

# Wire Straightening : Back to the Basics

We are regularly confronted with issues related to the manufacture of small wire components that, more often than not, are a direct result of the wire not being straight enough prior to the forming operation. As a matter of fact, this was the driving force that led Novo into the development of our standard line of TAK Precision Wire Straighteners (PWS) in 1981. Being unable to find an off-the-shelf wire straightener that had the precision and features necessary to satisfy a demanding wire application we were tooling, it required that we design and build one for the job. As our customers saw the unit in operation, more and more of them insisted that we make them one. The rest is history, as they say, and resulted in our first standard product line.

What makes our Precision Wire Straighteners unique, you ask?

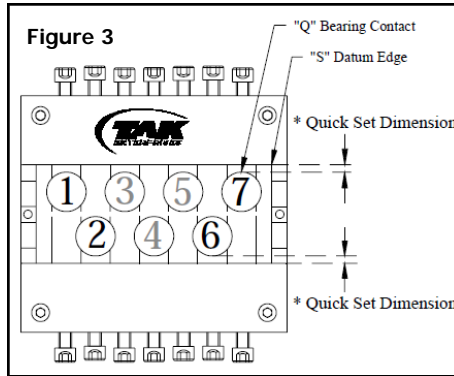
The center to center distances on our bearings are the closest on the market. This feature, coupled with the smaller diameter bearings we incorporate means that our PWS reacts to fine adjustments more aggressively. Typically, a .001" adjustment on our bearing setting will have an effect on the wire.

The 120° "V" groove we utilize (Fig. 1) is precision ground into each bearing. If the groove-to-ID concentricity is not held, the straightening results will not be consistent. Thus, inferior bearings will not work in a TAK PWS. When dealing with softer materials or tubing where the minimization of marking or deformation of the OD is critical, the precision bearings can be ground with a radius to match the wire diameter. (Fig. 2) Note that this makes the bearings specific to that particular wire diameter.

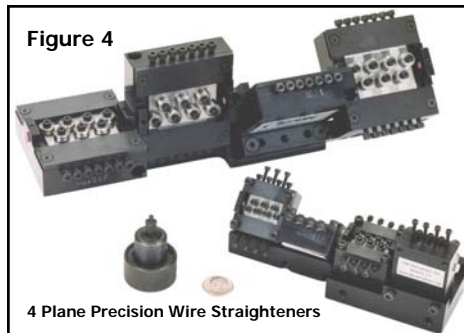
The "Q" Bearing Contact and "S" Datum Edge (Fig. 3) are precision surfaces. The dimension used for a specific set up can be accurately recorded and repeated for subsequent set ups. This can take much of the guess work out of straightener set up. We all know that variations from lot to lot in wire runs will affect the straightener settings. The recorded dimensions will get you back in the "ballpark" much faster, and allow the operator to concentrate on fine

tuning the adjustments as required.

For optimum straightening results, we always recommend our 4 plane configuration. (Fig. 4) This set up provides for controlling the wire from eight different directions, and can be useful for situations where the wire supplied has a high degree of helix present. What if you already have a TAK 2 plane PWS? Not to worry. You can purchase a standard adaptor bracket to convert your 2 plane over to the standard 4 plane configuration. With each PWS we ship, a comprehensive manual is included. In this manual, our recommend-



ed settings for specific wire diameters are indicated. We start with a "QS", or Quick Set dimension, which is the dimension to set the lead-in bearings at the point that they just make contact with the wire. From there, setting dimensions for percentages of wire break on the remainder of the bearings are listed. Click on the link at the bottom of this page in the blue box which will bring you to the standard TAK PWS



**Instruction Manual.** You can also go to our website homepage and navigate to the same manual by clicking on "Resources", then go to the "Download Center" link, scroll down to the

"Manuals" heading, and click on "Series #0-#5 Instructions", and you will be linked to the manual (Fig. 5).

In the manual you will find the suggested and proven method we developed for setting up a TAK PWS that can be applied to most wire types. It should be noted that other set-up processes and methods have been used that prove to be just as effective, however we find that starting with the process outlined in the manual will generally provide acceptable results.

We are always receptive to feedback concerning successes (and failures) of those using our products. What better way to make improvements than by utilizing input from hands-on

**Figure 5**

**TAK**  
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**TAK Series #0 thru #05 Unibody  
PRECISION WIRE STRAIGHTENER**

INSTRUCTIONS FOR USE  
WITH TAK TORQUE TOOL  
Revision 01/03/2006

TAK Enterprises Incorporated  
70 Enterprise Drive • Bristol, CT 06010-7400  
Ph. (860) 583-0517 • Fax (860) 585-0479

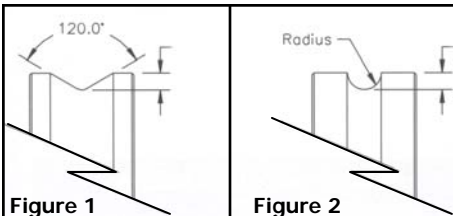
experiences? Drop us a note describing your trials and tribulations. We'll put it to good use.

Contact us at the following email addresses:

[sgriffing@novoprecision.com](mailto:sgriffing@novoprecision.com)

Or, click here to link to our website:

<http://www.novoprecision.com/>



[http://www.novoprecision.com/Customer-Content/www/products/Files/PWS-0-05\\_Instructions.pdf](http://www.novoprecision.com/Customer-Content/www/products/Files/PWS-0-05_Instructions.pdf)

-Click on the link above to navigate directly to the TAK PWS Instruction Manual-

# TAK Precision Wire Straightener Set-Up Data Form

## Precision Wire Straightener Set-up Data Form

Settings for size \_\_\_\_\_PWS

NOTE: All planes are shown facing position for ease of documentation.

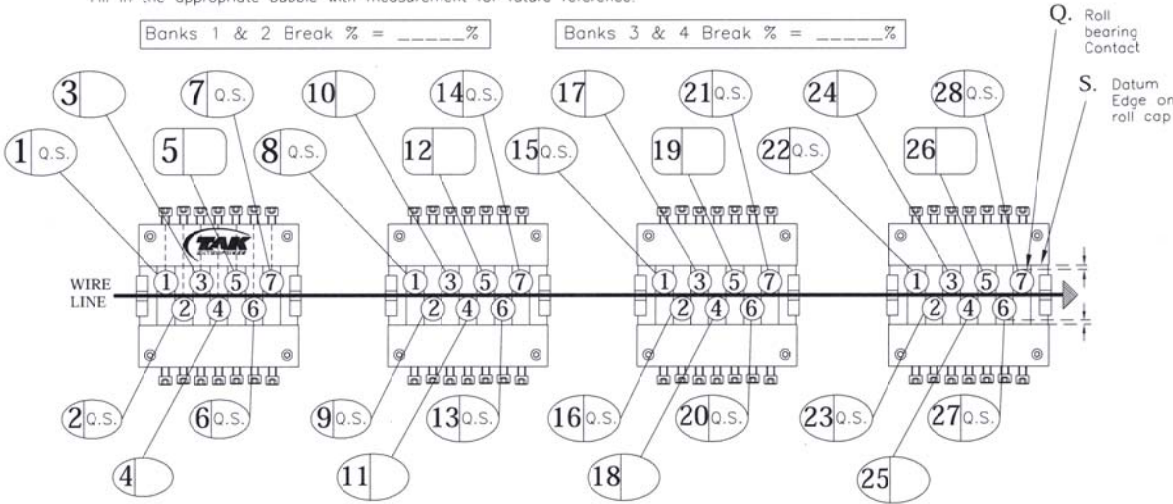
Whether the side with 4 bearings are on top or bottom has no effect on the setting or recording of positions.

Directions: Using a gauge block, take the measurement from the datum edge (S) to point (Q) of each bearing.

Fill in the appropriate bubble with measurement for future reference.

Banks 1 & 2 Break % = \_\_\_\_\_%

Banks 3 & 4 Break % = \_\_\_\_\_%



Wire Type: \_\_\_\_\_ Actual Size: \_\_\_\_\_ Tolerance: + \_\_\_\_\_ - \_\_\_\_\_ Q.S.: \_\_\_\_\_

Source: \_\_\_\_\_ Lot: \_\_\_\_\_ Finish: \_\_\_\_\_ Coil Size: ID \_\_\_\_\_ OD \_\_\_\_\_

To the left is our Precision Wire Straightener Set-Up Data Form. (This form can be found on page 8 of the TAK PWS Instruction Manual) This set-up chart can be very helpful when multiple wire diameter and/or material set-ups are required for the same straightener. By recording the bearing settings for each position that are successful for a particular application, the operator can easily re-set the bearing locations to the previous settings. As we all know, variations from coil to coil on the same wire will usually dictate slightly different settings to obtain the straightness desired, however this method will at least get the straightener back to a set-up that will be close, and require only minor tweaking.

If you have a particular application that you are having issues with, drop us a note and we will be happy to share our experiences with any similar applications we have experienced.

**For more information contact us at**  
<http://www.novoprecision.com/>