INCH-POUND

NOTICE
OF CHANGE

MIL-STD-1897(AT)
NOTICE 1
17 April 1991

MILITARY STANDARD

CASTINGS, INVESTMENT, TOLERANCES FOR

TO ALL HOLDERS OF MIL-STD-1897(AT):

1. THE FOLLOWING PAGES OF MIL-STD-1897(AT), HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED.

NEW PAGE	DATE	SUPERSEDE	DATE
5	22 May 1985	5	REPRINTED WITHOUT CHANGE
6	22 May 1985	6	17 April 1991

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-STD-1897(AT) will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military standard is completely revised or canceled.

4. Changes from previous issue. The margins of this standard are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodian:
Army - AT

Preparing activity:
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(Project MECA-A473)

AMSC N/A

FSC MECA

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5. DETAIL REQUIREMENTS

5.1 Dimensional variations and tolerances. Unless otherwise specified, all dimensions and tolerances are in inches.

5.1.1 Variables affecting as-cast dimensional tolerances.

a. Contraction of the wax, plastic, or frozen mercury pattern material within the pattern mold cavity after injection.
b. Variation in the temperature and resulting expansion during heating of the investment mold just before the casting is poured.
c. Expansion and contraction of the ceramic mold as the hot metal is poured and begins to solidify.
d. Contraction of the cooling metal in the mold.

5.1.2 Tolerances. Tolerances outlined in this standard are general for the investment casting industry. Some foundries, depending upon their practice, may be able to incorporate more restrictive tolerancing and as a result their unit cost would reflect this improvement.

5.1.2.1 Gates and risers.

a. Surfaces that require machining:

1. Flat or round surfaces, maximum protrusion 0.000 to 0.010 inch above adjacent surfaces in the same plane.
2. Irregular surfaces, maximum protrusion 0.000 to 0.030 inch above adjacent surfaces.
3. Intersection of planes, 0.25 inch fillet radius, maximum.

b. Unmachined surfaces. Maximum protrusion of 0.000 to 0.005 inch above surfaces in the same plane but not to exceed the drawing tolerance envelope.

5.1.2.2 Dimensional.

a. For all investment cast blades and vanes use table I.

TABLE I. Dimensional tolerances for investment cast blades and vanes.

Dimension	Tolerance
up to 0.999	± 0.005
1.000 to 1.999	± 0.010
2.000 to 3.999	± 0.015
4.000 to 5.999	± 0.020
6.000 to 11.999	± 0.030
12.000 and over	± 0.045

b. For all investment castings other than blades and vanes use Table II.

c. Dimensions from cast surfaces to finished surfaces are subject to the tolerances specified in Table II.

TABLE II. Dimensional tolerances for general category investment castings.

Dimension	Tolerance
up to 1.999	± 0.010
2.000 to 3.999	± 0.015
4.000 to 5.999	± 0.020
6.000 to 11.999	± 0.030
12.000 and over	± 0.045

5.1.2.3 Flatness (bow or dish). These tolerances apply regardless of feature size providing the form tolerance zone falls entirely within the tolerance zone for size. Each configuration must be evaluated in relation to alloy, total surface area, and volume of casting (see table III).

TABLE III. Flatness tolerances (bow or dish - plate) for investment castings.

Length	Tolerance
up to 0.999	± 0.005
1.000 to 1.999	± 0.008
2.000 to 3.999	± 0.012
4.000 to 6.000	± 0.015
6.000 and over	± 0.020

5.1.2.4 Shafts (solid).

5.1.2.4.1 Straightness. Straightness is the deviation of the cast axis from the true axis. The tolerances shown as table IV apply regardless of feature size.

TABLE IV. Straightness tolerances for investment castings.

Length	Tolerance
up to 1.999	± 0.010
2.000 to 5.999	± 0.020
6.000 and over	± 0.030