



TAK Series 00
PRECISION WIRE STRAIGHTENER
INSTRUCTIONS FOR USE
WITH TAK TORQUE TOOL

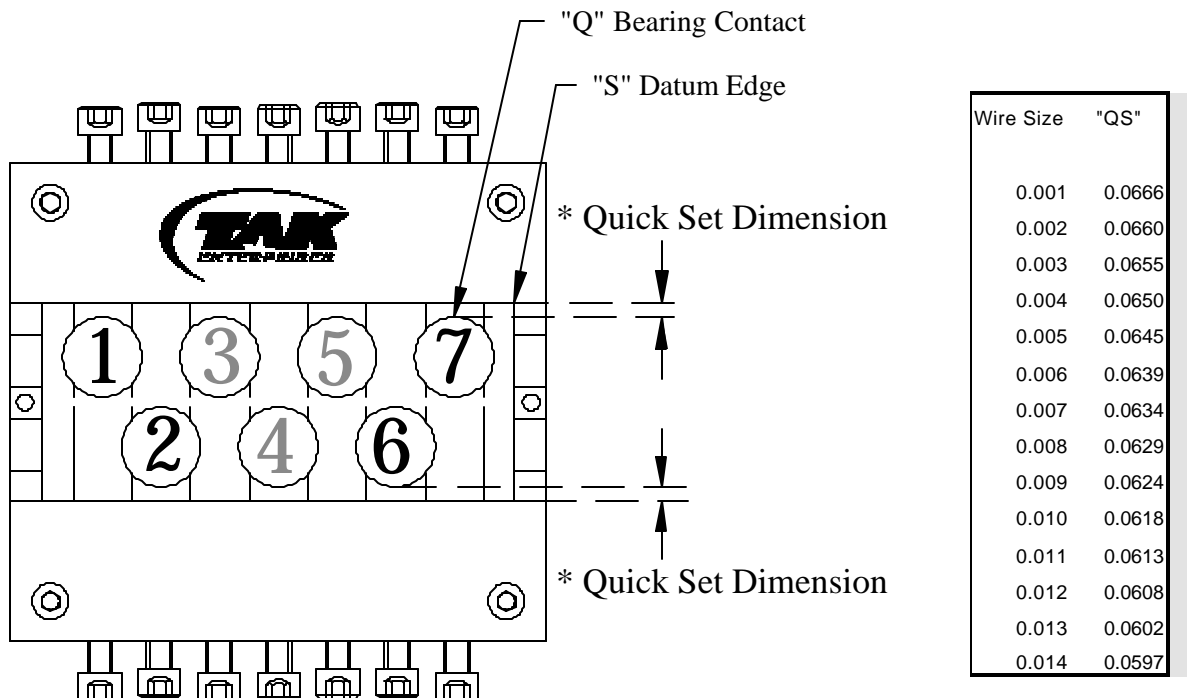
Revision 8/2000

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Standard Quick Setting Instructions

This page may be reduced and put in plastic protector at machine for reference.
(See detail setup on page 1)

1. Insert wire through middle of guides and bearings adjusted to just turning. Be sure the wire is through the center of the guides.
 2. Do not adjust bearings 1 or 2 any further for this wire size.
 3. Now adjust bearings 3, 4 and 5 in about 1/3 of the diameter size.
 4. Adjust bearing 6 until wire is about straight while backing off 7 to keep the wire passing through middle of guide.
 5. Now adjust bearing 5 until you acquire the desired straightness.
 6. If 5 does not allow you to control the wire in both directions, proceed to step 7.
 7. Adjust both bearings 4 and 5 a slight amount inward. Move them together the same distance without changing their distance from each other.
 8. Return to step 4 then 5 and re-test for control in both directions with bearing 5. If you still cannot control both directions, return to step 7 and test for the right amount to move both bearings 4 and 5. Also try moving them the opposite direction if unsuccessful with prior direction.
- Use an inside micrometer or gage blocks to "Quick Set" your TAK PWS for the wire diameter to be straightened. This will automatically put the wire at the PWS's center.**



TAK PRECISION WIRE STRAIGHTENER **DETAILED INSTRUCTIONS**

***REMEMBER:
SAFETY FIRST ALWAYS!***

Before working with your TAK product, please observe all safety precautions with the use of wire and machinery. DO NOT HANDLE WIRE AROUND EXPOSED ELECTRICAL WIRES OR CIRCUITS. Be careful when working near fellow employees. Make sure machinery is off.

PREPARATION:

Mount the wire straightener between the machine and the wire coil. The PWS may be mounted for a feed from the left or right, with the first or initial bank, called bank 1, either horizontal or vertical as required. For example, if the axle for the wire coil is vertical, the first bank of the straightener should be mounted with the axles of the straightener bearings vertical also. Bank 1 is easily identified by the funnel shaped wire lead-in hole where the wire enters the wire guide. As a reference, the last bank has a funnel shaped hold in its wire guide, facing the bearings in a lead-out position. The wire straightener should be fastened securely to the machine. Support on the opposite end is recommended for larger size PWS'S, or when machine mounting alone is deemed inadequate. When mounting, keep in mind it will be necessary to remove banks 3 and 4 as a unit on a 4 plane PWS as part of the set-up procedure.

When aligning for mounting, make sure the guides are level and in line with the machine feed wire line. This is very important to avoid variation in feeding or straightness.

Do not attach or allow anything to touch the wire in its path between the PWS and the feed mechanism other than a support in longer feeds.

DETAILED SETUP PROCEDURE

(see separate page for Quick Setting Instructions)

- 1) Hand straighten a piece of the wire to be used (approximately 12 inches long) to use for setup.
- 2) Back off the bearings where necessary so that the setup wire can pass through the wire guides at both ends of bank 1 and bank 4 in a gun sight line without interference.

Please Read

For the following procedures, when referring to bearing adjustments, always use both opposing screws. This means that when you are backing off on one, you must bring in the opposing screw snugly against the other. In every adjustment, you must complete it by snugging the opposing screw before testing. When you have completed your setup, absolutely no screws should be loose.

Warning, Do Not Over Tighten Any Screws. This will cause permanent damage to the threads and will not allow for screw removal should it become necessary.

- 3) (BANK 1) With the setup wire in place, adjust bearing 1 so that it just touches the wire. Make sure the wire remains in the center position of the guide hole.
- 4) Adjust bearings 3, 5 and 7 to be parallel with bearing 1 and to each other. (a straight edge may be used to check alignment). Make sure that when they are parallel and aim directly to the next bearing or guide hole. If the bearings are not parallel and straight they will have an indirect effect to the following procedure.
- 5) Adjust bearing 2 in very carefully, while moving the setup wire in and out through the guides until bearings 1, 2, and 3 just begin to turn together. Lock these three bearings in place with the opposing screws. (NOTE: When locking, take care not to over tighten. These screws are only to keep the working screws from changing due to vibration, they are not to be cranked in harshly.) Check that they will still roll when pushing the test wire back and forth. If necessary, readjust as previously described. **DO NOT ADJUST BEARING 1 AND 2 ANY MORE DURING THIS WIRE SIZE SET UP.** Remember at this point the wire must be in the center of the guide hole, if not, reset as previously described.
- 6) Adjust bearing 4 and then bearing 6 to the same as described in step 5 so they roll when moving the wire back and forth.
- 7) Starting with BANK 2, adjust bearing 1 the same as described in step 3 but use the position of the 7th bearing in the last bank to align with instead of the guide. It is important that the wire is in gun sight with the previous bank and to the next.
- 8) Repeat the same procedure as described in steps 3, 4, 5 and 6 when setting up bank 3 and 4.

STRAIGHTENING ADJUSTMENTS:

This section of procedure varies depending on many factors including, but not limited to: size, consistency, tensile strength, hardness, surface, coil diameter, cast and cleanliness and condition of the material to be straightened. The procedure is a rule of thumb method proven to give the most consistency for the best results.

Don't be concerned with bank 2 at this time, it will not have an effect other than just guiding the wire at this time.

- 1) Rotate bank 3 & 4 out of the wire line in one piece by loosening one screw on the adapter plate and removing the other.

MAKE THE FOLLOWING ADJUSTMENTS WITHOUT WIRE IN THE PWS:

- 2) Start with BANK 1 adjust bearing 3, 4 and 5 in approximately 1/4 of the diameter for mild material or 1/3 the diameter for moderately hard material. This varies depending on your straightness requirement and the material condition. With first time users, always start with very mild adjustments and advance only if you don't get satisfactory results. We strongly suggest to use lighter adjustments than normally used on conventional straighteners.

AT THIS POINT YOU MAY INSERT THE WIRE TO BE STRAIGHTENED THROUGH ONE BANK ONLY:

- 3) Insert the wire through BANK 1. Back off roll 7 as necessary so that the wire is directed straight towards bearing 1 of the next bank or in the center of the next ceramic guide. Note: If the screws do not have markings on the heads, you need to mark them with a small dot of paint before proceeding. The marks are for a visual reference to rotation used in the following steps.
- 4) At this point you are ready to adjust for straightness, starting with bearing 6. Before making an adjustment, look at the direction the wire is coming out of that bank. (1) With a visual reference look at the position of the adjustment screw (use paint dot for reference) for bearing 6. Adjust with to that reference, such as one eighth turn. You now should see the effect on the wire as you pull it through. (Be careful that when pulling the wire through for testing that you put it straight and smoothly. If not, you may get a false result of your adjustment and may spend much wasted time as a result.) Adjust, pull and repeat until the wire is fairly straight in this plane. Back off bearing 7 as necessary so that the wire is directed to bearing 1 of the next bank or to the center of the exiting guide during each adjustment. When you feel you can steer the wire in both directions with bearing 6 and you have it about in the middle, your basic setup is complete. Next move back to bearing 5. Bearing #5 is used to make all fine adjustments from this point forward. Do not go back and adjust any other bearing again while using this specific wire. You need only to maintain the direction, should it change, by making very, very, slight adjustments to bearing 5. If

your last adjustments made the wire go in the wrong direction, turn the screw back to its original position. Then, move it with a visual reference in the opposite direction and turn in the opposing screw until snug. It is best to make your first adjustment severe to find the effect. As a reminder, make an arrow with a felt tip pen on the face plate next to bearing 5 pointing the way it sends the wire. You now can adjust with very delicate moves to acquire straightness in plane 1.

- 5) Proceed to bank 2 following the same procedures in steps 2, 3, and 4 until straightness in both planes meets your requirement. The straightness may not maintain through production unless the next two planes are added for 8 point contact.
- 6) Reassemble the unit consisting of bank 3 and 4 to 1 and 2 before proceeding.
- 7) Insert the wire through the entire PWS. The wire should still be relatively straight. Now return to the preceding steps 2 through 5 and follow the same as described above. This step may sometimes cause confusion due to the wire not reacting in a logical direction of adjustment. With the use of a permanent black marker, you can mark the wire on one side before entering the straightener for a reference to direction when it is pulled through. After pulling the wire through, you lay it down on a flat surface, you can look for your black mark. Now see what direction the arc is related to the mark. You can now make a logical adjustment at the proper bank for correction. This method will allow you to see the reaction to each adjustment you make on the 5th bearing in the appropriate bank.

REMEMBER, ONLY USE BEARING 5 FOR ADJUSTING STRAIGHTNESS. BEARING 7 IS ONLY FOR DIRECTING THE WIRE TOWARDS THE NEXT EXIT GUIDE OR BEARING. DO NOT USE BEARING 7 TO CONTROL STRAIGHTNESS EVEN THOUGH IT MAY APPEAR TO CHANGE THE WIRE DIRECTION.

Once the initial setup has been completed, very small adjustments will be required to maintain straightness as long as the condition of the wire remains consistent. Proper and efficient use of the **TAK PRECISION WIRE STRAIGHTENER** is learned through experience. These operating instructions are meant as a guide. Many customers have developed their own procedures with equal success. Keep in mind that this is a precision unit and must be treated with care. Use proper tools when setting up the unit or attaching to other equipment.

NOTE: Grit, generated during the wire manufacturing process, may contribute to premature bearing wear. Also, some lubricants or conditions of extreme heat can cause damage to the bearings. When this happens the bearing becomes stiff and cannot turn freely. A rigid bearing will cause the wire to skid in the wire groove, wearing in one spot and creating a flat.

Once a flat is embedded into the groove, the bearing becomes inoperative, which can mark the material, cause it to lock up, or crack the bearing. At this point, our design is ineffectual. To prevent this problem **MAKE SURE ALL OF YOUR BEARINGS ARE TURNING.** Each bearing is marked with a white paint dot, to assist you in determining motion.

While pulling wire thru, if all bearings are rotating, you have no problem.

If any are not turning:

1. Check the set-up instructions. Make sure the bearings are touching the wire. The material controls the rotation of the bearing and if it is not touching, the bearing cannot move.
2. If the bearing is touching the material and still doesn't rotate, check that the bearing attaching screw isn't over tightened. If the screw is tightened correctly, remove and replace the bearing immediately.

CAUTION: Never use your finger to rotate bearing during operation. Feed must be off prior to touching bearing.

TAK offers Shielded 440 Stainless Steel bearings to suit most of your environments.

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*Please be aware that the use of **non-TAK replacement parts** for your TAK Precision Wire Straightener can result in:*

- *Split bearings*
- *Marks on soft materials*
- *Damage to plating on material*
- *Non-repeatable set-up (as designed)*
- *Pre-set characteristics ineffective*
- *Record congruity characteristics ineffective*

The TAK PWS's are designed with all features and dimensional tolerances being coordinated for its full functional capabilities. The TAK Straightener will not perform as advertised unless each detail is within the TAK design perimeters with absolute consistency required for dependable and consistent results.