

འབྲུག་གི་ནང་འཁོད་ལྗོངས་སྐད་པ་བཟོ་ནིའི་བྱ་རིམ་གནས་ཚད།

BHUTAN STANDARD

Process of Traditional Embroidery Thangka རྩེ་ཀཱ། /Kuthang རྩེ་བདེ། making



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FOREWORD

This Bhutan Standard for Process of traditional embroidery *thangka* རྩེང་ཀལ་ / *kuthang* རྩེ་ཐང་ making was drafted by Sub-Committee on Embroidery thangka/kuthang SC 03 and adopted by Bhutan Standards Bureau after the draft finalized by the Textile and Handicraft Technical Committee TC 06 and approved by the **Bhutan Standards Bureau Board (BSB Board) in August 2022.**

This standard is subject to systematic review after five years to keep pace with the market trends, industrial and technological developments. Any suggestions and further information may be directed to the concerned Technical Committee.

Draft Bhutan Standards for public comments

འབྲུག་གི་ནང་འཁོད་ལྷོ་ཆག་སྐྱེད་པ་བཟོ་ནིའི་བྱ་རིམ་གནས་ཚད།

Process of Traditional Embroidery Thangka རྩང་ཀའི་/Kuthang རྩུ་བའི་ making

1 Introduction

Zorig chusum རྩེ་བཟོ་བྱེད་ལུ་གུ་མེད་ was established in the 8th century and refined during the 17th century. It incorporates Thangka as part of the thirteen arts and crafts, which is based on the ten sciences of Buddhist studies.

The Thangka རྩང་ཀའི་/Kuthang རྩུ་བའི་ embroidery is an age-old tradition that requires a certain set of skills. While the painting is done exclusively by hand, it involves painting intricate and colourful images of Buddhist deities onto a canvas or silk using natural pigments and precise brushwork, followed by attaching a THAN-jah.

Thangkas play a crucial role in Bhutanese culture as they are used for meditation, prayer, and decoration in homes and monasteries. The art has been passed down through generations and is still widely practiced in Bhutan today.

This document provides guideline on traditional embroidery thangka/kuthang making.

2 Scope

This standard specifies the process of traditional embroidery thangka རྩང་ཀའི་/Kuthang རྩུ་བའི་ making.

3 Normative References

There are no normative references in this document.

4 Terms and Definition

For the purpose of this standard, the following definitions shall apply.

4.1. Tshem-drup རྩོམ་གྲུབ་ལྟེ

Traditional embroidery technique used for making Kuthang or any other decorative pieces.

4.2. Kuthang རྩོམ་ཐང་།/Thangka རྩོམ་གྲུབ་།/Zhelthang རྩོམ་ཐང་།

Refers to traditional forms of art in Bhutan that involve intricate paintings carefully stitched onto a fabric backing using a traditional Bhutanese sewing technique. *Ku* རྩོམ་ is a respectful term that usually refers to the images of Bodhisattvas. Depending on the type of thangka རྩོམ་གྲུབ་།, it can be referred to as a "thangka རྩོམ་གྲུབ་།, *Kuthang* རྩོམ་ཐང་།, or *Zhelthang* རྩོམ་ཐང་།

4.3. THAN-jah རྩོམ་ཐང་འཇམ་ལྟེ

Fabrics mounted to mā-loong.

4.4. Tsakpar རྩོམ་ཐང་པར་ལྟེ

Refers to a master copy (རྩོམ་ཐང་།) used for transferring an art or design (རྩོམ་ཐང་།) onto a canvas or cloth using the prick and pounce technique. This technique involves drawing, pricking, pouncing, and tracing on the canvas/cloth. The masterpiece is also commonly referred to as a *Tsakpar*.

4.5. Mā-loong རྩོམ་ཐང་།

Refers to a painted canvas or scroll. This canvas is typically painted or embroidered, and the size and shape of the *mā-loong* can vary depending on the intended purpose of the thangka.

4.6. Ku རྩོམ་ཐང་།

The statue placed at the *mā-loong*.

4.7. Thruë-ki རྩོམ་ཐང་རྩོམ་ཐང་།

Refers to a thread used for creating cord (border lines). A white thread is used for the inner cord and a red thread used for the outer cord.

4.8. Dhong རྩོམ་ཐང་།

A rectangular piece of silk or brocade at the lower part of a *THAN-jah* རྩོམ་ཐང་འཇམ་ལྟེ that is considered a symbolic “door” of the *thangka* རྩོམ་གྲུབ་།.

4.9. Thik-shing རྩོམ་ཐང་ཐོག་ལྟེ

refers to an instrument used for measuring dimensions/sizes to make a *thangka*.

4.10. Gay-choe རྒྱུ་མཚོ་མེད་ལོ་

Is a silk fabric.

4.11. Kha-sha (ལ་ཤ) ལ་ཤ

is a fabric.

4.12. Gu-shing རྒྱུ་ཤིང་ལོ་

The wooden ade stick used for hanging of *thangka /Kuthang* called top dowel

4.13. Ju-shing རྒྱུ་ཤིང་ལོ་

The wooden stick bigger than Top Dowel used for proper shaping of the *thangka* called bottom dowel

4.14. Tog རྒྱུ་ཤིང་ལོ་

Decorative knob fixed at the edge of the Bottom Dowel.

4.15. Lopen རྒྱུ་ཤིང་ལོ་

Framing square (L-shaped square used)

4.16. Thi-kue རྒྱུ་ཤིང་ལོ་ / **Tshem-Thi** རྒྱུ་ཤིང་ལོ་

Thread marker (a tool) used in Bhutanese traditional art to create lines by coating a thread with natural pigment or colour. The thread is first wrapped in a pouch made of cloth or leather, and tightened (or stitched) at the edges. To mark a line, the thread is pulled from either side to coat with pigment, then with the two edges of the thread held tightly it is snapped against the canvas to make lines onto the surface.

4.17. Jyal- thaa རྒྱུ་ཤིང་ལོ་

A string used for measuring the dimensions. The artisans now use measuring tape for the same purpose.

4.18. Rimo རྒྱུ་ཤིང་ལོ་

Refers to line drawing (initial sketch or outline drawn onto a brocade or other painting surface).

4.19. Sa-zhi རྒྱུ་ཤིང་ལོ་

Mā-loong that made by stitching blue and green brocade to represent sky and landscape.

4.20. Nyom-tse ta-chey རྒྱུ་ཤིང་ལོ་

A wooden divider used to check proportion/or if the figure is symmetrical.

4.21. Ta- khaab ཏྲ་ཁ་བའི

A tufting needle.

4.22. Sin-chu སིན་ཅུ

Is a bronze hook nailed on the *Gu-shing* to attach cord for hanging *thangka*.

4.23. Goeri གཤེན་ལྡི

Is a decorative pattern that is commonly used on a dress རྩམ་བེལ་ of *Lhatsho* to represent silk brocade. This technique allows the artist to create a richly textured and detailed representation of the brocade fabric in a painting. The pattern may be made from colour, silver, bronze/pure gold རྩམ་བེལ་, depending on the desired aesthetic and affordability.

4.24. Ser-ki སེར་ཀི་སྐྱུང་དུ

Is golden metallic thread used for creating decorative lines especially on a dress རྩམ་བེལ་ of *Lhatsho* to represent silk brocade.

4.25. Nge-ki རྩམ་བེལ་སྐྱུང་དུ

Is silver metallic thread used for creating decorative lines especially on a dress རྩམ་བེལ་ of *Lhatsho* to represent silk brocade.

4.26. Gay-ki གཤེན་ལྡི་སྐྱུང་དུ

Is a fine silk thread used for making brocade.

4.27. Lhatsho རྩམ་བེལ་སྐྱུང་དུ

It is assembly of god/deity.

4.28. Chen-Zhay རྩམ་བེལ་སྐྱུང་དུ

Is a respectful term for eyes and mouth.

4.29. Jaa-dri-Mar-ser རྩམ་བེལ་སྐྱུང་དུ་མེད་པའི་མེད་པའི་

Refers to a red and yellow border (frame) that surrounds the *mā-loong*.

4.30. Sa-zhi SPELLING SAME AS 4.19

Is a fabric used as a background landscape in embroidering *thangka*.

4.31. Chaw རྩམ་བེལ་སྐྱུང་དུ

Refers to a light colour shades.

4.32. Bar-tsho བཟའ་ཚུ་

Refers to medium colour shades.

4.33. Tsho ཚུ་

Refers to the dark or the main base of the colour.

4.34. Kar-chay རྒྱུ་ལྷན་པུ་

Refers to the white border line.

4.35. Chay-tshem རྒྱུ་ཚུ་ཚུ་

Refers to the border line

4.36. Meto kang མེ་ཀློག་རྒྱུ་

Flower and stem filling/shading.

4.37. Urti རྒྱུ་ཉི་

Cloth Iron.

4.38. Nung-do རྒྱུ་ཚུ་

Chalk.

4.39. Thig-shing རྒྱུ་ཤིང་

Measuring scale.

4.40. Tshem-toray ཚུ་ལྷན་པུ་

Fabric used for wrapping embroidery thangka to keep the embroidery work clean.

4.41. Khay shing རྒྱུ་ཤིང་

A wooden tool used for holding the thread while spinning.

4.42. Tshem-shing ཚུ་ཤིང་

A wooden tool used for holding the fabric while stitching.

4.43. Tshem-shub ཚུ་ཤུ་

Seam ripper.

4.44. Zu-shub མཚུ་ཤུབ་

Thimble.

4.45. Ku-sha ཀུ་ཤ་

Silk fabric used as per the facial color of ku.

5 Raw materials

5.1 Mā-loong

Gay-choe, Kha-sha, threads(silk/metallic/cotton)

5.2 THAN-jah

Fabric: (Silk, raw silk, cotton, polyester/acrylic), Sewing thread (acrylic), Thru-ki (Silk/polyester), Gu-shing, Ju-shing, Tog (Knob)- (Silver/Gold/Bronze/Wood), Metal hook (Bronze/Leather)

6 Production process of embroidery Kuthang/Thangka

- a) **Master design:** Design the Thangka on paper, using traditional iconography and symbolism.
- b) **Sa-zhi:** Prepare the *Sazhi* (typically made of brocade silk). Once complete, iron the brocade.
- c) **Ku-sha:** Choose the brocade for *kusha*, cut it to the required size, and stitch it onto the *sazhi*. For smaller *kuthangs*, separate brocade for *kushas* are not used. Instead, the *tsakpar* is directly traced onto the *sazhi*.
- d) **Tsak-par:** Trace the design onto the *Sazhi* using prick and pounce technique.
- e) **Embroidering:** Begin embroidery. Refer annex C
- f) **Mounting:** Mount the finished *mā-loong* using *THAN-jah*. Refer annex D

7 Types of Thangka/Kuthang

There are different types of embroidery *thangka/Kuthang* that are created using specific base colours.

- a) **Embroidered Thangka** is a type of thangka where the design is created entirely through embroidery using high-quality thread on a suitable fabric.
- b) **Goe-drim Thangka**, on the other hand, is a combination of applique and embroidery work. This type of thangka involves applying cut-out pieces of fabric onto the base fabric and then enhancing the design with detailed embroidery work. It also includes more than 50% of embroidery work, which adds to its aesthetic appeal.
- c) **Goe-thang** is a type of thangka that is commonly used for *Thong-drel*, but it also includes around 30% of embroidery work, which adds to its aesthetic appeal.

8 Type of stitches and application

8.1 Chay-tshem: Stem stitch or Chey-tshem is an embroidery stitch, derived from backstitch. It has a twisted look, which gives this stitch a flowing texture, different from that of the backstitch or split stitch. Chey-tshem is applied in two ways namely

- a. Chey-zungdi: This is a type of stem stitch where the stitch does not follow a straight line. Instead each stitch is picked at an angle. This technique is used mostly for robes, cloud and floral motifs in applique thangkhas.
- b. Chey-dongdi- Backstitch: This is an actual stem stitch where each stitch overlaps the previous stitch to one side, forming a twisted line of stitching, with the thread passing below the needle. This is mainly applied on smaller details such as eyes, and lips.

8.2 Hu-tshem: Satin stitch or Hu-tsem is a series of flat stitches that are used in embroidery. They are mainly used to create the border of small flowers or fill in the tiny flowers, or namzas.

8.3 Changtha-tshem: Chain stitch or Chagtha-tshem is an embroidery technique in which a series of looped stitches form a chain-like pattern. This technique is used when they use metallic thread or when they make rainbows.

8.4 Dhuephi-tshem: French knot or Dhuephi-tshem is a decorative stitch used to create one or more small knots or dots on a ground material. The stitch is made by bringing the thread through the ground material at the spot where the knot is required. The thread is then held down firmly with the left thumb and first finger. This technique is used to make Buddha's topknot hair, flower pollen and the food in the alms' bowl.

8.5 Drami-tshem: Buttonhole stitch or Drami-tshem is a technique used in various forms of embroidery. For Bhutanese embroidery, this type of technique is used in making flower pollens, and damaru tassels.

8.6 Nye-tshem: This type of embroidery stitch is done using two threads. This technique is time consuming and is used for the collars (namza-gong), rainbows and the outline of rocks.

8.7 Moti-tshem (now popularly known as Takup-tshem): This embroidery stitch is applied on collars (namza-gong), and for outlining hats (uzhams).

8.8 Kang-tshem: This type of stitch is used mainly to fill in the patterns such as namzas.

8.9 Kaydham-tshem: This type of embroidery stitch is used to create outlines of bigger floral motifs, and also to fill in patterns

9 Quality Control

(i) **Preparatory stage:** The preparatory stage of embroidering involves ensuring that the raw materials meet the required specifications and are of the appropriate size and quality for the intended use. This stage also includes checking the brocades and threads for defects and compatibility with design requirements. Additionally, the density and thickness of the fabric should be checked to ensure suitability for embroidery techniques. Furthermore, the design should be carefully examined for accuracy and completeness, including alignment, positioning, spacing, and sizing of stitches. Any necessary adjustments should be made to meet quality standards.

(ii) **Embroidering stage:** To ensure high-quality embroidered products during the embroidering stage, various quality control measures need to be taken. These include monitoring the colour shading, *chay*, *Zhay-chen*, and filling techniques, maintaining consistency in thread tension and stitch size, and adjusting the spacing and thickness of the embroidery. It is also important to use compatible and high-quality needles, thread, and fabric. Any mistakes or errors should be promptly corrected, and the finished product should undergo thorough inspection.

(iii) **Embroidering finishing stage:** To ensure that the final embroidered thangka product is of high quality and meets the desired specifications, the embroidering finishing stage requires several quality control measures. The first step is to inspect the embroidery thoroughly to identify and fix any mistakes or issues such as misaligned stitches, inconsistent thread tension, or missing details. Next, the thangka should be cleaned by using wheat flour dough to remove any dirt or stains. After cleaning, the thangka should be pressed or ironed to ensure it is smooth and wrinkle-free, without damaging the embroidery.

(iv) **THAN-jah stitching stage:** To ensure high-quality embroidered products during *THAN-jah* stitching, take several quality control measures. Thoroughly clean the sewing machine before stitching to prevent oil or dust stains that may affect the embroidery. Wrap the *THAN-jah* in a clean cloth and store it in a safe place to prevent damage. Inspect the finished product for stitch alignment, consistent thread tension, and no missing details to meet quality standards.

10 Storage and packaging

10.1 Mā-loong: When rolling the *mā-loong*, it is important to use a dowel to prevent creases and wrinkles. Additionally, it is recommended to wrap the embroidery with a thin and soft cloth or handmade paper during the rolling process to prevent mold and mildew.

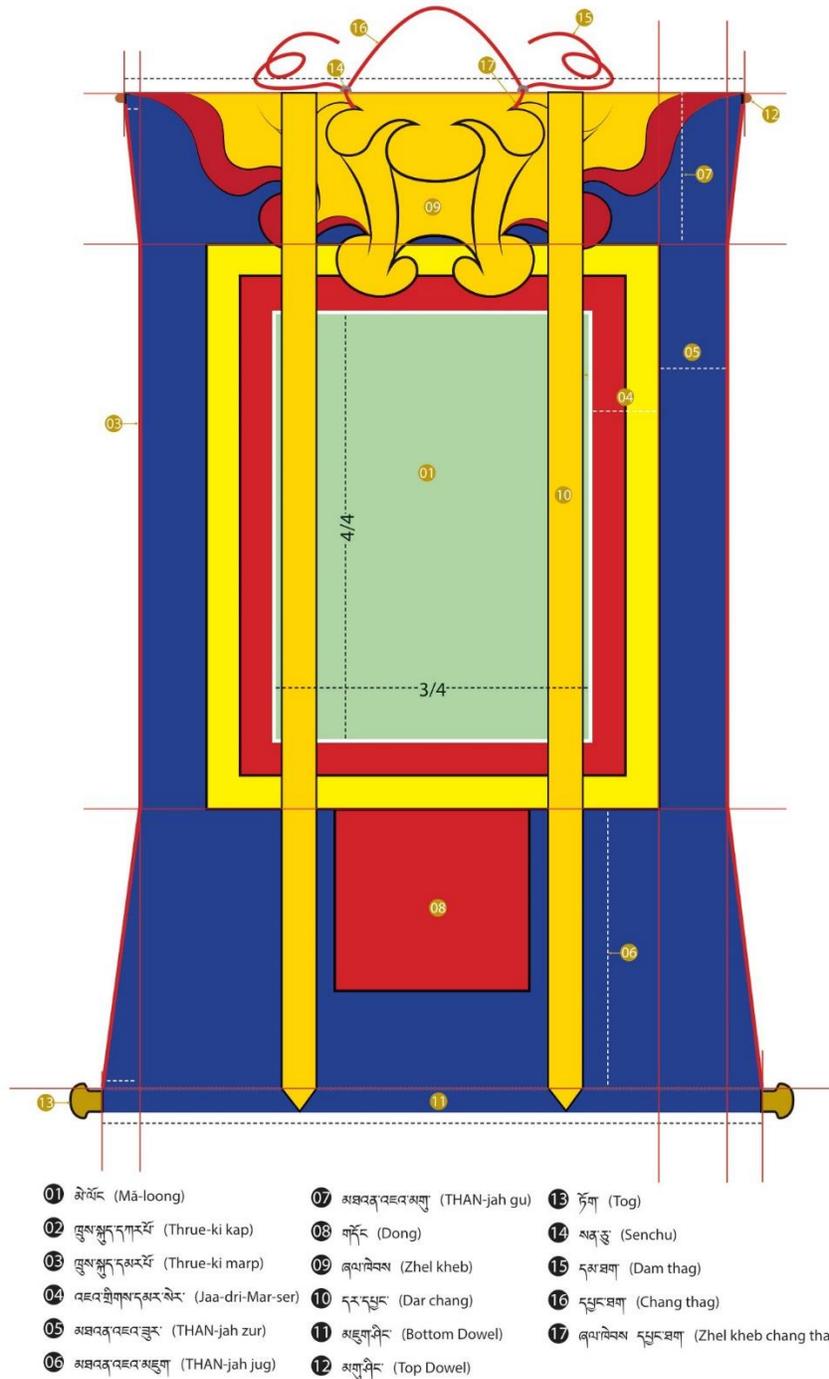
10.2 Thangka rolling: Before rolling an embroidered thangka, it is important to make sure that it is dry and free of dust. Once this is done, ensure that the *Zhaykheeb* (the front-facing silk border) is spread evenly before rolling the thangka smoothly, taking care to avoid forming any creases.

10.3 Thangka Storage: Store thangka in a clean, dry place with moderate temperature and humidity levels to prevent damage from moisture or pests.

10.4 Thangka packaging: To protect the thangka during transportation or shipping, use a sturdy and protective tube, such as a PVC pipe. Make sure to label the tube with any other relevant information.

11 Tools and Equipment

- a) Different sizes of needles
- b) Zu-shub
- c) Khay shing
- d) Tshem-shing
- e) Ur-ti
- f) Lopen
- g) Jyal- thaa
- h) Thik-shee
- i) Ta- khaab
- j) Scissors
- k) Nung-do
- l) Knife
- m) Saw
- n) Wooden divider
- o) Tshem-toray



- | | | | | | |
|----|--------------------------------------|----|-----------------------------|----|--|
| 01 | མེ་ལོང་ (Mä-loong) | 07 | མཐའན་འཇའ་མགུ་ (THAN-jah gu) | 13 | ཏྲོག་ (Tog) |
| 02 | ལྷུ་སྐྱད་དཀར་པོ་ (Thruë-ki kap) | 08 | གདོང་ (Dong) | 14 | སམ་ཅུ་ (Senchu) |
| 03 | ལྷུ་སྐྱད་དམར་པོ་ (Thruë-ki marp) | 09 | ཞལ་ལེབས་ (Zhel kheb) | 15 | དམ་ཐག་ (Dam thag) |
| 04 | འཇའ་ཐྱིགས་དམར་ལེང་ (Jaa-dri-Mar-ser) | 10 | དར་དཔྱད་ (Dar chang) | 16 | དཔྱད་ཐག་ (Chang thag) |
| 05 | མཐའན་འཇའ་རྩུ་ (THAN-jah zur) | 11 | མཇུག་གིང་ (Bottom Dowel) | 17 | ཞལ་ལེབས་ དཔྱད་ཐག་ (Zhel kheb chang thag) |
| 06 | མཐའན་འཇའ་མཇུག་ (THAN-jah jug) | 12 | མགུ་གིང་ (Top Dowel) | | |

Fig.1: Thangka measurement

(Normative)

Standard Measurement for *THAN-jah* Stitching:**1. $1 \text{ inch} \leq \text{WJMS} \leq 3 \text{ inches}$**

The given expression defines a range of values for the width of the *Jaa-dri Mar-ser* (WJMS). It states that the width of both the *Jaa-dri Mar-ser* should be greater than or equal to 1 inch and less than or equal to 3 inches. Together, the expression $1 \text{ inch} \leq \text{WJMS} \leq 3 \text{ inches}$ means that the width of the *Jaa-dri Mar-ser* must fall within the range of 1 inch to 3 inches. This formula provides a range of acceptable values for the width of the *Jaa-dri Mar-ser* that can be used to ensure that the dimensions of the *thangka* are accurate and consistent). The symbol " \leq " means "less than or equal to". Therefore, $1 \text{ inch} \leq \text{WJMS}$ means that the width of the *Jaa-dri Mar-ser* must be at least 1 inch or greater. Similarly, the expression $\text{WJMS} \leq 3 \text{ inches}$ means that the width of the *Jaa-dri Mar-ser* must not exceed 3 inches.

2. $\text{CWJMS} = (2(\text{WJMS}))$

The given expression defines the combined width of the *Jaa-dri Mar-ser* (CWJMS) as equal to twice the width of the *Jaa-dri Mar-ser* ($2(\text{WJMS})$). The width of the *Jaa-dri Mar-ser* is represented by the variable WJMS. By multiplying the width of the *Jaa-dri Mar-ser* by 2, we get twice its value. Therefore, the formula $\text{CWJMS} = 2(\text{WJMS})$ means that the combined width of the *Jaa-dri Mar-ser* is equal to twice the width of the *Jaa-dri Mar-ser*. This provides a straightforward way to calculate the combined width of the *Jaa-dri Mar-ser* based on the width of the *Jaa-dri Mar-ser* itself).

3. $\text{HJMS} = \text{HM} + (2(\text{WJMS}))$

The given expression defines the height of the *thangka* (HJMS) as the sum of two values: the height of the *mā-loong* (HM) and twice the width of the *Jaa-dri Mar-ser* ($2(\text{WJMS})$). The width of the *Jaa-dri Mar-ser* is represented by the variable WJMS. By multiplying the width of the *Jaa-dri Mar-ser* by 2, we get twice its value. By adding the height of the *mā-loong* to twice the width of the *Jaa-dri Mar-ser*, we get the height of the *Jaa-dri Mar-ser*. This formula provides a way to calculate the height of the *Jaa-dri Mar-ser* based on the height of the *mā-loong* and the width of the *Jaa-dri Mar-ser*.

4. $\text{WTJZ} = \text{CWJMS}$

The given expression defines the width of the *THAN-jah Zur* (WTJZ) as equal to the combined width of the *Jaa-dri Mar-ser* (CWJMS). The combined width of the *Jaa-dri Mar-ser* is represented by the variable CWJMS. This means that the width of both the *Jaa-dri Mar-ser* are added together to give us a single value that represents their combined width. The formula $\text{WTJZ} = \text{CWJMS}$, therefore, means that the width of the *THAN-jah Zur* is equal to the combined width of the *Jaa-dri Mar-ser*. This provides a straightforward way to calculate the width of the *THAN-jah Zur* based on the width of the *Jaa-dri Mar-ser*.

5. HLTJ = (HM/2) + CWJMS

The given expression defines the height of the Lower *THAN-jah* (HLTJ) as the sum of two values: half of the height of the *mā-loong* (HM/2) and the combined width of the *Jaa-dri Mar-ser* (CWJMS). The combined width of the *Jaa-dri Mar-ser* is represented by the variable CWJMS. This means that the width of both the *Jaa-dri Mar-ser* are added together to give us a single value that represents their combined width. By adding the combined width of the *Jaa-dri Mar-ser* to half of the height of the *mā-loong*, we get the height of the Lower *THAN-jah*. This formula provides a way to calculate the height of the Lower *THAN-jah* based on the height of the *mā-loong* and the width of the *Jaa-dri Mar-ser*.

6. LBELTJ = LM + (2(CWJMS)) + (2(WTJZ)) + (2(WTJZ/2))

The given expression LBELTJ represents the length of the bottom edge of a lower *THAN-jah*. It can be calculated by adding the length of the *mā-loong* (LM) to two times the combined width of the *Jaa-dri Mar-ser* (CWJMS) plus two times the width of the *THAN-jah Zur* (WTJZ) and two times half of the width of the *THAN-jah Zur* (WTJZ/2). In simpler terms, to find the length of the bottom edge of a lower *THAN-jah*, you need to add up the length of the *mā-loong*, twice the width of the *Jaa-dri Mar-ser*, twice the width of the *THAN-jah*, and twice half of the width of the *THAN-jah Zur* to account for the slanting edge.

7. WD = (LM + 2(CWJMS) + 2(WTJZ) + 2(WTJZ/2))/3

Dhong is a term used to refer to a patch attached right in the center of the lower *THAN-jah* that represents the traditional Bhutanese door. To calculate the Width of the *Dhong* (WD), you take the total length of the Lower *THAN-jah*, which is the sum of the length of the *mā-loong* (LM) plus twice the combined width of the *Jaa-dri Mar-ser* (2(CWJMS)) plus twice the width of the *THAN-jah Zur* (2(WTJZ)) plus half the width of the *THAN-jah Zur* (WTJZ/2). Then, you divide this sum by 3 to get the width of the *Dhong*.

8. HD = 2/3 * (HLTJ)

To calculate the height of the *Dhong*, you need to take 2/3 of the height of the lower *THAN-jah*. The height of the lower *THAN-jah* is the sum of the length of the *mā-loong* (LM), twice the combined width of the *Jaa-dri Mar-ser* (2(CWJMS)), twice the width of the *THAN-jah Zur* (2(WTJZ)), and half the width of the *THAN-jah Zur* (WTJZ/2).

9. LUEL TJ = LM + (2(CWJMS)) + (2(WTJZ))

LUEL TJ refers to the length of the upper edge of the lower *THAN-jah*. To calculate this, you need to add the length of the *mā-loong* (LM) to two times the combined width of the *Jaa-dri Mar-ser* (CWJMS) plus two times the width of the *THAN-jah Zur* (WTJZ). The resulting sum represents the length of the upper edge of the lower *THAN-jah* to account for the slanting edge.

10. HUTJ = (HLTJ/2)

HUTJ is the abbreviation for the Height of Upper *THAN-jah*. This formula states that the height of the upper *THAN-jah* is equal to half the height of the lower *THAN-jah* (HLTJ). In other words, if you know the height of the lower *THAN-jah*, you can use this formula to calculate the height of the upper *THAN-jah*. The formula divides the height of the lower *THAN-jah* by 2 to get the height of the upper *THAN-jah*.

11. LLEUTJ = LM + (2(CWJMS)) + (2(WTJZ))

The given expression LLEUTJ stands for the length of the lower edge of the upper *THAN-jah*. It is calculated by adding the length of *mā-loong* (LM) to two times the combined width of *Jaa-dri Mar-ser* (CWJMS) and two times the width of *THAN-jah Zur* (WTJZ). The resulting sum gives the length of the lower edge of the upper *THAN-jah* to account for the slanting edge.

12. LUETJ = LM + (2(CWJMS)) + (2(WTJZ)) + (2(WTJZ/2))

The given expression LUETJ stands for the length of the upper edge of *THAN-jah*. To calculate this length, you need to add the length of the *mā-loong* (LM), two times the combined width of the *Jaa-dri Mar-ser* (CWJMS), and two times the width of the *THAN-jah (Zur)* (WTJZ), plus half the width of the *THAN-jah Zur* (WTJZ/2) again. This gives you the total length of the upper edge of the *THAN-jah* to account for the slanting edge.

Definition of variable expressions:

"HM" represents the height of *mā-loong*.

"LM" represents length of the *mā-loong*

"JMS" represents *Jaa-dri Mar-ser*

"TJ" represents *THAN-jah*.

"TJZ" represents *THAN-jah poor*

"HJMS" represents height of *Jaa-dri Mar-ser*

"WJMS" represents the width of *Jaa-dri Mar-ser*

"CWJMS" refer to a combined width of the *Jaadri "mar & ser"*

"LJMS" represents the length of *Jaa-dri Mar-ser*.

"HLTJ" represents the height of lower *THAN-jah*

"WTJZ" represents the width of the *THAN-jah poor*.

"LUELTJ" refers to the length of the upper edge of the lower *THAN-jah*

"LLEUTJ" refers to the length of the lower edge of the upper *THAN-jah*.

"LTJ" represents the lower part of *THAN-jah*.

"HUTJ" refers to the Height of Upper *THAN-jah*

LUETJ stands for the length of the upper edge of *THAN-jah*.

"UTJ" represents the upper *THAN-jah*.

(Informative)
Iconometric

The basic iconometric measurement for sitting posture of any Choeku types need to meet the basic measurement given below:

1. The proportionate height and width of any sitting posture of iconography are determined using a basic measurement system:
 - a. The base measurement (the basic measurement or size used as a reference point for determining the proportions of an iconography) is determined based on the size requirement of the painting scroll (mā-loong).
 - b. The total proportionate height of the sitting posture is obtained by multiplying the base measurement by 9.5 (any unit of measurement used, can be arbitrary, e.g. handspan) .
 - c. The total measurement of the body width is obtained by multiplying the base measurement by 4.
 - d. The right and left sides of the posture are determined by drawing a vertical and horizontal line from the center. A grid is then created using the base measurement to proportion the body part of the icon.

Based on the above measurement system for determining the proportionate height and width of a sitting posture in iconography, the following is the formula:

- A. Total proportionate height of sitting posture = Base measurement x 9.5
- B. Total measurement of body width = Base measurement x 4

2. To proportion the facial parts of the icon, the following measurements are used:
 - a. The head size is proportioned by multiplying the base measurement by 1.25.
 - b. The face size is proportioned by multiplying the base measurement by 1.5.
 - c. The location of the facial parts (eyes, ears, nose, and mouth) is determined by dividing the total face measurement by the base measurement and drawing a grid. The eyes, ears, and nose are located at the center of the grid, whereas the mouth falls at the center of the lower grid.

Based on the above measurement system, the proportion of any facial parts of the iconography, the following formula can be used:

- a. Head size = Base measurement x 1.25
- b. Face size = Base measurement x 1.5

By following these steps, the basic iconometric measurement for sitting posture can be accurately determined.

To locate the facial parts on the icon, the following formula can be used:

Grid size = Total face measurement / Base measurement

The eyes, ears, and nose are located at the center of the grid.

The mouth is located at the center of the lower grid.

(Normative)**Steps for Embroidering**

1. First, create the outline or "Chay " starting from kusha, namza and to the rest of the designs.
2. Second, fill in the designs. This process is called 'kang ni' and employs 'kang tsem'. This process should also begin from kusha, namza and then the rest.
3. Third, start filling in the other designs around the main iconography using lhug-tshem and kedam-thsem. To create Lhay-tshem, three colour shades are typically used: Chaw, Bar-tsho, and Tsho. In the case of an extra-large rimo size, it often uses 5, 7, or 11 shades to enhance the intricacy of the shading. The filling technique is carried out from the outside to the inside.
4. Fourth, add kar-cha, ser-ki and meto kang by using chay-tshem and lhu tsem techniques.
5. Fifth, work on the Chen-Zhay of the main iconography. This uses chay-tsem.

Annex D

(Normative)**Steps for Stitching THAN-jah**

1. Prepare the required materials for THAN-jah
2. Determine the size of the mā-loong, and cut the materials/fabrics. The measurement formula is attached as annexure.
3. Stitch the Jaa-dri mar-ser (Red and yellow) together.
4. Stitch the Thru-ki, the inner cord to Jaa-dri-Mar-ser.
5. Join the four sides of Jaa-dri-mar-ser to make a frame, ensuring accuracy by using a Lopen (framing square/L-shaped Measuring tool) to align with the mā-loong.
6. Divide the lower part of the THAN-jah into three equal parts. Attach the Dong to the Center part of the lower THAN-jah. Ensure that the height of the Dong is $\frac{2}{3}$ of the height of the lower THAN-jah. Join all three parts of the lower THAN-jah together.
7. Attach/stitch THAN-jah Zur to the sides of Jaa-dri-mar-ser
8. Attach/stitch the lower and upper THAN-jah to the jaa-dri-mar-ser respectively.
9. Stitch outer cord (Thru-ki) on the two sides of the THAN-jah.
10. Attach the mā-loong to the THAN-jah.
11. Attach Nangshab (lining) to the THAN-jah
12. Align and attach the Zhay-kheeb, Dar-chang, Dam-tha, Chang-thap (1 for hanging and 1 for holding Zhaykheeb)
13. Attach the Top Dowel, and the bottom Dowel.
14. Attach the decorative knob (Tog) on the edges of the bottom dowel.

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