwater samples, all sampler parts must be thoroughly cleaned before and after each use. Scrub all metal parts using a stiff, long-bristle brush and a nonphosphate soap solution. Steam cleaning may be substituted for hand-washing if available. Rinse with distilled water and allow to air-dry before assembly.

### 4.4 SP15 Sampler Assembly (Figure 4.1)

Part numbers are listed for a standard SP15 sampler using 1.25-inch probe rods. Refer to Page 6 for screen and drive head alternatives.

1. Install an O-ring on a steel expendable drive point (GW1555K). Firmly seat the expendable point in the necked end of a sampler sheath (GW1510).
2. Place a PVC grout plug (GW1551) in the lower end of a wire-wound stainless steel screen (GW1520). Install a GW1520R O-ring in the groove on the upper end of the screen.
3. Slide the screen inside of the sampler sheath with the grout plug toward the bottom of the sampler. Lubricate the O-ring with clean distilled water if needed. Ensure that the expendable point was not displaced by the screen.



4. Install a bottom O-ring on a drive head (GW1513). Thread the drive head onto the sampler sheath. Attach a drive cap (AT1200) to the top of the drive head. Ensure that the threads engage completely. Tighten with an adjustable wrench if necessary.

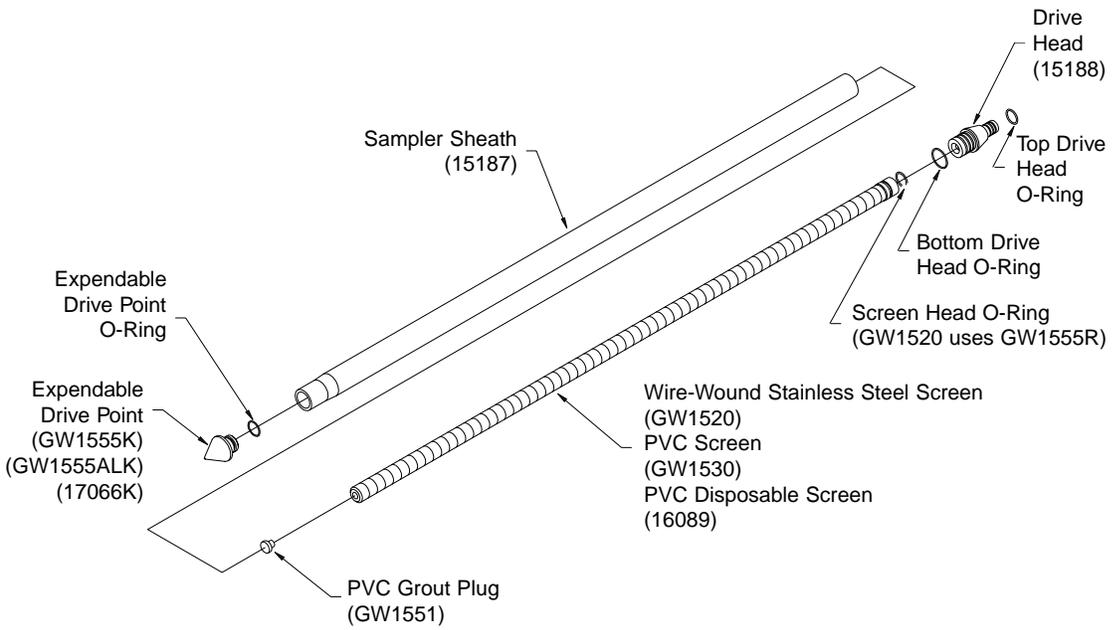
**Sampler assembly is complete.**

#### **4.5 SP16 Sampler Assembly (Figure 4.2)**

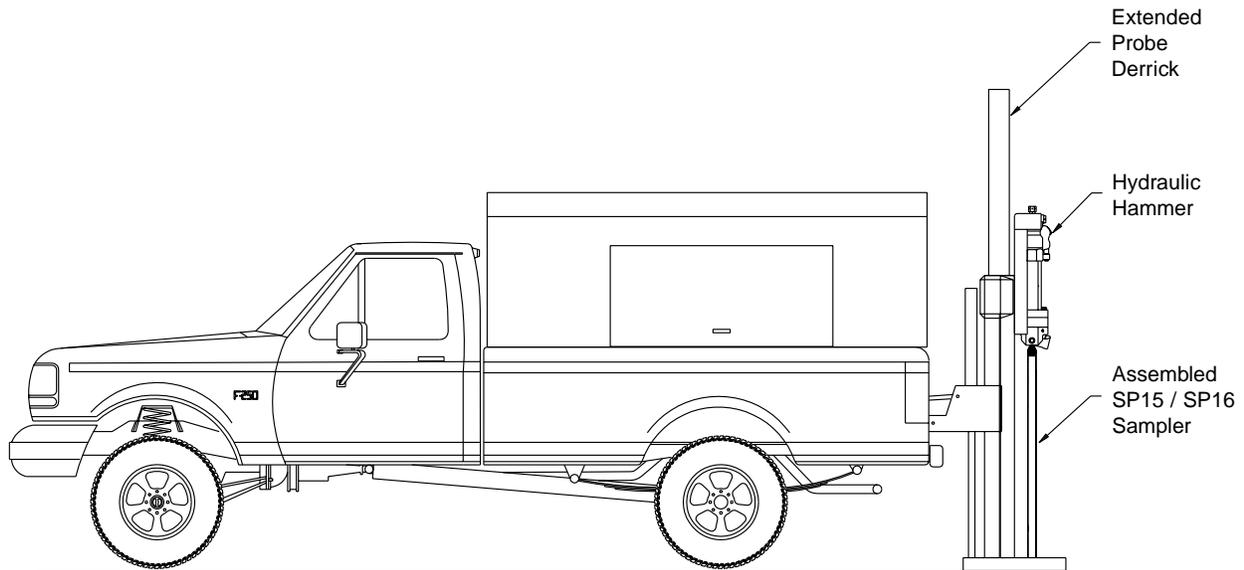
Part numbers are listed for a standard SP16 sampler using 1.5-inch probe rods. Refer to Page 6 for screen alternatives.

1. Install an O-ring on a steel expendable drive point (GW1555K). Firmly seat the expendable point in the necked end of a sampler sheath (15187).
2. Place a PVC grout plug (GW1551) in the lower end of a wire-wound stainless steel screen (GW1520). Install a GW1555R O-ring in the groove on the upper end of the screen.
3. Slide the screen inside of the sampler sheath with the grout plug toward the bottom of the sampler. Ensure that the expendable point was not displaced by the screen.
4. Install a bottom O-ring on a drive head (15188). Thread the drive head onto the sampler sheath. Attach a drive cap (12787 or 15590) to the top of the drive head. Ensure that the threads engage completely. Tighten with an adjustable wrench if necessary.

**Sampler assembly is complete.**



**FIGURE 4.2**  
**Screen Point 16 Groundwater Sampler Assembly**



**FIGURE 4.3**  
**Screen Point 15 / Screen Point 16 Groundwater Sampler in Driving Position**

## 4.6 Advancing the SP15 / SP16 Sampler

To provide adequate room for screen deployment with the Rod Grip Pull System, the probe derrick should be extended a little over halfway out of the carrier vehicle when positioning for operation.

1. Begin by placing the assembled sampler (Fig. 2.1.A) in the driving position beneath the hydraulic hammer of the direct push machine as shown in Figure 4.3.
2. Advance the sampler with the throttle control at slow speed for the first few feet to ensure that the sampler is aligned properly. Switch the throttle to fast speed for the remainder of the probe stroke.
3. Completely raise the hammer assembly. Remove the drive cap and place an O-ring in the top groove of the drive head. Distilled water may be used to lubricate the O-ring if needed. Add a probe rod (1.25- or 1.5-inch OD, length to be determined by operator) and reattach the drive cap to the rod string. Drive the sampler the entire length of the new rod with the throttle control at fast speed.
4. Repeat Step 3 until the desired sampling interval is reached. Approximately 12 inches (305 mm) of the last probe rod must extend above the ground surface to allow attachment of the puller assembly. A 12-inch (305 mm) rod may be added if the tool string is over-driven.
5. Remove the drive cap and retract the probe derrick away from the tool string.

## 4.7 Screen Deployment

1. Thread a screen push adapter (GW1535, Fig. 4.4) on an extension rod of suitable length (AT67, AT671, AT10073, or AT675). Attach a threaded coupler (AT68) to the other end of the extension rod. Lower the extension rod inside of the probe rod taking care not to drop it down the tool string. An extension rod jig (AT690, Fig. 4.4) may be used to hold the rods.
2. Add extension rods until the adapter contacts the bottom of the screen. To speed up this step, it is recommended that Extension Rod Quick Links (AT694K, Fig. 4.4) are used at every other rod joint.
3. Ensure that at least 48 inches (1219 mm) of extension rod protrudes from the probe rod. Thread an extension rod handle (AT-69, Fig. 4.3) on the top extension rod.
4. Maneuver the probe assembly into position for pulling. Refer to Figures 4.5 and 4.6 for positioning of the rod grip pull system for units equipped with GH40 Series and GH60 hammers.
5. Raise (pull) the tool string while physically holding the screen in place with the extension rods (Fig. 4.7.B). A slight knock with the extension rod string will help to dislodge the expendable point and start the screen moving inside the sheath.

Raise the hammer and tool string about 44 inches (1118 cm) if using a GW1520 or GW1530 screen. At this point the screen head will contact the necked portion of the sampler sheath (Fig. 4.7.C.) and the extension rods will rise with the probe rods. Use care when deploying a PVC screen so as not to break the screen when it contacts the bottom of the sampler sheath.

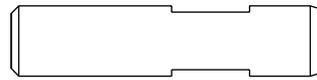
The disposable screen (16089) will extend completely out of the sheath if the tool string is raised more than 45 inches (1143 mm). Measure and mark this distance on the top extension rod to avoid losing the screen during deployment.



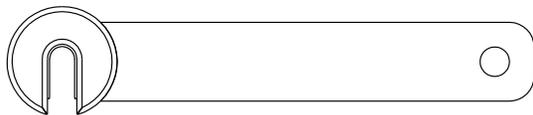
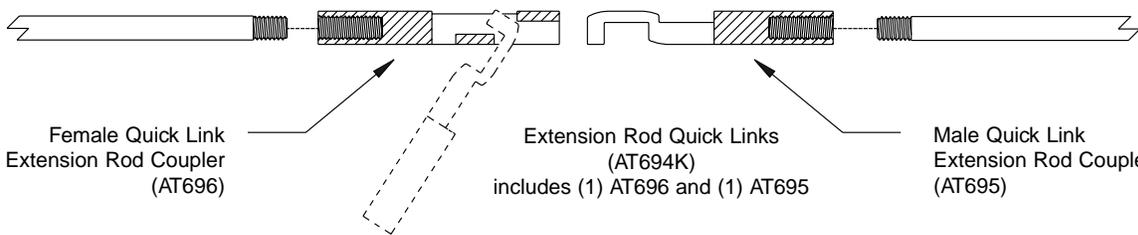
Extension Rod, 36-inch (AT67), 48-inch (AT671), 60-inch (AT10073), or 1-meter (AT675)



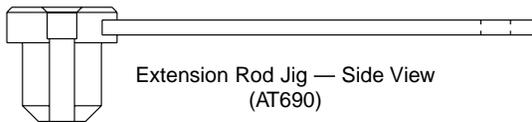
Grout Plug Push Adapter  
(GW1540)



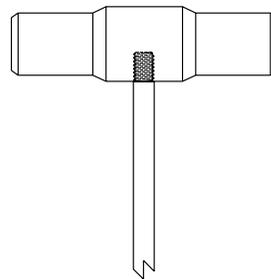
Screen Push Adapter  
(GW1535)



Extension Rod Jig — Top View  
(AT690)

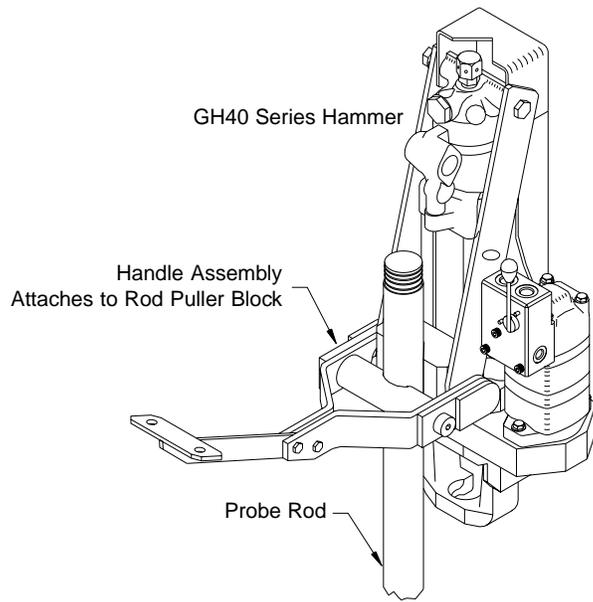


Extension Rod Jig — Side View  
(AT690)

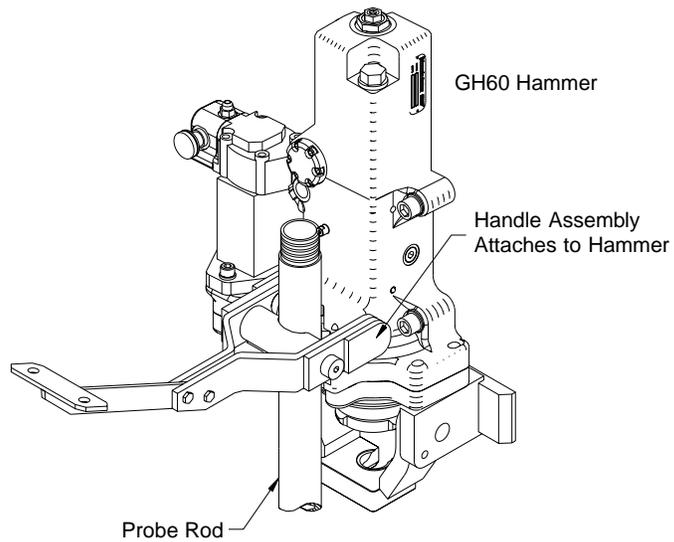


Extension Rod Handle  
(AT69)

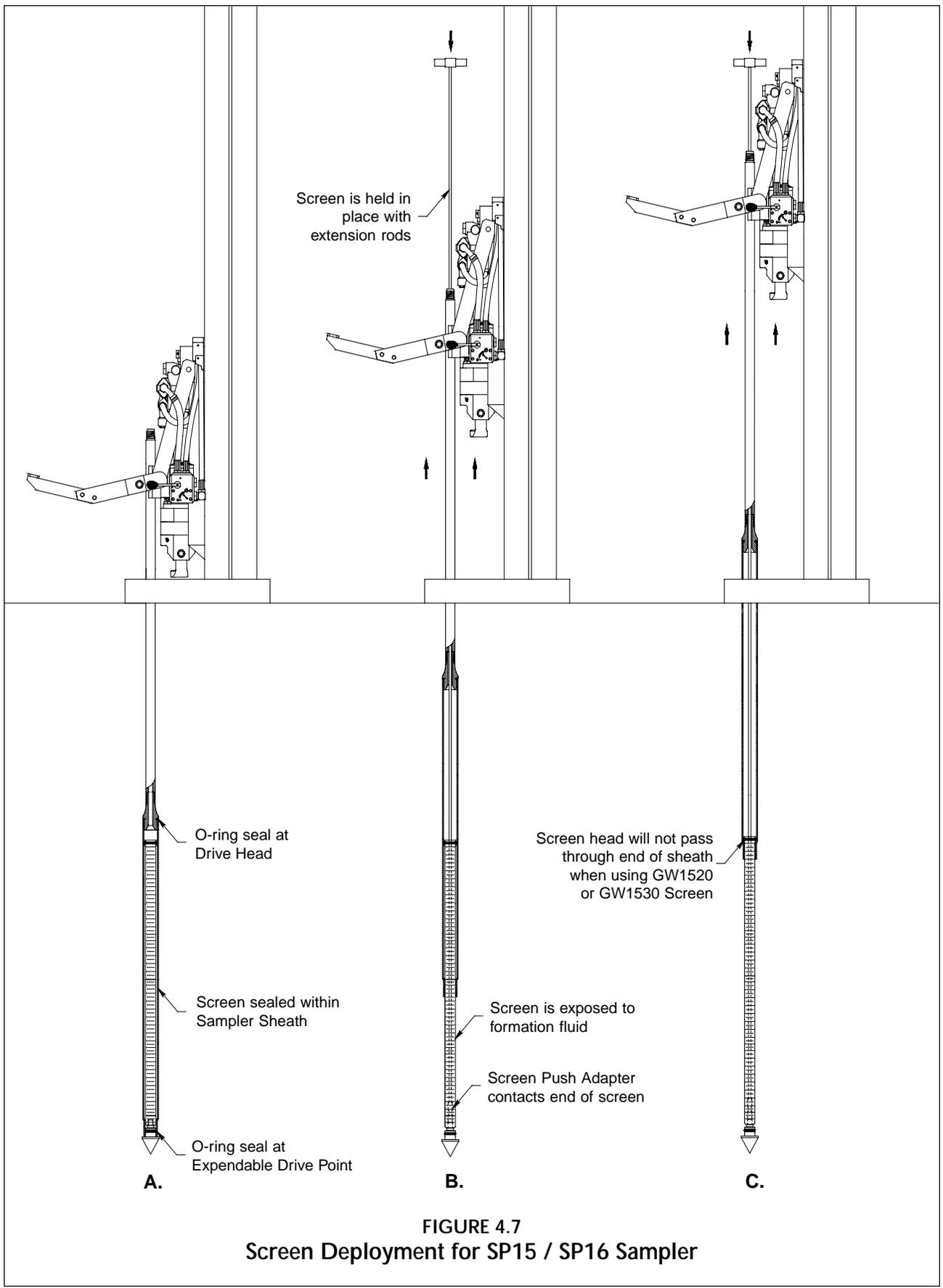
**FIGURE 4.4**  
**Geoprobe Extension Rods and Accessories**



**FIGURE 4.5**  
**Rod Grip Pull System for Units Equipped With a GH40 Series Hammer**



**FIGURE 4.6**  
**Rod Grip Pull System for Units Equipped With a GH60 Hammer**



**FIGURE 4.7**  
**Screen Deployment for SP15 / SP16 Sampler**

6. Remove the rod grip handle, lower the hammer assembly, and retract the probe derrick. Remove the top extension rod (with handle) and top probe rod. Finally, extract all extension rods.
7. Groundwater samples can now be collected with a mini-bailer, peristaltic or vacuum pump, tubing bottom check valve assembly, bladder pump, or other acceptable small diameter sampling device.

When inserting tubing or a bladder pump down the rod string, ensure that it enters the screen interval. The leading end of the tubing or bladder pump will sometimes catch on the edge of the screen head opening giving the illusion that the bottom of the screen has been reached. An up-and-down motion combined with rotation helps move the tubing or bladder pump past the lip and into the screen.

#### 4.8 Abandonment Grouting for GW1520 and GW1530 Screens

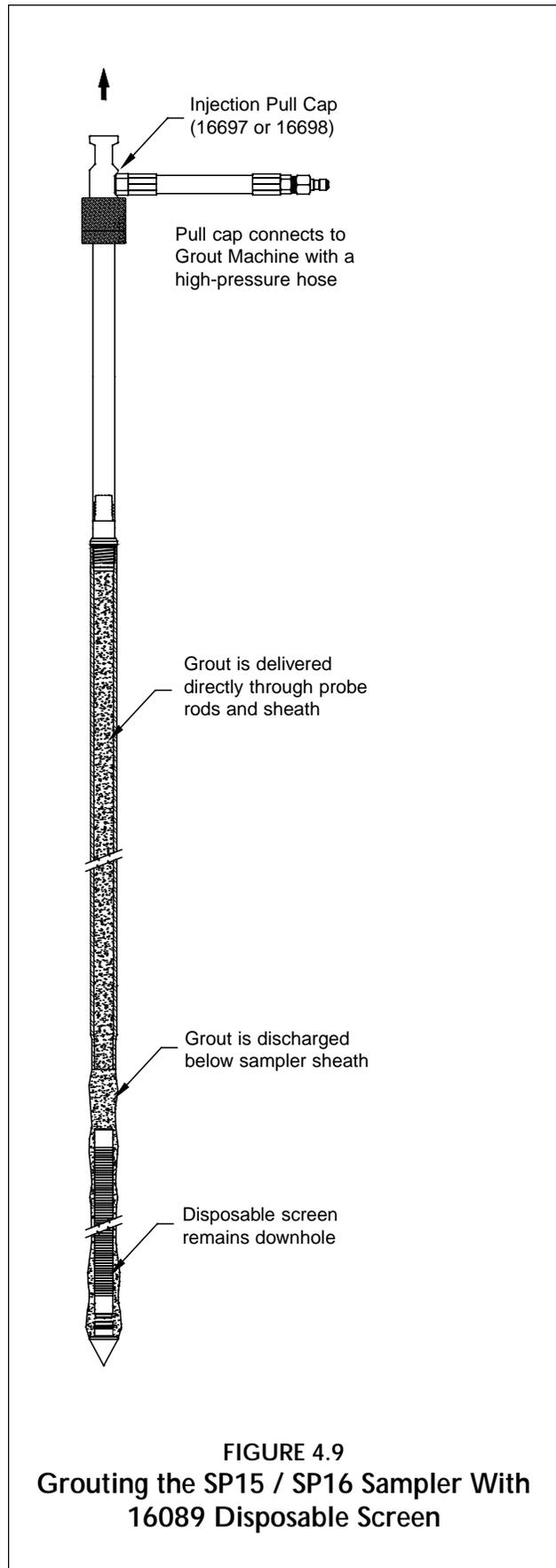
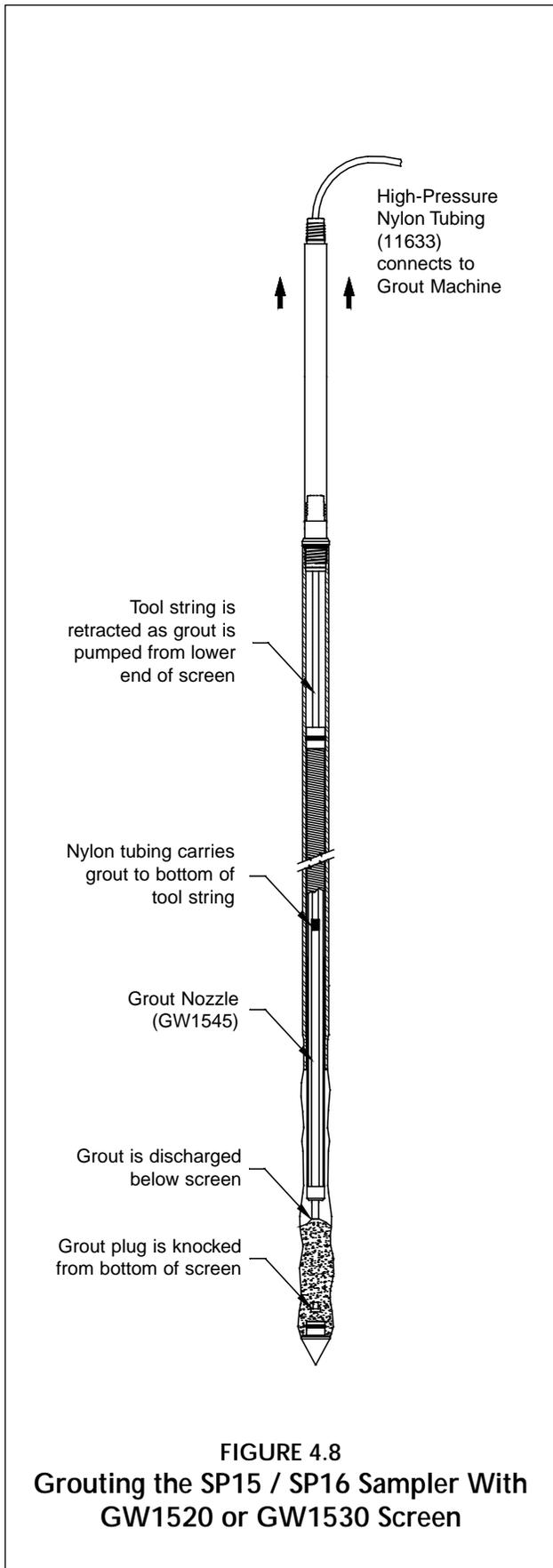
The SP15 and SP16 Samplers can meet ASTM D 5299 requirements for abandoning environmental wells or borings when grouting is conducted properly. A removable grout plug makes it possible to deploy tubing through the bottom of GW1520 and GW1530 screens. A GS500, GS1000, or GS2000 Grout Machine is then used to pump grout into the open probe hole as the sampler is withdrawn. The following procedure is presented as an example only and should be modified to satisfy local abandonment grouting regulations.

1. Maneuver the probe assembly into position for pulling. Attach the rod grip puller to the top probe rod. Raise the tool string approximately 4 to 6 inches (102 to 152 cm) to allow removal of the grout plug.
2. Thread the Grout Plug Push Adapter (GW1540, Fig. 4.4) onto an extension rod. Insert the adapter and extension rod inside the probe rod string. Add extension rods until the adapter contacts the grout plug at the bottom of the screen. Attach the handle to the top extension rod. When the extension rods are slightly raised and lowered, a relatively soft rebound should be felt as the adapter contacts the grout plug. This is especially true when using a PVC screen.
3. Place a mark on the extension rod even with the top of the probe rod. Apply downward pressure on the extension rods and push the grout plug out of the screen. The mark placed on the extension rod should now be below the top of the probe rod. Remove all extension rods.

**Note:** When working with a stainless steel screen, it may be necessary to raise and quickly lower the extension rods to jar the grout plug free. When the plug is successfully removed, a metal-on-metal sensation may be noted as the extension rods are gently "bounced" within the probe rods.

4. A Grout Nozzle (GW1545) is now connected to High-Pressure Nylon Tubing (11633) and inserted down through the probe rods to the bottom of the screen (Fig. 4.8). It may be necessary to pump a small amount of clean water through the tubing during deployment to jet out sediments that settled in the bottom of the screen. Resistance will sometimes be felt as the grout nozzle passes through the drive head. Rotate the tubing while moving it up-and-down to ensure that the nozzle has reached the bottom of the screen and is not hung up on the drive head.

**Note:** All probe rods remain strung on the tubing as the tool string is pulled. Provide extra tubing length to allow sufficient room to lay the rods on the ground as they are removed. An additional 20 feet is generally enough.



5. Operate the grout pump while pulling the first rod with the rod grip pull system. Coordinate pumping and pulling rates so that grout fills the void left by the sampler. After pulling the first rod, release the rod grip handle, fully lower the hammer, and regrip the tool string at the second probe rod. Unthread the top probe and slide it over the tubing placing it on the ground near the end of the tubing.
6. Repeat Step 5 until the sampler is retrieved. Do not bend or kink the tubing when pulling and laying out the probe rods. Sharp bends create weak spots in the tubing which may burst when pumping grout. Remember to operate the grout pump only when pulling the rod string. The probe hole is thus filled with grout from the bottom up as the rods are extracted.
7. Promptly clean all probe rods and sampler parts before the grout sets up and clogs the equipment.

#### **4.9 Abandonment Grouting for the 16089 Disposable Screen**

ASTM D 5299 requirements can also be met for the SP15 / SP16 samplers when using the 16089 disposable screen. Because the screen remains downhole after sampling, the operator may choose either to deliver grout to the bottom of the tool string with nylon tubing or pump grout directly through the probe rods using an Injection Pull Cap (16697 or 16698). A GS500, GS1000, or GS2000 Grout Machine is needed to pump grout into the open probe hole as the sampler is withdrawn. The following procedure is presented as an example only and should be modified to satisfy local abandonment grouting regulations.

1. Maneuver the probe assembly into position for pulling with the rod grip puller.
2. Thread the screen push adapter onto an extension rod. Insert the adapter and extension rod inside the probe rod string. Add extension rods until the adapter contacts the bottom of the screen. Attach the handle to the top extension rod.
3. The disposable screen must be extended at least 46 inches (1168 mm) to clear the bottom of the sampler sheath. Considering the length of screen deployed in Section 4.7, determine the remaining distance required to fully extend the screen from the sheath. Mark this distance on the top extension rod.
4. Pull the tool string up to the mark on the top extension rod while holding the disposable screen in place.

The screen is now fully deployed and the sampler is ready for abandonment grouting. Apply grout to the bottom of the tool string during retrieval using either flexible tubing (as described in Section 4.8) or an injection pull cap (Fig. 4.9). This section continues with a description of grouting with a pull cap.

5. Remove the rod grip handle and maneuver the probe assembly directly over the tool string. Thread an Injection Pull Cap (16697 or 16698) onto the top probe rod and close the hammer pull latch over the top of the pull cap.
6. Connect the pull cap to a Geoprobe grout machine using a high-pressure grout hose.
7. Operate the pump to fill the entire tool string with grout. When a sufficient volume has been pumped to fill the tool string, begin pulling the rods and sampler while continuing to operate the grout pump. Considering the known pump volume and sampler cross-section, time tooling withdrawal to slightly "overpump" grout into the subsurface. This will ensure that all voids are filled during sampler retrieval.

The grouting process can lubricate the probe hole sufficiently to cause the tool string to slide back downhole when disconnected from the pull cap. Prevent this by withdrawing the tool string with the rod grip puller while maintaining a connection to the grout machine with the pull cap.

#### **4.10 Retrieving the Screen Point 15 Sampler**

If grouting is not required, the Screen Point 15 sampler can be retrieved by pulling the probe rods as with most other Geoprobe applications. The Rod Grip Pull System should be used for this process as it allows the operator to remove rods without completely releasing the tool string. This avoids having the probe rods fall back downhole when released during the pulling procedure. A standard Pull Cap (AT1204 or 15164) may still be used if preferred. Refer to the Owner's Manual for your Geoprobe direct push machine for specific instructions on pulling the tool string.

### **5.0 REFERENCES**

American Society for Testing and Materials (ASTM), 1993. ASTM 5299 Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and Other Devices for Environmental Activities: *1993 Annual Book of ASTM Standards, Vol. 0408*. Philadelphia, PA.

Geoprobe Systems, 1997, "98-99 Tools and Equipment Catalog."

Geoprobe Systems, 1995, "1995-96 Tools and Equipment Catalog."

U.S. EPA (Robert W. Puls and Michael J. Barcelona), 1996. Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures: EPA Ground Water Issue. EPA/540/S-95/504. April

Equipment and tool specifications, including weights, dimensions, materials, and operating specifications included in this brochure are subject to change without notice. Where specifications are critical to your application, please consult Geoprobe® Systems.

COPYRIGHT© 2001, 1999, 1997 by Kejr, Inc.  
ALL RIGHTS RESERVED.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from Kejr, Inc.



A DIVISION OF KEJR, INC.

**Corporate Headquarters**

601 N. Broadway • Salina, Kansas 67401 • 1-800-GEOPROBE (1-800-436-7762) • Fax (785) 825-2097

**Mid-Atlantic Regional Office**

Tom's River, New Jersey • (732) 506-7555 • Fax (732) 506-9770

**Midwestern Regional Office**

Bellevue, Kentucky • (859) 581-4865 • Fax (859) 581-0879

**Southcentral Regional Office**

St. Amant, Louisiana • (225) 675-6395 • Tel/Fax (225) 675-6746

**Southeastern Regional Office**

Crystal River, Florida • Tel/Fax (352) 795-7876

**Western Regional Office**

Reedley, California • (559) 637-1696 • Fax (559) 637-1796