

WELCOME

LaserAlignment.Net

## Laser Tip of the Month



Norm Voelzow

### #2. Bolt Bound or Shim Bound Correction

Question: From Steven Michel in North Carolina:

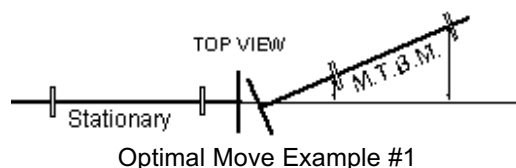
“What is the best way to fix a bolt bound application,”

Answer: There are several ways to fix a bolt bound piece of equipment, some are good choices and others not as good. Many drill out the Motor feet but when the motor is changed you are back with the same problem! Others turn or grind down the bolts - many times getting carried away and weakening the bolts which can cause a serious problem later.

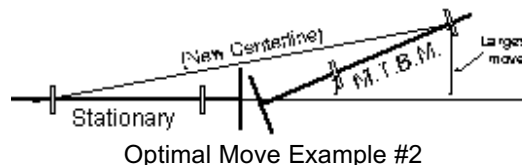
Experienced Millwrights will roll the motor which is basically a quick fix but if rolled excessively can cause another problem - soft foot! Of course the ideal solution would be to set the equipment in the right place when it is installed but many factors can prevent this.

Lets take a look at doing an Optimal Move which can work well for both bolt bound and shim bound equipment. But, keep in mind that I didn't say it would always work!

So you're bolt bound and you have to drill out the feet of the motor — HOLD EVERYTHING! You might be able to correct the problem with an Optimal Move. Take a piece of paper and draw the M.T.B.M. (Motor) and the Stationary (Pump, Gearbox, etc.) machine centerlines (Top View) with couplings as we have shown here in Example #1. You don't have to get fancy — just make a simple line drawing. It helps if it is to scale!

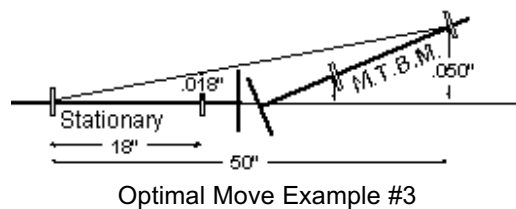


Now draw a line from the back foot of the Stationary machine to the bolt-bound (or Shim-bound) foot of the M.T.B.M. (in this Example #2 - the back foot). Notice the triangle made by this line you have drawn — this is our new a centerline. What we are going to do is put the front feet of both machines on this new centerline!



Now take the bolt bound (or shim bound) move and divide it by the back foot to back foot dimension. Next multiply that answer by the Stationary back to front foot dimension. The result is the correction you need to make on the Stationary machines front foot. Now don't be skeptical — many times we can pivot the pump! Next, we move the M.T.B.M. to the new centerline. Note: This may not be possible all the time but you will be very surprised how often it will work.

In Example #3 the back foot of the M.T.B.M. has to move .050" but is bolt bound. The dimension between the back feet of both machines is 50". The dimension from the back to front feet on the Stationary is 18".



When we divide the .050" correction by the dimension between the back feet of both machines of 50" — we get .001"/inch. Multiply that by the back to front foot of the Stat machine and we get an .018" correction. (Rise over Run)

Stationary move on front foot =  $.050"/50" \times 18" = .018"$

Now carefully pivot the Stationary machine towards the new centerline .018" as we have already done in Example #4. Important: Do not loosen the pivoting back foot during this procedure.



Optimal Move Example #4

Now take another set of measurements with your Optalign® IR or Optalign® V (see note at bottom) and you should be able to do the remaining correction illustrated in Example #4.

You can also use the same concept when you can not lower the M.T.B.M. (MOTOR)! This may not work out on your particular problem but going through this exercise may help you on another similar problem — and besides it was fun!

Look at doing an Optimal Move the next time you are bolt bound or shim bound. When someone tells you that you can't move the pump, gearbox or whatever - tell them that the Cape Hatteras Lighthouse in North Carolina was moved 1,800 feet on sand.

Note: The Static Feet feature for bolt bound or shim bound equipment is built into every Rotalign®, Rotalign® Pro, smartALIGN®, smartSCANNER® and Optalign® Plus Laser Shaft Alignment system. These systems are programmed to do all the math for you - all you do is select the feet that you want to leave stationary!

Have a Great Day!

Norm Voelzow • Voelzow & Company, Inc,

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Thanks - Norm

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*Voelzow & Company, Inc.* 

P.O. Box 0158 • Wingate, NC 28174

704-233-9222 • Fax 704-233-9211

E-mail: voelzow@perigee.net

Web: www.LaserAlignment.net