

GENERAL DYNAMICS

Ordnance and Tactical Systems

Weapons Systems Supplier Quality Requirements Site 21-Quality – Williston VT / Saco ME

Quality Clause	Revision	Phase In Date
Q70	1	07/28/2020

Q70–Casting Requirements

Requirements

If produced using dies/patterns, the following applies.

GD-OTS shall be notified of any work on dies/patterns/processing tooling which will affect the dimensions of the product.

Stock: Machined surfaces are designated by a finish symbol or flag note. Stock is per the drawing note and/or the following matrix whichever combination allows for the widest range:

Feature Size	Investment Castings	Sand Castings
Up to 6"	.030 to .120	.060 to .210
Over 6" up to 12"	.060 to .150	.060 to .270
Over 12" up to 24"	.090 to .240	.120 to .360
Over 24"	.090 to .300	.120 to .450

Actual machine stock if outside of these ranges may be evaluated by GD-OTS Manufacturing Engineering for Continue to process or rework disposition.

The indicated machine stock allowance shall be applied per surface. Holes and slots requiring machine stock shall be cast solid if they are 1/2" or smaller (investment); 3/4" or smaller (sand); unless otherwise specified on the purchase order, or unless tooling or casting method is capable.

Datum targets/points/lines: while the note on the drawing may state that these points "may be used" and are non-mandatory manufacturing and inspection data, datum targets/points/lines shall be adhered to on all material supplied to GD-OTS. Unless otherwise specified, a .125 dia. Datum target shall be used.

If produced using dies/patterns, the following applies:

Marking: The die/pattern number and the supplier trademark or symbol will be applied as specified on the drawing. The die/pattern number is found on GD-OTS drawings and consists of the part drawing number suffixed by the letter "H" and the applicable "H number".

Printed copy for reference only.

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Castings shall be marked with the heat/melt number or a lot number that is traceable to the heat/melt number. Marking for heat/ melt number or lot number must be located in the same general location as specified for cast raised marking per drawing. Marking method may be ink stamped. Vibro engraving or metal impression stamping must be approved by GD-OTS.

Tooling: Design approval of inspection gages and/or checking fixtures is required. All gages or inspection fixtures shall locate the castings on the datum targets as specified per drawing. Appropriate holding devices should be used to so the casting does not shift during inspection. Tool design should address the Casting Control List (CCL).

Casting Control List (CCL)

The CCL is to be identified for each casting part number. Each feature identified as a CCL should be inspected 100%. The casting control list is to be developed concurrently by GD-OTS Supplier Quality and the casting supplier. The features chosen for CCL inspection should primarily include non-static (straightening controlled) features.

Samples: When a First Article Inspection Report (FAIR) is required by PO instruction or AS9102 requirements, perform a complete AS9102 layout on one (1) piece. Report actuals on two (2) additional pieces for any non-conformances found on the complete layout or features that are using over 80% of the allowable tolerance and GD-OTS (CCL) Casting Control List.

When possible FA inspection is to be performed when the casting is located on the datum targets. It is recognized that this is not always possible and the targets need to be electronically simulated by probing or scanned and aligned. Best fit alignment is not allowed unless authorized by drawing or within the casting datum structure or design intent. Best fit alignment must be specifically communicated to GD-OTS Quality. Alignment of simulated datum targets must be within the drawing specified tolerances for datum targets.