



Friction reduction exactly when it helps — gone exactly when it hurts.

Auto-X is a fully mechanical, autonomous downhole tool. It delivers a strong oscillating signal pressure while sliding in the lateral, then automatically deactivates to a lower idle pressure the moment the string begins rotating — recovering vital horsepower for more efficient, more reliable operations.

350+ psi

lower standpipe pressure during rotation

~230 HP

recovered at the mud pumps for bit & motor

~250 gal

diesel saved per 20-hour rotating day

100%

mechanical — no electronics, no batteries

The Problem

Conventional friction reduction tools run continuously once activated — requiring 800 psi of standpipe pressure and consuming up to 525 pump HP whether the drillstring is sliding or rotating. *(HP calculated with 725 gpm, 11 ppg mud weight, 800 psi SPP load, and 85% pump mechanical efficiency)*

During rotation, continued excitation may not be needed: top-drive torque is already breaking string-to-wellbore friction. The result is wasted energy — and continuous axial vibration that works against downhole reliability and contributes to drilling dysfunction... **Auto-X applies excitation only when it pays off — during slides in the lateral.**

The Solution — Auto-X

SLIDING

in the lateral

When sliding in the lateral, a reciprocating valve generates a 400–800 psi oscillating signal between 10 – 20 Hz. This signal produces a corresponding motion in the drill pipe and any connected shock sub, breaking static friction along the string — **excitation only occurs while sliding in the lateral.**

ROTATING

string turning

During rotations, a valve repositions to dump a reference pressure — keeping the tool in its least restricted position and lowering standpipe pressure. When rotation stops, the valve again repositions and full excitation resumes — **no surface command, no ball drop, no electronics and no batteries.**

INCLINATION

awareness

Before the vertical-to-lateral transition (<70° inclination), a ball is held in a pocket below a dump port. Once the tool exceeds this inclination going into the lateral, the ball blocks that port, enabling autonomous switching between sliding and rotating modes. When inclination is less than 70°, the tool stays inactive except when surface testing with less than 1,500 psi — **the Auto-X tool only activates rotating in the lateral and for surface testing.**



The operator value case

Why Run Auto-X

- 1 More horsepower when you need it**
 Recover up to 230 pump HP during rotary drilling: headroom to extend lateral reach, increased ROP by delivering more hydraulic HP to the bit and mud motor, or run pumps at lower load to preserve fluid-end life and operate more efficiently. *(HP recovered calculated with 725 gpm, 11 ppg mud weight, 350 psi SPP reduction, and 85% pump mechanical efficiency)*
- 2 Improved downhole reliability and data transmission**
 Continuous axial vibration drives fatigue failures in MWD electronics, motors and threaded connections. Removing excitation during rotation eliminates unnecessary cyclic loading — and may help avoid bit bounce and stick-slip dysfunction. By removing the agitation pressure signal while rotating, **MWD tool mud pulse signals are cleaner** with fewer missed decodes and recycles.
- 3 Reduced surface equipment wear**
 Lower standpipe pressure during rotation means less mechanical wear on the mud pumps and longer intervals between swab and liner changes — less downtime, lower consumable spend.
- 4 Simple, robust mechanical design**
 Not a mud-motor-driven oscillating valve: no stator elastomer to chunk, no fragile specialty connections. Fully contained in a short collar with double-shouldered GPDS-55 (6¾") or XT-39 (5") connections.
- 5 Lower fuel burn & Scope 1 emissions**
 When the tool deactivates during rotation, its pressure drop goes down to a 150–250 psi idle pressure differential — typically reducing SPP by 350 psi, recovering up to 230 HP and saving up to 250 gallons of diesel per 20-hour rotating day, with proportional CO₂ and NOx cuts. *(Fuel savings calculated with 230 pump HP reduction at 5.5 gal/hr per 100 HP and assumed 20 hours of rotary drilling per day)*

The Bottom Line

Auto-X turns a continuously running power and reliability liability into a controlled, situational asset:

- **Up to 230 HP freed** for bit & motor hydraulics while rotating — faster ROP, longer reach
- **Reduced pump & consumables wear** — fewer swab and liner changes
- **Lower MWD, motor & connection failure rates** by eliminating unnecessary excitation induced vibration
- **Purely mechanical & autonomous** — no surface command, no ball drop, no electronics and no batteries
- **Cleaner mud-pulse signals** — reducing decoding-related NPT during rotation
- **Up to 250 gal/day of reduced pump fuel burn** — with matching Scope 1 emission cuts

CONFIGURATION & SPECS

- Tool sizes** — 6¾" and 5" collars - 15 ft long
- Connections** — GPDS-55 (6¾") · XT-39 (5")
- Sliding signal** — 400–800 psid @ ~10–20 Hz
- Idle pressure** — 150–250 psi (rotating)
- Activation** — autonomous, above ~70° inc.
- Reference case** — 725 gpm, 11 ppg mud

