KARUNYA MUSICALS

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S.R.I-G-Mini: 18" SYNTHETIC MRUDANGA FOR KIDS (FEMALE PITCH)

Product Specifications

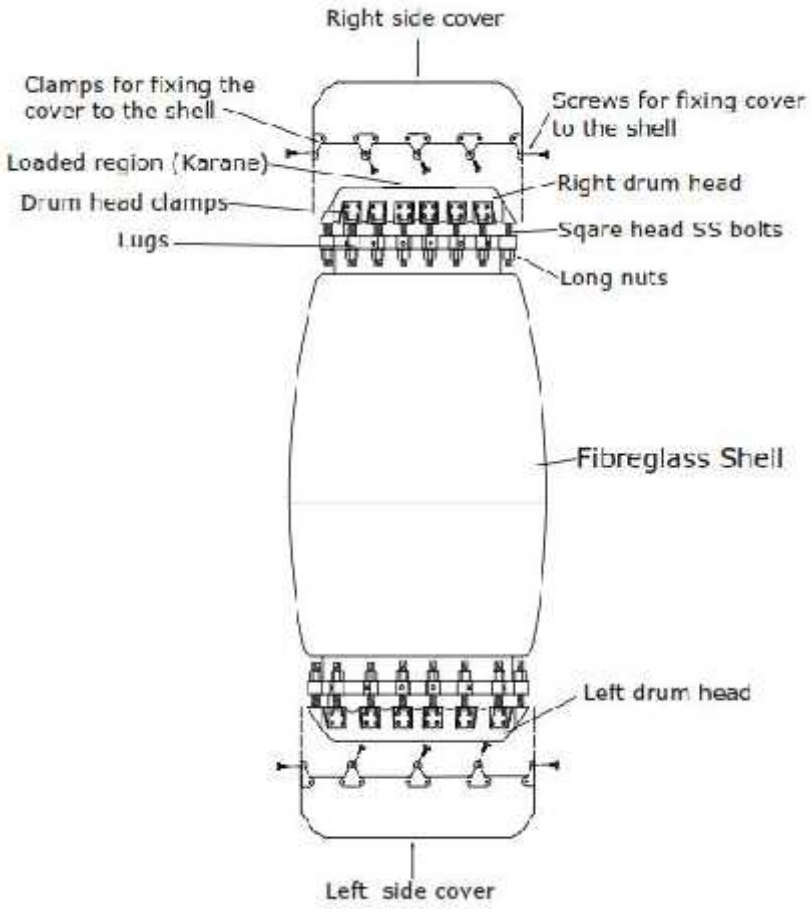
Patent pending design

1. Description

The Mrudanga consists of a fibreglass shell and two synthetic drumheads. The right drumhead consists of three membranes-an inner membrane, a middle membrane, and an outer membrane. The middle membrane has a centrally located circularly symmetric loaded region formed by bonding an elastomeric material on to it through a chemical process. The outer membrane with a circular cut-out has strips of a synthetic material on the underside that facilitates the production of the *Chapu* sound of the Mrudanga. The inner membrane which is in contact with the shell has a cut-out slightly smaller than the right aperture and serves to protect the middle membrane from wear and tear. The left drumhead consists of three membranes-a protective inner membrane in the form-of an annular ring, a middle membrane which has an elastomeric loading on the

underside so as to be able to produce low pitched bass tones, and an outer membrane with a cut out to prevent ringing of the middle membrane. The drum heads are attached to the shell by means of a set of clamps on the drum heads, a set of lugs on the drum shell, and a set of bolts and nuts. The drum is equipped with side covers to conceal the clamps and provide support for the hands and fingers while playing the instrument.

2. Component parts of the Mrudanga



The shell is made of fiberglass and a set of 16 lugs are attached on each side of the shell. The bolts pass through the holes provided on the drum head clamps and through the holes provided on the lugs and the head is held in place and tightened using the long nuts. The shell material is chosen so as to provide negligible variation of pitch due to temperature variations. This was one of the key problems that needed to be solved in creating this instrument. The lugs are fixed to the shell from inside using bolts. In order to prevent the rotation of the lugs during tensioning, the lugs are recessed into the shell in a groove- like arrangement. The drum head clamps and other hardware are completely covered using side cover there by giving an aesthetic look and complete protection to the hands and fingers. The head is tensioned uniformly with the help of the long nuts using a single spanner. A challenge here was to prevent the rotation of the bolts while

tightening or loosening the long nuts. This problem was solved using square head bolts and carefully designed drum head clamps.

One of the distinctive features of this design is the neat seating of the tuning hardware. In a conventional nut-bolt Mrudanga the hooks project out of the shell and may also cause injury to the fingers of the player. In the S.R.I Mrudanga the tuning hardware is concealed leaving access to only those parts that need access.

In contrast to the tuning system of western drums that use a hoop system for attaching and tensioning a drum head, the S.R.I Mrudanga uses a set of 16 metallic clamps on the drum head. The reason for this is follows:

The rim stroke (*Nam* or *Meetu* syllable) is a very important stroke in the case of the Mrudanga. In a conventional Mrudanga, there are 16 points on the rim through which leather straps run back and forth between the left and right heads to hold them together and provide tension to the head. In the case of the nut-bolt Mrudanga too there are sixteen hooks on each head which are tightened using the nuts. In the case of Western drums, a very precise adjustment of the pitches at various points on the rim is not necessary whereas it is required to be extremely precise in the case of the Mrudanga. The problem with the hoop system is that when a tension rod is adjusted for pitch at a given location it will alter the pitches at all other points on the rim as well. This makes perfect tuning a nearly impossible task.

In the case of the S.R.I. Mrudanga, each drum head has 16 metallic clamps. On the right head the pitch at each lug point (a lug point is the area on the rim of the drum head directly above or below the drum head) depends mostly on the tension of the corresponding bolt and does not significantly vary when the tension is altered at some other lug, provided that the variation is not too large. This enables easy tuning and it is not difficult to achieve a tuning accuracy of ±1 Hz at each point on the rim. The 16 points of tuning provide equal tensioning. When all the lug points are aligned in pitch the instrument resonates beautifully. Western drums usually have a far fewer number of lugs because the tension of the drum head is distributed to the lugs by the hoop. The Mrudangas are typically tuned to higher pitches and the 16 lugs help withstand this tension by distributing it among the 16 lugs. So these lugs help in load distribution, equal and precise tensioning and in achieving excellent resonance.

3. Advantages of the S.R.I Mrudanga

1. Totally ethical and no animals are harmed in its construction.
2. Environment friendly, as there is no need to cut trees.
3. Rugged and light weight (typically 4-4.5 Kgs)
4. Weather resistant; pitch is not much affected by temperature and humidity.
5. Easily tunable with a single spanner. It is possible to achieve a tuning accuracy of ±1 Hz with some effort all along the circumference of the right drum head.
6. Excellent tonal clarity, resonance and sustain
7. Easy to play without much strain on the hands.

8. The Karane is chemically bonded to the drum head membrane, so that it would not fall off or wither away with time. This eliminates the need to run to the Mrudanga repairer for Karane replacement. The head is also impervious to hand sweat.
9. Heads can be cleaned with a squeezed moist cloth
10. Maintenance free
11. No semolina paste is required to be applied to the left head. The loading of the left head is done from within, thereby providing a larger playing area and without the mess of semolina paste sticking to the fingers.
12. Wide tuning range over 6 semitones from E to A
13. Cost effective

4. Technical Specifications

1.	Tuning range	E-A
2.	Right Head diameter	156 mm (6. 14”)
3.	Right side external diameter	204 mm (8“)
4.	Left head diameter	188 mm (7.4”)
5.	Left side external diameter	239 mm (9.4”)
6.	Diameter of the belly	266 mm (10.46”)
7.	Overall length	473 mm (18..62”)
8.	No of tuning points on each head	16
9.	Shell material	Fibreglass
10.	Drum head material	Synthetic
11,	Material of Nuts and bolts	Stainless steel
12.	Weight	4.5 Kgs

5. **Tuning procedure**:

5.1 Right head

Note: The tuning of this Mrudanga is slightly different from the tuning of a regular nut bolt Mrudanga. Follow the below instructions carefully. If you do not follow these instructions correctly, or try to take a short cut, the heads will detune rapidly while playing.

If the head is newly put it should be seated first. See the procedure for seating the head under “Replacing the Mrudanga Head”. If the head is already seated follow the procedure outlined below:

5.1.1 Tuning Up

Keep the Mrudanga in vertical position with the right head facing up. A digital Tamboora will be very handy for the purpose of tuning the Mrudanga. Tuning is done one lug at a time and moving from one lug to the other in either clockwise or anti clockwise direction. First, ensure that all the

long nuts are hand tight. Then quickly check the pitches at different lug points. Then, using the spanner provided with the kit, start equalizing the pitches slowly at each lug point to a pitch that is still below the pitch to which you want to tune the instrument. This is usually done using the left hand. Let us say you want to set the pitch to G, then you may start aligning all the lugs to, say, E or F (or even below if the overall pitch of the head is lower). DO NOT GIVE FULL TURNS TO THE LONG NUTS. Go in for small fractional turns and align the pitches approximately to one particular pitch. It is not necessary to go for exact alignment of the pitches at this stage. Then with the heel of your right hand whack the drum head at the centre firmly but gently. This will lower the pitch again. The idea of whacking is to ensure that the drum head skin is released from sticking to the bearing edge of the shell and the gaps in the tuning system (such as between the threads of the bolt and nut, between the bolt head and the clamp, etc.,) are closed so that the pitch of the head will not go down further during subsequent playing. Then slowly start moving up by one semitone at a time initially and later in smaller intervals by tightening all the 16 lugs in small increments. Whack the head gently and firmly using the heel of the right palm at each lug point so that the pitch settles down. It may come down if there is still some slack at this lug point or it may remain same as before. As the desired pitch is approached keep the up tuning and whacking till the pitches at all the lug points are aligned to the desired pitch. Whack the head firmly once again at the centre and ensure that the pitches at the lug points do not go down. If they go down adjust slightly and align again. With some practice the tuning becomes quite easy to accomplish.

5.1.2 Tuning down

If the instrument is already tuned to a pitch higher than the desired one, start loosening the nuts. Tuning is done one lug at a time and moving from one lug to the other in either clockwise or anti clockwise direction. If the desired pitch is just one or two semi tones down start loosening in smaller steps. Otherwise, you can start with slightly larger steps first (in any case, not more than a ¼ turn) and later in smaller steps. After each step whack the head with the heel of the right hand at the centre and then at each lug point. Do not whack too hard. At each stage in the tuning, ensure that the pitch is nearly the same at all the lug points. However, it is not necessary to do an exact alignment of the pitches at this stage. Continue the process till the desired pitch is reached. Align all the lug points to the given pitch. Whack the head firmly once again at the centre and ensure that the pitches at the lug points do not go down. If they go down adjust slightly and align again. With some practice the tuning becomes quite easy to accomplish.

5.2 Left head

Keep the Mrudanga in the horizontal position on your lap or playing position and adjust the long nuts to get as uniform a tension as possible and the desired bass tone. Tune one lug at a time and move from one lug to the other in either clockwise or anti clockwise direction. Whack the head

a few times with the heel of the left hand. If the pitch becomes too low tighten the main nuts slightly

Please also watch the video on our website wwww.karunyamusicals.com to learn how to tune the S.R.I Mrudanga.

6. Replacing the Mrudanga head

6.1 Right head

The head may get worn out after years of use or due to abuse and it may have to be replaced. The following is the procedure for fixing a new head. Note that it will take about 3-4 days for the new head to get seated properly and only then the Mrudanga will be ready for playing.

Keep the Mrudanga in the vertical position with the right head facing up. Remove the outer cover using the star screw driver. The drum head with the clamps will now be visible. Loosen all the long nuts and take out the old head.

With a clean soft cloth gently clean the rim of the Mrudanga and ensure that the bearing edges are free from dust.

Put on the new head and attach the nuts and bolts to secure the drum head. Hand- tighten all the nuts. Fix the cover back

Then, using the spanner provided with the kit, start increasing the pitches at each lug point by giving about ½ a rotation to each nut. A digital Tamboora will be very handy for the purpose of tuning the Mrudanga. Tuning is done one lug at a time and moving from one lug to the other in either clockwise or anti clockwise direction. If the pitch is a bit too low at some points tighten those nuts so that the feeling of the tension is same as the tension at other points. Now gently strike the head to produce the Meetu sound. If there is no musical sound produced at any lug point proceed with another ¼ turn. At this point a musical tone may be produced at some lug point. If not, repeat the quarter turn until a musical tone is produced at some lug point. Roughly align the other lug points to this pitch and then with the heel of your right hand whack the drum head at the centre firmly but gently a few times. This will lower the pitch again. The idea of whacking is to ensure that the drum head skin is released from sticking to the bearing edge of the shell and the gaps in the tuning system (such as between the threads of the bolt and nut, between the bolt head and the clamp, etc.,) are closed. From here on, go for small fractional turns and align the pitches approximately to the next higher semitone. It is not necessary to go for exact alignment of the pitches at this stage. Again with the heel of your right hand whack the drum head at the centre firmly but gently. Tighten the nuts again and gradually increase the pitch to G# (or A). Whack the heat gently but firmly a few times. Then retune and equalize the pitches at all the lug points and set the Mrudanga aside.

6.2 Left head

Follow the same procedure as above for the left head too. Before doing this ensure that a soft cloth is spread on the floor so that the right drumhead could rest upon it.

6.3 Seating the head

During the initial days of fixing a new head, it will keep detuning and the Mrudanga will not be fit to play. This is because the drum head keeps stretching and starts to lose its intrinsic slack. So retune the Mrudanga daily (if possible) to restore the pitch to G# or A and let the head be under that condition for 3-4 days. This process will automatically seat the head and further detuning will not occur. After this initial period the Mrudanga can be used for solo or accompaniment. Tune the Mrudanga before each performance as outlined in the Tuning Procedure.

The left head also needs to be seated in a similar way. Tune the light head to a high pitch and leave the head in that state for 2-3 days. After that lower the pitch to the desired level and retune the head as per the desired bass tone.

7. Do's and Don'ts

Do's:

1. When placing the Mrudanga vertically always spread a soft cloth on the floor or stage to prevent scratches from appearing on the soft plastic left head casing.
2. Always keep the right head under moderate tension.
3. Follow the tuning instructions at all times.
4. When not in use, keep the Mrudanga in a protective casing or bag.
5. Always keep the Mrudanga in the vertical position with the left side resting down OR on a proper stand in the horizontal position..
6. Keep the Mrudanga in a protected environment away from direct sun light, heat, humid winds and extreme temperatures.
7. When removing the side covers for any reason, follow the instructions for removing and re-fixing the side covers.
8. Follow the instructions for removing and fixing the drum heads.
9. Always allow a new drum head to settle for 3-4 days before starting to play on them.

Don'ts

1. The drum heads do not have any serviceable parts. Do not poke into the them at any cost
2. Never place the left head directly on the stage or floor. Always spread a soft cloth before doing so.
3. Do not scratch the Karane which has a protective coating.
4. Do not abuse the drum heads by playing too hard.

5. Do not remove drumheads unnecessarily.
6. Do not remove the drum head from one shell and put on another.

7. Dimensional drawing