

OD in (mm)	4-3/4 (120.65)	6-1/4 (158.75)	8 (203.20)	11.25 (279.40)
ID in (mm)	2-1/16 (52.39)	2-1/4 (57.15)	3 (76.2)	3 (76.2)
Tool Joint Size (API)	3-1/2" IF	4-1/2" IF	6-5/8" REG	6-5/8" or 7-5/8" REG
Maximum Impact Strength lbf (mT)	450,000 (204)	850,000 (386)	1,200,000 (545)	3,000,000 (1,363)
Maximum Tensile Strength lbf (mT)	450,000 (204)	850,000 (386)	1,200,000 (545)	1,200,000 (545)
Impact Frequency Range (Hz)	0-16	0-16	0-16	0-16
Approximate Length ft(m)	40	40	40	40
Maximum Temperature f (C)	400 (204)	400 (204)	400 (204)	400 (204)
Circulation Pressure Psi (bar)	5000	5000	5000	5000

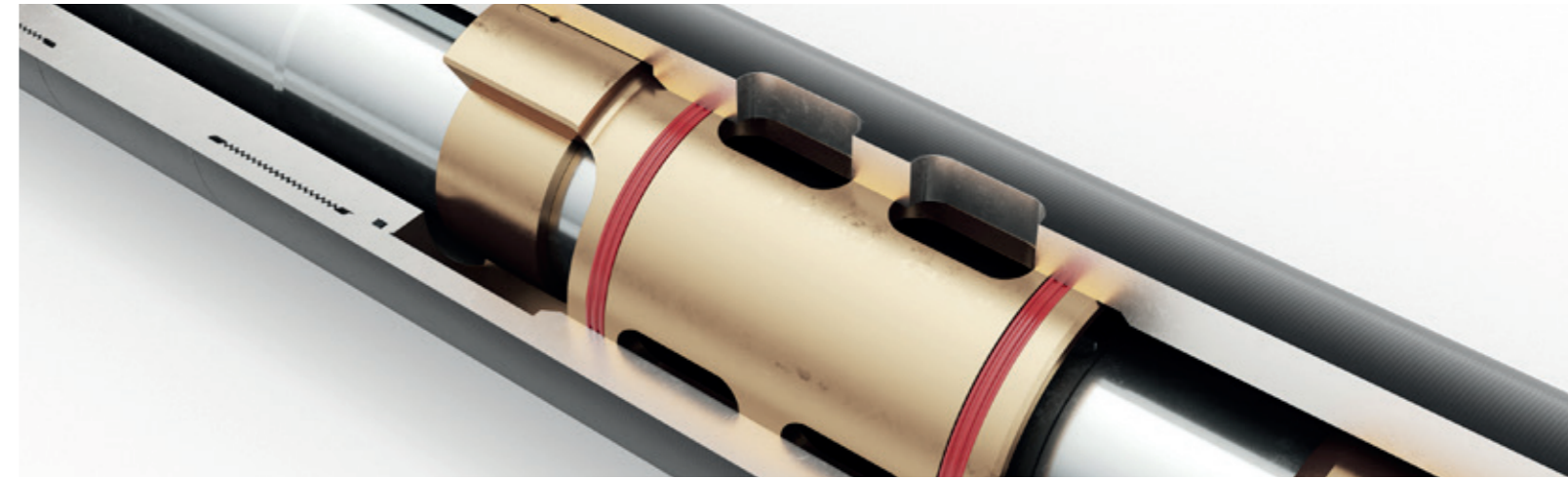
Specifications are for guidance only and are subject to change.

Technical Advantages

- **Intense axial impact and vibration = rapid bond-breaking and early release**
- **Reduced static friction = better weight transfer to the stuck point.**
- **Rotation and circulation = better wellbore condition**
- **No setting down to re-cock = continuous upward operation**
- **No accelerator or associated HWDP = no large swab or surge effect**
- **Versatile operation = ideal for both HWU and rig operations**
- **No recoil = kind to surface equipment.**
- **Shorter & lighter BHAs = reduced risk of stuck pipe incidents**
- **Improved drilling hydraulics = reduced swab and surge & lower ECD**

HydroVolve HAMMER

Universal stuck-object extraction system



HydroVolve HAMMER is the world's most powerful, most controllable and most versatile stuck-object extraction system. It is simple, rapid and robust and is operated and controlled instantly using only conventional rig systems.

It is the superior alternative to jars in the BHA for preventing and remedying stuck-pipe incidents, and is the ideal solution for fishing interventions and planned P&A operations.

HydroVolve HAMMER is powered by the HydroVolve INFINITY engine to generate and deliver intense vibration and rapid impact force to liberate stuck objects. It utilises the PolyVolve swivel to allow immense overpulls to be applied to stuck objects at the same time as delivering intense, high energy vibro-impact extraction forces. This combination is designed to deliver swift stuck object extraction thereby minimising downtime and increasing operational success.

HydroVolve HAMMER is recommended as a superior direct substitution for drilling jars in any Bottom Hole Assembly (BHA), and is especially suited to tophole applications, complex intermediate sections and complex 3D and/or extended reach drilling (ERD) applications. It is also designed to deliver the bond-breaking forces required to extract casing in P&A applications, where sticking due to cement or solid settlement is likely, and when used in fishing operations, it provides the ultimate control, flexibility and raw power required to ensure the highest chance of success.

Operator Benefits

- **Unimaginable extraction power on hand for planned and unplanned operations**
- **Full instantaneous, simple control of HAMMER force and speed from surface**
- **Instant and rapid activation where speed is the key to success**
- **Rapid intense action delivers friction reducing vibration and bond breaking axial impact**
- **Highest chance of recovery in stuck-pipe incidents when run in the BHA**
- **Superior alternative to drilling and fishing jars**
- **No surface recoil: ideal for shallow drilling, P&A and fishing operations**

Operating guide to use

HydroVolve HAMMER is a simple and robust system which requires only conventional rig systems to operate and control its function.

Hammer features three modes of operation.

1) 'Hibernate' mode

The HAMMER is locked in a hibernating MID-STROKE position allowing force and torque transmission through the tool.

2) 'HAMMER-Active' mode

The HAMMER is unlocked into the UP-STROKE position allowing overpull, rotation and impacting through the tool.

3) 'Down-jar' Mode

The HAMMER is unlocked into the DOWN-STROKE position following application of a sufficiently large triggering force to deliver a downward jarring impact.

Operation of the HAMMER is very simple:

1. Pull up to activate the HAMMER to disengage the drive splines and engage the PolyVolve swivel bearing.
2. Initiate drill pipe rotation at desired speed.
3. Pick up hook-load on the stuck object to the desired overpull.
4. Initiate flowrate to the desired rate/pressure to deliver the desired impact and vibration action.
5. Vary the rotational speed, overpull and pump rate and pressure to achieve the optimal extraction force and vibration regime for the application.

HydroVolve HAMMER is recommended as a superior direct substitution for drilling jars in any Bottom Hole Assembly (BHA), and is especially suited to Tophole applications, complex Intermediate Sections and complex 3D and/or Extended Reach Drilling (ERD) applications. It is also designed to deliver the bond-breaking forces required to extract casing in P&A applications, where sticking due to cement or solid settlement is likely, and when used in Fishing operations, it provides the ultimate control, flexibility and raw power required to ensure the highest chance of success.

Technical Features

