

*** QUALITY ASSURANCE PROVISIONS**

C-321: SPECIFICATIONS:

NSN: 2840-01-156-0835

P/N: (82402) 42312-363

NOMENCLATURE: GEARSHAFT, BEARING

Articles to be furnished hereunder shall be manufactured, tested and inspected in accordance with drawing number (82402) 42312-363 Rev. "B", and all details and specifications referenced therein.

I.

9310 Barstock shall be procured from Castle Metals, per AMS 6265.

II. QUALITY/INSPECTION REQUIREMENTS

- A. MIL-I-45208 applies: refer to contract section E.
- B. First Article Testing applies: contract section I.
- C. Production Lot Testing applies: contract section C.
- D. Mandatory Inspection applies: contract section C.

III. SUPPLEMENTAL REQUIREMENTS

A. Additionally, para. 3.1, 3.5, 5.1, 5.2, 6.1, 6.2 of MIL-Q-9858 apply.

B. The contractor shall include on the detailed process operation sheets developed, a tracking method that is traceable to the contract, all in-house manufacturing processes, and the identity of all manufacturing sources performing process/operations outside of their facilities. These sheets shall not be revised or altered after the successful completion of FIRST ARTICLE OR PRODUCTION LOT TESTING without the approval from the basic design engineering activity via the P.C.O.

C. The inspection method sheets which list the characteristics of each item produced under the contract shall have serial number traceability to the raw material, castings, or forgings. The tracking method used on the inspection/method sheets shall be traceable to the contract. In addition, the contractor is responsible for providing completed inspection method sheets showing the actual dimensions taken of all critical characteristics.

D. Markings should be I/A/W MIL-STD-130 REV. "J" para 5.3.3 (a), (b), (c), (g). Method and location shall be I/A/W the drawing.

IV. MANDATORY INSPECTION REQUIREMENTS:

During production, mandatory inspection is required to be accomplished by the contractor as follows:

A. LEVEL OF INSPECTION (L.O.I.)

- 1) Critical Characteristics: 100% inspection applies
- 2) Major and Minor Characteristics: L.O.I. shall be I/A/W a sampling plan acceptable to the Q.A.R.

B. CRITICAL CHARACTERISTICS FOR:

DWG. # 42312-362 REV. "M"

| | | | | | | | | |
|---------------------|--|---------|-----|-------|---------|--|--|---------|
| 1) 1.373 | | Zone B4 | | | | | | |
| 1.375 | <table border="1" style="border-collapse: collapse;"> <tr> <td style="text-align: center;">↗</td> <td style="text-align: center;">A-B</td> <td style="text-align: center;">.001</td> </tr> <tr> <td style="text-align: center;">-C-</td> <td></td> <td></td> </tr> </table> | ↗ | A-B | .001 | -C- | | | |
| ↗ | A-B | .001 | | | | | | |
| -C- | | | | | | | | |
| 2) 1.5751 1.5748 | <table border="1" style="border-collapse: collapse;"> <tr> <td style="text-align: center;">↗</td> <td style="text-align: center;">A-B</td> <td style="text-align: center;">.0005</td> </tr> <tr> <td style="text-align: center;">-B-</td> <td></td> <td></td> </tr> </table> | ↗ | A-B | .0005 | -B- | | | Zone C6 |
| ↗ | A-B | .0005 | | | | | | |
| -B- | | | | | | | | |
| 3) .9846 .9843 | <table border="1" style="border-collapse: collapse;"> <tr> <td style="text-align: center;">↗</td> <td style="text-align: center;">A-B</td> <td style="text-align: center;">.0005</td> </tr> <tr> <td style="text-align: center;">-A-</td> <td></td> <td></td> </tr> </table> | ↗ | A-B | .0005 | -A- | | | Zone D7 |
| ↗ | A-B | .0005 | | | | | | |
| -A- | | | | | | | | |
| 4) .625 .626 | <table border="1" style="border-collapse: collapse;"> <tr> <td style="text-align: center;">↗</td> <td style="text-align: center;">A-B</td> <td style="text-align: center;">.001</td> </tr> </table> | ↗ | A-B | .001 | Zone D7 | | | |
| ↗ | A-B | .001 | | | | | | |
| 5) 1.5497 1.5490 | <table border="1" style="border-collapse: collapse;"> <tr> <td style="text-align: center;">↗</td> <td style="text-align: center;">B</td> <td style="text-align: center;">.002</td> </tr> </table> | ↗ | B | .002 | Zone D5 | | | |
| ↗ | B | .002 | | | | | | |

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|--|---|------|------|--|
| 6) Internal Spline Data | Zone F8 | | | |
| 7) Spur Gear Data | Zone G8 | | | |
| 8) Gear & Spline Limits of Accuracy Table | Zone H5 | | | |
| 9) Involute Profil Chart | Zone H6 | | | |
| 10) | Zone G6 | | | |
| <table border="1" data-bbox="349 556 641 630"> <tr> <td></td> <td>A</td> <td>.001</td> </tr> </table> |  | A | .001 | |
|  | A | .001 | | |
| 11) | Zone G6 | | | |
| <table border="1" data-bbox="349 703 641 777"> <tr> <td></td> <td>B</td> <td>.001</td> </tr> </table> |  | B | .001 | |
|  | B | .001 | | |
| 12) 29.5° - 30.5° | Zone D6 | | | |
| 13) 29.5° - 30.5° | Zone B8 | | | |
| 14) 29.5° - 30.5° | Zone B4 | | | |

DWG. # 42312D206 Rev. "H"

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|---------------------|---------|
| 1) 1.8504 1.8502 | Zone C4 |
| 2) .98430 .98415 | Zone C4 |

DWG. # 42312D90 Rev. "C"

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|-------------------|---------|
| 1) .6255 .6250 | Zone C3 |
|-------------------|---------|

DWG. # 42312-366 Rev. "H"

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|------------------------------|---------|
| 1) 1.5748 + .0000 - .0002 | Zone C4 |
| 2) 2.4409 + .0000 - .0002 | Zone C4 |

DWG. # 42312-364 Rev. "C"

- 1) 1.5490
1.5497

Zone C3

C. MAJOR AND MINOR CHARACTERISTICS:

- 1) Shall be defined by the contractor subject to Q.A.R. concurrence, unless defined on applicable drawings and associated specifications.

V. THE BELOW LISTED DRAWINGS APPLY AND ARE BEING FURNISHED:

- | | |
|--------------|----------|
| 1) 42312-363 | REV. "B" |
| 2) 42312-362 | REV. "P" |
| 3) 42312D206 | REV. "H" |
| 4) 42312D90 | REV. "C" |
| 5) 42312-366 | REV. "H" |
| 6) 42312-364 | REV. "C" |

VI. Unless expressly provided for elsewhere in this clause, equipment such as **FIXTURES, JIGS, DIES, PATTERNS, TEMPLATES, MYLARS, SPECIAL TOOLING, TEST EQUIPMENT**, or any other manufacturing aid required for the manufacture and/or testing of the subject item will not be provided by the government or any other source and is the sole responsibility of the contractor. The foregoing applies notwithstanding any reference to such equipment or the furnishing thereof that may be contained in any drawing or referenced specification.

I. First Article Inspection/Test Criteria:

The tests to be performed under the contract approval clause of the contract are:

- A. Dimensional Check 100%
- B. Form/Fit
- C. Compliance with drawing, (82402) 42312-363 REV. "B", and associated drawings, latest revisions, and specifications referenced therein.
- D. Review documentation as provided under DD 1423 requirements
- E. Magnetic Particle Inspection
- F. Examine gear chemistry, hardness, metalography
- G. Analyze gear chemistry
- H. Examine carburized area microstructure and determine hardness and case depth
- I. Measure plating thickness
- J. Examine core microstructure and determine hardness and case depth
- K. Verification that the shaft has been dynamically balanced in accordance with drawing 423 12-362. This will take place at the contractor's facility or the sub vendors facility if the contractor subcontracted this process during manufacturing. The contractor shall notify NAVICP-Phil, code 0734, 14 days prior to performance of the balancing phase of the First Article Testing so that NAVICP-Phila, NADEP and NAVAIR can witness the balancing procedure. This requirement may be waived if the contractor has successfully demonstrated this capability on a F/A-18 C/D AMAD gear/gear shaft of equal or tighter tolerance. *Note this is to be performed prior to FA going to NADEP.

In addition to the above tests, the First Articles are to be delivered hereunder shall also be subjected to those tests which will demonstrate that the articles comply with contract requirements.

The contractor shall be responsible for providing necessary parts and repair of the First Article Samples during testing.

II. Samples to be submitted for testing: Quantity: Two (2)

- A. Estimated cost: TBD
- B. Waiver of First Article Testing Requirements may be granted for (82402) Western Gear Corporation.

III. Testing shall be performed at the Government designated facility listed below:

NADEP North Island
Attn: Debbie Evans
Code 024.5, Bldg. 463
San Diego, CA 92135-7058

IV. Special Instructions:

A. Samples may be considered as production items under the contract provided that the samples can be refurbished to ready for issue (RFI) condition and provided the samples have inspection approval of the cognizant Q.A.R. Samples may be shipped as production items only after all other units required under the contract have been produced and are ready for shipment.

B. Samples will be returned to the contractor if not destroyed in testing.

C. Samples are to be unpainted per drawing. Corrosive areas are to be coated with a light preservative.

D. Estimated Production leadtime Schedule:

1. Submission of the First Article samples by the contractor: Barstock: 60 days
2. Analysis of report and notification to contractor: 45 days.
3. Production delivery after First Article Acceptance: 14 days.
4. Total accumulated calendar days: 120

NOTIFICATION OF SHIPMENT OF MATERIAL FOR GOVERNMENT TESTING

Fourteen (14) days prior to shipment of First Article Samples, the contractor shall notify the designated test facility, in writing of the anticipated shipping date, with an information copy to the P.C.O. The contractor shall also arrange for preliminary inspection of test samples by the CAO/QAR.

Upon shipment of First Article Samples, two (2) copies of the Material Inspection and Receiving Report (DD Form 250), bearing the QAR's signature and indication of preliminary inspection,

shall be forwarded to the P.C.O. and to the designated test facility. The envelopes shall be clearly marked. **“DO NOT OPEN IN MAILROOM”**.

Within 105 days after receipt of the samples, the test site shall complete testing/evaluation and submit two (2) copies of their test report with conclusions and recommendations to the P.C.O.

I-964

FIRST ARTICLE APPROVAL (GOVERNMENT TESTING)

A. The contractor shall deliver two (2) units of lot/item 001 within 120 calendar days from the date of this contract to the government at:

NADEP North Island
Attn: Debbie Evans
Code 024.5, Bldg. 463
San Diego, CA 92135-7058

Marking of test samples shipping container:

**“FOR FIRST ARTICLE TESTING. NOT FOR RFI. DO NOT TAKE UP IN STOCK.
CONTRACT NUMBER:**

For First Article Test, the shipping documentation shall contain this contract number and the lot/item identification. The characteristics that the First Article must meet and the testing requirements are specified elsewhere in this contract.

B. Within 45 calendar days after the government receives the First Article, the contracting officer shall notify the contractor, in writing, of the conditional approval, approval or disapproval of the First Article. The notice of conditional approval or disapproval shall not relieve the contractor from complying with all requirements of the specifications and all other terms and conditions of the contract. A notice of conditional approval shall state any further action required of the contractor. A notice of disapproval shall cite the reasons for disapproval.

C. If the First Article is disapproved, the contractor (upon government request) shall submit an additional First Article for testing. After each request, the contractor shall make any necessary changes, modifications, or repairs to the First Article or select another First Article for testing. All costs related to these tests are to be borne by the contractor, including any and all costs for additional tests following a disapproval. The contractor shall furnish any additional First Article to the government under the terms and conditions and within the time specified by the government.

The government shall act on this First Article within the time limits specified in paragraph “B” above. The government reserves the right to require an equitable adjustment of the contract price for any extension of the delivery schedule or for any additional costs to the government related to these tests.

D. If the contractor fails to deliver any First Article on time, or the contracting officer disapproves any First Article, the contractor shall be deemed to have failed to make delivery within the meaning of the default clause of this contract.

E. Unless otherwise provided in the contract, the contractor:

- 1) May deliver the approved First Article as a part of the contract quantity, provided it

meets all contract requirements for acceptance and was not consumed or destroyed in testing and;

2) Shall remove and dispose of any First Article from the government test facility at the contractor's expense.

F. If the government does not act within the time specified in paragraph **B** or **C** above, the contracting officer shall upon timely written request from the contractor, equitably adjust under the changes clause of this contract the delivery or performance dates and/or the contract price, and any other contractual term affected by the delay.

G. The contractor is responsible for providing operating and maintenance instructions, spare parts support, and repair of First Article during any First Article Test.

H. Before First Article approval, the acquisition of material or components for, or the commencement of production of, the balance of the contract quantity is at the sole risk of the contractor. Before First Article approval, the costs thereof shall not be allocable to this contract for 1) progress payments, or 2) termination settlements if the contract is terminated for the convenience of the government.

I. The contractor shall produce both the First Article and the production quantity at the same facility and shall submit a certification to this effect with each First Article.

J. The contractor shall provide specific written notification to the procuring contracting officer informing him of the shipment of any articles furnished in accordance with this clause. Such notification must be addressed to the P.C.O. and to the testing activity. Failure to provide such notification shall excuse the government from any delay in performing First Article Testing and informing the contractor of the results thereof.

C-330

PRODUCTION LOT TESTING REQUIREMENTS

The material produced under contract shall be accepted by the cognizant CAO/QAR contingent upon the successful completion of these requirements.

I. Production Lot Test Sampling Requirements:

A. The cognizant CAO/QAR shall select two (2) items at random from the first production lot produced. In addition the QAR shall select one (1) item at random from each successive lot or portion thereof.

B. Production Lot Testing to be completed during production after First Article approval.

C. Samples are to be unpainted, and corrosive areas are to be coated with a light preservative.

II. The tests to be performed under the Production Lot Sample testing provisions of the contract are:

A. Compliance with drawing, (82402) 42312-363, REV. "B" and specifications referenced therein.

B. Dimensional Check of all critical characteristics.

C. Review of documentation as provided under CDRL, DD1423.

In addition to the above tests, the Production Lot Samples to be delivered hereunder shall also be subjected to those tests which will demonstrate that the samples comply with contract requirements.

III. Testing Location, Cost and Estimated Leadtime:

A. All testing to be accomplished at the contractors facility.

B. Ship all test data to NADEP, North Island
Attn: Debbie Evans
Code 024.5, Bldg. 463
San Diego, CA 92135-7058

Within fifteen days of completion of Production Lot Testing, the CAO/QAR shall prepare and submit two copies of the test report with conclusions and recommendations to the contracting officer.

IV. NOTIFICATION OF TESTING:

The contractor shall notify the PCO, ACO, and QAR prior to conducting Production Lot Tests so that the Government may witness such testing.

A. The QAR **shall** be present to witness all Production Lot Tests.

B. Samples may be considered as production items under the contract provided the samples can be refurbished to Ready For Issue (R.F.I.) condition and provided the samples have inspection approval of the cognizant CAO/QAR. Samples may be shipped as production items only after all other units required under the contract have been produced and are ready for shipment.

C. Samples will be returned to the contractor.

C-331 PRODUCTION LOT TESTING (CONTRACTOR TESTING)

A. The Production Lot Samples shall be:

1. Selected at random by the cognizant government inspector. The samples shall be identified by contract number, lot number, and be clearly marked as follows:

PRODUCTION LOT TEST SAMPLES
NOT RFI MATERIAL
DO NOT TAKE UP IN STOCK

B. Such samples shall be tested in sufficient time prior to the delivery date of the production articles to allow a 45 day period for testing and written notification by the contracting officer of the approval or disapproval of the samples. Within 15 days of the receipt of the samples, the CAO shall notify the contracting officer of the results of the testing, together with a recommendation for approval or disapproval.

C. In the event the contractor does not receive written notification of approval or disapproval of the samples for a particular production lot within 60 days from their submission for such testing, the contract delivery schedule shall be equitably adjusted as necessary.

D. If the contractor fails to deliver any production lot samples for testing within the time or times specified, or if the contracting officer disapproves any production lot samples, the contractor shall be deemed to have failed to make delivery within the meaning of the default clause of the contract, and this contract shall be subject to termination for default.

E. In order for a production lot to be acceptable, all samples representative of the lot must pass all of the contract requirements. In the event a sample fails to pass such requirements, the lot will be rejected. In such an event, the government may, at its option and at no additional cost to the government, (I) terminate all or any portion of this contract for default, (II) require the manufacture of a new production lot, or a rework of the rejected production lot if the means and procedures proposed by the contractor for rework are acceptable to the government, or (III) require the submission of additional samples for test. The foregoing procedures shall apply to new or reworked production lots in the same way as they did to the original production lots.

F. For each additional sample or each resubmission of a modified sample which the contractor is required to submit for approval hereunder as a result of the failure of a previous sample to conform to the requirements of the specification, the contractor shall pay to the government the cost of reinspection, shipping, examination and retesting by the government, and the contractor and his sureties (if any) shall be liable for the amount of such costs.

G. Nothing contained in the foregoing provisions of this clause, and no action of the government in accordance herewith, shall in any way prejudice the right of the government under the clause of this contract entitled Default.