

Mills Machine custom manufactured stabilizers are used to keep the drill rod centered in the hole. They are available in a wide range of construction with all wear surfaces coated with carbide hard facing.

All stabilizers are made with heavy walled steel pipe. Stabilizers larger than 8 1/2 OD are normally made with an inner as well as an outer pipe for rigidity and strength. There is full, direct flow circulation provided. We will discuss the specific design with you before accepting your order.

All stabilizers are made with 4142 heat-treated, steel tool joints. All ribs are fully welded on both sides and have hard facing. Optional replaceable cast carbide ribs are available to increase the gage life.

Mills offers **five standard styles of stabilizers.**

The first type is the **Smooth Stabilizer** that is normally a couple of inches smaller than the borehole ID and can have an inner and outer barrel.

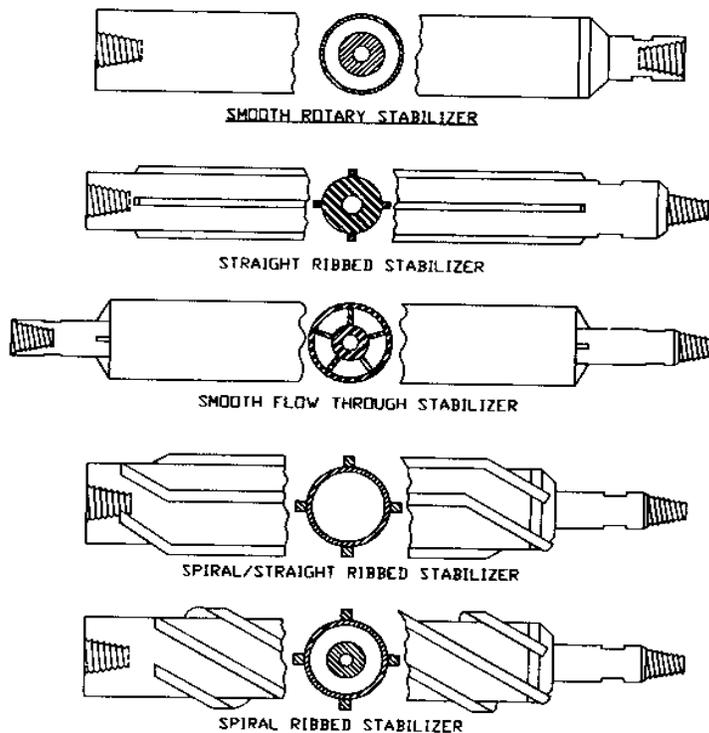
The **Flow Through** is another variation for larger diameters that allow the cuttings to flow between the inner and outer barrel.

**Straight Ribbed Stabilizers** can have three or more ribs (4 ribs is the most common) depending on the application. The ribs are welded to the steel tubing and are hard faced down the entire length to extend the gage life.

A variation on the straight rib design is the **Spiral Ribbed** stabilizer. The hard faced ribs are hand spiraled around the steel body to give 360 degree wall contact and assist in cutting removal.

The combination **Spiral-Straight Ribbed** stabilizer shown below gives the wall contact of the spiral stabilizer while reducing the cost of the spiraling process.

Finally, there is the **Overhammer Stabilizer** shown in more detail on the following page.



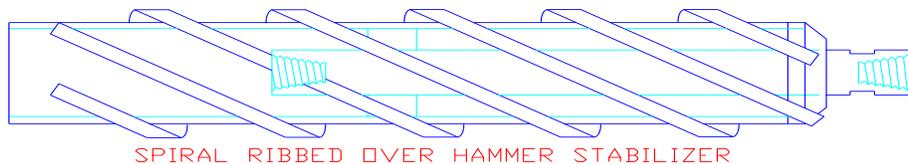
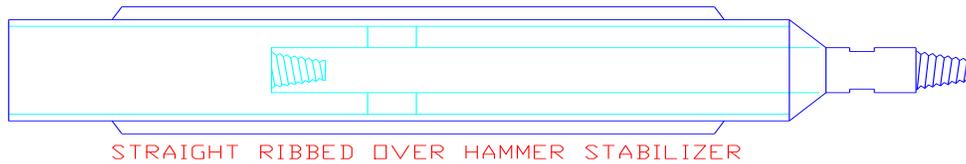
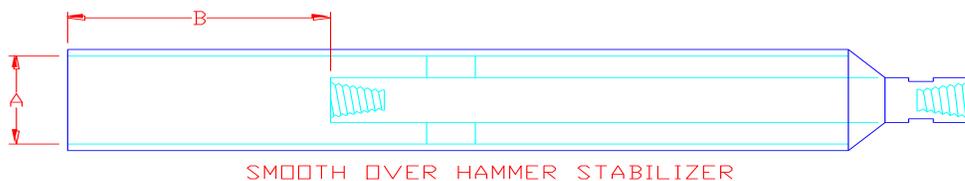
# Over-Hammer Stabilizers

The Mills Machine over-hammer stabilizer is built with the rugged construction that is standard for our units and with the ability to take the punishment of direct connection to the down hole hammer. The stabilizer is designed for the specific hammer that it is coupled with.

Although more often of smooth design it can be built with straight or spiral ribs. The top connection matches the drill pipe while the bottom is designed to overlap and protect the hammer.

We can design the top neck to your specific requirements. A float valve can be inserted into the bottom box connection if required.

It is essential that the over-hammer stabilizer application questionnaire at back of this section be filled out for the proper design of the stabilizer.



In building a stabilizer we will build the stabilizer ID, dimension A above, to fit the case diameter. The case housing length, dimension B above, is the length of the stabilizer case over the hammer. These dimensions must be specified.

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# Application Questionnaire

**Stabilizers**

**Stabilizers**

Company \_\_\_\_\_

Phone \_\_\_\_\_

Address \_\_\_\_\_

Fax \_\_\_\_\_

\_\_\_\_\_

E-mail \_\_\_\_\_

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

Contact \_\_\_\_\_

Sketch:

Quantity \*\*: \_\_\_\_\_ Length: Shoulder to Shoulder \_\_\_\_\_  
OR Overall \_\_\_\_\_

Hole Size \*\*: \_\_\_\_\_

Top Connection \*\*: \_\_\_\_\_ Pin  Box

Bottom Connection \*\*: \_\_\_\_\_ Pin  Box

Stabilizer Type \*\*: Straight Ribbed  Spiral Ribbed   
Smooth

Ribs \*\*: Quantity \_\_\_\_\_ Finished OD \_\_\_\_\_

**\*\*Must fill out these items. Fill out more if possible or custom product requested.**

Carbide Specs \_\_\_\_\_

Barrel: Outer OD \_\_\_\_\_ Outer ID \_\_\_\_\_

Inner OD \_\_\_\_\_ Inner ID \_\_\_\_\_

Top Neck Dimensions: OD \_\_\_\_\_ ID \_\_\_\_\_

Knurled  Length \_\_\_\_\_

Bottom Neck Dimensions: OD \_\_\_\_\_ ID \_\_\_\_\_

Knurled  Length \_\_\_\_\_

Flats: Two Sided  Four Sided

Special \_\_\_\_\_

Flat Length \_\_\_\_\_ Location \_\_\_\_\_

Dimensions: Flat to Flat \_\_\_\_\_

OR Depth per Side \_\_\_\_\_

Lugs: Drill Pipe OD \_\_\_\_\_ Hour Glass \_\_\_\_\_

Location \_\_\_\_\_ Dimensions \_\_\_\_\_

Float Valve: Bore Only  Install: Customer Furnished

Mills Furnished

Brand \_\_\_\_\_ Model & Size \_\_\_\_\_

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

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**Application Questionnaire**

**Overhammer Stabilizers** **Overhammer Stabilizers**

Company \_\_\_\_\_  
 \_\_\_\_\_  
 Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 City, State Zip \_\_\_\_\_  
 Contact \_\_\_\_\_

Phone \_\_\_\_\_  
 Fax \_\_\_\_\_  
 E-mail \_\_\_\_\_

Quantity \*\*: \_\_\_\_\_ Length: Shoulder to Shoulder \_\_\_\_\_  
OR Overall \_\_\_\_\_

Top Connection \*\*: \_\_\_\_\_ Pin  Box   
 Bottom Connection \*\*: \_\_\_\_\_ Pin  Box

Stabilizer Type \*\*: Straight Ribbed  Spiral Ribbed   
Smooth   
 Ribs \*\*: Quantity \_\_\_\_\_ Finished OD \_\_\_\_\_

Hammer \*\*: Brand \_\_\_\_\_  
Case OD \_\_\_\_\_  
Body Length \_\_\_\_\_  
Case Housing Length \_\_\_\_\_  
 See Dimension B on opposite page.  
Removable Barrel Design Yes  No

Sketch:

**\*\*Must fill out these items. Fill out more if possible or custom product requested.**

*Carbide Specs* \_\_\_\_\_  
 Barrel: *Outer OD* \_\_\_\_\_ *Outer ID* \_\_\_\_\_  
*Inner OD* \_\_\_\_\_ *Inner ID* \_\_\_\_\_  
 Top Neck Dimensions: *OD* \_\_\_\_\_ *ID* \_\_\_\_\_  
*Knurled*  *Length* \_\_\_\_\_

*Flats:* *Two Sided*  *Four Sided*   
*Special* \_\_\_\_\_  
*Flat Length* \_\_\_\_\_ *Location* \_\_\_\_\_  
*Dimensions:* *Flat to Flat* \_\_\_\_\_  
OR *Depth per Side* \_\_\_\_\_

*Lugs:* *Drill Pipe OD* \_\_\_\_\_ *Hour Glass* \_\_\_\_\_  
*Location* \_\_\_\_\_ *Dimensions* \_\_\_\_\_

*Float Valve:* *Bore Only*  *Install:* *Customer Furnished*   
*Mills Furnished*   
*Brand* \_\_\_\_\_ *Model & Size* \_\_\_\_\_

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

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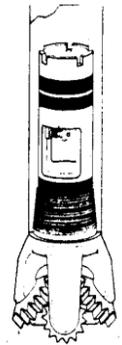
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# Drilling Accessories

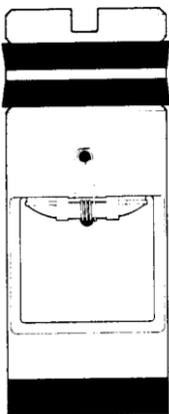
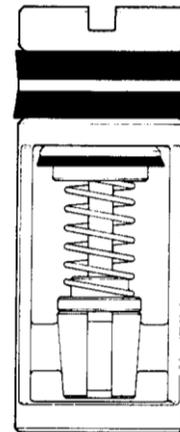
Mills Machine Co. stocks a wide variety of float valves at very competitive prices to sell separately or to install in our subs and stabilizers. We also stock the metal or rubber repair kits. Please contact us if you are not sure which type of float valve to use.



Baker Poppet Style	Baker Flapper Style	Demco Poppet Style	Box Tool Joint Size	Valve Diameter	Valve Length
1R, Model F			2 3/8 API Regular	1 21/32	5 7/8
1F-2R, Model F		27R	2 7/8 API Regular 2 7/8 API Full Hole 2 7/8 API Internal Flush	1 29/32	6 1/4
2F-3R, Model F	2F-3R, Model G	35R	3 1/2 API Regular 2 7/8 API Full Hole 2 7/8 API Internal Flush	2 13/32	6 1/2
3 F, Model F	3 F, Model G		3 1/2 API Full Hole	2 13/16	10"
3 1/2, Model F			3 1/2 API Internal Flush	3 1/8	10"
4R, Model F	4R, Model G	45R	4 1/2 API Regular	3 15/32	8 5/16
4F, Model F	4F, Model G		4 1/2 API Full Hole 4" API Internal Flush	3 21/32	12"
5R, Model F	5R, Model G		5 1/2 API Regular	3 7/8	9 3/4
5F-6R, Model F	5F-6R, Model G	65R	6 5/8 API Regular	4 25/32	11 3/4
6F, Model F			8 5/8 API Regular	5 11/16	14 5/8

Baker is the Registered trademark of Supply Products Division, Baker Oil Tool Co.  
Demco is the Registered trademark of Retasco, Inc.

The Poppet (plunger) Style Valve provides positive and instantaneous shut-off against high or low pressure, assuring continuous flow of the fluid during drilling. It prevents flow-back when adding joints and keeps cuttings out of the drill pipe, preventing plugging while making connections.



The Flapper Style Valve incorporates a specially designed flapper which opens quickly and fully to provide a completely unrestricted bore through the hole. When circulation stops the flapper closes instantly to prevent cuttings from entering the drill string and plugging the bit. The flapper style compliments primary blowout prevention equipment.

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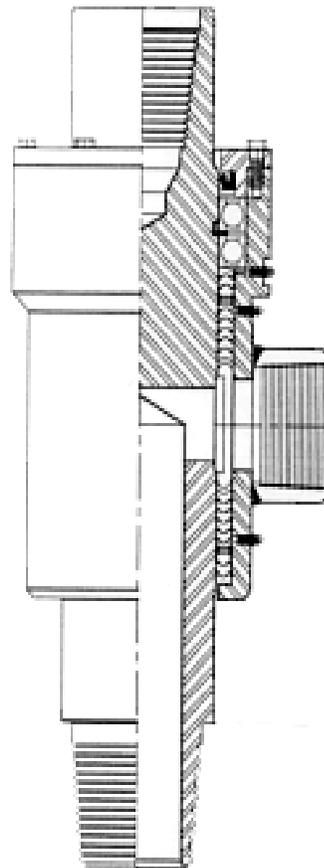
# Drilling Accessories

## Water Swivels

Available are the top mounted swivels or the side inlet swivels. The top mounted swivel comes with a U-bolt bail for conventional drilling or with studs when used as a rotating head. The lower NPT connection can be right or left hand, depending on the drill rig, while the top connection is the standard right hand thread, straight up or with a goose neck.

The side feed swivels is used with hydraulic, top-head drive rigs to insure the prevention of contamination of the hydraulic fluid. They are also used with auger rigs to convert them to circulating, rotary drilling rigs. The bottom connection will be matched to your specific requirements while the side connection is a standard NPT thread. The top is a 1 5/8 or 2" hex pin.

Please specify the bottom connection, water connection and, for side feed, the tops drive connection. These connections will determine the water course diameter.



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## Mud Pump Parts

Mills Machine Co., Inc. is your source for parts for the following mud pumps:

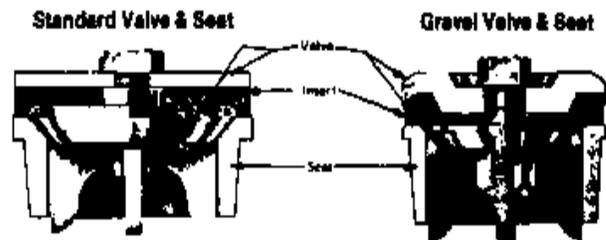
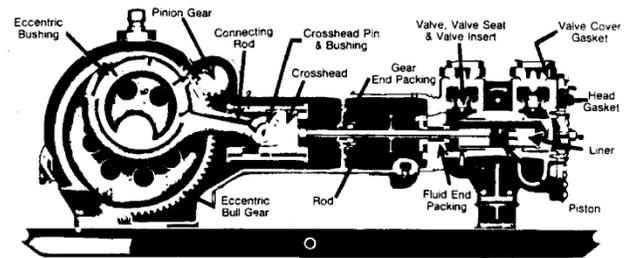
Gardner-Denver	Fluid end and gear end parts
Wheatly	Fluid end parts
Armstrong	Fluid end parts
Failing	Fluid end parts
Gaso	Fluid end parts
Harrisburg	Fluid end parts
L-K Industries	Fluid end parts
Worthington	Fluid end parts

These are just a few of the pumps with parts available. When you call please have the following information available:

Name of pump,  
Pump size,  
Part Number and  
Description of the part.

Some of the parts available are:

Liner - Chrome and Premium  
Rods  
Pistons  
Piston Rubber  
Valve Seat - Standard and Gravel  
Valve Seat - Standard and Gravel  
Valve Insert - Standard and Gravel  
Valve Spring  
Liner Packing  
Rod Packing  
Head Gasket  
Valve Cover Gravel  
Junk Ring  
Lantern Ring  
Gear End Packing  
Eccentric Gear (Bull)  
Eccentric Bushing  
Pinion Gear (Driver)  
Cross Pin  
Cross Pin Bushing



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# Drilling Accessories

## Drive Shoes

Steel Drive Shoes are available in threaded or weld on design. They are designed to be attached to the bottom of the casing enabling it to be driven into bedrock at the bottom of the hole. We will need to know the size, weight per foot, thread and inner or outer taper design.



## Centralizers



The Centralizers are designed to attach to the casing or pipe and keep it centered in the hole to insure even distribution during the grouting process. Please specify the pipe diameter and carbon or stainless steel.

## Pipe Thread Compound

Pipe Thread Compound is carried in stock in one gallon buckets but other sizes are available. The different types available are; JLS –multi purpose tool joint compound, Z-40 or Z-50 Zinc base tool joint compounds. We also stock Pipe Dope Brushes for application of the pipe thread compounds.



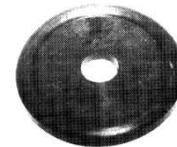
## Pipe Thread Protectors



We stock both plastic and steel thread protectors in a broad range of thread types and sizes. We use this product to protect the threads on our hole openers, stabilizers, etc. during shipping.

## Pipe Wipers

Pipe wipers come in a range of styles and diameters and include reinforced steel rings for rigidity and strength. Many sizes are available on request. Please let us know if you need the solid or split style.



## Pipe Packers



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## Drilling Accessories

Packers with either single or multiple sealing flanges are available with the expander tool assembly. Please call for price and availability.

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