


Document Title: MAINTENANCE BULLETIN – S-MN-MB-001v0			 Simpsonville, South Carolina	
Erema Melt Temperature Probe Bushing Modification				
Document Number: S-MN-CRD-XXX	Rev No: 01	Date: 05/05/14	Document Owner: Reliability & CI Manager	Approver(s): Maintenance Manager

1. SCOPE

- 1.1. This document describes and details the modification/s and requisite task/s instructions in original equipment manufacturer design in the SC1 Erema melt temperature probe bushing at the Fitesa, Simpsonville plant, SC.

2. DEFINITIONS

- 2.1. N/A

3. AFFECTED AREA / MACHINE / EQUIPMENT / PRODUCT / COMPONENT / MATERIAL

- 3.1. SC1 Erema recycling machine 906 T. Commission number P09/193 / ENA 874.
- 3.1.1. Extruder melt temperature probe bushing

4. FAULT ISOLATION CODE

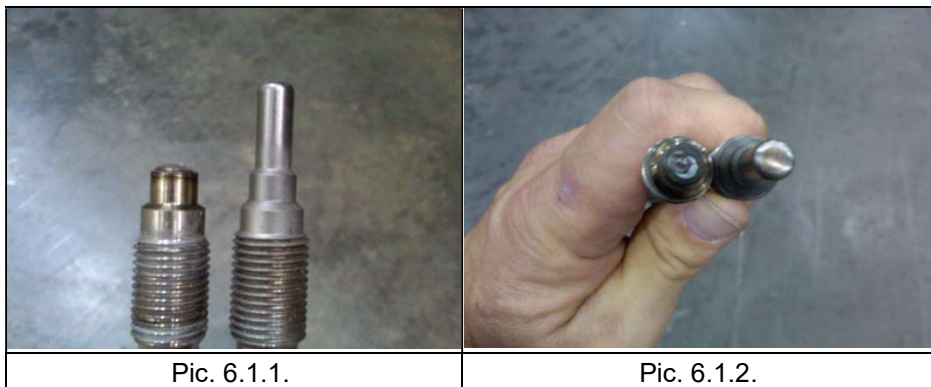
- 4.1. N/A

5. AFFECTED DATES RANGE

- 5.1. 05/05/2014 – Indefinite

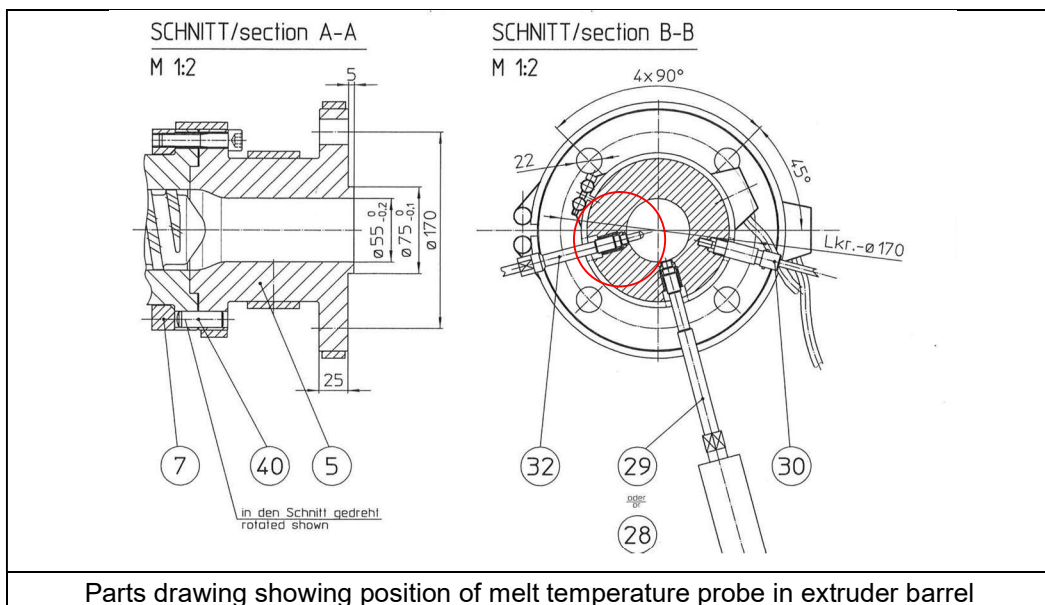
6. BACKGROUND DIAGNOSTICS

- 6.1. The Erema melt temperature probe has had a history of the tip of the probe breaking off from the body of the probe rendering the unit inoperative. The main reason is that the extruder is started from a cold or warm start up without ensuring that the plastic resin in the extruder barrel is fully plasticized (Pics. 6.1.1. and 6.1.2).

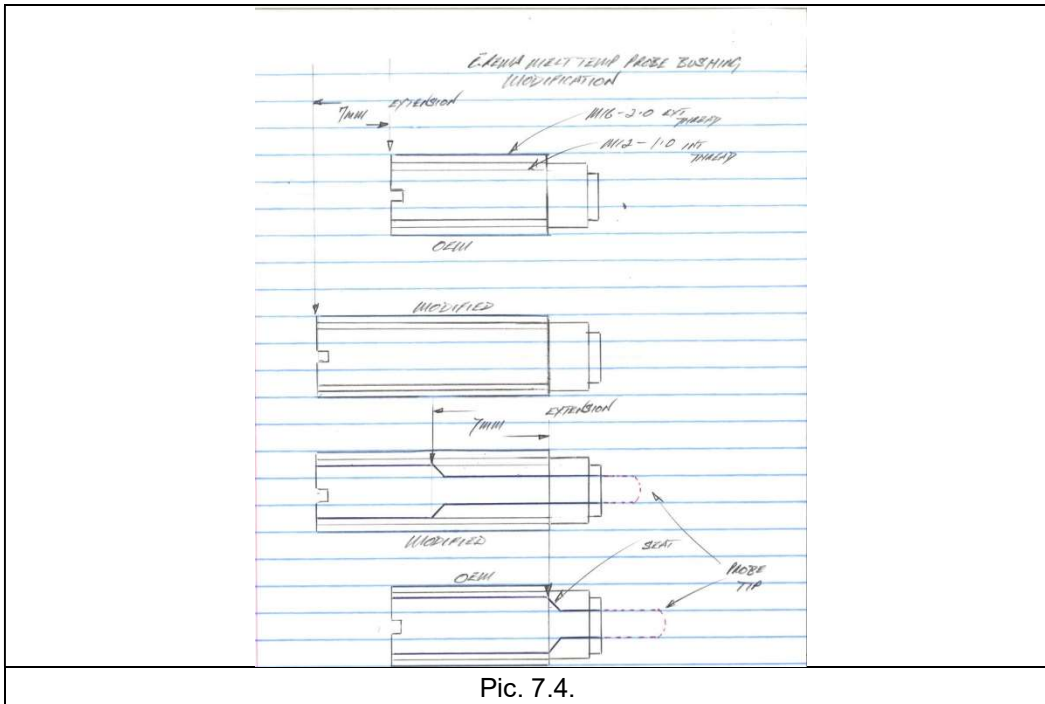


7. COUNTERMEASURES TAKEN

- 7.1. Following a physical analysis it was determined that there was insufficient lateral support of the tip of the probe and that longitudinal forces of the plastic melt flow was greater than the ability of the base of the probe tip to withstand being 'bent' to the point of the metal sleeve and mica fill of the probe would result in breaking down the molecular physical bonds and separate – failed state.
- 7.2. Reducing the moment of the tip of the probe to the base of the probe would negate this moment to the point where the surface contact of the length of the probe with the plastic melt flow to an extent the probe tip could withstand lateral forces of the plastic melt flow against it.
- 7.3. The probe has two parts; the probe itself and the bushing that it inserted to and then inserted into the extruder barrel directly into the plastic melt flow. The bushing has been modified to reduce the distance the probe extends into the plastic melt flow by 50%. Currently the probe extends 14 mm into the extruder barrel. This has now been reduced to 7 mm. This is not expected to affect the ability of the probe to accurately measure the plastic melt temperature. To achieve this modification of the bushing was necessary. The external and internal threaded body of the bushing has been increased by 7 mm. The internal seat of the bushing where the probe seal against the bushing has been moved 7 mm backwards thus is reducing the extension of the probe tip into the barrel by 7 mm. See pic 7.4

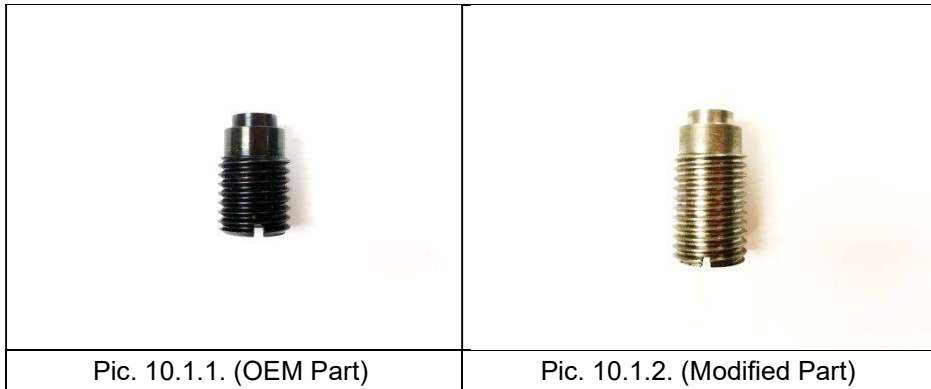


7.4. Modified part drawing



Pic. 7.4.

7.5. Pics 7.5.1. The original equipment manufacturer bushing and pic 7.5.2. is the modified bushing.



8. REFERENCES

8.1. Documentation

8.1.1. N/A

8.2. Forms

8.2.1. N/A

8.3. Responsibility

8.3.1. Authorized Fitesa Maintenance Technicians or authorized persons trained in this work task procedure.

8.4. Frequency

8.4.1. As required.

8.5. Materials

8.5.1. Anti-seize grease

8.5.2. Cotton rags

8.6. Tools

8.6.1. 12 mm combination wrench

8.6.2. 5 mm Allen wrench

8.6.3. 4 mm Allen wrench

8.6.4. 10" long flat blade screwdriver

8.7. Parts Requirements

8.7.1. Erema melt temperature probe w bushing part number: 34862 (contains OEM bushing which needs to be removed and discarded).

8.7.2. Modified melt temperature probe bushing part number: 35945 (new modified bushing which is to be used instead of the OEM bushing).

8.8. HS&E Mandates / Concerns / Considerations

8.8.1. No health, safety or environmental mandates, concerns or consideration have been identified with this maintenance bulletin.

8.9. Personal Protective Equipment

8.9.1. Company mandated PPEs in designated areas.

8.9.2. X 1 Hasp clasp lock out/tag out lock per person actually working on the extruder unit attached to the Erema machine extruder.

8.9.3. X 1 Hasp clasp lock out/tag out lock per person actually working on the extruder to be attached to the Vecoplan machine.

8.9.4. Face shield.

8.9.5. Leather gloves.

8.9.6. I pair of heat resistant arm sleeves for each person.



WARNING: Hot materials. Always wear hot work personal protection equipment.

8.10. Guidelines

8.10.1. N/A.

9. ATTACHMENTS

9.1. Modified bushing drawing.

9.2. Modified bushing B&D Machine quotation.

10. APPENDIX

10.1. None.

11. ACTIONS REQUIRED BY MAINTENANCE STAFF

11.1. Shut down the machine in the proper procedure and lock out / tag out electrical control panel. If the melt temperature probe requires replacement it is important that it is replaced using the modified bushing and not the OEM bushing.

11.1.1. Don PPEs.

Usually when the temperature is removed – which should be done very shortly after the machine has been purged of material in the extruder barrel while it is still hot – the bushing comes out with the probe and should be discarded and replaced with the new modified bushing. The modified bushing is stocked next to the probe in the spare parts store room (see 8.7.1. and 8.7.2. for parts requirement). **Note:** It is advisable to carry out this while the extruder barrel is still hot for ease of disassembly and assembly.

11.2. Remove the screen changer interlock switch mount plate (Pic. 11.2) and rest on the floor.



Pic. 11.2.

11.3. Unplug the temperature probe electrical connector plug (Pic. 11.3.).



Pic. 11.3.

11.4. Using the 12 mm combination wrench unscrew the probe (Pic. 11.4.).



Pic. 11.4.

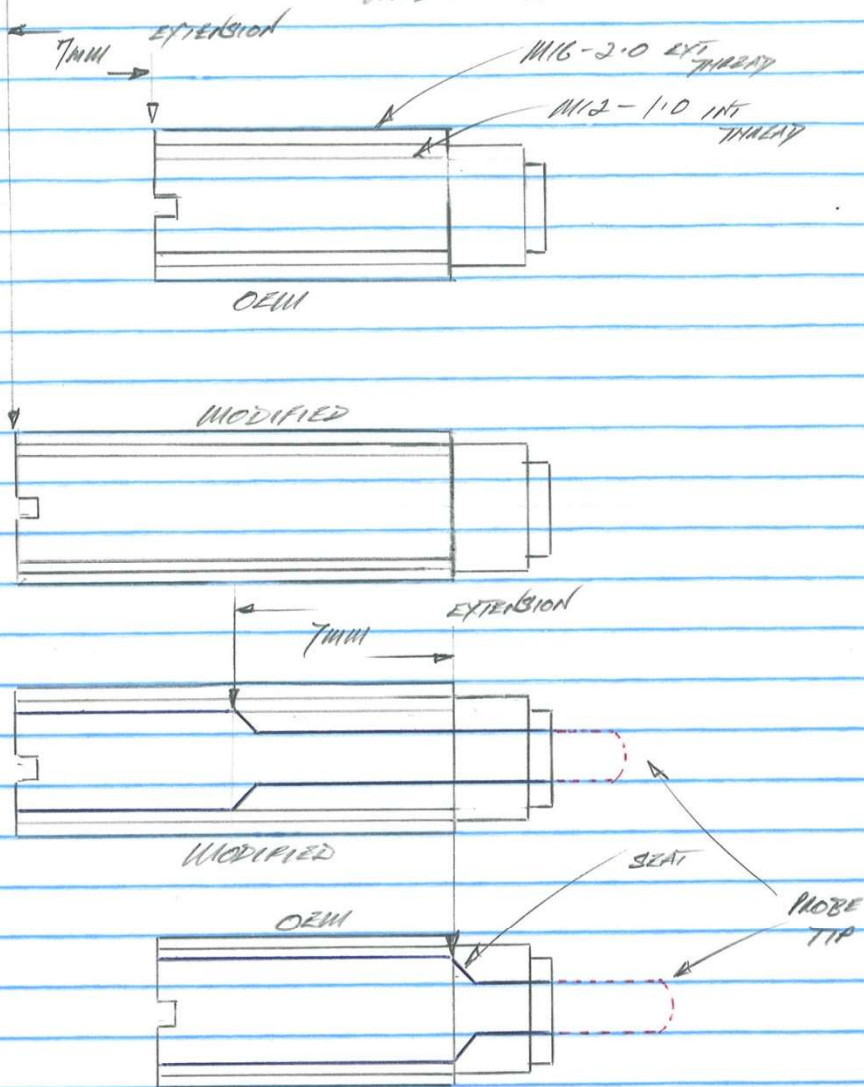
- 11.5. Apply a liberal amount of anti-seize grease to the threads of the temperature probe.
- 11.6. Install the modified bushing on the probe.
- 11.7. Apply a liberal amount anti seize grease to the external threads of the modified bushing.
- 11.8. Using a cotton rag and 10" long flat blade screwdriver push the corner end of the rag into the threaded port of the barrel to clean out any residual debris and molten plastic. Do this X 4 times to make sure it is cleaned out.
- 11.9. Install the probe into the barrel port and screw it all the way home to the port seat – **DO NOT OVER TIGHTEN.**
- 11.10. Plug the temperature probe electrical connector together.
- 11.11. Replace the screen changer interlock switch mount plate.
- 11.12. Remove lock out / tag out and turn power back on to control panel.
- 11.13. Start line back up and check probe area for leaks.

12. ACTIONS REQUIRED BY MRO COORDINATOR

- 12.1. When ordering replacement melt temperature probe from the vendor the probe is part of a kit containing a replacement bushing (the OEM bushing) this is to be removed from the packaging and discarded.
- 12.2. The modified bushing is a manufactured spare part that forms the new modified kit. The manufacturer of the modified bushing is B&D Machine. B&D Machine have this modified bushing saved in their customer data base of manufactured spare parts. The part number that has been assigned to this modified bushing is their origination reference quotation number: Q # 1091 Erema Extruder Melt Bush per Q # 1091.

13. ATTACHMENT 1: Modified bushing drawing.

C-AREA MELT TEMP PROBE BUSHING MODIFICATION



14. **ATTACHMENT 2:** Modified bushing B&D Machine quotation

QUOTE

B & D Machine

3113 Harris Bridge Road

Woodruff, S.C. 29388

Phone: 864-876-9764

Fax: 864-876-2257

Email: BandDmachine@gmail.com

Quote # **1091**

R.F.Q.#**Email/Fred**

Date: **1-24-14**

Lead Time: **1 week**

F.O.B. **Del'd/Add on**

Terms: **Net 30**

To: **Fitesa, Simpsonville Facility**

840 S.E. Main Street

Simpsonville, SC 29681

Attn: Fred Webberking

<u>Qty</u>	<u>Item</u>	<u>Description</u>
4	1	Erema Extruder Melt Bush per Q # 1091 (modified per Fred Webberking instructions) \$95.00 each.

TOTAL: \$380.00

15. APPENDIX. None.

Revision History:

Effective Date	Revision Number	Description of Change	Reason for Change
05/06/14	01	N/A	First Draft