Efficiency Redefined Through Automation

FIELD SERVICE REPORT

FSR Number	FSR-26-00025-01
Date	February 25, 2026
Customer	Northrop Grumman Corporation
Site / Facility	San Diego - Innovation Drive
Odoo Project #	26-00025
Service Type	Billable
Technician(s)	Chris Berger
Report Prepared By	Chris Berger
Report Date	March 02, 2026

Equipment Details

Machine Type	Datacon EVO
Machine Model	2200 Gen 3
Serial Number	
Firmware / SW Version	

Service Scope

This service engagement was conducted in two phases to address a defective theta axis on the bond head of the Datacon EVO 2200 Gen 3 machine at Northrop Grumman's San Diego Innovation Drive facility. Phase 1 consisted of remote technical support to guide the customer through bond head replacement and machine calibration procedures. Phase 2 involved onsite support to resolve remaining dispenser calibration issues, verify machine functionality, conduct recipe and toolbank optimization discussions, perform a comprehensive machine assessment, and provide recommendations for operational improvements and spare parts inventory.

Work Completed

1. Phase 1 Remote Support: Provided comprehensive remote technical assistance to guide customer personnel through bond head replacement procedures, including mechanical installation and all associated calibrations (bond force, bond head tilt, and autocalibration). Supplied detailed documentation outlining step-by-step bond head replacement procedures. Identified and resolved an autocalibration issue caused by incorrect assignment of the TD tool, which required re-programming of the BMC cavity position to achieve successful calibration completion.
2. Phase 2 Dispenser Calibration Resolution: Diagnosed and corrected dispenser calibration failure caused by bond force sensor position correction during autocalibration, which resulted in the dispenser touching down offset on the force transducer and generating height measurement errors. Adjusted the default offset position for 'bonding head 2' (dispenser) to center the nominal needle position, successfully enabling calibration to pass. Noted that both force sensors are missing their protective glass plates.
3. Recipe Execution Troubleshooting: Investigated and resolved issue where no dispense steps were executing during recipe testing. Determined that all dispense processing steps had been disabled by the previous shift due to the earlier dispenser calibration issue. Re-enabled all required processing steps, restoring proper program functionality.
4. Toolbank Configuration Optimization: Conducted detailed discussion regarding recipe and toolbank streamlining strategies. Recommended implementing a single unified toolbank configuration across all recipes with cal_TD2 and cal_BMC2 permanently assigned to two dedicated toolbank slots for calibration purposes. Clarified that custom TD tools are not acceptable for machine calibrations as they lead to Z-height calibration errors, but are acceptable for substrate, module, or backplane height measurements when required.
5. Vision System Optimization Discussion: Reviewed potential adjustments to accuracy mode search parameters to reduce search-related failures attributed to component quality variations. Identified that components with rounded edges lack distinct contrast characteristics, leading to increased vision errors.
6. Comprehensive Machine Inspection: Performed thorough visual and operational inspection of the complete machine system to identify any areas of concern. Verified excellent overall machine condition with proper cleanliness and maintenance practices observed.
7. Wafflepack Adapter Design Review: Evaluated current wafflepack adapter configuration and discussed improved design concept to eliminate spring clips, which would enhance reliability and ease of use.
8. Spare Parts Planning: Conducted brief review of recommended spare parts inventory requirements to support ongoing operations and minimize potential downtime.

Test Results & Verification

Following completion of the dispenser offset position adjustment, the dispenser calibration routine was executed and passed successfully with nominal needle position properly centered on the force transducer. Recipe execution testing confirmed that all dispense steps executed properly after re-enabling the previously disabled processing steps. Machine autocalibration was completed successfully following correction of the BMC cavity position programming. Bond force sensor calibration and bond head tilt calibration were verified as operating within specification. Overall machine functionality was confirmed operational with all primary systems performing as designed.

Parts Used

No parts consumed during this service visit.

Parts Recommended

Part Number	Description	Qty	Reason / Priority
	Glass plates for force sensors (both sensors)	2	High priority - Required to prevent solder contamination of force sensors. Autocalibration must be completed after installation to update force sensor position with glass plates installed.
	Improved wafflepack adapter design (eliminates spring clips)	1+	Enhanced design to improve reliability and ease of use. Technician to provide detailed design information and specifications.

Open Items / Punch List

#	Description	Owner	Target Date	Status
1	Provide improved wafflepack adapter design information and specifications	Chris Berger		Open
2	Provide recommended spare parts list for customer inventory	Chris Berger		Open
3	Customer to order glass plates for both force sensors	Northrop Grumman		Open
4	Complete autocalibration after glass plate installation on force sensors	Northrop Grumman		Open

Next Steps

- Order glass plates for both force sensors as high priority to prevent sensor contamination
- Implement unified toolbank configuration across all recipes with cal_TD2 and cal_BMC2 permanently assigned
- Remove any custom TD tools from machine calibration procedures
- Evaluate and implement accuracy mode search parameter adjustments to reduce component quality-related vision failures
- Complete autocalibration procedure after glass plate installation
- Review and implement improved wafflepack adapter design when specifications are provided

- Establish recommended spare parts inventory based on technician's forthcoming list

Notes & Observations

The machine is exceptionally well maintained with excellent cleanliness standards observed throughout. Customer personnel demonstrated strong technical capability by successfully completing the mechanical bond head replacement and initial calibrations under remote guidance. The primary remaining concern is the absence of glass plates on both force sensors, which presents a contamination risk from solder exposure. This should be addressed as soon as possible. The toolbank configuration discussion revealed an opportunity for significant operational streamlining by standardizing the configuration across recipes and maintaining dedicated calibration tool assignments. The use of custom TD tools for machine calibrations was identified as a root cause of previous calibration issues and must be discontinued. Customer is receptive to process optimization recommendations and demonstrates good operational discipline. Overall system performance is satisfactory with all identified issues now resolved.

Attachments

No attachments for this service report.