

Johnson Controls Automotive Experience
Global Supplier Standards Manual
Tooling and Equipment
Chapter 2
Metals Stamping Die Tooling Responsibilities and Guidelines
Johnson Controls Managed Tooling

December, 2012

Introduction

- ❖ This document contains tooling specific responsibilities. When conflicts arise between program specific statements of work (SOW) and these tooling responsibilities, this document will prevail.
- ❖ This document outlines the tooling expectations and definitions of responsibilities associated with the development of Stamping Dies and Gages for Johnson Controls, Inc. (JCI) or its part supplier (PS) through a Global Tooling Supplier (GTS) for JCI sourced and managed tools. JCI part suppliers (PS) that purchase and manage their own tooling are not governed by this document.
- ❖ All Tooling is subject to audit and approval by Johnson Controls – AE.
- ❖ THIS DOCUMENT IS NEITHER A SUPPLY AGREEMENT NOR A PROMISE TO ENTER INTO A SUPPLY AGREEMENT. In the event Part Supplier enters into a contractual relationship with JCI (pursuant to a Purchase Order, Long-Term Agreement or some other written document executed by JCI designated as a form of supply agreement, hereafter called the “Contract”), the Contract shall govern the terms and conditions of the Part Supplier -JCI contractual relationship.
- ❖ In the event of any conflict between a term of the Contract and a provision of these Global Tooling Supplier responsibilities document, the Contract shall supersede and govern. In the event that a Contract has been or is entered into between Supplier and JCI, the procedures and obligations set forth herein shall be met by Suppliers and, if a Contract is consummated, shall become express warranties made by Supplier and JCI.

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JCI Purchasing Responsibilities

JCI Tool Purchasing (JCI TP) is responsible to source, manage costs, and build stamping dies (tools) and gages (checking fixtures) for JCI's stamping facilities with the cooperation of its Global Tooling Suppliers (GTS). In the event JCI outsources tools to a Part Supplier (PS) after JCI issues the PO, this SOW will be honored with the PS. This is to include the original build of the tools and any subsequent engineering changes prior to PPAP.

The GTS is a tool supplier to JCI that manages the construction of tools for JCI both within and outside the borders of the United States. The GTS can be a domestic tool shop, a tool broker, or any other entity that JCI enters into a contract with to purchase tools. Special circumstances may arise that cause discrepancies between the responsibilities contained in this document and other JCI documents, Part Supplier expectations, JCI program expectations, and GTS capabilities. Under those circumstances, the JCI TP will determine the resolution to any discrepancies.

For the purposes of this document, the acronym PS will refer to the part supplier whether that supplier is a JCI Stamping Facility or an external Part Supplier.

Global Tooling Supplier (GTS) Responsibilities

1. The GTS is responsible to be the tool 'Builder of Record' for all tools produced in its facilities as well as all tools produced in its subcontracted facilities both within and outside the borders of the United States of America. This means that the GTS will take sole responsibility for the performance of its subcontractors which will include, but not be limited to: timing commitments, tool quality, data integrity, tool functional try-outs, shipment, delivery, adherence to JCI Global Tool Standards, JCI Gage Standards, and tool warranty. All tools will be designed and built with consideration for operator safety and ergonomics and in compliance with all OSHA standards. If tooling issues are not resolved through the GTS, JCI reserves the right to redirect the tool source and any subsequent costs incurred will be the responsibility of the GTS.
2. The GTS is responsible to present its subcontracted tools to JCI and its Part Suppliers (PS) as its own tools. This means that tools built offshore will be delivered to the GTS's dock and will bear the GTS's identification label. The GTS will make the process of subcontracting tools as transparent as possible to both JCI and its PS's.

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3. The GTS is responsible to affix a metal tag to the tool that contains at minimum: “Property of (insert OEM), JCI Tool #, JCI Part #(s), Part Name(s), Toolmaker’s Name and Job #, Date of Manufacture, Material Thickness, Width, and Feed Pitch, Tool Dimensions (H x W x D), Total Tool Weight, Upper Die Weight, Lower Die Weight.” This is in addition to any other tool markings specified in the JCI and/or PS tooling standards.
4. The GTS is responsible for designing all tools to the latest design level of JCI or PS specified CAD data.
5. The GTS is responsible to track and log all data levels and transmissions. The GTS must verify the correct engineering level the tool is to be built to on a weekly basis.
6. The GTS is responsible to insure and protect tools against loss or damage.
7. The GTS is responsible to obtain written authorization to proceed with tooling from JCI Tooling Purchasing (JCI TP).
8. The GTS is responsible to submit costs within adequate timing to resolve any cost issues prior to the tooling release date.
9. The GTS is responsible to obtain written approval from JCI TP before subcontracting tools to international locations other than North America. The GTS will only use international tool suppliers that are approved by JCI and on the JCI Approved Supplier List.
10. The GTS is responsible for managing the design, build, and prove-out of all tools used to manufacture parts for JCI at JCI facilities or through its PS. The GTS is responsible to construct the tools to meet the JCI’s tooling and gage standards. This includes constructing tools that meet quoted SPM (strokes per minute) and press sizes.

1. JCI Global Stamping Die Tooling Standards

2. JCI Stamping Dies Gage Standards

11. The GTS must obtain the quoted strokes per minute (SPM) and designated production press. The tool must be designed and built to meet quoted SPM and run in designated production press. The GTS must inform JCI of any tool that cannot be designed and built to meet these requirements.
12. The GTS is responsible to have a tooling representative at JCI launch team meetings, design reviews, program reviews, and customer tool shop visits.
13. The GTS is responsible to provide weekly written progress reports and tool-tracking spreadsheets throughout the build of the tools. The GTS will use standard JCI forms and documents. The GTS is further responsible to communicate this information to the JCI Program Manager and PS.
14. The GTS is responsible to maintain a tool issues list during the design, build, and prove-out phases of the tool build. The GTS is responsible to create the list, add items as directed from

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JCI and the PS and resolve those issues to the satisfaction of both JCI and the PS. The exact form of the list is at the discretion of the GTS, but at a minimum, it must include the following information: issue description, date issue was opened, person who opened it, resolution, date closed, and verifying person.

15. The GTS is responsible to attend product design feasibility reviews, provide feedback, and create/manage an issues list. The GTS must approve the product design and note all concerns that were not addressed by JCI Engineering. The GTS must provide preliminary tool feasibility prior to tooling data release and setup of milestones for tool design reviews and approvals to ensure designs are ready for release with no remaining tooling and manufacturing feasibility issues that would delay the tool build kickoff or timing. Any issues that are not resolved before release must be signed off by JCI Engineering and JCI TP as noted on drawing.
16. The GTS is responsible for Die Design, material utilization, and construction of the stamping tool. All deviations from the JCI Global Tooling Standard must be approved by JCI TP. The GTS must obtain design buy-off from JCI TP and PS at 0% (strip review), 50%, and 100% design reviews. All issues raised during design review must be carried forward and signed off until complete sign-off has been obtained. Tool build must not commence without sign-off of 100% design review approval.
17. The GTS is responsible to supply a third party material certification for all stamping tryout material.
18. The GTS is responsible to gain approval from JCI Engineering for locations of any miss-match notches or pinch trims.
19. The GTS is responsible to design the tool to all applicable JCI and PS tool specifications. This is to include all production press specifications, tool standards, quoted cycle times and press sizes, and special tool requests from the PS as agreed to by JCI TP. All special tool requests from the PS that are above and beyond the scope of the JCI Global Tooling Standards are at the expense of the PS.
20. The GTS is responsible to obtain final tool design approvals from both JCI Tool Engineering and the PS prior to cutting steel. The GTS will provide a formal request for approval to JCI Tool Engineering and/or PS. If after one week, JCI Tool Engineering or PS does not approve the tool or provide reasonable feedback for corrections, or if the request from the PS is driving the cost of the tool higher the GTS may seek JCI surrogate approval for JCI Tool Engineering or PS and proceed.
21. The GTS is responsible to provide the primary tool engineering services. This includes attendance at all requested tool meetings at JCI and JCI's customer sites. The GTS will build a tool that meets: the cost requirements of JCI TP, the part functional and appearance requirements, the part dimensional and GD&T criteria, tool standards, quoted press sizes, and JCI quoted SPM.

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22. The GTS is responsible to provide all necessary tool functional tryouts to resolve all tool issues. The GTS will supply the tryout location (in North America), machine, and material. The GTS must provide a 6 piece dimensional report prior to inviting JCI or the PS to review tool for buy-off. Upon concurrence of an acceptable 6 piece layout, the 300 piece buy-off at the GTS's facility may be scheduled. The GTS will allow both JCI and PS to retain the samples from these tryouts and provide at least 300 good parts to JCI or the PS for their desired use. If quantities of parts beyond 300 are required by JCI or the PS, these parts will be purchased from the GTS. The GTS will invite both JCI and PS to attend all functional tryouts to observe the function of the tool and record tool issues. JCI and/or the PS can inspect the tool at this time to identify any non-compliance instances to the JCI Global Tooling Standards. Any non-compliance instances will be recorded on a tooling issues list. The GTS will maintain the official tool issues list. All issues will remain on the list and will be checked off as they are corrected. The Issues list will be signed off by JCI and the PS. The GTS must correct all issues identified at the tryouts and obtain approval to transfer the tool to the JCI facility or PS for the 300 piece qualification run.
23. The GTS must confirm with 30 pieces from the 300 piece run-off that all significant characteristics (SC) and critical characteristics (CC) meet a 1.67 Cpk.
24. The GTS is responsible for coordinating the tool qualification process and completing the run-off at the JCI facility or PS. This run-off will be a total of 300 parts to be run in automatic mode to simulate production. The GTS is responsible to ensure each station is performing correctly, the tool has the ability to run-at-rate, part quality meets all dimensional and GD&T requirements, transfer system is fully integrated with the tool (transfer tools only), and assist production location in meeting a Cpk of 1.67 on all CC's and SC's.
25. The GTS is responsible to provide adequate packaging and shipping for sample parts at each tryout. These sample parts must be shipped to the appropriate JCI facility or PS.
26. The GTS is responsible for part appearance issues as a result of tooling.
27. The GTS shall provide evidence that dimensional verifications required by the design record and quality measurement plan have been completed and the results indicate compliance to specified requirements. The GTS dimensional report shall include: all dimensions (except reference dimensions), characteristics, and specifications as noted on the design record and quality plan.
 - a. The GTS shall indicate the date of the design record, change level, and any authorized engineering change document not yet incorporated in the design record to which the part was made. The GTS shall record the change level, drawing date, organization name, and part number on all auxiliary documents (e.g. supplementary layout result sheets, sketches, tracings, cross sections, PSM inspection point results, GD&T sheets, or other auxiliary drawings used in conjunction with the part drawings).

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- b. The GTS shall report all dimensional results on the AIAG Dimensional Results form (or equivalent), found in appendix C (Page 29) of the AIAG PPAP 4th Edition Book. A ballooned drawing shall accompany the dimensional results to provide a cross reference from the dimensional layouts to the drawing. The GTS must demonstrate capability on all SC and CC dimensions as outlined in AIAG PPAP 4th Edition.
28. The GTS is responsible to transfer the tool to the JCI facility or PS. The GTS will supply JCI and the PS with a package and a booklet before or at the time of tool transfer that contains the following items: the final tool designs including all surface data, required 2D drawings of details with dimensions, a copy of the strip layout with dimensions of the tool and blank size from the last functional tryout, and a copy of the tool issues list signed off by the JCI and/or PS, final 6 piece layout approved by JCI Engineering enabling tool transfer.
 29. The GTS will correct any further tool issues that arise from the PS tool buy-off's after transfer and before PPAP that are a result of tool function or part quality related issues.
 30. The GTS will warrant the tools for tool functionality for a minimum of 90 days after the start of regular production as specified by JCI TP. "Regular production" means production of parts using the tools at [70%] of scheduled volumes per JCI's instructions.
 31. The GTS must analyze spare part requirements upon completion of 100% design for items that are susceptible to damage or wear. The GTS must prepare a quote for all recommended spare parts identified and present to the intended JCI facility or PS that will run the tool.

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Part Supplier Responsibilities

- 1) The PS is responsible to supply the GTS all production stamping press specifications, press type, press tonnage, part cycle times, platen sizes, platen restrictions, plant locations, and any special circumstances and requirements prior to each individual tool kick-off. The exact form of this document is at the discretion of the PS. The information contained in this document is complete and any changes required to the tool for manufacturing purposes is the responsibility of the PS. If the PS does not provide the above-mentioned specifications, JCI will instruct the GTS to build the tools to JCI specifications.
- 2) The PS is responsible to accept the tool transfer when the tool package has been provided by the GTS. This package will contain the final tool designs including all surface data, required 2D drawings of details with dimensions, a copy of the strip layout with dimensions of the tool and blank size from the last functional tryout, and a copy of the tool issues list signed off by the JCI and/or PS, final 6 piece layout approved by JCI Engineering enabling tool transfer. The transfer will be considered final upon successful run-at-rate and meeting all dimensional requirements to allow the PS a successful PPAP to JCI.
- 3) The PS is responsible to attend functional tool tryouts to observe the tool and record any tool issues that arise from the tryout. The PS may use any internal checklists that it chooses, but any issues arising from those checklists must be recorded on the tool issues list maintained by the GTS.
- 4) The PS is responsible for all tooling preventative maintenance and service to meet all JCI manufacturing, delivery, and quality requirements. JCI reserves the right to review the PS preventative and spare part plans if the situation requires it. Preventative maintenance plans and records must be documented and kept on file by the PS. Damage to tooling that is due to negligence or lack of preventative maintenance will be the responsibility of the PS.
- 5) The PS is responsible to maintain the tool throughout its service life (10 years after production ends).
- 6) The PS is responsible to insure and protect said property against loss or damage.
- 7) Expenses incurred by JCI to support processing and manufacturing of parts above and beyond what would normally be expected will be invoiced directly to the PS. PS will validate costs and direction prior to implementation.

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- 8) The PS is responsible for process sign-off and part submissions (PPAP) and all associated activity that are required to achieve process sign-off and PPAP approval. An onsite process sign-off will be conducted prior to PS PPAP. PS PPAP requirements are identified in the JCI Supplier Standards Manual available at www.jcimanager.com. The PS is responsible for the quality of parts produced by these tools after PPAP approval.