

**SUPPLIER QUALITY ASSURANCE MANUAL
FOR PARTS AND RAW MATERIALS**

***** QUALITY ASSURANCE FOR TRIAL PRODUCTION *****

**SECTION 15 - QUALITY ASSURANCE SCHEDULE (QAS)
AND TOOLING PROGRESS REPORT (TPR)**

PURPOSE: To explain the required information and submission procedure for the Quality Assurance Schedule (QAS) and Tooling Progress Report (TPR).

SCOPE: Applies to Suppliers of production parts and raw materials when specified on the Notification of Quality Assurance, especially those requiring Tooling.

EXPLANATION:

The purpose of the QAS and the TPR is to provide DENSO QA/QC with a schedule of manufacturing and quality control activities leading up to and including initial mass production. The schedule should include all activities from Purchase Order issue through the first three months of mass production. For each item/ activity on the QAS and TPR, the start and finish date must be included. This applies to planned and actual dates.

SUPPLIER RESPONSIBILITIES:

1. **Quality Assurance Schedule (QAS):** The Supplier must create and submit a QAS per the date indicated on the NQAR. The QAS should include the following items (if not applicable note "N/A" on the QAS after the Items/ Activities Column):
 - A. **Master Schedule:** The master schedule is a general summary of schedules that should include the following information:
 - 1.) Supplier's ISIR, Production Trial, and Mass Production timing.
 - 2.) Supplier's ship dates of parts to DENSO for ISIR, Production Trial and Mass Production.
 - 3.) Build out and ramp up schedules for Mass Production at Sub-Supplier (The Sub-Supplier is the Supplier's Supplier).
 - 4.) Supplier's Quality System Development.
 - 5.) Supplier's Hiring and Training timing (Reference Section 13 - Training and Qualification of Team Members).

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B. Component Build and Ship Schedule: This section applies to Suppliers that use Sub-Suppliers. This portion of the schedule should include the following information:

- 1.) Sub-Supplier selection timing.
- 2.) Supplier's Evaluation of Sub-Component / Materials.
- 3.) ISIR, Trial and Mass Production schedules at the Sub-Supplier.
- 4.) Sub-Supplier tooling timing.

C. Production Process Development: This should be a general schedule showing design, build, debug, trial and ISIR schedules for the following (The TPR will cover the details of the tooling schedule):

- 1.) Tooling.
- 2.) Equipment.
- 3.) Jigs.
- 4.) Assembly Checking Fixture.

D. Quality System Development : This portion of the QAS should show all activities concerning development of mass production quality systems for the part(s)/ materials being produced. This section must show schedules for all NQAR documentation (Additional submissions such as the DENSO Supplier Deviation Request/ Reply may also have to be submitted depending on the Supplier's situation). Items to be included, but not limited to :

- 1.) DENSO Supplier Quality Assurance Contacts List
- 2.) DENSO Supplier Quality Assurance Schedule (QAS).
- 3.) DENSO Supplier Tooling Progress Report (TPR).
- 4.) DENSO Supplier QAS/ TPR Status Report.
- 5.) DENSO Supplier Control Plan.

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- 6.) DENSO Supplier Procured Check Fixture, Gage, and Test Equipment Request/ Approval.
 - 7.) Process Failure Mode Effects Analysis (PFMEA)
 - 8.) Material Certification or Material Test Report
 - 9.) Process Capability Study (Initial) (Reference Section: 18 Critical Control Characteristics and Process Capability Studies).
 - 10.) DENSO Supplier Gage Repeatability and Reproducibility Studies (Reference Section: 19 Gage Repeatability and Reproducibility (R & R)).
 - 11.) DENSO Supplier Initial Sample Inspection Report (ISIR)/ Sample Submission.
 - 12.) DENSO Supplier Packaging Information and Traceability (Reference Section 21- Packaging Information and Traceability).
 - 13.) DENSO Supplier Early Stage Control Plan.
 - 14.) DENSO Supplier Boundary Sample/ Master Sample
 - 15.) Operator work instructions & check sheets.
 - 16.) Maintenance procedures & logs.
 - 17.) Defect tracking & sort /rework procedures.
 - 18.) Training (Reference Section 13 - Training and Qualification of Team Members).
- E. Material, ISIR, & Appearance Evaluations: This section should include all evaluations being performed on the parts. These include, but are not limited to, the following:
- 1.) Material testing.
 - 2.) ISIR.
 - 3.) Dimensional and/or electrical characteristics.
 - 4.) Appearance / Color evaluation.

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- F. **Tool Progress Report (TPR):** A TPR must be prepared for all new dies, molds, equipment, jigs, custom gages, and fixtures. This schedule must include all activities from design through mass production. This schedule must also include Sub-Supplier tooling schedules (Reference Section 14 - Checking Fixtures, Gages, and Test Equipment).

- G. **Supplier Approval:** All related departments within the Supplier should approve The QAS and TPR. Management approval is also required (i.e. Supplier Plant Manager, Quality Assurance Manager, General Manager, etc.). It is the responsibility of the Supplier's related management to monitor the schedules and ensure all milestones are achieved.

- H. **Submittal to DENSO:** The Supplier must submit the QAS and TPR to DENSO QA/QC and Purchasing by the date indicated on the NQAR (Reference Section 11 - Notification of Quality Assurance Requirements (NQAR)). The schedules will be reviewed and adjustments negotiated as needed.

- I. **Schedule Updates:** The Supplier must submit a QAS/TPR Status Report if the NQAR requires that the Supplier complete a QAS/ TPR. Updates must be submitted to DENSO QA/QC. Timing for submitting updates may be changed (more frequently) depending on DENSO QA/QC requirements. If there are no changes to the schedules, only a QAS/TPR Status Report needs to be submitted. If there are changes to the QAS or TPR they must be listed on the QAS/TPR Status Report. The Status report and an updated copy of the QAS and TPR must be submitted.

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