

Accurate Measurement of Break Out Torque of Pressurized Valves

ACCURATELY MEASURING THE BREAK OUT TORQUE OF SEVERN GLOCON BALL VALVES

Severn Glocon Ball Valves

The Severn Glocon Group engineers and develops control and choke valves for use in the Oil and Gas industry.

Ball valves are subjected to high pressure as liquids pass through them, so safe operation when opening and closing them is critical. 'Breakout' or 'Break to Open' (BTO) torque is the torque required to unseat a closed valve. Identifying the correct BTO for a valve is important so that they can be operated optimally and safely.

Measuring BTO Torque

The valves used in the oil and mining industry are exposed to tough environmental conditions. As a result, the BTO value of a ball valve can increase over time due to corrosion. Being able to measure any change in the BTO over the life of a valve is important for Quality Assurance requirements.

To measure the BTO needed to open ball valves installed at various sites, the service technician was using a manual torque wrench rated to 1500+ Nm. It was set to a low torque setting, and then tested on the pressurised valve to see if the force was sufficient. This process was repeated, incrementally increasing the torque limit on the wrench to try and identify the approximate BTO of the valve. This method was unsuccessful because the breakout torque of the valve exceeded the capability of the torque wrench that they had on hand.

The manual effort required was also too great, limited by physical effort that a technician could reasonably achieve.

Eventually, in order to open the valve, high, unmeasured forces were being applied.

Engineering the Solution

The solution proposed by Norbar was an engineered-to-order (ETO) reaction arm, designed by the Norbar mechanical engineering team and manufactured locally.

The reaction arm was combined with the Norbar EvoTorque® Battery Tool EBT-80-2700, which includes inbuilt EvoLog reporting software.



Image: The EBT tool with logged data from the EvoLog logging and reporting software.

The Outcome

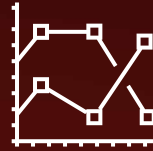
With the recommended solution, the measuring process is now as simple as pulling a trigger and letting the EBT identify the exact torque needed to open the valve. The data is logged by the EvoLog software, allowing the technician to check the data in real-time to see the forces needed to actuate the valve. The EvoLog software can subsequently output reports on-demand for Quality Assurance purposes.

The EvoLog data can also be used to measure the base torque reading of the valve when new. This allows the client to identify any defects in the valve over time by tracking changes in the torque required to open and close it.

The engineered-to-order reaction arm provides a safe reaction point that contains the minimum force of 1400 Nm needed to open the valve.

Key Benefits

- **Precision Measurement** — exact torque values can be applied and measured for optimal valve actuation.
- **Easy Accountability** — by tracking data, the client can provide consistent, accurate proof of work completed. Reports can be easily generated for Quality Assurance.
- **Ergonomic** — elimination of manual torquing. The EBT is comfortable and easy to use, effortlessly achieving the required BTO value.



**TRACKABLE
PERFORMANCE**



**ENGINEERED
TO ORDER**



**PRECISION
MEASUREMENT**



Image: The EBT-80-2700 tool with the engineered to order reaction arm in-situ on a Severn Glocon ball valve.

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› **EvoTorque® Battery Tool**

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