

Hollow Stem Augers

Hollow stem augers are used extensively for **soil sampling** and **ground water monitoring** in industrial and commercial installations. The auger flighting acts as a **screw conveyor** to move the dirt from the bottom of the hole while the cutterhead and pilot bit break up and drill the material. The auger pitch determines the efficiency and lifting speed of the auger. The cutterhead is slightly larger than the auger flighting diameter to increase the life of the flighting edges and improve soil removal.

The advantages of hollow stem augers are many. Unlike the solid stem method, drill rods can pass through the center of the auger section and an **undisturbed sample** of the soil can be taken for analysis or **ground water monitoring** pipe can be installed.

Mills Machine Augers

Mills Machine Company has been a leader in the development of Hollow Stem Augers and their related components. Several of our designs have **established a standard in the industry.**

Mills Machine hollow stem augers are fully **reversible** through the use of drive keys that transfer the torque directly from auger to auger. The auger lock bolts are used when **lifting** the auger string. We furnish double key or triple key systems depending on the application along with standard and heavy-duty tool joints.

Drilling Operation

For normal hole advancement, a **pilot bit** is inserted through the **cutterhead** to drill the center of the hole. The drill rod is bolted to the inside of the drive cap with a rod to cap adapter so that the pilot bit can turn in tandem with the augers.

Drill rods must be added each time an auger is added. In soft formations (dirt and sand), a **tapered plug** may be inserted into the end of the cutterhead to prevent material from going up inside the augers and to eliminate the use of drill rod. When the hole is completed the plug may be knocked out the bottom of the auger string. The next step is to insert the monitoring screen and casing which is then grouted into place to prevent contamination from the top of the hole.

The center section may also be used for **intermittent or continuous sampling.** Mills Machine Company, Inc. manufactures a broad line of soil sampling tools.

In some applications hollow stem augers are used as temporary casings to **prevent caving and sloughing** of the borehole wall. In other applications, the auger walls may be **slotted** to allow water to pass through the center of the auger for sampling of the ground water as it passes through the auger.

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

Check our Web site:
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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Hollow Stem Augers

Hollow Stem Auger Specifications

The tubing and flighting are made from **premium carbon steel**, the tool joint ends are manufactured from **4142 heat-treated alloy steel** and the flighting has continuous hardfacing for durability. Our **flighting is thicker** than most of our competitors' augers with 3/8 being the standard on 2 1/4 to 12 1/4 I.D. augers.

The standard outside diameter of the Mills hollow stem augers ranges from 5 5/8 to 17. The inside diameters of the stocked augers range from 2 1/4 to 12 1/4. Special internal and external diameters are available upon request. Auger lengths are normally 5 feet or metric versions at 1.5 meters with shorter or longer lengths available with or without flighting to meet specific requirements.

The **standard duty augers** are designed for use in shallow hole applications and are recommended for **depths up to seventy feet**. For **deeper drilling, the tapered, heavy-duty augers** should be used. These augers have heavier tool joints and feature larger drive keys, nuts, and bolts for added strength.

The heavy-duty auger tool joints are tapered for **easy makeup and breakout** and can be

used in depths exceeding 70 feet. We also have extra heavy-duty augers available that features our heavy-duty tapered tool joints and a thicker wall tube.

Often the first step is to drill through a layer of concrete to reach the soil to be examined. Mills Machine was the **first** manufacturer to design and market an efficient and economical concrete cutting bit that fits on the bottom of the auger. The Mills **Concrete Bullet Bit** is available in sizes ranging from 6 - 24 O.D. with any size or make of tool joint.

Variations in auger specifications are common. Mills Machine stands ready to meet those differences with a strong **history of design and development** that has established us as a leader in the field. We carry an **inventory** of all the standard components and are ready to meet your special needs with **rapid design and delivery time**.

The auger line complements the standard line of rotary drilling equipment manufactured by Mills Machine Company.

Call on us for drag bits, claw bits, core bits, rock bits, underreamers, backreamers, hole-openers, stabilizers, fishing tools and related accessories

➔ 3/8 THICK FLIGHTING STANDARD

➔ CONTINUOUS MACHINE WELDS

➔ KEY AND BOLT CONNECTIONS

➔ DOUBLE OR TRIPLE KEY

➔ STANDARD AND HEAVY DUTY CONSTRUCTION

➔ SIX STYLES OF CUTTERHEADS

➔ HARD FACED EDGES

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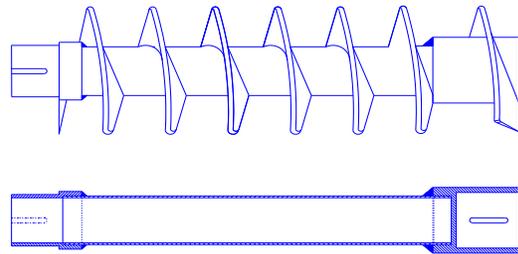
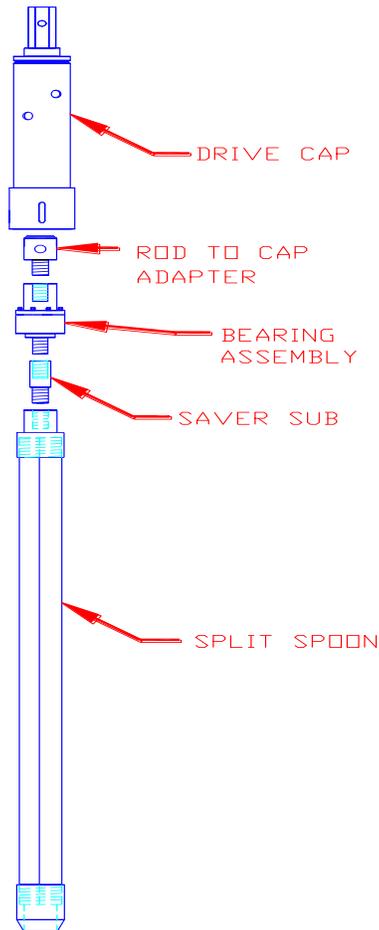
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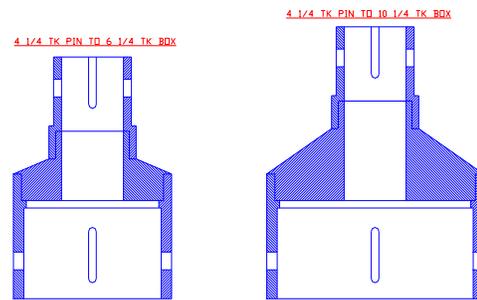
Hollow Stem Auger Variations

Wireline Systems, Auger Extensions, Tool Joints, Adapters

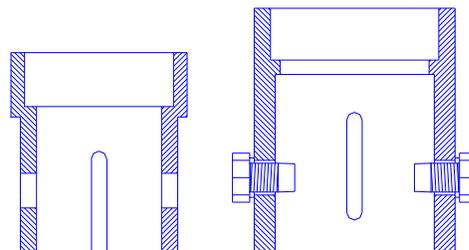
Standard Continuous
Sampling System.



Auger Extensions - Flighted and Flightless.



Auger Adapters



Auger Tool Joints

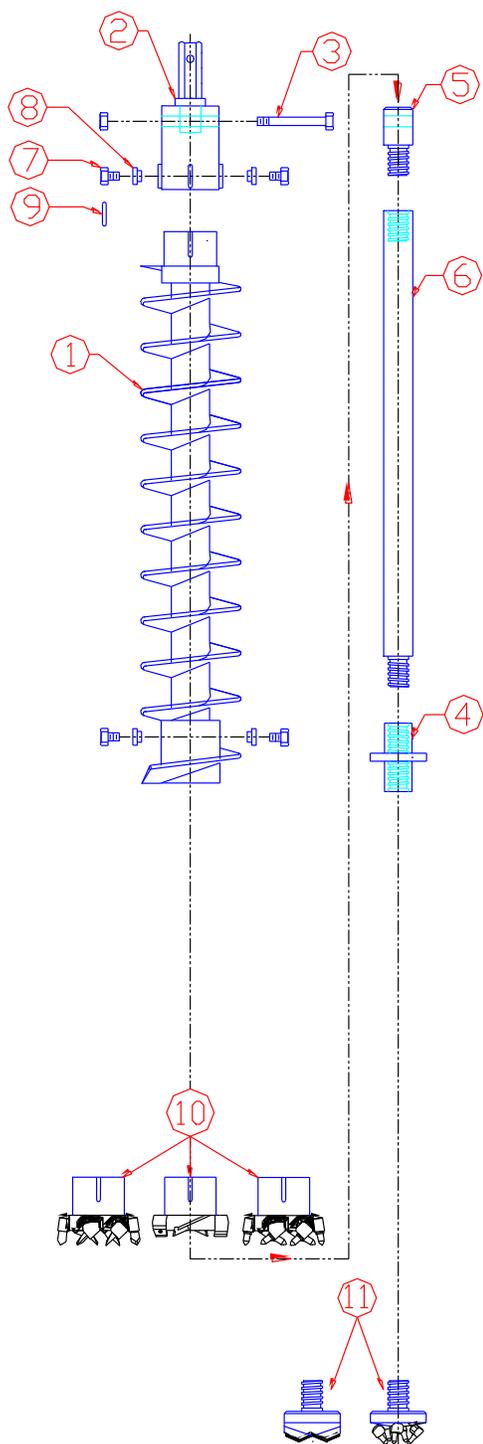
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Hollow Stem Auger Construction



The complete Hollow Stem Auger string is shown at the left. The numbers correspond with the numbers on each page of the auger sizes. The 2 1/4 , 3 1/4 and 3 3/4 size augers are single bolt (only one lock bolt and nut), items **(7)** and **(8)**, (Double bolt is available on the 3 1/4 and all 3 3/4 On request)

The heavy-duty versions of the augers have a taper on the tool joint to make them easier to remove. All 8 1/4 , 10 1/4 and 12 1/4 ' augers are heavy-duty.

Augers are connected in 5' strings to reach the depth required (we also make the augers in 1 1/2 meter sections); the flighting is timed so the sections match.

The outside components are the drive cap **(2)** that connects the auger string to your drive, the auger **(1)** that moves the material from the bottom of the hole and the cutterhead **(10)**. Depending on the size, there are up to six different cutterheads available depending on the formation of material being drilled. The spade/bullet style is the most universal type available.

The inside components will drill a complete hole using the drill-string and a pilot bit or act as a sampling center hole when the auger reaches the desired sampling area. The inner string consists of the nut and bolt that holds the rod to cap adapter **(3)**, the drill rod **(6)**, and the pilot bit connector **(4)** that centers the pilot bit **(11)**.

Sampling can be done using the center pipe and sampling tubes or one of the four other sampling systems as shown in section three of this catalog.

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

2 1/4" (57mm) and 3 1/4" (83mm) HOLLOW STEM AUGER COMPONENTS

Double Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with single bolt connection. The 4142 alloy steel connectors ensure strength and durability for environmental ground water monitoring well installations. The auger pitch is 5 (127 mm).

Standard Duty

		2 1/4 ID		Auger Section			
DESCRIPTION		PART#	Lbs.	Kg.	3 1/4 ID	Lbs.	Kg.
1	Auger 2 1/4 (57 mm) ID x 5 5/8 (143 mm) OD x 5' (1524 mm)	A214200	52	23.5	A314200	81	36.7
1	Auger 3 1/4 (83 mm) ID x 6 5/8 (168 mm) OD x 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys						
2	DRIVE CAP W/ 1 5/8 (41 mm) HEX MALE SHANK	ADC214210	16	7.3	ADC314210	22	10.0
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK				ADC314211	23	10.4
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB2	0.9	0.4	ANAB3	0.9	0.4
4	PILOT BIT CONNECTOR (AW BOX - A-ROD BOX)	APBC218AWB	5	2.3	APBC318AWB	11	5.0
4	PILOT BIT CONNECTOR (AWJ BOX - A-ROD BOX)	APBC218AWJB	5	2.3	APBC318WJB	12	5.4
4	PILOT BIT CONNECTOR (AW BOX - 4 THREAD N-ROD BOX)				APBC318NW	8	3.6
4	PILOT BIT CONNECTOR (AWJ BOX - 4 THREAD N-ROD BOX)				APBC318NWJ	11	5.0
4	PILOT BIT CONNECTOR (NW BOX - 4 THREAD N-ROD BOX)						
4	PILOT BIT CONNECTOR (NWJ BOX - 4 THREAD N-ROD BOX)						
5	ROD TO CAP ADAPTER - AW PIN	ARCAAWP	3	1.4	Same		
5	ROD TO CAP ADAPTER - AWJ PIN	ARCAAWJP	3	1.4	Same		
5	ROD TO CAP ADAPTER - NW PIN				ARCNWP	7	3.2
5	ROD TO CAP ADAPTER - NWJ PIN				ARCNWJP	6	2.7
6	AW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AW	31	9.5	Same		
6	AWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AWJ	35	10.4	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	9.5	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	10.4	Same		
1A	TOOL JOINT - 2 1/4 (57 mm) DOUBLE KEY PIN	ATJ2142P	6	2.7	ATJ3142P	7	3.2
1B	TOOL JOINT - 2 1/4 (57 mm) DOUBLE KEY BOX	ATJ2142B	5	2.3	ATJ2142B	6	2.7
1A	TOOL JOINT - 3 1/4 (83 mm) DOUBLE KEY PIN						
1B	TOOL JOINT - 3 1/4 (83 mm) DOUBLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys						
7	REPLACEMENT LOCK BOLTS (1 REQUIRED/ AUGER)	ALB2	0.3	0.1	Same		
8	REPLACEMENT BUSHING NUTS (1 REQUIRED/AUGER)	ABN2	0.3	0.1	Same		
9	REPLACEMENT DRIVE KEYS (2 REQUIRED/ AUGER)	ADK1	0.3	0.1	Same		

Auger Repair Parts

7	REPLACEMENT LOCK BOLTS (1 REQUIRED/ AUGER)	ALB2	0.3	0.1	Same		
8	REPLACEMENT BUSHING NUTS (1 REQUIRED/AUGER)	ABN2	0.3	0.1	Same		
9	REPLACEMENT DRIVE KEYS (2 REQUIRED/ AUGER)	ADK1	0.3	0.1	Same		

Auger Cutterheads and Pilot Bits.

10	SPADE CUTTERHEAD - 6 1/2 (165 mm) 2 1/4	ACH214251	10	4.5	ACH314250	11	5.0
10	SPADE/BULLET COMBO CUTTERHEAD - 6 1/2 (165 mm) 2 1/4	ACH214261	9	4.1	ACH314251	12	5.5
10	BULLET CUTTERHEAD - 6 1/2 (165 mm) 2 1/4	ACH214270	10	4.5	ACH314260	14	6.4
10	4 BIT 5-T SQUARE FINGER BIT - 6 1/2 (165 mm) 2 1/4	ACH214271			ACH214261	9	4.1
10	BLADE CUTTERHEAD - 7 1/2 (190 mm) 3 1/4				ACH214270	10	4.5
10	SPADE CUTTERHEAD - 7 1/2 (190 mm) 3 1/4				ACH214271		
10	BLADE/BULET CUTTERHEAD - 7 1/2 (190 mm) 3 1/4						
10	SPADE/BULLET COMBO CUTTERHEAD - 7 1/2 (190 mm) 3 1/4						
10	BULLET CUTTERHEAD - 7 1/2 (190 mm) 3 1/4						
10	4 BIT 5-T SQUARE FINGER BIT - 7 1/2 (190 mm) 3 1/4						
11	2 1/8 (54 mm), PILOT BIT, HEAVY DUTY APEX TYPE, A-ROD PIN	APB218APX	2.5	1.3	APB318APX	2.5	1.3
11	3 1/8 (79 mm), PILOT BIT, HEAVY DUTY APEX TYPE, 4-THD N-ROD PIN				APB318APX	5	2.3
11	3 1/8 (79 mm), PILOT BIT, BULLET TYPE, 4-THD N-ROD PIN						
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP078	3	1.4	Same		

See Reference Page 2-10 for specific component information (# of cutters, blocks, etc.)

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

3 3/4" I D (95 mm) HOLLOW STEM AUGER COMPONENTS

Double Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors ensure strength and durability for environmental ground water monitoring well installations. The auger pitch is 5 (127 mm) and single key design on the Standard Duty and 6 (152.4 mm) and double key design on the Heavy Duty

Standard Duty

Heavy Duty

Auger Section

	DESCRIPTION	PART#	WEIGHT		PART#	WEIGHT	
			Lbs.	Kg		Lbs.	Kg
1	3 3/4 (95 mm) I. D. X 7 1/8 (181 mm) O.D. X 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A334200	81	36.7	A334200HD	84	38.1
2	DRIVE CAP W/ 1 5/8 (41 mm) HEX MALE SHANK	ADC334210	22	10.0	ADC334210HD	25	11.3
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK	ADC334211	25	11.3	ADC334211HD	28	12.7
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB4	0.9	0.4	Same		
4	PILOT BIT CONNECTOR (AW BOX - 2 3/8 REG. BOX)	APBC358AWB	8	3.6	Same		
4	PILOT BIT CONNECTOR (AWJ BOX - 2 3/8 REG. BOX)	APBC358AWJB	11	5.0	Same		
4	PILOT BIT CONNECTOR (NW BOX - 2 3/8 REG. BOX)	APBC358NWB	11	5.0	Same		
4	PILOT BIT CONNECTOR (NWJ BOX - 2 3/8 REG. BOX)	APBC358NWJ	12	5.4	Same		
5	ROD TO CAP ADAPTER - AW PIN	ARCAAWP	3	1.4	Same		
5	ROD TO CAP ADAPTER - AWJ PIN	ARCAAWJP	3	1.4	Same		
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2	Same		
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7	Same		
6	AW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AW	21	9.5	Same		
6	AWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AWJ	23	10.4	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9	Same		

Auger Repair Parts

1A	TOOL JOINT - 3 3/4 (95 mm) DOUBLE KEY PIN	ATJ3342P	6	2.7	ATJ3342PHD	8	3.6
1B	TOOL JOINT - 3 3/4 (95 mm) DOUBLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ3342B	5	2.3	ATJ3342BHD	7	3.2
7	REPLACEMENT LOCK BOLTS (1 REQUIRED/ AUGER)	ALB2	0.3	0.1			
8	REPLACEMENT BUSHING NUTS (1 REQUIRED/AUGER)	ABN2	0.3	0.1			
9	REPLACEMENT DRIVE KEYS (2 REQUIRED/ AUGER)	ADK1	0.3	0.1	ADK2	0.3	0.1
7	REPLACEMENT LOCK BOLTS (2 REQUIRED/ AUGER)				ALB3	0.4	0.2
8	NUTS (REPLACEMENT BUSHING 2 REQUIRED/AUGER)				ABN3	0.2	0.1

Auger Cutterheads and Pilot Bits.

10	BLADE CUTTERHEAD - 8 1/2 (216 mm)	ACH334250	16	7.3	ACH334250HD	16	7.3
10	SPADE CUTTERHEAD - 8 1/2 (216 mm)	ACH334251	20	9.1	ACH334261HD	20	9.1
10	BLADE/BULLET COMBO CUTTERHEAD - 8 1/2 (216 mm)	ACH334260	20	9.1	ACH334260HD	20	9.1
10	SPADE/BULLET COMBO CUTTERHEAD - 8 1/2 (216 mm)	ACH334261	22	10.0	ACH334261HD	22	10.0
10	BULLET CUTTERHEAD - 8 1/2 (216 mm)	ACH334270	22	10.0	ACH334270HD	22	10.0
10	5-T SQUARE FINGER BIT - 8 1/2 (216 mm)	ACH334271	22	10.0	ACH334271HD	22	10.0
11	APEX PILOT BIT - 3 5/8 (92 mm), 2 3/8 PIN	APB358APX	5	2.3	Same		
11	BULLET PILOT BIT - 3 5/8 (92 mm), 2 3/8 PIN	APB358BUL	8	4.1	Same		
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP078	3	1.4	Same		

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

4 1/4" (108 mm) HOLLOW STEM AUGER COMPONENTS

Double Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors ensure strength and durability for environmental ground water monitoring well installations. The auger pitch is 5 (127 mm) on the Standard Duty and 6 (152.4 mm) on the Heavy Duty.

Standard Duty Heavy Duty

Auger Section

	DESCRIPTION	PART#	WEIGHT		PART#	WEIGHT	
			Lbs.	Kg		Lbs.	Kg
1	4 1/4 (108 mm) I. D. X 7 5/8 (194 mm) O.D. X 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A414200	99	44.9	A334200HD	102	46.2
2	DRIVE CAP W/ 1 5/8 (41 mm) HEX MALE SHANK	ADC414210	22	10.0	ADC414210HD	25	11.3
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK	ADC414211	25	11.3	ADC414211HD	28	12.7
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB4	0.9	0.4	Same		
4	PILOT BIT CONNECTOR (AW BOX - 2 3/8 REG. BOX)	APBC418AWB	8	3.6	Same		
4	PILOT BIT CONNECTOR (AWJ BOX - 2 3/8 REG. BOX)	APBC418AWJB	11	5.0	Same		
4	PILOT BIT CONNECTOR (NW BOX - 2 3/8 REG. BOX)	APBC418NWB	11	5.0	Same		
4	PILOT BIT CONNECTOR (NWJ BOX - 2 3/8 REG. BOX)	APBC418NWJB	12	5.4	Same		
5	ROD TO CAP ADAPTER - AW PIN	ARCAAWP	3	1.4	Same		
5	ROD TO CAP ADAPTER - AWJ PIN	ARCAAWJP	3	1.4	Same		
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2	Same		
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7	Same		
6	AW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AW	21	9.5	Same		
6	AWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AWJ	23	10.4	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9	Same		

Auger Repair Parts

1A	TOOL JOINT - 2 1/4 (57 mm) DOUBLE KEY PIN	ATJ4142P	8	3.6	ATJ3342PHD	9	4.1
1B	TOOL JOINT - 2 1/4 (57 mm) DOUBLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ4142B	7	3.2	ATJ3342BHD	8	3.6
7	REPLACEMENT LOCK BOLTS (2 REQUIRED/ AUGER)	ALB2	0.3	0.1	ALB3	0.4	0.2
8	REPLACEMENT BUSHING NUTS (2 REQUIRED/ AUGER)	ABN2	0.3	0.1	ABN3	0.2	0.1
9	REPLACEMENT DRIVE KEYS (2 REQUIRED/ AUGER)	ADK1	0.3	0.1	ADK2	0.3	0.1

Auger Cutterheads and Pilot Bits.

10	BLADE CUTTERHEAD - 8 3/4 (222 mm)	ACH414250	16	7.3	ACH414250HD	16	7.3
10	SPADE CUTTERHEAD - 8 3/4 (222 mm)	ACH414251	20	9.1	ACH414261HD	20	9.1
10	BLADE/BULLET COMBO CUTTERHEAD - 8 3/4 (222 mm)	ACH414260	20	9.1	ACH414260HD	20	9.1
10	SPADE/BULLET COMBO CUTTERHEAD - 8 3/4 (222 mm)	ACH414261	22	10.0	ACH414261HD	22	10.0
10	BULLET CUTTERHEAD - 8 3/4 (222 mm)	ACH414270	22	10.0	ACH414270HD	22	10.0
10	5-T SQUARE FINGER BIT - 8 3/4 (222 mm)	ACH414271	22	10.0	ACH414271HD	22	10.0
11	APEX PILOT BIT - 4 1/8 (105 mm), 2 3/8 PIN	APB418APX	5	2.3	Same		
11	BULLET PILOT BIT - 4 1/8 (105 mm), 2 3/8 PIN	APB418BUL	8	4.1	Same		
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP078	3	1.4	Same		

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

6 1/4" I D (159 mm) HOLLOW STEM AUGER COMPONENTS

Double Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors ensure strength and durability for environmental ground water monitoring well installations. The auger pitch is 6 (152.4 mm) on both styles.

Standard Duty

Heavy Duty

Auger Section

	DESCRIPTION	PA RT#	WEIGHT		PART#	WEIGHT	
			Lbs.	Kg		Lbs.	Kg
1	6 1/4 (159 mm) I. D. X 9 5/8 (244 mm) O.D. X 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A614200	131	59.4	A614200HD	135	61.2
2	DRIVE CAP W/ 1 5/8 (41 mm) HEX MALE SHANK	ADC614210	39	17.7	ADC614210HD	40	18.1
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK	ADC614211	42	19.1	ADC614211HD	43	19.5
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB6	1.3	0.4	Same		
4	PILOT BIT CONNECTOR (AW BOX - 3 1/2 REG. BOX)	APBC618AWB	8	3.6	Same		
4	PILOT BIT CONNECTOR (AWJ BOX - 3 1/2 REG. BOX)	APBC618AWJB	11	5.0	Same		
4	PILOT BIT CONNECTOR (NW BOX - 3 1/2 REG. BOX)	APBC618NWB	11	5.0	Same		
4	PILOT BIT CONNECTOR (NWJ BOX - 3 1/2 REG. BOX)	APBC618NWJB	12	5.4	Same		
5	ROD TO CAP ADAPTER - AW PIN	ARCAAWP	3	1.4	Same		
5	ROD TO CAP ADAPTER - AWJ PIN	ARCAAWJP	3	1.4	Same		
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2	Same		
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9	Same		

Auger Repair Parts

1A	TOOL JOINT - 6 1/4 (210 mm) DOUBLE KEY PIN	ATJ6142P	13	5.9	ATJ6142PHD	13	5.9
1B	TOOL JOINT - 6 1/4 (210 mm) DOUBLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ6142B	12	5.4	ATJ6142BHD	12	5.4
7	REPLACEMENT LOCK BOLTS (2 REQUIRED/AUGER)	ALB2	0.3	0.1	ALB3	0.4	0.2
8	REPLACEMENT BUSHING NUTS (2 REQUIRED/AUGER)	ABN2	0.3	0.1	ABN3	0.2	0.1
9	REPLACEMENT DRIVE KEYS (2 REQUIRED/AUGER)	ADK1	0.3	0.1	ADK2	0.3	0.1

Auger Cutterheads and Pilot Bits.

10	BLADE CUTTERHEAD - 11 (279 mm)	ACH614250	23	10.4	ACH614250HD	23	10.4
10	SPADE CUTTERHEAD - 11 (279 mm)	ACH614251	22	10.0	ACH614251HD	22	10.0
10	BLADE/BULLET COMBO CUTTERHEAD - 11 (279 mm)	ACH614260	28	12.7	ACH614260HD	28	12.7
10	SPADE/BULLET COMBO CUTTERHEAD - 11 (279 mm)	ACH614261	27	12.2	ACH614261HD	27	12.2
10	BULLET CUTTERHEAD - 11 (279 mm)	ACH614270	29	13.2	ACH614270HD	29	13.2
10	6 BIT, 5-T SQUARE FINGER BIT - 11 (279 mm)	ACH614271-6			ACH614271HD-6		
	8 BIT, 5-T SQUARE FINGER BIT - 11 (279 mm)	ACH614271-8			ACH614271HD-8		
11	APEX PILOT BIT - 6 1/8 (156 mm), 3 1/2 REG PIN	APB618APX			Same		
11	BULLET PILOT BIT - 6 1/8 (156 mm), 3 1/2 REG PIN	APB618BUL			Same		
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP078	3	1.4	Same		

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

7 1/4" and 8 1/4" I D (210 mm) HOLLOW STEM AUGER COMPONENTS

Double Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors ensure strength and durability for environmental ground water monitoring well installations. The auger pitch is 6 (152.4 mm). All 7 1/4 and 8 1/4 augers are Heavy Duty.

7 1/4 Heavy Duty

8 1/4 Heavy Duty

	DESCRIPTION	Part #	Weight		Part #	WEIGHT	
			Lbs.	Kgs.		Lbs.	Kgs.
1	7 1/4 (184 mm) I. D. 11 (279 mm) O. D. X 5' (1524 mm)	A714200HD					
1	8 1/4 (210 mm) I. D. 12 (305 mm) O.D. X 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys				A814200HD	183	83.0
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK	ADC714211HD	39	17.6	ADC814211HD	42	19.1
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB7	1	0.5	ANAB4	1	0.5
4	PILOT BIT CONNECTOR (NW BOX – 3 1/2 REG. BOX)	APBC718NWB	11	5.0	APBC818NWB	11	5.0
4	PILOT BIT CONNECTOR (NWJ BOX – 3 1/2 REG. BOX)	APBC718NWJB	12	5.4	APBC818NWJB	12	5.4
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2	Same		
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9	Same		

Auger Repair Parts

1A	TOOL JOINT – 7 1/4 (184 mm) DOUBLE KEY PIN				ATJ7142PHD	12	5.4
1B	TOOL JOINT - 7 1/4 (184 mm) DOUBLE KEY BOX				ATJ7142BHD	11	5.0
1A	TOOL JOINT - 8 1/4 (210 mm) DOUBLE KEY PIN	ATJ8142PHD	13	5.9			
1B	TOOL JOINT - 8 1/4 (210 mm) DOUBLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ8142BHD	12	5.4			

7	REPLACEMENT LOCK BOLTS (2 REQUIRED/ AUGER)	ALB3	0.3	0.1	ALB3	0.3	0.1
8	REPLACEMENT BUSHING NUTS (2 REQUIRED/ AUGER)	ABN3	0.3	0.1	ABN3	0.3	0.1
9	REPLACEMENT DRIVE KEYS (2 REQUIRED/ AUGER)	ADK2	0.3	0.1	ADK3	0.3	0.1

Auger Cutterheads and Pilot Bits.

10	BLADE CUTTERHEAD – 12 (310 mm) for 7 1/4 Auger	ACH714250	33	15.0			
10	SPADE CUTTERHEAD – 12 (310 mm) for 7 1/4 Auger	ACH714251	33	15.0			
10	BLADE/BULLET COMBO CUTTERHEAD – 12 (310 mm) for 7 1/4 Auger	ACH714260	38	17.2			
10	SPADE/BULLET COMBO CUTTERHEAD – 12 (310 mm) for 7 1/4 Auger	ACH714261	35	15.9			
10	BULLET CUTTERHEAD – 12 (310 mm) for 7 1/4 Auger	ACH714270	35	15.9			
10	BLADE CUTTERHEAD – 13 (330 mm) for 8 1/4 Auger				ACH814250	35	15.9
10	SPADE CUTTERHEAD – 13 (330 mm) for 8 1/4 Auger				ACH814251	35	15.9
10	BLADE/BULLET COMBO CUTTERHEAD – 13 (330 mm) for 8 1/4 Auger				ACH814260	40	18.1
10	SPADE/BULLET COMBO CUTTERHEAD – 13 (330 mm) for 8 1/4 Auger				ACH814261	37	16.8
10	BULLET CUTTERHEAD – 13 (330 mm) for 8 1/4 Auger				ACH814270	37	16.8
11	APEX PILOT BIT – 7 1/8 (184 mm), 3 1/2 REG PIN for 7 1/4 Auger	APB718APX	22	10.0			
11	BULLET PILOT BIT – 7 1/8 (184 mm), 3 1/2 REG PIN for 7 1/4 Auger	APB718BUL	27	12.2			
11	APEX PILOT BIT – 8 1/8 (206 mm), 3 1/2 REG PIN for 8 1/4 Auger				APB818APX	22	10.0
11	BULLET PILOT BIT – 8 1/8 (206 mm), 3 1/2 REG PIN for 8 1/4 Auger				APB818BUL	27	12.2
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP078	3	1.4	Same		

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

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3 1/4" I D (83 mm) HOLLOW STEM AUGER COMPONENTS

TRIPLE KEY DESIGN

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors ensure strength and durability for environmental ground water monitoring well installations. The auger pitch is 5 (117 mm).

Standard Duty

Auger Section	DESCRIPTION	PART#	WEIGHT	
			Lbs.	Kg.
1	3 1/4 (83 mm) I.D. X 6 5/8 (169 mm) O.D. X 5' (1525 MM) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A314300	81	36.7
2	DRIVE CAP W/ 1 5/8 (41 mm) HEX MALE SHANK	ADC314310	21	9.5
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK	ADC314311	25	11.3
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB3	.9	.4
4	PILOT BIT CONNECTOR (AW BOX - 4-THREAD BOX)	APBC318AWB	11	5.0
4	PILOT BIT CONNECTOR (AWJ BOX - 4-THREAD BOX)	APBC318AWJB	12	5.4
4	PILOT BIT CONNECTOR (NW BOX - 4-THREAD BOX)	APBC318NWB	8	3.6
4	PILOT BIT CONNECTOR (NWJ BOX - 4-THREAD BOX)	APBC318NWJB	11	5.0
5	ROD TO CAP ADAPTER - AW PIN	ARCAWP	3	1.4
5	ROD TO CAP ADAPTER - AWJ PIN	ARCAWJP	3	1.4
5	ROD TO CAP ADAPTER - NW PIN	ARCNWP	7	3.2
5	ROD TO CAP ADAPTER - NWJ PIN	ARCNWJP	6	2.7
6	AW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AW	21	9.5
6	AWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AWJ	23	10.4
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWRD	31	14.1
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9

Auger Repair Parts

1A	TOOL JOINT - 3 1/4 (83 mm) TRIPLE KEY PIN	ATJ3143P	7	3.2
1B	TOOL JOINT - 3 1/4 (83 mm) TRIPLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ3143B	6	2.7
7	REPLACEMENT LOCK BOLTS (1 REQUIRED/ AUGER)	ALB1	0.3	0.1
8	REPLACEMENT BUSHING NUTS (1 REQUIRED/ AUGER)	ABN1	0.2	0.1
9	REPLACEMENT DRIVE KEYS (3 REQUIRED/ AUGER)	ADK1	0.3	0.1

Auger Cutterheads and Pilot Bits

10	BLADE CUTTERHEAD - 7 1/2 (190 mm)	ACH314350	11	5.0
10	SPADE CUTTERHEAD - 7 1/2 (190 mm)	ACH314351	12	5.5
10	BLADE/BULLET COMBO CUTTERHEAD - 7 1/2 (190 mm)	ACH314360	14	6.4
10	SPADE/BULLET COMBO CUTTERHEAD - 7 1/2 (190 mm)	ACH314361	12	5.5
10	BULLET CUTTERHEAD - 7 1/2 (190 mm)	ACH314370	12	5.5
10	4 BIT 5-T SQUARE FINGER BIT - 7 1/2 (190 mm)	ACH314371		
11	3 1/8 (79 mm), PILOT BIT, HEAVY DUTY APEX TYPE	APB318APX	4	1.8
11	3 1/8 (79 mm), PILOT BIT, BULLET TYPE Pilot Bits have a 4-Thread Pin Connection	APB318BUL	5	2.3
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP078	3	1.4

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

3 1/4" I D (83 mm) HOLLOW STEM AUGER COMPONENTS

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

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4 1/4" I D (108 mm) HOLLOW STEM AUGER COMPONENTS

Triple Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors feature bigger nuts, bolts and drive keys for added strength and have a tapered surface. The taper provides a better seal and reduced friction, enabling the tool joint to slide in and out easier. The auger pitch is 5 on Standard Duty and 6 (152.4 mm) on Heavy Duty.

Auger Section

	DESCRIPTION	WEIGHT		WEIGHT			
		Part #	Lbs.	Kg.	Part #	Lbs.	Kg.
1	4 1/4 (108 mm) I.D. X 7 5/8 (194 mm) O.D. X 5' (1525 MM) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A414300	103	46.7	A414300HD	107	48.5
2	DRIVE CAP W/ 1 5/8 (41 mm) HEX MALE SHANK - HD TPRD	ADC414310	26	11.8	ADC414310HD	25	11.3
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK - HD TPRD	ADC414311	30	13.6	ADC414311HD	28	12.7
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB4	1	.5	Same		
4	PILOT BIT CONNECTOR (AW BOX - 2 3/8 REG BOX)	APBC418AWB	21	9.5	Same		
4	PILOT BIT CONNECTOR (AWJ BOX - 2 3/8 REG BOX)	APBC418AWJB	20	9.1	Same		
4	PILOT BIT CONNECTOR (NW BOX - 2 3/8 REG BOX)	APBC418NWB	19	8.6	Same		
4	PILOT BIT CONNECTOR (NWJ BOX - 2 3/8 REG BOX)	APBC414NWJB	20	9.1	Same		
5	ROD TO CAP ADAPTER - AW PIN	ARCAAWP	3	1.4	Same		
5	ROD TO CAP ADAPTER - AWJ PIN	ARCAAWJP	3	1.4	Same		
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2	Same		
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7	Same		
6	AW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AW	21	9.5	Same		
6	AWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AWJ	23	10.4	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9	Same		

Auger Repair Parts

1A	TOOL JOINT - 4 1/4 (105 mm) TRIPLE KEY PIN	ATJ41433P	8	3.6	ATJ41433PHD	8	3.6
1B	TOOL JOINT - 4 1/4 (105 mm) TRIPLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ41433B	8	3.6	ATJ41433BHD	8	3.6
7	REPLACEMENT LOCK BOLTS (2 REQUIRED/ AUGER)	ALB1	0.3	0.1	ALB3	0.4	0.2
8	REPLACEMENT BUSHING NUTS (2 REQUIRED/ AUGER)	ABN1	0.3	0.1	ABN3	0.2	0.1
9	REPLACEMENT DRIVE KEYS (3 REQUIRED/ AUGER)	ADK1	0.3	0.1	ADK2	0.3	0.1

Auger Cutterheads and Pilot Bits

10	BLADE CUTTERHEAD - 8 3/4 (222 mm)	ACH414350	12	5.4	ACH414350HD	16	7.3
10	SPADE CUTTERHEAD - 8 3/4 (222 mm)	ACH414351	14	6.4	ACH414351HD	20	9.1
10	BLADE/BULLET COMBO CUTTERHEAD - 8 3/4 (222 mm)	ACH414360	18	8.2	ACH414360HD	20	9.1
10	SPADE/BULLET COMBO CUTTERHEAD - 8 3/4 (222 mm)	ACH414361	16	7.3	ACH414361HD	22	10.0
10	BULLET CUTTERHEAD - 8 3/4 (222 mm)	ACH414370	16	7.3	ACH414370HD	22	10.0
10	4 BIT 5-T SQUARE FINGER BIT - 8 3/4 (222 mm)	ACH414371			ACH414371HD		
11	4 1/8 (104 mm), PILOT BIT, HEAVY DUTY APEX TYPE	APB418APX	5	2.3	Same		
11	4 1/8 (104 mm), PILOT BIT, BULLET TYPE	APB418BUL	9	4.1	Same		
11	4 1/8 (104 mm), PILOT BIT, SPADE TYPE BLADE Pilot Bits have a 2 3/8 Reg. Pin Connection	APB418SPD	9	4.1	Same		
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP100	3	1.4	Same		

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

6 5/8" (169 mm) HOLLOW STEM AUGER COMPONENTS

TRIPLE KEY DESIGN

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors ensure strength and durability for environmental ground water monitoring well installations. The auger pitch is 6 (152.4 mm).

Standard Duty

Heavy Duty

Auger Section

	DESCRIPTION	PART#	WEIGHT		PART#	WEIGHT	
			Lbs.	Kg.		Lbs.	Kg.
1	6 5/8 (169 mm) I. D. X 10 1/8 (257 mm) O.D. X 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A658300	143	64.9	A658300HD	145	65.8
2	DRIVE CAP W/ 1 5/8 (41 mm) HEX MALE SHANK	ADC658310	47	21.3	ADC658310HD	48	21.8
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK	ADC658311	50	22.7	ADC658311HD	51	23.1
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB6	1.3	0.6	Same		
4	PILOT BIT CONNECTOR (AW BOX - 3 1/2 REG BOX)	APBC612AWB	64	29.0	Same		
4	PILOT BIT CONNECTOR (AWJ BOX - 3 1/2 REG BOX)	APBC612AWJB	64	29.0	Same		
4	PILOT BIT CONNECTOR (NW BOX - 3 1/2 REG BOX)	APBC612NWB	64	29.0	Same		
4	PILOT BIT CONNECTOR (NWJ BOX - 3 1/2 REG BOX)	APBC612NWJB	64	29.0	Same		
5	ROD TO CAP ADAPTER - AW PIN	ARCAAWP	3	1.4	Same		
5	ROD TO CAP ADAPTER - AWJ PIN	ARCAAWJP	3	1.4	Same		
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2	Same		
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7	Same		
6	AW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AW	21	9.5	Same		
6	AWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5AWJ	23	10.4	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9	Same		

Auger Repair Parts

1A	TOOL JOINT - 6 5/8 (168 mm) TRIPLE KEY PIN	ATJ6583P	13	5.9	ATJ6583PHD	16	7.3
1B	TOOL JOINT - 6 5/8 (168 mm) TRIPLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ6583B	12	5.4	ATJ6583BHD	13	5.8
7	REPLACEMENT LOCK BOLTS (2 REQUIRED/ AUGER)	ALB1	0.3	0.1	ALB3	0.4	0.2
8	REPLACEMENT BUSHING NUTS (2 REQUIRED/AUGER)	ABN1	0.3	0.1	ABN3	0.2	0.1
9	REPLACEMENT DRIVE KEYS (3 REQUIRED/ AUGER)	ADK1	0.3	0.1	ADK3	0.3	0.1

Auger Cutterheads and Pilot Bits

10	BLADE CUTTERHEAD -11 1/2 (292 mm)	ACH658350	28	12.7	ACH658350HD	29	13.2
10	SPADE CUTTERHEAD - 11 1/2 (292 mm)	ACH658351	25	11.8	ACH658351HD	26	11.8
10	BLADE/BULLET COMBO CUTTERHEAD - 11 1/2 (292 mm)	ACH658360	33	15.0	ACH658360HD	34	15.4
10	SPADE/BULLET COMBO CUTTERHEAD - 11 1/2 (292 mm)	ACH658361	30	13.6	ACH658361HD	30	13.6
10	BULLET CUTTERHEAD - 11 1/2 (292 mm)	ACH658370	34	15.4	ACH658370HD	34	15.4
10	6 BIT 5-T SQUARE FINGER BIT - 11 1/2 (292 mm)	ACH658371-6			ACH658371-6HD		
10	8 BIT 5-T SQUARE FINGER BIT - 11 1/2 (292 mm)	ACH658371-8			ACH658371-8HD		
11	6 1/2 (165 mm), PILOT BIT, HEAVY DUTY APEX TYPE	APB612APX	15	6.8	Same		
11	6 1/2 (165 mm), PILOT BIT, BULLET TYPE	APB612BUL	20	9.1	Same		
11	6 1/2 (165 mm), PILOT BIT, SPADE TYPE BLADE Pilot Bits have a 3 1/2 Reg. Pin Connection	APB612SPD	21	9.5	Same		
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP078	3	1.4	Same		

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

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8 1/4" (210 mm) HOLLOW STEM AUGER COMPONENTS

Triple Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors feature bigger nuts, bolts and drive keys for added strength and have a tapered surface. The taper provides a better seal and reduced friction, enabling the tool joint to slide in and out easier. The auger pitch is 6 (152.4 mm). All 8 1/4 augers are Heavy Duty.

Heavy Duty

Auger Section

	DESCRIPTION	PART#	WEIGHT	
			Lbs.	Kg.
1	8 1/4 (210 mm) I. D. X 12 (305 mm) O.D. X 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A814300HD	183	83.0
2	DRIVE CAP W/ 2 (51 mm) HEX MALE SHANK	ADC814311HD	71	32.2
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB4	1	0.5
4	PILOT BIT CONNECTOR (NW BOX - 3 1/2 REG BOX)	APBC818NWB	55	24.9
4	PILOT BIT CONNECTOR (NWJ BOX - 3 1/2 REG BOX)	APBC818NWJB	56	25.4
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9

Auger Repair Parts

1A	TOOL JOINT - 8 1/4 (210 mm) TRIPLE KEY PIN	ATJ8143PHD	13	5.9
1B	TOOL JOINT - 8 1/4 (210 mm) TRIPLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ8143BHD	12	5.4
7	REPLACEMENT LOCK BOLTS (2 REQUIRED/ AUGER)	ALB1	0.3	0.1
8	REPLACEMENT BUSHING NUTS (2 REQUIRED/AUGER)	ABN1-M	0.3	0.1
9	REPLACEMENT DRIVE KEYS (3 REQUIRED/ AUGER)	ADK1-S	0.3	0.1

Auger Cutterheads and Pilot Bits

10	BLADE CUTTERHEAD -13 (330 mm)	ACH814350	35	15.9
10	SPADE CUTTERHEAD - 13 (330 mm)	ACH814351	35	15.9
10	BLADE/BULLET COMBO CUTTERHEAD - 13 (330 mm)	ACH814360	40	18.1
10	SPADE/BULLET COMBO CUTTERHEAD - 13 (330 mm)	ACH814361	37	16.8
10	BULLET CUTTERHEAD - 13 (330 mm)	ACH814370	37	16.8
11	PILOT BIT, HEAVY DUTY APEX TYPE, 3 1/2 REG PIN	APB818APX	22	10.0
11	PILOT BIT, BULLET TYPE , 3 1/2 REG PIN	APB818BUL	27	12.2
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP100	3	1.4

See Reference Page 2-10 for specific component information (# of cutters, blocks, etc.)

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HDD Components

Triple Key Design

Featuring continuous hardfaced flighting design, 3/8 (9.5 mm) thick on outer edge with double bolt connection. The 4142 alloy steel connectors feature a taper and bigger nuts, bolts and drive keys for added strength. The taper provides a better seal and reduced friction, enabling the tool joint to slide in and out easier. The auger pitch is 7 1/2 (190.5 mm). All 10 1/4 and 12 1/4 augers are heavy duty.

10 1/4 ID

12 1/4 ID

Auger Section

	DESCRIPTION	PART#	WEIGHT		PART#	WEIGHT	
			Lbs.	Kg.		Lbs.	Kg.
1	10 1/4 (260 mm) I.D. X 14 1/2 (362 mm) O.D. X 5' (1524 mm) 12 1/4 (311 mm) I.D. X 17 (432 mm) O.D. X 5' (1524 mm) Manufactured with Bushing Nuts, Lock Bolts and Drive Keys	A1014300HD	265	120.2	A1214300HD	183	83.0
2	DRIVE CAP W/ 3 1/4 (83 mm) AUGER CONNECTOR	ADC101433HD	84	38.1	ADC121433HD	90	40.8
2	DRIVE CAP W/ 4 1/4 (108 mm) AUGER CONNECTOR	ADC101433HD	86	39.0	ADC121434HD	91	41.3
3	NUT AND BOLT FOR ROD TO CAP ADAPTER	ANAB4	1	.5	Same		
4	PILOT BIT CONNECTOR (NW BOX - 3 1/2 REG BOX)	APBC1018NWB	36	16.3	APCB1218NWB	46	20.9
4	PILOT BIT CONNECTOR (NWJ BOX - 3 1/2 REG BOX)	APBC1018NWJB	36	16.3	APCB1218NWJB	46	20.9
5	ROD TO CAP ADAPTER - NW PIN	ARCANWP	7	3.2	Same		
5	ROD TO CAP ADAPTER - NWJ PIN	ARCANWJP	6	2.7	Same		
6	NW DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NW	31	14.1	Same		
6	NWJ DRILL ROD FOR HOLLOW STEM AUGERS - 5' (1524 mm)	ADR5NWJ	35	15.9	Same		

Auger Repair Parts

1A	TOOL JOINT - 10 1/4 (260 mm) TRIPLE KEY PIN	ATJ10143PHD	32	14.1			
1B	TOOL JOINT - 10 1/4 (260 mm) TRIPLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys	ATJ10143BHD	31	14.0			
1A	TOOL JOINT - 12 1/4 (311 mm) TRIPLE KEY PIN				ATJ12143PHD	13	5.9
1B	TOOL JOINT - 12 1/4 (311 mm) TRIPLE KEY BOX Box Tool Joint Manufactured with Nuts, Bolts and Drive Keys				ATJ12143BHD	12	5.4
7	REPLACEMENT LOCK BOLTS (2 REQUIRED/AUGER)	ALB4	0.4	0.2	Same		
8	REPLACEMENT BUSHING NUTS (2 REQUIRED/AUGER)	ABN3-M	0.2	0.1	Same		
9	REPLACEMENT DRIVE KEYS (3 REQUIRED/AUGER)	ADK3	0.3	0.1	Same		

Auger Cutterheads and Pilot Bits

10	BLADE CUTTERHEAD -15 (381 mm)	ACH1014350	52	23.6			
10	SPADE CUTTERHEAD - 15 (381 mm)	ACH1014351	48	21.8			
10	BLADE/BULLET COMBO CUTTERHEAD - 15 (381 mm)	ACH1014360	55	24.9			
10	SPADE/BULLET COMBO CUTTERHEAD - 15 (381 mm)	ACH1014361	54	24.5			
10	BULLET CUTTERHEAD - 15 (381 mm)	ACH1014370	56	25.4			
10	BLADE CUTTERHEAD -17 3/4 (451 mm)				ACH1214350	80	36.3
10	SPADE CUTTERHEAD - 17 3/4 (431 mm)				ACH1214351	74	33.6
10	BLADE/BULLET COMBO CUTTERHEAD - 17 3/4 (431 mm)				ACH1214360	69	31.3
10	SPADE/BULLET COMBO CUTTERHEAD - 17 3/4 (431 mm)				ACH1214361	78	35.4
10	BULLET CUTTERHEAD - 17 3/4 (431 mm)				ACH1214370	69	31.3
11	10 1/8 (257 mm), PILOT BIT, APEX, 3 1/2 R. PIN	APB1018APX	33	15.0			
11	10 1/8 (257 mm), PILOT BIT, BULLET, 3 1/2 R. PIN	APB1018BUL	46	20.9			
11	12 1/8 (308 mm), PILOT BIT, APEX, 3 1/2 R. PIN				APB1218APX	48	21.8
11	12 1/8 (308 mm), PILOT BIT, BULLET, 3 1/2 R. PIN				APB1218BUL	61	27.7
12	KNOCK OUT WRENCH FOR BULLET CUTTERS	C123	4.4	2.0	Same		
13	FLEX HEAD SOCKET WRENCH FOR AUGER BOLT	KP100	3	1.4	Same		

See Reference Page 2-8 for specific component information (# of cutters, blocks, etc.)

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

Hollow Stem Auger Modifications

Auger Extensions

Auger Extensions are used to compensate for the distance from the ground up to the rig. To order these extensions please specify:

1. Length: standards are 24, 30, 36, 42, or 48 shoulder to shoulder.
2. Tool Joint: Double Key or Triple Key in Standard or Heavy Duty Tapered
3. Auger I.D. (inside diameter)
4. Flighted or flightless. All flightless augers are made with heavy duty tube.

Laser Slotted Augers

These special hollow stem augers are designed to enable sampling of the ground water as it flows through the inside of the auger tube. To maintain the integrity and strength of the auger we use an industrial laser to cut the slots through the auger tube wall. The vertically cut slots are .0015 wide with the number of slots depending on diameter of the auger.

Heavy Duty Flighting

Our standard flighting is 3/8 (9.5 mm) at the outer edge with hardfacing material applied to the working edge. Where severe conditions exist we have cobble chasers available which feature double thick heavy-duty flighting, or any other thickness you desire.

Wide Flighting

Each size auger has a standard flighting size as listed on the catalog sheet. Often there is a need for wider flighting to drill larger size holes. We will custom manufacture augers to meet your width specifications.

Flighting Pitch

The pitch on an auger is the distance between the flights. The standard pitch for our augers is listed on each individual catalog sheet. If you need a different pitch we will be more than happy to make the auger pitch to whatever dimension you need.

I D of Auger

The I.D. (inside diameter) of the Hollow Stem Augers is considered to be the working area of the auger. We manufacture to industry standards or we can make any I.D. that you might require.

Auger Length

Our augers are available in a standard industry length of 5 feet but we have manufactured augers up to 40 feet long and metric lengths are available on request.

Special Connections

Other connections are available: Tapered threads, Acker, Diedrich, etc. We also manufacture extra heavy-duty tool joints for harsh applications.

Special Materials

The standard auger comes with 4142 heat-treated alloy tool joints, mild steel tube and 3/8 (9.5 mm) heavy duty steel flighting with hardfacing on the outer edge. These materials may be modified to meet special needs. We are able to work with unusual requirements such as non-magnetic material and corrosion resistant material.

Other Modifications

There are special needs for augers that have yet to be defined. Mills Machine stands ready to satisfy those needs. We have a full line of augers and have been a leader in the development and design of special augers for the individual requirements of our customers.

"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

Auger Cutter Heads and Their Components

Auger Cutter Heads

All cutter heads are available with Double Key or Triple Key, Standard or Heavy Duty, Acker or Diedrich style tool joints. Auger cutter heads are designed to cut at the gage dimension listed for each auger size as follows:

Auger ID Size		Cutting Diameter	
2 1/4	57 mm	6 1/2	165 mm
3 1/4	83 mm	7 1/2	190 mm
3 3/4	95 mm	8 1/4	210 mm
4 1/4	108 mm	8 3/4	222 mm
6 1/4	159 mm	11	279 mm
6 5/8	168 mm	11 1/2	292 mm
7 1/4	184 mm	12	305 mm
8 1/4	210 mm	13	330 mm
10 1/4	260 mm	15	381 mm
12 1/4	451 mm	17 3/4	451 mm

For details on formation capabilities and see the four color bulletin at the front of this catalog section.

Components for Cutter Heads and Pilot Bits

Component	Part #	Lbs	Kgs
Mini-bullet	CMM4	0.2	0.1
Standard Bullet	C23	0.4	0.2
Standard Blade, Carbide	CO11	1	0.5
Flat Head Screws for Blade 5/8-11 x 1 1/2	CO12	0.2	0.1
Spade Type Blade Cutters, .868 (22.0 mm)	C87L	1	0.5
Cutter Block for Mini-bullet	CMM4	0.4	0.2
Cutter Block for Standard Bullet	C20	0.7	0.3
Cutter Block, Heavy Duty for Standard Bullet	C20HD	1.3	0.6
Cutter Block for Spade Type Blade	C87B	1	0.5
5-T Square Finger Bit	C5T	.2	0.1
Square Finger Bit Cutter Block without Flighting	C5TB	.7	0.3
Square Finger Bit Cutter Block with Flighting	C5TBF	1	0.5
Knock out wrench for C23 Bullet	C123	4.4	2.0

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Auger Pilot Bits and Tool Joints

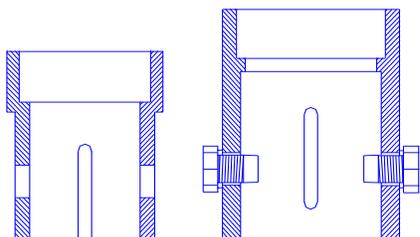
Auger Pilot Bits

Pilot bits are designed to fit snugly in the center of the auger ID for drilling without sampling. The pilot bit OD is 1/8 smaller than the auger ID. Designed to match the auger cutter head style, the pilot bit compliments the cutter head for smooth, rapid drilling.

Pilot bits may be attached to the center drill rod string, with an additional drill rod connected as each auger section is connected. For wireline sampling systems, the pilot bit is attached to the lead auger latching tube and only another auger section is necessary as new depths are reached. The wireline system is used to remove the pilot bit system and a sampling system inserted as required.

For details on formation capability of each style of pilot bit see the color bulletin in the front of this section.

Auger Tool Joints



Mills Machine stocks auger tool joints for repair of Mills augers. We also stock the cutter head connectors for repair or modification of cutter heads. We will sell a small quantity of an auger tool joints on an as needed basis. For prices or discussions on larger volumes please contact your sales representative.

Internal Fishing Tools (Auger Retrievers)

Used for recovery of hollow stem augers lost down-hole. Mills stocks the threaded ends and the tool joints to give fast response to your needs. These tools are for each specific inside diameter of auger and are with left hand thread. Used on both standard and heavy duty-tapered augers. Non-standard tool joints are readily available.



Fishing Tool Description

Fishing Tool Description	Size
A. For 2 1/4 (57 mm) or 3 1/4 (83 mm) augers.	2 1/4
Large OD Wicker - 3 3/4(95 mm)	2 1/4
Small OD Wicker - 1 3/4 (44 mm)	3 1/4
Thread length - 18 (457 mm)	3 1/4
	3 1/4
B. For 3 1/4 (83 mm) or 4 1/4 (108 mm) augers.	3 1/4
Large OD Wicker - 4 3/4 (121 mm)	3 1/4
Small OD Wicker - 2 3/4 (70 mm)	3 1/4
Thread length - 18 (457 mm)	4 1/4
	4 1/4
C. For 6 1/4 (159 mm) or 6 5/8 (168 mm) augers.	4 1/4
Large OD Wicker - 7 1/4 (184 mm)	4 1/4
Small OD Wicker - 5 3/4 (146 mm)	4 1/4
Thread Length - 18 (457 mm)	4 1/4
	6 1/4
Please call for prices.	6 1/4
	6 5/8
	6 5/8
	7 1/4

Some typical Auger Fishing Tools

Tool Joint	Part #
2 1/4 DK	AFT214DK
Diedrich Style	AFT214DD
3 1/4 DK	AFT314DK
3 1/4 TK	AFT314TK
3 1/4 DK, HD	AFT314DKHD
3 1/4 TK, HD	AFT314TKHD
Diedrich Style	AFT314DD
Acker Style	AFT314AC
4 1/4 DK	AFT414DK
4 1/4 TK	AFT414TK
4 1/4 DK, HD	AFT414DKHD
4 1/4 TK, HD	AFT414TKHD
Diedrich Style	AFT414DD
Acker Style	AFT414AC
6 1/4 DK	AFT614DK
6 1/4 DK, HD	AFT614DKHD
6 5/8 TK	AFT658TK
6 5/8 TK, HD	AFT658TKHD
7 1/4 TK	AFT714TK

External spiral auger fishing tools available on request.

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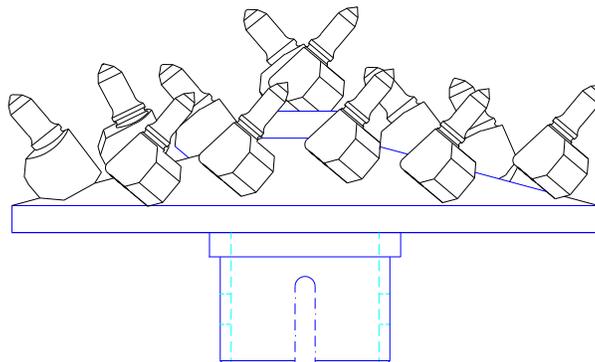
Concrete Cutter Bits

Concrete Cutter Bits

The concrete cutter bit has been specially **designed to drill through concrete to set manhole covers** and give access to the earth below the concrete. The bits feature our inexpensive field replaceable bullet carbide cutters. They make a clean round hole with rapid penetration. **They are not manufactured to drill below the concrete.** We also, manufacture a complete line of solid face cutter heads to drill through and below the concrete. Our Concrete Cutter Bits are available in a variety of sizes and tool joint connections with some of our more **common configurations listed below.**

Part #	Description	Number of Cutters	Weight	
			Lbs.	Kgs.
ACBB600158HXP	6 Concrete Bullet Bit with 1 5/8 Hex Pin	6		
ACBB700314DKP	7 Concrete Bullet Bit with 3 1/4 Auger DK Pin	7		
ACBB800414TKP	8 Concrete Bullet Bit with 4 1/4 Auger TK Pin	9		
ACBB900414TKPHD	9 Concrete Bullet Bit with 4 1/4 Auger TK HD Pin	10		
ACBB1000414DKP	10 Concrete Bullet Bit with 4 1/4 Auger DK Pin	12		
ACBB1200614DKP	12 Concrete Bullet Bit with 6 1/4 Auger DK Pin	15		
ACBB1400614DKPHD	14 Concrete Bullet Bit with 6 1/4 Auger DK HD Pin	18		
ACBB1500658TKP	15 Concrete Bullet Bit with 6 5/8 Auger TK Pin	20		
ACBB1600658TKPHD	16 Concrete Bullet Bit with 6 5/8 Auger TK HD Pin	21		
ACBB1800814DKP	18 Concrete Bullet Bit with 8 1/4 Auger DK Pin	24		
ACBB2000814TKP	20 Concrete Bullet Bit with 8 1/4 Auger TK Pin	30		
ACBB22001014TKP	22 Concrete Bullet Bit with 10 1/4 Auger TK Pin	33		
ACBB24001214TKP	24 Concrete Bullet Bit with 12 1/4 Auger TK Pin	36		

The bits are available with any auger or threaded tool joint. Call your Mills Sales Representative for specific pricing information.



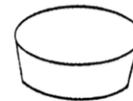
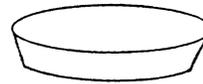
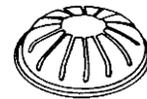
"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

Hollow Stem Auger Accessories

Auger plugs are used to block the ID of the auger when drilling without the pilot bit. Plugs may be left in the hole when sampling or the sampling tube will pass through the flex plug.

Auger Plugs

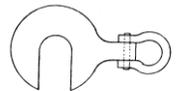
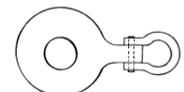
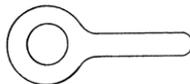
High Density Polyethylene			
Auger Size	Part #	Weight	
		Lbs	Kgs
3 1/4	APEP314HD		
4 1/4	APEP414HD	.5	.2
6 5/8	APEP614	.7	.3
8 1/4	APEP814		
Plastic Flex Plug			
2 1/4	APFP214	.1	.05
3 1/4	APFP314	.2	.1
4 1/4	APFP414	.3	.1
6 1/4	APFP614	.4	.2
Wooden Plug			
2 1/4'	APW214	2	.9
3 1/4	APW314	3	1.4
4 1/4	APW414	4	1.8
6 1/4	APW614	5	2.3
6 5/8	APW658	5	2.3
8 1/4	APW614		
10 1/4	APW1014		
12 1/4	APW1214		
Wooden Plug - Heavy Duty			
3 1/4	APW314HD	4	1.8
4 1/4	APW414HD	5	2.3



Pulling Plates and Holding Irons

For holding or pulling 1 3/4 OD, 2 3/8 and 2 5/8 OD Drill Rod

Pulling Plate Closed		Lbs	Kgs
AW and AWJ Rod	AHIPPCAW-AWJ	11	5.0
NW and NWJ Rod	AHIPPCNW-NWJ	23	23
Pulling Plate Open			
AW and AWJ Rod	AHIPPOAW-AWJ	9	4.1
NW and NWJ Rod	AHIPPONW-NWJ	20	9.1
2 3/8 ID	AHIPPO238ID	21	9.5
Holding Iron Closed			
AW	AHICAW-AWJ	16	7.3
NW	AHICNW-NWJ	16	7.3
Holding Iron Open			
AW	AHIONW-NWJ	13	5.9
NW	AHIOAW-AWJ	15	6.8



Hex Extension Rod

These extension rods are used to compensate for the drill base height above the ground or to extend the drive cap.

Solid Rods 1 5/8 (41.3 mm) Hex Pin to 1 5/8 (41.3 mm) Hex Box - 5' (1524 mm) length. AEXT158-5
Adjustable Rod 1 5/8 (41.3 mm) Hex Pin to 1 5/8 (41.3 mm) Hex Box, AEXT158-2-3
 Adjustable from 2' to 3' (610 mm to 914 mm).



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Hollow Stem Auger Accessories

Auger Hoisting Assembly

The hoisting assembly is used to lift the auger string with the main hoist and features a heavy-duty wire cable bridal assembly with two snap on safety hooks.



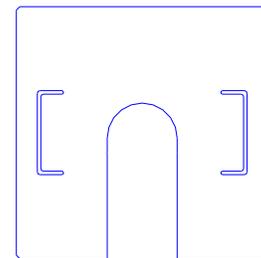
Description	Hook		Weight		
	Part #	Capacity	Lbs	Kgs	
2 1/4 (57 mm) Double key, standard duty	AHA2142	3 Ton	20	9.1	
3 1/4 (83 mm) Double key, standard duty	AHA3142	3 Ton	21	9.5	
3 1/4 (83 mm) Double key, heavy duty	AHA3142HD	3 Ton	21	9.5	
3 1/4 (83 mm) Triple key, standard duty	AHA3143	3 Ton	21	9.5	
3 1/4 (83 mm) Triple key, heavy-duty	AHA3143HD	3 Ton	21	9.5	
4 1/4 (108 mm) Double key, standard duty	AHA4142	3 Ton	22	10	
4 1/4 (108 mm) Double key, heavy-duty	AHA4142HD	3 Ton	22	10	
4 1/4 (108 mm) Triple key, standard duty	AHA4143	3 Ton	22	10	
4 1/4 (108 mm) Triple key, heavy-duty	AHA4143TP	3 Ton	22	10	
6 1/4 (159 mm) Double key, standard duty	AHA6142	3 Ton	27	12.2	
6 1/4 (159 mm) Double key, heavy-duty	AHA6142TP	3 Ton	27	12.2	
6 5/8 (168 mm) Triple key, standard duty	AHA6583	3 Ton	28	12.7	
6 5/8 (168 mm) Triple key, heavy-duty	AHA6583HD	3 Ton	28	12.7	
8 1/4 (210 mm) Double key, heavy-duty	AHA8142	5 Ton	36	16.3	
8 1/4 (210 mm) Triple key, standard-duty	AHA8143	5 Ton	36	16.3	
10 1/4 (260 mm) Triple key, heavy-duty	AHA10143	5 Ton	48	21.8	
12 1/4 (311 mm) Triple key, heavy-duty	AHA12143	5 Ton	59	26.8	

Hoisting Assemblies are available in Acker, Diedrich or other special tool joints. The removable wire cable assembly may be used for other lifting jobs within the capacity of the lifting hook.

Auger Forks

These forks are used as temporary support for hollow stem augers.

Description	Part #	Lbs	Kgs
2 1/4 (57 mm) with side handles	AFRK2143	6	2.7
3 1/4 (83 mm) with side handles	AFRK3143	7	3.2
3 3/4 (95 mm) with side handles	AFRK3343	10	4.5
4 1/4 (108 mm) with side handles	AFRK4143	10	4.5
4 7/8 (124 mm) with side handles	AFRK4873	10	4.5
6 1/4 (159 mm) with side handles	AFRK6143	14	6.4
6 5/8 (168 mm) with side handles	AFRK6583	14	6.4
8 1/4 (210 mm) with side handles	AFRK8143	21	9.5
10 1/4 (260 mm) with side handles	AFRK10143	25	11.3
12 1/4 (311 mm) with side handles	AFRK12143	38	17.2



Comes

Auger Hook

This hand hook is made to handle all augers - made from 3/4 (19 mm) round bar.

Description
Auger Hook

Part #
AHO75



"PLEASE CALL FOR CUSTOM OPTIONS AND OTHER ACCESSORIES"

Hollow Stem Auger Accessories

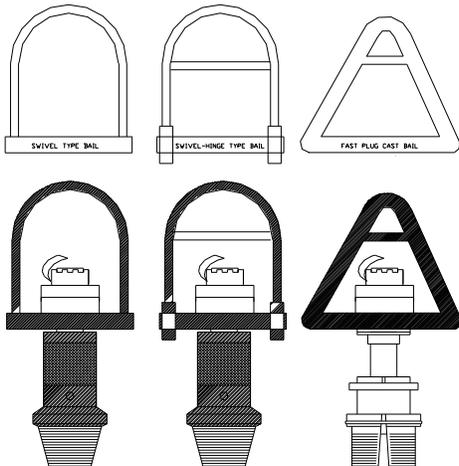
Auger Drill Pipe

Auger Drill Pipe is carried in inventory in the following sizes:



Part #	Description	Weight	
		Lbs	Kgs
AWRD5	AW Rod X 5'	21	9.5
AWRD10	AW Rod X 10'	45	20.4
NWRD5	NW Rod X 5'	31	14.1
NWRD10	NW Rod X 10'	60	27.2
AWJRD5	AWJ Rod X 5'	23	10.4
AWJRD10	AWJ Rod X 10'	49	22.2
NWJRD5	NWJ Rod X 5'	35	15.9
NWJRD10	NWJ Rod X 10'	68	30.8

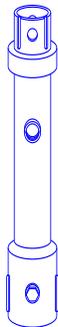
Hoist Plugs



In addition to the hoisting assembly and auger forks on the previous page, page 2-5, Mills Machine carries Swivel Hoist Plugs, Swivel-Hinged Hoist Plugs, Lifting Plugs and Murphy Fast Plugs. The full line is described in the Pipe handling Tools section of this catalog. Following are specific plugs we inventory:

Size	Swivel	Swivel Hinged	Murphy Fast Plug
NW Pin	X	X	
NWJ Pin	X	X	X
AW Pin	X	X	
AWJ Pin	X	X	
NW Box	X	X	
NWJ Box	X	X	
AW Box	X	X	
AWJ Box	X	X	

Hollow Stem Wash



Used for mud rotary drilling, the hollow stem wash tee has a pipe thread coupling located on the side of the tube, a 2 NPT on the smaller sizes and a 3 NPT on the larger sizes. Our wash tees have tool joints the same as the auger string. We can supply special tool joints to meet your specific needs or lengths as required. The standard length is 18 (457 mm) shoulder to shoulder with the wash tee 6 (152 mm) below the bottom edge of the top tool joint.

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Hollow Stem Auger Construction Components - Reference Sheet

Hollow Stem Auger Hardware

	Auger Size	Qty.	Bolt #	Qty.	Bushing #	Qty.	Key #	Pitch	Rod to Cap Bolt
Standard Double Key	2 1/4 (57 mm)	1	ALB2	1	ABN2	2	ADK1	5 Pitch	ANAB2
	3 1/4 (83 mm)	1	ALB2	1	ABN2	2	ADK1	5 Pitch	ANAB3
	3 3/4 (95 mm)	1	ALB2	1	ABN2	2	ADK1	5 Pitch	ANAB4
	4 1/4 (108 mm)	2	ALB2	2	ABN2	2	ADK1	5 Pitch	ANAB4
	6 1/4 (159 mm)	2	ALB2	2	ABN2	2	ADK1	6 Pitch	ANAB6
Heavy Duty - Double Key	3 3/4 (95 mm)	2	ALB3	2	ABN3	2	ADK2	5 Pitch	ANAB4
	4 1/4 (108 mm)	2	ALB3	2	ABN3	2	ADK2	6 Pitch	ANAB4
	6 1/4 (159 mm)	2	ALB3	2	ABN3	2	ADK2	6 Pitch	ANAB6
	8 1/4 (210 mm)	2	ALB3	2	ABN3	2	ADK2	6 Pitch	ANAB4
Standard Triple Key	3 1/4 (83 mm)	1	ALB1	1	ABN1	3	ADK1	5 Pitch	ANAB3
	4 1/4 (108 mm)	2	ALB1	2	ABN1	3	ADK1	5 Pitch	ANAB4
	6 5/8 (168 mm)	2	ALB1	2	ABN1	3	ADK1	6 Pitch	ANAB6
	8 1/4 (210 mm)	2	ALB1	2	ABN1M	3	ADK1-S	6 Pitch	ANAB4
Heavy Duty - Triple Key	4 1/4 (108 mm)	2	ALB3	2	ABN3	3	ADK2	6 Pitch	ANAB4
	6 5/8 (168 mm)	2	ALB3	2	ABN3	3	ADK2	6 Pitch	ANAB6
	10 1/4 (260 mm)	2	ALB4	2	ABN3-M	3	ADK3	7 1/2 Pitch	ANAB4
	12 1/4 (311 mm)	2	ALB4	2	ABN3-M	3	ADK3	7 1/2 Pitch	ANAB4

Auger Cutter Head Hardware

Auger Size	Carbide Blade	Spade Type Blade	Blade-Bullet Combo	Spade-Bullet Combo	Bullet Cutter	5-T Cutter Head
2 1/4 (57 mm)		2 - C87L Spade Type Blades 2 - C87B Blocks		2 - C87L Spade Blades 2 - C87B Blocks 2 - C23 Bullets 2 - C20 Blocks	4 - C23 Bullets 4 - C20 Blocks 2 - ACHF214BU Bullet Flights	4 - C5T Finger Bits 2 - C5TBF Cutter Blocks/Flighting 2 - CFTB Cutter Blocks No Flighting
3 1/4 (83 mm)	2 - C011 Carbide Blades 2 - C012 Cap Screws 2 - ACHF314BL Blade Flights	3 - C87L Spade 3 - C87B Blocks	2 - C011 Carbide Blades 2 - C012 Cap Screw 2 - ACHF314BL Blade Flights 2 - C23 Bullets 2 - C20 Blocks	2 - C87L Spade Blades 2 - C87B Blocks 2 - C23 Bullets 2 - C20 Blocks	4 - C23 Bullets 4 - C20 Blocks 2 - ACHF314BU Bullet Flights	4 - C5T Finger Bits 4 - C20 Blocks 2 - ACHF314BU Bullet Blocks/Flighting 2 - C5TB Cutter Blocks No Flighting
3 3/4 (95 mm) or 4 1/4 (108 mm)	3 - C011 Carbide Blades 3 - C012 Cap Screws 3 - ACHF414BL Blade Flights	4 - C87L Spade Type Blades 4 - C87B Blocks	3 - C011 Carbide Blades 3 - C012 Cap Screw 3 - ACHF414BL Blade Flights 3 - C23 Bullets 3 - C-20 Blocks	3 - C87L Spade Blades 3 - C87B Blocks 3 - C23 Bullets 3 - C20 Blocks	6 - C23 Bullets 6 - C20 Blocks 3 - ACHF414BU Bullet Flights	4 - C5T Finger Bits 2 - C5TBF Cutter Blocks/flighting 2 - C5TB Cutter Blocks No Flighting
6 1/4 (159 mm)	4 - C011 Carbide Blades 4 - C012 Cap Screws 4 - ACHF614BL Blade Flights	5 - C87L Spade Type Blades 5 - C87B Blocks	4 - C011 Carbide Blades 4 - C012 Cap Screw 4 - ACHF614BL Blade Flights 4 - C23 Bullets 4 - C20 Blocks	4 - C87L Spade Blades 4 - C87B Blocks 4 - C23 Bullets 4 - C20 Blocks	8 - C23 Bullets 8 - C20 Blocks 4 - ACHF614BU Bullet Flights	4 - C5T Finger Bits 2 - C5TBF Cutter Blocks/Flighting 2 - C5TB Cutter Blocks/no Flighting
6 5/8 (168 mm)	4 - C011 Carbide Blades 4 - C012 Cap Screws 4 - ACHF658BL Blade Flights	5 - C87L Spade Type Blades 5 - C87B Blocks	4 - C011 Carbide Blades 4 - C012 Cap Screw 4 - ACHF658BL Blade Flights 4 - C23 Bullets 4 - C20 Blocks	4 - C87L Spade Blades 4 - C87B Blocks 4 - C23 Bullets 4 - C20 Blocks	8 - C23 Bullets 8 - C20 Blocks 4 - ACHF658BU Bullet Flights	6 - C5T Finger Bits 3 - C5TBF Cutter Blocks/Flt. 3 - C5TB Cutter Blocks No Flighting 8 - Bit Available
8 1/4 (210 mm)	5 - C011 Carbide Blades 5 - C012 Cap Screws 5 - ACHF814BL Blade Flights	5 - C87L Spade Type Blades 5 - C87B Blocks	5 - C011 Carbide Blades 5 - C012 Cap Screw 5 - ACHF814BL Blade Flights 5 - C23 Bullets 5 - C20 Blocks	4 - C87L Spade Blades 4 - C87B Blocks 4 - C23 Bullets 4 - C20 Blocks	10 - C23 Bullets 10 - M20 Blocks 5 - ACHF814BU Bullet Flights	6 - C5T Finger Bits 3 - C5TBF Cutter Blocks/Flighting 3 - C5TB Cutter Blocks No Flighting 8 - Bit Available
10 1/4 (260 mm)	6 - C011 Carbide Blades 6 - C012 Cap Screws 6 - ACHF1014BL Blade Flights	8 - C87L Spade Type Blades 8 - C87B Blocks	6 - C011 Carbide Blades 6 - C012 Cap Screw 6 - ACHF1014BL Blade Flights 6 - C23 Bullets 6 - C20 Blocks	5 - C87L Spade Blades 5 - C87B Blocks 5 - C23 Bullets 5 - C20 Blocks	10 - C23 Bullets 10 - C20 Blocks 5 - ACHF1014BU Bullet Flights	
12 1/4 (311 mm)	7 - C011 Carbide Blades 7 - C012 Cap Screws 7 - ACHF1214BL Blade Flights	10 - MMC87L Spade Type Blades 10 - MMC87B Blocks	7 - CC011 Carbide Blades 7 - C012 Cap Screw 7 - ACHF1214BL Blade Flights 7 - C23 Bullets 7 - C20 Blocks	6 - 87L Spade Blades 6 - 87B Blocks 6 - CC23 Bullets 6 - C20 Blocks	12 - CC23 Bullets 12 - CC20 Blocks 6 - ACHF1214BU Bullet Flights	

Pilot Bit Hardware

	Auger Size						
	3 1/4 (83 mm)	3 3/4 (95 mm) or 4 1/4 (108 mm)	6 1/4 (159 mm)	6 5/8 (168 mm)	8 1/4 (210 mm)	10 1/4 (260 mm)	12 1/4 (311 mm)
Bullet	3-CMM4 Bullets 3-CMM4B Blocks	3-C23 Bullets 3-C20 Blocks	6-C23 Bullets 6-C20 Blocks	6-C23 Bullets 6-C20 Blocks	8-C23 Bullets 8-C20 Blocks	10-C23 Bullets 10-C20 Blocks	12-C23 Bullets 12-C20 Blocks
Spade		2-C87L Spaded 2-C87B Blocks	4-87L Spade 4-C87B Blocks	4-C87L Spaded 4-C87B Blocks	6-C87L Spade 6-C87B Blocks	8-C87L Spade 8-C87B Blocks	10-C87L Spade 10-C 87B Blocks

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

Sampling Systems

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.

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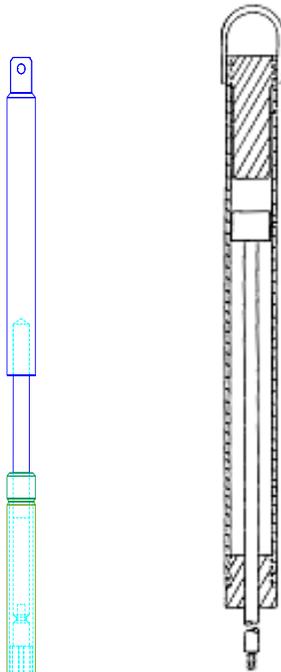
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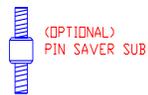
Standard Intermittent Sampling

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

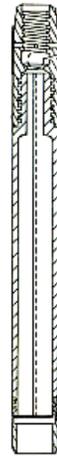


(OPTIONAL)
PIN SAVER SUB

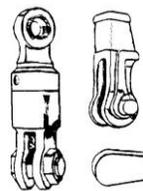
In-hole Sampler Hammer



Split Tube Sampler



Shelby Tube Sampler



3EJM Swivel
(With Open Wedge Socket)



C-611Z Swivel

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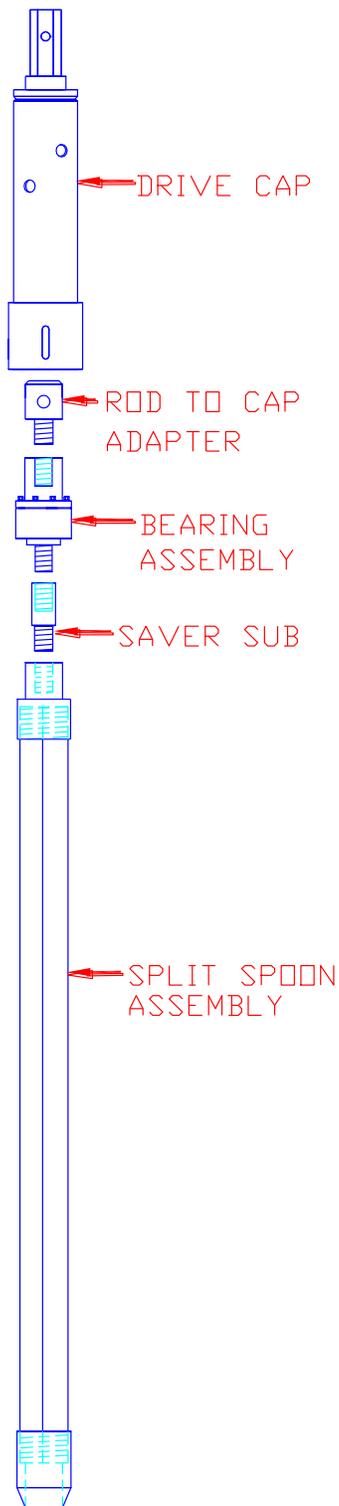
Sampling Systems

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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	

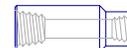
Swivels for In-Hole Hammers and Wireline Systems

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.

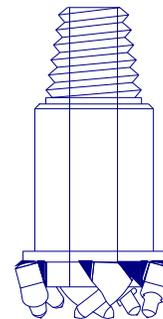
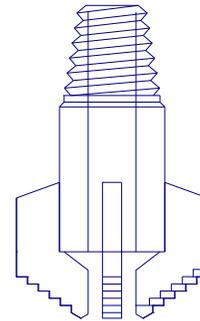
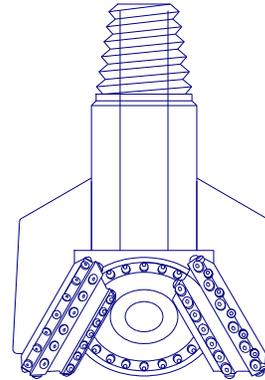
The drag bit style is designed for softer formations with sizes starting at 6 OD. Standard wing configurations consist of three or more wings in a step or chevron shape. The thickness of the blade and carbide inserts is offered in a standard or heavy-duty style.

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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