



# Inspection requirement primer

For repeat machined components, first batches and second-source supply

---

Good inspection starts before the job reaches the machine. The drawing, RFQ and approval path need to say which features control fit, function and release.

Use this primer before sending a repeat part, critical spare or second-source component for review. It gives the buyer and machinist the same starting point.

Item	Detail
Best for	OEMs, machinery builders, maintenance teams and industrial operators ordering machined parts that need dimensional evidence or repeat control.
Use before	RFQ, drawing review, first batch approval, supplier transfer, repeat spares planning or shutdown component ordering.
Main output	A clear list of critical features, inspection method, acceptance evidence and batch release requirements.
Limit	This primer does not replace customer design authority, statutory compliance, safety certification or regulated product approval.

## Next steps

[Start a component supply review](#)

[Inspection and documentation capability](#) | [Drawing health checklist](#)

## What to specify before quotation

Inspection requirements affect set-up, cycle time, measuring method, documentation and release. State them early.

Input	What to provide
Part use	Where the part fits, what it drives, carries, seals, locates or controls.
Critical features	Bores, diameters, faces, slots, hole patterns, shoulders, threads, keys, datums and mating surfaces that control function.
Tolerances	General tolerances, critical tolerances, geometric tolerances and any fit classes that need to be held. Be specific. Do not "over tolerance" – doing so only adds cost.
Surface finish	Ra values, sealing faces, bearing journals, slide faces, coating-prep faces and any visual finish requirement.
Material and treatment	Material grade, hardness, heat treatment, plating, anodising, coating, passivation or other post-machining operations.
Evidence required	Dimensional report, first article result, certificate, material traceability, special process certificate or customer sign-off.
Batch release rule	Who approves the first part, what evidence is required and whether later batches need the same evidence.

### Minimum information for a controlled review

Field	Required detail
Drawing revision	Current revision, revision date and any pending change.
Quantity and frequency	First batch quantity, expected repeat demand and timing.
Inspection level	Standard dimensional check, targeted critical feature check, full dimensional report or customer-specified method.
Consequence of error	Machine stop, assembly rework, leakage, misalignment, noise, vibration, warranty exposure or safety concern.

## Feature control checklist

Use this table to mark the features that need controlled inspection. Not every feature needs the same level of evidence.

Feature group	Inspection notes
Bores and bearing fits	Diameter, roundness, depth, position, surface finish, lead-in chamfer and mating fit.
Shafts and journals	Diameter, runout, concentricity, shoulder position, thread, keyway, hardness and finish.
Sealing faces	Flatness, surface finish, groove detail, gasket face damage, coating exclusion and cleanliness.
Mounting faces	Flatness, parallelism, perpendicularity, hole position and thread engagement.
Hole patterns	Pitch circle, position tolerance, thread type, countersink or counterbore and datum reference.
Slots, keys and drive forms	Width, depth, position, corner radius, burr condition and mating part relationship.
Threads	Thread form, class, depth, lead-in, orientation, go/no-go gauge requirement and protection before dispatch.
Coated or treated surfaces	Pre-treatment dimensions, post-treatment dimensions, masked areas and certificate requirement.

### Datum and set-up control

Mark the datums that define the part. Do not have multiple unrelated and unrelatable datums. If a drawing has no clear datum structure, agree the inspection reference before the first batch starts.

## Evidence levels

Choose the evidence level to match the part risk. Over-specifying inspection adds cost. Under-specifying inspection creates approval risk.

Evidence level	Use case
Level 1: standard check	Suitable for low-risk repeat parts with known drawings and no special release requirement. Inspection record stays internal unless requested.
Level 2: critical feature check	Selected dimensions recorded against key features that control fit, assembly or function. Good for repeat spares and supplier transfer.
Level 3: first article report	First batch dimensional evidence against agreed drawing features. Suitable before planned repeat supply starts.
Level 4: full dimensional report	Broader dimensional report against drawing callouts. Suitable for higher-risk parts, new supplier approval or formal release.
Level 5: traceability and certificates	Material certificate, heat treatment, coating, plating, anodising or special process certificate tied to the batch.
Level 6: customer-specified plan	Customer inspection plan, CMM program requirement, sampling plan, FAIR requirement or regulated documentation path.

### Suggested default

For a new repeat component, start with Level 2 or Level 3 unless the customer needs full reporting or traceable certificates. Confirm the requirement before quote release.

## Common RFQ inspection gaps

These gaps slow quoting, create rework and make supplier transfer harder.

Gap	Risk created
No critical features identified	The quote treats every feature the same, or misses the feature that controls assembly.
Old or uncertain drawing revision	The part may be made to superseded information.
Material or treatment left open	The job cannot be priced or released with confidence.
General tolerance relied on too heavily	The real functional features may need specific tolerance or measurement notes.
Surface finish not stated	Bearing, sealing and sliding surfaces are left open to interpretation.
Inspection evidence requested late	The batch may already be priced, planned or made without the required reporting allowance.
Sample part conflicts with drawing	The review needs a decision on whether the drawing or sample controls manufacture.
Design responsibility unclear	Supplier, customer and end user may not agree who owns fit, function or compliance release.

### Correction rule

Record the inspection requirement before the first batch quote is accepted. If the requirement changes later, treat it as a controlled change.



# Inspection planning worksheet

Use this worksheet for the first review or first batch meeting.

Field	Project notes
Part name / number	
Drawing number and revision	
Part use	
Machine or assembly	
First batch quantity	
Expected repeat demand	
Critical features	
Datum references	
Material and treatment	
Surface finish requirements	
Inspection evidence required	
Certificates required	
Customer approver	
Approval required before repeat supply	Yes / No
Timeline for approval	
Notes, risks or open questions	

## How this connects to repeat supply

Inspection requirements do not sit on their own. They connect the drawing, the first batch, the approval record and future repeat orders.

Stage	Control point
Before RFQ	Confirm drawing revision, material, critical features, inspection level and certificate needs.
During first batch	Check the agreed features, record the result and hold release if the evidence does not match the requirement.
After approval	Store the drawing, inspection record, batch notes and release status against the part.
Before repeat order	Check whether the drawing, treatment, inspection level or customer requirement has changed.
Quarterly review	Review repeat demand, open issues, delivery risk, drawing changes and inspection evidence.

### Related ALE resources

[RFQ readiness guide](#)

[Drawing health checklist](#)

[Controlled first batch guide](#)

[Customer critical parts register](#)

[Planned repeat component supply](#)