

GAMMATEC NDT SUPPLIES SOC LTD

Group	Logistics	Calibration of GD-2 and GD-1A Densitometer		
Document	Work Instruction			
Document No.	5.1.39.0			
Revision No.	5	Effective from	4 February 2018	Page 1 of 8

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DISTRIBUTION

DEPT
EWS

NAME	DEPT

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1. PURPOSE/OBJECTIVES

The objectives of this procedure are:

- 1.1 To outline the different steps and taken in the Calibration of the GD-2 and GD-1A Densitometers.

2. SCOPE

This procedure is applicable to all personnel within Gammatec NDT Supplies SOC Ltd.

3. RESPONSIBILITIES AND AUTHORITIES

3.1 **Managing Director**

It is the responsibility of the Managing Director to ensure that the necessary responsibilities and authorities are defined, assigned and communicated to the applicable personnel within the company.

3.2 **EWS Manager/Supervisor**

- The EWS Manager/Supervisor must ensure that this work instruction is available at point of use and is complied with and is also responsible for delegation and prioritising of work to his staff.
- Is Responsible for ensuring that all Repair, Testing and Calibration is recorded on the relevant work sheets and is available for review when required during processing.
- Is responsible for ensuring that all calibrations conducted are traceable to National, International standards, or Manufacturers specification (where required).
- Is responsible for ensuring that customers stated requirements are met about Repair, Testing and Calibration.
- Is responsible for the training, and certification of technicians in accordance with the approved Quality Policy and Work instructions.
- Is responsible for regular reviewing and updating of this work instruction to ensure that it remains current.

3.3 **EWS Technician**

- The EWS technician must perform the duties as required by the work instruction and as delegated by the EWS Manager/Supervisor.
- Is responsible for reporting any problems or non-conforming situations to the EWS Manager/Supervisor for resolution.
- Is responsible for Repair, Testing and Calibration of any used or new equipment as per stated requirements.
- Is responsible for accurate recording of test results onto the applicable documents.

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3.4 Company Accountant

- Is Responsible for authorising the disposal of documents/records which have reached their stated retention periods.

4. REFERENCES

- 4.1 ISO 9001 Quality Management System.
- 4.2 Applicable procedures and work instructions within Gammatec NDT Supplies SOC Ltd.
- 4.3 Applicable regulatory requirements as applicable within Gammatec NDT Supplies SOC Ltd.

5. DEFINITIONS

5.1 EWS – Electronic Workshop

6. PROCEDURE

6.1 Discussion of process - GD-2 and GD-1A Densitometer Calibration.

6.1.1 Equipment required

- Film viewer
- Certified “Film Density Strip”

6.1.2 Check the condition of the Densitometer and note on **Calibration Record PM/GSA/LOG-005.01.039.001** (Appendix 1).

- **Body** – No visible cracks or dents that may affect performance of unit.
- **LCD Screen** – No visible cracks/ or damage to the LED screen.
- **LCD Display** – Ensure the LCD display is not faulty.
- **Probe Cable** – Ensure cable is not cracked /perished.
- **Probe** – Ensure lens is secured and not damaged or scratched
- **Battery** – Ensure battery is firmly fitted inside battery casing.
- **Battery Terminals** – Ensure terminals are not damaged or corroded.
- **Battery Cover** – Ensure it fits properly.
- **Battery level** - Ensure on-screen indicator is working.
- **Screws** – are present and tight.

6.1.3 Calibration Procedure

6.1.3.1 Push switch, that is in front below the display screen for the GD-2 or on the left side of the GD-1A, to ON.

6.1.3.2 Depress **on/off key** whilst depressing **zero key** and **hold key**. Dark reference will appear.

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- 6.1.3.3 Set dark reference to correspond with the density strip, select a step on the step wedge with a value of between 3.00 and 4.00, by pressing **zero key** adjust the value to correspond with the value on the step wedge once the value is correct press the **hold key**.
- 6.1.3.4 Place densitometer onto the Viewer on maximum light, then press **zero key** and then **hold key**. **The display should read 0.00.**
- 6.1.3.5 Place densitometer on the density step tablet on a step with a value of between 3.0 and 4.0, Press Zero to capture density reading, if this reading corresponds with the step value then press the HOLD key. If the reading was not exactly like the step value you must press ZERO until the reading matches the density step value, when this is correct press HOLD.
- 6.1.3.6 The calibration procedure is now completed.

6.1.4 Verification Procedure

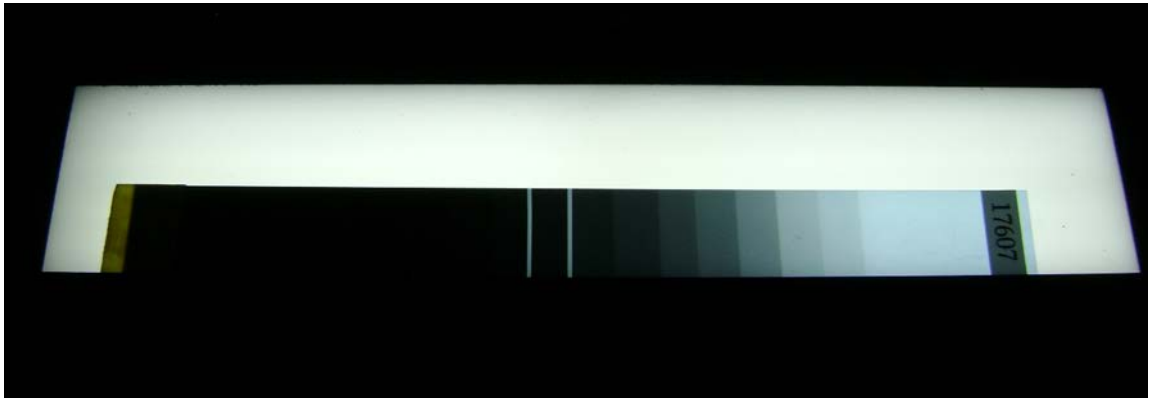
- 6.1.4.1 Switch on the Densitometer and the Film Viewer. Set the viewer to maximum intensity and maintain this setting throughout the verification process.
- 6.1.4.2 Place the probe of the Densitometer on the surface of the viewer where the density measurements will be done and press the “Zero” button to Zero the reading. If the Zero reading (**0.00**) does not remain stable the Densitometer must be re-calibrated as per 6.1.3. If the Zero reading is still unstable the Densitometer must be sent to the manufacturer for repairs.



- 6.1.4.3 Place the calibrated film density strip on the viewer.

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- 6.1.4.4 Place the probe of the densitometer on each step of the Density Strip and note the readings on the Examination Record.
- 6.1.4.5 Ensure that the readings are within the tolerances stated on the Examination Record. If they are not the densitometer needs to be re-calibrated.
- 6.1.4.6 Record readings on **Calibration Record PM/GSA/LOG-005.01.039.001** (Appendix 1).
- 6.1.4.7 Where some customers specify a different Standard, use the appropriate Calibration Record.

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7. RECORDS

Records generated by this procedure are as follows:

Record	Location/Responsible	Retention Period
Job Cards	Reception	5 Years
Calibration Records	Reception	5 Years

8. RECORD OF REVISION / RECORD OF CHANGES

RECORD OF CHANGES, REVISIONS AND CANCELLATIONS		
DATE	NATURE / DETAIL OF CHANGE	REV. NO.
31 May 2004	New issue	0
August 2011	Revised 4	1
May 2012	Revised 6.1	2
14 May 2013	Revised	3
19 June 2018	Revised 3.2 to 3.7 and Calibration Records.	4
4 February 2018	Revised and added 6.1.1, 6.1.2 and 6.1.4	5

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Appendix 1

GAMMATEC	SYSTEMS PROCEDURE MONITORING AND MEASUREMENT OF PRODUCT PM/GSA/LOG-005.01.039.001	REV 5	ISSUE DATE 2018	
CALIBRATION RECORD				
Customer: _____		Record No.: _____		
Reference Standard: <u>ASME V: 2017 Article 2 T 262.2</u>				
Item: <u>Densitometer</u>				
Make and Model: _____				
Serial No.: _____				
Visual Check:				
Description	EWS Repair	QC Repair	New	Remarks
Body				
LCD Screen / Display				
Probe/Probe cable				
Battery & Battery cover				
Screws				
Zero				
Measurement				
Film Stepwedge Serial No.: 180087 Expiry 07.2019 Allowable Tolerance				
ACTUAL DENSITY	ALLOWABLE DEVIATION (Min)	ALLOWABLE DEVIATION (Max)	DENSITOMETER READING	
0.17	0.12	0.22		
0.41	0.36	0.46		
0.73	0.68	0.78		
1.14	1.09	1.19		
1.63	1.58	1.68		
1.87	1.82	1.92		
2.02	1.97	2.07		
2.23	2.18	2.28		
2.43	2.38	2.48		
2.84	2.79	2.89		
3.20	3.15	3.25		
3.61	3.56	3.66		
3.99	3.94	4.04		
4.47	4.42	4.52		
Allowable deviation: 0.05D including 0.02D measurement uncertainty				
Workshop			Quality control	
NAME _____			NAME _____	
SIGN _____			SIGN _____	
DATE _____			DATE _____	