



Hemtack

# ENGINEERING CHANGE ORDER

| REQUEST DATE  | 6/19/2024   | REQUESTED BY        | H. AMEZQUITA                              | REQUESTED RELEASE DATE                               | 6/26/2024                                     | ECO #   | <b>ECO-00143</b>                    |
|---|---|---------------------|---|--|---|---|-------------------------------------|
| AFFECTED PRODUCT LINES                                | ZEBRA SHADES (ALL LIFT TYPES)   |                     |   |  |   |   |                                     |
| REASON FOR CHANGE                                     | IMPROVE ROLLER PIPE END PLUG DESIGN TO MINIMIZE RISK OF MATERIAL DAMAGE (FRAYING ON EDGES).   |                     |   |  |   |   |                                     |
| DESCRIPTION OF CHANGE                                 | CHANGE DESIGN TO ELIMINATE THE EXPOSURE OF THE GAP BETWEEN THE ALUMINUM ROLLER PIPE EDGE AND THE END PLUG INSIDE FACE. THE CHANGE TO THE BASE OF THE END PLUG HIDES ANY POTENTIAL ROUGH EDGES OR ALUMINUM SHAVINGS LEFT BY THE CUTTING PROCESS. |                     |   |  |   |   |                                     |
| COST IMPACT   | N/A   |                     |   |  |   |   |                                     |
| DOCUMENT / PART NUMBER                                | OLD REV   | NEW REV             | DOCUMENT/ PART DESCRIPTION                | CHANGE DESCRIPTION                                   | FORM, FIT, OR FUNCTION AFFECTED<br>Yes, or No | PART DISPOSITION<br>(USE AS IS)<br>(REWORK)<br>(SCRAP)<br>(OBSOLETE)<br>(RETURN TO VENDOR)<br>(OTHER) |                                     |
| MPMI1342  |   |                     | END PLUG, BR ROLLER PIPE V-SHAPED, WHITE  | CHANGE PART DESIGN<br><br>SEE PART DRAWING ON PAGE 3 | YES   | USE AS IS*  |                                     |
| MPMI1343  |   |                     | END PLUG, BR ROLLER PIPE V-SHAPED, IVORY  |  | YES   | USE AS IS*  |                                     |
| MPMI1344  |   |                     | END PLUG, BR ROLLER PIPE V-SHAPED, BLACK  |  | YES   | USE AS IS*  |                                     |
| MPMI1345  |   |                     | END PLUG, BR ROLLER PIPE V-SHAPED, SILVER |  | YES   | USE AS IS*  |                                     |
| MPMI1346  |   |                     | END PLUG, BR ROLLER PIPE V-SHAPED, BRONZE |  | YES   | USE AS IS*  |                                     |
| ADDITIONAL INFORMATION                                | *DEplete INVENTORY OF CURRENT DESIGN<br>*STARTING PO: TBD   |                     |   |  |   |   |                                     |
| AFFECTED DOCUMENTS / PROCESSES (CHECK ALL THAT APPLY) |   |                     |   |  |   |   |                                     |
| BOM / CONFIG  | <input type="checkbox"/>  | PRODUCT / PART SPEC | <input checked="" type="checkbox"/>       | QC CHECKLIST   | <input type="checkbox"/>                      | PART DRAWING  | <input checked="" type="checkbox"/> |
|   |   |                     |   | ASSEMBLY DRAWING                                     | <input type="checkbox"/>                      | INSTR SHEET   | <input type="checkbox"/>            |
|   |   |                     |   | PROCESS VISUAL AIDS                                  | <input checked="" type="checkbox"/>           | WORK INSTRUCTIONS   | <input checked="" type="checkbox"/> |
| ECO APPROVALS ROUTING                                 |   |                     |   |  |   |   |                                     |
| APPROVER  | APPROVAL REQUIRED   | APPROVER NAME       | APPROVAL STATUS                           | APPROVED ON  | NOTES   |   |                                     |
| PHASE II MANAGEMENT (US - DL)                         | <input checked="" type="checkbox"/>   | T. DAVIDSON         | APPROVED                                  | 06/19/2024   |   |   |                                     |
| PHASE II PROD DEV (US - NY)                           | <input checked="" type="checkbox"/>   | L. HUNT             | APPROVED                                  | 06/19/2024   |   |   |                                     |
| MANAGEMENT (MX)                                       | <input checked="" type="checkbox"/>   | L. MONTEJO          | APPROVED                                  | 06/20/2024   |   |   |                                     |
| QC / ENG (MX)   | <input checked="" type="checkbox"/>   | H. AMEZQUITA        | APPROVED                                  | 06/19/2024   |   |   |                                     |
| IT (MX)   | <input checked="" type="checkbox"/>   | E. CASTELLANOS      | APPROVED                                  | 06/19/2024   |   |   |                                     |
| PRODUCTION (MX)                                       | <input type="checkbox"/>  |                     |   |  |   |   |                                     |
| MATERIALS (MX)  | <input type="checkbox"/>  |                     |   |  |   |   |                                     |

**ACTIONS REQUIRED**

|                     |                                     |                                 |
|---------------------|-------------------------------------|---------------------------------|
| BOM / CONFIG        | <input type="checkbox"/>            | WILL BE MODIFIED BY IT (MX)     |
| PRODUCT / PART SPEC | <input checked="" type="checkbox"/> | WILL BE MODIFIED QC / ENG (MX)  |
| QC CHECKLIST        | <input type="checkbox"/>            | WILL BE MODIFIED QC / ENG (MX)  |
| PART DRAWING        | <input checked="" type="checkbox"/> | WILL BE MODIFIED QC / ENG (MX)  |
| ASSEMBLY DRAWING    | <input type="checkbox"/>            | WILL BE MODIFIED QC / ENG (MX)  |
| INSTR SHEET         | <input type="checkbox"/>            | WILL BE MODIFIED PHASE II (USA) |
| PROCESS VISUAL AIDS | <input checked="" type="checkbox"/> | WILL BE MODIFIED QC / ENG (MX)  |
| WORK INSTRUCTIONS   | <input checked="" type="checkbox"/> | WILL BE MODIFIED QC / ENG (MX)  |

**PICTURES, DRAWINGS, ETC.**



**MPMI1342**



**MPMI1343**



**MPMI1344**

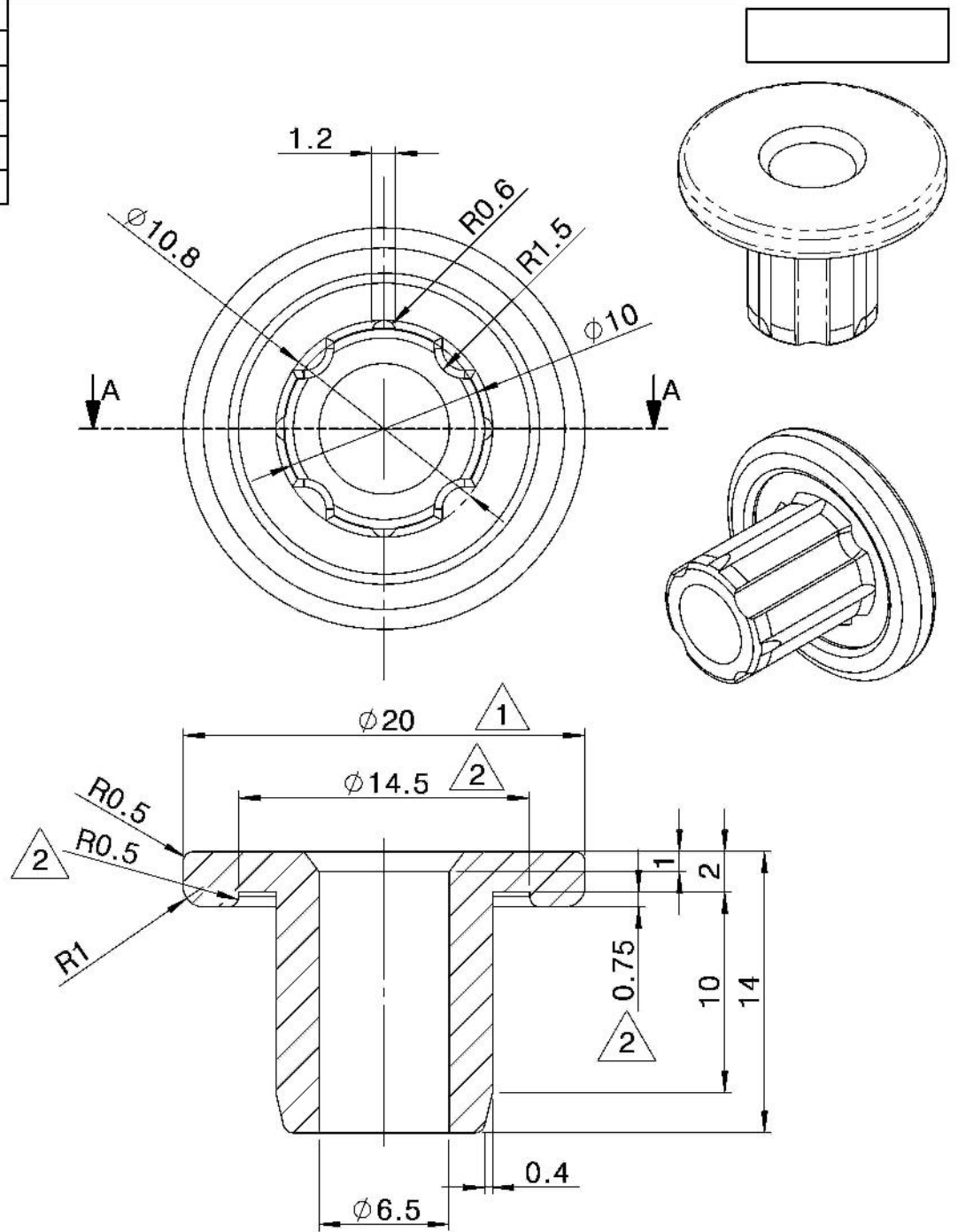


**MPMI1345**



**MPMI1346**

| 一般公差      |      |
|-----------|------|
| 315mm以上   | ±0.5 |
| 121~315mm | ±0.4 |
| 31~121mm  | ±0.3 |
| 6~30mm    | ±0.2 |
| 6mm以下     | ±0.1 |



剖面圖 A-A  
比例 2 : 1

|        |      |                      |        |       |           |                        |       |
|--------|------|----------------------|--------|-------|-----------|------------------------|-------|
| 160319 | △1   | 尺寸13.8mm改20mm,增加圓角R1 |        |       |           | HONG                   | JACKY |
| 240423 | △2   | 增加凸台及圓角R0.5          |        |       |           | MING                   | JACKY |
| 口 期    | 變更記號 | 訂 正 履 歷              |        |       |           | 訂正者                    | 圖 檢   |
| 單 位    | mm   | 日期                   | 姓名     | 名稱    | MMC 鋁圓管護套 |                        |       |
| 比 例    | 3:1  | 繪 圖                  | 240423 | MING  | 客 戶       |                        |       |
| 材 質    | ABS  | 設 計                  | 160125 | JACKY | 圖 號       |                        |       |
| 數 量    |      | 校 對                  | 240423 | JACKY | 型 號       |                        |       |
| 表面處理   |      | 審 核                  | 240423 | JACKY | 備 註       | 體積為1.14cm <sup>3</sup> |       |







Hemtack  
S.A. De C.V.

# ENGINEERING REPORT

|                                      |   |                    |                     |            |
|--------------------------------------|---|--------------------|---------------------|------------|
| <b>REPORT TITLE:</b>                 | ROLLER PIPE ZEBRA END PLUG SAMPLE           |                    | <b>REPORT DATE:</b> | 05/20/2024 |
| <b>REPORT NUMBER:</b>                | ENGREP093                                   | <b>CREATED BY:</b> | C. Ramirez          |            |
| <b>QA &amp; ENGINEERING APPROVAL</b> | <b>CC:</b>                                  |                    |                     |            |
| H. Amezcua                           | L. Hunt, L. Hernandez, M. Chang, H. Amezcua |                    |                     |            |

## 1. Background:

A set of 4 Zebra roller pipe end plugs were received for review and testing. This test samples include a modification to allow for better fit and eliminate the risk of material fraying or damage on the edges, especially on Zebra cordless shades.

## 2. Analysis:

During inspection, the current end plug was compared with the samples to determine which features are different. The new end plug has groove on the inside base (see photo 1). This groove allows for the roller pipe edge to be inserted and stay "hidden" and also eliminate the gap between the aluminum part and the end plug inside face. The groove at the base of the end plug hides any potential rough edges or aluminum shavings left by the cutting process that could potentially damage the material. Also, by hiding the gap between the two parts there is no risk of the material getting stuck while raising or lowering the shade (see photo 2 and 3).

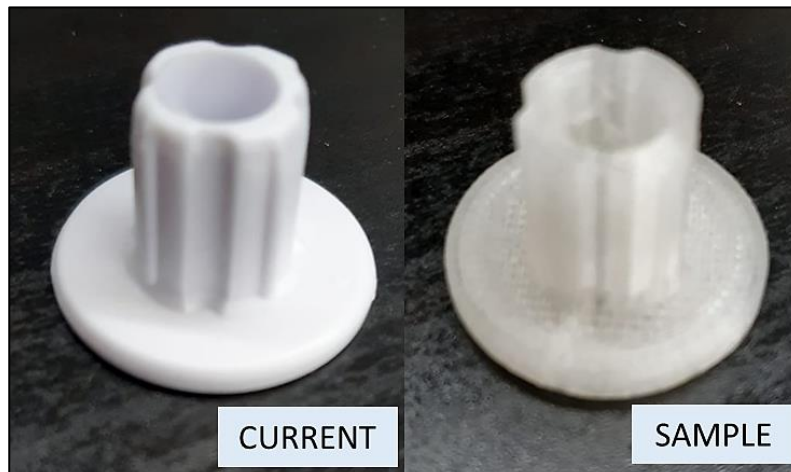
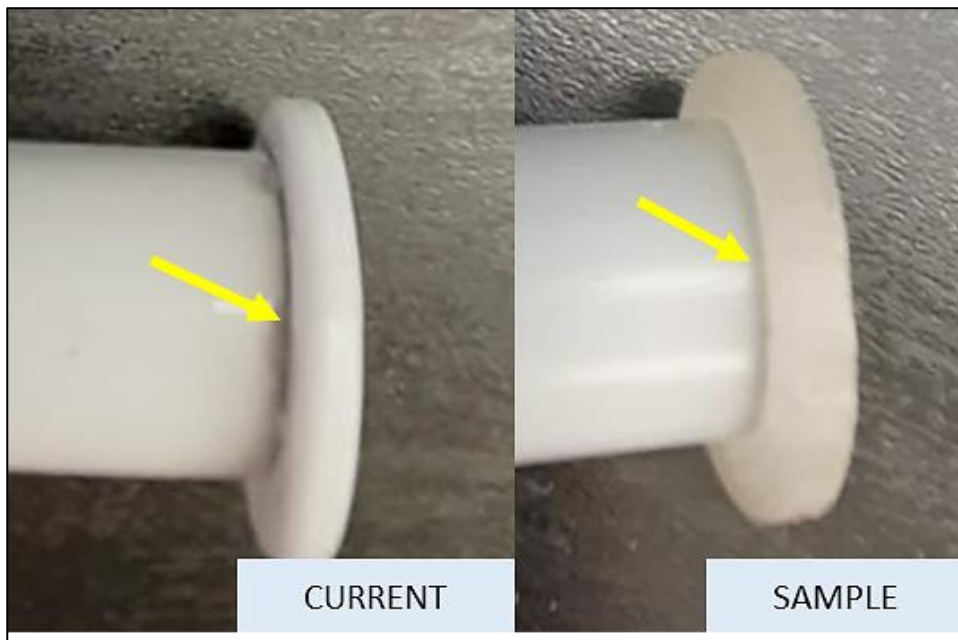
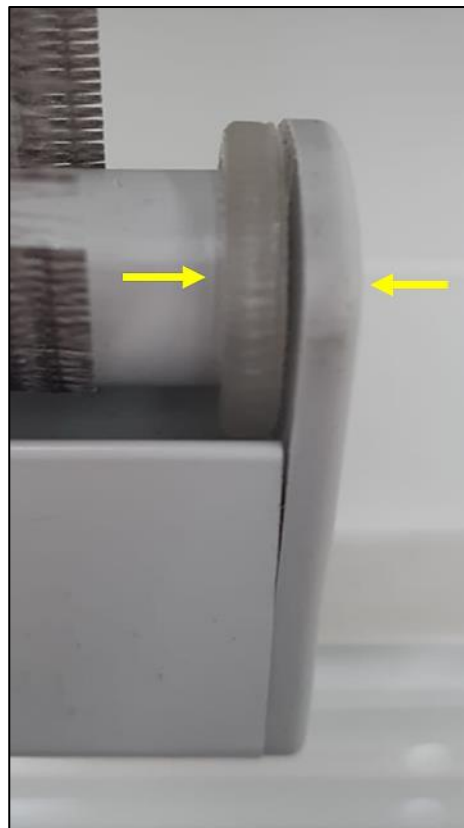


Photo 1. Current vs Sample Roller Pipe End Plug



**Photo 2. End Plug and Roller pipe Assembly**



**Photo 3. Assembly with end cap bottom rail v shaped**

See video: <https://youtube.com/shorts/WZe6-hYh2xc?feature=share>

### **3. Conclusion:**

- The groove on the inside base of the end cap seems to be effective in preventing fraying, tear or damage to the edges of the material when raising and lowering the shade.
- 50 operation cycles (raise and lower shade) were performed.
- No significant issues were detected during assembly of these end plug samples and aluminum roller pipe.
- No additional tools or equipment were required.