



Dura-Shiloh Global Supplier Quality Assurance Manual

Edition

2.0

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Global Supplier Quality Assurance Manual

BODY



CHASSIS



POWERTRAIN

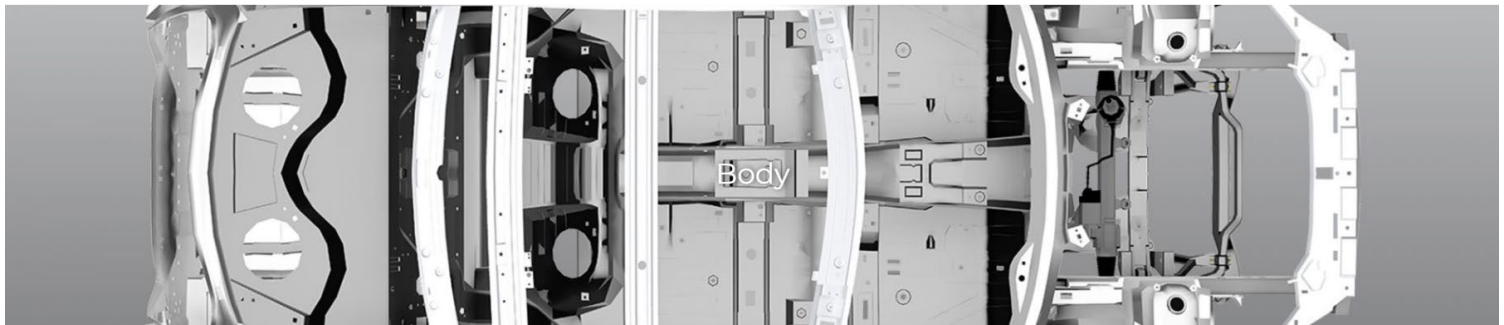


ELECTRICAL



INTERIOR





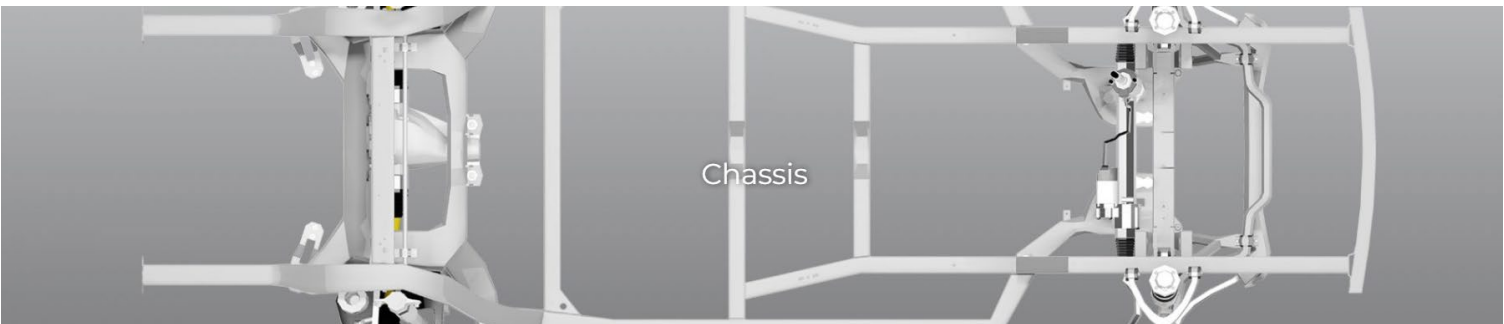
BODY

Lightweight Structural Products

Dura-Shiloh leads the industry in advanced material forming and joining technologies to create innovative products with optimized strength-to-weight ratios. From component supply to integrated structures, our areas of focus include space frames, cross car beams, seating systems, door systems, suspension products and steering components.

We are experts in fabricating with lightweight and tailored materials including aluminum, composites and high strength steels. Our award-winning manufacturing forming processes include roll-forming of advanced geometries, robotic stretch-bending, hydroforming, and stamping. Dura-Shiloh excels at integrating mixed materials to deliver precisely engineered performance.

- Cross Car Beams
- Composite/Hybrid Rear Shelf Tray
- BMW Enginer Carriers
- Lightweight Motor Carriers
- Door Structures and Headers
- Laser Welded Tubes
- Side Impact Beams
- Seat Frame Structures
- JLR Transaxle
- Hinge Assemblies



CHASSIS

Suspension, Tire Stowage, and Parking Brake Systems

Dura-Shiloh chassis solutions assist automakers in achieving stringent weight reduction, safety, and performance goals. Leveraging extensive metal forming capabilities, our engineers develop custom manufacturing processes that achieve precision tolerances for the most demanding product specifications. Our vast design and analysis capabilities enable predictive design in static and dynamic conditions.

Electric vehicles demand ultra-lightweight chassis solutions to minimize energy consumption and increase range. Dura-Shiloh innovation teams are experts in integrating alternate materials that shed weight and reduce components. Our hybrid/multi-material constructions for tire tubs create a revolutionary structure that improves NVH and simplified vehicle assembly. Dura-Shiloh aluminum suspension arms offer significant weight reduction and lower component count.

More than 50 years in parking brake system design and manufacturing bring safety to the forefront with the world's largest selection of parking brake controls and cable solutions. Our production materials experience with parking brakes and pedal systems includes aluminum, high-strength steel, and composites.

- Tire Carriers
- Lightweight Suspension Arms
- Parking Brake Controls
- Parking Brake Cabel Systems
- Integrated Park Brake & Cable Systems
- Hand & Foot Parking Brake Controls
- Lightweight Parking Brakes
- Electric Parking Brakes
- Clutch Release Parking Brakes
- Push-to-Release Parking Brakes
- Self-adjusting Parking Brake Systems

Interior

INTERIOR

HMI Driving Controls, Haptics, Body Cables, and Seating Structures

The ambiance that an automobile interior manifests plays a critical role in reinforcing a brand promise. It is the first true impression experienced by a potential buyer. Successfully executed interiors immerse occupants in the perfect harmony of comfort, design aesthetics, illumination, sound, and haptic feel. It is in the vehicle cabin that the finest details convey the greatest impression. Dura-Shiloh industrial designers craft human-machine interfaces that augment your brand experience blueprint.

From the push button start of the engine to the touch of the carbon fiber shift-by-wire selection joystick to the distinct responsive feedback of each gear shift, every sensation is deliberate and precisely engineered. Human factors and safety are designed into every Dura-Shiloh lightweight driver control system, seat adjuster, and frame. Comfort and command are precisely placed, from your seating position to the haptic feedback of the pedal system.

As new materials, electronics and connectivity transform mobility evolution, Dura-Shiloh remains at the forefront of design and technology. Advancements in facial recognition, biometrics, and gesture control will enable exciting new vehicle experiences in the future.

- Human Machine Interfaces
- Shifter Controls
- Parking Brake Controls
- Pedal Controls
- Control Cables
- Seating Structures

Electrical

ELECTRICAL

Driver Controls and Actuation

Mechatronics and active safety systems will continue to evolve and refine functionality as vehicles ascend from Level 1 to Level 5 autonomy. At the same time horizon, vehicle electrification and alternate powertrain solutions will rapidly deploy across global markets. Bolstering the success of each technology migration, Dura-Shiloh innovations in sensors, processors, software, and smart actuators provide the brain power and muscle to safely navigate vehicles in the most complex of driving scenarios.

Dura-Shiloh drive-by-wire mechatronic actuation systems replace mechanical link or hydraulic controls to reduce vehicle weight, improve responsiveness, and enable the implementation of active safety and automated driving systems. Dura-Shiloh smart shift-by-wire and park lock actuators are enabling new automation on high performance vehicle nameplates worldwide.

- Shift-by-Wire Electronics
- Lighting Technologies
- Mechatronic Actuators

Powertrain

POWERTRAIN

Driver Control and Safety Systems

New CAFE mandates are driving innovative powertrain technologies that extend range and reduce CO2 emissions. Dura-Shiloh technologies accelerate this continuous evolution toward efficiency improvement, at every progressive stage. Our shift-by-wire mechatronic actuators and HMI's play a critical role in electrifying traditional and advanced automated MTX & ATX gearbox systems. A complete portfolio of smart actuators, integrated with electronics and software drive park lock capability for EV's and hybrid electric powertrains.

Looking further under the hood, Dura-Shiloh charge-air cooling (CAC) tubes systems interface with superchargers and turbochargers to route compressed and cool air for increased engine output. Inside diesel and internal compression engines, Dura-Shiloh precision lightweight valve spring retainers provide reliable positioning for engine efficiency and durability.

While new creations, including, multi-speed transmissions, battery electric powertrain, hybrid technologies and turbocharging, improve efficiency, they also create monumental challenges for NVH tuning and non-traditional engine/motor mounting. Dura-Shiloh lightweight motor carrier configurations are engineered to deliver optimized stiffness and tuned energy absorption. Our unique aluminum geometries, roll-forming and stretch-bending processes, and robust joining technologies contribute to achieving elevated demands in vehicle performance.

- Mono-Stable and Bi-Stable Shift-by-Wire
- Rotary Shift-by-Wire Controls
- Shift-by-Wire Actuators
- Return-to-Park Actuators
- MTX Start-Stop Features
- Park Lock Actuators
- Manual Park Release Cables
- ATX & MTX Cable Shift Systems
- Guide Controls & Inertia Modules
- Tubes & Fuel Rails
- Charge Air Coolers (CAC)
- Valve Spring Retainers

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Foreword

This manual is not intended to replace the AIAG reference manuals or other customer specific requirements. Its purpose is to complement, provide and clearly communicate to all Global Suppliers, DURA-SHILOH 's expectations with regard to quality system requirements, advanced quality planning, launch management activities, logistics/materials procedures and serial production product and process robustness.

DURA-SHILOH Core Guiding Principles

- a) **CUSTOMER FOCUS** – Flawless launch, maintaining all quality certifications, technology roadmaps to support customer needs;
- b) **SUSTAINABILITY** – C02 carbon neutral roadmap being developed, Career development tools with strategic talent reviews;
- c) **EFFECTIVENESS** – Measuring and achieving our forecasts;
- d) **AGILITY** – Business management tool roll outs (ERP/Plex, financial consolidation tools, etc.);
- e) **TOTAL QUALITY (COPQ)** – Managed and tracked in 2023 in our monthly business reviews;
- f) **TRANSPARENCY** – PER role out at in all facilities;
- g) **CONTINUAL IMPROVEMENT** – Optimization of footprint/capacity, CI projects in Shibu mi.

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Scope

Suppliers of a) production materials, b) production or service parts, or c) heat treating, plating, painting or other finishing services directly to, and used in the manufacture of DURA-SHILOH 's products. The scope of this manual excludes DURA-SHILOH intercompany sales.

DURA Internet Systems

As a supplier to DURA-SHILOH you are required to communicate with DURA via the following B2B web based applications:

Supplier RFQ	http://rfq.DURAauto.com
Supplier Extranet	http://extranet.DURAauto.com
<u>Supplier Global 8D</u>	http://global8d.DURAauto.com
Supplier APQP	http://apqp.DURAauto.com

Access or changes to the above B2B applications can be requested by contacting your DURA-SHILOH Purchasing or Advanced Supplier Quality Engineering (ASQE) contact.

Note: All correspondences must be in English.

1.0 Supplier Basic Quality Requirements

In accepting DURA-SHILOH ’s Terms and Conditions of Purchase, suppliers agree to participate in DURA-SHILOH ’s supplier quality and improvement program(s), to comply with all quality requirements and procedures specified by DURA-SHILOH , as revised from time to time and those applicable to the supplier’s third-party certified management system. In addition, DURA-SHILOH shall have the right to enter the supplier’s facility at reasonable times to inspect the facility, goods, materials and any property of DURA-SHILOH covered “by” contract. DURA-SHILOH ’s inspection of goods whether during manufacture, prior to delivery or within a reasonable time after delivery, shall not constitute acceptance of any work-in-progress or finished goods.

All suppliers are expected to supply products to DURA-SHILOH with zero defects and in accordance to schedule and/or Kanban call/order requirements. Parts shall meet all engineering specification requirements and function with no abnormalities according to intent.

1.1 Integrated Management System Requirements

All suppliers of a) production materials, b) production or service parts, or c) heat treating, plating, painting or other finishing services supplying directly to DURA-SHILOH shall be certified to ISO 9001 (actual version) as a minimum with the goal of conformity to IATF 16949:2016requirements.

If the supplier is not IATF 16949 certified, it is mandatory to demonstrate the compliance with Minimum Automotive Quality Management System Requirements [MAQMSR] or equivalent) through a second-party audit.

This requirement shall be cascaded through the supply chain.

Suppliers not certified to ISO 9001 or IATF 16949:2016, or those suppliers constructing i.e. “green-field”, or purchasing facilities to manufacture the parts being quoted, must include an outline of their certification attainment plan with their quote for further consideration.

Suppliers are actively encouraged to implement an environmental system in compliance with a current valid version of ISO 14001. ISO14001 certification may be required, depending upon regions and product supplied.

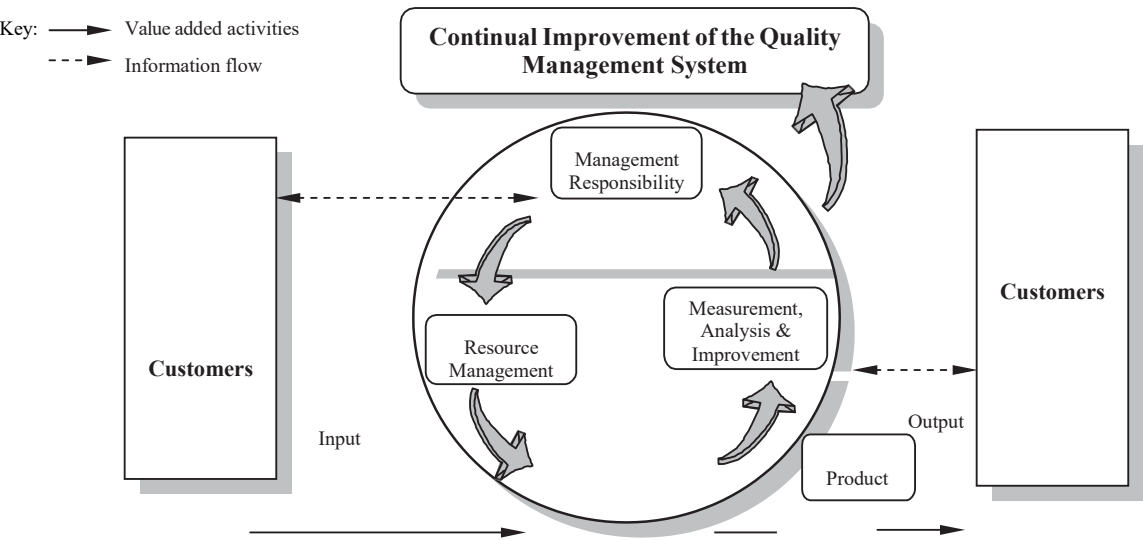
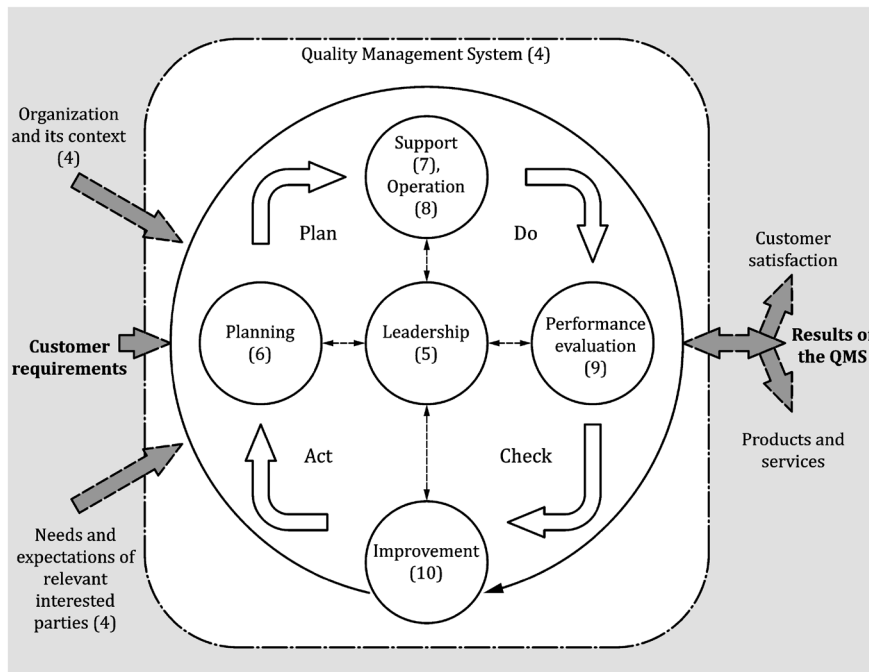


Figure 1: Model of a process-based quality management system in ISO/IATF16949:2016 Standard



NOTE: Numbers in brackets refer to the clauses in ISO9001:2015 International Standard.

Figure 1: Representation of the structure of this International Standard in the PDCA cycle

1.2 Process Based Quality System Requirements

Suppliers to DURA-SHILOH shall self-audit each manufacturing process at least annually to determine its effectiveness **per IATF16949:2016 clause 9.2.2.3**. Records of these audits shall be maintained and made available upon request.

Some OEM's/customers to DURA-SHILOH require these manufacturing process audits to be conducted using their specific criteria and reporting format, and for DURA-SHILOH to retain evidence of these audits. When this is the case, the criteria, requirements, and formats of these audits will be provided and/or communicated.

Suppliers of certain products or processes **shown in the below table** are required to comply with automotive industry specific requirements, guidelines, and assessments. DURA-SHILOH requires its suppliers to perform and upload these self-assessments on section 5 of supplier profile <http://extranet.DURAauto.com>. These assessments **are manufacturing process audits in scope, and** are required to be performed **annually**. As such, annual assessments must be uploaded and maintained within your DURA-SHILOH Extranet supplier profile and be less than 1 year old.

Note: These special processes requirements apply to the supplier and the sub-supplier of these processes regardless of where they reside in the DURA-SHILOH supply chain.

Special Process Annual CQI Audits/Assessments include:

CQI-9	Special Process: Heat Treat System Assessment	Processes affected include: Sintering, Brazing, Normalizing (using heat), Stress Relieving, Annealing, Induction Heat Treatment, Carburizing, Carbon Correction, Neutral Hardening, Quench and Temper, Austempering, Martempering, Tempering, Precipitation Hardening/Aging, Nitriding, Ferritic Nitrocarburizing, Aluminum Treat Treatment.
CQI-11	Special Process: Plating System Assessment	Processes affected include: Zinc Plating, Zinc Alloy Plating, Decorative Plating, Surface Conditioning of Metals for Decorative Plating, Surface Conditioning of Plastics for Decorative Plating, Mechanical Plating (all copper, silver, gold, aluminum, passivation) and any and all metal plating addition processes
CQI-12	Special Process: Coating System Assessment	Processes affected include: Phosphating, Anodizing, Powder Coating, Electrocoat (E-Coat), Spray, Dip/Spin, Autophoretic, Conventive Paint Cure, Aqueous Cleaning, Mechanical Cleaning.
CQI-15	Special Process: Welding System Assessment	Processes affected include: Arc Welding, Resistance Welding, Laser Welding, Solid State Welding. Does not include plastics Ultrasonic Welding.
CQI-17	Special Process Soldering System Assessment	Processes affected include: Any use of electrical soldering processes, including the processes of conformal coating or wiring gluing / staking of PCB's.
CQI-23	Special Process: Molding System Assessment	Processes affected include the use of any thermoplastic, thermoset plastic or rubber and it's derivatives that utilize the following: Injection Molding, Extrusion, Compression Molding, Vacuum Forming, Transfer Molding, or Blow Molding.

DURA-SHILOH is prohibited by law from providing CQI forms and guidelines to its suppliers. These guidelines and forms are easily available for purchase by the AIAG at <http://www.aiag.org>, or directly via regional AIAG global offices.

1.3 Sustainable Development

Suppliers to DURA-SHILOH shall conduct themselves, their operations, and their corporate activities in a manner consistent with DURA-SHILOH Terms and Conditions of Purchase regarding Sustainable Development, and their impact on society, to ensure a high quality of life, health, and prosperity with social justice and maintaining the earth's capacity to support life in all its diversity. In support of DURA-SHILOH's commitments, all suppliers are required to comply with the requirements contained in F-MP-01-5.1.1.2 DURA-SHILOH Supplier Code of Conduct.

DURA-SHILOH reserves the right to inspect the observance of the aforementioned requirements at the supplier's facilities at any time.

DURA-SHILOH further expects suppliers to ensure that their sub-suppliers observe these requirements and those of local governing bodies, laws, and regulations in which they operate.

1.4 Conflict Minerals and Reporting

DURA-SHILOH supports its OEM and Tier-1 Customer requirements to comply with Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act and the U.S. Securities and Exchange Commission ("SEC") rules and regulations. DURA-SHILOH has initiated a process to perform due diligence on, and make disclosures concerning, the use of conflict minerals originating in the Democratic Republic of the Congo and adjoining countries. DURA-SHILOH's process is based on guidelines and processes established by the OECD and the AIAG Conflict Minerals Workgroup.

All DURA-SHILOH suppliers, **regardless of global location or global DURA-SHILOH facility they supply**, must comply with requirements to record material content, including any content of **these** minerals (tin, tungsten, tantalum and gold) into the IMDS (International Material Data System.). In addition, DURA-SHILOH Suppliers must respond to information requests from DURA-SHILOH, and use the iPCMP (iPoint) reporting system or EICC-GeSI Global e-Sustainability Initiative MS-Excel report format, to report the uses and **smelting sources, contacts, and locations of these** minerals (tin, tungsten, tantalum and gold) in products sold to DURA-SHILOH, including information about minerals that are sourced from recycled or scrap materials.

In order to respond to DURA-SHILOH's information requests, suppliers will need to establish a similar process and perform similar inquiries of their suppliers as a means to investigate the source of materials in their products, and to provide DURA-SHILOH the requested information based upon the results of such inquiries.

DURA-SHILOH may be required, and may require its suppliers, to support Customer audit inquiries of the diligence process and reported data in accordance with SEC audit standards, including the "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas."

Finally, it is DURA-SHILOH's policy to avoid the use of conflict minerals originating in the Democratic Republic of the Congo and adjoining countries which fund illegal armed groups. DURA-SHILOH expects its suppliers to also avoid such use and to cooperate with resourcing of materials as determined

by DURA-SHILOH and DURA-SHILOH 's Customers.

More information on conflict minerals is available at <http://www.conflict-minerals.com>.

2.0 Potential New Suppliers

The DURA-SHILOH purchasing representative shall request information to all potential new suppliers. The DURA-SHILOH purchasing representative will visit the potential supplier to determine viability. The ASQE shall perform an on-site Potential New Supplier Assessment (PNSA). Following a successful assessment rating the supplier is added to the DURA-SHILOH global approved supplier list in the Supplier Extranet system.

Supplier access to DURA-SHILOH 's web-based applications should be requested directly through your DURA-SHILOH purchasing representative. Once access has been granted the supplier is responsible for completing their business profiles, consisting of general information, including plant manager and materials contact after hours telephone numbers, user profile(s), business and financial data, product commodities and third-party certification status, including the uploading of current valid certificates and productscope.

Failure to comply with these basic requirements prevents the supplier from being awarded any new business.

2.1 Requests for Quotation

The DURA-SHILOH purchasing representative communicates all requests for quotation via email. In all cases the DURA-SHILOH terms and conditions of purchase are applicable.

The RFQ package shall include, but not be limited to, a valid drawing (with special characteristics identified, if applicable), associated engineering and technical specifications, general terms and conditions, volume, milestones and any other relevant information that allows the supplier to conduct a feasibility review and generate a quotation package.

Funding is to be identified in the initial quote and subsequent quotes to reflect general tooling maintenance, error occurrence detection (poka-yoke, error proofing devices, etc.) and defect outflow prevention to DURA-SHILOH . Controls implemented at a later date are the financial responsibility of the supplier.

If tooling replacement is required due to an increase in volume or product life extension then, funding of such tooling is to be negotiated with the DURA-SHILOH purchasing representative.

Supplier quotations, including Feasibility Study and relevant supporting data, shall be submitted to the DURA-SHILOH purchasing representative via email and must comply with the stated technical specifications, standards, general terms and conditions and DURA-SHILOH and/or DURA-SHILOH 's customers' specific requirements. Any exemptions must be clearly identified and stated, including any changes needed to product and/or process requirements, when submitting a formal quotation.

2.2 New Business Award

A DURA-SHILOH sourcing committee reviews all supplier quotations on the basis of technical competence, previous/current quality and logistic delivery performance and commercial viability to determine the optimum total cost supplier.

Only a DURA-SHILOH purchasing representative is authorized to sign and issue a Purchase Order / contract.

3.0 Product Quality Timing Plan

Suppliers are required to generate an Advanced Product Quality Timing Plan in accordance with the AIAG APQP reference manual for review by the DURA-SHILOH purchasing representative and supplier quality engineering. This plan shall include, but not be limited to the following phases: planning and definition, product design and development¹, process design and development, product and process validation, production launch, key supplier and DURA-SHILOH and/or DURA-SHILOH ’s customers’ milestones.

The DURA-SHILOH Supplier APQP web application found at <http://apqp.DURAAuto.com> must be used as the communication tool for all APQP activities. The status of specific pre-defined program deliverables, timings and open issues must be maintained at all times, both by DURA-SHILOH and the supplier.

Training in this web application shall be requested either directly through your DURA-SHILOH purchasing representative, advanced supplier quality engineer (ASQE).

Simultaneous engineering performed by product/process engineering activities working concurrently drives defect prevention and therefore a timing plan is to be maintained at all times to ensure consistency of approach and readiness.

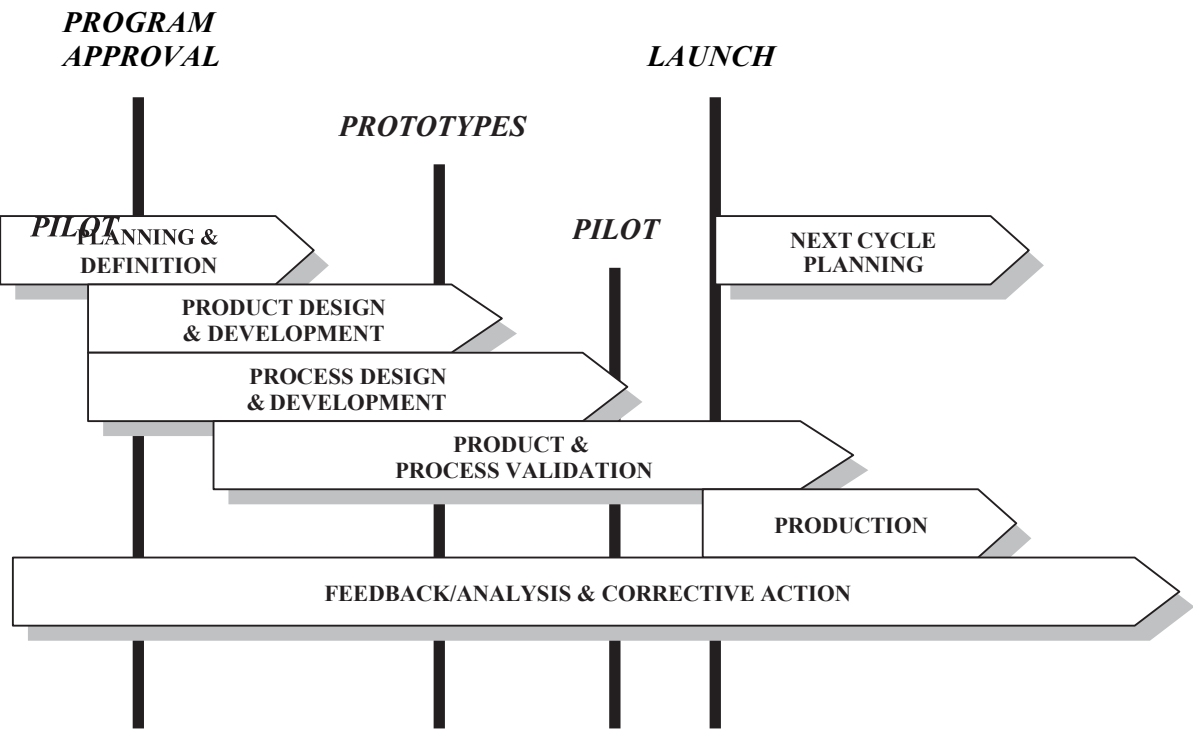


Figure 2: Model of product quality planning timing chart

¹ A supplier that does not have design responsibility may be subject to design exclusions. Such design exclusions do not affect the suppliers’ ability, or responsibility, to provide product that meets DURA and applicable regulatory requirements.

3.1 High Impact (High Risk) Suppliers and/or Parts and Components

Suppliers to DURA-SHILOH may be considered high impact (high risk) whenever:

- A component or product is new technology or produced by new technology processes or whose function is otherwise determined by the project team to have significant impact on the product.
- A supplier is new to DURA-SHILOH , or is a current supplier providing a component or product type not previously provided and/or using new technology to produce the product.
- A supplier is judged to have financial weakness that could disrupt supply over the life of the program.
- A supplier that is mandated by the customer (a “directed” source) may also be high impact.

When a supplier, part or component is designated as High Impact, the DURA-SHILOH purchasing representative or ASQE shall facilitate an APQP “kick-off” meeting to ensure that all drawings, specifications, standards and special characteristics are clearly communicated and understood by the supplier. Proposed product and process controls shall also be reviewed for their robustness. If required, DURA-SHILOH engineering prior to tool release shall approve tool design and definition.

Attendees should include, but not be limited to: DURA-SHILOH project/product engineering, purchasing, logistics/materials, supplier quality engineering and tooling engineering (if applicable), supplier engineering, manufacturing and quality.

3.2 Special Characteristics

Special characteristics (critical/significant/key) are product and/or process characteristics, which are identified, documented and communicated initially during the APQP planning and definition phase and reviewed in subsequent phases to ensure their continuing suitability. Special characteristics shall,

- comply with DURA-SHILOH specified definitions and symbols (see below), and
- be identified in process control documents including drawings, FMEAs, control plans and operator instructions.

Critical Characteristic: Is a product characteristic for which reasonably anticipated variation could significantly affect the products safety or compliance with government regulations and/or safe vehicle/product function (such as: occupant protection, steering control, braking etc....) and is ranked with a severity of 9 or 10 in FMEA (refer to AIAG FMEA manual ranking tables for further guidance). The use of statistical techniques is required, to determine process stability/capability of product/process critical characteristics (C_{mk} / P_{pk} / C_{pk} – Index). Once stability/capability is established the use of 100% control and/or preventive Poka Yoke is required.

- DURA-SHILOH symbol: CC_n (where “n” represents the special characteristic number)

Significant Characteristic: Is a product characteristic for which reasonably anticipated variation is likely to significantly affect customer satisfaction with a product (other than safety compliance) such as its fit, function, mounting, appearance and/or the ability to process or manufacture the product and is normally ranked with a severity of 5 to 8 and with an occurrence of 4 or above in P-FMEA. The use of statistical techniques is required, to determine process stability/capability of product/process significant characteristics (C_{mk} / P_{pk} / C_{pk} – Index). Once stability/capability is established the use of preventive/detective Poka Yoke and/or ongoing statistical process control (SPC) is required.

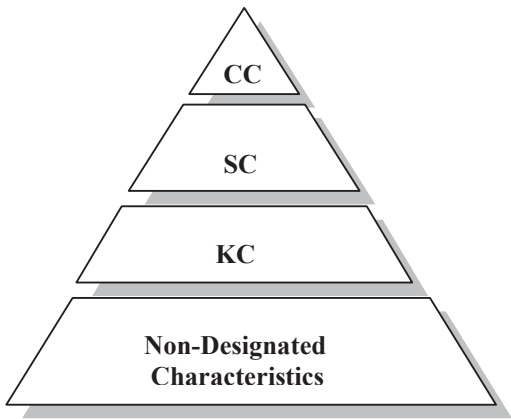
- DURA-SHILOH symbol SC_n (where “n” represents the special characteristic number)

Key characteristic: Is a product or process characteristic (e.g. temperature, pressure, speed, etc.,) which has been reduced from a significant characteristic following the P-FMEA analysis, but still requires special process controls e.g. if the severity is 5 to 8 and the occurrence is less than 4. As a minimum, key characteristics should be checked at the start of each shift or tool-run and/or tool change. DURA-SHILOH symbol KC_n (where “n” represents the special characteristic number)

Note: In case of Product Key Characteristic should be identified in process control documents including drawings, FMEAs, control plans and operator instructions

Process Key Characteristic be identified in process control documents including, FMEAs, control plans and operator instructions

Figure 3: Hierarchy of special characteristic



3.3 Product/Process Stability and Capability

Critical and significant characteristics must be both stable and capable and therefore all special or assignable causes must be identified and acted upon prior to production release. Common causes of part-to-part variation should also be addressed as an aspect of continuous improvement.

In the absence of any design or process defined Critical or Significant characteristic, the supplier is required to select the most significant characteristic for criticality (S x O) as determined by the supplier's PFMEA for an initial and annual stability & capability study/analysis. See section 3.4 for determination of this characteristic.

Key process characteristics when required by Customer or DURA-SHILOH will also be requested the initial process study and include on the PPAP.

Once stability and capability of machine, process and part/component significant characteristics are demonstrated during a production trial run, the level of control shall be agreed and established in the production control plan, including frequency, method of check, sample size and method of record. If significant characteristics are not stable or capable, a 100% inspection or poka yoke must be installed until both stability and capability is recovered. As stated above, the application of 100% control and/or preventive Poka Yoke is required for Critical Characteristics.

Minimum capability index requirements are defined below:

- | | | |
|------------------------------------|-----------------|-----------------|
| - Critical Characteristics (CC) | Ppk ≥ 2.00 | Cpk ≥ 1.67 |
| - Significant Characteristics (SC) | Ppk ≥ 1.67 | Cpk ≥ 1.33 |

Note 1: Ppk must be calculated using a minimum of 50 consecutive parts from a production run. Parts must represent all the cavities, tools, cells etc. (as described in current version of the AIAG PPAP reference manual) Each cavity, tool, and/or cell must be studied separately. (valid for Note 2: as well)

Note 2: Cpk must be calculated using a minimum of 25 sub-groups of 4, monitored and recorded at an adequate frequency to ensure control.

Capability Index	Spread	% Defect	PPM
0.33	$\pm 1\sigma$	31.74	317,400
0.67	$\pm 2\sigma$	4.56	45,600
1.00	$\pm 3\sigma$	0.27	2,700
1.33	$\pm 4\sigma$	0.006	60
1.67	$\pm 5\sigma$	0.0025	25
2.0	$\pm 6\sigma$	0.0001	1

Figure 4 – The Sigma (σ) Scale: Probability of Defects

3.4 Potential Failure Modes & Effects Analysis

FMEA's shall be prepared and maintained by the supplier and must comply with the guidelines set forth in the AIAG Potential Failure Mode and Effects Analysis reference manual.

The Design FMEA or D-FMEA: If a D-FMEA is to be generated by a supplier then, a design and/or several design alternatives should be objectively analyzed with regard to their specific design targets (i.e. reliability, design for manufacture, recyclability etc.) to prevent or avoid product-related potential failures prior to drawing release / design "freeze" and subsequent serial production.

Following "design freeze" and during the entire "life" of the product, design change modifications should be analyzed and documented in the D-FMEA. These experiences gained should be taken into account when developing future products.

DURA-SHILOH reserves the right to participate in supplier D-FMEA's.

The Process FMEA or P-FMEA: A structured approach used to deduce potential failure modes at each process step/function of a manufacturing process, allowing prevention and detection controls to be designed in to the manufacturing process and thus, avoiding unnecessary defects and failure costs in production. As such, each process step shown in the Process Flow should be detailed in the PFMEA and Control plan, detailing the potential failure modes and controls applied, with each of these process steps being linked.

Following the commencement of serial production and during the entire “life” of the product, process-related changes are analyzed and documented in the PFMEA. The experiences gained are taken into account when developing future processes.

DURA-SHILOH reserves the right to participate in supplier P-FMEA's.

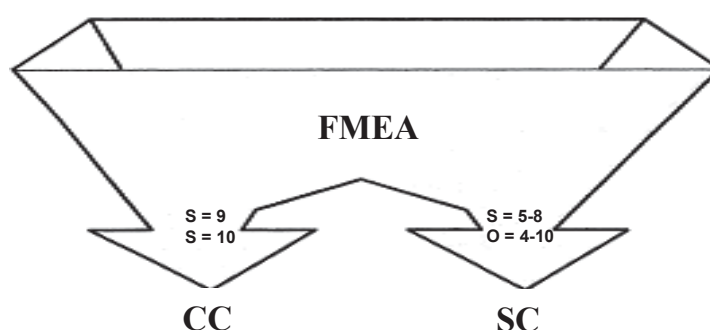


Figure 5: The Derivation of Special Characteristics from the Supplier's Manufacturing Process

FMEA Corrective Action: During the development of an FMEA potential corrective actions should be actioned, wherever feasible:

- for CC if detection (D) is > 1
- for SC if occurrence (O) is ≥ 4

Following an FMEA review, all potential failure modes should be rated in the following order:

- Severity (S)
- Occurrence (O)
- Detection (D)
- Action Priority (AP) for FMEA
- RPN ($S \times O \times D$) (Still accepted in a transition phase)

PFMEA's are to detail both those special characteristics shown on the DURA-SHILOH applicable print / specification AND those identified by the supplier in the above “Derivation of Special Characteristics” model.

Failure mode causes should be prioritized and actioned, with an aim to reducing the occurrence (O) and detection (D) to 1, as failure mode severities can be rarely reduced. When, at a given time, there are either no further design/process changes or preventive/detective controls available and/or economic improvement actions to be made, the FMEA, in agreement with the relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE), can be considered as complete. As part of a continual improvement process, the supplier is to review the FMEA at least annually for potential occurrence and detection improvements.

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PFMEA's shall be reviewed at each corrective action taken on the process detailed, and updated any time there is a corrective action taken that provides further information regarding failure modes, occurrence, or detection.

Each step of the PFMEA, Flow Diagram, and Control Plan shall be numbered / annotated consistently for each process step taken to ensure all steps have been considered.

3.5 Control Plans

Control Plans are formal documented descriptions of the systems installed to control both products and processes. They form an integral part of product quality planning and shall be used by the supplier to communicate special product and process characteristic controls, gauge controls and reaction plans as a minimum. Control Plans are generated in three distinct phases:

- Prototype: A description of the special characteristics (CC/SC/KC), dimensional, material, functional and performance testing that will occur during prototype build.
- Pre-launch: A description of the special characteristics, dimensional, material, functional, and performance testing that will occur during production trial runs, prior to start-of-production, and 90 days or 3,000 parts (whichever is greater) after the start of serial production following the early product containment process in section 5. Note, the pre-launch control plan normally details larger sample sizes and increased frequency of check to ensure that all potential non-conformities are identified and acted upon prior to production release. This shall include 100% inspection for all visual attributes and Special Characteristics unless otherwise specified by the ASQE.
- Production: A comprehensive description of special characteristics product and process controls, gauge controls and reaction plans that will occur during serial production.

3.6 Supplier Equipment, Tools and Gauges

Supplier equipment and tooling (i.e. dies, patterns, molds, special tooling etc.) shall be permanently identified per the applicable customer requirement as defined in the DURA-SHILOH Tool/Mold Build Standard available via the extranet at <http://extranet.duraauto.com>.

The supplier shall establish and document a preventive and predictive maintenance process for all equipment, tooling and gauging. Preventive and predictive maintenance schedules and records shall be maintained and made available upon request.

Supplier equipment, tools and gauges used in the manufacture of DURA-SHILOH products shall not be sold or consigned to another entity without adequate notification and written consent from DURA-SHILOH. Mergers, acquisitions or affiliations also require adequate notification to enable DURA-SHILOH to verify both the continuity of supply of product and the supplier's quality management system and its effectiveness. In such cases, or in the case of relocation to an alternative supplier location or facility, it is the supplier's responsibility to contact DURA regarding potential production part approval process (PPAP) requirements.

3.7 Supplier Readiness Review

A DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE) may conduct a supplier readiness review at the supplier's facility prior to PPAP to confirm production readiness. Areas of focus during a supplier readiness review are, but not limited to, capacity analysis and confirmation, product and process controls and supporting documentation, sub-supplier status, training, maintenance and logistic readiness.

Following a supplier readiness review a formal report is issued from DURA-SHILOH to the supplier, including any corrective actions required before PPAP submission. Confirmation audits may also be conducted at a later date to verify the supplier's corrective actions.

3.8 Sub-Supplier Control

Where specified by contract (e.g. drawing, specification etc.), the supplier shall purchase products, materials or services from approved sources. The use of DURA-SHILOH and/or DURA-SHILOH's customers' designated sources, including equipment, tool and gauging sub-suppliers, does not relieve the supplier of the responsibility for ensuring the quality of purchased products.

The supplier shall establish the inspection or other activities necessary for ensuring that the purchased product meets specified purchase requirements, including regulatory requirements.

Suppliers shall promote and include sub-supplier monitoring of the performance of their manufacturing processes, including applicable annual CQI requirements, and providing evidence of these assessments in your DURA-SHILOH Extranet Supplier profile.

DURA-SHILOH reserves the right to visit Tier 2 sub-suppliers in coordination with DURA-SHILOH Tier 1 supplier.

3.9 Risk Assessment

DURA-SHILOH require suppliers to have a risk assessment process in place to identify areas within the supply chain process that could affect the ability to meet the organization's requirements. A supplier's risk assessment process prioritizes which processes should be documented within the contingency/back-up procedures based on probability of occurrence, severity of the impact, detection, etc. The process could include the use of analytic tools as appropriate.

DURA-SHILOH require suppliers to develop contingency plans that would be implemented in the event of a deviation or disruption from the normal business process. This could include IT systems (e.g. EDI), transportation, packaging, equipment failure, absenteeism, etc.

4.0 PPAP Basic Requirements

PPAP submissions and requirements shall apply to all suppliers supplying production parts (including catalog parts), service parts, or production materials.

All production part sample submissions shall be in accordance with the AIAG Production Part Approval Process (PPAP) manual – latest revision **or applicable VDA Production process and Product Approval (PPA) manual**. In addition, DURA-SHILOH or DURA-SHILOH 's customers' specific requirements may also be required, see section 4.4 for clarification. Level III PPAP, supplied electronically, is the default submission level unless otherwise specified in writing from the relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE). **Additional VDA-PPA requirements will be supplemental and in addition to PPAP requirements depending upon DURA-SHILOH 's customers' specific requirements.**

Supplier PPAP submissions shall include declarations stating that all material, part, component, heat treatment and surface finish meets specified purchase requirements. Individual sub-supplier Part Submission Warrant (PSW) and/or additional PPAP documentation may be requested as appropriate by the relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE).

PPAP samples shall be clearly identified with a DURA-SHILOH PPAP label on each container. A Template is available on <http://extranet.DURAauto.com> under the "key information" choice.

Suppliers to North America shall provide evidence of conformance to NAFTA requirements with each PPAP submission.

Full or interim PPAP approval must be established prior to shipping parts/components to any DURA-SHILOH facility for production. Any production shipments received by a DURA-SHILOH facility prior to obtaining such approval will result in rejection and scorecard demerits.

4.1 Annual Re-qualification

Unless waived in writing by DURA-SHILOH , the supplier shall conduct annual layout inspection (i.e. dimensional, capability analysis, material and functional testing) for each active product supplied to DURA-SHILOH to assure conformance to DURA-SHILOH and/or DURA-SHILOH 's customers' standards and specifications as specified. Annual Layout inspection requirements shall be detailed in the suppliers control plan. A qualified laboratory shall conduct material testing with the laboratories third-party certificate and scope being available upon request.

Annual layout inspection results shall be held on file at the supplier and made readily available to DURA-SHILOH upon request. If any nonconformity is identified during annual layout inspection, the supplier shall notify the quality department in each DURA-SHILOH manufacturing-receiving location immediately to enable remedial action to be determined and executed.

If DURA-SHILOH is required to submit PPAP to a customer, suppliers affected, with PPAP submissions older than twelve months may be requested to re-submit a new PPAP to DURA-SHILOH .

DURA-SHILOH does not accept charges for initial, annual re-qualification or re-submission of any PPAP documentation and samples.

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4.2 Certificates of Conformance

A certificate of conformance shall be maintained on file at the supplier and made readily available to DURA-SHILOH upon request. Certificates of conformity may be required to be submitted with each delivery of material/parts/components from the supplier. The certificate of conformance must contain the actual physical test results and/or material analysis of the product being supplied.

4.3 European ELV Directive and IMDS, REACH and requirements of machine directive

The European End-of-Life-Vehicle (ELV) Directive 2000/53EC that entered into force on 21st October 2000, imposes specific rules and guidelines for materials used in motor vehicles. Suppliers to DURA-SHILOH are responsible to ensure that the ELV Directives are fulfilled and that DURA-SHILOH is informed through the International Material Data System (IMDS) or other Systems approved by the DURA-SHILOH ASQE or SQE of the material and substance composition of all products supplied.

In order to ensure regulatory compliance to the ELV-Directive and any other applicable substance regulations over time, it is necessary to document the material and substance composition of the entire vehicle. The IMDS or other Systems allow the OEM's and suppliers to collect and manage this information.

Suppliers are required to report their material and substance composition of all products supplied to DURA-SHILOH in the IMDS or other Systems. Individual DURA-SHILOH facility IMDS identification numbers can be obtained from the relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE).

Note: Threshold Limits for substance reporting of Conflict Minerals shall be 0, no use of "wildcards", nor use of miscellaneous descriptions. See section 1.4 of this manual for more detail regarding Conflict Minerals.

DURA-SHILOH holds the supplier solely liable in the event product supplied to DURA-SHILOH does not conform to regulatory requirements and therefore any and all costs incurred in such instances shall be borne by the supplier.

The European Directive EC 1907/2006 (REACH) imposes specific rules for producers and dealers to provide material safety data sheet in REACH format and language according customer country origin. Safety data sheet must be provided for all applicable parts and materials for PPAP approval process and in time of serial production or spare parts production period. All Substances delivered to DURA-SHILOH have to be preregistered and then registered within timeframe by the European Chemistry Agency (ECHA). Suppliers from outside EU have to deliver registered substances so that DURA-SHILOH will not switch to the role of an importer.

All Machines delivered to DURA-SHILOH in Europe must be supplied with a CE Mark and a declaration of conformity regarding EU Machine directive EC 2006/42. If DURA-SHILOH constructs the Machine and different suppliers are involved, one of the suppliers has to be chosen to declare the conformity and the CE Marking of the whole machine.

All Global Supply Base must comply in case of delivering products assembled in vehicles for Volkswagen and subsidiaries brands with Environmental Standard VW 91101 and VW 91101 Supplement 1

4.4 PPAP Master Document Retention/Submission Matrix

S = Submit document to DURA-SHILOH

A = Submit document to DURA-SHILOH for approval signature

R = Retain document, and make readily available to DURA-SHILOH upon request

* = Retain document and submit to DURA-SHILOH upon request

No.	Requirement	PPAP Level					Comments
		1	2	3	4	5	
1	Design Records of Saleable Product - for proprietary components/details - for all other components/details	R	S	S	*	R	
2	Engineering Change Documents, if any	R	S	S	*	R	History of technical changes.
3	DURA Engineering approval, if required	R	R	S	*	R	
4	Design FMEA	R	R	S	*	R	
5	Process Flow Diagrams	R	R	S	*	R	
6	Process FMEA	R	R	S	*	R	
7	Dimensional Results	R	S	S	*	R	Include drawing with numbered features corresponding to dimensional report. Record actual measurement results (the use of OK/NOK should be avoided).
8	Material, Performance Test Results	R	S	S	*	R	
9	Initial Process Study	R	R	S	*	R	
10	Measurement Systems Analysis Studies	R	R	S	*	R	Refer to AIAG Measurements System Analysis manual for methodology and acceptance criteria.
11	Qualified Laboratory Documentation	R	S	S	*	R	Third-party certification, including scope.
12	Control Plan	R	R	S	*	R	
13	Part Submission Warrant (PSW)	A	A	A	A	R	Approval required prior to tooling payment.
14	Appearance Approval Report (AAR), if applicable	S	S	S	*	R	
15	Bulk Material Requirements Checklist (for bulk material PPAP only)	R	R	R	*	R	
16	Sample product	R	S	S	*	R	Quantity to be agreed with DURA-SHILOH purchasing representative.
17	Master Sample	R	R	R	*	R	
18	Checking Aids – Gauge Specification	R	R	S	*	R	
19	Records of Compliance with DURA and/or DURA's Customer-Specific Requirements	R	R	S	*	R	
20	Sub-supplier PPAP	*	*	*	*	R	Submit sub-suppliers PSW.
21	Capacity (OEE) Results	*	*	S	*	R	From production trial run.
22	IMDS Declaration	R	R	S	*	R	
23	NAFTA Declaration	R	R	*	*	R	Applicable to North American suppliers only.



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4.4.1 PPAP Submission Levels

- Level 1 - Warrant only, and for designated appearance items, an Appearance Approval Report.
- Level 2 - Warrant with product samples and limited supporting documents.
- Level 3 - Warrant with product samples and complete supporting documents.
- Level 4 - Warrant and other requirements as defined by DURA-SHILOH.
- Level 5 - Warrant with product samples and complete supporting data available for review at the suppliers' manufacturing location.

Note 1: These detail SUBMISSION levels. Actual required PPAP documentation must exist for each applicable requirement for each product supplied, regardless of whether it is required to be submitted or retained.

Note 2: Bulk Material is a substance, (e.g., non-dimensional solid, liquid, gas) such as adhesives, sealants, chemicals, coatings, fabrics, lubricants, etc. The quantity and type of resins and steels that DURA-SHILOH purchases are NOT considered bulk materials as DURA-SHILOH is not buying the precursors of resins (polymers) nor Bulk (continuous furnace foundry) steel.

5.0 Launch Management Concept

To support and ensure flawless launches at both DURA-SHILOH and DURA-SHILOH's customers', the supplier may be required to install new product containment during the pre-production phases and continuing through the first 90 days or 3000 pieces/units², whichever is the greatest, following start-of-production (SOP). The objective of new product containment is to ensure that any quality issues that may arise are quickly identified, contained, and corrected at the supplier's location and not at a DURA-SHILOH receiving location. It also serves to increase the involvement and visibility of the supplier's top management.

5.1 New Product Containment

New Product Containment requires a pre-launch control plan that is a significant enhancement to the supplier's production control plan and, which raises the confidence level to ensure that all products shipped meet DURA-SHILOH's expectations. The pre-launch control plan also serves to validate the production control plan.

The pre-launch control plan should take into consideration all known special characteristics of the product as well as potential areas of concern identified during the Production Part Approval Process and, should include additional controls, inspection audits, and testing to identify non-conformances during the production process.

Depending on the dominant factor of the production process (set-up, machinery, fixture, tooling, operator, material/parts/components, preventive maintenance, environment) additional controls should include but, not be limited to:

- Off-line, separate and independent check from the normal production process, whenever possible
- 100% inspection for all pre-production and pilot parts shipped for all special characteristics and Visual attributes.
- Increased frequency/sample size of receiving, process and or shipping inspections
- Increased verification of label accuracy
- Error proofing validation through introduction of known defects, "challenge parts".

The use of variable or attribute control charts, scatter diagrams or an approved alternative, shall be used to document and record the results of new product containment.

² The length of time or quantity of pieces/units may differ depending on launch ramp-up volumes and the supplier's parts/units per hour capability only in agreement with the relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE). Any such agreements must be documented and recorded on the Part Submission Warrant (PSW).

5.2 New Product Containment Exit Criteria

Suppliers may self-exit new product containment when no non-conformances have been detected by the pre-launch control plan and containment activity for the period stipulated, records of the containment activity shall be maintained for two years. If the supplier is unable to meet the exit criteria or the supplier’s plan continues to identify non-conformances the supplier shall continue the necessary containment measures to insulate DURA-SHILOH up to the time when the quality concerns have been resolved to the satisfaction of both the Supplier and DURA-SHILOH, and the Supplier’s Production Control Plan is validated

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6.0 Packaging

Packaging shall be included in any quotation to DURA-SHILOH via email unless otherwise approved by the DURA-SHILOH Purchasing representative. Approval of packaging shall either be conducted in pre-production trial runs or during the PPAP approval process. Packaging instructions shall be developed and consistently applied for each DURA-SHILOH product supplied.

6.1 Returnable Containers

Customer owned returnable containers shall be treated as customer owned property. As such, specific handling and preservation procedures shall be applied. For relevant information please look for Logistics Hand book and relevant Logistics Handbook appendix available on <http://extranet.DURAauto.com> under “key information” choice.

6.2 Labeling

Supplier labeling for North America shall be in accordance with the latest valid version of the DURA-SHILOH *Shipping Label Supplier Guide* which is located on the DURA Supplier Extranet <http://extranet.DURAauto.com>.

Supplier labeling for EU and non-EU DURA-SHILOH plants shall be in accordance with the latest valid version of VDA 4902 or ODETTE unless otherwise agreed with the relevant DURA-SHILOH logistics/materials representative.

6.3 Identification and Traceability

Identification and traceability for product shall be maintained throughout the supplier’s production and handling processes, from raw materials to finished goods. At minimum (unless otherwise specified on the DURA-SHILOH print or specification), the supplier shall be able to trace material for in-process and raw material inspection and test records based upon the DURA-SHILOH identification label applied to DURA-SHILOH products and/or containers. For relevant information please look for Logistics Handbook and relevant Logistics Handbook appendix available on <http://extranet.DURAauto.com> under “key information” choice.

6.4 Schedule Call

For relevant information please look for Logistics Handbook and relevant Logistics Handbook appendix available on <http://extranet.DURAauto.com> under “key information” choice.

6.5 Kanban Call/Order

For relevant information please look for Logistics Handbook and relevant Logistics Handbook appendix available on <http://extranet.DURAauto.com> under “key information” choice.

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6.6 Freight Documentation

For relevant information please look for Logistics Handbook and relevant Logistics Handbook appendix available on <http://extranet.DURAauto.com> under “key information” choice.

6.6.1 Delivery Note

Delivery notes must be in duplicate, detail the suppliers name, DURA-SHILOH supplier number, date, have an assigned delivery note number and contain the following information for each product delivered: DURA-SHILOH part number, description, purchase order number, quantity per container, number of containers and type, total quantity, Net and gross weight and Lot numbers.

Deliveries of multiple products (e.g. a single palette with several product references) will only be accepted if:

- Prior written permission is given by a relevant DURA-SHILOH logistics/materials representative
- Each container on the palette is clearly labeled
- Each product type is packaged in a separate container
- The delivery note clearly states contents of the palette

Note: If the supplier does not comply with the above, the delivery will be rejected.

6.7 Transport – (DURA-SHILOH funded only)

For relevant information please look for Logistics Handbook and relevant Logistics Handbook appendix available on <http://extranet.DURAauto.com> under “key information” choice.

6.8 Incoterms

For relevant information please look for Logistics Handbook and relevant Logistics Handbook appendix available on <http://extranet.DURAauto.com> under “key information” choice.

6.9 Freight Insurance

Freight insurance must be agreed between the supplier and the relevant DURA-SHILOH plants.

6.10 Delivery Discrepancies

All deliveries must be made in accordance with a DURA-SHILOH schedule or Kanban call/order, and the requirements of this manual. Any deviation from a schedule or Kanban call/order must be agreed in writing with the relevant DURA-SHILOH logistics/materials representative prior to a delivery being made within 1 business day of receipt of the release or order. Failure to obtain written approval prior to delivery will result in rejection.

6.11 Storage and Inventory

The supplier shall use an inventory management system to optimize inventory turns over time and assure stock rotation, such as “first-in-first-out” (FIFO). Obsolete product shall be controlled in a similar manner to non-conforming product.

7.0 Supplier Extranet

Suppliers of a) production materials, b) production or service parts, or c) heat treating, plating, painting or other finishing services supplying directly to DURA-SHILOH are required to monitor their performance monthly on the DURA-SHILOH Supplier Extranet <http://extranet.DURAauto.com>.

In order to monitor performance, a supplier must first register with DURA-SHILOH by contacting your Purchasing or Advanced Supplier Quality Engineering contact. Once registration is complete, the supplier will receive a confirmation email informing them of their Username and Password, and that they can begin monitoring their performance on a monthly basis.

7.1 Supplier Scorecard

The supplier scorecard is updated on the 15th of each month (e.g. January's performance results will not be available until February 15th). A notification email is sent to all registered suppliers on the 15th of each month reminding them that the scorecard has been updated and is available for review.

At the beginning of each month the supplier is awarded with 100 points, any subsequent technical, delivery, purchasing or operational incidences incurred in the month by a supplier shall result directly in a loss of points. Failure to achieve the DURA corporate target of >80 points rolling average over a six-month period will result in the inclusion in Phase 3 and/or Phase 4 of the supplier performance escalation process described in section 8.6.

Technical PPM (<i>Maximum +40 points table</i>)		Points
	0 to 10PPM	+40 points
	11 to 20	+38
	21 to 30	+36 etc...
	>201	0
Delivery Error Incident (<i>Maximum +40 points table</i>)		Points
	Mislabeled and/or Incorrect Packaging	-5 ³
	Late or Missing ASN/EDI	-5 ³
	Incorrect Carrier	-5 ³
	Early/Late/Over/Under Shipment	-10 ³
Purchasing (<i>Maximum +20 points table</i>)		
	eRFQ Profile Fulfillment (<i>+5 points</i>)	
	Incomplete eRFQ profile	-5
	ERFQ Responsiveness (<i>+15 points</i>)	
	Late or No Response to RFQ	-2 ³
Operation Incidences		
	8D Overdue Response (D1/D3 & D5)	-5 ³
	DURA Quality Issue	-5 ³
	Late or Rejected PPAP	-10 ³
	8D Repeat Occurrence	-20 ³
	DURA Production Line Stop	-20 ³
	DURA Customer Issue or Production Stop	-20 ³

³ Denotes the number of points deducted per incident.

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8.0 Non-Conforming Product

All handling, packaging, labeling, delivery and technical rejections are transmitted to the supplier via DURA-SHILOH 's Supplier Global 8D web based application <http://global8D.DURAauto.com>, or via email.

A Checklist exists for the proper application and activities involved with corrective action requests via this web site, as well as the Supplier Extranet at <http://extranet.DURAauto.com>.

8.1 Emergency Response Action

Following the receipt of an automatic email informing the supplier of a rejection at a DURA-SHILOH facility, the supplier must login to the DURA-SHILOH web application to review the details of the rejection (8D). The supplier shall notify DURA-SHILOH within 24hrs with the details of the first 100% certified delivery, including, but not limited to, the delivery note number, quantity, method of identification (product and packaging), means of transport (premium freight) and estimated time of arrival. Such notifications must be provided to the DURA-SHILOH receiving facility (s) prior to the receipt of a replacement and/or new delivery.

8.2 Containment Level I (one)

Suppliers shall implement Containment Level I (CL 1) immediately upon receiving notification from DURA-SHILOH of a rejection. The goal of CLI is to cleanse the entire supply system of any non-conforming material and shield DURA-SHILOH from receiving any additional defective product. The supplier is required to quarantine and sort all potential non-conforming products within their facility, at their sub-suppliers, in transit and at DURA-SHILOH and/or DURA-SHILOH 's customers' facilities.

Containment Level I Guidelines:

- Containment areas must be off-line and have a well-defined process flow, including clearly identified areas for incoming and outgoing material.
- Containment areas must be clean, equipped and well illuminated.
- Acceptance standards and containment instructions must be clearly documented with Boundary samples available, if required.
- Personnel performing containment must be trained.
- Results of the containment shall be recorded and reviewed for necessary corrective actions on a daily basis. Records of containment shall be maintained for two years and made available upon DURA-SHILOH request.
- The identification method of material passing through containment shall be agreed with the relevant DURA-SHILOH supplier quality engineer (SQE).

Exit criteria for CL I shall be agreed with the relevant DURA-SHILOH supplier quality engineer (SQE) and shall include as a minimum, an agreed pre-determined quality level for the next three consecutive production runs and/or deliveries following a rejection. Containment must not be removed before a permanent corrective action has been validated.

8.3 Containment Level II (Two)

Containment Level II (CLII) is defined as the implementation of additional controls by an impartial third-party selected by DURA-SHILOH at the expense of the supplier. CL II is enacted when a supplier's CL I activity fails to shield DURA-SHILOH from receipt of non-conforming material.

The DURA-SHILOH supplier quality engineer (SQE) determines if CL II is required. The DURA-SHILOH plant quality manager and commodity purchasing representative will initiate CL II activities by selecting the third-party who is to conduct the CL II activity and by sending a letter to the supplier's plant manager and quality manager informing them of the decision.

The CL II letter shall detail the specific non-conformance and required supplier actions, including inspection and exit criteria. The supplier is responsible for confirming receipt of the CL II letter by signing and returning a copy of the letter to the DURA-SHILOH plant quality manager.

The DURA-SHILOH plant quality manager assigns a sorting agency (third-party) to perform the CL II activities. The supplier's input on the company used will be considered in the decision-making process. The DURA-SHILOH plant quality manager will define the required checks and facilitate the definition of the exit criteria.

The third-party agency is responsible for performing the containment activity in accordance with the pre-defined inspection criteria and recording methods. Records of the containment shall be provided by the third-party agency to both the supplier and the DURA-SHILOH plant quality manager.

The supplier is responsible for issuing the purchase order to the third-party agency and is liable for payment of all costs associated. Initiation of CL II does not relieve the supplier of any relevant CL I activities following the aforementioned CL I guidelines and responsibilities.

CL II shall not be removed until a review of the data indicates that all significant issues show evidence of closure and are evidenced in both the CSL II records and the records from the CL I activity upstream in the process. If applicable, a CL II exit meeting will be held at the supplier's facility to review both the CL I and II containment records and validation results of the permanent corrective actions.

Following this review, the DURA-SHILOH plant quality manager will evaluate the findings and if found to be acceptable, will communicate in writing that the supplier has been removed from CL II.

8.4 Corrective Action

The supplier shall use a team-based approach to problem solving following the 8D methodology and should utilize wherever possible the following quality tools when determining root cause; Ishikawa diagram (*fishbone*), 5 Why's, Design of Experiments (*DOE*). The method of root cause verification shall also be determined.

Chosen permanent corrective actions shall be communicated within 14 days from the original rejection date. Implemented corrective actions shall be validated by either the supplier or a relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE).

8.5 Preventive Action

An action, directed at the suppliers system, intended to prevent recurrence of a specific 8D problem by directing analysis and action toward correcting the system. The relevant supporting process documentation e.g. FMEA's, control plans, procedures, work instructions, maintenance plans etc. must be uploaded by the supplier to the 8D for review and approval by a relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE).

8.6 Supplier Performance Escalation Process

DURA-SHILOH utilizes a four-level supplier performance escalation process to resolve systemic supplier performance issues.

PHASE 1 Supplier Escalation 1

Manufacturing plant, Global ASQE or any other entity inside DURA-SHILOH escalate supplier quality incident to the Global Advanced Supplier Quality group.

Escalation Trigger:

1. DURA-SHILOH plant has not received the initial containment actions report in 48 hours, after several attempts by the 8D issuer, and having been internally escalated to the Plant Quality Manager.
2. Customer complaint involving third party certification of production parts and high risk to disrupt the production at customer site.
3. Customer complaint with re-occurrence for the same failure mode from supply base.
4. Impact to daily production disruption (Line Stop) at DURA-SHILOH Assembly line with responsibility of supply base.

Level 1 exit criteria:

Supplier cooperation and timely delivery of the requested information?

- Yes - Closure of incident.
- No – Start Escalation level 3

PHASE 2 Supplier Escalation 2

Escalation of supplier following performance scorecard or any DURA-SHILOH initiative for Global supplier base development.

Escalation Trigger:

Supplier Performance scorecard resulting in <80 (average 6 months weighted for all facilities) with no improvement in the initial Supplier Development activities.

Level 2 exit criteria:

- Supplier scorecard improvement > 80 score starting 4th month or before and LOP completion?
 - Yes – ASQE report to Regional ASQ Mgr.
 - No – Set the supplier to New Business Hold and start Escalation level 3

Driven by: Global Advanced Supplier Quality Group
Supported by: DURA-SHILOH Purchasing

Driven by: DURA-SHILOH Plants and Global Advanced Supplier Quality Group
Supported by: DURA-SHILOH Purchasing.

8.6 Supplier Performance Escalation Process – Cont.

PHASE 3 Supplier Escalation 3

Supplier escalated for support to DURA-SHILOH Purchasing Group. (Supplier Escalation level 1 & 2 failed)

Escalation Trigger:

1. Escalation resulted in supplier lack of response and cooperation. Supplier not meeting DURA-SHILOH and/or Customer specific requirements.
2. Failure to meet target dates and/or actions agreed in the Escalation Levels 1 & 2.
3. No Scorecard improvement on 6 months after approaching to supplier and LOP activities on Escalation-2

Level 3 exit criteria:

- Supplier cooperation and timely delivery of the requested information?

Yes – ASQ Group and Purchasing release supplier from New Business Hold
No – Start Escalation level 4

PHASE 4 Supplier Escalation 4

Initiate a CQR ‘Critical Quality Review’ (Supplier Escalation 3 failed).

Escalation Trigger:

1. Escalation Trigger: Lack of Supplier cooperation and timely delivery of DURA-SHILOH and/or DURA-SHILOH Customer requirements and expectations on Escalation-4

CQR is a DURA-SHILOH corporate led activity involving the executive management of both DURA-SHILOH and the supplier to address issues not resolved in a timely fashion in level 3. Start de-sourcing activities.

Driven by: Global Advanced Supplier Quality Group and DURA-SHILOH Purchasing.

Driven by: Global Advanced Supplier Quality Group and DURA-SHILOH Purchasing.

In addition, corporate purchasing and quality management review the overall performance of the supply base on a six-monthly basis to establish those suppliers that have not met the DURA-SHILOH scorecard minimum requirement of >80 points Weighted Overall Supplier rating (WOS) over a six-month period. Suppliers not maintaining this minimum DURA-SHILOH corporate requirement will be subject to Phase 3 and/or Phase 4 of the supplier performance escalation process described above.

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8.7 Supplier Non-Conformance Chargeback

Costs incurred and which are directly attributable to a supplier's non-conforming product and/or logistics/materials performance shall be detailed in the relevant 8D and invoiced to the supplier. Costs may include, but not be limited to, administration costs, sorting or rework, premium freight, loss of productivity, scrap and any other costs incurred by DURA-SHILOH and/or by DURA-SHILOH 's customers' that are directly attributable to the supplier. Note: failure to close 8D's in a timely manner may result in the supplier being placed in Phase 1 of the Supplier Performance Escalation Process.

8.9 Warranty Management Process

Suppliers to DURA-SHILOH are required to implement a warranty management process. The process shall include a method for warranty part analysis, including NTF (no trouble found). When requested by DURA-SHILOH 's Customer, Suppliers shall use a process that complies with the Verband der Automobilindustrie e.V. (VDA) requirements for Field Failure Analysis(FFA), or the Automotive Industry Action Group (AIAG) CQI 14 or similar which includes an NTF process.

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9.0 Supplier Change Request (SCR)

Suppliers and/or sub-suppliers shall not make any unauthorized changes to products (e.g. material, parts, components etc.) and/or processes used to produce a product supplied to DURA-SHILOH , and that has previously been PPAP approved by DURA-SHILOH . This includes any changes to production control plans.

The supplier shall notify the DURA-SHILOH plant (s) quality manager (s) of intentions to change a product or process using the DURA-SHILOH Supplier Change Request (form no. [sqa-cf-01-02 \(E\)](#)) Template is available on <http://extranet.DURAauto.com> under “key information” choice.) accompanied by a suitable timing plan and quality plan. Suppliers shall gain approval prior to making any such changes. **For assistance in making this Quality Manager contact, liaise with your Purchasing or Advanced Supplier Quality Engineer, or your global DURA systems administrator.**

The affected DURA-SHILOH plant (s) will review and determine the effects of the potential change (s) and approve or reject the suppliers change request and supporting quality plans within fifteen working days from receipt. However, if the potential change effects DURA-SHILOH ’s customers’ requirements, then the time period for approval/rejection may be subject to extension.

All approved SCR’s require a Level III PPAP submission, supplied electronically via <http://apqp.duraauto.com>, unless otherwise specified in writing from the relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE). A copy of the approved SCR shall form part of the PPAP submission.

The supplier, prior to releasing or shipping changed products to DURA-SHILOH must obtain written PPAP approval and have received schedules or Kanban calls/orders determining the introduction date.

Each container supplied in the first shipment/delivery made by the supplier following a change must be identified with a DURA **“1st Shipment”** label referencing the applicable PCRN/DCR number specified on the Supplier Change Request form.

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9.1 DURA-SHILOH Notification Requirements

Supplier change requests shall be submitted to DURA-SHILOH for changes including, but not limited to:

- Changes of sub-suppliers
- Changes in heat treat, plating, coating, soldering
- Changes to supplier designed components
- Relocation of product/tooling to an alternative manufacturing location
- Use of alternative material or components
- Changes in process sequence
- Changes in equipment
- Tool movement within the same plant
- Replacement of DURA-SHILOH -owned gauges

Any such change made without prior written approval by DURA-SHILOH constitutes not only a breach of purchase order terms and conditions, but also a serious breach of both standard automotive practice and the supplier's third-party certification. Suppliers who fail to comply with these fundamental requirements shall be placed on new business hold and shall be liable for all damages, losses and liabilities associated with such a change.

A change to perishable tooling is considered to be part of normal maintenance practice, and therefore, does not require SCR approval. If in any doubt, the supplier should contact the relevant DURA-SHILOH supplier quality engineer (SQE) or advanced supplier quality engineer (ASQE) for guidance.

9.2 Product and/or Process Deviations

It is the policy of DURA-SHILOH not to accept any product that does not meet DURA-SHILOH and/or DURA-SHILOH 's customers' requirements. However, under extenuating circumstances, requests for any such deviations shall be submitted to the DURA-SHILOH receiving plant (s) quality manager who will in turn review the request with DURA-SHILOH engineering. Deviation requests shall include, but not be limited to; the reason for the deviation, quantity of parts or time period the deviation is requested to extend to, and part and packaging identification proposals to ensure traceability. If a deviation is approved it shall only extend to the quantity of parts or time period stipulated, any shipments received outside of the deviation that do not conform to specifications shall be rejected.

The DURA-SHILOH form (V4-stf-17-01_Concession Permit Request.xls) template is available for such requested concessions on <http://extranet.DURAauto.com> under "key information" choice.

10.0 Continual Improvement

Suppliers shall continually improve the effectiveness of their quality management systems and manufacturing processes. Actions taken to regain previous levels of performance are corrective actions and not continuous improvement.

10.1 Quality Management System Improvement

Suppliers shall define quality objectives and targets that shall be included in their business plans. These objectives and targets shall be continuously monitored, prioritized and acted upon, ensuring continuous improvement and the fulfillment of DURA-SHILOH's expectations. DURA-SHILOH scorecards reviews shall form a part of these objectives on a monthly basis at minimum.

10.2 Manufacturing Process Improvement

Manufacturing process improvement shall continually focus upon control, and reduction in variation and waste in product characteristics and manufacturing process parameters. Continuous improvement can only be implemented once manufacturing processes are stable and capable, or product characteristics are predictable and meet DURA-SHILOH's requirements.

10.3 Performance Reviews and Workshops

DURA-SHILOH reserves the right to visit the suppliers manufacturing facilities to assess continuous improvement programs and lean manufacturing techniques, including making recommendations for improvement. In addition, DURA-SHILOH in agreement with the supplier may facilitate a continuous improvement and/or lean manufacturing workshop to aid the supplier in its continuous improvement process. Savings generated from such a workshop shall be shared between the DURA-SHILOH and the supplier.

11.0 Record Retention

Suppliers are required to maintain purchase orders and amendments, PPAP submission packages, re-qualification and validation records, tooling, maintenance, traceability, engineering and inspection records providing evidence of conformity to requirements for the active life⁴ of the product plus one calendar year or a minimum of fifteen years, whichever is the longer, unless otherwise specified by DURA-SHILOH . In case of critical characteristics, the period for record retention is 15 years after active life⁴ of the product.

Corrective/preventive actions (8D’s) and supporting data shall be maintained for three years.

All records shall be stored, protected & retrievable upon request.

⁴ Active life is defined as the duration of both serial production and service part usage requirements.