



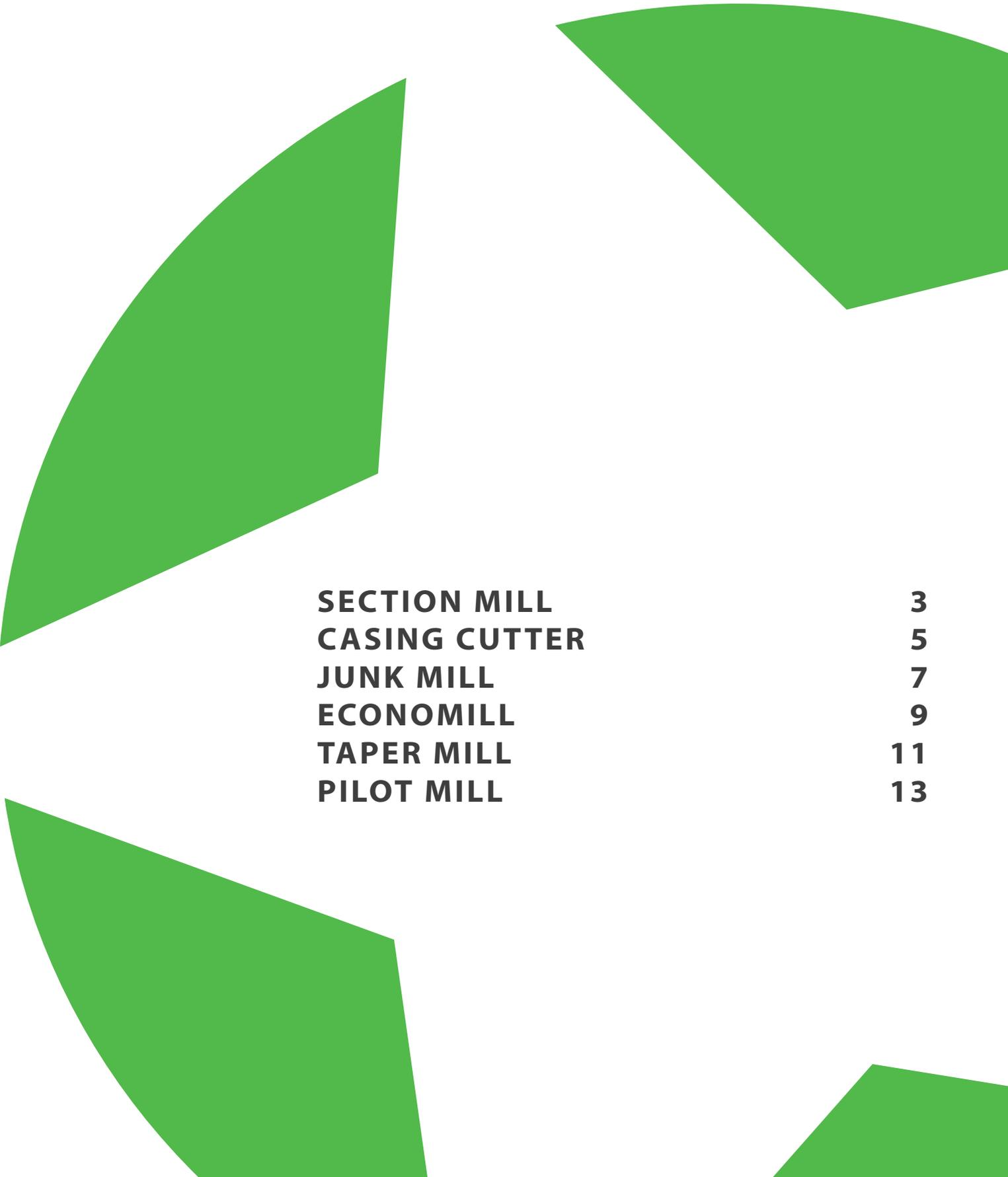
## MILLING TOOLS CATALOG

Downhole Milling & Cutting Operations



[www.drillstar.fr](http://www.drillstar.fr)

*Downhole Innovations, Made in France*



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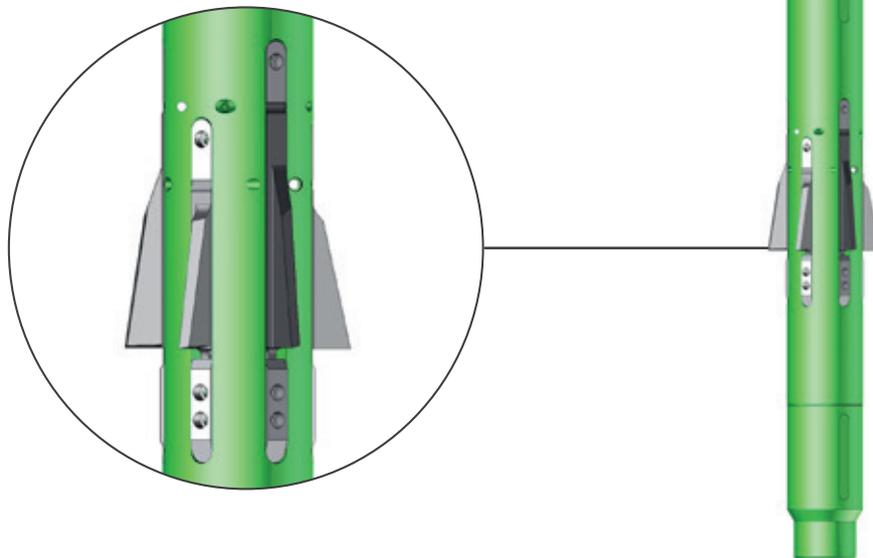
# SECTION MILL

Section mills are designed for cutting and milling a complete section of casing.

All models 4 1/2" OD and above are equipped with 2 sets of 3 knives: 1 long set and 1 short set, designed first for cutting and then milling the casing.

Knives can be hardfaced with your choice of TOPLOY carbide grains or TOPMILL/SWORDFISH® tungsten carbide inserts. For most jobs, TOPMILL inserts are strongly recommended to improve milling performance.

This tool can be equipped with Flo-tel, which produces a sudden drop in mud pressure when the pipe is cut out, indicating the right time to start applying milling weight.



*5 1/2" body section mill*



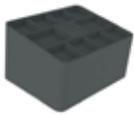
# SECTION MILL

## Standard dimensions

Body OD	Casing OD to mill	Standard Connections
3 5/8"	4 1/2"	2 3/8" REG
4 1/2"	5 1/2"	2 7/8" REG
5 1/2"	6 5/8" - 7"	3 1/2" REG
8 1/4"	9 5/8"	4 1/2" REG
11 3/4"	13 3/8" - 16"	6 5/8" REG

## Cutting inserts

Drillstar cutting inserts are made of premium cutting grade tungsten carbide, and can replace TOPLOY on most milling tools. They enable you to mill faster and longer, while reducing the necessary weight on bit.



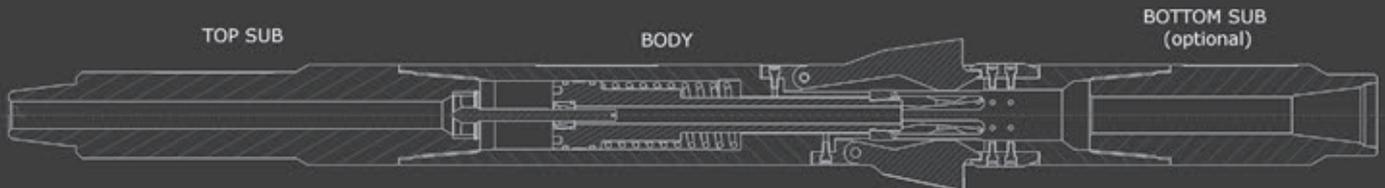
### TOPMILL

these large, square-shaped tungsten carbide inserts are widely used today for all milling applications.



### SWORDFISH®

these innovative inserts combine the advantages of both square and round-shaped models. (exclusivity from Cutting & Wear)



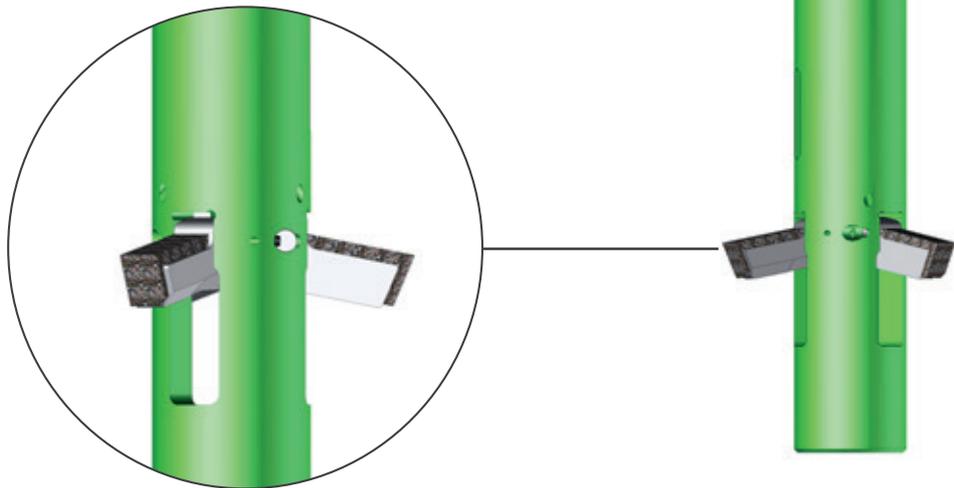
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## CASING CUTTER

Drillstar hydraulic casing cutter is designed to cut away a complete section of casing or liner. It is a dependable, rugged tool, easy to operate and maintain in the field.

The cutting blades, lodged in the body, are expanded by mud pressure and can cut multiple concentric strings of casing quickly and safely.

- Cutter arms reinforced with TOPLOY tungsten carbide dressing, designed to tackle the hardest grades of casing without difficulty.
- Can be equipped with Flo-tel, which produces a sudden drop in mud pressure when the pipe is cut out.
- Interchangeable cutter arms, easy to replace in the field.
- Wide choice of top subs and bottom features (bull-nose, connections, etc.)



*5 3/4" casing cutter*

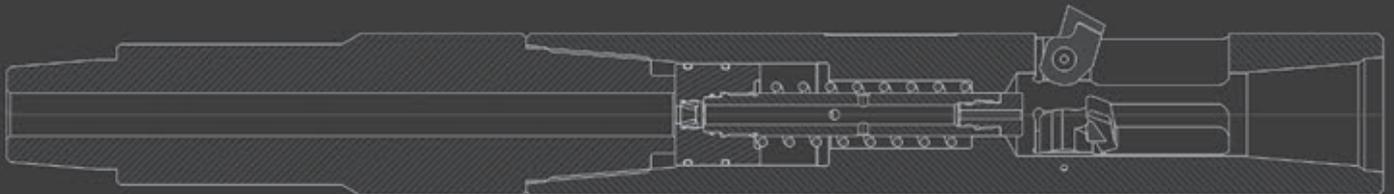


# CASING CUTTER

## Standard dimensions

Body OD	Casing OD to cut
4 3/8"	5 1/2 to 7"
5 3/4"	7 5/8 to 14"
8 1/4"	9 5/8 to 26"
11 3/4"	13 3/8 to 36"

For large diameter casings, it is strongly recommended to stabilize the tool with a free-wheeling stabilizer as well as a marine swivel for offshore operations



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# JUNK MILL

Drillstar Junk Mills are designed for heavy-duty milling jobs. The fruit of over 20 years of experience in design and hardfacing, they are available in five standard designs covering a wide range of milling applications:

## Conventional Junk Mill

Designed for cement, general junk, tubing milling or packer removal.



## Integral Bladed Junk Mill

This uncompromising mill is ideal for cement milling jobs, plug removal or general milling jobs. Tool integrity is ensured by integral blades machined out of the body, which can be fitted with TOPMILL cutting inserts for improved ROP.



## Flat Bottom Junk Mill

With more hardfacing for a longer tool life



## Super Junk Mill

Designed for intensive use, such as drill collar milling. Its wide blades allow for maximum weight to be put on the mill.



## Conebuster Junk Mill

Its concave shape is ideal for milling bit cones and other objects by keeping them centered under the mill.



All Drillstar mills feature integral AISI4145H body and can be used in both cased and open hole. They are available in a variety of standard and custom sizes, with or without stabilizing blades.



# JUNK MILL

## Standard dimensions

Dressed OD	Top Pin Connection 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", 7 5/8"	33"	12"	8 3/4", 9 1/2"	625
18 1/2 - 26"	8 5/8", 7 5/8"	37"	18"	9 3/4", 9 1/2"	1200

## Hardfacing

All mills can be hardfaced using TOPLOY S. Integral Bladed Mills and Super Junk Mills can be hardfaced using tungsten carbide inserts backed by TOPLOY S. Inserts enable better ROP and tool life, while TOPLOY backing significantly improves the hardfacing resistance to downhole shocks. Two standard types of inserts are available : TOPMILL square inserts, or SWORDFISH® shaped inserts. Custom inserts are available on request.



### TOPLOY

*Copper alloy hardness : 120 to 130 Hv  
Calibrated tungsten carbide grains.  
Hardness: 1400 to 1700 Hv*

- Mills (TOPLOY S) : excellent behaviour thanks to its matrix specially designed to release worn grains.

## Cutting inserts

Drillstar cutting inserts are made of premium cutting grade tungsten carbide, and can replace TOPLOY on most milling tools. They enable you to mill faster and longer, while reducing the necessary weight on bit.



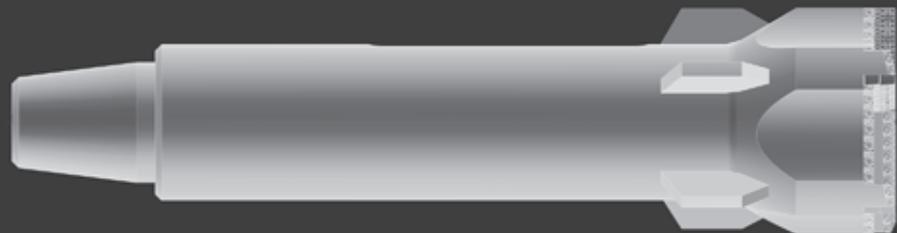
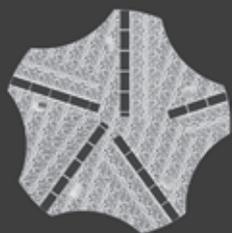
### TOPMILL

these large, square-shaped tungsten carbide inserts are widely used today for all milling applications.



### SWORDFISH®

These innovative inserts combine the advantages of both square and round-shaped models. (exclusivity from Cutting & Wear)



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## ECONOMILL

DRILLSTAR Economill is a low-cost junk mill, ideal for milling tubular equipment. It will also shave off cement in drill pipes and tubings or mill bridge plugs and retainers.

### Main advantages

The Economill can be air freighted at low cost for urgent jobs. Made with a standard rock-bit connection, it can be easily adapted to drill stem stabilizers or used inside a skirt to mill fish heads.

A large central hole gives improved mud flow, facilitating the evacuation of cuttings. Other small holes allow a perfect cleaning of the blades. The special blade design ensures perfect stabilization and centering in the casing. Drillstar Economill can be used with a turbodrill.

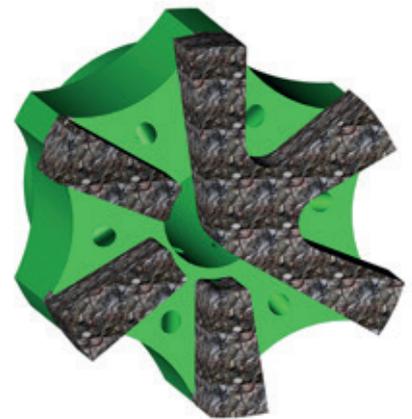
It can be hardaced with your choice of TOPLOY or TOPMILL / SWORDFISH® inserts backed by TOPLOY.



#### TOPLOY

*Copper alloy hardness : 120 to 130 Hv  
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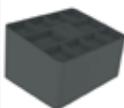
- Stabilizers (TOPLOY W) : satisfactory behaviour in soft formations.
- Mills (TOPLOY S) : excellent behaviour thanks to its matrix specially designed to release worn grains.



8 1/2" Economill

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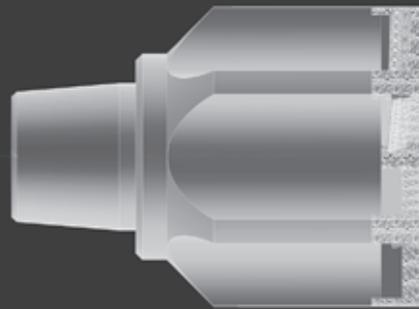
These innovative inserts combine the advantages of both square and round-shaped models. (exclusivity from Cutting & Wear)



# ECONOMILL

## Standard dimensions

Dressed Diameter	Top Connection API Regular	Overall Length	Weight (lbs)
3 1/4 - 4 3/8"	2 3/8"	7 5/8"	17
4 1/2 - 5 3/8"	2 7/8"	8 5/8"	26
5 1/2 - 7 3/8"	3 1/2"	9"	40
7 1/2 - 8 3/4"	4 1/2"	11 1/2"	76
10 1/4 - 12 1/4"	6 5/8"	16 1/2"	125
15 - 17 1/2"	7 5/8"	20"	175
19 - 26"	7 5/8"	25"	230



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# TAPER MILL

DRILLSTAR taper mill is used to repair collapsed casing or tubing sections, and to shave off cement or corroded parts in a casing.

The taper mill hardfacing is designed to clean the casing without cutting it, and to penetrate very gradually. The upper part of the taper mill is long enough to allow the addition of stabilizing blades while still remaining "fishable".

DRILLSTAR Taper mill is available in two types, long or short. Blades, whether spiralled or straight, are fully customizable.

They can be hardaced with your choice of TOPLOY or TOPMILL / SWORDFISH inserts.



Long taper mill with straight blades and TOPMILL inserts



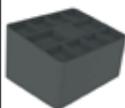
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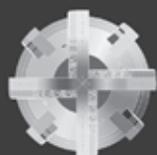
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# TAPER MILL

## Standard dimensions

Dressed OD	Top Pin connection API Reg.	Overall Length		Fishing Neck		Weight (lbs)	
		Long type	Short Type	Length	OD	Long type	Short Type
3 1/4 - 3 7/8"	2 3/8"	34"	30"	10"	3"	80	60
4 - 4 3/8"	2 3/8"	34"	30"	10"	3 1/8"	90	70
4 1/2 - 5 3/8"	2 7/8"	38"	31"	10"	3 3/4"	106	75
5 1/2 - 5 5/8"	3 1/2"	42"	32"	13"	4 1/4"	155	115
5 3/4 - 6 3/8"	3 1/2"	44"	32"	13"	4 3/4"	160	120
6 1/2 - 7 3/8"	3 1/2"	46"	34"	13"	4 3/4"	170	130
7 1/2 - 7 7/8"	4 1/2"	54"	36"	13"	5 3/4"	250	185
8 3/8 - 9 1/2"	4 1/2"	54"	36"	14"	5 3/4"	280	220
9 3/8 - 9 7/8"	4 1/2", 6 5/8"	54"	36"	14"	5 3/4", 7 3/4"	345	280
10 3/8 - 11"	6 5/8"	57"	38"	14"	7 3/4"	415	355
11 1/2 - 12 1/4"	6 5/8"	60"	40"	14"	7 3/4"	455	390
14 3/4 - 15"	6 5/8"	70"	60"	18"	7 3/4"	525	460
17 - 17 1/2"	6 5/8"	70"	60"	18"	7 3/4"	595	530
20 - 26"	6 5/8", 7 5/8"	76"	66"	18"	7 3/4", 9 1/2"	1250	1125



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## PILOT MILL

**DRILLSTAR Pilot Mill is ideal for milling tubular fish, cleaning a casing ID before running casing patch and suppressing the damaged parts of a casing.**

Due to the pilot bit located below the blades, DRILLSTAR Pilot Mill can be perfectly directed to the target on the fish head, avoiding side tracking. Mud circulation holes between the blades facilitate the easy evacuation of cuttings. The pilot is hardfaced for optimum resistance to wear and smooth guiding of the milling blades.

The blades can be hardfaced with your choice of TOPLOY tungsten carbide grains or tungsten carbide cutting inserts. (TOPMILL - SWORDFISH®)

All features (Pilot diameter, fishing neck, number of blades, etc.) remain customizable to your needs.



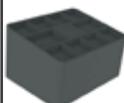
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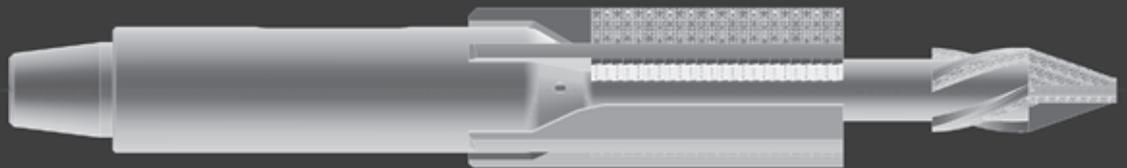
*Pilot Mill with TOPMILL inserts*



# PILOT MILL

## Standard dimensions

Dressed OD	Top Pin Connection API Reg.	Pilot OD	Overall Length	Fishing Neck		Weight (lbs)
				Length	OD	
3 1/4 - 3 7/8"	2 3/8"	1 3/4 - 2 3/4"	27"	12"	3"	40
4 - 4 3/8"	2 3/8"	1 3/4 - 2 3/4"	27"	12"	3 1/8"	45
4 - 5 3/8"	2 7/8"	2 - 3 1/4"	27"	12"	3 3/4"	120
5 1/2 - 5 5/8"	3 1/2"	2 1/2 - 4 3/4"	38"	16"	4 1/4"	240
5 3/4 - 7 3/8"	3 1/2"	2 1/2 - 4 3/4"	38"	16"	4 3/4"	255
6 - 9 7/8"	4 1/2"	4 3/4 - 6 3/4"	42"	18"	5 3/4"	305
9 7/8 - 17 1/2"	6 5/8"	7 3/4 - 15"	45"	18"	7 3/4"	550
17 1/2 - 20"	7 5/8"	7 3/4 - 15"	50"	18"	9 1/2"	800



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# BACKGROUND



Drillstar Industries has been serving the oilfield industry since 1977. Originally founded as the manufacturing branch of directional drilling company Top Services, it became a stand-alone company in 1986, when world leader Schlumberger Anadrill acquired Top Services.

Since then, we have grown into an integrated independent manufacturer, providing both a wide range of proprietary tools and full subcontracting solutions to major oilfield suppliers.

Today, we provide equipment and services in two main domains, offering both Drillstar and custom/client designs:

- Drilling and fishing tools.
- Tubing and casing accessories.

Our human size, experience and product quality enable us to serve customers worldwide on tight schedules, a quality which has earned us the trust of major operators and oilfield service companies.

# QUALITY CONTROL

Quality is present at every step within Drillstar Industries, from design through production to delivery and after-sales support. Procedures and equipment have been put in place to ensure that the strictest quality requirements of our customers can be met. Controls are implemented throughout this chain to detect and report any discrepancy.



This process has been certified according to the ISO 9001: 2008 standard.

Beyond the requirements of this standard, our manufacturing plant is regularly subjected to quality audits by major oil companies and oilfield equipment manufacturers. Being able to meet the strictest quality requirements in the industry is our best reference.





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