NON-SENSITIVE
A-A-59883
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COMMERCIAL ITEM DESCRIPTION

BORESCOPE

The General Services Administration has authorized the use of this Commercial Item Description (CID) for all federal agencies.

1. SCOPE

1.1 Scope. This CID describes various borescopes used to aid in the inspection of the internal components of Air Force aircraft engines.

2. CLASSIFICATION

2.1 Types.

2.1.1 Types. The types of borescopes covered within this CID are as follows:

Type I - 6mm diameter borescopes with working channel and measuring capability

Type II - 6mm diameter borescope with measuring capability

Type III - 6mm diameter borescope without measuring capability

Type IV - 6mm diameter borescope without measuring capability

Type V - 4mm diameter borescope with measuring capability

3. SALIENT CHARACTERISTICS

3.1 Borescope description. The borescope shall be supplied with a carrying case, viewing tips, a calibration check block, a battery charger if equipped with a battery, and an associated electrical cable for use with 110 VAC 50/60 Hz.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: WR-ALC/GRVEC, Robins AFB GA 31098-1813. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.daps.dla.mil/online .

3.2 Design and construction. The borescope shall be designed and constructed so that no parts will work loose in service. It shall be built to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service. It shall be weatherproof and designed to prevent the intrusion of water and sand into critical operating components.

3.2.1 Materials, protective coatings, and finish.

3.2.1.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs. However, used, rebuilt, or refurbished items shall not be provided.

3.2.2 Workmanship. The borescope, including all parts and accessories, shall be constructed and finished in a thoroughly workmanlike manner. Workmanship objectives shall include freedom from blemishes, defects, burrs and sharp corners and edges; accuracy of dimensions, surface finish, and radii of fillets; thoroughness of welding, painting, and riveting; marking of parts and assemblies; and proper alignment of parts and tightness of assembly fasteners.

3.2.3 Foolproofness. Where improper installation of an item could cause a malfunction, an asymmetric mounting system shall be provided, where practical, to ensure proper mounting of the item.

3.2.4 Bolted connections. Bolt holes shall be accurately punched or drilled and shall be deburred. Threaded fasteners shall be tight and shall not work loose during testing or service usage.

3.2.5 Riveted connections. Rivet holes shall be accurately punched or drilled and shall be deburred. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the component.

3.2.6 Electromagnetic interference (EMI). The borescope shall be in accordance with the following radiated emission and susceptibility requirements of MIL-STD-461: RE102 and RS103.

3.2.7 Electrostatic discharge (ESD). The design of the borescope shall preclude equipment damage due to ESD, protect personnel from electrical shock due to static charging, and prevent ignition of explosive atmospheres due to sparking.

3.3 Operation. The borescope offered shall be a complete ready to use borescope with all necessary components described herein.

3.4 Insertion tube.

3.4.1 Insertion tube/probe outside diameter. The insertion tube outside diameter shall not be greater than 6.2mm for “6mm scopes” and not greater than 4.1mm for “4mm scopes”.

3.4.2 Insertion tube/probe working length. The insertion tube working length shall be 3m, (+0.5m/-0.4m).

3.4.3 Insertion tube/probe construction. The insertion tube probe shall be constructed using multi-layer materials which offer a strong durable insertion tube that remains flexible enough to be maneuverable in the internal components of an engine.

3.4.4 Interchangeability of insertion tube/probe (optional feature). The interchangeability of the insertion tube/probe is a desired feature that adds to the versatility of the borescope.

3.4.5 Insertion tube/probe camera chip. The insertion tube probe camera chip shall be a National Television Standard Committee (NTSC) CCD camera chip with a minimum 1/10 image and 250,000 pixels.

3.4.6 Insertion tube/probe storage. The insertion tube probe shall be easily retrieved and stored in the borescope case.

3.4.7 Optical insertion tube/probe tip adapters. The insertion tube probe tips shall be supplied with the ability to change out probe tips. The borescope shall be supplied with the following tips in a reusable storage case. Each tip shall have an individual storage compartment in the tip storage case and identified as to the actual part/model number of the tips. The tip storage box shall be stored in the borescope case. Determination as to the tip configuration/selection will be evaluated on an individual basis.

3.5 Articulation. The tip articulation shall be a minimum of four way.

3.5.1 Articulation direction. The directions of articulation shall be up-down and left-right.

3.5.2 Articulation angle. The articulation range (angle) of the tip (degrees from center) shall be at least 120°.

3.6 Measurement requirements. The borescope supplied shall accurately and reliably measure the following: depth, area, cumulative length (multiple points), and linear (point to point).

3.6.1 Calibration check block. The borescope shall be supplied with a means to periodically check the measurement accuracy of the borescope with a calibration check block.

3.6.1.1 Certification of calibration. Each borescope shall be supplied with a certificate of calibration from a nationally recognized testing laboratory.

3.6.1.2 Periodic calibration check. The borescope shall be subject to a calibration check prior to use of the measurement function on the borescope.

3.7 Light. The light source shall be a light emitting diode (LED).

3.8 Hardware/software.

3.8.1 Internal data storage component. The supplied borescope shall have an internal data storage component capable of internally storing a minimum of 20 digital images and corresponding data at an image resolution of at least 680 x 480 pixels.

3.8.2 Data storage transfer media device. The supplied borescope shall have some type of data storage transfer media device that is able to transfer existing stored or captured images/data to a removable device. The transferring of these images/data is made possible through the use of a commercially available media (compact flash card, secure digital card, smart media card, PCMCIA (personal computer memory card international association, etc.). The borescope shall have the ability to capture, store, and download color digital images in standard Windows image format (jpeg, bitmap, tiff, or mpeg).

3.8.3 Internal measurement software. The borescope shall be supplied with internal measurement software program that has the ability to accurately and reliably measure the various types of defects found throughout the engine. The software shall be able to measure in inches and millimeters.

3.8.4 Miscellaneous features (optional features). The borescope may be supplied with additional features, such as text messaging, moving imaging, voice annotation, etc.

3.9 LCD monitor. The borescope shall be supplied with a high resolution LCD monitor or screen for a handheld device which provides bright and easy to view images inside or in outdoor lighting conditions. The monitor shall be a minimum 0.25 VGA (video graphics array) with a resolution of at least 320 x 240 pixels.

3.9.1 Glare protection (optional feature). The monitor may be provided with glare protection.

3.10 Borescope controls. The borescope shall be supplied with easy to use controls for the operation of all the functions for this borescope.

3.11 Viewing tips.

3.11.1 Direct view far focus tip. Direct view far focus tip with a minimum field of view of 80°.

3.11.2 Direct view near focus tip. Direct view near focus tip with a minimum field of view of 80°.

3.11.3 Side view near focus tip. Side view near focus tip with a minimum field of view of 80°.

3.11.4 Direct view measuring tip. Direct view measuring tip with a minimum field of view of 60° (to be provided with Types I, II, and IV scopes).

3.11.5 Side view measuring tip. Side view measuring tip with a minimum field of view of 60° (to be provided with Types I, II, and IV scopes).

3.12 Working channel requirements. The Type I scope shall be supplied with a working channel that is an integral part of the insertion tube/probe assembly.

3.12.1 Working channel tool requirements. The tools that are to be supplied with the working channel shall be the following: hook with a replaceable spring retainer, shim measuring kit, snare basket, three-pronged grabber, and magnet.

3.13 Rigid adapter tube. The borescope shall be supplied with a rigid adapter tube with a length of 18 inches (+ 0/- 4 inches).

3.14 External re-measurement/evaluation software. The borescope shall be supplied with an external measurement software program compatible with all current DoD operating systems. This software is used to re-evaluate discontinuities found during an engine inspection which was digitally stored during the inspection. This software package shall be capable of reading and interpreting all data from the internal measurement software.

3.15 USB reader. The borescope shall be supplied with a USB reader. USB storage devices will be used with this reader and then transferred to a “stand-alone” computer.

3.16 Power requirements. The borescope shall be able to operate on 100-120 VAC, 220-240 VAC, 50 Hz, 60 Hz, and 400 Hz, as well as 11-32 VDC.

3.17 Surge protection. The borescope shall be supplied with surge protection to prevent against variations in power sources.

3.18 Probe operating temperature requirements.

3.18.1 Minimum operating temperature. The minimum operating temperature of the insertion tube probe shall be -25° C (-13°F).

3.18.2 Maximum operating temperature. The maximum operating temperature of the insertion tube shall be 80° C (176°F).

3.18.3 Temperature sensor (optional feature). The insertion tube probe tip may be supplied with a temperature sensing device that will indicate the tip operating temperature environment.

3.19 Borescope operating temperature requirements.

3.19.1 Minimum operating temperature. The minimum borescope operating temperature shall be -20° C (-4°F).

3.19.2 Maximum operating temperature. The maximum borescope operating temperature shall be 46° C (115°F).

3.20 Borescope overall weight. The maximum weight of the entire borescope shall not exceed 60 pounds. Any borescope that exceeds the weight of 25 pounds shall have the actual weight clearly marked on the case.

3.21 Explosion proof/intrinsically safe (optional feature). The borescope offered may be certified to class 1 division 2 requirements as specified by AFOSH (Air Force Office of Safety and Health) Std 91-100 and NFPA 70 article 500 2002 edition.

3.22 Fluid/contaminate resistance. The borescope insertion tube, control cables, and borescope case shall offer protection against water, jet fuel, engine oil, various other fluids found in and around the engine as well as foreign objects, i.e. dirt, dust, sand, etc found in hanger environments or in a storage environment.

4. REGULTORY REQUIREMENTS

4.1 Recycled recovered materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with 23.403 of the Federal Acquisition Regulation (FAR). However, used, rebuilt, or refurbished items shall not be provided.

4.2 Green Procurement Program. Green Procurement Program (GPP) is a mandatory federal acquisition program that focuses on the purchase and use of environmentally preferable products and services. GPP requirements apply to all acquisitions using appropriated funds, including services and new requirements. FAR 23.404(b) applies and states the GPP requires 100% of EPA designated product purchase that are included in the Comprehensive Procurement Guidelines list that contains recovered materials, unless the item cannot be acquired: a) competitively within a reasonable timeframe; b) meet appropriate performance standards, or c) at a reasonable price. The prime contractor is responsible for ensuring that all subcontractors comply with this requirement.

5. PRODUCT CONFORMANCE PROVISIONS.

The products provided shall meet the salient characteristics of this Commercial Item Description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The Government reserves the right to require proof of such conformance.

5.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First production inspection (see 5.2).

b. Conformance inspection (see 5.3).

5.2 First production inspection. The first production borescopes shall be subjected to the examinations, tests, and analyses described in 5.5.1 through 5.5.4. The contractor shall provide or arrange for all test equipment and facilities.

5.3 Conformance inspection. Each production borescope shall be subjected to the examinations and tests described in 5.5.1.

5.4 Inspection requirements.

5.4.1 General inspection requirements. Apparatus used in conjunction with the inspections specified herein shall be laboratory precision type, calibrated at proper intervals to ensure laboratory accuracy.

5.4.2 Data. During all testing specified herein, at least the following data, unless not applicable, shall be recorded at intervals not to exceed 30 minutes. Additional data or shorter intervals shall be provided as appropriate for any specific test.

a. Date.

b. Time started.

c. Time finished.

d. Ambient temperature.

e. Ambient humidity.

5.4.3 Test rejection criteria. Throughout all tests specified herein, the borescope shall be closely observed for the following conditions, which shall be cause for rejection:

a. Failure to conform to design or performance requirements specified herein or in the contractor's technical proposal.

b. Structural failure of any component, including permanent deformation, or evidence of impending failure.

c. Evidence of excessive wear.

d. Misalignment of components.

e. Conditions that present a safety hazard to personnel during operation, servicing, or maintenance.

f. Evidence of corrosion or deterioration.

5.5 Test methods.

5.5.1 Examination of product. Each borescope shall be examined to verify compliance with the requirements herein prior to accomplishing any other tests listed in 5.5. A contractor-generated, Government-approved checklist shall be used to identify each requirement not verified by a test or analysis, and shall be used to document the inspection results. Particular attention shall be given to materials, workmanship, dimensions, surface finishes, protective coatings and sealants and their application, welding, fastening, and markings. Proper operation of each borescope function shall be verified. Each production borescope shall be inspected to a Government-approved reduced version of the checklist.

5.5.2 Electromagnetic interference test. A first production borescope shall be tested in accordance with MIL-STD-461: RE 102 and RS 103 to demonstrate compliance with 3.2.6.

5.5.3 Environmental testing.

5.5.3.1 High temperature storage and operation test. A first production borescope shall be tested in accordance with MIL-STD-810, Method 501.5, Procedures I and II, to demonstrate compliance with the high temperature storage and operating requirements of 3.18.2 and 3.19.2. Test duration shall be one 24-hour cycle for each procedure.

5.5.3.2 Low temperature storage and operation test. A first production borescope shall be tested in accordance with MIL-STD-810, Method 502.5, Procedures I and II, to demonstrate compliance with the low temperature storage and operating requirements of 3.18.1 and 3.19.1. Test duration shall be one 24-hour cycle for each procedure.

5.5.4 Weight and dimension tests.

5.5.4.1 Weight. The weight of a first production borescope shall be measured to demonstrate compliance with the weight requirement of 3.20.

6. PACKAGING

6.1 Preservation, packing and marking shall be specified in the contract or order.

7. NOTES

7.1 Source of documents.

7.1.1 Department of Defense and Federal documents may be obtained at https://assist.daps.dla.mil/online or from the Document Automation and Production Service, Bldg 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia PA 19111-5094.

7.1.2 FAR and DFARS may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Electronic copies of the FAR may be obtained from http://www.arnet.gov/far Electronic copies of the DFARS may be obtained from http://www.acq.osd.mil/dpap/dars/dfars/index.htm .

7.1.3 NFPA documents may be obtained at http://www.nfpa.org/index.asp or from NFPA, Batterymarch Park, Quincy MA 02269-9101.

7.1.4 AFOSH Publications and forms are available on the e-Publishing website at www.e-publishing.af.mil for downloading or ordering.

7.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this CID.

b. Product Conformance provisions.

c. Packaging requirements

7.3 Key words.

Generator
Ground power supplies
Portable type

Custodian:
Air Force - 84

Preparing activity:
Air Force - 84

Agent:
Air Force - 99

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