

**Thank you for purchasing the Welch Tuning System™ (WTS)!**

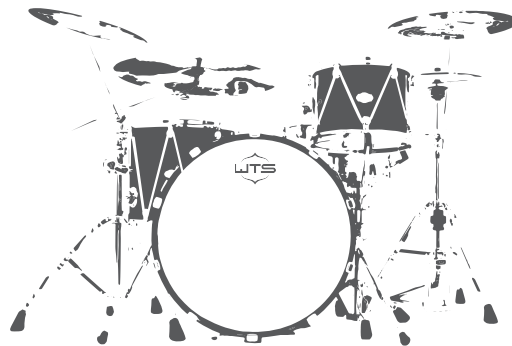
To get the most out of this premium drum hardware, and to install and use it in a safe manner, we urge you read this Installation Manual prior to installing and using WTS.

### INSTALLATION REQUIREMENTS:

- Experience using a drill and basic hand tools
- 7" minimum tom tom shell depth
- 7.5" minimum snare drum shell depth
- 8" minimum shell diameter
- 26" x 16" maximum shell size
- 2.3mm triple-flanged hoops required for tom toms
- WTS die-cast hoops required for snare drums (do NOT use triple-flanged hoops for snare drums)

### TOOLS REQUIRED:

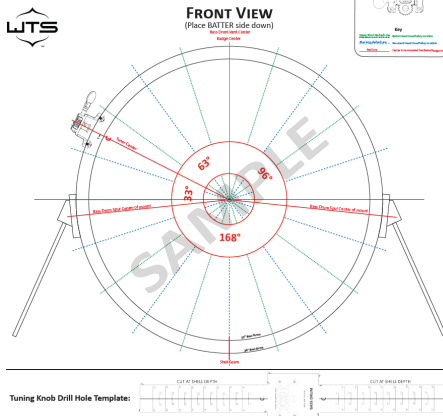
- Flat work table or hard surface
- Electric drill
- Low-tack masking tape
- 3/8" open-ended wrench
- 1/8" Allen key
- T-25 torx bit
- 3/16" drill bit
- Framing square or similar tool
- Pencil / marking utensil



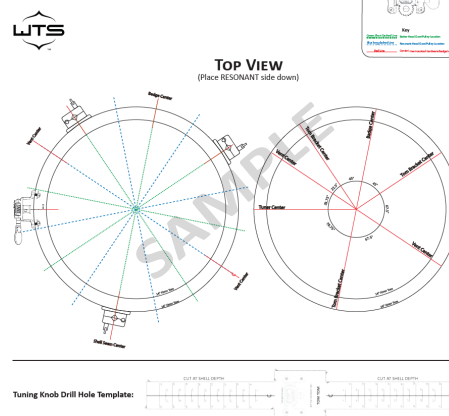
## Step 1: Print Layout Drawings

Visit [www.wtsdrums.com/installation](http://www.wtsdrums.com/installation) to download the WTS Scale Layout Drawings. Visit your local print shop and print the Layout Drawing in full color and actual size (do not scale up or down) for each size drum you plan to build. **Each sheet measures 36" x 36"**. This will serve as your layout mat for your build and will ensure proper installation.

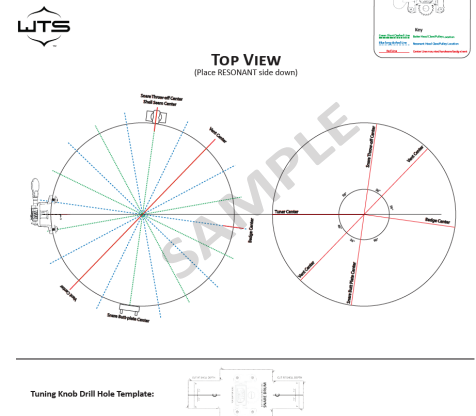
**22" AND 24" BASS DRUMS - 10 CLAWS/HOOP**



**14" AND 16" FLOOR TOMS - 8 HOLE HOOPS**

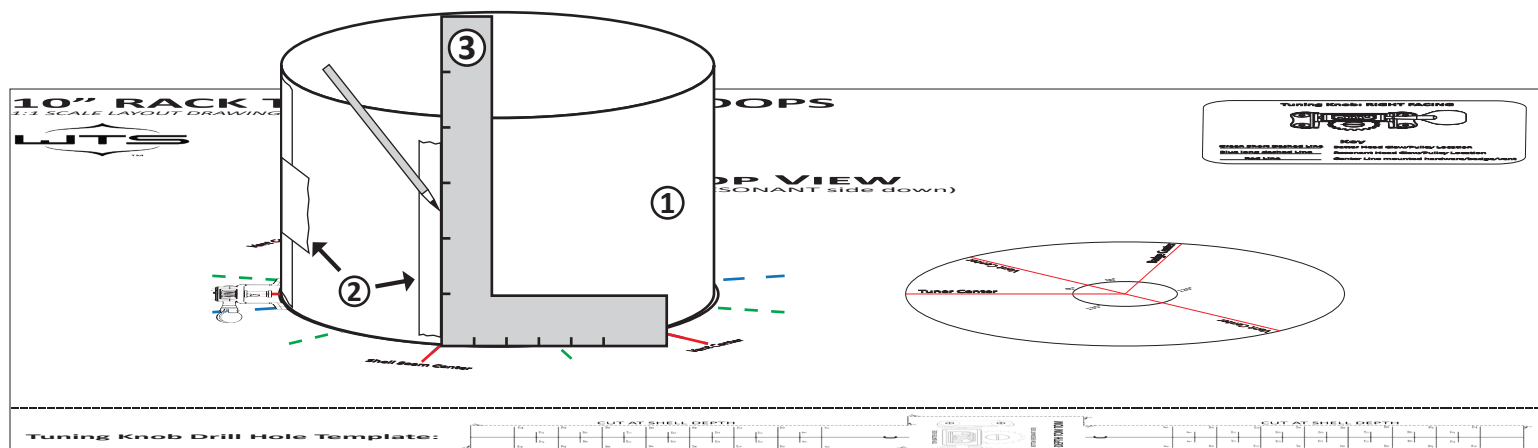


**14" SNARE DRUM - 10 HOLE DIE CAST HOOPS**



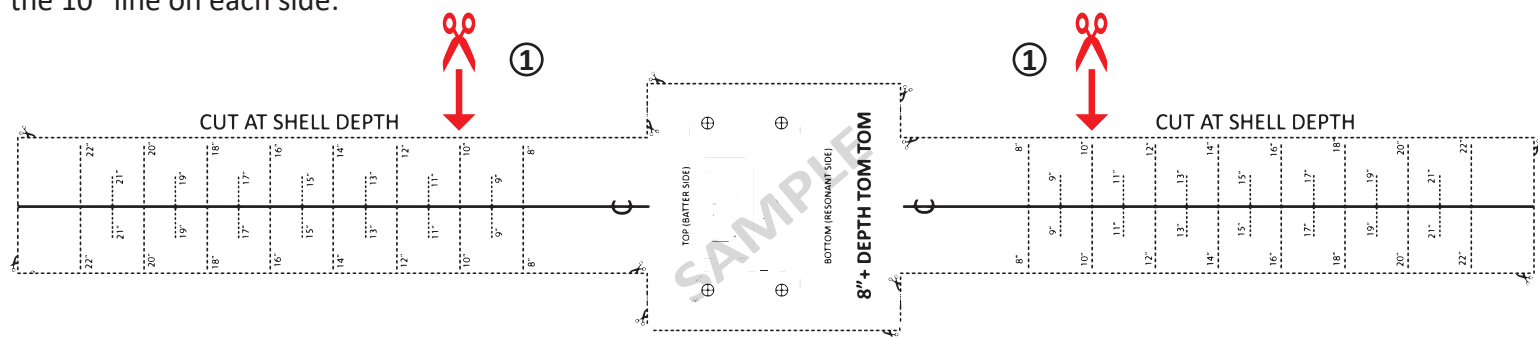
## Step 2: Layout Hardware Locations

1. Place drum shell on appropriate WTS Scale Layout Drawing. If there are particular grain patterns or special considerations regarding your particular shell, now is the time to align these features how you would like them to be seen in relation to the rest of the hardware. Also, be sure to place the correct side down on the Layout Drawing (resonant side down for toms and snares, batter side down for bass drums).
2. Place masking tape in the general areas you will be marking the drum shell, such as areas of the WTS tuning knob, floor tom leg mounts, bass drum spurs, snare throw off, etc.
3. Align your square to the center line of every piece of hardware and mark a vertical center line on your masking tape. Do this for every piece of hardware, and make sure the drum shell does not move in the process.

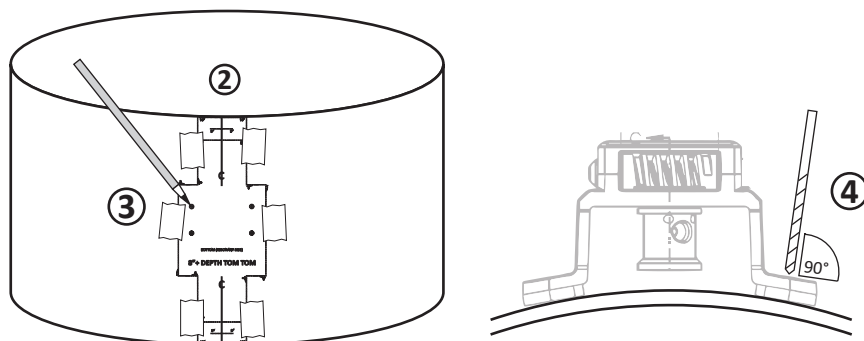


## Step 3: Drill for Tuning Knob (TA101)

1. Cut out the Tuning Knob Drill Hole Template located at the bottom of each WTS Scale Layout Drawing. Note that these are drum-specific. Cut the template at each line matching the depth of the shell, i.e., for a 10" deep drum, cut at the 10" line on each side:



2. Tape Drill Hole Template to shell by aligning the center line of the template with the center line you have drawn on the shell for the tuning knob; align the top and bottom of the template to the bearing edge:

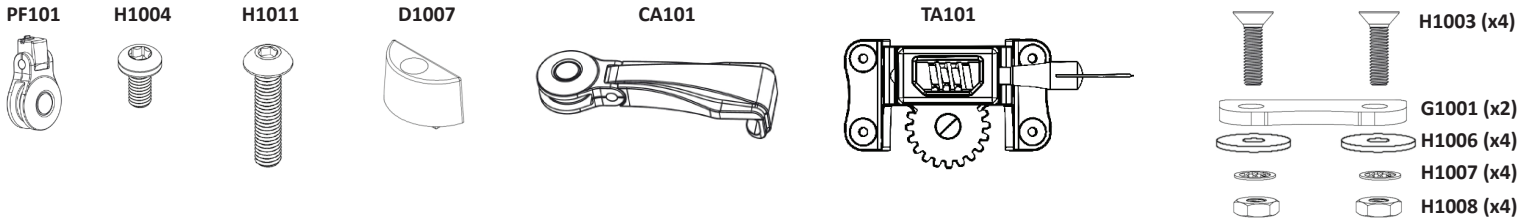


3. Mark or center punch the hole location through the template into the shell for each of the four holes for the tuning knob.

4. Remove the Template and carefully drill each of the holes with a 3/16" drill bit. Drill at an angle perpendicular (90°) in relation to the feet of the tuning knob bracket (do not drill through tuning knob bracket).

# Step 4: Install Tuning Knob and Assemble Hoops

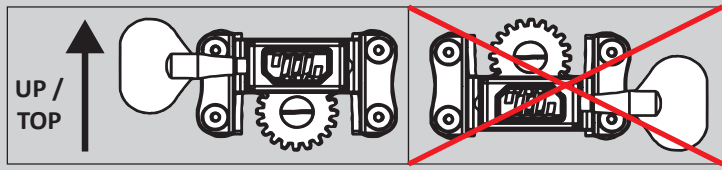
## WELCH TUNING SYSTEM (WTS) COMPONENTS:



**1. Install the tuning knob (TA101) onto each shell.** Be sure to check your Layout Drawings to see if you should be using a right-facing tuning knob or a left-facing tuning knob.

**NOTE:**

- Make sure tuning knob is installed correct side up on tom toms and snare drums:



### TUNING KNOB (TA101) INSTALLATION

*Bolting to shell:*

1. Place rubber pads (G1001) and tuning knob (TA101) against outside of shell as shown in Fig. 1;
2. Align tuning knob (TA101) mounting holes with rubber pad holes (G1001) and holes drilled in shell. Assemble bolts (H1003) through tuning knob (TA101) mounting holes.
3. Assemble flat washer (H1006), tooth washer (H1007) and nut (H1008) on the inside of the shell as shown in Fig. 1. Tighten nut until snug and the rubber pad begins to bulge, **do not over-tighten.**

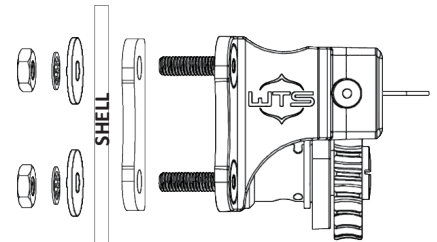


Fig. 1

**2. Assemble the drum hoops.** If you have purchased WTS Hardware without drum hoops, please follow the Pulley Fixture (PF101) Installation below. If you have purchased a WTS Hardware Kit with the Pulley Fixtures already assembled, move on to the Bass Drum Claw (CA101) installation.

### PULLEY FIXTURE (PF101) INSTALLATION

#### Triple Flanged Hoops

1. Align the pulley fixture (PF101) under hoop ear using the ridge to align the pulley fixture (PF101) with the inside-back of the hoop hole (Fig. 2);
2. Thread bolt (H1004) through the hoop, into the pulley fixture (PF101) (Fig. 3). Tighten until snug, **do not over-tighten.**

**NOTE:** The pulley fixture ridge must stay inside the hoop hole for proper alignment (Fig. 2).

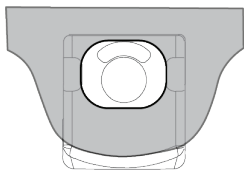


Fig. 2

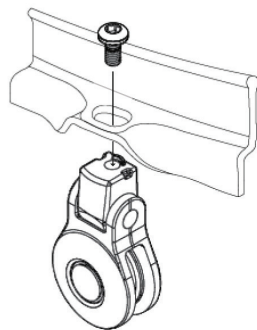


Fig. 3

#### Cast Hoops

1. Place cast hoop spacer (D1007) inside ear of cast hoop (Fig. 4);
2. Align pulley fixture (PF101) under cast hoop spacer (D1007) and allow the male tabs from the cast hoop spacer (D1007) to connect with the female indentations in the pulley fixture (PF101) (Fig. 4);
3. Hold pulley fixture (PF101) in place (Fig. 4);
4. Thread cast hoop bolt (D1007) through hoop hole, cast hoop spacer (D1007), and into pulley fixture (PF101) (Fig. 4). Tighten until snug, **Do not over-tighten.**

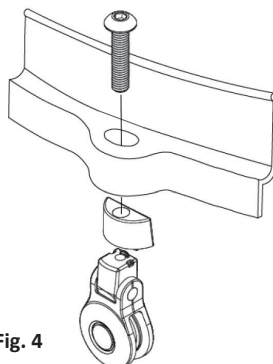
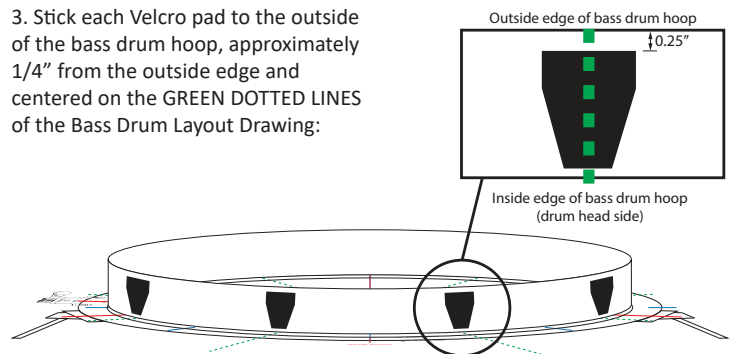


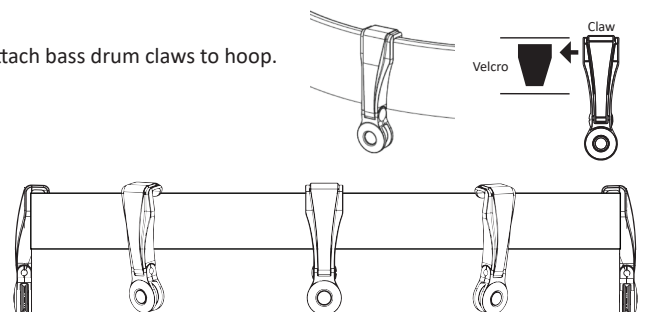
Fig. 4

### BASS DRUM CLAW (CA101) INSTALLATION

1. Place your bass drum hoop (inside edge down) onto the Bass Drum Layout Drawing.
2. Remove the outer half of the Velcro pad from each of the bass claws.
3. Stick each Velcro pad to the outside of the bass drum hoop, approximately 1/4" from the outside edge and centered on the GREEN DOTTED LINES of the Bass Drum Layout Drawing:



4. Attach bass drum claws to hoop.



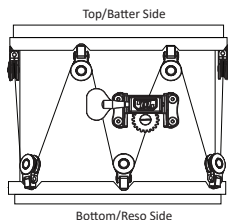
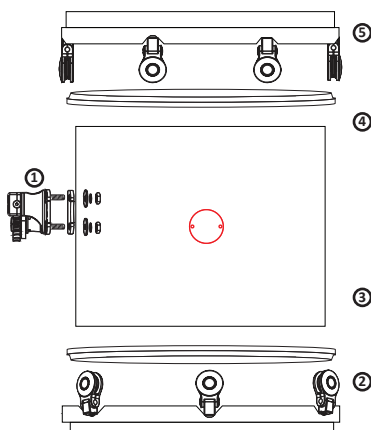
# Step 5: Test Assemble the Drum Shells (WTS Hardware Only)

**1. Assemble the drum shells with the hoops, tuning knob, and cable only.** By test assembling, you can confirm the locations of your other hardware (shown in **RED**), such as bass drum spurs, floor tom leg brackets, vents, badges, etc. It is very important that none of this additional hardware interferes with the WTS cable path.

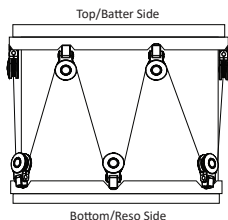
**TIP:** Use the Layout Drawing as a guide to align the pulleys of the top and bottom hoops with the tuning knob.

## TOM TOM ASSEMBLY

1. Bolt TA101-L to shell.
2. Place resonant head into bottom hoop.
3. Place shell onto resonant head.
4. Place batter head on shell.
5. Place top hoop over batter head.
6. Align hoops (**SIDE VIEW (A/B)**).
7. Assemble cable (follow instructions for replacing heads / cable in user manual).
8. Check that your fully assembled drum looks like the drawing below.



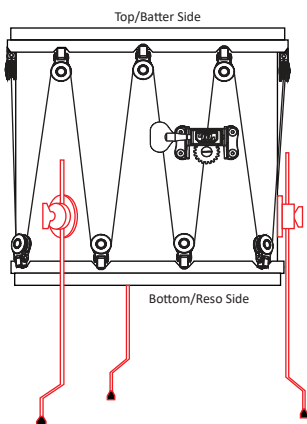
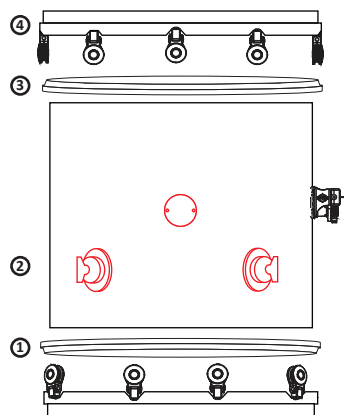
SIDE VIEW (A)



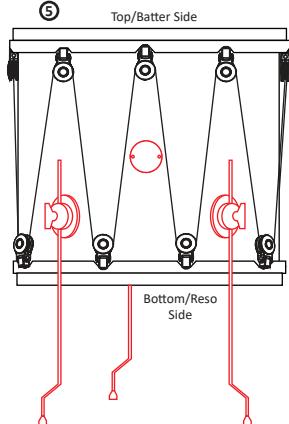
SIDE VIEW (B)

## FLOOR TOM ASSEMBLY

1. Place resonant head into bottom hoop.
2. Place shell onto resonant head.
3. Place batter head on shell.
4. Place top hoop over batter head.
5. Align hoops (**SIDE VIEW (A/B)**).
6. Assemble cable (follow instructions for replacing heads / cable in user manual).
7. Check that your fully assembled drum looks like the drawing below.



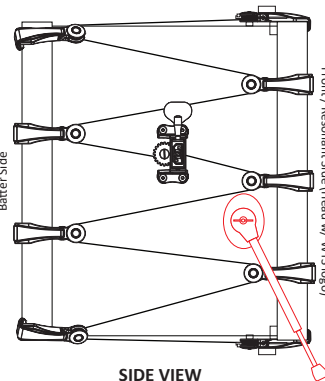
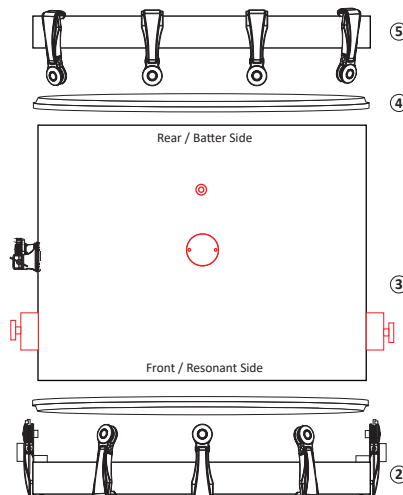
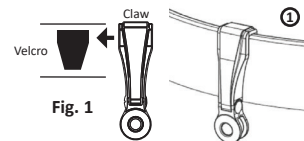
SIDE VIEW (A)



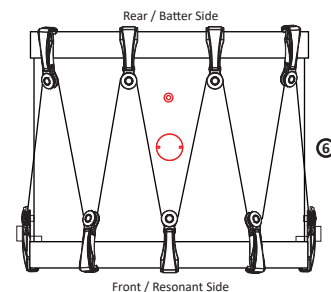
SIDE VIEW (B)

## BASS DRUM ASSEMBLY

1. Attach bass claws to bass hoops where Velcro is present (**Fig. 1**).
2. Place front hoop on ground and resonant head into front hoop.
3. Place shell onto resonant head.
4. Place batter head on shell.
5. Place batter side hoop over batter head.
6. Align hoops (**TOP VIEW**).
7. Assemble cable (follow instructions for replacing heads / cable in user manual).
8. Check that your fully assembled drum looks like the drawing below.



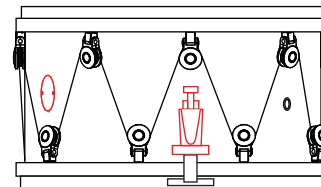
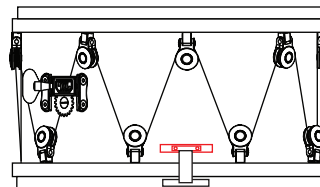
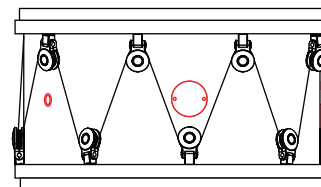
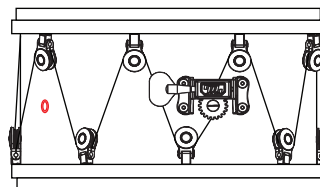
SIDE VIEW



TOP VIEW

## SNARE DRUM ASSEMBLY

1. Follow same test assembly procedures as other drums.
2. Check that your fully assembled drum looks like the drawing below.



# Step 6: Drill and Install All Remaining Hardware

1. After checking that all of your center line markings on the drum shell are correct and confirming that nothing will interfere with the WTS cable path, you can now layout and drill for your remaining hardware, such as bass drum spurs, floor tom leg brackets, vents, badges, snare throw off, snare butt plate, etc.

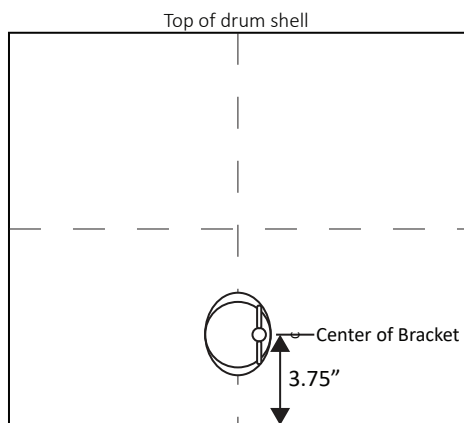
## HELPFUL TIPS:

- Make sure bass spurs do not interfere with the cable in both open and closed positions.
- Make sure the snare throw off can operate on or off without hitting the top pulley fixture or cable.
- Refer back to the WTS Layout Drawing for hardware location recommendations.

2. The following recommendations may or may not apply to your chosen accessory hardware. IT IS UP TO YOU TO CONFIRM THE PLACEMENT AND DRILL HOLE PATTERN FOR YOUR SPECIFIC ACCESSORY HARDWARE.

## Floor Tom Bracket Location

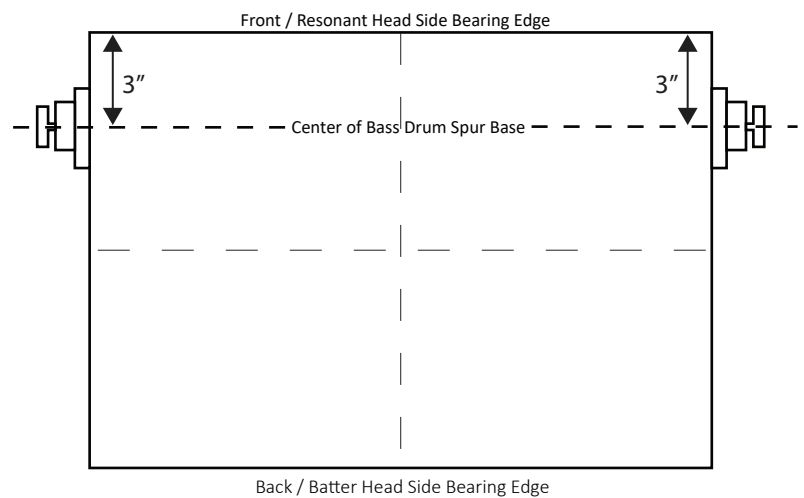
(Shown on 12" deep shell)



**SIDE VIEW**

## Bass Drum Spur Locations

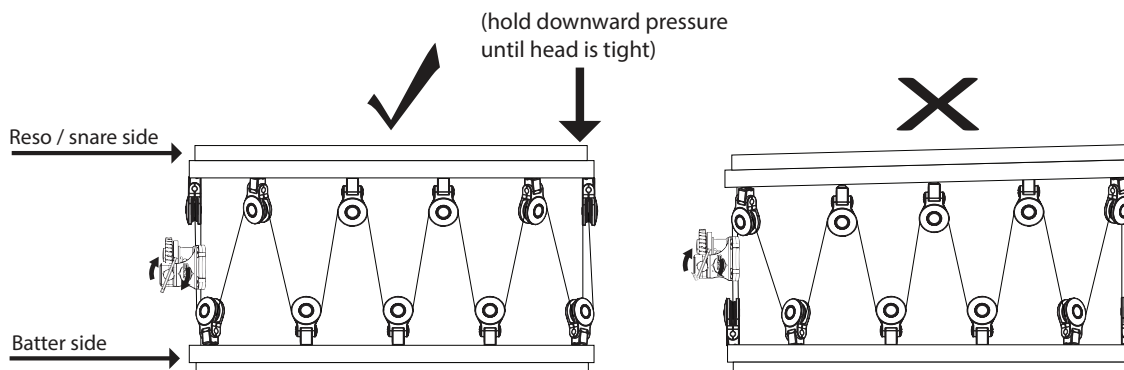
(Shown on 14" deep shell)



**TOP VIEW**

## Snare Drum Assembly Note:

When tightening snare heads down for the first time, flip the drum upside-down and place firm pressure on the side the hoop opposite the tensioner while tightening the cable to ensure hoops stay parallel (not lopsided).



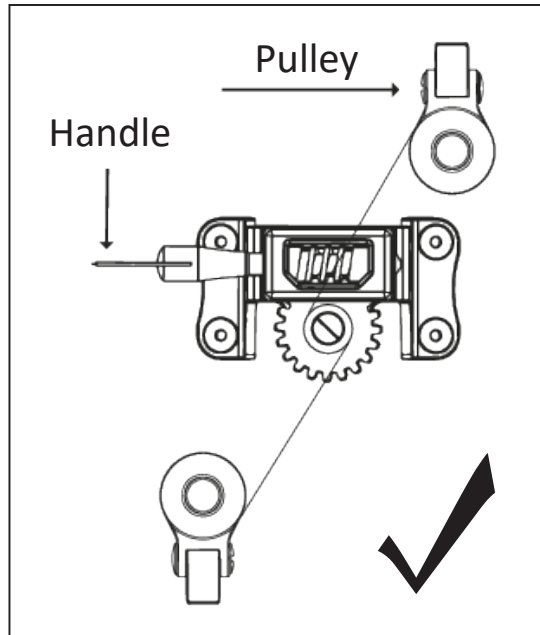
# Tuning Knob Orientation Guide

If you find you have incorrect tuning knob orientation, simply loosen tension on the cable and rotate the hoops. It may be necessary to unlace the cable.

## CORRECT:

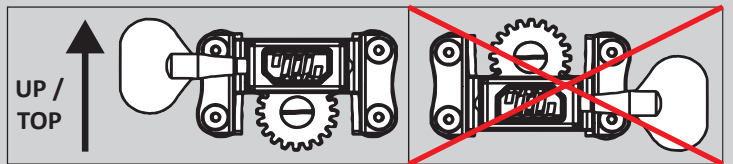
Tuning knob is in correct relationship to the pulleys when:

1. In-line / centered with the cable path; and
2. Top pulley is on opposite side of the tuning knob handle.



### NOTE:

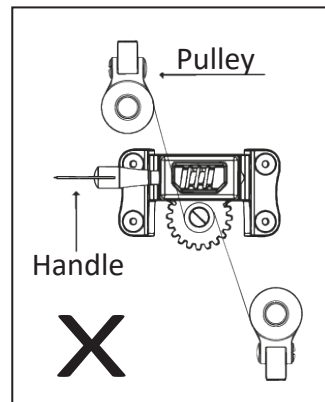
- Make sure tuning knob is installed correct side up on tom toms and snare drums:



## INCORRECT:

Tuning knob is NOT in correct relationship to the pulleys when:

1. Top pulley is on the same side of the tuning knob handle (when this happens, it can be difficult to turn the tuning knob with the pulley in the way); and/or



2. Tuning knob is not in-line / centered with the cable path (this can cause uneven tension and cable wear).

