



Build Transfers:

12 Things Contract Manufacturers
Need from OEMs

What is needed to transfer an existing build to a contract manufacturer?

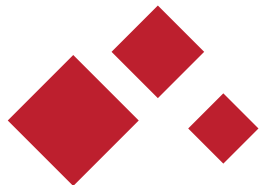


OEMs are cost and quality conscious. Increasing competition in a global marketplace has them re-evaluating how to consistently meet these goals — and many are transferring low- to mid-volume assembly and unit builds to contract manufacturers.

Depending on the capabilities and experience of the contract manufacturer, these transfers can occur “as-is” or can be a collaborative effort to improve the design, processes, and other efficiencies to control cost and quality.

Either way, the larger question remains: “What is needed to transfer an existing build to a contract manufacturer?”

This guide provides a high-level framework for better understanding low- to mid-volume build transfers and the components required by a contract manufacturer to ensure success.



1. Supporting Manufacturing Documentation for Any Custom Components

In many ways, this documentation drives the project, since it lays out the custom components (metalwork, plastics, cables, tooling, PCB boards, etc.) necessary for the supply chain to build to specification. It also ensures that the contract manufacturer and OEM are on the same page with regard to the specifications and management of custom and off-the-shelf components.

Typical supporting documentation includes:

- 2D engineering prints
- 3D CAD models
- Bill of Materials (BOM) for cables and PCB boards
- Gerber files
- Manufacturer testing requirements and/or critical dimensions

2. Supporting Specifications Called Out on 2D Prints

Quite often, key specifications noted in engineering prints are inadvertently overlooked during the file transfer from an ERP or PLM system.

Given the criticality of this information for proper component manufacturing, providing 2D prints that call out specifications such as those listed below is a cross-referencing best practice:

- Paint/finish
- Materials
- Customer inspection documentation
- Silkscreening artwork
- Wiring and PCB schematics
- Tolerances outside of those stated generally on prints



3. Detailed Cosmetic Requirements

Cosmetic requirements are largely subjective. They also have a tendency to be changed over time without proper documentation or specification updates, since decisions are often made in-person or via email, and usually on-the-fly.

The informality of these requirements can be a stumbling block during build transfers as the contract manufacturer can't anticipate what tribal knowledge exists.

Collaboration is key in making sure current cosmetic requirements are met, with an OEM providing the contract manufacturer with written answers to these guiding questions:

- What is the end user expecting to experience? Are any types of defects allowable?
- Is a product always visible, or hidden/partially hidden in a cabinet?
- When inspecting:
 - What types of defects are allowable (i.e., scratches, dents, plating discoloration, etc.)?
 - What defect sizes are allowable?
 - How should the unit be inspected? From what distance and how long?
- Is there a special form of packaging required to protect the finish?

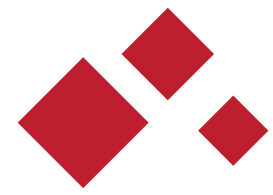
4. Certification and Compliance Requirements

Usually, certification and compliance requirements are captured in assembly drawings or top-level component or unit specifications. However, like cosmetic requirements, unwritten tribal knowledge sometimes exists.

To get and keep everyone on the same page, the OEM should provide written clarity around:

- The type of certifications required (i.e., UL, TUV, CCC, ISTA 3A, etc.), and who is responsible for obtaining the certifications
- The type of compliance required (i.e., RoHA, REACH, etc.), and who is responsible for ensuring component compliance





5. Any Available Assembly Instructions

Contract manufacturers are generally well-versed in determining how to build an assembly or unit, but an OEM's existing assembly instructions provide insights about nuances that may not be captured in an exploded drawing, such as:

- Torque specifications
- Use of Loctite or other material during assembly
- Manufacturing fixtures or jigs that may need to be supplied, either by the customer or contract manufacturer
- Special cleaning substances or methodologies
- Additional operations, including things like gluing, curing, heat staking, or other operations

6. Test Requirements/Procedures/Fixtures (if available)

Contract manufacturers do not own product designs and are not necessarily directly connected to an OEM's end-users. As such, it is critical that an OEM develops and conveys test requirements so the unit or assembly built by the contract manufacturer functions to the design's full intent.

Specific testing requirements also give all team members involved in the assembly a common understanding around:

- All testing required to satisfy an OEM's needs
- Special fixtures needed to efficiently complete tasks
- Existing or needed software
- Power and environmental requirements
- Any dangerous materials that may be handled during testing (radioactive material, for example)

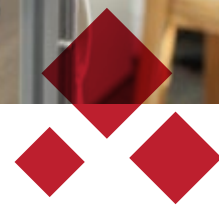


7. Quality Documentation Requirements for Production

Depending on the contract manufacturer, quality inspections take place throughout production. GMI, for example, is committed to inspecting products before shipment, with no exceptions, and retains the inspection results internally.

However, an OEM may need specific quality documentation for their own internal processes. In that case, clearly communicating those expectations up front helps a contract manufacturer develop a solution that aligns with exact OEM process and documentation practices, which might include:

- Certificate of Conformance (CoC) with each unit
- Detailed retention of test results
- OEM sign-off of test results before product shipment
- Gathering specific data required for use in the OEM's internal tracking system



8. Process Validation Documentation Requirements

As a process develops, the contract manufacturer may develop and apply its own risk-mitigation and validation measures to guarantee and document defect-free builds. They use this information to keep internal processes on-track and also help the OEM satisfy its own internal requirements around:

- PFMEA, Flow Chart, and Control Plan
- PPAP or IQ/OQ/PQ documentation
- Detailed evidence of validation of special manufacturing equipment

9. First Article Requirements for Start-up (and Ongoing Changes)

As with process validation, contract manufacturers generally document first article inspections (FAI) either to their own process standards or in compliance with what the OEM needs around:

- Full ballooned FAI of multiple pieces on first component run
- PPK/CPK reporting
- Customer approval of FAIs on first product builds before transferring to production

10. List of Field Replacement Unit (FRU)/Spare Part Requirements

Before partnering with a contract manufacturer, OEMs need to consider their potential need for spare parts and how the parts will be distributed. Does the contract manufacturer have proven capabilities in accurately and consistently replenishing stock for field technicians or service teams?

- Define FRU items that are field replaceable
- Instructions or other documentation needed
- FRU-level testing requirements
- Define packaging requirements for each shippable FRU

11. Packaging and Labeling Requirements

While not every contract manufacturer offers packaging solutions, there are contract manufacturing partners, like GMI, that understand the importance of this service.

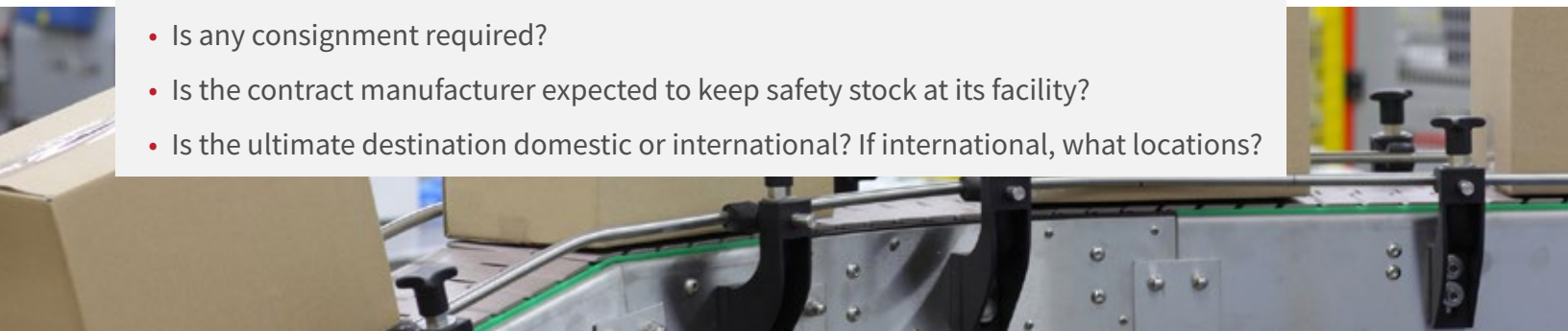
An OEM needs to factor in the roles packaging and labeling play in the overall project. It helps in contract manufacturer selection, and also raises key questions that need to be answered in conjunction with the build transfer:

- Are there any size restrictions?
- Will this be palletized or shipped individually?
- Will the packaging be utilized once, or is it reusable?
- Are there packing materials that are not acceptable?
- What information needs to go on the labeling?
- Is there custom artwork that needs to be included in the labeling?
- Are there ESD or waste material considerations at the final unpacking point?
- Any special materials considerations based on destination (California Prop 65 for example)?

12. Logistics and Inventory Requirements

A contract manufacturer may be flexible in handling logistics and inventory, but it's extremely helpful to know what the OEM expectations are for a specific product to ensure a smooth transition:

- Is there a specific logistics company the contract manufacturer should be using?
- Is any consignment required?
- Is the contract manufacturer expected to keep safety stock at its facility?
- Is the ultimate destination domestic or international? If international, what locations?



Why GMI Solutions?

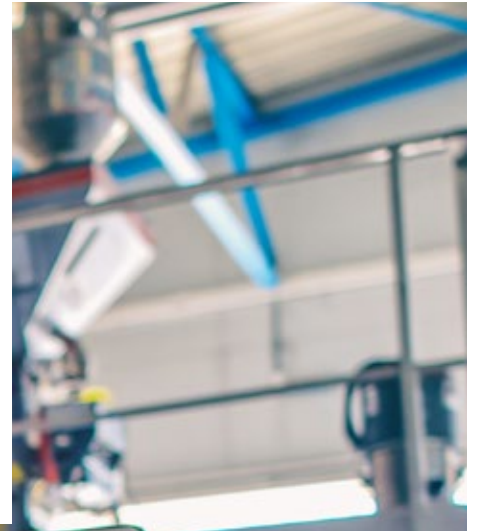
OEMs are increasingly turning to contract manufacturers for low- to mid-volume assembly and unit builds that are high-quality, cost-effective, and keep their products competitive in global markets. Finding and leveraging a collaborative contract manufacturer partnership is essential, especially since transfers can be complicated.

GMI Solutions' processes and procedures have been developed to accommodate transfers. Everything we do is intended to add value to our OEM customers' products, and apply directly to what's needed for a successful transfer and build, including:

- Capturing, documenting, and sharing supporting manufacturing documentation, specifications, cosmetic requirements, and tribal knowledge
- Understanding and applying certification, compliance, and logistics requirements
- Organizing a build process to best utilize internal efficiencies and incorporate OEM instructions, as needed
- Testing and quality assurance that's process-driven, with results that are readily available to OEMs as well as archived for future reference
- Validating processes and FAI using risk mitigation and validation documentation to move from engineering builds to run-rate production of an assembly
- Managing and fulfilling spare parts shipments on behalf of the OEM to replenish field/service technician inventories
- Developing custom labeling and packaging solutions to safely deliver units to an OEM, or utilize an OEM's designed solution within our supply chain



In addition to having solutions that make low- and mid-volume assembly and unit builds practical for OEMs, GMI has a team of professionals focused on providing exceptional support that makes the choice of contract manufacturing partner easy for them.



10202 North Enterprise Drive, Mequon, WI 53092 USA
262.242.8800, option 2 | contact@gmisolutions.com
www.gmisolutions.com