

Works with XDIAG, RODDIAG, XROD, RODSTAR, XSPOC, and other Wave Equation Computer Programs

You must use XBAL along with a wave equation diagnostic or predictive computer program to balance your unit. XBAL relies on the predictive or diagnostic software for torque and required maximum CBM calculations

Using XBAL with Diagnostic and Predictive Computer Programs

Modern diagnostic and predictive computer programs such as XDIAG, RODDIAG, RODSTAR, and XROD allow you to enter the existing counterbalance data so they can do torque analysis calculations. This determines whether the pumping unit is balanced, if the gearbox is overloaded, and the counterbalance moment or structural unbalance required to balance the unit.

A common way of getting existing counterbalance data is by recording the counterbalance effect (CBE) in the field, with a dynamometer system. This field measurement is time consuming and dangerous if you have to chain the polished rod.

XBAL eliminates the need for a CBE field measurement. You can simply select the cranks or beam and counterweights you have, and their positions. From this information, XBAL calculates the existing counterbalance moment or structural unbalance. This value can then be transferred to a wave equation program to find out if the gearbox is overloaded or if the unit is out of balance.

Both diagnostic and predictive programs calculate the maximum counterbalance moment required to balance the unit. Up to now, this information was not easy to use. With XBAL you can enter the maximum counterbalance moment you need and it will tell you where to move the counterweights. For crank balanced units, XBAL calculates several combinations of counterweight positions that will balance the unit. XBAL may recommend moving only two, or all four depending on the existing

counterweight positions. Also, XBAL advises you whether you need to add or remove counterweights, how close you can get to balancing the unit with your existing counterweights, etc. XBAL works the same way with beam balanced units. Using the required structural unbalance to balance the unit, XBAL calculates the exact beam counterweight position and will recommend to add or remove counterweights if necessary.

Pumping Units Supported

XBAL contains crank and counterweight data for the following pumping units: American: Conventional, Maximizer, Maximizer II, Producer, Producer II, Lufkin: Conventional, Mark II, Reverse Mark, Mobile (Roadrunner), and Low Profile, LS/Darco, Ampscot, Legrand, National, Oilwell, and Torqmaster. XBAL also contains data for Churchill, Sentry, and Jensen beam balanced units.

Outstanding Technical Support

Theta Oilfield Services is dedicated to your satisfaction. Our technical support, which is free for the first year, includes an e-mailed newsletter, podcasts, upgrades, "bug" fixes and immediate response to problems or questions. Program upgrades can be downloaded directly from our web site. When you have a problem, solving it becomes our highest priority.

System Requirements

Processor:

- 1.6 GHz or higher

Operating System:

- Windows XP/Vista/7

Memory:

- 1 GB of RAM or higher

Hard Disk:

- 125 MB available disk space

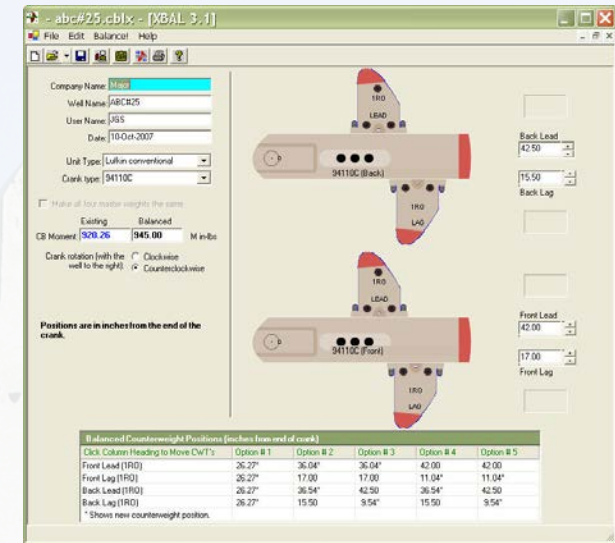
Display:

- 1024 x 768 or higher

30 Day Trial

Please contact Theta Oilfield Services for a 30 day trial of XBAL. (USA and Canada only)

XBAL™



Computer Assisted Expert Balancing for Beam Pumping Units

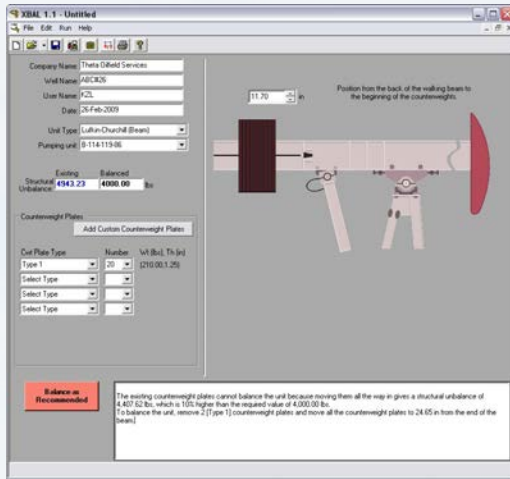


Unlimited
Petroleum
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Your Artificial Lift Experts

The Easy, Accurate, Fast, and Safe Way to Balance Pumping Units

Are you spending a lot of money and time balancing pumping units? Do you want to minimize the time and expense required? Do you want to eliminate the field measurement of counterbalance effect? Do you want to eliminate the risk of injury when chaining off the unit? If the answer to any of these questions is yes, then XBAL for Windows is the tool you need.



XBAL does the following:

1. It allows you to get your existing maximum counterbalance moment (or structural unbalance for beam balanced units) without a field measurement.
2. It calculates the counterweight positions required to balance the unit in one step.
3. It recommends weights that will work if the existing weights cannot balance the unit.

XBAL contains a large database of cranks, beams, and counterweights for most common units and expert knowledge about how to balance units. XBAL can quickly and accurately calculate the existing maximum counterbalance moment or structural unbalance. Also, it shows expert balancing recommendations for where to move the weights (all possible position combinations for crank balanced units). This allows you to balance the unit in one step to minimize torque, energy consumption, or both. This saves you a lot of time and allows you to apply the results of XROD, RODSTAR, RODDIAG, and

XDIAG faster than ever before.

XBAL Expert Balancing versus the Old-Fashion Amp Plot

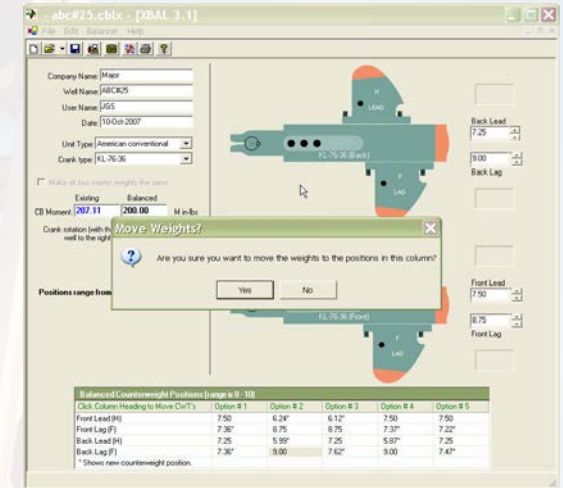
In the past, pumping unit balancing had been done with the trial and error approach using an amp meter. This method is based on the principle that the current drawn by the motor is proportional to motor torque. If the peak amps drawn by the motor on the upstroke equals the peak amps drawn on the downstroke, then the unit is considered to be balanced. **This method has the following disadvantages that XBAL eliminates:**

1. **It is time consuming.** To balance the unit you may have to move the weights several times. This may take from 30 minutes to three hours depending on the size and age of the unit. Also, it depends on the experience of the crew doing the work. The time required to balance the unit may be even longer if you find that you need to add or remove counterweights.
2. **The trial and error approach is inaccurate** because in many cases you balance the unit for the wrong fluid level. This occurs because, to move the counterweights, you must turn the unit off. While the unit is off, the fluid level in the annulus rises and you end up balancing the unit for the wrong fluid level.
3. **The trial and error approach is dangerous.** Since you have to move large counterweights several times, you are increasing the risk of injury. This is especially true if you have to remove or add counterweights.

XBAL for Windows allows you to figure out exactly what you need to do to balance the unit before you do any unnecessary field work.



For those familiar with our Seven-Step Optimization process, XBAL makes doing step 7 very easy. To set the counterweights to a recommended position, simply click the header of the configuration you would like to implement (crank balanced) or click the “Balanced as Recommended” button (beam balanced).



Easy to Use, Unique Visual Interface

XBAL has a realistic visual interface that allows you to run it without ever reading the manual. XBAL for Windows displays a picture of the cranks or beam, and counterweights. To select a crank type or beam, you right-click on the image or select it from a drop down menu. To select a counterweight, you right-click on its picture. To specify weight positions, you can click and “drag” the counterweight to the position you want. As you are moving the counterweights, the existing maximum counterbalance moment or structural unbalance value updates dynamically.

Context Sensitive Help

While operating XBAL for Windows, help is only one keystroke away. If you have any questions about any of the input fields, simply press **F1** while in that field. Or, you can get more general help by clicking the help icon on the toolbar. The toolbar provides you with the most common program functions such as opening and saving files, printing, help, etc.