

# Sampling Systems

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Mills machine offers two distinctive types of sampling systems ranging from the simple, inexpensive to the more complex, time saving system. Our full range of hollow stem augers and auger accessories give you the versatility to accomplish your sampling needs. All augers are available in English or Metric lengths.

**1. Standard Intermittent Sampling.** The first type uses standard hollow stem augers and the normal interior drill rod. As sampling is required you remove the interior rod from the augers, attach a split tube sampler and drive it into the ground with an above-ground 140# safety hammer or if the sample is deeper down, an in-hole 140 # hammer. Dimensions for the in-hole hammers are shown on the components page. When the sampler is full you remove the drill rod, retrieve the sample and reinsert the drill rod and pilot bit and continue to drill to the next zone to be sampled.

Components for this type of system may be purchased individually or your Mills sales representative will put together a package of parts that will make up a complete system.

**2. Standard Continuous Sampling.** This method uses drill rod for continuous sampling. Similar to the first method with the exception of a modified, longer drive cap and the use of a five-foot sampling tube. The drive cap has adjustment holes for easy adjustment, at any time, for proper positioning of the sampling tube behind the cutter head, even with the cutter head or in front of the cutter head and as the soil conditions vary.

Below the rod-to-cap adapter, a bearing assembly is inserted to keep the sampling tube from rotating and shearing the soil sample. The five-foot split-sampling barrel is pulled from the hole each five feet and an empty split barrel inserted. In normal operating conditions two split barrel tubes are required.

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

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[www.MillsMachine.com](http://www.MillsMachine.com)

MILLS MACHINE CO. INC., P O BOX 1514, SHAWNEE, OK, 74802  
Phone: 800-654-2703 or 405-273-4900 Fax: 405-273-4956

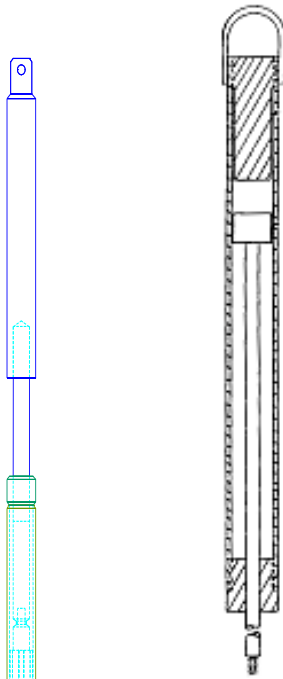
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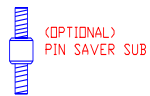
## Standard Intermittent Sampling

This is the basic method used to take a soil sample through a hollow stem auger. The interior drill rod along with the pilot bit and connector are removed. A sampling tube is attached to the bottom of the drill rod and pounded into the formation with a 140 lb. safety hammer until it is full.

The pilot bit, connector and drill rod are reinserted and standard auguring is continued to the next zone to be sampled. The components for this system, hammers, sampling tubes and swivels are found in the Sampling System Components section of this catalog.



Above-hole Hammer



(OPTIONAL)  
PIN SAVER SUB

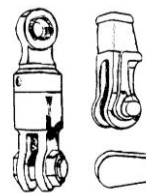
**In-hole Sampler Hammer**



**Split Tube Sampler**



**Shelby Tube Sampler**



**3EJM Swivel**  
(With Open Wedge Socket)



**C-611Z Swivel**

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# Sampling Systems

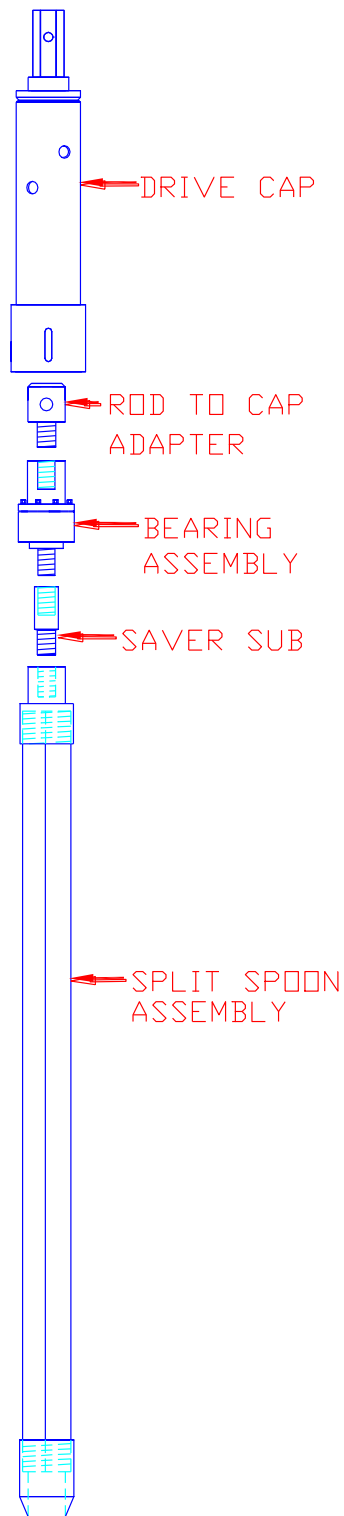
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## Standard Continuous Sampling.



For shallow sampling the simplest and lowest total cost system is the standard continuous sampling system. Drill rod is used to connect to the split tube sampler. There is a modified drive cap with adjustment holes for positioning of the sampling tube required with various soil conditions or sampling specifications. The position of the sampling shoe can be changed from 1 inside the auger to approximately 4 ahead of the auger bit.

A bearing system is required below the rod to cap adapter to prevent the sampler from rotating and disturbing the soil sample. This system is usually used with a five foot split tube sampler. When the tube is full, it is removed and a spare five-foot tube is inserted in the hole to continue the sampling operation.

In addition to the normal drill string the following are required for this system:

- Extended Drive Cap
- Rod to Cap Adapter (included in your drive string)
- Bearing Assembly
- Nut and Bolt for Rod to Cap Adapter
- Saver Sub/any combo of auger pipe Tool Joints
- Sampling Tube,  $\frac{1}{4}$  wall 5' long with Head and Shoe
- Spare Sampling Tube with Barrel and Shoe only

The 5' split spoon assembly is available in 3 OD for the 3  $\frac{1}{4}$  and 3  $\frac{3}{4}$  augers and 4 OD for larger augers. With a 6  $\frac{1}{4}$  ID auger and above, a shroud is used around the drive shoe to insure the sampler is centered. The top box connection of the sampler is the same as your drill string pin-down connection.

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# Sampling System Components

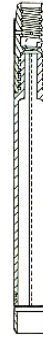
## Split Tube Samplers

### 2 O.D. X 24 - COMPLETE ASSEMBLY

SS224AW	AW ROD BOX
SS224AWJ	AWJ ROD BOX

### 3 O.D. X 24 - COMPLETE ASSEMBLY

SS324AW	AW ROD BOX
SS324AWJ	AWJ ROD BOX
SS324NW	NW BOX
SS324NWJ	NWJ BOX



← Split Tube Sampler

## Shelby Tube Samplers

### Shelby Tube Head (Holds Shelby Tube)\*\*

SSHEL2HAW	2 O.D. AW Box
SSHEL2HAWJ	2 O.D. AWJ Box
SSHEL3HNW	3 O.D. NW Box
SSHEL3HNWJ	3 O.D. NWJ Box

### Shelby Tube \*\*\*

SSHEL224T	2 Dia. X 24 long Shelby Tube for AW or AWJ
SSHEL324T	3 Dia. X 24 long Shelby Tube for NW or NWJ

### End Caps for Shelby Tubes. (Two required on each tube.)

SSHEL2C	2 Diameter
SSHEL3C	3 Diameter

\*\*\* 4 Thread is Standard, 8 Thread is available check factory. Also check for other sizes, Lynac Samplers, Shelby tube parts.

\*\*\*Other lengths of tubes are available such as 18 or 30 – refer to factory.

Shelby Tube Sampler →



In Hole Hammer →



OPTIONAL PIN SAVER SUB

## In-Hole Safety Hammer

### Mills Machine Complete 140 In-Hole Safety Hammer

Overall length including swivel - 158 open and 119 closed.

SSIHAM200	2 O.D.	SPECIAL
SSIHAM258	2 5/8 O.D.	SPECIAL
SSIHAM278	2 7/8 O.D.	STANDARD

Above Hole Hammer →



## Above-Hole Hammer

SSAHAM140AW	AW Pin	
SSAHAM140AWJ	AWJ Pin	

## Swivels for In-Hole Hammers and Wireline Systems

Swivel	Description	Lbs.	Kgs.
SSINSW3EJM	3 Ton Ball Bearing Swivel, 3EJM	8	3.5
SSINSWWS4	Wedge for 3EJM Swivel	3	1.3
SSINSWC-611Z	3 Ton Ball Bearing Swivel, C-611/Thimble Top & Zert Ftg.		



## Subs for Hammers and Wirelines

AW Pin to ?? Pin	Adaptor Sub with AW, AWJ, NW or NWJ Pin	\$70.00
AW Box to ?? Box	Adaptor Sub with AW, AWJ, NW or NWJ Box	\$70.00



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# Sampling System Components

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The Rotary Core Bit is an innovative option for taking core samples through standard rotary drill rods. These bits are designed to take intermittent samples of dirt or rock.

When you reach the desired sampling zone you simply insert a standard 2 OD split spoon sampler connected to the bottom of 1 5/8 OD AW or AWJ drill rod down the I.D. of the larger drill rod. Connecting an above ground-sampling hammer the drill rod and pounding it into the formation take the actual core. We also, offer a special in hole sampling hammer to eliminate the use of drill rod.

Bit sizes start at 6 OD and are available in new, rerun or retip steel tooth or TCI button cones with standard or sealed bearings. This type of core bit is built with standard roller rock bit segments.

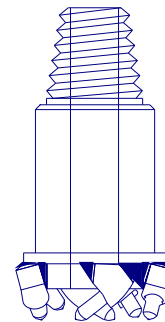
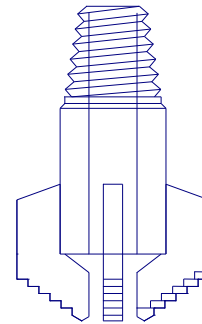
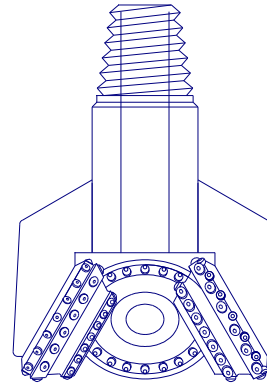
The drag bit style is designed for softer formations with sizes starting at 6 OD. Standard wing configurations consist of three or more wings in a step or chevron shape. The thickness of the blade and carbide inserts is offered in a standard or heavy-duty style.

Bullet type core bits are designed for soft to medium hard formations with sizes starting at 6 OD. Our standard carbide tipped bullet cutter is used to manufacture these specialty bits. We also offer other styles of carbide tipped cutters for more versatility.

Typical thread connections are 2 7/8 I.F., 3 1/2 I.F. Box or 4 1/2 Regular Pin with 2 1/4 I.D.

See the Sampling System Components section of this catalog for sampling tubes and the sampling hammers to drive the sampling tube.

The questionnaire on the opposite page will assist in determining the construction.



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**Core Bit**

**Application Questionnaire**

**Core Bit**

Company \_\_\_\_\_

Phone \_\_\_\_\_

Address \_\_\_\_\_

Fax \_\_\_\_\_

\_\_\_\_\_

E-Mail \_\_\_\_\_

City, State Zip \_\_\_\_\_

Contact \_\_\_\_\_

Quantity: \_\_\_\_\_ Bit OD \_\_\_\_\_ Core Minimum ID \_\_\_\_\_

OR Sampling Tube OD \_\_\_\_\_

Connection: \_\_\_\_\_ Box  or Pin  Flats: \_\_\_\_\_

**Drag Type**

Step  Chevron  Number of Blades \_\_\_\_\_

**Claw Type**

Type of Cutters \_\_\_\_\_

**Roller Type**

Bearing: Conventional  Sealed

Steel Tooth: New  Retip  IADC Code \_\_\_\_\_

Formation: Soft , Med. Soft , Medium , Med. Hard , Hard

OR: \_\_\_\_\_

TCI Button Bit: New  Rerun  IADC Code \_\_\_\_\_

Formation: 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9

Special Requirements: \_\_\_\_\_

Sketch:

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