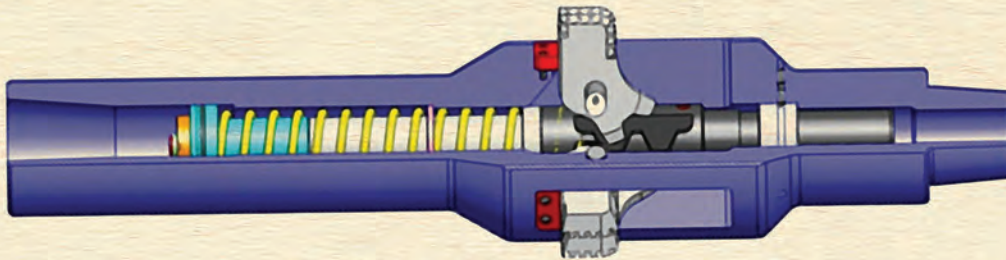


Underreamer

HPOGC Hydraulic PDC Underreamer is a hard wearing tool, used to enlarge the borehole beyond bit diameter. It can be opened and closed several times in downhole condition, making it the best choice for section enlarging jobs. This simple and efficient arm design increases longevity and facilitates field maintenance. The optimum mud ports placement also ensures thorough cleaning of the PDCs for faster reaming with less pack-off risks.



HPOGC Hydraulic Underreamer

Applications

- Unexpected remedial underreaming jobs for running expandable casing/liners.
 - Top hole section enlargement when a surface diameter restriction is present.
 - Gravel packing work-over.
 - Wiping out bridges and key seats.
 - Adequate annular space for cementing.
 - Gravel packing for gas storage wells.
 - Section enlarging or window opening job.
 - Increasing Inflow diameter in Pay zone.
- ✓ Removing mud invaded zone at reservoir section

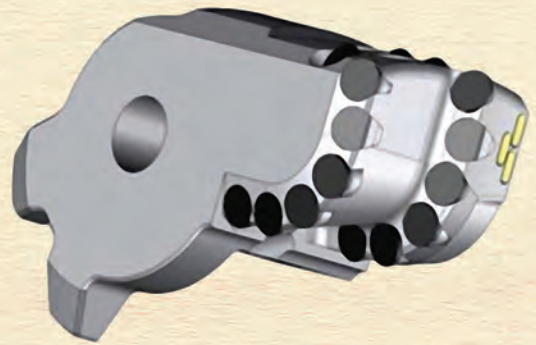
Underreamer's design related specification

- Size of the hole to be enlarged.
- Desired hole size after underreaming.
- Connection types.
- Options and accessories (bullnose, extra set of arms, etc.).



Features

- Maintaining wellbore directional path while enlarging, neutral directional behavior.
- Integral stabilizer blades.
- No bearings, minimal moving parts (1 piston, 3 arms).
- Ease of service and downhole operation.
- Design selection of hole size and cutting types.
- Simple and effective arm design.
- Improved durability and field maintenance.
- Faster operations with less packing-off risks
- Ease of hydraulic design



12 1/4" Cutting arm for UR800 featuring 2 rows of Premium PDC

HPOGC Hydraulic Under Reamer Specifications

Type	Body OD	Hard Facing OD	Standard Cutter Arms	Top	Bottom	No. of arms
UR 550	5 1/2"	6"	7 " to 14"	3 1/2 IF	3 1/2 IF	3
UR 575	5 3/4"	6"	7 " to 14"	3 1/2 IF	3 1/2 IF	3
UR 800	8"	8 1/2"	9 1/4" to 18"	4 1/2 IF	4 1/2 IF	3
UR 1200	12"	12 1/4"	13 1/2" to 16"	6 5/8 REG	6 5/8 REG	3
UR 1750	17 1/2"	17 1/2"	19" to 26"	7 5/8 REG	7 5/8 REG	3

Factors	UR 575	UR 800	UR 1200	UR 1750
Max Flow (USG/min)	350	500	800	1200
Max Weight on bit (metric ton)	5	8	15	20
Max Weight on bit (klbs)	11	17.6	33	44
Max Torque (daN.m)	450	700	1200	1600
Max Torque (lbs.ft)	3300	5200	8800	11800
ROTATION (RPM)	80 to 120 rpm	80 to 120 rpm	80 to 120 rpm	80 to 120 rpm
Make-up TORQUE (daN.m)	2000 to 2400	3200 to 3600	5500 to 6000	8000 to 8600
Make-up TORQUE (klb.ft)	14.1 to 17.6	23.6 to 26.5	40.6 to 26.5	59.0 to 63.4
Fishing Neck Dia	5 1/4"	6 1/4"	8 1/2"	12"