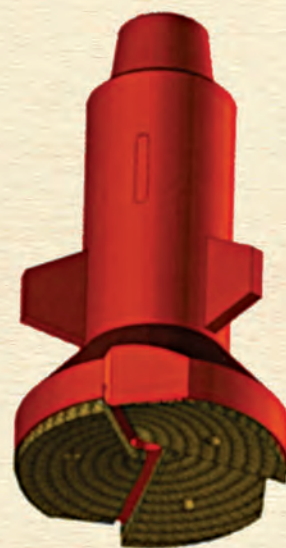


Milling Tools

HPOGC services carries a large inventory of the standard and special milling tools which covers a wide range of milling requirements.

Junk Mill

Junk Mills are the most commonly used milling tools designed to mill up or dress off a wide variety of junks such as squeeze tools, packers, tubing, bridge plugs, it also works well where there is a combination of junk and cement. The Junk Mill, dressed with Tungsten Carbide, chews its way through the toughest drilling materials. Junk Mills are applied for milling away of metal parts in a hole (subs, bits, pipes, etc.).



Types

Available in standard designs covering a wide range of milling applications:

- Conventional Junk Mill
- Flat Bottom Junk Mill
- Integral Bladed Junk Mill
- Super Junk Mill
- Offset Junk Mill

Junk Mill Technical Specification

Dressed OD	Top Pin Conn. API Reg.	Overall Length	Fishing Neck		Weight (lbs)
			Length	OD	
3 1/2 - 4 1/2"	2 3/8"	20"	12"	3 1/8"	45
4 1/2 - 5 1/2"	2 7/8"	21"	12"	3 3/4"	62
5 1/2 - 5 5/8"	3 1/2"	23"	12"	4 1/4"	95
5 3/4 - 7 1/2"	3 1/2"	23"	12"	4 3/4"	105
7 1/2 - 9"	4 1/2"	27"	12"	5 3/4"	180
9 1/2 - 12 1/4"	6 5/8"	29"	12"	7 3/4"	350
13 - 15"	6 5/8", 7 5/8"	30"	12"	7 3/4", 9 1/2"	500
17 - 17 1/2"	7 5/8"	33"	12"	8 3/4", 9 1/2"	625
18 1/2 - 26"	7 5/8", 7 5/8"	37"	18"	9 3/4", 9 1/2"	1200



Econo Mill

Is a low-cost mill for light-duty milling jobs, dressed with tungsten carbide. It is an effective tool for milling packers, bridge plugs, cement retainers and tubular equipments. No additional subs are required, circulation is directed junk slots along each cutting blade and through the center of the head for proper cutting removal and cooling.



Econo Mill Technical Specification

Dressed Diameter (in)	Top Pin Conn. API Reg. (in)	Length (in.)	Recommended Torque (Ft.Lbs)
3 1/4 - 4 3/8	2 3/8	7 5/8	3,000 - 3,500
4 1/2 - 5 3/8	2 7/8	8 5/8	6,000 - 7,000
5 1/2 - 7 3/8	3 1/2	9	7,000 - 9,000
7 1/2 - 8 3/4	4 1/2	11 1/2	12,000 - 16,000
10 1/4 - 12 1/4	6 5/8	16 1/2	28,000 - 32,000
13 - 16	7 5/8	18	45,000 - 60,000

Taper Mill

Is a low-cost mill for light-duty milling jobs, dressed with tungsten carbide. It is an effective tool for milling packers, bridge plugs, cement retainers and tubular equipments. No additional subs are required, circulation is directed junk slots along each cutting blade and through the center of the head for proper cutting removal and cooling.

Pilot Mill

Is best used for milling stuck tubular, such as Packers, liner hangers, wash pipe, rotary shoes or drill pipe and is ideal for cleaning a casing head before running casing patch, and suppressing the damaged parts of a casing. The pilot assembly maintains a centered position on the tubular, while the milling blades mill the product away.

