

# HYDRAULIC DRILLING JAR



The Cathedral Hydraulic Drilling Jar is designed for applying an intensified force either down or up against a stuck portion of the drill-string. Our unique design combines both a hydraulic time delay release and a mechanical latch mechanism; in one relatively short double-acting drilling jar which is simple to operate without the risk of unexpected jarring.

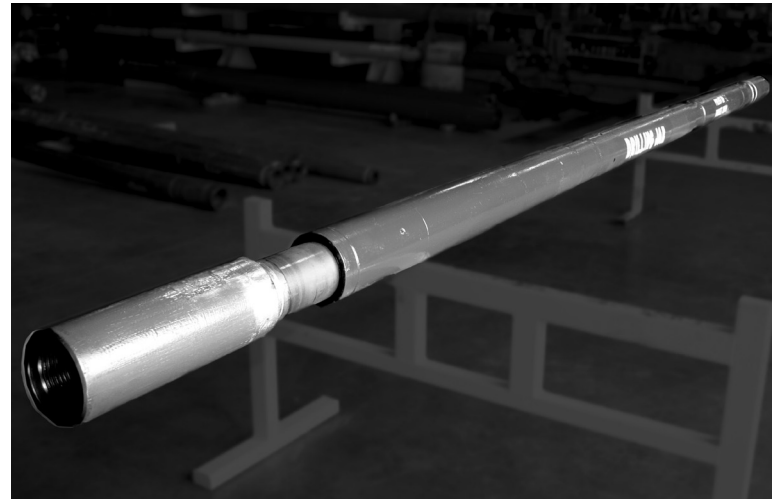
## FEATURES

- No unexpected jarring: Reducing damage to surface and downhole equipment
- Simple to operate: No safety collars or special handling procedures
- Less restricted jar placement in BHA: Located in the string in tension, neutral or compression
- Maximizes on bottom time: No wait time for the jar to bleed when applying pressure
- Linear latch: Not affected by torque and may be used in high friction or directional holes
- Hydraulic delay timing remains relatively constant even after prolonged jarring
- Fully sealed: Lubricated for longer service life
- Separate spline, latch and hydraulic chambers: Prevents contamination of fluid in the hydraulic chamber
- Hydrostatically balanced: Not affected by the hydrostatic pressures
- Fewer body connections: Reduces potential connection failures
- Safety nut: Minimizes potential fishing jobs by preventing parts from being left in the hole if a connection is accidentally backed off
- Backup jarring features: In the event of a hydraulic delay mechanism failure, the tool will continue to function as a mechanical jar

## OPERATIONS

**To Jar up:** Tension is applied to the jar, stretching the drill string. When the jar releases, the stored energy accelerates the jar mandrel rapidly to its fully extended position. The sudden stop of the mandrel as it hits inside the jar then converts the kinetic energy (of the moving mass of drill collars) into an intense impact or jarring force. This impact force can reach up to eight times the initial overpull. In addition, this force can be adjusted by reducing or increasing drill string tension while waiting for the hydraulic delay time.

**To Jar down:** Weight is slacked off until the force applied to the jar exceeds the mechanical down latch setting. The latch will then release, allowing the drill string to drop free. When the jar reaches its fully closed position, an intense impact force is applied to the stuck portion of the drill string.



**Our advantage is our many state of the art motor facilities where our equipment is meticulously maintained by our qualified team members.**

**MAINTENANCE:** As part of the comprehensive maintenance program, all tubular components are inspected for thread and fatigue damage, magnetism and degaussed. Our motor fleet is also monitored through our Continuous Improvement Process which allows us to track individual component life histories. This process provides us the ability predict component life cycles and implement design modifications, being proactive rather than reactive.

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## HYDRAULIC DRILLING JAR SPECIFICATIONS

TOOL O.D. (+API Drill Collar Tolerance)	Inches	4.75	4.75	6.25	6.5	6.5	6.75	7.00	8.00	9.00	9.5
	(mm)	(121)	(121)	(159)	(165)	(165)	(171)	(178)	(203)	(229)	(241)
SERIES		341	380	447	339	474	340	450	336	354	381
MAX RECOMMENDED HOLE DIAMETER	Inches	7 7/8	7 7/8	9 7/8	9 7/8	9 7/8	12 1/4	12 1/4	17 1/2	26	26
	(mm)	(200)	(200)	(251)	(251)	(251)	(311)	(311)	(445)	(660)	(660)
TOOL I.D.	Inches	2.00	2.25	2.25	2.25	2.75	2.50	2.50	2.81	2.81	2.81
	(mm)	(51)	(57)	(57)	(57)	(70)	(64)	(64)	(71)	(71)	(71)
LENGTH	Feet	12.5	12.7	16.3	16.3	18.5	15.0	15.0	15.0	15.0	15.0
	(m)	(3.8)	(3.9)	(5.0)	(5.0)	(5.6)	(4.6)	(4.6)	(4.6)	(4.6)	(4.6)
WEIGHT	Lbs	575	550	1,300	1,400	1,500	1,400	1,540	2,100	2,700	3,000
	(kg)	(260)	(250)	(590)	(640)	(680)	(640)	(700)	(950)	(1,200)	(1,400)
STROKE UP	Inches	4.0	4.0	4.5	4.5	10.0	4.5	4.5	5.0	5.0	5.0
	(mm)	(102)	(102)	(114)	(114)	(254)	(114)	(114)	(127)	(127)	(127)
STROKE DOWN	Inches	4.0	4.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
	(mm)	(102)	(102)	(152)	(152)	(152)	(152)	(152)	(152)	(152)	(152)
PRESET RELEASE UP (Down =45% of up) MAX:	Lbs	40,000	40,000	90,000	90,000	90,000	90,000	90,000	95,000	100,000	100,000
	(daN)	(18 000)	(18 000)	(40 000)	(40 000)	(40 000)	(40 000)	(40 000)	(42 000)	(44 000)	(44 000)
	Lbs	55,000	55,000	140,000	140,000	140,000	140,000	140,000	150,000	155,000	155,000
	(daN)	(24 000)	(24 000)	(62 000)	(62 000)	(62 000)	(62 000)	(62 000)	(67 000)	(69 000)	(69 000)
MAXIMUM LOAD DURING HYDRAULIC DELAY	Lbs	85,000	75,000	160,000	160,000	180,000	190,000	190,000	220,000	250,000	250,000
	(daN)	(38 000)	(33 000)	(71 000)	(71 000)	(80 000)	(85 000)	(85 000)	(98 000)	(111 000)	(111 000)
MAXIMUM TENSILE LOAD AFTER JARRING	Lbs	416,000	354,000	755,000	755,000	865,000	825,000	828,000	965,000	1,225,000	1,225,000
	(daN)	(185 000)	(157 000)	(336 000)	(336 000)	(385 000)	(368 000)	(368 000)	(429 000)	(545 000)	(545 000)
MAX TORSIONAL LOAD	lb/ft	16,000	16,000	41,000	41,000	41,000	40,000	40,000	68,000	110,000	112,000
	(Nm)	(22 000)	(22 000)	(56 000)	(56 000)	(56 000)	(54 000)	(54 000)	(92 000)	(149 000)	(152 000)
PUMP OPEN AREA	Inch <sup>2</sup>	6.0	6.5	9.6	9.6	11.0	11.0	11.0	14.2	15.9	15.9
	(cm <sup>2</sup> )	(39)	(42)	(62)	(62)	(71)	(71)	(71)	(92)	(103)	(103)

Cathedral drilling jars are available in sizes ranging from 121 mm (4 3/4") to 241 mm (9 1/2"). Drilling jar latch settings can be preset to meet different drilling requirements.

