Land Systems

# GDLS Quality Clauses and Quality Purchase Requirements

**MATERIAL SUPPLIED TO PURCHASE ORDERS MUST BE IN ACCORDANCE WITH THE QUALITY CLAUSE REQUIREMENTS OUTLINED ON THE PURCHASE ORDER AS FOLLOWS:**

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**REVISION HISTORY**

| Revision | Description of Change | Author | Effective Date |
|---|---|---|---|
| 5/13/10 | Initial Release – conversion from web to PDF format | Shellnut | 05/13/2010 |
| 5/17/10 | Added QL86.0 clause and table of contents | Caullay | 05/17/2010 |
| 5/27/10 | Revised QL 86, re-instate QY-10 | Caullay | 5/27/2010 |
| 7/19/10 | Various changes in red. Deleted old revisions: QJ7.1, QL22.4, QL512.1, QP2.0, QP2.1, QP41.5, QP43.0, QP5.0, QY2.7, QY2.8, QY2H.IR. Deleted Muskegon clauses: QG5.1, QW7.0 and QW6.0. Added London clauses. Added appendix and removed links in body of document and put in appendix, removed engineering revision date. Change weld submission from 10/6 or 4 weeks to 2 weeks | Gramlich/Shellnut | 07/19/2010 |
| 9/30/10 | Added QP96.0 and QP97.0, updated QX23.2, QX26.0 and QX118.3 with Canada contact information | Scheffler/Shellnut | 09/30/2010 |
| 11/10/10 | Update TOC, completely revised GDRS requirements, QL-87 cancelled and removed | Shellnut/GDRS | 11/15/2010 |
| 12/09/10 | Add QW8 clause. added date on footer | Caullay/ Shellnut | 12/10/2010 |
| 1/5/11 | Add QY14 | Caullay/ Shellnut | 1/05/2011 |
| 3/7/11 | Revise ROB20 to add 80% life requirement and add ROB36 | GDRS | 3/7/11 |
| 4/4/11 | Update QW8 and add new QK17 | Caullay/ Shellnut | 4/4/11 |
| 4/7/11 | Update Table of contents | Shellnut | 4/7/11 |
| 4/20/11 | Added QX47 | Shellnut | 4/20/11 |
| 8/4/11 | Updates requested per Canada: Clause QG7 has been updated to be consistent within GDLS and reflect the Quality System Certifications for ISO and SAE. The Ballistic Steel clause has been updated to align with revision J of Quality Assurance Directive 25 involving Ballistic Steel Control | Scheffler | 08/01/11 |
| 8/18/11 | Remove *requalify comment from table of comments | Shellnut | 8/17/11 |

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**REVISION HISTORY**

| Revision | Description of Change | Author | Effective Date |
|---|---|---|---|
| 8/30/11 | Updates per Engineering to revision levels of individual clauses | Bulas/Shellnut | 8/30/11 |
| 11/1/11 | Add clause for Merkava: QJ8M & update QY14.0 | Gramlich/Caullay | 11/11/11 |
| 12/15/11 | Added QP98, update welding clauses | Loeffler/Caullay | 12/15/11 |
| 2/3/12 | Removed QP98, added QX27, updated QX26 and QX118 per Canada's request | Scheffler | 2/2/12 |
| 2/8/12 | Updated QY-10 (removed QY-11 reference and replaced with FPI) | Gramlich | 2/8/12 |
| 2/14/12 | Added PQA3000 to QY-10 | Shellnut | 2/14/12 |
| 3/26/12 | Added QP-98 and delete EFV clauses | Caulley | 3/26/12 |
| 6/4/12 | update QL-88 | Caulley | 1/20/2011 |
| 7/17/12 | Added, QK48.0 and QX57.0, updated QX23.3, QX27.1 and QX118. Update to match GDLS-C Quality Clauses at rev N | Shelffler | 7/03/12 |
| 7/23/12 | Update QW8.2 AND QY-10 | Shellnut | 7/23/12 |
| 11/12/12 | Updated QK48, QX22, QX23 & QX57 for Canada | Sheffler | 11/12/12 |
| 5/30/13 | Update per Robotics- ROB 05A. GDLS changed the website address | Jacobs | 5/30/13 |
| 11/18/13 | Updated QP43.2 to include metric and added additional wording for specifications that apply | Caulley | 11/18/13 |
| 1/10/14 | Addition of QJ23, update to QJ21, QX27, QX23, QX57 and QX118 (updates include documentation requirements, welding machines requirements and weld inspector qualifications) | Scheffler | 1/10/14 |
| 3/10/14 | Update clause: EQC1, EQC1ND, EQC7, EQC4ND, QP94 and added new EQF3 and QJ7M.0 | Various | 3/10/14 |
| 6/24/14 | Update of Eng. Clauses EQC1, EQC1ND, EQC4, EQC4ND, EQA4, EQC2, EQC2ND, EQC5, EQC5ND | Bulas | 7/14/14 |
| 3/9/15 | Added QY15 at request of London | Scheffler | 3/9/15 |
| 3/25/15 | Update to QP95 | Caullay | 3/24/15 |
| 10/19/15 | Added QK49 at request of London | Scheffler | 10/19/15 |
| 3/22/16 | Updated Table of Contents to include QP44 and changes QL22 remove ROB quality clauses | Shellnut/Caullay | 4/1/2016 |
| 6/21/16 | Update to QY11 and EQD2A, QP42 and QK 18 | Fadoir/Caullay | 6/21/16 |
| 2/15/17 | Update QP98 and update typo's | Kuhlhoff | 2/15/17 |
| 3/1/2017 | Update for Eng Quality Clauses & Weld clause | Urban/Karas | 3/22/17 |
| 10/12/2017 | Update QX118 | Fadoir | 10/12/2017 |
| 6/14/2018 | Remove QX26, QW5.3, QX117.3, QX16.4, QX18.4 and update QP98 | Shellnut | 6/14/2018 |
| 11/29/18 | Update QX118 by removing typo, updated wording on QY2.9 by removing revision reference. Update Eng Quality Clauses: EQB9, EQC4, EQC5, EQD1, EQK3 | Shellnut, Pastor, Willey, Urban | 11/29/18 |
| 2/20/2019 | Update QL22 at request of London to clarify requirements | Shellnut | 2/20/2019 |
| 9/25/19 | Update QP98 and add PQR comment in QW51.2, 53.2, 54.2, 55.1, QX 107, 11.3, 112.6, 113.4, 119.2, 1191.0, 12, 1201.1, 13.4, 14.4 and 17.4 and updates to QJ21, and QY15. Remove 52.2, wording on qx121, removing .extensions from all clauses | Fadoir/Shellnut\Karas | 9/25/19 |
| 1/7/2020 | Incorporation of QY11 updates for FAI language inclusion and added forward, added 9.8 in QP43, QL22 and EQK3 | Fadoir/Shellnut | 3/1/2020 |
| 5/7/2020 | Updated QG4 with park marking statement and added QK19 | Shellnut | 5/7/2020 |
| 6/4/2020 | Added QY12 and references to QY12 into applicable clauses. | Schafer | 6/4/2020 |
| 9/17/2020 | Update Eng. Quality clauses and EQD2A.1 | Bulas | 9/17/2020 |
| 11/24/2020 | Update QK19 | Caullay | 11/24/2020 |
| 4/21/2021 | Update QK19 (limit subcontracting ASTM A514 material | Shellnut | 04/21/2121 |
| 06/17/2021 | Fix typo in revision block | Shellnut | 06/17/2021 |
| 07/22/2021 | Remove the following weld clauses: QW53.2, QW54.2, QW55.1, QX107.1, QX112.6, QX113.4, QX116.2, QX119.2, QX12.0, QX1201.1, QX13.4 AND Add QY16 and QL48 | Caullay/Stokes/Shellnut | 7/28/2021 |
| 10/15/2021 | Add QK20 and QK39. Update QP2.3 to reflect T & Cs. | Bonnar/Newall | 10/15/2021 |
| 03/16/2022 | Remove QG6; update Engineering weld clauses EQ118.7, EQ121.0, EQ23.6, remove EQF2 | Bulas/Caullay | 03/16/2022 |
| 08/09/2022 | Update to QG5 | Willey | 08/08/2022 |

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**REVISION HISTORY**

| Revision | Description of Change | Author | Effective Date |
|---|---|---|---|
| 10/26/2022 | Update QY12 and add QX28 | Draca/Pecora | 10/26/2022 |
| 11/01/2022 | Update QL48 to add LS1138059 and 19207 12585018 | Stokes | 11/01/2022 |
| 12/13/2022 | Add QX112.7 back | Karas | 12/13/2022 |
| 2/14/2023 | Update QL48 | Stokes | 2/14/2023 |
| 4/18/2023 | Update QK 10 | M. Robinson | 4/18/2023 |
| 04/04/2023 | Additional UIUD grading sheet verbiage-Item Unique Id QP95 | R. Fadoir | 04/04/2023 |
| 8/21/2024 | Removed MPF from QL48 | Stokes | 8/21/2024 |
| 8/22/2024 | Fixed Type-O on QL48 | Stokes | 8/22/2024 |
| 3/20/2025 | Update EQB9, EQB11, EQC4, EQC5, EQD1, EQ118.7, EQ121.0 | S. Isho | 3/20/2025 |
| 5/13/2025 | Removed QJ22 and QW51 | Webb | 5/13/2025 |
| 7/10/2025 | Added EQK16 clause | Webb | 7/10/2025 |
| 9/4/25 | Corrected type-o in table of contents and updated QP93 clause | Webb | 9/4/25 |
| 12/16/25 | Updated QCS-16 to AS9102 and updates to QY12 | Webb | 12/16/25 |
| 1/28/26 | Updates to remove QY12 | Webb | 1/28/26 |
| 3/4/26 | Fixed Typos | Webb | 3/4/26 |
| 8/31/26 | Updated revision dates to new revision format to all clauses.<br>QJ21 updates – Changed Procurement to Production, added within 5 business days<br>QJ23 updates – changed procurement to production, added within 5 business days<br>QK9 updates – changed a reasonable amount of time to within 5 business days<br>QK11 updates - changed a reasonable amount of time to within 5 business days<br>QK16 updates - changed a reasonable amount of time to within 5 business days<br>QK17 updates – fixed typo in IMOD<br>QL22 updates – added within 5 business days upon request<br>QL31 updates – added within 5 business days<br>QL41 updates – added within 5 business days<br>QL42 updates – added within 5 business days<br>QL52 updates – added within 5 business days<br>QL81 updates – added within 5 business days<br>QL82 updates – added within 5 business days<br>QL83 updates – added within 5 business days<br>QL84 updates – added within 5 business days<br>QL85 updates – added within 5 business days<br>QL 86 updates – added within 5 business days<br>QL88 updates – added within 5 business days<br>QP42 updates – added within 5 business days<br>QW8 updates – fixed typo in IMOD, changed address from Lima Assembly Tank plant to Joint Systems Manufacturing Center and added weld lab email address<br>QX23 updates – added Do not start production welding without a GDLS approved WPS<br>QX24 updates – added within 5 business days<br>QX27 updates – Changed 2 weeks to 3 weeks. Added Do not start production welding without a GDLS approved WPS and within 5 business days<br>QX28 updates – Changed GDLS Delegate Quality Representatives to GDLS Inspection Delegates<br>QX105 updates - Added Do not start production welding without a GDLS approved WPS<br>QX106 updates - Added Do not start production welding without a GDLS approved WPS. Changed first piece to first article.<br>QX111 updates - Added Do not start production welding without a GDLS approved WPS. Changed 2 weeks to 3 weeks. Changed address from Lima Assembly Tank plant to Joint Systems Manufacturing Center and added weld lab email address | Webb/Willey/ Maye | 9/1/26 |

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**REVISION HISTORY**

| Revision | Description of Change | Author | Effective Date |
|---|---|---|---|
| | QX112 updates – Changed 2 week to 3 weeks. Added Do not start production welding without a GDLS approved WPS. Added both US and LON addresses.<br>QX118 updates – Added AWS D1.9 for titanium. Added Do not start production welding without a GDLS approved WPS. Changed 2 weeks to 3 weeks. Added within 5 business days<br>QX119 updates - Added Do not start production welding without a GDLS approved WPS. Changed 2 weeks to 3 weeks. Added within 5 business days. Changed address from Lima Assembly Tank plant to Joint Systems Manufacturing Center and added weld lab email address.<br>QX121 updates – Added Steel Grades 4130, 4140, 8630, 8640 (When quenched and tempered to HRC 42 or greater) and 4330 (MOD) are included as Armor Material and shall be welded in accordance with applicable specification with contractual flow down. Added Do not start production welding without a GDLS approved WPS. Added weld inspector qualifications. Added within 5 business days. Added Gas Certification and weld machine calibrations. Changed drawing to technical data package. Changed 2 weeks to 3 weeks. Changed 12 months to 24 months. Added weld lab email address.<br>QX14 updates – Changed 2 weeks to 3 weeks. Added Do not start production welding without a GDLS approved WPS. Changed address from Lima Assembly Tank plant to Joint Systems Manufacturing Center and added weld lab email address<br>QX17 updates - Changed 2 weeks to 3 weeks. Added Do not start production welding without a GDLS approved WPS. Changed address from Lima Assembly Tank plant to Joint Systems Manufacturing Center and added weld lab email address<br>QX57 updates – Changed 2 weeks to 3 weeks. Added Do not start production without a GDLS approved BPS/SPS. Added GDLS and US weld lab information.<br>QY8 – New clause added<br>QY9 – New Clause added<br>QY11 – Changed Supplier shall perform FAI on one of the first 5 pieces…to Supplier shall perform FAI on first production part manufactured utilizing the supplier's defined production process. FAI shall be completed on each part number within an assembly as listed on the Parts List from the Digital Product Definition (DPD).<br>EQA4 updates – Changed TS 16949 to IATF 16969<br>EQB9 updates – added prior to shipment<br>EQB11 updates – added prior to shipment<br>EQC4 updates – added prior to and within 5 business days<br>EQC5 updates – added prior to and within 5 business days<br>EQD1 updates – added EQA email address. Added prior to end item acceptance to #4 delivery requirements. Removed #5 delivery requirements.<br>EQE2 updates – added EQA email address<br>EQK16 updates – Changed to prior to shipment. Added within 5 business days.<br>EQK3 updates – Changed to prior to shipment<br>EQ118 updates – added AWS D1.9 for titanium. Changed 2 weeks to 3 weeks. Added Do not start production welding without a GDLS approved WPS. Added prior to shipment to delivery requirements<br>EQ121 updates - Added Steel Grades 4130, 4140, 8630, 8640 (When quenched and tempered to HRC 42 or greater) and 4330 (MOD) are included as Armor Material and shall be welded in accordance with applicable specification with contractual flow down. Added Do not start production welding without a GDLS approved WPS. Changed 2 weeks to 3 weeks. Changed 12 months to 24 months. Added prior to shipment to delivery requirements. | | |

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# PRODUCTION QUALITY REQUIREMENTS

## Forward

Quality Clauses are meant to supplement and complement the existing Technical Data Package (TDP) provided by GDLS buyers. The Quality Clauses listed hereafter may refer to different part approval terminology (e.g. PPAP, or FAI). For the current part approval processes and instructions, please refer to the latest revision of the PQA 3000 located on the GDLS supplier website at www.gdls.com or contact your local GDLS SQA Regional Manager.

### EQD2A - GD Source Inspection

Revision: B Date: Sept. 16, 2020

General Dynamics Land Systems source inspection/acceptance is required on this order. Source is to be completed prior to EVERY shipment of end item on this order. Supplier shall notify the buyer five (5) working days prior to start of acceptance test or inspection to allow for scheduling of a GDLS quality representative to be in attendance. The supplier shall have technical data (e.g. drawing, QAR, specification, certification, etc.) available for use in support of source inspection.

If supplier-developed automated test software is used as a means of functional product acceptance, the test software (not the firmware) must be approved by GDLS Quality Engineering & Test. Supplier instructions and requirements for test software review and validation are defined in GDLS document QCS-5. The test software shall be submitted to GDLS Quality Engineering & Test for review a minimum of 2 weeks prior to the scheduling GDLS source inspection.

### QG1A - MIL-Q-9858 and ANSI/ISO 9000

Revision: E Date: Nov. 21, 1996

Supplier must maintain a quality program that meets the requirements of MIL-Q-9858 dated 16 December 1963 with amendment 1, dated 7 August 1981 and MIL-STD-45662A dated 1 August 1988. Supplier, at their option, may implement the equivalent or better ANSI/ISO series standards (9001,etc) in lieu of the above listed MIL Spec/STD if such implementation is at no additional charge. These programs are subject to approval and/or periodic review by GDLS/government. GDLS contracted suppliers are responsible to document and control any portion of this contract that is performed by them and extend applicable portions of this contract to any tertiary suppliers.

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## QG2A - MIL-I-45208 and ANSI/ISO 9000

Revision: E  Date: Nov. 21, 1996

Supplier must maintain a quality control system that meets the requirements of MIL-I-45208, dated 16 December 1963 with amendment 1, dated 24 July 1981 and MIL-STD-45662A dated 1 August 1988. Supplier, at their option, may implement the equivalent or better ANSI/ISO series standard (9001, 9002, etc.) in lieu of the above listed MIL Spec/STD if such implementation is at no additional charge. These systems are subject to approval and/or periodical review by GDLS/government. GDLS contracted suppliers are responsible to document and control any portion of this contract that is to be performed by them and extend applicable portions of this contract to any tertiary suppliers.

## QG3 - GDLS Minimum System Requirements

Revision: D  Date: Jul. 20, 2009

Supplier must provide and maintain a Quality System that is acceptable to General Dynamics Land Systems and government. In addition, all measuring and test equipment used to inspect the items delivered against this contract shall be calibrated by the supplier utilizing standards whose calibration is certified as being traceable to the National Institute of Standards and Technology. These systems are subject to approval and periodic reviews by GDLS to determine acceptability. GDLS contracted suppliers are responsible to document and control any portion of this contract that is performed by either the contracted supplier or any tertiary supplier. In view of the above contracted suppliers are responsible for extending GDLS contract requirements to any tertiary supplier.

## QG4 - Commercial Requirements

Revision: D  Date:  May 7, 2020

The products provided shall meet the characteristics of this commercial catalog item, conform to the producer's own drawings, specifications, standards and quality assurance practices and be the same as offered for sale in the commercial market. All part marking requirements on GDLS drawings must be followed. General Dynamics reserves the right to require proof of such conformance.

## QG5 - C = O Sampling Plan

Revision: D  Date: Aug. 9, 2022

Suppliers and all sub-tiers will perform lot sampling per the reference in the PQA 3000 to a C=0 requirement.  The PQA 3000 can be found at www.gdls.com

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## QG7 - Quality System Certification Requirement

Revision: B  Date:  Jul. 22, 2011

The supplier must maintain a Quality Management System that is certified to AS9100 or an ISO Quality System Standard such as ISO 9001 or TS16949.  The system is subject to approval and/or periodic review by GDLS/Government. GDLS contracted suppliers are responsible to document and control any portion of this contract that is to be performed by them and extend applicable portions of this contract to any tertiary suppliers.

## QG8 - Supplemented Material Review Board

Revision: A  Date: Jan. 4, 2006

Limited material review board (MRB) approval is granted on this purchase order. This authority is limited to Class II nonconformance(s) that impact both internal Supplier and GDLS drawings. MRB is only allowed for minor dimensional characteristics which do not impact/violate the fit, form or function of the next higher level assembly or create a deviation to an approved ATP. This MRB authority does not encompass any changes to electronic components or circuitry control devices. A quarterly report will be provided to GDLS-SQA summarizing Class II MRB activities and the associated corrective actions. Government participation is not required for MRB.

## QJ21 - Inspection Delegation

Revision: E  Date: Aug. 31, 2026

The supplier shall conduct all required inspections as agreed upon in accordance with supplier instruction contained in GDLS Production Quality Assurance Handbook PQA 3000. The above shall be accomplished through the use of the GDLS approved delegate only who is responsible for the adequacy and accuracy of said inspection. Failure of GDLS to inspect the goods shall not limit any of GDLS's rights as included under the terms and conditions of this contract to recover damages from seller for supply of defective goods. This program is subject to termination with minimum notice for reasons defined in PQA 3000. All specified documents referenced in the purchase order (i.e. certifications, test reports, etc.) are not to be shipped with the product unless required by a quality clause. These records are to be maintained at the supplier's facility, under delegate control, and are subject to GDLS verification upon request within 5 business days. The records must be retained for a minimum of five (5) years after completion of deliveries and payment thereof under this purchase order unless the GDLS PO directs differently. This paragraph takes precedence over remaining quality requirement clauses for data submittals.

A GDLS issued Inspection Delegation stamp impression must be affixed on the packing slip of parts shipping to GDLS facility once compliance to PO and TDP requirements are confirmed.

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## QJ23 - Pre-approved Supplier Shipments

Revision: E  Date: Aug. 31, 2026

The supplier shall conduct all required inspections as agreed upon in accordance with supplier instruction contained in GDLS Production Quality Assurance Handbook PQA 3000.  Failure of GDLS to inspect the goods shall not limit any of GDLS's rights as included under the terms and conditions of this contract to recover damages from seller for supply of defective goods.  All specified documents referenced in the purchase order (i.e. certifications, test reports, etc.) are not to be shipped with the product. These records are to be maintained at the supplier's facility and are subject to GDLS verification upon request within 5 business days. The records must be retained for a minimum of five (5) years after completion of deliveries and payment thereof under this purchase order unless the GDLS PO directs differently.

Suppliers will not be required to apply delegation stamp impression on shipper/packing slips for these part numbers, but must maintain GDLS First Article approval (AS9102 Forms) for all product delivered to GDLS in accordance with Quality Clause QY11.

## QJ7H -  Government GSI

Revision: A  Date: Oct. 5, 1998

Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the Government representative who normally services your facility so that appropriate planning for Government inspection can be accomplished. In the event the representative or office cannot be located, our purchasing agent should be notified immediately.

## QJ7M - Merkava Customer Source Inspection

Revision: A  Date: Oct. 5, 1998

Israeli Ministry of Defense (IMOD) inspection and acceptance is required prior to shipment from your plant. Your GDLS Buyer must be notified 14 calendar days in advance of your availability to present material for IMOD inspection. All references to calendar days will take into account both parties' national and religious holidays. IMOD will schedule a visit within 7 calendar days following the end of the 14-day notification period of the supplier's availability to conduct the inspection or sooner if mutually agreed. Material presented for inspection must be in batches (defined as quantity of no fewer than 3 sets of the kit) ready for delivery. The scope of the inspection will include review of inspection documentation, verification that configuration changes, if required, have been incorporated, and minimal physical inspection of hardware. For each Part Number defined on this purchase order, records documenting the results of the Control Plan inspections must be provided to IMOD and/or GDLS at acceptance.

No material may be shipped without IMOD acceptance and/or GDLS authorization.

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## QJ8M - Merkava Government Selective Evaluation (Merkava Only)

Revision: A  Date: Sept. 20, 2011

During performance on this order, your quality control or inspection system, manufacturing processes, and the acceptance plan unique to the Merkava product(s) may be subject to review, verification and analysis by authorized Israel Ministry of Defense representatives. Israel Ministry of Defense visits must be coordinated through a GDLS representative. Israel Ministry of Defense release of product prior to shipment is not required unless you are otherwise notified by General Dynamics.

## QJ8 - Government Selective Evaluation

Revision: B  Date: Jan. 18, 1988

During performance on this order, your quality control or inspection system and manufacturing processes may be subject to review, verification and analysis by authorized government representatives. Government release of product prior to shipment is not required unless you are otherwise notified by General Dynamics Land Systems purchase order supplement.

## QK9 - QAP-Cert (Fill In)

Revision: C  Date: Aug. 31, 2026

Special quality assurance requirements (QAR, QAP, SQAP, SPEC, etc) apply to the item(s) being procured under this contract. The supplier shall have documented objective evidence on file verifying conformance to specific characteristics referenced in the requirement. The objective evidence shall be made available to GDLS on request within 5 business days.

## QK10 - Armour Steel or Aluminum Material Identification

Revision: F  Date: Mar. 4, 2026

This item contains armour steel or aluminum plate material.  The armour plate used in this item must be sourced from a supplier that maintains armour plate cutting records.  These records must identify the armour plate and associated mill certification (heat/melt and slab/plate codes), the part numbers and quantities that were cut from the plate, and the date on which the parts were cut.

Suppliers procuring cut armour steel or aluminum parts for assemblies must maintain procurement records indicating the part number, quantities, source and date.  Sources used and records kept will be reviewed at First Article Inspection.

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## QK11 - Test Data

Revision: D  Date: Aug. 31, 2026

Supplier shall have on file for each shipment a copy of the actual chemical test results, physical test results and/or test data as required. These results shall be made available to GDLS on request within 5 business days.

## QK12 - Engineering Prototype Sample Approval

Revision: B  Date: Jan. 7, 2020

Supplier shall confirm TDP compliance according to item specific PS-FRM-3.2.55 form provided by buyer.  Supporting compliance data shall be submitted prior to material shipment, to the GDLS-C ED&T Product Assurance contact identified on the form.  Any deviations to the TDP require ED&T PA approval prior to shipment.

## QK14 - Engineering Prototype Commercial

Revision: B  Date: Jan. 7, 2020

Items under this Purchase Order do not require GDLS specified quality inspections or documentation submittal.  Product shall meet the Technical Data Package (TDP) requirements, and shall be verified according to the supplier's standard quality system requirements.  GDLS reserves the right to require proof of such conformance.  Any deviations to the TDP require ED&T Product Assurance approval prior to shipment.

## QK16 - Key Characteristics

Revision: B  Date: Aug. 31, 2026

Attributes identified as Key Characteristics shall demonstrate a process capability of 1.33 Cpk or be inspected 100%. The supplier shall have documented objective evidence on file which supports the process capability of 1.33 or greater, or the actual inspection and/or test data as verification of conformance to the drawing key characteristics. The objective evidence shall be made available to GDLS on request within 5 business days.

## QK17 - Ballistic Testing, Merkava Armor Castings

Revision: B  Date: Aug. 31, 2026

Ballistic testing shall be conducted in accordance with Standard 2030. The supplier shall provide the GDLS buyer with a schedule for preparation of ballistic test samples in accordance with Standard 2030, including supplier-internal qualifications required prior to ballistic testing. Details on sample submittal (location, dates, etc.), will be provided by the GDLS buyer. GDLS and the Israeli Ministry of Defense (IMOD) reserve the right to witness/verify all aspects of the armor qualification process. The supplier will be notified by the GDLS Buyer if this option is exercised.

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## QK18 - Inspection/Test Data Deliverable

Revision: A  Date: May 2, 2016

Supplier shall deliver with each shipment a copy of all inspection/test data required by item drawings and/or specifications.

## QK19 - ASTM A514 Certification to GDLS Material Specification

Revision: C  Date: Dec. 16, 2025

This PO contains items using ASTM A514 material. If the ASTM A514 material thickness is equal to or greater than 1.25”, the following conditions apply:

This material must be compliant to the most current revision of the LS1133576 specification. Suppliers of this contract shall require a valid GDLS ASTM A514 Process Approval Letter in order to perform under this contract which is valid for two (2) years from the approval date. The supplier is responsible for managing the expiry of the GDLS ASTM A514 Process Approval Letter. The supplier shall not subcontract the source of supply for this material; all material must be purchased directly from a mill or distributor approved by GDLS. Approved mills must supply their own material and are not allowed to procure or supply material from any other manufacturer for subsequent sale to General Dynamics. The approved source(s) of supply can be found on the GDLS ASTM A514 Process Approval Letter OR from GDLS buyer.

Supplier must maintain Form# SQA 037 QK19 ASTM A514 Cutting Log and present it to a GDLS Quality Representative at the time of FAI in accordance with Quality Clause QY11. GDLS Quality Representative must confirm Form# SQA 037 has been updated completely for the parts being inspected for FAI and stamped for shipment to GDLS. A periodic audit of SQA 037 and Mill Certificate(s) of Conformance will be done by a GDLS Representative.

All A514 steel greater than or equal to 1.25” thick shall be procured only from GDLS approved manufacturers or distributors.  Contact your GDLS Buyer for additional information or to confirm latest revision of LS1133576.

## QK20 - Wire Harness and Cable Requirements

Revision: B  Date: Jan. 28, 2026

Supplier manufacturing facilities shall be reviewed and certified by GDLS-C. Only supplier facilities certified by GDLS-C are permitted to manufacture wire harness and cable assemblies in accordance with this clause. Certified supplier facilities must undergo an audit every two years, performed by GDLS-C Quality Engineering, to maintain certification status.

Wire harnesses and cables must meet all technical data package (TDP) requirements for components, assembly, process, inspection and testing; including applicable

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requirements from IPC/WHMA-A-620, IPC-A-640, and GDLS harness fabrication specifications as specified in the TDP (e.g. 10727520, ES13452, etc). Quality Assurance Provisions (QAP) requirements must also be met where applicable.

The supplier shall maintain a training program for wire harness assembly and inspection personnel. All wire harness assembly and inspection personnel shall receive initial training before performing work under this clause, and additional periodic training on a continuing basis. The content of training shall be based on the standards for the harness being produced (e.g. IPC/WHMA-A-620).

Assembly Work Instructions are required for the assembly of wire harnesses and cables. The Work Instructions shall be in the supplier's own format but must reference specific IPC and/or GDLS harness fabrication specification sections for key operations as applicable.

A Control Plan is required for each wire harness and cable assembly. Suppliers may use their own format, but must follow the generally accepted industry Control Plan content. Reference sample Control Plan at http://www.gdls.com/suppliers/quality.html
In-Process Secondary Inspection is required for wire harnesses and cables. Assemblers must have 100% wire harness secondary in-process inspection. The in-process inspection shall be conducted by a supplier's own internal secondary inspector prior to wire harness completion where key operations are not visible following harness close-out (including but not limited to: break outs, crimping, soldering, etc). Secondary in-process inspections shall be documented in the supplier's work instructions and/or job travelers (recommend including pictures, personnel sign-offs, etc).

Final inspection and testing of completed harnesses and cables is required for confirming TDP requirements (e.g. branch lengths, labeling, workmanship, continuity, resistance, etc). The final inspection process shall be documented and be included in the supplier's work instructions.

The supplier shall develop and maintain a data package in accordance with the above requirements. The data package shall be provided to GDLS-C at least two (2) weeks in advance of FAI. The data package submitted shall contain at a minimum:

a) Training records for all assembly and inspection personnel performing work under this clause.
b) Control Plan detailing work instructions, inspections and testing to be performed.
c) Assembly Work Instructions for key operations in harness manufacture.
d) In-process secondary and final inspection instructions
e) Test plans for TDP-specified wire harness/cable testing

Forward data packages to the below address unless otherwise specified by GDLS-C.
Email: qualityengineering@gdls.com
Subject: QK20, Part Number, Part Revision, PO Number

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GDLS-C approval letter(s) are required for First Article (FAI) acceptance and approval(s). Supplier shall have an approval letter for each specific part number or applicable down component, at the time of FAI. Wire harness approval letters are valid for (2) years from the approval date. The supplier is responsible for managing the expiry of the wire harness approval letters.

## QK39 - Wire Harness and Cable Destructive Testing

Revision: B  Date: Jan. 28, 2026

The supplier shall have destructive testing completed on one (1) wire harness/cable sample from the initial production lot. The destructive testing shall be completed by one of the approved destructive testing facilities listed below. The destructive testing shall verify all technical data package requirements. A destructive test report from the approved facility shall be forwarded to GDLS-C Quality Engineering (qualityengineering@gdls.com) at least two (2) weeks in advance of FAI. If the destructive testing is deemed acceptable the supplier will be provided a QK39 approval letter from GDLS-C. The supplier shall have an approval letter for each specific part number, which shall be presented at the time of FAI for clause acceptance. Changes in design revision or production process may require new wire harness/cable destructive testing – contact GDLS-C Quality Engineering (qualityengineering@gdls.com) for direction and approval. Approval by similarity may be acceptable with GDLS-C Quality Engineering approval.

Approved destructive testing facilities:

MRO Electronic Supply Ltd.
2240 Pegasus Rd NE
Calgary, AB
T2E 8G8

Alternative testing facilities may be considered and reviewed by GDLS-C for inclusion on this list. Alternative testing facilities shall only be used if approved by GDLS-C.

## QK48 - Critical/Complex Components

Revision: D  Date: Jan. 28, 2026

GDLS has designated this component as a Critical performance item or complex to manufacture.  Supplier may be subject to and must demonstrate compliance with a specific process audit associated with this component.

GDLS will issue a clause approval letter, which is required for First Article Inspection completion and approval.  First Article Inspection must be completed at the supplier's facility, prior to the acceptance of production material.

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## QK49 - Supplier Procurement

Revision: C  Date: Jan. 28, 2026

This Item contains components to be sourced by the supplier, to which GDLS quality requirements apply.  The First Article Inspection submission for this item must include compliance evidence for all supplier sourced components that have GDLS quality requirements.

## QL22 - Fasteners

Revision: G  Date: Aug. 31, 2026

Use of English series (Grade 5, or Grade 8 hexagon or socket head) or Metric Series (Class 8.8, 9.8, 10.9 hexagon head or Class 12.9 socket head) fasteners, within products supplied to General Dynamics Land Systems, must be from a manufacturer approved by GDLS.  Fasteners will be plated as specified and results of all required tests shall be maintained on file and available within 5 business days upon request.

Additionally, your receiving inspection criteria shall include a verification of approved logo head markings to a 0.04% AQL sample as outlined in MIL-STD-105, however, acceptance is C=0.  Hexagon head cap fasteners must be identified with proper grade symbol markings and shall be marked with the manufacturer's identification head logo.

## QL31 - Functional Test

Revision: C  Date: Aug. 31, 2026

Supplier shall furnish a certification with each shipment to indicate that the test requirements have been complied with and actual tests results are on file and available upon request within 5 business days. Certification must include signature, date and title of responsible supplier representative and specifically identify the shipment it relates to including serial number if applicable, for instance, by reference to the shipper number.

## QL41 - Inspection Cert - Jan Devices

Revision: C  Date: Aug. 31, 2026

Supplier shall comply with MIL-S-19500 documentation requirements for traceability. Copy of certification of Jan Devices must be maintained on file and be available upon request within 5 business days.

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## QL42 - Inspection Cert - Nuclear Hardness

Revision: B  Date: Aug. 31, 2026

Supplier shall comply with nuclear hardness requirements specified in the technical data package. All required certification documentation must be maintained on file and be available upon request within 5 business days.

## QL46 - CARC Paint Process Certification

Revision: C  Date: Jan. 28, 2026

The CARC process applied to this item requires certification to demonstrate compliance to the TDP requirements.  Paint certification requirements as outlined in GDLS-C Form 4707, shall be submitted with First Article Inspection for GDLS approval.

## QL48 - CARC Paint and MIL-PRF-14105 Process Certification/Verification

Revision: A  Date: Aug 22, 2024

The CARC process applied to this item requires testing to demonstrate Technical Data Package (TDP) compliance. Coating requirements per TDP and LS1138059 (latest revision). Paint verification requirements per 12585018 (latest revision). Acknowledgement per GDLS-US-4708 (CARC Process and Heat Resistant MIL-PRF-14105 Certification) shall be submitted during First Article Inspection for GDLS approval.

## QL512 - 11655194 (or) MIL-STD 2000A

Revision: C  Date: Jan. 7, 2020

Soldering shall be in accordance with either MIL-STD-2000A, TACOM soldering process specification 11655194, ANSI/J-STD-001B or other commercial soldering standards with the contractor's approval.

## QL52 - TT-C-490/MIL-P-16232

Revision: B  Date: Aug. 31, 2026

Supplier shall maintain inspection records indicating quantity accepted/rejected in accordance with MIL-P-16232, DoD-P-16232 and/or TT-C-490. These inspection records shall be traceable to each lot of material processed and shall be available for GDLS or government review upon request within 5 business days. The pre-production approvals cited are not required to be submitted to GDLS, however, the procedure approval must be documented and maintained at your facility.

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## QL6 - Consigned Material

Revision: B  Date: Apr. 24, 1988

The supplier shall be required to furnish a certification with each shipment whenever the material furnished by the buyer has been replaced or substituted during the manufacturing operations.

The certification, when required, shall state the material and/or chemical composition of the material substituted and shall include signature, date, and title of supplier representative and specifically identify the shipment it relates to; for instance, by reference to the shipper number.

## QL81 - Radiographic

Revision: B  Date: Aug. 31, 2026

Supplier shall control radiographic inspection equipment and personnel, including the certification and qualification to the specification. Records shall be maintained for all personnel certified, indicating the date of certification and objective evidence of examination. Records shall be made available upon request within 5 business days.

## QL82 - Magnetic Particle

Revision: B  Date: Aug. 31, 2026

Supplier shall control magnetic particle inspection equipment and personnel, including the certification and qualification to the specification. Records shall be maintained for all personnel certified, indicating the date of certification and objective evidence of examination. Records shall be made available upon request within 5 business days.

## QL83 - Eddy Current

Revision: B  Date: Aug. 31, 2026

Supplier shall control eddy-current inspection equipment and personnel, including the certification and qualification to the specification. Records shall be maintained for all personnel certified, indicating the date of certification and objective evidence of examination. Records shall be available upon request within 5 business days.

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## QL84 - Ultrasonic

Revision: B  Date: Aug. 31, 2026

Supplier shall control ultrasonic inspection equipment and personnel, including the certification and qualification to the specification. Records shall be maintained for all personnel certified, indicating the date of certification and objective evidence of examination. Records shall be made available upon request within 5 business days.

## QL85 - Dye-Penetrant

Revision: B  Date: Aug. 31, 2026

Supplier shall control dye-penetrant inspection operations including the certification and qualification to the specification. Records shall be maintained for all personnel certified, indicating the date of certification and objective evidence of examination. Records shall be made available upon request within 5 business days.

## QL86 - Non-Destructive Testing (NDT), Double-V Hull Plates

Revision: B  Date: Aug. 31, 2026

Supplier shall conduct either dye penetrant inspection (per ASTM E165), or magnetic particle inspection (per ASTM E1444) on the tension side of all formed radii for each item produced. Any indication of a crack shall be cause for rejection. The GDLS buyer shall be notified immediately.
Supplier shall control NDT operations including certification and qualification, as required, to ASTM E165 and/or ASTM E1444. Records shall be maintained for all personnel certified, indicating the date of certification and objective evidence of examination. Records shall be made available upon request within 5 business days.

## QL88 - Non-Destructive Testing (NDT), Formed Armor

Revision: B  Date: Aug. 31, 2026

If forming is performed following final quenching and tempering operations, the supplier shall conduct either dye penetrant inspection (per ASTM E165), or magnetic particle inspection (per ASTM E1444) of the formed area for each item produced.  Any linear indication shall be cause for rejection. The GDLS buyer shall be notified immediately.
Supplier shall control NDT operations including certification and qualification, as required, to ASTM E165 and/or ASTM E1444. Records shall be maintained for all personnel certified, indicating the date of certification and objective evidence of examination. Records shall be made available upon request within 5 business days.

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## QP2 - Shelf Life Requirement

Revision: D  Date: Oct. 15, 2021

The seller shall identify those items and/or assemblies, which have a shelf life requirement, in accordance with the Shelf Life clause in the Purchase Order Terms and Conditions.

## QP41 - Traceability - MS Fasteners (CAD)

Revision: G  Date: May 9, 2007

Grade 5/Grade 8 hex head and socket head fasteners, with equivalent Grade 5 and Grade 8 chemistry, shall be purchased directly from only those manufacturers approved by GDLS. Approved manufacturers must supply fasteners of their own manufacture only and are not allowed to procure or supply fastener from any other approved North American manufacturer for subsequent sale to general dynamics.

Fastener supplier shall furnish a certification with each shipment that documents the actual material chemistry, core hardness, or tensile strength (per I or SAE J-429 for hex head or section 3 of FF-S-86E for socket head fasteners) and plating requirements specified in Purchase Order. The laboratory test sampling size shall be performed in accordance with section 7.3 of SAE J-429.

Subsequent lot shipments covered under this purchase order will be accepted with a copy of the original laboratory results provided the fasteners originated from the initial raw material production run.

## QP42 - Compression Set Test Results

Revision: C  Date: Aug. 31, 2026

The supplier shall maintain actual compression set test data for each purchase order shipment to General Dynamics Land Systems per the requirement of the applicable material specification. In addition, the specific compression set test results shall be subject to random audits by GDLS at supplier's facility and shall be presented to GDLS representatives upon request within 5 business days.

## QP43 - Traceability – High Strength Screws

Revision: C  Date: Nov. 18, 2013

Grade 5 and Grade 8 English series and Metric series Classes 8.8, 9.8, 10.9, and 12.9 hex head and socket head fasteners shall have documentation confirming the chemical and mechanical properties meet the requirements for heat treated alloy steel as specified in the applicable procurement specification.

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Fasteners shall be purchased directly by GDLS or from distributors that purchase directly from manufacturers approved by GDLS. Approved manufacturers must supply fasteners of their own manufacture and are not allowed to procure or supply fasteners from any other manufacturer for subsequent sale to General Dynamics.

Fastener suppliers shall furnish a certification with each shipment that documents the actual material chemistry, core hardness, or tensile strength (per applicable specifications SAE J429, ASTM A354, SAE J1199, ASTM F568M, ASTM A574, ASTM A574M, FF-S-85, or FF-S-86), and finish requirements as specified on the applicable drawing or Purchase Order.

Subsequent lot shipments covered under this purchase order will be accepted with a copy of the original laboratory results provided the fasteners originated from the initial raw material production run.

## QP44 - North American High Strength Fasteners

Revision: C  Date: Jan. 28, 2026

All high strength fasteners offered for sale to GDLS-C shall conform to the requirements of Form 4496.  Bulk fasteners shall include the Declaration (Form 4496, Appendix A) or Certification (Form 4496, Appendix B) in the First Article  Inspection submission.

Fasteners offered for sale to GDLS-C within assemblies shall conform to the following sections of Form 4496:

A) No high strength fasteners are contained within the assembly.  The First Article Inspection submission shall include a declaration (Form 4496, Appendix A), or

B) High strength fasteners are contained within the commercial item assembly.  The First Article Inspection submission shall include a certification (Form 4496, Appendix C) stating that the supplier's quality control system for fasteners meets the intent of Form 4496, section 2.0, or

C) High strength fasteners are contained within the non-commercial item assembly. The First Article Inspection submission shall include a certification (Form 4496, Appendix D) stating that the supplier's quality control system for fasteners meets all the requirements of Form 4496, section 2.0.

## QP5 - Serialization Requirements

Revision: B  Date: Dec. 7, 2006

Each unit supplied on this purchase order must be permanently marked with a unique serial number which consists of any combination of numbers and letters. Alpha and numeric letters must be clearly distinguishable (ex. 2 and Z, 1 and I, 0 and O, etc.) The supplier must ensure that serial numbers are not duplicated for

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previous or future shipments of the same part number. The supplier must submit their planned serial numbering sequence to the buyer for approval prior to serial numbers being applied. The numbering sequence must be approved by the buyer on the initial purchase order and for any subsequent purchase order where the supplier intends to change the sequence of serial numbers.

## QP6 - Ordering Data Sheets

Revision: A Date: Jan. 1, 1986

Supplier shall comply with specific ordering data sheet requirements specified in this technical data package.

## QP71 - Cleaning (SC-X14510)

Revision: A Date: Jan. 1, 1986

1. Per paragraph 4.2.2.3 of SC-X-14510 each unit shall be cleaned for compliance to requirements of paragraph 3.2.2.3.

## QP8 - Sub-contract Requirements

Revision: A Date: July 10, 2009

All Quality Requirements of the Statement of Work (SOW) apply to this purchase order.

## QP9 - Re-work Requirements

Revision: A Date: July 10, 2009

Rework product to new condition and upgrade to the specified revision. Any deviations from the specified design configuration will require prior authorization.

## QP92 - Military Standard Hardware ID

Revision: B Date: Feb. 24, 1999

Supplier shall furnish standard hardware to the drawing revision level as indicated in the purchase order and/or technical data/drawing package. If no revision level is specified for technical data/drawing package provided, parts must be supplied to the latest revision level established by design agencies as of the date of this purchase order.

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## QP93 - Packing Slip Requirement

Revision: A  Date: Sept. 4, 2025

Packing slips must be numbered and depict the following information: Purchase order number, line item number, shipment number, quantity, part number, drawing number, revision letter and date, ECP number(s), and waiver number(s) if applicable.

## QP94 - Foundry Control

Revision: B  Date: Mar. 10, 2014

Foundry control and production x-ray technique approval is required by GDLS Materials Engineering & Survivability in accordance with paragraph 3.1.8 of specification 12292537. Approval must be obtained prior to initial shipment of castings on this purchase order. Foundry control/production x-ray technique documentation shall be submitted to the GDLS buyer for internal distribution to GDLS Materials Engineering & Survivability.

## QP95 - Item Unique Identification (IUID) per MIL-STD-130

Revision: B  Date: Apr. 4, 2024

The supplier shall apply Machine Readable Information (MRI) marking per MIL-STD-130 to each item produced. Marking shall include, but not be limited to, manufacturer CAGE code, original part number and serial number (if serialization is required by drawing or specification). The quality attributes of each label shall be documented in a Grading Sheet as outlined in section 5 of MIL-STD-130.  A physical paper copy of each Grading Sheet must ship with every deliverable item. The supplier shall demonstrate 2D Data Matrix Symbol readability via a verifiable automatic identification device separately during initial part approval.

## QP96 - Intra-company Sourcing

Revision: A  Date: Sept. 27, 2010

This is a GDLS intra-company purchase order.  GDLS manufacturing plant Quality System Requirements apply to the material sourced under this purchase order.

## QP97 - Incomplete Technical Data – Long Lead Sourcing

Revision: A  Date: Sept. 27, 2010

Material cannot be delivered under this purchase order.  The technical data package is incomplete.  Quality Clause requirements will not be assigned until the technical requirements are fully defined, after which the purchase order will be revised.

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## QP98 - Electronic Component Packaging

Revision: A  Date: Aug. 15, 2019

All solder-mountable circuit card components (through-hole and surface mount), including printed wiring boards, shall be packaged per the following specifications:

**Surface Mount:** All surface mount components shall be packaged in accordance with EIA-481. Irregular configuration or heavy parts that are not readily packaged in tape form may be packaged in carrier waffle trays. Parts in trays shall be aligned similarly with the tray being of a configuration that prevents misorientation when handling in a closed state (i.e. a tray designed for that part package configuration). Trays shall be no larger than 35cm L x 25cm W. Parts shall not be supplied in tubes. Any parts supplied on cut tape shall have leader and trailer lengths as specified in EIA-481. Plastic tape is preferred over paper tape. Embossed tape is preferred over punched tape.

Any components requiring larger than **104** mm tape, shall be supplied in a carrier waffle tray per the applicable EIA and JEDEC specifications. ***All components shall have vacuum pick-up features (either integral or installed) to support machine placement.***

**Through-hole Components:** Through-hole components shall **NOT** be provided in bulk packaging. Components are to be supplied tape and reel, tube or tray.

**Printed Wiring Boards:** When the Technical Data Package (TDP) includes a Panel drawing, the PWB's will be supplied as panels per that drawing. The Panel drawing and "read me" text (.txt) note must be included in the inspection criteria and measurement data presented for Quality acceptance. Panelized boards shall not be broken out. X-outs in panelized boards shall have no more than (1) X-out board per panel. X-out boards shall not be allowed on 2-board, and 3-board panels. All X-out panels shall be organized such that similar X-out configurations are packaged together. All PWBs shall be dry-packaged in accordance with J-STD-033 and not exceed 3 inches in height per package.
NOTE: In addition to these requirements, any subordinate requirements (e.g., ESD, Moisture Sensitive) shall also apply as required by the component.

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## QW8 - Merkava Weld Standard 3030

Revision: D  Date: Aug. 31, 2026

All welding shall be performed in accordance with Standard 3030 to the specific Grade specified. If no specification or Grade is specified, welding shall be performed to Standard 3030, Grade 4. All weld symbology shall be interpreted to ISO2553. Unless otherwise specified, fillet weld size shall be interpreted as “a” (throat). Certification tests referenced in Standard 3030 and the welding procedure specification, weld specimens and test report shall be submitted to the address listed below per the 3-stage process outlined in Standard 3030, prior to initiation of production welding. Welders shall be qualified in accordance with Standard 3030, and all applicable welder certification/recertification shall be maintained throughout the production build. Welders’ certifications shall be attached to the welding procedure specification. GDLS and the Israeli Ministry of Defense (IMOD) reserve the right to witness/verify all aspects of the weld qualification process. The supplier will be notified by the GDLS Buyer if this option is exercised.

Joint Systems Manufacturing Center
General Dynamics Land Systems
1161 Buckeye Road
Lima, OH 45804
Attn: Material Control Laboratories
Email: weldlab@gdls.com

## QX22 - Weldable Appurtenances

Revision: B  Date: Oct. 16, 2012

Item shall be free of mill scale, rust and oil free.

Only water-soluble coolants, tapping fluids, etc. should be used during processing. It is required that these process fluids leave a rust-inhibiting residue when the fluid dries. If hydrocarbon coolants, tapping fluids, etc. are used, they must be followed by a post-cleaning step. The post cleaning step must consist of a hot alkaline cleaner that is based on fatty acids or amines.

Packaging must be accomplished in such a way that rusting will be minimized. Examples are sealed plastic bags in boxes, or wax-lined boxes.

## QX23 - Ballistic Steel Welding – GDLS-Canada Weld Standard

Revision: G  Date: Aug. 31, 2026

Only suppliers approved to perform ballistic welding by GDLS-C are permitted to weld ballistic assemblies in accordance with this clause. Approved suppliers must undergo an annual audit, performed by GDLS-C Quality Engineering, to maintain certification status. Weld joints within this assembly are to be qualified, implemented, and inspected in accordance with the current version of the GDLS-C Weld Manual 10703626.

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Drawings which do not reference 10703626 must be reviewed/approved by GDLS-C Engineering prior to welding armour steel. For weld joints which do not contain armour steel, refer to Quality Clause QX118 or consult the GDLS-C contact at *ppap.fpi@gdls.com*.

Only welders with a current GDLS-C D-0040 Weld Certification may weld this material. Weld inspectors responsible for acceptance or rejection of material and workmanship must be trained and certified in accordance with the GDLS-C Weld Inspection Training Program. Each GDLS-C weld inspector certificate is valid for a 5 year period.

These weld inspectors shall also hold current certification to one of the following options:

(1) Certification as an AWS Certified Welding Inspector (CWI) in conformance with the provisions of AWS QC1, *Standard for AWS Certification of Welding Inspectors*, or

(2) Qualification by the Canadian Welding Bureau (CWB) in conformance with the requirements of the Canadian Standard Association (CSA) Standard W178.2, *Certification of Welding Inspectors*, with the exception that a Level I weld inspector must work under the supervision of a Level II or III weld inspector whom is also certified in accordance with the GDLS-C Weld Inspection Training Program.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

GDLS-C or GDLS-JSMC approval letter(s) are required for First Article Inspection (FAI) acceptance and approval(s). Supplier shall have an approval letter for each specific part number or applicable down component, at the time of FAI in accordance with Quality Clause QY11. GDLS-C or GDLS-JSMC will respond with a Weld Approval Letter for inclusion in the FAI. The supplier shall submit a weld Certification/Warrant for each first new part produced to the address listed below:

| | |
|---|---|
| GDLS-Canada Originating Contracts/Purchase Orders<br>Emails: ppap.fpi@gdls.com (Canada)<br>Subject: QX23, Part Number, Part Revision, PO Number | GDLS-SHC/JSMC Originating Contracts/Purchase Orders<br>Emails: weldlab@gdls.com (USA)<br>Subject: Part Number, Part Revision, PO Number |

Heat Affected Zone Criteria (HAZ): The rework or addition of any ballistic weld joint outside of the print specified location is not permitted; the supplier shall consult GDLS for MRB approval prior to any such rework. Rework examples include but are not limited to: mislocated / translated appurtenances or welds, stray welds, arc strikes, and additional welds not mandated by the TDP.

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## QX24 - Weld Inspection

Revision: C Date: Aug. 31, 2026

1) All welds on items in this contract shall be visually inspected by Certified AWS or CWB Welding Inspectors. Weld inspectors shall:

   i. Hold current or previous certification as an AWS Certified Welding Inspector (CWI) in conformance with the provisions of AWS QC1 (Standard and Guide for Qualification of Welding Inspectors).

   or

   ii. Hold current or previous certification by the Canadian Welding Bureau (CWB) in conformance with the requirements of the Canadian Standard Association (CSA) Standard W178.2 (Certification of Welding Inspectors).

   Inspection shall be conducted in accordance with the governing weld specification identified in the TDP. When no weld specification is identified the requirements shall be governed by AWS D1.1 for steel, AWS D1.2 for aluminum, or AWS D1.6 for stainless steel. Copies of inspector certifications shall be provided for FAI review; verification inspection reports shall be retained by the contractor and made available upon request within 5 business days.

2) Weld Inspection NDT Quality Control Plan:

   Supplier shall develop an NDT Quality Control Plan to be submitted with FAI. Welds on items shall be verified by Liquid Penetrant Testing. Penetrant testing shall be conducted in accordance with ASTM E 165 (Standard Test Method for Liquid Penetrant Examination) and ASTM E 1417 (Standard Practice for Liquid Penetrant Testing). Personnel performing penetrant testing shall be qualified in conformance to SNT-TC-1A, Mil-Std-410, NAS410, or ANSI/ASNT CP-189, and be certified to NDT Level II. Personnel performing penetrant inspection need not be certified under AWS QC1 or CSA W178.2. Copies of personnel certifications shall be provided for FAI review; penetrant testing reports shall be retained by the contractor and made available upon request within 5 business days.

   Magnetic Particle Testing may be conducted in lieu of penetrant testing, subject to GDLS approval. Magnetic particle inspection shall be conducted in accordance with ASTM E 1444 (Standard Practice for Magnetic Particle Examination).

## QX25 - Repair and Overhaul

Revision: A Date: July 10, 2009

This clause applies to customer owned material for Repair Only. Upon completion of repair, the supplier shall return the item, together with:

A) a report indicating work performed to bring material to usable condition.

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B) a Certificate Of Conformance indicating compliance to specification(s) and completion of repaired item functional testing to original test procedure(s).

C) appropriate test results and/or measurements supporting requirement (b) above shall be submitted with the shipment, unless otherwise specified.

Shipments must include the documentation required by this clause.

## QX27 - Resistance Spot Welding

Revision: F  Date: Aug. 31, 2026

Resistance spot weld joints within this assembly are to be qualified, implemented, and inspected in accordance with the Technical Data Package (TDP). When there is no weld specification identified the supplier shall contact the buyer for direction.

When AWS C1.1 applies, the procedure certification test report for each machine used in production shall contain at least two Metallographic tests per AWS C1.1, Clause 4.9. Weld quality evaluation criteria shall be per AWS D8.7, Clause 5. Results shall be recorded within the resistance welding data sheet (Figure 34 of AWS C1.1) and signed/dated by the manufacturer.

A weld qualification data package consisting of the following elements shall be maintained by the supplier. Minimum data package requirements shall be furnished to the appropriate client address listed below, at least three (3) weeks in advance of production welding. Any changes to resistance welding data sheet(s) parameters require resubmission.

Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection approval(s).

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

The resistance spot weld data package shall contain at a minimum:

1. Weld Map, detailing which data sheet(s) apply to each weld joint.
2. Resistance Welding Data Sheet(s).
3. Procedure Certification Test Report(s).
4. Machine Qualification Test Report(s), as applicable to TDP.

The following elements shall be provided upon request within 5 business days:

5. Visual inspection criteria/instructions in place.
6. Weld re-work instructions in place.

The weld qualification data package shall be submitted to the appropriate client:

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| GDLS-C Originating Contracts |
| --- |
| Email: ppap.fpi@gdls.com<br>Subject: QX27, Part Number, Part Revision, PO Number |

## QX28 - GDLS Repair, Rework, Reset, Overhaul, Upgrade Services

Revision: C  Date: Aug. 31, 2026

This clause applies to Customer owned material for the above services. Purchase Order must be specific to requirements of the specified service. Upon completion of specified service(s), the Supplier shall perform the applicable acceptance requirements:

A) First completed piece/lot of material will be reviewed by GDLS SQA per requirements of QY11 First Article Inspection (FAI) utilizing the AS9102 Forms as the Inspection Record. The Supplier will request FAI per QY11 requirements and must obtain acceptance prior to shipping any return material. The Supplier must present validation of all services performed and compliance data for all applied materials.

B) a Certificate of Conformance indicating compliance to specification(s) and completion of repaired item functional testing to original test procedure(s).

C) Suppliers with assigned GDLS Inspection Delegates may review/stamp/release shipments after meeting the initial requirements in item

(D) Suppliers without GDLS Inspection Delegates must submit for Source Inspection for each shipment following acceptance of item (A).

All shipments must include a GDLS SQA stamp on the Packing List/Shipper.

## QX105 - Welding - Independent Test Lab

Revision: B  Date: Aug. 31, 2026

Welding qualified at independent lab: hardware shall be welded using a welding process qualified by General Dynamics as defined in the supplier instructions QCS 83-9 and fabricated in accordance with specification _____. Weld samples shall be submitted to an independent lab for required testing.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

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Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection acceptance approval(s). When the blueprint allows for use of optional specifications only the quality clause for the selected specification shall apply.

## QX106 - Welding - JSMC Test Lab

Revision: B Date: Aug. 31, 2026

Welding qualified at JSMC lab: hardware shall be welded using a welding process qualified by General Dynamics as defined in the supplier instructions QCS 83-9 and fabricated in accordance with specification _____. Weld samples and procedures shall be submitted to GDLS for prior approval.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection acceptance and approval(s). When the blueprint allows for use of optional specifications only the quality clause for the selected specification shall apply.

## QX111 - Weld Procedure - SD-X12141

Revision: F Date: Aug. 31, 2026

Welding procedure specification (WPS) and Procedure Qualification Record (PQR) to be used for production parts against this contract per specification SD-X12141 shall be furnished to the address listed below for approval at least three (3) weeks in advance of production welding.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection acceptance approval(s).

Joint Systems Manufacturing Center
General Dynamics Land Systems
1161 Buckeye Road
Lima, OH 45804

Attn: Material Control Laboratories

Email: weldlab@gdls.com

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## QX112 - Weld Procedure – Resistance Spot Welding – AWS D8.1M (Steel), AWS D9.2M/D8.2 (Aluminum), AWS D17.2M/D17.2 (formerly MIL-W-6858/ SQA-AMS-W-6858) and AWS C1.4M/AWS C1.4

Revision: G  Date: Aug. 31, 2026

Resistance Spot Welding procedure specifications (WPS) and Procedure Qualification Record (PQR) to be used for production parts against this contract per specification MIL-W-6858, SAE-AMS-W-6858 (Superseded by D17.2M/D17.2) shall be furnished to the address listed below for approval at least three (3) weeks in advance of production welding.  In addition, same applies for specifications AWS D8.1M/D8.1 (Steel), AWS D8.2M/D8.2 (Aluminum) or AWS C1.4M/AWS C1.4.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection acceptance approval(s).

Joint Systems Manufacturing Center
General Dynamics Land Systems
1161 Buckeye Road
Lima, OH 45804
Attn: Material Control Laboratories
Email: weldlab@gdls.com

GDLS-C Originating Contracts/Purchase Orders
Email: ppap.fpi@gdls.com
Subject: QX118, Part Number, Part Revision, PO Number

## QX118 - Commercial Welding

Revision: K  Date: Aug. 31, 2026

Weld joints within this assembly are to be qualified, implemented, and inspected in accordance with the Technical Data Package (TDP) (E.g., AWS, CSA). When there is no weld specification identified in the TDP, the requirements shall be governed by AWS D1.1/D1.3 for steel, AWS D1.2 for aluminum, AWS D1.6 for stainless steel, and AWS D1.9 for titanium, as applicable.

If a weld joint contains armor material, consult the GDLS contact at weldlab@GDLS.com or for GDLS-C purchase orders contact ppap.fpi@GDLS.com. If a weld joint contains Armor material and the drawing is not for the Stryker or the LAV vehicle family, refer to Quality Clause QX121.0 or consult GDLS contact at weldlab@GDLS.com.

The supplier shall develop and maintain a weld qualification data package in accordance with the relevant weld specification. The data package shall be provided to the client address listed below at least three (3) weeks in advance of production welding.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

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The weld qualification data package submitted shall contain at a minimum:

1. Weld Procedure Specification (WPS).
2. Procedure Qualification Record (PQR) with accompanying test results.
3. Welder Qualification Records.
4. Weld map, detailing which WPS(s) apply to each weld joint.

The following elements shall be provided upon request within 5 business days:
5. Visual inspection criteria/instructions in place.
6. Weld rework instructions in place.

GDLS approval letter(s) are required for First Article Inspection (FAI) acceptance and approval(s). Supplier shall have an approval letter for each specific part number or applicable down component, at the time of FAI in accordance with Quality Clause QY11. Weld approval letters are considered valid from either of the issuing authorities (below) and are valid for (3) years from the approval date. The supplier is responsible for managing the expiry of the weld approval letters.

The weld qualification data package shall be submitted to the appropriate reviewing authority:

| | |
|---|---|
| Joint Systems Manufacturing Center<br>General Dynamics Land Systems<br>1161 Buckeye Road<br>Lima, OH 45804<br>Attn: Material Control Laboratories<br>Email: weldlab@gdls.com | GDLS-C Originating Contracts/Purchase Orders<br>Email: ppap.fpi@gdls.com<br>Subject: QX118, Part Number, Part Revision, PO Number |

## QX119 - AMS 2681 Electron Beam Welding

Revision: C Date: Aug. 31, 2026

A minimum of two (2) weld specimens for each machine using the welding procedure specifications (WPS) as established by the procuring activity per specification AMS 2681. The weld specimen, (WPS) and Procedure Qualification Record (PQR) shall be forwarded to the address listed below at least three (3) weeks in advance of production welding.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection acceptance approval(s). A certification shall be supplied with the initial production shipment indicating compliance to specification AMS 2681 and that all data is on file and available upon request within 5 business days. The certification shall include signature, date, and the title of responsible supplier representative, and specifically identify the shipment it relates to, for instance, by reference to the shipper number.

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General Dynamics Land Systems
1161 Buckeye Road
Lima, OH 45804
Attn: Material Control Laboratories
Email: weldlab@gdls.com

## QX121 - Armor Welding (Steel, Aluminum, Titanium) – Excluding Namer, Stryker and LAV Family

Revision: B  Date: Aug. 31, 2026

Weld joints within this assembly are to be qualified, implemented, and inspected in accordance with the governing weld specification indicated in the Technical Data Package (TDP). Cancelled, replaced or inactive welding specifications, (eg. MIL-STD-1261, MIL-STD-1941, Ground Combat Vehicle Welding Code-Steel 12479550, Ground Combat Vehicle Welding Code-Aluminum 12472301) shall refer to the latest released specification indicated on the cancellation notice (eg. MIL-HDBK-1941 superseded with MIL-STD-3040), unless otherwise specified by GDLS.

Armor material is classified as any material that is governed by a military or internal GDLS armor material document (eg. MIL-DTL-12560, MIL-A-46100, MIL-DTL-46027). Steel Grades 4130, 4140, 8630, 8640 (When quenched and tempered to HRC 42 or greater) and 4330 (MOD) are included as Armor Material and shall be welded in accordance with applicable specification with contractual flow down. Weld joints within the assembly are to be qualified, implemented, and inspected in accordance with the current version of the applicable welding specification called out on the TDP.

Contractors are responsible for production weld quality and to ensure proper workmanship practices are being utilized on armor materials.  Contractors must be knowledgeable and proficient with applicable welding specifications (ie: Ground Combat Vehicle Welding Code-Steel 12479550 or Ground Combat Vehicle Welding Code-Aluminum 12472301) and are not authorized to subcontract any contracted armor welding without GDLS approval.

A weld qualification data package consisting of the following elements shall be furnished as indicated below.  The package shall include the name of the welder who performed the welds and the date the samples were tested. GDLS requires armor welding to utilize certain key essential variables based upon the type of armor material.  GDLS will provide these key essential variables (ie: wire type) along applicable mechanical test data requirements.  The contractor shall contact GDLS by emailing weldlab@gdls.com to receive requirements for particular armor material.  All applicable documentation shall include date of origin, applicable signatures, and shall include method of configuration control.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

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The weld qualification data package shall contain at a minimum:

1. Weld Procedure Specification (WPS) including all applicable key essential welding variables (filler wire, wire speed, travel speed, pre-heat, voltage, transfer mode, welding position, etc.) as required by applicable welding specification.
2. Procedure Qualification Record (PQR) with accompanying results (eg. X-Ray, Ultrasonic, Tensile and Bend testing).
3. Weld workmanship sample (macro section) for each unique joint and welding procedure. Joints may be grouped to minimize number of workmanship samples. Contractor shall consult with GDLS to ensure proper grouping. All workmanship samples shall be sent cut and prepared to a sufficient level to validate fusion.
4. Weld map, detailing which WPS(s) apply to each weld joint. Mapping is not required if a single WPS is used to fabricate the entire assembly.
5. Welder qualification test records.
6. Weld inspector qualification, or clarify if third party is being utilized.
    - Certification as an AWS Certified Welding Inspector (CWI) in conformance with the provisions of AWS QC1, Standard for AWS Certification of Welding Inspectors.
    - Qualification by the Canadian Welding Bureau (CWB) in conformance with the requirements of the Canadian Standard Association (CSA) Standard W178.2, Certification of Welding Inspectors, with the exception that a Level I weld inspector must work under the supervision of a Level II or III weld inspector.

The following elements shall be provided upon request within 5 business days:

7. Weld re-work instructions in place.
8. Gas Certifications and dew points
9. Welding Machine calibrations

Welder qualification testing shall follow the applicable welding specification identified in the Technical Data Package(TDP); unless authorized by GDLS to allow alternate material. Contractor is responsible to ensure weld inspectors are certified to applicable requirements.

Rework / Repair or addition of any ballistic weld joint outside of the print specified location is not permitted. The supplier shall consult GDLS for MRB approval prior to any rework/repair consideration. Rework/repair examples include but are not limited to: mislocated appurtenances or welds, stray welds, arc strikes, and additional welds not mandated by the TDP.

Weld procedure documentation and / or specimens shall be furnished for any new welding procedure specifications (WPS) or when essential variables fall outside previously approved limits. Weld specimens shall be furnished to the address listed below at least three (3) weeks in advance of production welding. The specimens are to be fabricated using the submitted welding procedure specification (WPS). Following (WPS) approval; an official GDLS approval letter will be provided and shall be maintained by the

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supplier during the terms of the contract. GDLS approval and or authorization shall be presented at the time of first piece inspection. Parts that have not been in continuous production for 24 months require a new weld approval. Approval of previous welding procedures do not require resubmission of weld specimens, but require all other applicable documentation.

Joint Systems Manufacturing Center
General Dynamics Land Systems
1161 Buckeye Road
Lima, OH 45804
Attn: Material Control Laboratories
Email: weldlab@gdls.com

## QX14 - Weld Procedure - MIL-W-12332

Revision: F Date: Aug. 31, 2026

Welding procedure specifications (WPS) and Procedure Qualification Record to be used for production parts against this contract per specification MIL-W-12332 shall be furnished to the address listed below for approval at least three (3) weeks in advance of production welding.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection acceptance approval(s).

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General Dynamics Land Systems
1161 Buckeye Road
Lima, OH 45804
Attn: Material Control Laboratories
Email: weldlab@gdls.com

## QX17 - Weld Procedure - MIL-W-45210

Revision: F Date: Aug. 31, 2026

Welding procedure specifications (WPS and Procedure Qualification Record) to be used for production parts against this contract per specification MIL-W-45210 shall be furnished to the address listed below for approval at least three (3) weeks in advance of production welding.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

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Supplier shall have an approval letter for each specific part number, and shall be presented at the time of First Article Inspection. Approval letter(s) are required for First Article Inspection acceptance approval(s).

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General Dynamics Land Systems
1161 Buckeye Road
Lima, OH 45804
Attn: Material Control Laboratories
Email: weldlab@gdls.com

## QX47 - Merkava Paint Application/Painter Qualification

Revision: A Date: Apr. 14, 2011

Paint shall be applied per Technical Instruction H-103 and/or H-107, as applicable per product drawing. If anti-skid paint is required (H-107), painter qualification shall be in accordance with Standard ORD-BM-9-0004.

## QX57 - Brazing and Soldering

Revision: E Date: Aug. 31, 2026

Brazed and soldered joints within this assembly are to be qualified, implemented and inspected in accordance with the Technical Data Package (TDP) brazing/soldering specification (Eg. AWS C3.4, C3.5, C3.11). When conforming to an AWS specification, qualification shall be in accordance with AWS B2.2/B2.3. When there is no brazing/soldering specification defined in the TDP, the manufacturer or contractor shall contact the buyer for direction.

The manufacturer or contractor shall develop and maintain a qualification data package in accordance with the relevant brazing/soldering specification. The data package shall be provided to the client address listed below at least three (3) weeks in advance of production brazing/soldering.

**DO NOT START PRODUCTION WITHOUT A GDLS APPROVED BPS/SPS**

The qualification data package submitted shall contain at a minimum:

1. Brazing/Soldering Procedure Specification(s) (BPS, SPS).
2. Brazing/Soldering Procedure Qualification Record(s) (BPQR, SPQR).
3. Brazing/Soldering Performance Qualification Record(s).
4. Braze/Solder map, detailing which BPS/SPS is applied to each joint.

GDLS-C or GDLS approval letter(s) are required for First ~~piece~~ Article Inspection acceptance and approval(s). Manufacturer or contractor shall have an approval letter for

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each specific part number or applicable down component, at the time of First Article Inspection in accordance with Quality Clause QY11.

The brazing/soldering qualification data package shall be submitted to the appropriate client:

| GDLS-C Originating Contracts |
| --- |
| Email: ppap.fpi@gdls.com<br><br>*Subject: QX57, Part Number, Part Revision, PO number* |

| GDLS Originating Contracts |
| --- |
| Email: Weldlab@gdls.com<br><br>*Subject: QX57, Part Number, Part Revision, PO number* |

## QY8 – Acceptance Test Procedure (ATP) & Acceptance Test Report (ATR)

Revision: A Date: Aug. 31, 2026

The supplier shall develop and submit an ATP for approval prior to the final testing of hardware. GDLS approval of supplier's test procedure does not relieve the supplier from meeting all requirements of the specifications, drawing and other technical data.

ATP Requirements:

1. The ATP shall have a unique document number and shall be revision controlled.
2. Each test shall be cross referenced to the performance characteristics in the applicable specification or Technical Data Package (TDP).
3. Each performance characteristic shall be addressed with a detailed test method.
4. The test data recording format shall be identified (test data sheets are preferred). Actual values are required except for those characteristics typically inspected with pass/fail criteria.
5. A list of test equipment required to execute the ATP shall be included.
6. Diagrams or photographs of the test setup shall be included in the ATP.
7. Signature, date and title of responsible Quality representative or equivalent shall be included.

ATR Requirements:

1. The ATR shall identify the Purchase Order, Part Number and Serial Number if applicable of the end item being delivered.
2. Each test shall be cross referenced to the performance characteristics in the ATP.
3. A test equipment calibration log shall be included that identifies the nomenclature, serial number, last calibration date, and next calibration due date.

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4. Signature, date and title of responsible Quality representative or equivalent shall be included.

Delivery Requirements:

1. Latest ATP approval letter must be provided in all AS9102 FAI packages and listed on the GDLS Part Approval Audit Record submitted for both FAI and Source Inspected items. EQA written approval of the ATP shall be maintained on file by the supplier per GDLS PO Terms & Conditions.

2. Contact GDLS buyer for direction on how to transfer ATP data. The ATP shall be submitted for approval a minimum of 30 days prior to the scheduled production acceptance test to the following: GDLS Engineering Quality Assurance (EQA) and the GDLS Buyer identified on the Purchase Order. GDLS must be notified of any changes to test procedure. All revisions to the ATP shall be submitted for approval prior to testing. GDLS reserves the right to witness and verify tests at any point during a production order.

3. A completed ATR shall be kept on file for every part shipped and made available upon request within 5 business days.

## QY9 – 3D Digital Product Definition (DPD)

Revision: A Date: Aug. 31, 2026

Supplier shall manufacture, inspect, and certify product(s) in accordance with the 3D DPD specified on the GDLS Purchase Order. 3D DPD will be provided in approved digital formats (e.g. CAD, STEP, 3D PDF, etc.). This requirement supersedes any conflicting requirements in the PQA-3000 or any other document.
Supplier is responsible for ensuring that:

1. The part number and revision of the 3D DPD matches the part number and revision from GDLS Purchase Order is used for all manufacturing, inspection, and product acceptance activities
2. Any ambiguity, discrepancy, or access issue related to the 3D DPD is brought to the attention of the Buyer in writing and resolved prior to manufacture

Any 2D drawing or derivative document (e.g. 2D drawings, shop prints, etc.) is reference only and must not be used for part acceptance.

Final part approval and acceptance by GDLS will be based on conformance to the 3D DPD and the part number revision indicated on the GDLS Purchase Order.

## QY10 - FLOWCHART/CONTROL PLAN (FC/CP)

Revision: D Date: Jan. 28, 2026

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Prior to First Article Inspection (FAI) a Process Flow Chart/Control Plan (FC/CP) is to be developed. A suggested sample format can be found in the PQA3000 or the supplier may use an existing format. This document is to be attached and submitted with the FAI request form (please refer to PQA3000). The request for FAI will not be processed without this document being completed. The FC/CP must provide a logical representation of the manufacturing process flow and process control points. This document can be used as an aid for work station development, identifying process control points, defining the methods being used at these control points, and must include all key product characteristics such as KPC/QARs/QAPs and all out sourcing identification.

A walk through of the manufacturing process to include a review of the FC/CP and work instructions should be anticipated as a means to validate process requirements. The FC/CP will be used as part of the Process/Product Validation at FAI and on future GDLS audits.

## QY11 - First Article Inspection (AS9102)

Revision: D  Date: Sept 1, 2026

The following First Article Inspection (FAI) requirements are applicable unless otherwise specified in the purchase order.  Supplier shall perform FAI on first production part manufactured utilizing the supplier's defined production process. FAI shall be completed on each part number within an assembly as listed on the Parts List from the Digital Product Definition (DPD).  FAI shall be performed utilizing AS9102 Forms available at www.gdls.com.  The First Article Inspection Report (FAIR) shall include objective evidence of compliance with all technical data package (TDP) requirements.

Upon completion of the supplier's inspection, the supplier shall notify the Buyer and/or cognizant GDLS SQA representative.  Five (5) working days' notice shall be required for scheduling verification via www.gdls.com (reference PQA3000 for instructions).  Always reference the online document for current requirements.  Reference FAI Guide for conditions that require FAI.  This guide is available at www.gdls.com.

If supplier-developed automated test software is used as a means of functional product acceptance, the test software (not the firmware) must be approved by GDLS Quality Engineering & Test.  Supplier instructions and requirements for test software review and validation are defined in GDLS document QCS-5.  The test software shall be submitted to GDLS Quality Engineering & Test for review a minimum of 2 weeks prior to the scheduled FAI.

## QY14 - Merkava First Article Inspection

Revision: C  Date: Jan. 28, 2026

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A First Article Inspection (FAI) is required as part of this purchase order. It is the supplier's responsibility to conduct a FAI on the first five pieces delivered on this order to verify conformance of all physical, chemical, and test requirements specified as part of this order. Upon completion of the inspection, the supplier shall notify the buyer and/or cognizant GD SQA representative. Objective evidence of this requirement shall be available and verified by GD prior To any shipments on this order. A thirty (30) day notice shall be required for scheduling verification. FAI shall be performed in utilizing AS9102 Forms available at www.gdls.com. Reference PQA3000 and FAI guide when completing FAI.

FAI verification due to a change will be required on one (1) piece in lieu of the five referenced above objective evidence must be maintained documenting the above.

## QY15 - Material Compliance

Revision: A Date: Jan. 28, 2026

The Supplier's Part Number **must** be the same as the suggested source on a GDLS vendor item controlled drawing or reflect the part number on the GDLS purchase order. FAI submission only requires a Certificate of Conformance from the supplier that validates the supplier's part number complies with the supplier's own technical data package. Any substituted material will be in violation of the Purchase Order.

A GDLS issued Inspection Delegation stamp impression is not mandatory on the packing slip.

## QY16 - APQP/PPAP

Revision: A Date: July 14, 2021

This item requires APQP/PPAP as specified in QCS-7: GDLS APQP/PPAP Guide for Suppliers, if so indicated by a purchase order line item. In the absence of an APQP/PPAP line item, the APQP/PPAP requirement does not apply to this purchase order. Document QCS-7: GDLS APQP/PPAP Guide for Suppliers is available at www.GDLS.com.

## QY2 - FAT- QCS-4

Revision: K Date: Nov. 29, 2018

The supplier shall obtain First Article Approval (FAA) for this assembly or it's subcomponents when a line item is included on this Purchase Order that requires the delivery of the final test report. The absence of this line item indicates that no FAA has been contracted or is required for this Purchase Order and a previous approval satisfies the Technical Data Package (TDP) requirements for FAA. First Article Approval will be granted upon successful completion of a First Article Inspection (FAI) and a First Article Test (FAT). Shipments under this Purchase Order prior to FAA are not allowed. FAI and FAT shall be conducted in accordance with the requirements of the TDP drawing,

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QAR/QAP, production function/fabrication specification and/or military specification and this Purchase Order. Additional supplier instructions for FAI are contained within GDLS Supplier Instruction QCS 83-4 and for FAT within QCS-4. Test sample selection shall be accomplished under the supervision of the Government. Government notification is required to allow test monitoring prior to test start (reference QCS-4, Section 4.2.1). Within 30 days of receiving the FAA requirement notification by activation of the FAA Purchase Order line item you must notify the GDLS Buyer of the test facility name, location, contact, phone number and purchase order/work authorization number.

## QY2H - First Article Test (HAB)

Revision: C  Date: Sept. 26, 2001

(This quality clause is unique to the components supporting the heavy assault bridge (HAB) low rate initial production (LRIP) contract only).
The supplier shall obtain First Article Approval (FAA) for this assembly or subcomponents, when a line item is included on this purchase order that requires the delivery of the final test report. The absence of this line item indicates that no FAA has been contracted or is required for this purchase order and a previous approval satisfies the TDP requirements for FAA.

First article approval will be granted upon successful completion of a First Article Inspection (FAI) and a First Article Test (FAT). Shipments under this purchase order prior to first article approval are not allowed unless otherwise authorized by the procuring activity.

FAI and FAT shall be conducted in accordance with the requirements of the technical data package (TDP) (drawing, QAR, production specification and or military specification) and this purchase order. Additional supplier instructions for FAI are contained within GDLS supplier instructions QCS 83-4 revision "F", dated July 2000, except section v, paragraph A. Instead, the first two (2) production pieces produced will be the FAI samples. Likewise for FAT within QCS-4, dated August 2001, except paragraphs 6.1 and 6.3. Instead the first two (2) production pieces produced will be new FAT samples, no destructive testing will be performed, and the FAT samples will be used in production upon successful completion of testing. Within thirty (30) days of receiving the FAA requirement notification, by activation of the FAA purchase order line item, supplier must notify the GDLS buyer of the test facility name, location, contact, phone number and purchase order/work authorization number.

## QY3 - Control Test (QCS-4A)

Revision: H  Date: Jan. 7, 2020

Supplier shall conduct Control Test examinations on this item or its subcomponents in accordance with the requirements of the Technical Data Package when a Control Test line item is included on this Purchase Order that requires the delivery of the final test

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certification. The absence of this line item indicates that no Control Test has been contracted or is required for this Purchase Order.

Specific supplier instructions and requirements for control test (s) and reports are contained within the attached QCS-4A. Hardware shipment prior to Control Test approval is not allowed.

## QY4 - Control Inspection

Revision: C  Date: Dec. 15, 1988

Control inspection required on a lot-by-lot basis for dimension and/or performance characteristics imposed per specific requirements of (_____). Frequency of inspection or test, inspection method and inspection results shall be documented and supplied with each hardware shipment to GDLS receiving plant.

## QY32 - Process Certification

Revision: A  Date: July 25, 2000

Process and operator certification of the coating system by the procuring activity is required in accordance with specification 12292894, paragraph 3.9. Certification is required prior to processing material on this purchase order. In addition, certification shall be performed prior to the processing of each purchased lot of materials.

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# ENGINEERING QUALITY REQUIREMENTS

## EQA3 – Quality System

Revision: B  Date: Mar. 1, 2017

The suppliers internal Quality System is acceptable for this item. The supplier is not required to have prior approval of their Quality System by General Dynamics Land Systems.

## EQA4 – Approved Quality System

Revision: F  Date: Aug. 31, 2026

Requirement Description:
The supplier shall use a Quality System that is approved by General Dynamics Land Systems (GDLS) Engineering Quality Assurance for the goods/services to be provided.

Quality System Requirements:

1. If the supplier is third party registered to AS9100, ISO 9001, or IATF 16949, the supplier shall provide their current registration certificate to GDLS. If the supplier is not currently third party registered, GDLS Quality Assurance will perform a pre/post award assessment to evaluate the supplier's Quality System.

2. All measuring and test equipment used for final product acceptance shall be calibrated with certifications traceable to the National Institute for Standards and Technology (NIST).

## EQB9 – Certificate of Conformance (COC)

Revision: G  Date: Aug. 31, 2026

Requirement Description:
The supplier shall furnish a COC with each shipment attesting that the goods/services meet all the Technical Data Package requirements.

COC Requirements:

1. Signature, date and title of the responsible Quality representative or equivalent shall be included.
2. Data supporting the COC shall be kept on file and made available upon request.

Delivery Requirements:

1. The COC shall be uploaded prior to shipment to the Purchase Order Line item within iSupplier.  Navigate to www.GDLS.com > Suppliers > iSupplier.

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2. If the requirement is specified as non-deliverable (i.e., EQB9-ND) the COC shall be kept on file and made available upon request.
    a. When applicable, such as XM30, M10 Booker, etc., per contractual flow down, see Production Quality Clause QL48 (CARC Paint and MIL-PRF-14105 Process Certification/Verification) if LS1138059 is list on any technical data.
        *For any questions needing clarification, please contact the GDLS buyer listed on the purchase order.
    b. When applicable, such as XM30, M10 Booker, etc., per contractual flow down, see Production Quality Clause QP95 (Item Unique Identification (IUID) per MIL-STD-130).
        *For any questions needing clarification, please contact the GDLS buyer listed on the purchase order.

Non-conformance Requirements:
1. All non-conformances shall be dispositioned by GDLS prior to delivery.
2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.
3. The dispositioned E-NCH shall be included with the COC.

## EQB11 – Material Test Report (MTR)

Revision: C  Date: Aug. 31, 2026

Requirement Description:
The supplier shall furnish a Material Test Report (MTR) from the material manufacturer attesting that the material(s) meet all of the Technical Data Package requirements.

MTR Requirements:
1. The MTR shall include the name of the manufacturer, material specification, and size.
2. Chemical composition analysis and mechanical properties test results shall be included.
3. Material heat lot number shall be included.

Delivery Requirements:
1. The MTR shall be uploaded prior to shipment to the Purchase Order Line item within iSupplier.  Navigate to www.GDLS.com > Suppliers > iSupplier.
2. If the requirement is specified as non-deliverable (i.e., EQB11-ND) the MTR shall be kept on file and made available upon request.

Non-conformance Requirements:
1. All non-conformances shall be dispositioned by GDLS prior to delivery.

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2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.

## EQC4 – First Piece Inspection (FPI) Report

Revision: G  Date: Aug. 31, 2026

Requirement Description:
A complete verification is required to confirm the hardware being inspected per lot complies with the Technical Data Package requirements identified in the Purchase Order.

FPI Report Requirements:

1. The FPI form shall be IAW SAE Aerospace Standard AS9102 Form 3 or equivalent.
2. Annotated/ballooned drawing shall be included.
3. All drawing notes shall be included.
4. Weld sizes and visual inspection of all welds shall be reported.
5. All GD&T characteristics including basic dimensions shall be included.
6. Supporting documentation (i.e., certifications for materials, special processes, etc.) shall be included.
7. FPI report(s) shall be included for all sub-assemblies and details.
8. Signature, date and title of the responsible Quality representative or equivalent shall be included.

Delivery Requirements:

1. The FPI shall be uploaded prior to the first shipment to the Purchase Order Line Item within iSupplier.  Navigate to www.GDLS.com > Suppliers > iSupplier.
2. If the requirement is specified as non-deliverable (i.e., EQC4-ND) the FPI report package shall be kept on file and made available upon request within 5 business days.

Non-conformance Requirements:

1. All nonconformance(s) shall be dispositioned by GDLS prior to delivery.
2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.
3. The dispositioned E-NCH shall be included with the FPI report.

Additional Information:
Dimensional data and certifications are not required for fasteners unless otherwise specified. Data from Coordinate Measuring Machines (CMM) are not a substitute for the FPI report. Casting and forging x-rays shall be kept on file and made available upon request.

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## EQC5 – Electrical/Functional Test

Revision: G  Date: Aug. 31, 2026

Requirement Description:
The supplier shall perform electrical and/or functional testing and furnish a copy of the results for each end item delivered.

Test Report Requirements:

1. The test data in supplier format shall address all characteristics required by the Technical Data Package and if required traceable by serial number.
2. Actual values are required except for those characteristics typically inspected with pass/fail criteria.
3. Signature, date and title of the responsible Quality representative or equivalent shall be included.

Delivery Requirements:

1. The test data shall be uploaded prior to shipment to the Purchase Order Line Item within iSupplier. Navigate to www.GDLS.com > Suppliers > iSupplier.
2. If the requirement is specified as non-deliverable (i.e., EQC5-ND) the test data shall be kept on file and made available upon request within 5 business days.

Non-conformance Requirements:

1. All non-conformances shall be dispositioned by GDLS prior to delivery.
2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.
3. The dispositioned E-NCH shall be included with the test data.

## EQD1 – Acceptance Test Procedure (ATP) & Acceptance Test Report (ATR)

Revision: L  Date: Aug. 31, 2026

Requirement Description:
The supplier shall develop and submit an ATP for approval prior to the final testing of hardware. A completed ATR shall be provided with each end item delivered. GDLS approval of supplier's test procedure does not relieve the supplier from meeting all requirements of the specifications, drawing and other technical data.

ATP Requirements:

1. The ATP shall have a unique document number and shall be revision controlled.
2. Each test shall be cross referenced to the performance characteristics in the applicable specification or Technical Data Package (TDP).
3. Each performance characteristic shall be addressed with a detailed test method.

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4. The test data recording format shall be identified (test data sheets are preferred). Actual values are required except for those characteristics typically inspected with pass/fail criteria.
5. A list of test equipment required to execute the ATP shall be included.
6. Diagrams or photographs of the test setup shall be included in the ATP.
7. Signature, date and title of responsible Quality representative or equivalent shall be included.

ATR Requirements:

1. The ATR shall identify the Purchase Order, Part Number and Serial Number if applicable of the end item being delivered.
2. Each test shall be cross referenced to the performance characteristic in the ATP.
3. A test equipment calibration log shall be included that identifies the nomenclature, serial number, last calibration date, and next calibration due date.
4. Signature, date and title of responsible Quality representative or equivalent shall be included.

Delivery Requirements:

1. The ATP shall be submitted for approval a minimum of 30 days prior to the first scheduled acceptance test to the following:
   GDLS Engineering Quality Assurance (EQA) at engsqa@gdls.com
   and the GDLS Buyer identified on the Purchase Order
2. Any revisions to the ATP shall be submitted for approval prior to additional testing.
3. EQA written approval of the ATP shall be maintained on file by the supplier.
4. The ATR shall be uploaded prior to end item acceptance for each shipment to the Purchase Order Line Item within iSupplier. Navigate to www.GDLS.com > Suppliers > iSupplier.

Non-conformance Requirements:

1. All non-conformances shall be dispositioned by GDLS prior to delivery.
2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.
3. The dispositioned E-NCH shall be included with the ATR.

## EQD2 – Source Acceptance

Revision: E Date: Jun. 26, 2020

Requirement Description:
General Dynamics Land Systems (GDLS) requires source acceptance to be completed prior to shipment of end item.

Source Inspection Requirements:

1. The supplier shall notify GDLS five business days prior to the start of final acceptance test or inspection to allow for scheduling of the acceptance activity.

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Contact either Engineering Quality Assurance (EQA) or the GDLS Buyer identified on the Purchase Order.
2. All supporting documentation as required by the Purchase Order, Quality Requirements and any additional Technical Data Package requirements shall be readily available to support the source inspection.

## EQE2 – Automated Test Equipment (ATE) Software Evaluation

Revision: F  Date: Aug. 31, 2026

Requirement Description:
The supplier shall submit any ATE Software utilized as a means of functional product acceptance for approval prior to final acceptance testing of hardware.

ATE Software Requirements:
The ATE Software shall be revision controlled. Revision control procedures are subject to GDLS audit.

Delivery Requirements:
1. The ATE Software shall be submitted for approval a minimum of 30 days prior to final acceptance testing of hardware to the following:
   GDLS Engineering Quality Assurance (EQA) at engsqa@gdls.com
   and the GDLS Buyer identified on the Purchase Order
2. Any revisions to the ATE Software shall be submitted for approval prior to additional testing.
3. EQA written approval of the ATE Software shall be maintained on file by the supplier.

Additional Information:
The GDLS evaluation of ATE may include either a line by line review of the source code (or equivalent) or demonstration of the software operation by the supplier.

## EQF3 – Weld Inspection & Welder Certifications

Revision: B  Date: Jun. 26, 2020

Requirement Description:
The supplier shall perform a visual weld inspection and ensure Individual Welder Certification are IAW the applicable weld specifications.

Visual Weld Inspection Requirements:
1. All welds shall be visually inspected and be free of cracks, overlap and undercut IAW the applicable specification in the Technical Data Package (TDP).
2. All welds shall be measured with suitable gages and documented in the First Piece Inspection (FPI) report per EQC4.
3. Visual inspection shall be aided by strong light, magnifiers or other equipment as the supplier deems suitable.

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Welder Certification Requirements:

1. Individual Welder Certifications shall be IAW the applicable specification in the TDP.
2. All welding shall be traceable to the certified individuals performing the work.
3. Weld records shall be maintained in supplier format and made available upon request.

Non-Destructive Test (NDT) Requirements:

1. Any NDT shall be conducted after visual inspection is complete.
2. NDT is required when specified by the TDP or may be conducted at the manufacturer's discretion.
3. NDT inspection shall be conducted utilizing liquid penetrant per ASTM E1417/E1417M or magnetic particle per ASTM E1444/E1444M with no cracks permissible.
4. Personnel performing NDT other than visual inspection shall be a certified:
   a. CWI Level II inspector or
   b. CWI Level I inspector working under the supervision of a Level II inspector.
5. Personnel performing NDT shall be qualified and certified IAW ASNT Personnel Qualification SNT-TC-1A ANSI/ASNT-CP-189 or NAS 410 for military purposes, or as specified in the contract or Purchase Order.

## EQJ1 – Calibration Certification

Revision: E  Date: Jun. 26, 2020

Requirement Description:
The supplier shall furnish a certification with the shipment including data if available attesting that each item being delivered is calibrated and traceable to the National Institute for Standards and Technology (NIST).

## EQK16 – Key Characteristics

Revision: B  Date: Aug. 31, 2026

Requirement Description:
All attributes identified as Key Characteristics shall be inspected 100%. The supplier shall keep on file actual inspection/test data and verification of conformance to the drawing key characteristics.

Delivery Requirements:

1. The test data shall be uploaded prior to shipment to the Purchase Order Line item within iSupplier. Navigate to www.GDLS.com > Suppliers > iSupplier.

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2. If the requirement is specified as non-deliverable (i.e., EQK16-ND) all data shall be kept on file and made available upon request within 5 business days.

Non-conformance Requirements:

1. All non-conformances shall be dispositioned by GDLS prior to delivery.
2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.
3. The dispositioned E-NCH shall be included with the COC.

## EQK3 – High Strength Fastener Certification

Revision: K  Date: Aug. 31, 2026

Requirement Description:
The supplier shall ensure high strength fasteners are compliant to the Technical Data Package (TDP) for American Grade 5 (BC), Grade 8 (BD) or Metric Classes 8.8, 9.8, 10.9, 12.9 hex head and socket head fasteners, and procured from a manufacturer approved by GDLS.

High Strength Fastener Requirements:

1. The fasteners shall be traceable to a recognized manufacturing source (as identified by the bolt head logo) that is on the approved GDLS “Process to Supplier List”. Contact the GDLS buyer identified on the Purchase Order to obtain the list of approved manufacturers.
2. The material certification shall document the actual material chemistry, core hardness or tensile strength and plating conformance.

Delivery Requirements:
The material certification shall be uploaded prior to shipment to the Purchase Order Line Item within iSupplier. Navigate to www.GDLS.com > Suppliers > iSupplier.

## EQ118 - Commercial Welding

Revision: C  Date: Aug. 31, 2026

Weld joints within this assembly are to be qualified, implemented, and inspected in accordance with the Technical Data Package (TDP) (Eg., AWS, CSA). When there is no weld specification identified in the TDP, the requirements shall be governed by AWS D1.1/D1.3 for steel, AWS D1.2 for aluminum, AWS D1.6 for stainless steel, or AWS D1.9 for titanium as applicable.

If a weld joint contains armor material, consult the GDLS contact at weldlab@GDLS.com purchase orders. If a weld joint contains Armor material and the drawing is not for the Stryker or the LAV vehicle family, refer to Quality Clause EQ121.0 or consult GDLS contact at weldlab@GDLS.com.

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The supplier shall develop and maintain a weld qualification data package in accordance with the relevant weld specification. The data package shall be provided to the client address listed below at least three (3) weeks in advance of production welding.

**DO NOT START PRODUCTION WELDING WITHOUT A GDLS APPROVED WPS**

The weld qualification data package submitted shall contain at a minimum:

1. Weld Procedure Specification (WPS).
2. Procedure Qualification Record (PQR) with accompanying test results.
3. Welder Qualification Records.
4. Weld map, detailing which WPS(s) apply to each weld joint.
   (The following elements shall be provided upon request)
5. Visual inspection criteria/instructions in place.
6. Weld rework instructions in place.

GDLS approval letter(s) are required for First Piece Inspection (FPI) acceptance and approval(s). Supplier shall have an approval letter for each specific part number or applicable down component, at the time of FPI in accordance with Quality Clause, EQC4. Weld approval letters are considered valid from either of the issuing authorities (below) and are valid for (3) years from the approval date. The supplier is responsible for managing the expiry of the weld approval letters.

The weld qualification data package shall be submitted to the appropriate reviewing authority:

General Dynamics Land Systems
Joint Systems Manufacturing Center
Lima, OH 45804
Attn: Material Control Laboratories
Email: weldlab@gdls.com

Delivery Requirements:

1. The GDLS Weld Approval Letter for each part number shall be uploaded prior to shipment to the Purchase Order Line Item within iSupplier. Navigate to www.GDLS.com > Suppliers > iSupplier.

Non-conformance Requirements:

1. All non-conformances shall be dispositioned by GDLS prior to delivery.
2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.
3. The dispositioned E-NCH shall be included with the WPS and weld approval letter for each part number.

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## EQ121 - Armor Welding

Revision: C  Date: Aug. 31, 2026

Weld joints within this assembly are to be qualified, implemented, and inspected in accordance with the governing weld specification indicated in the Technical Data Package (TDP). Cancelled, replaced or inactive welding specifications, (eg. MIL-STD-1261, MIL-STD-1941, Ground Combat Vehicle Welding Code-Steel 12479550, Ground Combat Vehicle Welding Code-Aluminum 12472301) shall refer to the latest released specification indicated on the cancellation notice (eg. MIL-HDBK-1941 superseded with MIL-STD-3040), unless otherwise specified by GDLS.

Armor material is classified as any material that is governed by a military or internal GDLS armor material document (eg. MIL-DTL-12560, MIL-A-46100, MIL-DTL-46027). Steel Grades 4130, 4140, 8630, 8640 (When quenched and tempered to HRC 42 or greater) and 4330 (MOD) are included as Armor Material and shall be welded in accordance with applicable specification with contractual flow down. Weld joints within the assembly are to be qualified, implemented, and inspected in accordance with the current version of the applicable welding specification called out on the TDP.

Contractors are responsible for production weld quality and to ensure proper workmanship practices are being utilized on armor materials. Contractors must be knowledgeable and proficient with applicable welding specifications (ie: Ground Combat Vehicle Welding Code-Steel 12479550 or Ground Combat Vehicle Welding Code-Aluminum 12472301) and are not authorized to subcontract any contracted armor welding without GDLS approval.

A weld qualification data package consisting of the following elements shall be furnished as indicated below. The package shall include the name of the welder who performed the welds and the date the samples were tested. GDLS requires armor welding to utilize certain key essential variables based upon the type of armor material. GDLS will provide these key essential variables (i.e.: wire type) along applicable mechanical test data requirements. The contractor shall contact GDLS by emailing weldlab@gdls.com to receive requirements for particular armor material. All applicable documentation shall include date of origin, applicable signatures, and shall include method of configuration control.

The weld qualification data package shall contain at a minimum:

1. Weld Procedure Specification (WPS) including all applicable key essential welding variables (filler wire, wire speed, travel speed, pre-heat, voltage, transfer mode, welding position) as required by applicable welding specification.
2. Procedure Qualification Record (PQR) with accompanying results (eg. X-Ray, Ultrasonic, Tensile and Bend testing).
3. Weld workmanship sample (macro section) for each unique joint and welding procedure. Joints may be grouped to minimize number of workmanship samples. Contractor shall consult with GDLS to ensure proper grouping. All workmanship samples shall be sent cut and prepared to a sufficient level to validate fusion.

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4. Weld map, detailing which WPS(s) apply to each weld joint. Mapping is not required if a single WPS is used to fabricate the entire assembly.
5. Welder qualification test records.
6. Weld inspector qualification, or clarify if third party is being utilized.
   The following elements shall be provided upon request:
7. Weld re-work instructions in place.

Welder qualification testing shall follow the applicable welding specification identified in the drawing; unless authorized by GDLS to allow alternate material. Contractor is responsible to ensure weld inspectors are certified to applicable requirements. Rework / Repair or addition of any ballistic weld joint outside of the print specified location is not permitted. The supplier shall consult GDLS for MRB approval prior to any rework consideration. Rework examples include but are not limited to: mislocated appurtenances or welds, stray welds, arc strikes, and additional welds not mandated by the TDP.

Weld procedure documentation and / or specimens shall be furnished for any new welding procedure specifications (WPS) or when essential variables fall outside previously approved limits. Weld specimens shall be furnished to the address listed below at least three (3) weeks in advance of production welding. The specimens are to be fabricated using the submitted welding procedure specification (WPS). Following (WPS) approval; an official GDLS approval letter will be provided and shall be maintained by the supplier during the terms of the contract. GDLS approval and or authorization shall be presented at the time of first piece inspection. Parts that have not been in continuous production for 24 months require a new weld approval. Approval of previous welding procedures do not require resubmission of weld specimens, but require all other applicable documentation.

Delivery Requirements:

1. The GDLS Weld Approval Letter for each part number shall be uploaded prior to shipment to the Purchase Order Line Item within iSupplier. Navigate to www.GDLS.com > Suppliers > iSupplier.

Non-conformance Requirements:

1. All non-conformances shall be dispositioned by GDLS prior to delivery.
2. All non-conformances shall be addressed on the GDLS Engineering Nonconforming Hardware Form (E-NCH). Navigate to www.GDLS.com > Suppliers > Quality > E-NCH Form.
3. The dispositioned E-NCH shall be included with the WPS and weld approval letter for each part number.

Joint Systems Manufacturing Center General Dynamics
Land Systems
1161 Buckeye Road
Lima, OH 45804
Attn: Material Control Laboratories

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