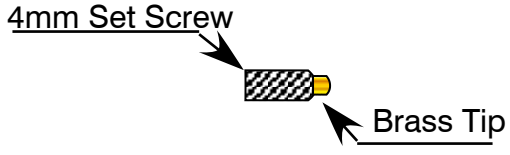
**Important: PrecisionMotorWorks is supplying only the UNIVERSAL style T/REDS™ to be used on all series Otari MTR-90's & MTR-100's**

The UNIVERSAL style roller is an exact replacement for rollers found on the MTR-90 mkIII and the MTR-100. (also on some late MTR-90 mkII's - Q-LOT and later). By following the instructions below, you will successfully install your new rollers on any series Otari MTR-90 or MTR-100. If you are unsure about the installation or if you experience difficulty, please contact us!

**Note: Our rollers are now supplied with brass tipped set screws.**

When the set screw and flat do not align, a brass tip is required! When mounting the UNIVERSAL roller on a STANDARD shaft, the brass tip is used to avoid damaging the steel shaft. Such damage would make it extremely difficult to later remove the roller.

When mounting the universal roller on a universal shaft, the brass tip may be used to lock on the flats, or the rollers may be rotated to optimize flutter performance.

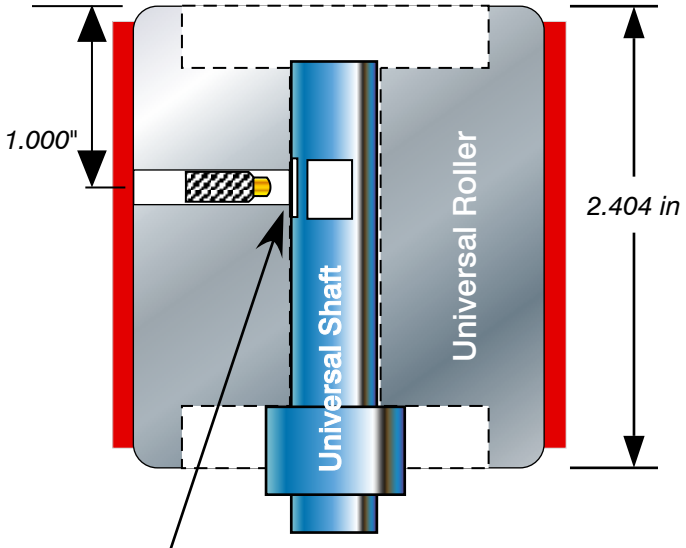



## To install your Universal Rollers - on any shaft.

1. Make sure the brass tipped set screws are fully retracted. Place the roller over the shaft. Note the orientation of the set screw flats and set screw holes. Rotate to align these.
2. Push down on the metal edge of the roller only (not the elastomer) until bottomed.
3. Once fully seated and properly aligned, tighten the set screws equally - moving from one to the other until equal torque is applied to both set screws.
4. If at any time, you must remove the rollers, NEVER lift up by pulling on the elastomer covering.
5. Note: The brass tipped set screws will lock your rollers to the shafts whether or not they are on the "flats". The brass tips will not create burrs or damage the shafts.

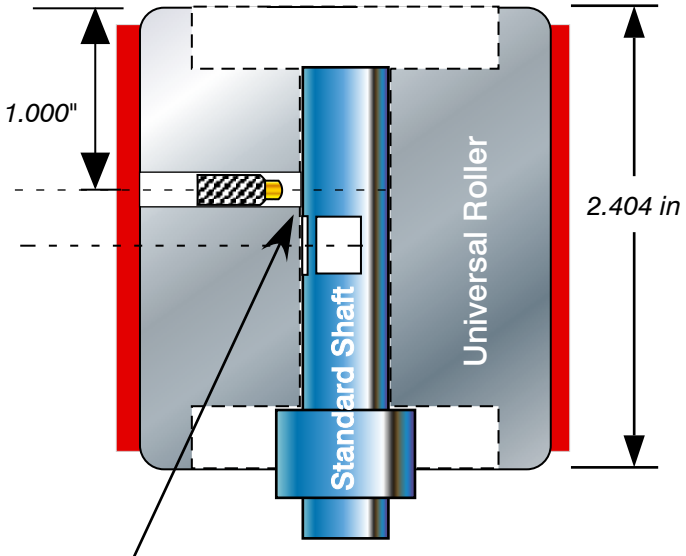
**T/REDS rollers may be safely installed & rotated on any shaft to optimize flutter performance.**

### Universal Roller on Universal Shaft




When fully seated the Set screws and flats will perfectly align.

### Universal Roller on Standard Shaft




Shaft shown with roller fully seated.
Set screws and flats do not align. **No Worry!**

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# Important Installation Tips

## T/REDS™ - High performance Capstan & Tacho Rollers for 1" & 2" analog & digital tape recorders

If you are unable to remove your old rollers, we strongly urge you to call us. Never LIFT UP ON YOUR CAPSTAN ROLLER with a lot of force - YOU WILL DAMAGE THE OPTICAL ENCODER INSIDE THE MOTOR. Do not place your new rollers on damaged, rusted or corroded shafts. To avoid serious damage to your capstan motor, a stuck roller may require a "bearing puller" for removal.

1. If the rollers you are replacing are easily removed from their shafts... Installation of the new T/REDS should be a simple matter. Please read below:

After removing your old rollers, please carefully examine the shafts for signs of corrosion and/or rust. The T/REDS rollers are carefully made and are designed to fit on the 12MM shafts with a snug "sliding fit". As the tolerances are controlled to within .0002", the ease of this fit assumes that your shafts are not corroded or scored. If your shafts appear in good condition, we recommend that you wipe the shafts clean with a paper towel or cloth moistened with a de-greasing agent, and then immediately apply a very thin coating of light grease. Important: Be careful to avoid dripping liquid into bearings.

Your new T/REDS should ideally be above room temperature at the time of installation - definitely **not** cold. Allowing them to warm for 10-20 minutes near an incandescent light source or radiator is a good idea. Warming them up will expand the aluminum hub and facilitate installation. Do not allow T/REDS to become hot.

If at anytime in the installation process, you must remove the new T/REDS, lift them off only by placing your fingers under the aluminum hub. DO NOT lift them by grabbing hold of the red elastomer. Doing so may deform the material creating a possible "out of round" condition.

2. If you have difficulty removing your old rollers...

This could be an indication of badly corroded shafts and/or scoring. Note: you may want to consider giving us a call. Assuming that you are able to remove the old rollers, albeit with difficulty, you may need to prepare the shafts by cleaning or lightly "de-burring" to accept the T/REDS. "De-burring" can be accomplished with a bit of fine crocus cloth or Cratex, an impregnated rubber product commonly found in machine shops. Both of these are polishing agents and will have virtually no effect on the shaft's dimensions. Do not use sandpaper or other harsh abrasives. Burrs are most commonly found at the top of the shaft and at the top and bottom edges of the set screw flats. Important: Before using any polishing agents on the shafts you need to protect the bearings by carefully placing tape around the base of the shafts and/or placing a suitable rubber washer over the shafts so as to cover any access to the bearings below. Once the shafts are "de-burred" and clean, you should back-up and follow the procedure outlined at the beginning of this page (1).

If you are unable to remove your old rollers, or unable to easily install the new T/REDS, you've got a problem and we strongly recommend that you call us. **Never** LIFT UP ON YOUR CAPSTAN ROLLER with great force - YOU WILL DAMAGE THE OPTICAL ENCODER INSIDE THE MOTOR and do not place your new rollers on damaged, rusted or corroded shafts.

**Please contact us if you have questions.**

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