



Mechanically Expandable (MX) Ball Seat

Weatherford's mechanically expandable (MX) ball seat is used to activate hydraulic liner hangers, holddown subs, and running tools. Unlike conventional ball seats, the MX is not sheared out; rather, it is mechanically expanded by a special expander mandrel.

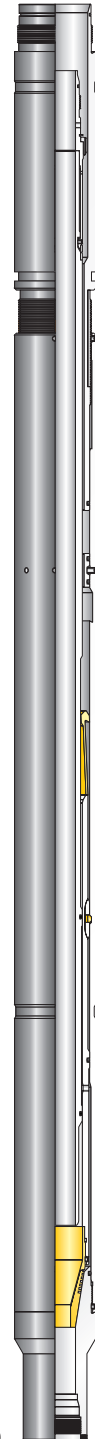
When a setting ball lands on the MX and seals, pressure can be applied against the supported MX ball seat to carry out necessary hydraulic events. Pressure is then reduced. The running tools, complete with the expander mandrel and the MX inner assembly, are picked up until the MX ball seat sleeve is locked into the outer joints. At this point, setting down weight on the MX expander mandrel through the running tools expands the ball seat, allowing the setting ball to travel to the landing collar or float equipment, as required.

Applications

- Liners installed in wells where it is necessary to protect formations from shock loading that can occur from shearing out ball seats
- Liners for which high pressures are needed to activate hydraulic liner hangers and running tools
- Liners that use auto-fill float equipment and/or Weatherford's MudMaster™ II guide shoe filtration system
- Liners for which other hydraulically activated equipment is located below the MX ball seat, such as Weatherford's BULLDOG™ ACP™ annulus casing packer, or hydraulic mid-string liner packers

Features, Advantages and Benefits

- The MX ball seat is expanded mechanically rather than sheared out hydraulically. This advantage protects the formations in the well from potentially damaging hydraulic shock and also simplifies the job planning process.
- Made of steel (rather than aluminum), the ball seat is resistant to erosion, allowing high circulation rates. Steel construction also gives the MX excellent sealing capability that is superior to that of ceramic ball seats.



US Patent: 6866100



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Features, Advantages and Benefits (continued)

- When expanded, the MX ball seat opens to the ID of the running tools, allowing all operations that can be performed with the running tool to be carried out.
- Location of the ball seat at the bottom of the running tools is more reliable than landing collar ball seats, minimizing the potential for nonproductive time.
- The MX ball seat is retrieved with the running tools; elimination of the need to drill out a ball seat reduces drill-out time.
- After it has been expelled from the MX, the ball can be used to activate auto-fill float equipment or to land in another ball seat below the MX ball seat. This advantage saves rig time, as no additional balls have to be dropped.
- After expansion the expander mandrel remains across the expanded ball seat, providing a smooth ID through which drillpipe darts can be pumped.

Specifications

Contact an authorized Weatherford representative.

Options

- Ball seats for the standard 6 5/8- to 11 3/4-in. (168- to 298-mm) assembly are available with 1 3/8-, 1 3/4-, and 2 1/8-in. setting balls.